



Image by Keith Bauer
Copyright © Keith Bauer 2015

ALOFT

THE JOURNAL OF
HAWKS ALOFT, INC.



- 3 Burrowing Owls**
- 4 Eagle Aviary at the Navajo Nation Zoo**
- 5 Spotted Owls in the Apache-Sitgreaves NF**
- 6 Avian Monitoring in the Jemez Mountains**
- 7 Middle Rio Grande Bosque Surveys**
- 8 Winter/Summer Raptor Surveys**
- 11 Pesticides — A Second Silent Spring**
- 14 Living with the Landscape**
- 17 New Mexico Birder: Jim Battaglia**
- 20 Rescue and Rehabilitation Highlights**
- 25 Education Programs**



PO Box 10028 • Albuquerque, NM 87184

(505) 828-9455

WWW.HAWKSALOFT.ORG

WHO WE ARE:

BOARD OF DIRECTORS

- Carter Cherry, *Chair*
- Nancy Brakensiek, *Secretary*
- Liz Farr, *Treasurer*
- Mary Chappelle, *Director*
- Terry Edwards, *Director*
- Jim Findley, Ph.D., *Director Emeritus*

STAFF & ASSOCIATES

- Gail Garber, *Executive Director*
- Jim Battaglia, *Wildlife Rehabilitator*
- Julia Davis, *Education and Outreach Coord.*
- Barbara Deshler, *Consultant*
- Steve Elkins, *Graphic Designer*
- Trevor Fetz, *Lead Avian Biologist*
- Carol Fugagli, *Field Technician/Educator*
- Mike Fugagli, *Biologist*
- Maggie Grimason, *Senior Editor*
- Mike Hill, *GIS Specialist*
- Gerald Hobart, *Raptor Survey Project Mgr.*
- Lisa Morgan, *Field Technician/Membership*
- Everett Ogilvie, *Statistician*
- Emiliano Salazar, *Raptor Rescue Coordinator*
- Amanda Schluter, *Field Technician*
- Contributors – Laurie Marnell,*
Kevin Loughlin
- Photographers – Keith Bauer, Doug Brown,*
Alan Murphy, David Powell, Larry Rimer,
Tony Thomas, John Van't Land

ON THE FRONT COVER:

Two burrowing owl fledglings check out photographer Doug Brown.

ON THE BACK COVER:

The varied landscape of the Valles Caldera reveals dramatic beauty around every corner, Nirvana for birds and other wildlife.
Image by Keith Bauer.

OUR MISSION

Hawks Aloft, Inc. works to conserve indigenous wild birds and their habitats through avian research, conservation education, and cooperation with others. Hawks Aloft is funded, in part, by membership. To become a member and receive future issues of Aloft, as well as our monthly online newsletter, please visit our website: www.hawksaloft.org

(C) 2016 Hawks Aloft, Inc. Aloft is published annually. We invite contributions, but cannot be held responsible for their loss or damage. Enclose a self-addressed stamped envelope with submission. Articles will be edited at our discretion.

From the Director: Twenty-Four Years: Then, Now, Tomorrow

by Gail Garber

1994: It seems like yesterday that we sat around my kitchen table discussing the beginning of the organization that would become Hawks Aloft. We had no money, no credentials, no paying work, no permits, no education birds and, of course, no office. Although on paper it seemed impossible to pull this off, our assets column included a solid education program/instructor and a group of true believers in us—our initial board of directors, people with business and legal acumen; folks with the knowledge to get us started. Thus we began, with me as director and Helen Haskell our full-time educator.

Luck also was on our side, as Blue Sky Natural Beverage Company promised education funding. Further, two of our founders, Jerry and Sally Mayeux, underwrote our expenses for the first twelve months. Wildlife Rescue also came to our aid, letting us borrow “educational ambassadors” for school programs. So, while Helen was in the classroom, I set about writing grant proposals. Those first efforts were understandably a long shot. Not only was I inexperienced at this task, we didn’t even have our nonprofit tax status. The Frost Foundation must have seen the desperation written between the lines of that very first proposal requesting \$5,000, for they not only approved it, they granted us \$10,000 for education, a sum that seemed like a veritable pot of gold. So, the story of *the little nonprofit that wanted to be* got its start.

Those early years were tough; no doubt about that! Another founder, Jim Place, suggested that we offer our survey efforts to the Bureau of Land Management to count songbirds in riparian areas. It was 1997 before we secured seasonal field work and 1999 before we were able to hire a biologist for more than a few months. We still worked out of my home and I worried that we would be caught violating zoning laws with all the vehicles parked in my driveway and on the street. By 2000 we had matured considerably and, thanks to the efforts of Mary Pat Day, moved into the office that we still occupy—16 years,

10 employees and 70+ volunteers stronger.

Although we occasionally were contacted about injured birds of prey, it was only three years ago that we created the position of raptor rescue coordinator, a need identified because of the increasing number of calls each year. Now we have a dedicated hotline for rescue calls, 505-999-7740. It rings almost daily, and sometimes four times per day, with calls from throughout the state. We also developed a raptor rescue team, volunteers who travel state-wide to pick up injured raptors, corvids, roadrunners, and sometimes other species, and then deliver them to an appropriate rehab facility.

We are bursting at the seams in our current office, often having to play musical computers, where volunteers call before coming in to see if there is an available PC. Many of our cubicles house two desks and work stations in spaces meant for one. Our education area overflows with enrichment materials, file cabinets, clean sheets and towels for programs, dirty laundry waiting to be cleaned, and so on. Our meeting space seats six comfortably, but we often hold meetings of up to 20 people crammed in to watch presentations on the small square of available wall space. There is no quiet, and no privacy. Sometimes, staff work at home to finish important documents or research reports.

We regularly receive requests from interested individuals that want to visit our “center” to view our non-releasable educational ambassadors and learn more about birds of prey, their biology, history, and majesty. Unfortunately, those requests cannot be fulfilled as our birds are housed throughout the Albuquerque metro area, living in large outdoor flight cages behind the homes of dedicated volunteers and staff.

Thus, in the past year, we have begun to explore the space requirements of Hawks Aloft, now and into the future. We began a series of long-range planning meetings, facilitated by architect Cynthia Figueroa-McInteer, to develop a comprehensive plan that addresses our current needs with room for

See **Director** page 18 ▶

The Plight of the Burrowing Owl in the West

By Maggie Grimason

Less than a decade ago there were more than 68 nesting pairs of Burrowing Owls in the Santa Fe area. Undervalued and overlooked, through development, removal, pesticide use, and the eradication of resident prairie dog colonies, the number of breeding pairs dwindled to a depressing six by 2011. This inauspicious story is a variation of the one being told again and again throughout the west. Once a common sight around New Mexico and the surrounding states, and even in western Canada and Mexico, the Burrowing Owl has become increasingly rare. The decimation of these small, ground-dwelling owls in Santa Fe is an allegory for the incremental destruction of wildlife and their environments across the United States, until little by little, unique species such as these will have all but disappeared.

Burrowing Owl populations in New Mexico are largely contingent on the existence of thriving prairie dog colonies. Typically, these long-legged owls live and nest in abandoned prairie dog tunnels, although they occasionally utilize the vacated dens of skunks, armadillos, ground squirrels, and pocket gophers. As the west experiences a boom in housing and business development, prairie dogs are increasingly viewed as a nuisance, and tremendous effort has been made to remove these rodents from urban areas—although so-called urban areas are increasingly encroaching upon what was once largely pristine prairie dog (and Burrowing Owl) habitat. According to the U.S. Department of Agriculture, in 2015 alone, more than 21,000 prairie dogs in New Mexico were “removed or destroyed.” Between 2001 and 2013, the municipal government of Santa Fe, for example, spent more than half a million dollars on prairie dog relocation—not only to manage nuisance complaints, but also to meet concerns of the spread of plague and other disease. Yet, these interests must be balanced with those of the native species that have been living in New Mexico since the Miocene—that’s nearly 25 million years ago—long before humanity as we know it showed up.

A species of concern in New Mexico—as well as in Arizona, California, Florida, Montana, Oklahoma, Oregon, Utah, Washington, and Wyoming—the speckled brown bird also is listed as threatened in Mexico and endangered in Canada. Since they require very specific habitat, the main threats the Burrowing Owl faces are

diminishing low grasslands, open desert, and prairie. These habitats are most frequently threatened by development—Albuquerque’s West Mesa and the expanding city of Los Lunas are prime examples—but even federal policy and livestock grazing have contributed to habitat loss. For example, recently at both Kirtland Air Force Base and the Santa Fe Municipal Airport, the burrows of prairie dogs and Burrowing Owls have been removed due to legalities surrounding their proximity to both site’s runways. In more rural areas of our state, ranch lands inhabited by grazing animals for long periods have compacted soil to the extent that new burrows can’t be made in large swaths of viable habitat.

An increasing depletion of habitat is compounded by several other looming threats to the Burrowing Owl and avian populations as a whole. Burrowing Owls have a broad diet that includes insects, small mammals, reptiles, and even, occasionally, other birds, depending on the season and food availability. Due to the widespread use of pesticides, preferred insects are becoming an increasingly scarce food source, and rodenticides often poison raptors that prey on infected mice and rats. Collisions with automobiles, troublingly, also remain a point of concern for Burrowing Owls and for every bird species—at Hawks Aloft, nearly 90 percent of our team of “Avian Ambassadors”—permanently injured, non-releasable birds—sustained their injuries in this way.

Burrowing Owls also face some unique threats for an owl species—although they are crepuscular, they are frequently observed during the day, and they make their homes in the earth as opposed to snags, cavities, or treetops. The hours they keep and the homes they prefer make them vulnerable to predation by larger birds, foxes, household pets, and even, yes, humans. In the summer of 2016, a disturbing story surfaced from the Santa Fe National Forest, where, in the Caja del Rio area, one half of a mated pair of Burrowing Owls was shot, mid-flight, in its left wing, killing it. In spring of the same year near Cape Coral, Fla., three

See **Burrowing Owls** page 19 ▶



Burrowing Owls in the west face many challenges to their habitat and very existence from both human and natural causes.

Photos by Doug Brown.

Navajo Nation Zoo Opens Eagle Aviary



by Lisa Morgan

On July 1, Gail Garber, Julia Davis, and I had the honor of attending the dedication ceremony and opening of the 4,133 square foot eagle aviary at the Navajo Nation Zoo in Window Rock, Arizona. The Navajo Nation Zoo is the only zoo in the country owned and operated by a Native American tribe.

Heartfelt songs and passionate speeches were given by Navajo dignitaries and zoo employees prior to tours of the aviary, which can house up to 30 permanently injured Bald and Golden Eagles. This amazing aviary, which cost almost \$760,000 to construct, also includes a food preparation area, office, medical treatment area, and quarantine rooms. The highlight of the day's events was the release of four permanently injured Golden Eagles into the new aviary while a large group of people watched quietly—each of us in awe of these majestic birds.

The Golden Eagle, or *atsá* in Navajo, represents eternal life. The feathers of these birds, as well as other parts, are used for ceremonial purposes, primarily to cure illness and keep evil at bay. To the Navajo people, the Golden Eagle is a highly-esteemed protector that can carry prayers to the heavens.

Bald and Golden Eagles are protected by the federal Migratory Bird Treaty Act of 1918, as well as the Bald and Golden Eagle Protection Act of 1940. Violations of the 1940 act can result in fines of over \$100,000, as well as imprisonment for up to one year for the first offense. These violations include, but are not limited to the harassing, maiming, and killing of eagles. Despite this, over the years, many eagles have been illegally harmed for their prized feathers and body parts. On the black market, feathers and body parts can sell for hundreds to thousands of dollars. Even on the Navajo Nation, eagles have been maimed and killed, presumably in order to use the birds for ceremonial purposes. With the addition of the new eagle aviary, the Navajo Nation hopes to change all of that.

Holding live, permanently injured eagles under their federal Live Eagle

Left, above: A Golden Eagle, one of the residents of the Eagle Aviary. Above: Information signage provides some background on the significance of the Golden Eagle to Native Americans. Photos by Gail Garber.

Possession for Indian Religious Purposes and Special Purpose Possession permits, and per the Division of Natural Resources Department of Fish and Wildlife Eagle Feather Distribution Policy, the Navajo Nation has put into place a detailed Eagle Feather Distribution Policy in which Navajo tribal members can request eagle feathers naturally molted from the birds. Once tribal membership is confirmed via state issued identification and Navajo Nation identification cards, two wing and/or tail feathers are legally allotted to each tribal member per calendar year. Applicants also have a choice of plume or body feathers. Thus far, over 500 naturally molted eagle feathers have been distributed legally to tribal members.

The U.S. Fish and Wildlife Service provided initial funding of \$200,000 to the Navajo Nation Zoo, which was used for the planning and design of the aviary. The Navajo National Council also approved an appropriation of \$401,000, and the Navajo Tourism Department contributed \$200,000 to construct the aviary. This new addition to the zoo is sure to keep the general public in awe, and to assist the Navajo people in maintaining their ceremonial practices and spiritual connection to these incredible birds.

We thank Zoologist, David Mikesic and the people of the Navajo Nation for inviting us to participate in this incredible event. Heading back to Albuquerque, I felt a renewed spiritual connection with the eagles New Mexico and our beautiful lands.

Next time you are driving west on I-40, take time to visit this special place. David and his team have built an amazing zoo where visitors can reconnect with animals of the Southwest. Amazingly, they've done all of this while charging nothing for the experience. Thank you David, and the Navajo Nation!



by Amanda Schluter

The human-caused Wallow Fire, which began in June 2011, devastated a significant portion of the Apache-Sitgreaves National Forest in the White

Mountains of eastern Arizona. To date, it is the largest fire in Arizona history, and ultimately burned about 841 square miles in Arizona and a small area in western New Mexico. Unfortunately, the path of the fire impacted a substantial portion of one of the largest tracts of Mexican Spotted Owl (*Strix occidentalis lucida*) habitat in the United States. Given that the population of Mexican Spotted Owl in the United States is estimated at 2,100 birds and that this region of east-central Arizona and west-central New Mexico supports hundreds of individuals, the impact of the fire on the species was substantial.

As part of an effort to quantify the impact of the Wallow Fire on Mexican Spotted Owl reproductive success in the region, the Apache-Sitgreaves National Forest, Alpine Ranger District contracted Hawks Aloft, Inc. (HAI) to monitor a subset of Mexican Spotted Owl protected activity centers (PACs). Each PAC encompasses at least 600 acres surrounding historical owl nest and/or roost sites. The 2016 breeding season was the second year of HAI monitoring. Mexican Spotted Owl breeding primarily occurs in mixed conifer forests, with a preference for dense, old-growth patches located in steep canyons near perennial water sources. But, the owls do not build their own nests. Instead, they use tree cavities, mistletoe brooms, the nests of other species, and ledges and potholes in cliffs. Outside of the breeding season, bonded pairs generally part ways and spend their time alone. Their behavior shifts as nesting season approaches and the pair spends time strengthening their bond by roosting together in an area known as the “nest core”. The nest core tends to be in the same general area throughout a pair’s reproductive years.

Mexican Spotted Owls begin nesting in March and produce a clutch of one to three eggs. During the early portion of the breeding season (March through mid-April) they become particularly aggressive towards other owls in their territory. It is during this critical time that field surveys begin because the owls are more vocal and more likely to respond to the broadcast of vocalizations by researchers during both nighttime and daylight hours, greatly increasing the likelihood of confirming pair status

Spotted Owl Monitoring in the Apache-Sitgreaves National Forest



Far Left: A Spotted Owl perched in the forest. Left: Observers Mike Eugagli and Amanda Schluter in the field have the challenging—and rewarding job of finding and monitoring Spotted Owls.

Photos by Larry Rimer.

and locating roost areas and nests. Still, initial owl detection work generally occurs at night, when they are most active. Surveyors then return to the location of a detection during daylight to determine pair and nesting status. Because Spotted Owls often are unresponsive during the day, even during the early breeding season, it is not always possible to confirm nesting status. As the breeding season proceeds, owls become increasingly less vocal, making location and determination of breeding status far more difficult. In May, we begin checking active nests for young, which should be hatching around that time. Young Spotted Owls leave the nest at around four to five weeks old. After fledging, they hang out in trees near the nesting area, remaining dependent on parental care. Monitoring concludes in August, by which time fledging should have occurred at any successful nests and with the owls less likely to vocalize. From the middle of September to early October the young birds become independent and leave the nesting area.

Mexican Spotted Owl pairs do not nest every year. A variety of factors, including prey availability and weather conditions can influence the decision of a pair about whether to breed in a given year. This strategy allows the owls to reproduce when conditions are favorable and to survive by reducing reproduction during unfavorable periods. In addition to being sporadic breeders, other factors limit the species’ population size. At the individual level, the survival rate of hatch-year birds tends to be low (as is true with most bird species) due to starvation and predation. Broader threats to Mexican Spotted Owl include the loss of suitable habitat due to direct human impact (extensive logging and even-aged tree management) and factors generated by climate change, including the increased threat of wildfire and susceptibility of forests to parasite attack. Given the susceptibility of Mexican Spotted Owls to a variety of threats, it is imperative to understand the impact of catastrophic fire on the species. Will the species return to the area after a fire? How do fires impact the species reproduction? Gathering data that helps provide answers to these questions will help to ensure that Spotted Owl populations thrive in the future.

In 2016, 12 PACs were surveyed and we confirmed that four of those were occupied by Spotted Owls. But, we were only able to confirm an active nest at one of those PACs. Unfortunately, that pair did not successfully fledge any young. We did, however, locate an additional nesting pair outside of the PACs we were contracted to monitor, in an area where we frequently camped. We confirmed the successful fledging of two chicks from that nest. Although it was disappointing to not have more confirmed nests, it was encouraging that Spotted Owls are still breeding in the area. The confirmation of successfully fledged young near our campsite was particularly satisfying.

Jemez CFLRP Study: A Look at the Impact of Fire

by Amanda Schluter and Everett Ogilvie

In 2012, Hawks Aloft Inc. contracted to conduct avian point count surveys as a partner for the Southwest Jemez Collaborative Forest Landscape Restoration Project (CFLRP). The ongoing surveys take place within the Valles Caldera National Preserve and adjacent Santa Fe National Forest. The Valles Caldera is a 13-mile circular depression that was formed about 1.25 million years ago after a super volcano erupted in the Jemez Mountains. This depression formed several grassland valleys that support a variety of wildlife unique to the area. In October of 2015, management of the Valles Caldera was officially transferred to the National Park Service.

In 2016, we surveyed 11 different point count routes comprising 127 points in mixed conifer, ponderosa pine, mountain grassland, and riparian habitats. Each route was visited once a month during May, June, and July, for a total of three visits to each point. During these standard, 10 minute point counts, surveyors documented all birds seen or heard within a 125-meter radius. This protocol allows for the accurate assessment of avian density and richness within specific habitat types. In addition to the point counts, three breeding bird survey (BBS) routes (each 24.5 miles long) comprising 150 total points were added in 2016. Each BBS route was surveyed once during the latter part of June. For BBS points, surveyors documented all birds seen or heard during a three minute period, regardless of distance. The BBS protocol provides a comprehensive species list for the study area in general. When repeated over the course of many years, BBS data also can be used to assess population trends across the study area. On a broader scale, the U.S. Geological Survey (USGS) has combined BBS data collected throughout the United States and Canada since 1966 to create comprehensive summaries of population change for over 400 species of birds at the state, regional, and national levels.

Our standard, 10-minute point count sites include 41 points that are located within the boundaries of the Los Conchas and Thompson Ridge fires. The Los Conchas fire burned approximately 150,000 acres of both the Valles Caldera National Preserve and the Santa Fe National Forest in 2011, prior to the beginning of this project. The Thompson Ridge fire burned more than 23,000 acres within the Valles Caldera National Preserve in 2013. The occurrence of these catastrophic fires provided us with the opportunity to compare avian use between burned and unburned areas of like habitat.

Surprisingly, avian use in the burn areas was not necessarily lower than unburned areas. Cumulative avian density across all years of the



American Three-toed Woodpecker.
Photo by Alan Murphy.

study (2012-2016) was slightly higher in unburned mixed conifer (2.08 birds/ha) than in burned mixed conifer (1.99 birds/ha), but the difference was not significant (Tukey-Kramer test). Similarly, cumulative density in unburned mountain valley grassland (1.24 birds/ha) was slightly higher than burned mountain valley grassland (1.17 birds/ha), but again, the difference was not significant (Tukey-Kramer test). In contrast, cumulative avian density in burned ponderosa pine (2.04 birds/ha) was significantly higher than unburned ponderosa pine (1.74 birds/ha; Tukey-Kramer test).

There are a couple of factors that help explain the apparent lack of negative impact on the avian community due to the fires. Probably the biggest factor is the variation of fire damage among the points we classify as "burned". At some of the burned points, all of the woody vegetation within the 125 m radius plot was consumed by fire,

resulting in large decreases in avian use. But, at other points, only portions of the vegetation were consumed by fire, leaving varying amounts of the plots intact. Further, mature ponderosa pine is relatively resistant to fire. Thus, at ponderosa pine plots where the fire did not sweep through the canopy, the ultimate effect may have been similar to a prescribed burn by simply opening up the stands and making them more desirable to certain species. In mountain valley grassland, slower-growing woody vegetation was sparse and faster-growing herbaceous vegetation was dominant. Thus, the recovery time from fire was much faster and, in areas where the fires were not too intense, they may have improved habitat quality by recycling nutrients. The other factor to consider is the preferences of individual bird species. While many species are negatively impacted by fire, some species benefit from fire.

The 111 species documented during standard point counts in the first five years of this study included 34 species of conservation concern. One of the more interesting of these species is American Three-toed Woodpecker. This woodpecker frequents mature boreal and montane forests that foster an abundance of the larvae of bark beetles and wood-boring beetles. As such, American Three-toed Woodpeckers often colonize areas after a fire, taking advantage of the increase in beetle larvae. Although the population of this species in North America is considered stable based on BBS data, accurate estimates are difficult to obtain due

See CFLRP page 24 ▶

Changes in Middle Rio Grande Bosque Avian Species Composition and Abundance since the Early 1980's

by Trevor Fetz

When Hawks Aloft, Inc. (HAI) began surveys for the Middle Rio Grande Songbird Study in December 2003, one of the goals was to compare current avian use of the bosque with avian use as documented during the early 1980's Middle Rio Grande Biological Survey (MRGBS; Hink and Ohmart 1984). One of the obvious questions we wanted to address was whether the abundance and presence of specific species had changed in the bosque since the early 1980's. The first task was to ensure that the data being compared were limited to the area surveyed during both projects. Although the La Joya Waterfowl Management Area was the southern boundary of both study areas, the MRGBS extended north all the way to Espanola while the HAI survey area extends only to Bernalillo. Thus, MRGBS data collected north of Bernalillo was excluded from the analyses.

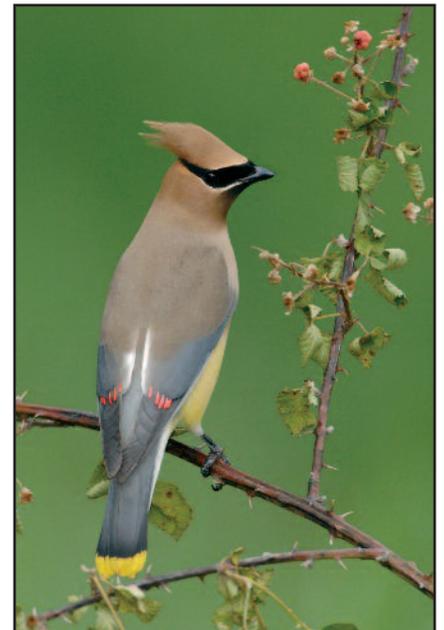
In order to compare the relative abundance of individual species, I calculated the mean detection rates (total number of detections ÷ number of surveys conducted) cumulatively by season (winter and summer) for all species documented on transects during MRGBS surveys and HAI surveys in the common study area. Statistical comparisons of detection rates for individual species between studies were analyzed using Tukey-Kramer tests. Winter detection rates for species documented during the MRGBS were calculated from survey data collected during 1981-1983 and summer detection rates were calculated from survey data collected during 1981-1982.

The detection rates for HAI data were calculated from data collected during 2004-2014 for both winter and summer.

Combining the data across all years for each study increased the sample size, thereby increasing the reliability of the data. This was especially important for the MRGBS data, due to the relatively short term nature of that study. Additionally, only a subset of the original MRGBS data is still in existence. Field work for the MRGBS occurred from February 1981 through February 1983, but we only have a



Counter-clockwise from top: Western Bluebird, Spotted Towhee, and Cedar Waxwing are among the species that have changed in abundance in the Rio Grande Bosque over the past thirty years. Photos by Larry Rimer, David Powell, and Alan Murphy.



substantial portion of the original data for summer 1981 (June-August) and winter 1982 (December-February). To ensure that existing MRGBS data accurately reflected individual species status as documented during that study, the consistency of detection rate data was compared with the individual species accounts provided in the MRGBS report. The comparison of MRGBS data and HAI data were limited to species that did not show any obvious discrepancy among the existing MRGBS data and species status as described in the MRGBS report.

Although approximately 280 bird species were documented during MRGBS and HAI surveys in the bosque, the number of species for which a meaningful comparison of status based on detection rates could be completed was limited by several factors. First, a number of the species documented were outside of their normal range, and were vagrants or very

rare visitors to the bosque. Additionally, there were a number of species whose ranges included the bosque, but were not regularly detected because their preferred habitats occurred elsewhere. Second, it was impossible to accurately assess changes in the presence of species whose primary bosque habitat was substantially under-surveyed during one (or both) of the studies. For example, due to the lack of existing MRGBS data from marsh and open water habitats it was not possible to accurately compare the abundance of species tied to those habitats between the two studies.

Third, as mentioned above, there were a number of species for which detection rates documented in the existing MRGBS data suggested a substantial change in status, and yet the species accounts in the MRGBS report suggested no discernable change. Many

See **Middle Rio Grande Bosque** page 27 ▶

Raptor Surveys of the Rio Grande & Estancia Valleys

Winter 2015/2016

by Jerry Hobart

This year, Hawks Aloft completed the 22nd year of raptor surveys in the Rio Grande and Estancia valleys of New Mexico.

During the winter surveys, our volunteers recorded a total of 705 raptors along 490 miles of survey route—that's approximately 144 raptors per hundred miles. During our summer surveys, 1,501 raptors were recorded along 506 miles of survey route, for an average of 297 raptors per 100 miles.

These surveys are accomplished entirely through the time, expertise and vehicle miles (11,235 total) donated by the following volunteers: Chuck Brandt, Mary Bruesch, Ed Chappelle, Gill Clarke, Pat Folsom, Gail Garber, Lisa Griffin, Roger Grimshaw, Jerry Hobart, Bonnie Long, Everett Oglivie, Meg Peterson, Larry Rimer, Donna Royer, Susan Russo, Sam Sanborn, Martin Schelble, Diane Schlies, and Steve Youtsey.

The accompanying tables show the most recent ten years of winter and summer raptor counts for key species in the various survey areas. Counts in the table represent raptors per 100 survey miles. The average and standard deviation calculations include all years since the surveys began.

Winter Raptors – 2006-2016 Birds/100 Miles

Species	Area	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	Avg	SD
Bald Eagle	Belen	1	4	2	4	1	5	2	1	4	2	5	3
	Socorro	4	1	4	4	9	6	2	5	0	2	7	5
	Armendaris Lake	0	0	13	2	2	3	0	0	0	0	18	37
	Armendaris Grassland	-	-	0	0	0	0	0	0	0	0	0	0
	McIntosh	0	0	0	7	1	0	0	1	1	0	1	2
Golden Eagle	Belen	0	0	0	0	0	0	0	0	1	0	0	1
	Socorro	2	0	0	1	0	0	0	0	1	0	1	1
	Armendaris Lake	14	5	12	5	0	10	8	3	5	7	7	5
	Armendaris Grassland	-	-	15	13	5	10	13	8	12	0	9	5
	McIntosh	1	5	6	7	10	6	11	11	6	1	6	4
Northern Harrier	Belen	7	6	8	8	8	7	8	4	9	8	11	5
	Socorro	9	16	14	20	21	27	18	18	8	10	17	7
	Armendaris Lake	8	10	2	3	0	3	0	2	8	2	7	7
	Armendaris Grassland	-	-	12	3	8	8	2	8	5	3	6	3
	McIntosh	13	2	8	6	6	3	6	1	3	6	5	3
Red-tailed Hawk	Belen	60	58	48	55	60	66	67	72	93	66	65	10
	Socorro	89	63	70	56	96	69	58	84	88	65	84	18
	Armendaris Lake	22	35	15	17	5	10	3	20	45	45	39	42
	Armendaris Grassland	-	-	13	30	8	23	5	10	33	29	18	11
	McIntosh	15	15	24	24	15	44	25	22	17	26	20	7
Rough-legged Hawk	Belen	0	1	1	0	0	0	0	1	1	0	0	0
	Socorro	0	0	0	0	0	1	1	4	1	0	1	1
	McIntosh	11	0	2	6	5	4	7	8	2	6	6	3
Ferruginous Hawk	Belen	2	1	2	1	0	2	2	2	0	2	3	2
	Socorro	8	7	2	4	4	13	4	7	10	6	9	4
	Armendaris Lake	0	0	0	2	0	0	0	0	0	0	0	0
	Armendaris Grassland	-	-	3	7	2	3	0	0	5	0	4	5
	McIntosh	45	35	47	58	61	46	95	88	69	60	53	20
Prairie Falcon	Armendaris Grassland	-	15	5	0	0	0	10	3	13	10	5	6
	McIntosh	1	1	6	4	6	2	6	3	6	5	5	3
American Kestrel	Belen	46	38	50	37	19	30	26	32	55	60	47	13
	Socorro	89	76	65	22	49	54	45	73	91	86	75	20
	Armendaris Lake	4	2	5	3	0	8	0	5	18	3	5	5
	Armendaris Grassland	-	-	40	5	5	10	13	5	32	10	15	12
	McIntosh	32	19	27	17	27	24	21	22	31	30	24	5
Total Raptors	Belen	133	134	142	135	112	135	134	146	203	152	163	28
	Socorro	241	203	180	138	217	206	155	212	228	188	232	48
	Armendaris Lake	60	62	68	47	10	43	22	45	118	83	101	90
	Armendaris Grassland	-	-	122	83	58	63	63	38	113	76	76	25
	McIntosh	150	99	166	177	169	176	219	199	176	176	169	36

Raptor Surveys: Summer 2016

These tables do not include those species seen less frequently, such as accipiters, kites, etc. Anyone interested in the birds observed, but not included here, may contact me at gkhobart@hotmail.com.

Unusual sightings:

This summer, there were two recordings of Osprey in the Rio Grande Valley. These were the first sightings of Osprey in the 22 years of surveys. The first was on July 8, just south of Belen, by surveyors Ed Chappelle, Larry Rimer, and Gill Clarke. The second was four days later, just north of Belen, by surveyors Sam Sanborn and Diane Schlies.

On July 19, on the Armendaris Ranch, an unbanded, juvenile Aplomado Falcon was spotted by Ed Chappelle, Larry Rimer, and Jerry Hobart. Fortunately, Larry had his camera and the perched bird posed quite patiently. This sighting caused some excitement when it was reported to ranch manager, Tom Waddell. It indicates that there is at least one breeding pair of Aplomado Falcons in the area.



Prairie Falcon. Photo by Doug Brown

Summer Raptors – 2007-2016 Birds/100 Miles

Species	Area	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg	SD
Turkey Vulture	Belen	71	120	176	118	154	161	131	94	122	90	114	41
	Socorro	186	163	242	196	198	181	239	140	139	167	224	67
	Armendaris Lake	223	275	185	173	243	190	214	185	192	177	214	40
	Armendaris Grassland	153	105	118	233	68	177	105	100	130	165	117	61
	McIntosh	93	99	178	127	219	104	146	107	119	129	142	51
Golden Eagle	Armendaris Lake	5	3	2	0	3	3	5	3	27	17	5	7
	McIntosh	0	3	2	1	2	0	2	3	1	3	1	1
[No other areas have a significant number of Golden Eagles in the summer.]													
Swainson's Hawk	Belen	11	13	21	19	16	25	29	19	25	29	21	11
	Socorro	32	24	39	19	27	39	29	37	30	56	31	21
	Armendaris Lake	23	0	2	0	5	2	5	12	8	7	6	6
	Armendaris Grassland	88	58	110	58	48	72	73	45	115	43	74	26
	McIntosh	87	77	83	94	131	139	91	128	151	179	98	41
Red-tailed Hawk	Belen	2	4	1	1	1	2	2	2	2	4	3	2
	Socorro	0	0	0	2	2	1	1	2	4	2	1	1
	Armendaris Lake	10	5	5	7	3	2	4	3	5	15	5	5
	Armendaris Grassland	2	5	10	0	3	5	8	0	8	5	6	5
	McIntosh	12	6	7	7	9	4	5	6	3	9	5	3
Ferruginous Hawk	McIntosh	20	15	6	28	6	5	14	17	9	6	13	7
[No other areas have a significant number of Ferruginous Hawks in the summer.]													
Prairie Falcon	Armendaris Grassland	12	5	3	0	0	2	3	3	7	3	3	3
	McIntosh	5	1	2	2	1	1	2	1	2	0	1	1
[No other areas have a significant number of Prairie Falcons in the summer.]													
American Kestrel	Belen	11	34	24	10	11	12	10	24	32	21	26	12
	Socorro	59	70	75	31	32	42	61	56	87	83	63	19
	Armendaris Lake	7	18	22	5	5	5	8	8	62	5	11	14
	Armendaris Grassland	13	33	43	5	3	8	15	8	10	13	15	12
	McIntosh	15	16	9	12	21	29	19	17	38	55	22	11
Total Raptors	Belen	113	202	239	158	200	222	191	156	216	192	186	45
	Socorro	303	264	370	272	272	279	350	261	280	328	338	67
	Armendaris Lake	300	243	237	178	265	205	250	245	330	263	256	42
	Armendaris Grassland	320	317	350	345	142	292	236	165	338	302	259	85
	McIntosh	321	279	335	322	414	331	328	321	346	375	328	56

Amazon Adventure with Hawks Aloft and Wildside Nature Tours

February 3-11, 2018

by Kevin Loughlin of Wildside Nature Tours

The mighty Amazon is the most powerful river in the world. Over one hundred miles wide at its mouth, it pours 20 percent of Earth's fresh water into the Atlantic Ocean. The Amazon's annual volume is greater than the next seven of the world's largest rivers combined!

Although the headwaters reach high into the Andes, the true beginning of the main stem of this mighty river has been debated in recent years. Currently, it is considered to be located in northeastern Peru, at the confluence of the Marañon and Ucayali Rivers, just upstream from the city of Iquitos. This is where our adventure takes place.

Northeastern Peru truly is a wild rainforest full of life and wonder. Monkeys, jaguars, and hundreds of species of birds inhabit the jungles, through which flow many streams and small rivers that contribute to the Amazon's might. Amidst this jungle is an island of concrete built during the rubber boom at the turn of the twentieth century. European-style structures of that era, adorned in decorative tiles owing to the extravagance of the time, line the streets of Iquitos. This is our entry-point to the wilderness which surrounds the isolated city of over 400,000 people.

The only paved road in the region, about 50 miles long, connects Iquitos to Nauta, a smaller town of less than 12,000 people. This road passes through an unusual habitat known as a white-sand forest, where the terrain is comprised of nutrient poor sand. During stops, we find plants adapted to the lacking soil along with insects and birds that have evolved to eat these unique plants. For example, Yellow-billed Nunbirds are bug-eaters found in the mid- to upper-levels of the trees in the white-sand forest.

It is from Nauta that we board our deluxe riverboat for an experience like no other.

Having our "hotel" move with us is the ultimate convenience. We get to visit a large area without having to re-pack our bags, and we can even have our laundry done! Each day brings a new stream, river, or lake to explore from our comfortable, motorized skiffs—perfect platforms for birding and photography! We use these separate skiffs so the photographers can "hang out" and take advantage of cooperative subjects, while the birders can choose to move on to find other wildlife if they wish.

Our first morning on the river (and every morning thereafter!) is always full of excitement for what the day might bring. With coffee and snacks, I board the photographer's skiff with my fellow camera brandishers while Edison Buenaño, one of South America's top birding guides, gathers the remainder of the group to board the birding skiff. But, before we begin to motor, a pod of pink river dolphins gather in a feeding frenzy around us! The odd-looking creatures briefly show us their long beaks and bulbous foreheads each time they surface, grabbing a quick breath and diving into the muddy water once again. As quickly as it started, the frenzy ends and, like the dolphins, we move off to find more opportunities!

Following a meandering stream we enter a dense thicket of trees, sprouting from the flooded forest, where the odd Hoatzin gather in small flocks to feed on their favorite leaves. These vegetarian birds are an icon of the Amazon Basin, with their croaking calls and striking "hairdos"; they are a highlight for every visitor—that is, until we hear a sound that can



Some potential species to be observed on your Amazon trip include the Black-collared Hawk and the Slate-colored Hawk. Photos courtesy Wildside Nature Tours



only be drunken donkeys calling from overhead! Looking up toward the sound, we see giant, raptor-like shorebirds—Horned Screemers—making that ridiculous noise!

Scarlet-crowned Barbets purr from the forest canopy and Glittering-throated Hummingbirds sparkle as they buzz from flower to flower. Monk saki monkeys feed quietly in the tree-tops while squirrel monkeys and saddle-backed tamarins squeak and chatter in noisy troupes. The forest is rarely silent but for the gliding wings of the King Vulture soaring overhead.

Raptors abound in the Amazon, including my favorite, the Black-collared Hawk, a fish-eater. Diminutive, yet fierce, Bat Falcons hunt

see **Amazon** page 15 ▶



A Second Silent Spring

by Maggie Grimason

"There is something infinitely healing in the repeated refrains of nature—the assurance that dawn comes after night, and spring after winter." Rachel Carson penned these words in the 1960's, using her words in praise of the rhythms of nature and to deride the

use of the pesticide DDT, which has since been made illegal across the United States. Songbirds are a large part of the chorus she refers to—their trills, coos, and calls a constant reminder of the abundance of life around us—that we are not the only species on this planet, but in fact, are a very small percentage of life on Earth. A world in which birds are silenced is one where the richness of nature is absent and forever altered. Decades after Carson published *Silent Spring*, we are facing a very similar crisis, this time centered on a new class of pesticides, and once again the Earth's birds are sending us a message about the health of our planet.

After DDT was made illegal in the United States in 1972, manufacturers developed a new class of pesticides called neonicotinoids; these are now the most commonly used and fastest growing class of pesticides in the world. Effective and easy to apply, neonicotinoids are systemic pesticides—that is, the seeds are coated in the chemical, and as the plant grows, it is incorporated into every bud, branch, and flower. The structure of chemical neonicotinoids is based on nicotine, a natural insecticide which induces paralysis, and later death, in insects; in short, it is a nerve poison to the small creatures that encounter it that is, by some accounts, 5,000 to 10,000 times more toxic than the now maligned DDT. There are more than 300 types of neonicotinoid pesticide available for commercial and private use and while many European countries have limited their use, they still have the global market cornered—about 40 percent of the insecticides sold globally are neonicotinoids. Of the five billion tons of neonicotinoids produced annually, 20 percent of the total volume is put to work in the United States. While manufacturers insist on the safety of these products when used as prescribed, worldwide, songbird populations are in rapid decline, and all indications point toward the insidious use of neonicotinoids as a primary cause.

By their very nature, it is difficult to predict the impact pesticides will have on the natural world. Because insecticides are synthetic chemicals produced in a laboratory, when they are introduced into the environment, they carry consequences that are nearly impossible to anticipate. It's not an easy task to gauge the precise number of birds that are impacted annually by use of these chemicals, but one estimate from the Smithsonian National Zoological Park Conservation Biology Institute suggests that roughly 672 million birds are exposed to these insecticides on US agricultural lands, and 10 percent of those—that's 67 million—are killed. In addition to fatalities, there are a host of sub-lethal effects including eggshell thinning, deformed embryos, slower nestling growth rates, weight loss, and suppressed immune system response. Peripherally, neonicotinoids poison prey items, taint waters, and alter habitat necessary for a thriving bird population.

Alarmingly, one study published in July 2015 found that neonicotinoids even persist in the foods we consume, making the impact of these chemicals consequential not just for birds and bugs, but potentially for humans, too. Researchers from the American Bird Conservancy tested 66 food items available in the dining halls of the US Congress in Washington DC and found that, of those foods sampled, 91 percent contained remnants of neonicotinoids that couldn't be removed with a simple washing. While the scope of this particular study is quite small, the implications may be wide-reaching, as very little research has been done to estimate the amount of neonicotinoids found in commercial produce. Adding another layer of alarm to the whole scenario, clinical research done in Japan found that even low dosages of these pesticides in a human diet can have adverse effects on the overall health of the individual in question.

In the agriculture-rich Central Valley of California, where pesticides are heavily employed, recent studies have discovered that insectivorous bird species have declined dramatically. The western Purple Martin, for example, declined by 83 percent in this area, whereas, in the nearby foothills area, where pesticide use is minimal, populations remained stable. The decline of Purple Martin in this area happened at a pace that matched the expanded use of neonicotinoids—and it wasn't just the Purple Martin that was affected. The study also looked at the Tricolored Blackbird, whose population dropped by 63 percent in the region, and butterfly populations—which, across a broad range of species, all declined drastically in areas where pesticides were omnipresent, and remained consistent in areas where little or no pesticides are known to be employed. What's suggested by this study is that indiscriminate killing and toxifying of insects is starving and poisoning the birds that prey upon them. There are a whole host of other bird species that also are measurably in decline; the list of vanishing songbirds is astonishing—in the last two decades varieties of kingbirds, warblers, whip-poor-wills, nighthawks, swifts, swallows, martins, flycatchers, and more—are in decline. Of all birds that eat flying insects, 85 percent are in decline.

Worst of all, as we sterilize agricultural land and the environs that surround them, the use of pesticides may decrease overall productivity of farmland by decimating the birds and bugs that keep pests at bay, creating a lack of biodiversity and a total dependence on chemicals. This shortsighted approach to agricultural success is slowly being revealed as not just ineffectual and contradictory, but harmful to the entire food chain. "In nature, nothing exists alone," Carson wrote. As with DDT, neonicotinoids have been revealed as reckless—sterilizing the landscape and silencing the diverse harmonies of songbirds and insects across North America. As bird species decline at a frightening rate, we gain little and stand to lose the integrity and meticulous balance of the natural world around us.



Purple Martins are in rapid decline in habitats where pesticides are heavily employed.

Photos by Alan Murphy.

The Battle of the Bird and the Beetle

by Amanda Schluter

In recent years, plans have been set in motion to eradicate problematic invasive species from the local environment. Invasive species are often generalists, meaning they are able to take advantage of a variety of food sources and habitat types, which, when combined with the ability to grow and reproduce quickly, make them a force to be reckoned with. When introduced into an area, they often out-compete and out-produce native species. A large number of invasive species, including salt cedar, were introduced into the local environment by humans. Salt cedar, also known as tamarisk, is a plant native to the Middle East, Asia, and parts of Africa, evolving in a very harsh landscape with little rain. It was brought to the east coast in the early 19th century for ornamental gardens because of its exotic appearance.

During the early 1900s, parts of the Southwest like Phoenix, Las Vegas, and Los Angeles were rapidly growing in population. As these areas became more populated, the need to address water for residential and agricultural uses became pressing. The fragile and complex ecosystems of the Southwest maintain a delicate balance that is often easily affected by outside interference. When humans began diverting rivers and pumping ground water, they changed the environment in ways that could not have been foreseen. As dams were built and aquifers depleted, native cottonwood and willow trees along rivers' edges began to disappear. The flood and fire regimes in the area also were affected by damming and stream channelization that caused changes in water chemistry, compounded by the clearing of vegetation. Grazing livestock further reduced native trees along the riverbed, leaving banks susceptible to erosion. Encouraged by local governments, farmers began planting



tamarisk to stabilize riverbanks, provide wind-breaks, and provide shade to the river, preventing evaporation. Tamarisk flourished in this new environment and, unlike the native plants, it was able to grow in highly saline soils. Tamarisk soon took over many southwestern river systems.

Initial research of tamarisk water consumption suggested that its intake was much higher than that of native plants. More recent studies, however, show that, while tamarisk water consumption varies among sites, it's comparable to that of native plants like cottonwoods and willows. This has led some people to question the reputation that salt cedar has been given. What if it wasn't the nasty invasive salt cedar choking-out the native species, but instead riverbanks that were disrupted from their natural ebb and flow because of human-made dams? Still, the movement towards a historically natural environment was desired to encourage and sustain biodiversity.

Like most invasive species, tamarisk is extremely hard to remove from a habitat upon which it has encroached. In tamarisk's native habitat there are species of leaf-eating beetle that feed exclusively on this plant. After a decade of testing different beetles, the U.S. Department of Agriculture determined one species of beetle—the *diorahadba elongate*—was the ideal candidate for release in the southwest to manage the spread of tamarisk. In 2001, beetles were released in California,



Top, Salt cedar beetle larva. Photo by Trevor Fetz. Above, Willow Flycatcher. Photo by Alan Murphy.

Nevada, Utah, Colorado, and Wyoming, then two years later in Montana, Oregon, and New Mexico. Over the next several years, various agencies released the beetle on non-federal lands, effectively increasing the beetle's range throughout the Southwest.

In 1995, the U.S. Fish and Wildlife Service

See **Bird and Beetle** on page 13 ▶

Raptors in a Reclaimed Landscape: McKinley Mine

by Mike Fugagli

Again, in 2016, Hawks Aloft, conducted raptor surveys in McKinley County, New Mexico. Chevron's McKinley Mine is an approximately thirty-year-old surface coal mine near Gallup, in the northwestern portion of the state. Leased from the Navajo Nation, the McKinley Mine is no longer actively producing coal. Instead, in an effort to return the land to the Navajo Nation, Chevron has hired Golder, Inc. to navigate the mine through its close-out phase, which includes the tricky business of reclamation: restoring native habitat to thousands of acres of disturbed land.

Today at the mine, huge swaths of native grassland cover what were actively mined sites just a few years ago, and raptor populations are responding. During the 2016 breeding season, we documented Red-tailed Hawk, Great Horned Owl, Cooper's Hawk, Golden Eagle, American Kestrel, and Burrowing Owl utilizing the landscape, with all but Golden Eagle confirmed as breeding on mine property.

According to USGS Breeding Bird Survey data, Burrowing Owl populations have been declining range-wide since the 1960's. In New Mexico, populations have been in decline since about 2003. Thus, the presence of Burrowing Owls is especially good news for the mine and their ongoing reclamation efforts. Throughout the mine, prairie dogs, a keystone species in western grasslands, are returning to the landscape, providing not only an important food resource for breeding raptors, but also the burrows that Burrowing Owls need for nesting and shelter.

In 2016, only one pair of Burrowing Owls was documented breeding at the site, raising at least three young. But, the potential for the species appears high. As prairie dog populations continue to expand throughout reclaimed areas, Burrowing Owls also are likely to respond positively, making the reclaimed mine a potential strong-hold for the species in that part of the state.



Red-tailed Hawk is one of the species that nests at McKinley Mine. Photo by Tony Thomas.

Interestingly, the future of Burrowing Owls and other raptors at McKinley Mine depends as much on what happens to the land after the lease obligations are fulfilled and the property reverts back to the Navajo Nation, as it does on the success of reclamation. As with most western grasslands, the specter of future grazing looms large over the landscape, and the gains made through Chevron's restoration could quickly be lost without a long-term conservation plan. Hopefully, with the support of the Navajo Nation, some kind of special conservation status will be conferred on the reclaimed habitats of McKinley Mine, and the Burrowing Owls and other raptors drawn to the area will find a safe haven in northwestern New Mexico for years to come.

◀ page 12 Bird and Beetle

listed the Southwestern Willow Flycatcher as endangered. The Southwestern Willow Flycatcher is a small, drab flycatcher that nests in dense riparian habitats and shows some site fidelity. The Southwestern Willow flycatcher's population has declined due to habitat loss for a multitude of reasons—one of them being the establishment of non-native species like tamarisk. While Willow Flycatchers prefer to nest in native species of willow, they will nest in tamarisk and Russian olive. With the salt cedar beetle's range expanding to overlap with the nesting territories of the Southwestern Willow Flycatcher, the bird's nests began to fail due to exposure, if they nested at all.

The beetles are doing their job rapidly killing tamarisk, but that's not the end of the story. Individuals, organizations, and land management agencies must take the initiative to remove dead plants after the beetle has moved through a region and begin planting native species in its place. Government programs like Working Lands for Wildlife (WLFW) set up by the NRCS (National Resources Conservation Service) are working with

conservation partners and private landowners to complete projects that restore critical ecosystems for several declining species, including the Southwestern Willow Flycatcher. Their work benefits other sensitive and threatened species too, including the New Mexico jumping mouse, Yellow-billed Cuckoo, leopard frog, Townsend's big-eared bat, and Bell's Vireo.

With the knowledge of how fragile the ecosystems of the Southwest are, it is encouraging that steps are being taken to restore it to a more natural state. The spread of tamarisk in the Southwest is a valuable lesson that illustrates how a chain of events can have consequences that are evident only decades later. There are still concerns for the future of the river systems of the Southwest and the Southwestern Willow Flycatcher. Are there enough efforts to restore the habitat, or is it too little too late? After the beetles have killed all the tamarisk, will they fade away from the landscape? Where is the root of the problem? The answers will only be divined through careful attention, study, and restoration for many years to come.

Living with the Landscape: Building a Future for Communities and Wildlife

by Julia Davis

Overview

Living with the Landscape (LWL) is a grant funded, multi-visit program offered to low-income schools in Albuquerque and surrounding New Mexico communities. The goal of the program is to inspire students to take ownership of and improve their surroundings. During the 2015–16 school year, LWL was delivered to five Albuquerque schools and six Silver City schools. Foundations and corporations, as well as private donations, funded the program. Each April, LWL applications are sent to all Title 1 schools in Albuquerque. Typically, a dozen completed applications are submitted for review. The selection process considers each school's specific needs and the sustainability of the project after visits from Hawks Aloft conclude.

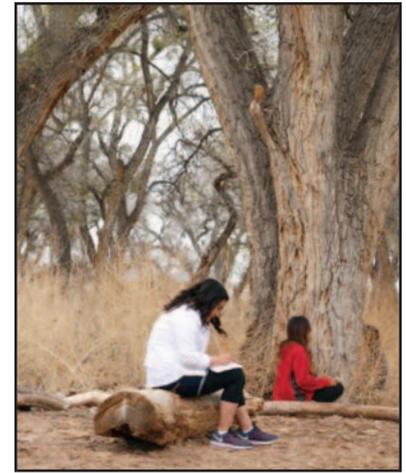
Last school year, we presented 243 programs at five Albuquerque schools: Cochiti, Matheson Park, La Mesa, Lew Wallace, and Los Padillas elementary schools, and five Silver City schools: Harrison Schmitt, Bayard, and Sixth Street elementary schools, Cliff School, and Silver High School. Classroom visits and other activities totaled 264 hours of working with students, teachers, and the surrounding community, encompassing all aspects of the LWL program: conservation projects, school presentations, field trips, and conservation nights. LWL reached approximately 6,050 participants during the 2015-16 school year, ending successfully in May 2016.

Conservation Projects

Conservation projects are hands-on experiences organized for each Albuquerque school's fifth grade class. This past year Matheson Park, La Mesa, and Lew Wallace built wooden bluebird houses and recycled milk carton bird feeders that were placed around each school's courtyard. Cochiti fifth graders, using entirely recycled materials, made large bird feeders out of everyday items (milk jugs, soda bottles, etc.). Their bird feeders and a bird feeder station were installed in the school's garden. Los Padillas Elementary School had already established a wildlife sanctuary and outdoor classroom. As such, students elected to hit the trails with a variety of maintenance tools, clearing overgrown plants and cleaning up around the outdoor classroom and education pond. Each of these conservation projects tied into lessons presented throughout the school year for all grade levels.

School Presentations

Visits to each school started in September and concluded in May. Each program featured at least two live, non-releasable birds of prey and interactive games, stories, and activities. Students in preschool to



Above: During the Living with the Landscape program, students undertake conservation projects and visit local wilderness areas. Staff photos.

third grade received two school presentations, while fourth and fifth grade students received three classroom presentations. All presentations encouraged student-centered discussions and emphasized Hawks Aloft's mission to protect wild, indigenous birds. Topics were determined by grade level and outlined basic bird biology and the adaptations unique to raptors, as well as concepts such as habitat fragmentation, watersheds, fire ecology, and migration. Each lesson encouraged students to list the negative and positive human impacts they observed and connect them to real life scenarios. In this way, students discussed their own communities through the lens of conservation.

The concept of habitat loss was strengthened via an experiential game that was introduced to second and third graders. Students roleplayed different kinds of raptors whose habitat was being broken into pieces by roads, cars, and houses. Throughout the game, we paused to create a bar graph that tracked the number raptors (students) that survived after each increasingly fragmented round. The graph was then used to answer questions about the impact of habitat fragmentation on wild raptors.

Conservation of the Rio Grande watershed was introduced to students through an interactive story about a place called Crystal Lake. We began by telling students that their teacher visited Crystal Lake, took pictures, and put them on Facebook. The lake was so beautiful it began trending online! Unfortunately, this began a domino effect of negative human impacts for the lake. Campers did not clean up after themselves, a farmer raised sheep on the once pristine grassy fields, and a whole community sprung up around the lake, much to the distress of the wildlife that lived there. After hearing the story, students then talked about the effects of development on the wildlife around the lake and brainstormed possible ways the residents of Crystal Lake could clean up the mess in their formerly beautiful community.

See **LWL** on page 15 ▶

◀ page 14 **LWL**

Fire in the forest can have positive or negative effects on resident wildlife, depending on the intensity of the burn. During the fire ecology lesson, students learned about the impact of wildfire by playing the roles of both healthy and unhealthy forests. Students experienced how fire in an unhealthy forest could be catastrophic due to an abundance of diseased trees and a large amount of natural litter. After the game, discussion focused on the causes and prevention of forest fires.

Finally, we addressed migration. Migration is tricky business and some species face long journeys every year. During this lesson students became migrating raptors that traveled between summer and winter habitats. The activity concluded with a student-centered discussion about migration, specifically the personal journeys each student took over the course of the game.

Field Trips

In Albuquerque, four of the five schools went on field trips to local natural spaces. These field-based experiences took place near the end of the school year, summarizing and concluding the program. This unique experience tied in concepts and ideas learned in the classroom to a natural environment.

During field trips, students rotated through four inquiry based stations: quiet contemplation, bird watching, a nature hike, and bone puzzles. Matheson Park fourth graders and Los Padillas fourth and fifth graders took a trip to the Elena Gallegos Open Space in the foothills of the Sandia Mountains. Albuquerque Open Space allowed us to use their facilities at no cost and met with students to present an overview of the area and a brief safety talk.

Matheson Park, Cochiti, and Lew Wallace students visited Valle de Oro National Wildlife Refuge, the first urban wildlife refuge in the United States. It provided a fantastic site for outdoor learning. Located a few miles south of downtown Albuquerque, the refuge includes grasslands, agricultural fields, and Rio Grande bosque habitats. Students observed wildlife that frequented the farmlands, forest, and river's edge.

A Glimpse into the Future

For the 2016-17 school year, Dolores Gonzales, Lowell, and Wherry elementary schools in Albuquerque are receiving the LWL program. During this school year, we also will visit the following Silver City schools: Harrison Schmitt, Bayard, and Sixth Street elementary schools, Cliff School, and Silver High School. We look forward to working with these schools during the 2016-17 school year.

Our Funders

All classroom visits, field trips, and supplies for conservation projects were supported by donations from PNM Resources, Albuquerque Community Foundation, the Larry and Anna B. Harris Foundation, Chevron Corporation, and private individuals. Field trips were made possible through the collaboration with Valle de Oro National Wildlife Refuge and Albuquerque Open Space.

We hope these programs will continue in 2017 and beyond. Your help would be greatly appreciated, not only by us, but by the students who learn about the environment around them through the experience of the Living with the Landscape program.

◀ page 10 **Amazon**

insects and hummingbirds from tall snags while Plumbeous and Swallow-tailed Kites soar on long, pointed wings as they hunt. Slate-colored Hawks and Great Black Hawks perch, patient with a keen eye.

Though very rarely seen, we know that the powerful Harpy Eagle can be around any bend in the river, so we keep a watchful eye in anticipation, knowing that new surprises await us with every moment—maybe even the rare Harpy.



Adventure to the Amazon: Feb 3-11, 2018

Join Gail Garber, HAI Director, and Kevin Loughlin of Wildside Nature Tours on Another Great Adventure

Eight days. The Amazon is the most powerful river in the world. It pours 20 percent of Earth's fresh water into the Atlantic Ocean. Along this river is a wild rainforest full of life and wonder. Monkeys, jaguars, and hundreds of species of birds inhabit the jungles, through which flow many streams and small rivers that contribute to the Amazon.

At Nauta, Peru we board our deluxe riverboat for an experience like no other. Each day brings a new stream, river, or lake to

explore from our comfortable, motorized skiffs—the perfect platforms for birding and photography! Wildside chooses our itineraries and boats very carefully for comfort and to maximize your wildlife viewing and photography success.

Save the date!

For complete information, including itinerary, pricing and boat details visit <http://hawkaloft.org/member-events/>



Adopt-a-Raptor! A perfect gift for the wildlife lover who has everything!

On staff at Hawks Aloft are 27 permanently injured, non-releasable birds of prey. Some have been injured by an impact with a car, some have collided with powerlines—and one of our corvids, Indigo-the American Crow, was taken from her nest and never given the opportunity to learn how to live in the wild. While some of our Avian Ambassador's injuries are more mysterious, what many of these birds have in common is that they received their injuries as the result of human interference.

Since they cannot live in the wild, Hawks Aloft feeds, houses, and looks after the medical concerns of these resilient birds—but that task is not inexpensive. For example, even the smallest raptors, like an American Kestrel, cost around \$35 just to feed each month. You can support us in our mission to care for these birds through our Adopt-a-Raptor program. When you adopt one of our Avian Ambassadors, your money goes directly toward the food, medical care, and housing of the 27 birds in our care.

When you 'Adopt-a-Raptor' you will receive:

- a card thanking you for your donation
- an 8"x10" photograph of the bird you've selected to sponsor or a stuffed animal with a realistic call of the bird's voice
- a printed copy of your adopted bird's unique story and a biological description of its species
- a one year Hawks Aloft membership (includes a subscription to our annual magazine, *Aloft* and our monthly online newsletter, the HAI Flyer)

Choosing to Adopt-a-Raptor is not only a great gift to our organization—but it makes a great gift to others in your life, too. If you choose to make a raptor adoption a gift to another, we will send the above materials as well as a card appropriate for the occasion, whether it is a birthday or a holiday, simply specify at the time of purchase. In addition, classrooms frequently adopt a raptor and make researching the selected species an ongoing activity. Packages for classrooms vary slightly and include educational materials, as well as a surprise for each child in the class.

Participate in the Adopt-a-Raptor-program! Adopt online!

<http://hawksaloft.org/shopping/category/adopt-a-raptor-program/>

Or, use the order form below and mail it with a check payable to Hawks Aloft:

Hawks Aloft, Inc.
Adopt-a-Raptor Program
PO Box 10028
Albuquerque, NM 87184

YES! I WANT TO ADOPT AN EDUCATIONAL RAPTOR!

Please circle any of the following individual birds or one of the packages:

Western Screech-Owl	\$35	American Kestrel	\$35	Eastern Screech-Owl	\$35	American Crow	\$35
Merlin	\$50	Cooper's Hawk	\$50	Great Horned Owl	\$60	Red-tailed Hawk	\$75
Swainson's Hawk	\$75	Prairie Falcon	\$75	Peregrine Falcon	\$100	Ferruginous Hawk	\$100
Rough-legged Hawk	\$100						

Falcons (1 ea. Peregrine Falcon, Merlin, American Kestrel) \$150

Owls (1 ea. Great Horned Owl and Screech-Owl) \$75

Hawks & More (1 ea. Red-tailed, Swainson's, Ferruginous, Rough-legged) \$250

<p>Adopt All 25 Birds \$1000</p>

Please print: _____ Your Name _____ Name to appear on card if given as a gift

Type of greeting card: required if given as a gift (birthday, holiday, etc.)

Mailing address

Phone

Phone number of the gift recipient, if applicable

If you would like to receive our online Flier, please provide your email and email of the gift recipient, if applicable:

E-mail

Gift recipient E-mail

New Mexico Birder:

by Maggie Grimason

As I made my way into Jim Battaglia's house to sit down for this interview, IQ, a Chihuahuan Raven in training, called out as I passed by; I then made my way through the grounds surrounding the house, passing the mews of other birds in Jim's care, including, surprisingly, a cadre of chickens. For the past two years, Jim has been one of the primary wildlife rehabilitators at Hawks Aloft, at all hours of the day and night doing intakes and triage on raptors in desperate need of care. On this particular day, Jim had five educational birds at his house and three birds being rehabilitated. Jim works tirelessly to give these birds the best possible futures, and as such, his home is a place of care, calm, and safety. On one early September afternoon, I was lucky enough to sit down with Jim at his kitchen table and hear about his history with animals, and his experiences as a rehabilitator.

When did you first become interested in animals?

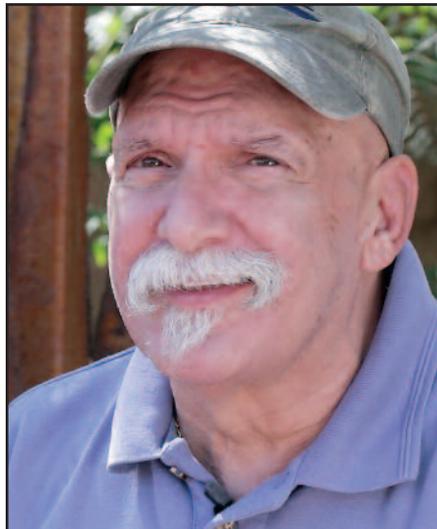
I've been interested in animals all my life. All my life, I had pets. My mother didn't like dogs, but I did manage to smuggle a cat [into the house]. I had fish, and all the common pets. Then, I got a dog when I was a teenager. When I was teaching special needs students [before I retired], I always had animals in the classroom ... to calm the students and teach them how to take care of something. When they were getting agitated, it calmed them down. So, [in the classroom] I had mice and hamsters and guinea pigs—everything! I couldn't stand the sight of blood when I was younger, that's why I never became a vet. That's why what I do with these birds and for these birds—I never saw myself doing this in my lifetime. I never saw myself cutting up a quail, or a mouse, and de-boning it and all that [for the birds in my care]. I do things now I never thought I'd do in my life. I still can't believe it! I never saw myself doing this in retirement.

What were some of those first experiences with animals like?

My family raised pigeons when I was growing up in New York. They were homing pigeons—we'd fly them, race them, that type of thing.

How did you get started doing rehabilitation?

I was reading the Albuquerque Journal one day in 2006 when we first



Wildlife rehabilitator Jim Battaglia.
Photo by Dean Balmer

Jim Battaglia

moved into this house, and I saw an organization that was looking for volunteers that was holding a two day training session. So, I went [and then] I started working in the clinic. I was very happy, cleaning cages, feeding birds, just mindless busy-work, but I was helping, so it was good. I worked with this woman who was such a dynamo ... she showed me lots of things, and little by little, I was doing intakes, and then taking care of [birds] after they were diagnosed. I ended up doing 250 hours in the clinic and became a manager. Later, what caught me were the people handling the raptors. I thought, I want to do that, too. So, I started going to training classes to handle birds, and then, after 140 hours doing that, I became a senior handler, which means you can have birds at your house. And then, I started doing educational programs, too.

How did you become involved with Hawks Aloft?

I'd met Gail a long time ago. Through former employee and volunteer, Lizzie Roberts, I had seen Gail throughout the years. In the summer of 2015, I think, Gail called and asked me to work with Hawks Aloft as a rehabilitator. I said sure, no problem. It's easy for me, because Mike Melloy, our veterinarian, lives across the street.

Do you have a favorite bird?

It changes. My favorite bird before I came to New Mexico was the Peregrine Falcon. Then, when I moved out here, I liked Red-tailed Hawks. Now that I house Swainson's Hawks, they're really cool too. I've learned a lot about them. Then, I also love kestrels. Right now, it's probably kestrels.

Have you had any particularly memorable experiences rehabbing—any stories that have stood out?

Every bird I release! Because, unfortunately, there are more that don't make it than do get set free. If I ever get in a young bird, and I hand feed it, and it matures and goes out into a flight, and then I release it, that's always a memorable story. Every bird that I release is special.

Hear more about Jim's and others' volunteer involvement with Hawks Aloft in our new video "We Are Hawks Aloft," located on our web site home page: www.hawksaloft.org.

As you can see by reading the articles in each issue of *Aloft*, vast amounts of work is accomplished by people volunteering their time, skills, and energy. We would not be the same organization without them.

There are opportunities for you to make a difference with Hawks Aloft, too. Please get in touch with us by phone at 505-828-9455.



◀ page 2 **Director**

growth. The day-long meetings included most of the board of directors, as well as some staff and volunteers, each providing different perspectives for future growth.

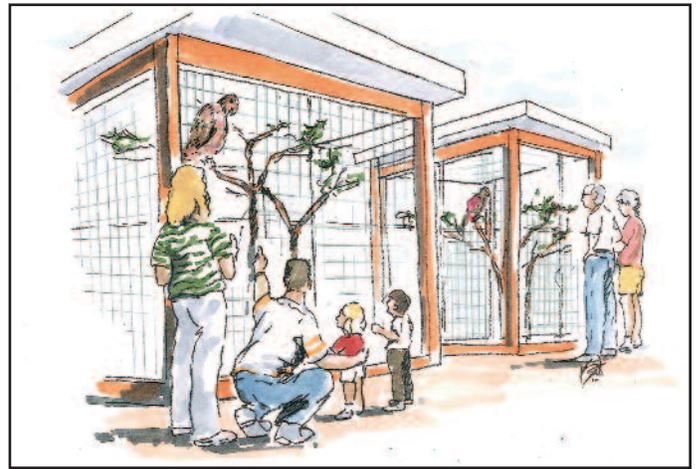
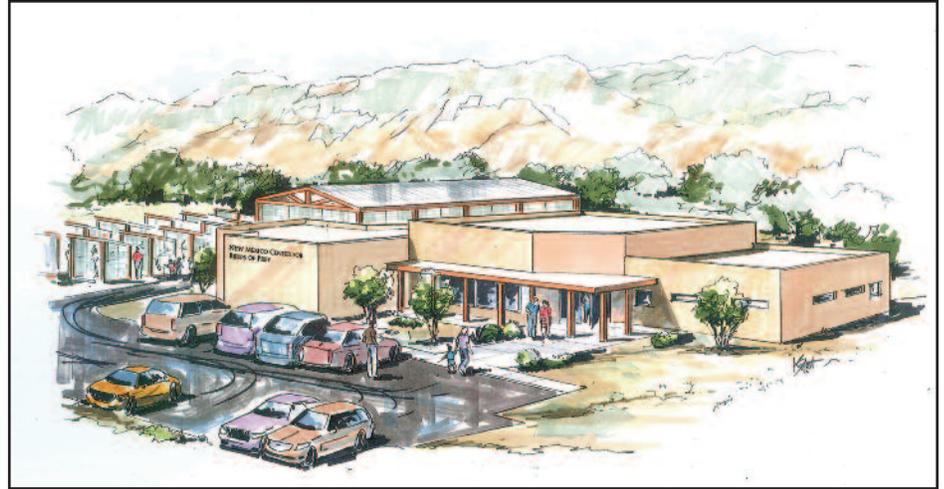
Cynthia compiled all the various—and sometimes competing—interests into one cohesive plan with space enough for our office needs as well as public spaces, including indoor education and raptor displays and outdoor exhibit spaces for live, non-releasable native species of birds of prey. It will be called the **New Mexico Center for Birds of Prey** and we are excited to share some initial concept drawings of our dream facility, as illustrated by Kent Blair.

We have begun a capital funding campaign intended to make this center a reality in the next few years. In September, we held the “Flights of Fancy” gala at the Albuquerque International Balloon Museum with some 160 participants. Volunteers and staff worked hard on the event, but the greatest effort came from the two co-leaders of the event, Susan Cherry and Nancy Brakensiek. It was their creative energy that merged many ideas into one cohesive plan, culminating in this glorious evening. Susan and Nancy coordinated the silent auction, raffle tables, and the live auction, ensuring that no detail was overlooked. They also secured many of the auction items, including the original oil painting of Sunny, the Prairie Falcon, by Barbara Meikle, “Head in the Clouds.”

We thank all the Gala Sponsors who contributed funds to the event: **PNM Resources, Irby Utilities, and Summit Construction** at the Platinum Level of \$2,500; and **McFarland Cascade, Sparkle Maintenance, Contract Associates, and Carolyn “Sami” Sanborn** at the Bronze Level of \$500. We also thank *all of you* who donated auction items.

One of the focal points of the evening was the premiere of our new video “We Are Hawks Aloft.” The video, produced by Steve and Mary Elkins and Dean Balmer, with assistance from Tony Giancola, provides viewers with a comprehensive look into the workings of Hawks Aloft from the perspective of volunteers and staff. Please take a few minutes to learn more about us. The video is on our home page: HawksAloft.org.

The Flights of Fancy Gala was the first step in our capital campaign to develop and build The New Mexico Center for Birds of Prey. This first effort netted about \$15,000, all of which is now set aside in a special



Concept for the New Mexico Center for Birds of Prey, by Cynthia Figueroa-McInteer; Illustrations by Kent Blair.

account. It’s a wonderful start, but only a beginning. If you are interested in donating to the capital campaign with funds restricted for this purpose, visit our website for further information. If you would like to help in other ways to move this goal within reach, please call me, Gail Garber, at 505-828-9455 or email gail@hawksaloft.org.

Please join in this exciting and bold new vision for the future and help us build The New Mexico Center for Birds of Prey.

Enhance Your Future!

Donate now to our fund dedicated to the development and building of the New Mexico Center for Birds of Prey. Donations are fully tax deductible.

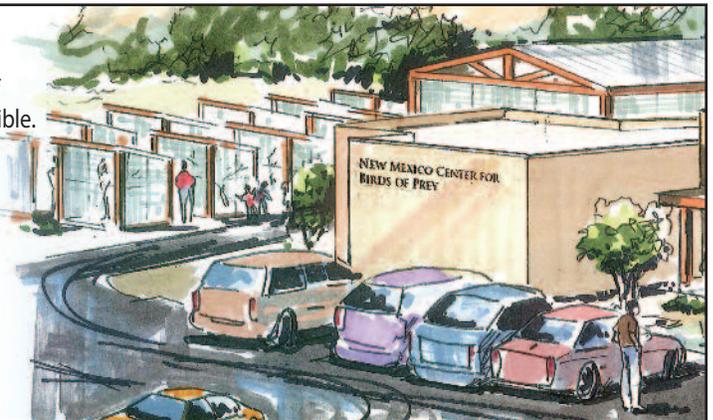
Name _____

Address _____

City, State, Zip _____

Amount of my donation _____

Mail with check (not cash) to Hawks Aloft, Inc. PO Box 10028, Albuquerque, NM 87184



New Mexico Avian Protection Working Group (NMAP)

by Lisa Morgan

Each year, thousands of eagles, hawks, and other migratory birds throughout the United States are killed by power line electrocution and collisions with power structures (e.g., electrical transmission lines, wind generation facilities, and telecommunication facilities that involve high elevation towers and supporting wires). Most birds are protected under one or more federal statutes including the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Endangered Species Act. In addition, Presidential Executive Order 13186, signed January 10, 2001, directs any federal agency whose actions have a measurable negative impact on migratory bird populations to develop and work under a memorandum of understanding with the U.S. Fish and Wildlife Service to promote conservation of migratory birds.

Raptors are especially vulnerable to electrocution because of their size and hunting behavior. The Southwest provides open habitat for a variety of raptors, where there is growing awareness among utility companies, organizations with bird conservation responsibilities, and the general public regarding this issue. Migratory bird deaths related to collision or electrocution can be minimized by proper selection of sites prior to the construction of electric lines, wind and communication towers, and modifications to specific poles or segments that are causing death and injury among migratory bird populations. NMAP is working to guide utility companies and those invested in the well-being of migratory bird species to greater business efficiency, while simultaneously protecting the interests of avian populations.

NMAP is a group of individuals, corporations, government agencies, and conservation organizations that are working proactively to resolve the issues associated with migratory birds and power lines. NMAP was



formed in 2002 by representatives from Public Service Company of New Mexico (PNM), Rural Utility Services, Hawks Aloft, Inc., the New Mexico Falconers Association, and U.S. Fish and Wildlife Service. It incorporates the best available knowledge concerning avian mortality caused by electrocution and works to develop sound approaches to resolving these high mortality rates and associated injuries. The group has received national recognition for its collaborative approach toward avian protection. Both the APLIC and U.S. Fish and Wildlife Service in Washington have praised NMAP as a role model in resolving avian utility interaction issues.

To this end, NMAP will host the 8th Avian Protection workshop at the Crowne Plaza Hotel in Albuquerque, New Mexico, February 7-8, 2017. The workshop will include presentations on the latest regulatory developments, best management practices during mitigation, and other related issues. In addition, the Avian Power Line Interaction Committee (APLIC) Short Course will be delivered to those in attendance. The APLIC (www.aplic.org) is a national organization dedicated to providing leadership within the electric utility industry in the protection of avian resources, while simultaneously enhancing reliable energy delivery. APLIC consists of industry biologists from more than 30 utility companies, the Rural Utilities Service, Electric Power Research Institute, and U.S. Fish and Wildlife Service. APLIC is working in conjunction with NMAP to deliver this essential information to utility companies and avian conservation organizations in New Mexico.

If you are interested in attending the NMAP Conference in February 2017, please contact Gail Garber or Lisa Morgan at Hawks Aloft.

*Above: A Ferruginous Hawk in flight.
Photo by Tony Thomas.*

◀ page 3 Burrowing Owls

nestling Burrowing Owls were found dead in their nest, after someone piled rocks on top of it, smothering them. In a nation where only 10,000 pairs of Burrowing Owls are estimated to be in existence, the unwarranted cruelty of human beings is not just a federal crime (these owls are protected under the Migratory Bird Treaty Act) but a crime against the entire ecosystem that is enhanced and made whole by the presence of these owls.

Promisingly, there are a number of projects that have met with success in their efforts to conserve and create habitat for the unique, yellow-eyed owl. Ongoing research and monitoring of established nesting sites is vital for protecting the spaces that these birds have claimed for their homes, as is the measurement of prairie dog distribution and population success. Education—in the classroom and outside of it—remains a pursuit with measureable success that has the potential to reach thousands of people each year with meaningful information and actionable insights about the plight of the Burrowing Owl. Organizations like the Burrowing Owl Conservation Network have even



begun to construct artificial burrows to help re-establish the species in California and throughout the west, while simultaneously petitioning

for policy changes that would protect the diverse and critical habitat of the owl—and many other bird, reptile, and mammal species—throughout the country. It also is encouraging to note that, in several countries throughout Central and South America, the Burrowing Owl is widespread and common, accepted and respected, even in city parks. Whether or not the United States can recreate the success of Burrowing Owls in these countries remains to be seen. The success of local populations, however, is contingent upon the ongoing efforts of individuals and organizations that have recognized not just the particular beauty of the Burrowing Owl, but their indispensable role in the ecosystem.

Burrowing Owl image above by Doug Brown.

Rescue and Rehabilitation Highlights, 2016

by Lisa Morgan

It is through the dedicated and competent efforts of our raptor rescue team who perform captures, rescues, initial exams, and overnight stays that we are making a difference to injured, wild birds. Our hotline phone for rescue calls is invaluable. It is monitored by our rescue team, consisting of staff and trained volunteers, 24 hours a day, seven days a week. The phone rotates from one individual to another, usually on a weekly basis. That number is 505-999-7740.

Our rescue team has picked up, captured and transported birds statewide. Word of mouth might just be the best way to advertise the program, which saw an increase of over 28% in rehabilitation intakes from 2015 to 2016 (the 2016 intake year ran from September 1, 2015 to August 31, 2016). A total of 22 different bird species were represented in the 2016 intakes (Table 1).

Jim Battaglia, our primary rehabilitator, donated his time and expertise and treated most of the birds that arrived. Jim and Dr. Michael Melloy, who are neighbors, have a unique working relationship, in that Dr. Melloy picks the birds up in the morning on his way to work, and then returns them that evening, following assessment, x-rays, surgery, and other treatments. This arrangement ensures that injured birds are provided with immediate professional medical expertise and do not experience prolonged suffering.

New rescuers enter the program every six months, via docent training classes held each February and August. This is followed by in-depth training to teach them safe capture and restraint methods. Those that are interested also receive ongoing training on managing the hotline phone.

One of our most rewarding cases this year occurred in early August. A woman in Pecos, New Mexico called our hotline about a small owl in need of immediate care. Apparently, a



A Ferruginous Hawk (left) and a fledgling Red-tailed Hawk (above) were among the birds rescued by Hawks Aloft in 2016. Photo above by Larry Rimer.

Species	2015	2016
American Coot	1	0
American Crow	1	0
American Kestrel	5	16
American Robin	0	1
American Wigeon	0	1
Barn Owl	6	6
Canada Goose	1	0
Common Night-Hawk	1	1
Common Raven	2	1
Cooper's hawk	18	27
Cattle Egret	0	1
Ferruginous Hawk	1	0
Flammulated Owl	0	1
Gambel's Quail	4	0
Golden Eagle	1	0
Great Horned Owl	10	9
Greater Roadrunner	1	6
Harris's Hawk	2	0
Indian Peafowl	1	0
Long-eared Owl	2	1
Mallard	0	1
Merlin	3	0
Mourning Dove	2	0
Northern Harrier	1	1
Northern Saw-whet Owl	1	1
Peregrine Falcon	0	1
Prairie Falcon	1	1
Red-tailed Hawk	6	12
Sharp-shinned Hawk	2	1
Swainson's Hawk	7	6
Turkey Vulture	0	3
Western Screech-Owl	1	4
Totals	81	102

Table 1. Hawks Aloft, Inc. bird rescues by species during the 2015 and 2016 rehabilitation years. The rehabilitation year runs from 1 Sept to 31 Aug.

juvenile Flammulated Owl had crashed into a window the prior evening and was still unable to fly. Jeannine Kinzer, a rescue volunteer, retrieved the barely-conscious and very cold owl, holding him next to her chest to warm him on the drive back to Albuquerque. We administered fluids, medications, and simple nutrition before propping his limp body up in a tiny hand-made nest in an incubator. A half-hour later, I found him perched, but wobbly, on the edge of the "nest," still in rough shape, but somewhat improved. Thankfully, with the help of anti-inflammatories and pain relievers, the owl quickly regained strength and demanded feedings of chopped mice every 15 minutes over the next three days. It was an intense, but joyful weekend! Quickly regaining the ability to use his feet to hold prey, the owl was soon ready to eat small mealworms. Then, on to giant mealworms—25+ per feeding! Soon, he wanted to fly! Less than two weeks later, he was released back into the wilds of the Pecos where he was found, just in time to begin fall migration.

A majority of intakes this year were the result of traumatic injuries, nearly half of which were ultimately fatal (Table 2). Each year, we continue to see an increase in birds that suffer injuries due to vehicle and window impacts. Some birds arrived already deceased. Others required intensive rehabilitation efforts in hopes of recovery. While some birds do not recover from these injuries, many do, and are either placed in permanent captivity programs as avian ambassadors, or are released back into the wild.

See Table 2 on page 21 ▶

Raptor Rescue Volunteer Program: Looking Forward to Challenges Ahead

by Emiliano Salazar

Hawks Aloft is the only organization that travels throughout the state of New Mexico to rescue injured raptors, roadrunners, and corvids. Our all-volunteer rescue team consists of dedicated volunteers who staff the hotline phone, conduct rescues and rehabilitate birds. We hold the necessary permits through the U.S. Fish and Wildlife Service and the New Mexico Department of Game & Fish in compliance with the federal Migratory Bird Treaty Act. When transferring injured birds for continued care, the destination location also must be a permitted entity. Due to federal government mandates and state laws, all parties involved have to be properly permitted or sub-permitted.

It is evident that the Raptor Rescue Program was tremendously underserved in the past. As our hotline calls increase year-to-year, and knowledge of our service spreads throughout the state, we struggle to keep up.

How does the program work? Typically, we receive a call from a concerned citizen (or sometimes a government agency) on our dedicat-



Left: Larry Rimer prepares to release a Red-tailed Hawk fledgling. Above: Sophia Borowsky releases a Barn Owl. Left photo by Tony Giancola.

ed raptor rescue hotline phone. The Hawks Aloft Raptor Rescue Hotline (505-999-7740) is staffed 24 hours a day, seven days a week. The hotline operator is trained to assess the call to determine if a rescue is indeed necessary. The operator coaches the caller on basic capture techniques and care of the injured, ill, or orphaned bird. The caller is encouraged to

text or email a photograph to help identify the species and determine the extent of the injury, if possible. Information is gathered and the rescue team is notified, usually through a group text message. Volunteers then notify the hotline operator of their availability and a rescue plan is developed. The volunteer drives to retrieve the injured bird, either from the concerned citizen or by capturing it in the field. The volunteer gathers necessary information on the injured bird, and then transports it to the closest and most-appropriate volunteer rehabilitator. From that point, the rehabilitator makes an initial assessment of the bird's condition, administers the necessary care and arranges a veterinary assessment, if needed.

Animal control departments, as well as the New Mexico Department of Game & Fish work with us in varying degrees, but are extremely limited in the time and financial resources necessary to focus efforts on capturing, transporting and rehabilitating injured birds. Essentially, there IS no budget for these efforts within governmental agencies. Our volunteers play an important role in the capture and transport of injured, ill and orphaned birds.

Some of our calls come from the far reaches of the state, at times in remote or unwelcoming locations. Our volunteers not only drive to these remote communities to rescue birds, but they also function as public relations liaisons, educators, and bird handlers. At the same time, they contribute their personal time and expenses for gas and wear and tear on their own vehicles. Many of the com-

◀ page 20 **Rescue and Rehabilitation Highlights**

Reasons for Capture	# Birds	Intake Outcomes	# Birds
Impact Injuries (Car, Window, etc.)	52	Transferred***	26
Predator Attack	9	Released	17
Failure to Thrive	7	Euthanized within 24 hours	15
Fell from Nest	5	Died within 24 hours*	10
Gunshot	5	Euthanized**	10
Human Interference	3	Died in Care	8
Illness	3	DOA	7
Electrocution	3	Currently Rehabilitating	5
Congenital Defect	3	Permanent Placement	4
Barbed Wire	2		
Stuck in Enclosed Area	2		
Other	5		
Unknown	2		
Fell Down Chimney	1		
Mitigation	0		
Totals	102		102

* Generally speaking, in the rehabilitation community it is considered that birds that have died within 24 hours after arrival most likely would have perished with, or without, care.
 ** Birds that were not euthanized on arrival were guarded cases that had been assessed by veterinarians, and were placed in rehabilitative care in hope of recovery.
 ***Transfers to other rehabilitation facilities generally occur after the patient is stable enough to begin preparation for release.
Other: Fell in Pond, Covered in tar, Hold-over for other facilities

See **Rescue Volunteer Program** page 23 ▶

Encore Fellowships: Take Two for Intel Corporation's Early Retirees

by Gail Garber

When first meeting new volunteers and members, we never know which will become longtime, dedicated Hawks Aloft aficionados, actively engaged in one or more aspects of the organization. For most, that first meeting occurs at the semi-annual Docent Training, held in February and August. So it was that we met up with Jeannine Kinzer in 2015. She immediately became an invaluable member of our raptor rescue team, happily taking off on a moment's notice to points near and far to transport injured birds.

She had other talents as well, and many friends among her colleagues at Intel Corporation, where she had worked for 23 years. She brought her friends into Hawks Aloft too; people like Ginger Atwood, who is one of the finest woodworkers we've ever met. Jeannine and Ginger constructed new travel boxes for our educational raptors, boxes of such sophistication that our older boxes pale in comparison.

One day, when delivering an injured hawk to our office, Jeannine stopped to chat a while, letting us know that she would soon be retiring from Intel and might just be looking for a different kind of work. Since we had already known her for many months and had an established friendship, we began talking. Shortly thereafter, Jeannine told us about the Encore Fellowship Program for Intel retirees, a generous package to reintegrate former staff into a different work world, that of the nonprofit sector.

Encore.org was founded by Mark Freedman in 2011, in the Silicon Valley, California. Its mission is building a movement to tap the skills and experience of those in midlife and beyond to improve communities and the world. Encore programs mobilize the baby boomer population, enabling them to re-envision their careers.

In New Mexico, in 2012, United Way of Central New Mexico (UWCNM) became the New Mexico Encore host through the Center for Nonprofit Excellence with the goal of build-



ing capacity in local nonprofits. Intel Corporation joined the collaborative endeavor and began to make the fellowship program available to retirees, among various other retirement options. The first four years saw an average of eight fellows annually. The fellowships proved to be very popular, word spread, and in 2016, there was a huge influx of applicants. The program had taken off!

Jeannine became an Encore Fellow and Hawks Aloft staff member in June 2016. Her first job was protecting a cluster of Burrowing Owls that were nesting along the border fence that separates the U.S. and Mexico. Look for her friendly smile as you walk in the door, where she watches over our finances, our contracts, troubleshooting where necessary and yet, still running off to capture yet another injured bird.

Through the program, we met Larry Alei, director. He also was a former Intel employee and Encore Fellow. Encore Fellows work for their chosen nonprofit for up to 1,000 hours, with their salaries paid through the Encore program. Larry and others helped us secure two additional Encore Fellows, Everett Ogilvie and Emiliano Salazar. And, build capacity they did!

Everett brought a much needed skill set to Hawks Aloft, that of statistician. While Trevor

We have been the lucky recipients of Intel's Encore Fellowship program with assistance from Everett Ogilvie, left, Jeannine Kinzer, center, and Emiliano Salazar, right.
Photo by Gail Garber.

Fetz, our lead avian biologist, certainly has those skills, there is no time in his work life to analyze data at the minute levels now possible, particularly on studies that are critically underfunded.

Emiliano joined us in August as the Raptor Rescue Coordinator, with the goal of building a statewide, collaborative network to ensure that injured raptors, and other birds, are quickly captured and transported to the nearest facility. Emiliano and Lisa Morgan are undertaking this new initiative to build the rescue group in outlying communities in New Mexico.

The Encore Fellowship Program has been a huge boon to Hawks Aloft, enabling services and data analysis, not to mention, funding a full-time office manager for 1,000 hours. We expect to make great strides during this period, with the ultimate goal of ongoing, expanded programs. Thank you, Santa Claus Intel!

Continued Partnership: PNM Resources and Hawks Aloft, Inc.



by Maggie Grimason

PNM and Hawks Aloft first collaborated for the betterment of New Mexico's natural spaces and wild animals in 2002 through an initiative to protect the habitat of Burrowing Owls throughout the state. Since then, we are proud to have worked with PNM Resources on a number of projects, including the New Mexico Avian Protection Working Group (NMAP), a coalition of businesses, organizations, and individuals that dedicate time and expertise to reducing avian fatalities that result from collision and electrocution by utility structures. Yet, PNM's work to preserve and protect bird populations through collaboration with Hawks Aloft hasn't stopped there.

This year, PNM contributed \$10,000 toward our flagship education program, Living with the Landscape. Living with the Landscape is an application-based, year-long conservation education effort delivered to regional Title 1 elementary schools. The program provides a window to the natural world

that students living in low-income, urban areas often don't otherwise have access to. PNM's gracious contribution toward this program has provided two Albuquerque area elementary schools with an entire year of programming and has allowed us to deliver an adapted version of the program for another year to schools in Silver City. Through this program, which includes field trips to local wildland areas, conservation projects on school grounds, and multiple visits for every class from our educators with our live, permanently injured raptors, a sense of stewardship is developed in a new generation of naturalists.

In addition, Hawks Aloft recently applied for and received a grant from PNM through their Reduce Your Use funding opportunity to revamp our office space. A contribution of \$4,000 from PNM will go toward replacing all of our overhead lighting from outdated T8-style light bulbs to highly efficient LED bulbs, improvements that are expected to significantly lower our monthly energy expenditure. In addition, a portion of this generous dona-

tion will go toward lining our windows with insulating film and installing energy efficient blinds—two measures that will help to reduce our need for heating and cooling measures. As a result of these upgrades, we will be able to more effectively actualize what is outlined in our mission—the conservation of wild birds and their habitats through research, education, and cooperation with others.

For more than a decade, PNM and Hawks Aloft, Inc. have partnered to preserve and protect the unique landscapes of New Mexico and the wild birds that inhabit them. Through PNM's efforts, whether that takes the shape of avian mitigation training for its linemen or contributing vital funds toward eye-opening conservation education for underfunded public schools, we have been able to expand our efforts and strengthen the collaborative efforts that underpin all that we do. Thank you, PNM, for another year of devotion to New Mexico's avian populations and your dedicated work preserving their habitat!

◀ page 21 Rescue Volunteer Program

passionate rehabilitators and veterinarians with whom we work also volunteer their time, money and supplies and do not receive any compensation. Our volunteers are rewarded by knowing that they are helping wildlife get the proper care needed to minimize pain and suffering.

Over the next year, we will be working to strengthen our Raptor Rescue Program. We will forge new relationships and improve current ones with organizations and agencies statewide so that we can work together more efficiently. We will encourage and support the startup of a New Mexico conference or association of rehabilitators. Standard operating procedures will be developed that will align and compliment current policies of the U.S. Fish and Wildlife Services, New Mexico Department of Game & Fish, county and municipal animal control departments, and wildlife veterinarians.

We will increase communication to the public and among groups though updated and relevant information on multiple websites and social media pages. Through targeted training workshops in distant communities, we will continue to build our vital base of volunteers trained in capture and rescue. Establishing a system of volunteer coordinators and managers will be essential for the Raptor Rescue Program to continue to be viable with minimal funding. We will work on gaining financial support from donors for our rescue efforts, as well as grants

that might be available. We will look to model the New Mexico program after other successful wildlife organizations nationwide.

Our dedicated rescue team works hard while sacrificing their personal time to help make a difference, and we cannot thank them enough for their efforts.

Do you want to become a raptor rescuer?
Contact our office at 505-828-9455 for more information.



Our rescue team handles all types of birds suffering a variety of injuries and trauma, providing safe transit to the appropriate medical or rehabilitative facility. Photo of Great Horned Owl nestling by Gail Garber.

to the nomadic nature of the species, as individuals search for new burns to exploit. In New Mexico, the species is considered "vulnerable" by Heritage New Mexico. Prior to the Los Conchas fire, American Three-toed Woodpecker had not been documented on the Valles Caldera National Preserve. As expected, our detections of American Three-toed Woodpecker have almost exclusively occurred at points that burned during the Los Conchas and Thompson Ridge fires. Predictably, our detections have gradually decreased over the five years of the study. But, we continued to detect American Three-toed Woodpeckers in 2016, likely due to the large number of dead trees that still harbored insects.



Top: Grace's Warbler.

Photo by Alan Murphy.

Above: A lone pine stands strong on a winter day in the Valles Caldera.

Photo by Keith Bauer.

Another species of particular interest is Grace's Warbler. A southwestern specialty, recent BBS data show significant declines in its population throughout its range in the United States. In New Mexico, this warbler is listed as a Species of Greatest Conservation Need by the New Mexico Department of Game and Fish and a Species of Conservation Concern, Level 1, by New Mexico Partners in Flight. Grace's Warblers are dependent on extensive, mature stands of pine, where they are found at the tops of trees gleaning insects. It is believed that the species is in decline due to the loss of open pine habitat dominated by larger trees as a result of logging, overgrazing, management practices limiting low intensity ground fires and increasing the risk of catastrophic fires, and urban development. Our data from 2012-2016 found that Grace's Warbler density was significantly higher in unburned ponderosa pine (0.126 birds/ha) and mixed conifer (0.074 birds/ha) stands than in burned stands of the same types (0.018 and 0.010 birds/ha respectively in burned ponderosa pine and burned mixed conifer; Tukey-Kramer tests). Not surprisingly, a number of other species of concern showed similar trends.

In areas that have high moisture levels, dead materials tend to rapidly break down and nutrients are naturally recycled into the soil. But, in the arid environments of the southwest, fire is one of the few mechanisms that breaks down dead plant material and recycles nutrients. Most forests in the southwest evolved with the regular occurrence

of fire. Thus, many native plants in the region evolved reproductive strategies based on the historical occurrence of low-intensity fires every two to 12 years. Over the past century, fire suppression was a key management strategy, creating unnaturally dense understory conditions and a buildup of dead plant materials. Compounding the problem is climate change, which in the southwest has resulted in a trend towards hotter, drier weather conditions. These factors have created conditions that allow for the more frequent occurrence of severe, high-intensity fires. Examples of these over the past few years include the Los Conchas Fire in the Jemez Mountains and the Whitewater-Baldy Fire in the Gila Mountains, the two largest fires in New Mexico history. One of the important contributions the Jemez CFLRP study will ultimately make is to help increase our knowledge regarding the impact of catastrophic fire on avian use of southwestern forests.

Hawks Aloft, Inc. 2015 Financial Report	Jan - Dec 2015	
Income		%
Contracts and Grants		
Government Contracts	250,223	63%
Private Contracts & Grants	76,284	19%
Education Programs & Grants	20,539	5%
Donations		
Cash	26,286	7%
Raffle Ticket Sales	3,288	1%
Non-Cash	4,834	1%
Operations/Sales	17,020	4%
Total Income	398,474	100%
Cost of Goods Sold	1,781	
Gross Profit	396,693	
Expenses		
Payroll		
Research	134,872	36%
Education/Outreach	57,019	15%
Administration	30,745	8%
Raptor Rescue	16,752	4%
Membership	6,611	2%
Fundraising	15,360	4%
Bird Care	16,995	5%
Facilities & Utilities	21,139	6%
Office	9,698	3%
Other	20,495	5%
Professional Services	16,968	5%
Transportation/Travel	28,089	7%
Total Expenses	374,743	100%
Net Income	21,950	

Education Programs of Hawks Aloft

by Julia Davis and Maggie Grimason

An integral part of our mission is to reach learners of all ages with a message of conservation of New Mexico's wild spaces and the animals that call those places home. To this end, we offer several kinds of educational programs: Living with the Landscape, Reading with Raptors, Birds of Prey, Adult Education Programs, and Community Outreach Booths. The details of each of these programs are outlined below.

Living with the Landscape

Living with the Landscape is our flagship program—a grant-funded, comprehensive, year-long program offered free of charge to Title 1 elementary schools in the Albuquerque area. In the 2015-16 school year we also delivered these programs to several schools in and around Silver City, reaching 6,050 students and teachers in total. For the 2016-17 school year, we are partnering with three elementary schools in Albuquerque and will again visit Silver City. Please see the Living with the Landscape article on page 14.

Reading with Raptors

Reading with Raptors is a single-visit program for our youngest students. Educators bring one or two birds to the classroom and read an age-appropriate, bird-themed book that draws a specific connection to the birds they meet that day. Students participate in an interactive activity such as a puppet show, bird artifact discovery, or a build-a-raptor exercise. During the 2015-16 school year, we reached 395 young learners, the majority of them from Nob Hill Early Learning Center during a trip to Ruidoso, New Mexico.

Birds of Prey

Our versatile, single-visit Birds of Prey program can be adapted to grade levels 1-12 and altered to address many topics. This program involves learning about our work and meeting some of our non-releasable, live birds of prey. The program covers a variety of topics, including biological adaptations, general bird facts, and ways that students can help make a positive difference for birds and their local environment. During the 2015-16 school year, we presented this lesson across New Mexico and reached 3,343 students, including schools in Ruidoso, Gallup, Grants, and Lake Valley Navajo School near Crownpoint.

Our single visit Birds of Prey and Reading with Raptors programs are frequently requested throughout the school year. When funds are available, these programs are offered at a reduced price for Title 1 schools.

Adult Education Programs

Adult education programs include a variety of adult continuing education and corporate programs covering a wide variety of topics. Popular themes include *Life and Times of New Mexico Raptors*, *Raptor Identification*, and *All About Owls*. Each program includes live, non-releasable birds of prey and a PowerPoint presentation. Corporate programs are offered to groups that can benefit from increased awareness and understanding of species identification and unique behaviors, as well as the legalities that protect almost all North American birds. These programs include guidelines on how to safely handle injured or



Through projects, play, and visits with "Avian Ambassadors," students learn important conservation lessons. Staff photos.

abandoned wildlife.

We offer a semi-annual docent training that introduces new volunteers to our many aspects and opportunities. These are held in February and August, after which volunteers move on to specialized training classes in field studies, education and outreach, raptor handling, raptor rescue, and administrative needs. Raptor handling class covers safe handling practices, and hands-on handling with our permanently injured, non-releasable avian ambassadors. During the 2015-16 year we reached 522 participants through our Adult Education efforts.

Community Outreach Booths

We are strongly invested in our community and frequently participate in events throughout New Mexico and neighboring states. Our booths are designed to engage audiences of all ages and incorporate kid-friendly activities along with educational materials for adults and older youth. Through these activities, we aim to encourage individuals to make positive choices for the environment and conserve New Mexico's unique natural heritage. All of this work could not be done without the help of our spectacular volunteers. In the past year, we reached 6,772 participants during our visits to communities in New Mexico, Arizona, and Colorado.

Program Funding

If you are interested in donating to our education programs please contact us for more information.

Program Fees

- \$150 For programs within the Albuquerque metro area, with one or two consecutive programs at the same location on the same day. Additional programs cost \$90 each.
- \$300 (Plus mileage at \$0.56/mile) For locations more than 50 miles from Hawks Aloft. Same program structure as above.
- \$300 For Outreach Booth events within the Albuquerque area, or \$300 plus mileage (\$0.56/mile) for Outreach Booth events more than 50 miles away.

Living with the Landscape is entirely grant funded and free of charge to participating schools. We accept applications for this program each year in April and May. If you are a Title 1 School, please ask about our program discounts.

Quilt in a Day: 2016

by Laurie Marnell

Every winter for many years, usually in January, an intrepid group of 14 sewers meets at Gail Garber's cabin in the Jemez Mountains to make the famous Hawks Aloft raffle quilt top. Meeting in the mountains can be challenging, and this year my car was not up to the task. It just could not make it up the final hill to the cabin and had to be parked on the road. It was embarrassing, because I grew up in upstate New York and driving on snow was a fact of life.

Gail had designed the quilt in the months before the retreat, using a computer drafting program and constructing paper patterns for everyone to follow. These parts must be simple enough to be stitched by everyone, but the gradations of hand-dyed fabrics make for a spectacular design. Unique parts of the design were made ahead of time. This year, Barb Deshler hand appliquéd the mother owl and owlets that are the centerpiece of the quilt. Donna Barnitz helped create the innermost ring for the owls well ahead of time, and it was incorporated into the quilt on our marathon day of sewing.

On Friday, we got settled in and set up. Most of us took our stuff upstairs where we would sleep, dormitory style. Ed Chappelle and Rick Deshler started assembling stacks of fabric kits that evening, so we were prepared to dive in the next morning. Saturday is the day we get down to the real work. After Gail explained each of our tasks we grabbed our kits and began to sew. For some people this is the only sewing they do all year, and those of us who are quilters helped get them started. Mary Chappelle put on her playlist for us to listen to, and we were off with lots of laughing and feelings of camaraderie. The many dogs that join us at the cabin always add to the fun. Once the kits were assembled, we stitched the individual blocks, and later the larger sections were pieced together. After only nine hours, we were finished. We celebrated with a wonderful dinner and lots of wine.

The next morning we were sad to pack up and return to the world outside. The others helped me get my car out of the snow, and we all made our way back to civilization. After our weekend quilting retreat, the quilt top was sent to Kris Vierra, a long arm machine quilter in Lincoln, Nebraska. We thank everyone who contributed to the making of the 2016 quilt: Donna Barnitz, Ruth Burstrom, Ed and Mary Chappelle, Barb and Rick Deshler, Steve Elkins, Cynthia Figueroa-McInteer, Pat Folsom, Laurie Marnell, Chellye Porter, Lizzie Roberts, Sami Sanborn, Allison Schacht and Kris Vierra.

Raffle tickets are still available for this spectacular quilt for \$1 each or six tickets for \$5! We will draw the winning ticket at our annual holiday party on December 3, 2016.

Mail the order form with check (please don't mail cash) to:
**Hawks Aloft, PO Box 10028,
 Albuquerque, NM 87184**



Quilt Raffle 2016 To Benefit Conservation Education in NM

\$1.00 each / 6 for \$5.00

Drawing December 3, 2016

Please indicate quantity of tickets ____.

Name _____ Phone _____

Address _____

City _____ State _____ Zip _____

◀ page 7 **Middle Rio Grande Bosque**

Neotropical migrants that pass through but don't breed in the bosque fell into this category, primarily due to the volatility in numbers present in the bosque during the summer months among years and the short term nature of the MRGBS. Ultimately, fewer than 60 species met the criteria to assure an accurate assessment regarding a potential change in status since the early 1980's.

A total of 32 species with significant differences in detection rates between the two studies were supported by differences between the MRGBS species accounts and our accounts of current species status. Among those 32, were 15 species that have experienced significant declines and 17 species that have either experienced significant increases or did not occur in central New Mexico during the early 1980's. Detection rates for all species showing significant changes in status are provided in Table 1. Accounts of species of particular interest are provided below.

Yellow-billed Cuckoo No bird species has seen a greater decline in the middle Rio Grande bosque since the early 1980's, and its decline has not been limited to the bosque, but has been widespread throughout the western United States. As such, in 2014 the U.S. Fish and Wildlife Service listed the western race of Yellow-billed Cuckoo as "threatened" under the Endangered Species Act. MRGBS considered the species to be uncommon during the summer in mature and mixed-age cottonwood stands. HAI data indicates that this cuckoo is now virtually absent from the bosque. We had only six detections during 2004-2014, compared to 280 detections documented in the existing MRGBS data from 1981-1982. Available habitat for this species in the bosque has been reduced by thinning operations, but the challenges it faces go far beyond the local level.

Black-headed Grosbeak This species also has experienced a large decline in the bosque since the early 1980's. MRGBS considered this grosbeak to be one of the most abundant species in the bosque during summer and migration. We found Black-headed Grosbeak to be uncommon to fairly common, with numbers generally declining over the course of our study. Our highest detection rate was in 2004 (2.5 birds/survey), and our lowest detections rates occurred in 2013 (1.1 birds/survey) and 2014 (1.4 birds/survey). By comparison, the detection rate in 1981 (the only summer for which a substantial portion of the MRGBS data still exists) was 4.9 birds/survey.

Gambel's Quail USGS Breeding Bird Survey (BBS) data indicate this quail has decreased range-wide over the past 30 years. MRGBS considered it to be common along habitat edges and more open areas of the bosque. We consider the species to be rare to uncommon year-round in the same habitats. Both the summer detection rate during 1981-1982 (0.57 birds/survey) and the winter detection rate in 1981-1983 (0.18 birds/survey) were significantly higher than 2004-2014 summer and winter detection rates (0.09 birds/survey and 0.04 birds/survey respectively).

Indigo Bunting In addition to declining in the bosque, BBS data indicate this Neotropical migrant has been declining throughout much of its range in the United States over the past few decades. MRGBS considered this species to be a fairly common summer resident and migrant in the bosque. In contrast, we found this species to be rare to uncommon. The summer detection rate during 1981-1982 (0.39 birds/survey) was significantly higher than 2004-2014 (0.12 birds/survey).

Species	Summer 1981-1982 DR	Summer 2004-2014 DR	Winter 1981-1983 DR	Winter 2014-2014 DR
American Robin	2.70	0.76	23.86	4.33
Black-capped Chickadee	0.54	0.88	0.20	0.70
Black-chinned Hummingbird	1.63	14.95	–	–
Berwick's Wren	0.00	2.35	0.30	0.60
Brown-headed Cowbird	2.59	1.13	0.00	0.00
Black-headed Grosbeak	4.59	1.76	–	–
Bushtit	0.04	1.39	0.03	0.79
Cedar Waxwing	0.00	0.06	0.18	0.29
Downy Woodpecker	0.40	0.89	0.17	0.48
Eastern Bluebird	–	0.21	0.06	0.33
Eurasian Collared-Dove	–	0.07	–	0.03
European Starling	0.85	0.13	8.26	0.74
Gambel's Quail	0.57	0.09	0.18	0.04
Hairy Woodpecker	0.00	0.10	0.00	0.07
House Sparrow	0.15	0.07	0.10	0.09
Indigo Bunting	0.39	0.12	–	–
Lark Sparrow	0.38	0.15	0.00	0.00
Ladder-backed Woodpecker	0.00	0.04	0.01	0.02
Lesser Goldfinch	0.32	1.54	0.00	0.20
Mourning Dove	9.63	3.33	0.15	0.68
Northern Flicker	1.24	0.51	1.50	1.25
Ring-necked Pheasant	0.40	0.20	0.12	0.10
Song Sparrow	0.00	0.00	1.26	2.90
Spotted Towhee	1.04	6.30	0.71	2.79
Summer Tanager	0.08	1.05	–	–
White-breasted Nuthatch	0.20	1.65	0.22	1.31
Western Bluebird	–	0.05	0.00	0.35
Western Meadowlark	0.95	0.01	0.18	0.01
Western Wood-Pewee	0.54	0.35	–	–
Winter Wren	–	–	–	0.01
White-winged Dove	–	0.16	–	0.29
Yellow-billed Cuckoo	0.52	0.00	–	–
Yellow-rumped Warbler	0.00	0.00	1.13	0.68

Table 1. Alphabetical list of bird species experiencing a significant change in status in the middle Rio Grande bosque over the past 30 years based on detection rates from MRGBS and HAI data. DR = detection rate. Detection rates in enlarged, bold, italicized print were significantly higher during that study and season. The presence of a dash (-) indicates that species did not occur in the bosque during that season and/or study. Detection rates listed as 0.00 were <0.005, but indicate that the species was known to occur in the study area during that time. Statistical analyses were conducted using Tukey-Kramer tests.

◀ page 27 **Middle Rio Grande Bosque**

Lark Sparrow MRGBS found this sparrow to be a common summer resident in salt cedar habitats. We found Lark Sparrow to be rare to uncommon in the salt cedar stands at La Joya and an irruptive, post-breeding visitor to other bosque habitats. The detection rate during summer 1981-1982 (0.38 birds/survey) was significantly higher than the 2004-2014 detection rate (0.15 birds/survey). The majority of our detections were of post-breeding individuals near habitat edges and drains. Lark Sparrow breeding in the study area has clearly decreased since the early 1980's.

Mourning Dove The abundance of this dove in the bosque during summer has drastically decreased since the early 1980's, but its winter abundance may have increased. MRGBS considered Mourning Dove to be abundant during the summer, and it had the highest MRGBS summer detection rate (9.63 birds/survey) of any species based on existing data. Although we found this dove to be fairly common to common during summer, the detection rate was significantly lower (3.33 birds/survey). In contrast, both studies considered this species to be uncommon during winter, with a higher (but not statistically significant) detection rate during HAI surveys (0.68 birds/survey) than MRGBS surveys (0.15 birds/survey). Thus, although Mourning Dove breeding in the bosque has clearly decreased since the early 1980's, the number of birds frequenting the bosque during winter appears to have increased.

Northern Flicker This woodpecker has also experienced a decline in both the bosque and throughout much of its U.S. range over the past 30 years. MRGBS considered this species to be a common resident, becoming abundant during fall and winter when individuals breeding at higher elevations joined their brethren in the bosque. We found flickers to be uncommon during summer and fairly common to common during winter. The summer detection rate for 1981-1982 (1.24 birds/survey) was significantly higher than 2004-2014 (0.51 birds/survey) and it is clear the species is now much less prevalent in the bosque during the breeding season. The winter detection rate for 1981-1983 (1.50 birds/survey) was not significantly higher than the detection rate for 2004-2014 (1.25 birds/survey), but it appears flickers are now also less abundant during winter.

Western Meadowlark BBS data indicate this species has experienced steep declines throughout its range over the past several decades, a trend that has also played out within the middle Rio Grande bosque. MRGBS considered this year-round resident to be common in more open bosque habitats, especially open salt cedar stands, and uncommon elsewhere. In contrast, we found this meadowlark to be rare to very uncommon in open habitats and absent elsewhere. A simple comparison of the total number of detections during each study illustrates the dramatic decrease this species has experienced in the bosque. There were 508 summer detections and 106 winter detections in the existing MRGBS data from 1981-1982 and 1981-1983 respectively, compared to 36 summer and 62 winter detections during HAI surveys in 2004-2014.

Western Wood-Pewee MRGBS considered this flycatcher to be a common migrant and summer resident that was most numerous in mature cottonwood stands with an open understory and closed canopy. We found the species to be uncommon during the summer with most detections occurring in the habitat described above. The detection rate for 1981-1982 (0.54 birds/survey) was significantly higher

than for 2004-2014 (0.35 birds/survey).

Yellow-rumped Warbler

MRGBS considered this warbler to be abundant in migration and fairly common in winter throughout the study area. We consider the species to be common during migration and uncommon to fairly common during winter, with higher numbers occurring in areas with large Russian olive berry crops. The detection rate for winter 1981-1983 (1.13 birds/survey) was significantly higher than the rate for winter 2004-2014 (0.68 birds/survey). Although this species is still a regular winter resident in the bosque, it has substantially decreased over the past 30 years.



Other species that appear to have experienced significant decreases in the bosque during one or more seasons since the early 1980's include American Robin, Brown-headed Cowbird, European Starling, House Sparrow, and Ring-necked Pheasant (see Table 1).

Bewick's Wren The presence of this wren in the bosque during summer has drastically changed since the early 1980's. MRGBS found this species to be virtually absent from the bosque during summer south of Bernalillo. There is only a single summer record of Bewick's Wren in the existing MRGBS data. But, MRGBS considered it to be fairly common during migration and winter, when the species would move into the bosque south of Bernalillo. Today, this species a common bosque breeder and year-round resident. The summer detection rate for 2004-2014 (2.35 birds/survey) was significantly higher than 1981-1982 (0.00 birds/survey). The winter detection rate for 2004-2014 (0.60 birds/survey) was also higher than 1981-1983 (0.30 birds/survey), but the difference was not significant.

Black-chinned Hummingbird Both studies found this hummingbird to be an abundant migrant and summer resident. Because they are so prevalent in most bosque habitats, accurately documenting Black-chinned Hummingbird numbers using avian walking transect protocol is difficult and highly subjective. There was undoubtedly observer bias within and between studies in documenting this species. But, because the difference in detection rates from 2004-2014 (14.95 birds/survey) and 1981-1982 (1.63 birds/survey) were so vastly different, it is likely numbers have increased since the early 1980's.

Bushtit MRGBS did not document any nests, but speculated that this species may sporadically breed in the bosque. We found Bushtits to be regular breeders, with Russian olive and cottonwood most commonly serving as nesting substrates. Flocks moving nomadically through the bosque were documented during both studies. But, the species was apparently encountered less frequently during the MRGBS than during our study. Detection rates in 2004-2014 during both summer (1.39 birds/survey) and winter (0.79 birds/survey) were significantly higher than summer 1981-1982 (0.04 birds/survey) and winter 1981-1983 (0.03 birds/survey).

Cedar Waxwing MRGBS considered this species to be occasional (i.e. a vagrant) in the bosque during early summer as a late migrant, but apparently did not document any individuals during the summer

See **Middle Rio Grande Bosque** page 29 ▶



Facing page: Indigo Bunting. Above Left: Lark Sparrow. Photo by Alan Murphy. Above Right: Yellow-billed Cuckoo. Photo by Doug Brown.

months in 1981-1982. We found the species to be rare to uncommon during summer, with sightings increasing from 2004-2014. On several occasions in recent years, we documented adults with recently fledged young, suggesting breeding occurred in or near the bosque.

Both studies found this waxwing to be uncommon to fairly common during migration and winter, but the winter detection rate during 2004-2014 (0.29 birds/survey) was significantly higher than 1981-1983 (0.18 birds/survey). We found the species to be most prevalent in areas with large Russian olive and New Mexico olive berry crops.

Eastern Bluebird and Western Bluebird Both of these bluebirds have increased in the bosque since the early 1980's. MRGBS did not document any individuals of either species during summer. In contrast, we documented breeding Eastern Bluebirds in the bosque during all years from 2004-2014 and documented breeding Western Bluebirds in 2011-2014. Both species most commonly bred in more open, mature cottonwood stands and burned areas with cottonwood snags. During winter, MRGBS found Eastern Bluebird to be uncommon in the winter of 1982 but absent in winter 1983; they considered Western Bluebird to be rare from fall to spring, but the least often encountered of the three bluebird species. Both species were fairly common during winter in 2004-2014, and Western Bluebird is now the most common bluebird species in the bosque year-round.

Hairy Woodpecker and Ladder-backed Woodpecker MRGBS found both of these woodpeckers to be rare residents, but did not document either species breeding in the bosque. We found Hairy Woodpecker to be an uncommon resident, Ladder-backed Woodpecker to be an uncommon to rare resident, and documented both species using cottonwoods as nesting substrates in the bosque. Both species appear to have increased in numbers in the bosque since the early 1980's. Hairy Woodpecker detection rates during 2004-2014 were significantly higher during both summer and winter than during the MRGBS (1 summer and 2 winter detections in the existing data). The Ladder-backed Woodpecker detection rate during summer 2004-2014 was significantly higher than 1981-1982 (1 detection in the existing data), but there was not a significant difference in winter detection rates for ladder-backs between studies.

Lesser Goldfinch MRGBS considered this finch to be common during summer and rare during winter, although there were no winter detections in the existing data. Although we also found the species to be common during summer, the detection rate for summer 2004-2014 (1.54 birds/survey) was significantly higher than summer 1981-1982 (0.32 birds/survey). Additionally, we found this species to be uncommon

during winter, with most observations involving birds foraging on the seeds of weedy vegetation. It seems clear that Lesser Goldfinch numbers in the bosque have increased year-round since the early 1980's.

Spotted Towhee MRGBS considered this species to be a common resident, but less common during winter than other seasons. We found this towhee to be abundant during summer and common during winter, with detection rates during both season significantly higher in 2004-2014 (6.30 and 2.79 birds/survey respectively) than during the MRGBS (1.04 and 0.71 birds/survey respectively). The species was most prevalent in areas supporting substantial amounts of New Mexico olive, and we surveyed more transects incorporating that habitat than the MRGBS. New Mexico olive has increased throughout the study area since the early 1980's, and Spotted Towhee has been one of many beneficiaries of this habitat change.

Summer Tanager The middle Rio Grande bosque represents the north end of this species range in New Mexico, and it has increased in numbers over the past 30 years. MRGBS found this tanager to be rare to uncommon from the Bosque Bridge (south of Belen) on north. We found the species to be uncommon to fairly common during summer, with higher numbers in more mature cottonwood stands. The summer detection rate for 2004-2014 (1.05 birds/survey) was significantly higher than 1981-1982 (0.08 birds/survey). BBS data indicates this species has increased throughout New Mexico and range-wide over the past 30 years.

White-winged Dove and Eurasian Collared-Dove Neither species was present in the study area during the MRGBS. White-winged Dove has clearly expanded its range northward over the past 30 years, and is now an uncommon bosque resident with numbers increasing from 2004-2014. Eurasian Collared-Dove is an introduced species that reached the middle Rio Grande around the year 2000, with numbers steadily increasing from 2004-2014. We documented both species breeding in the bosque (white-winged more frequently) and both may be factors in the decrease of Mourning Dove in the bosque during summer. But, both species are much more prevalent in residential areas than the bosque.

Winter Wren In 2010, the American Ornithologists' Union split this wren into two species: Winter Wren in the eastern part of its range and Pacific Wren in the western part of its range. MRGBS considered Winter Wren to be a rare migrant through the study area, but did not document it during winter. We found this wren to be a rare winter resident, but uncommon along drains bordered by dense vegetation. Since the species split, about 90% of our detections have been of "Eastern" Winter Wren. The presence of these species in the bosque during winter appears to be a phenomenon of the past 30 years, as there is only a single winter record from the study area prior to 1984.

Other species that appear to have experienced significant increases in the bosque since the early 1980's include Black-capped Chickadee, Downy Woodpecker, Song Sparrow, and White-breasted Nuthatch (see Table 1). The large number of species that have experienced increases and decreases in the bosque over the past 30 years illustrate the complexity of the ecosystem and the importance of ongoing monitoring. With the support of the U.S. Army Corps of Engineers, we will continue to document avian use of the bosque in the foreseeable future.

Thank You to All the Volunteers Who Make Hawks Aloft a Success!

Corporate, Foundation & Government Agencies

ALBUQUERQUE COMMUNITY FOUNDATION
ALBUQUERQUE PUBLIC SCHOOLS
AMAZON SMILE FOUNDATION
AMERICAN TOWER CORPORATION
BAUER, BROWN AND BASCO PHOTOGRAPHY
BETA SIGMA PHI
BUREAU OF LAND MANAGEMENT
CENTRAL NM AUDUBON - THURSDAY BIRDERS
CHEVRON CORPORATION
CIMARRON PUBLIC SCHOOLS
COCA-COLA FOUNDATION
CONTRACT ASSOCIATES
CORONADO ANIMAL HOSPITAL
DESERT WILLOW VETERINARY CLINIC
DORN CHARTER SCHOOL
DOUG BROWN PHOTOGRAPHY
EYE CARE FOR ANIMALS
FESTIVAL OF THE CRANES - FRIENDS OF BOSQUE DEL APACHE NWR
GOLDER ASSOCIATES
INTEL MATCHING FUNDS
IRBY UTILITIES
KEITH BAUER PHOTOGRAPHY
LAND OF ENCHANTMENT WILDLIFE FOUNDATION
LARRY & ANNA HARRIS FOUNDATION
LAVENDER FESTIVAL
LOS NINOS MONTESSORI
MANZANO DAY SCHOOL
MCFARLAND CASCADE
MONSTER ENERGY COMPANY
MONTE VISTA CRANEFEST - FRIENDS OF MONTE VISTA NWR, CO
NATIONAL PARK SERVICE
NAVAJO NATION ZOO
NEW MEXICO DEPARTMENT OF GAME AND FISH
NEW MEXICO FALCONERS' ASSOCIATION

PEABODY ENERGY - LEE RANCH
PETROGLYPH ANIMAL HOSPITAL
PETROGLYPH NATIONAL MONUMENT
PLANET GREEN
PNM MATCHING FUNDS
RIPLEY B. HARWOOD, P.C.
RUIDOSO PUBLIC SCHOOLS
SANDIA MOUNTAIN NATURAL HISTORY CENTER
SOUTHWEST VETERINARY CENTER
SPARKLE MAINTENANCE
ST. MICHAEL & ALL ANGELS EPISCOPAL CHURCH
STUART C. IRBY COMPANY
SUMMIT CONSTRUCTION
TNMP - TEXAS-NEW MEXICO POWER Co.
U.S. ARMY CORPS OF ENGINEERS
UNITED WAY OF CENTRAL NEW MEXICO
UNIVERSITY OF NEW MEXICO
UPPER GILA WATERSHED ALLIANCE
USDA FOREST SERVICE: APACHE-SITGREAVES NATIONAL FOREST
USDA FOREST SERVICE: SANTA FE NATIONAL FOREST
VALLES CALDERA NATIONAL PRESERVE
VENTANA ANIMAL HOSPITAL
WILD BIRDS UNLIMITED - ALBUQUERQUE

Individuals & Volunteers

ANN SILVA'S SEWING CENTER
ANONYMOUS AT CIELO AZUL ELEMENTARY
ARTHUR & CATHERINE ARENHOLZ
JOAN & PAUL ARMER
KARIANA ATKINSON, DVM
GINGER ATWOOD
ROSEMARY AVERY
AMY BAB
DEAN BALMER
PAULINE BARNES
DONNA BARNITZ

GREG BASCO
JIM BATTAGLIA
KEITH BAUER
JANET BEASLEY
NANCY BENNETT
ROBERT BERRY
BETA SIGMA PHI
EMMITT & ROSA BOOHER
DONNA BOROWSKY
SOPHIA BOROWSKY
BOSQUE DEL APACHE
LESLEY BOTZ
ELIZABETH BOWEN
NANCY BOWSHER
NANCY & WARREN BRAKENSIEK
CHUCK BRANDT
WILLIAM & LUCIE BRENNAN
DOUG & KRISTIN BROWN
WENDY BROWN
MARY BRUESCH
DAVID BUCKLEY
KAY & JACK BURGESS
LORETTA BURNHAM
RUTH BURSTROM
MARY CARLSON
JIM CARNEVALE
NIELS CHAPMAN
ED & MARY CHAPPELLE
CARTER & SUSAN CHERRY
JIM CHURCH
ED CLARK
GIL CLARKE
DAVID COMINGS
LINDA CONTOS, DVM
CORONADO ANIMAL HOSPITAL
DAGNY COSBY
COTTONWOOD REHABILITATION CENTER
KATHLEEN COVALT
CHARLES CUMMINGS
PATRICIA CUMMINGS
DAVE & MAG DAHRLING
ROD DANIEL
PATRICK DAVENPORT
JULIA DAVIS
BRIGITTE DE SAINT PHALLE
MIKAL DEESE
DEBBIE DELOZIER
VICKI DERN

DESERT WILLOW ANIMAL CLINIC
BARBARA DESHLER
RICK DESHLER
STEPHANIE DOBBIE
TERRY EDWARDS
STEVE & MARY ELKINS
EYE CARE FOR ANIMALS
ELIZABETH FARR
CYNTHIA FIGUEROA-MCINTEER
DENISE FLIGNER & TERRY EDWARDS
CARA FOSTER
CHARLES FREYE
ROGER FRIEDMAN
DANA & MARION GEBEL
TONY GIANCOLA
REBECCA GRACEY
ANDRIANIQUE GREEN
MAGGIE GRIMASON
ROGER GRIMSHAW
AVA GUTIERREZ
ALICE HANSON
JOAN HASHIMOTO
VERONICA HAVENS
MIKE HECHT
LOIS HERRMANN
GERALD HOBART
ANITA HOLTZ
BILL HOUSTON
RAY HUDGELL, DVM
TERRY ILIFF
KAY JACKSON
JENNIFER JEFFERY
KAREN JEFFERY
MIKE JOLA
WILLIAM KEELEY
GAVIN KENNARD, DVM, DACVO
PHILANA KILEY
JEANNINE KINZER
BOB KIPP
DEAN & TONI KLASSY
JERRETT KOENIGSBERG
REBECCA KRAIMER
BILL & SANDY KROLL
LAWRENCE LATTMAN
DANIEL LEVENSON, DVM
JUDY LIDDELL
BONNIE LONG
BILLY & CARMEN LOVETT
DOUGLAS MAAHS
MAURICE MACKKEY
MOLLY MADDEN

JUDITH MANGELSSON
SUZANNE MARKS
LAURIE MARNELL
DAVID MARTINEZ
JAMES MATHEWS
JANET MATHEWS
TOM & EDEL MAYER
CARRIE McDONALD
EVELYN MCGARRY
MICHAEL MCGEE
SALLY MCGRATH
LAURA MCNAMARA
VINCENT MCRUIZ
LETITIA MEE
MIKE MELLO, DVM
NICOLE MENAS
SUSAN MESINAI
JO MICKELSON
ARLETTE MILLER
MICHAEL & SHERI MILONE
TONY MISTRETTA
JAMES MOORE
DOLORES & EZEQUIEL MORENO
NANCY MORRIS
MACK MULLICAN
ALAN MURPHY
DAMIE NELSON
NEW MEXICO WILDLIFE CENTER
NICK & KRIS NICOLAUS
KERRY OBER
MIGUEL PALAVICINI
DAVE PARSONS
DARL PATRICK
DANIEL PAULSON
BOB PEIFFER, DVM, PhD
MEG PETERSON
PETROGLYPH ANIMAL HOSPITAL
EMILY PHILLIPS
KATE PINARD
ERIN & BRIAN PLUMER
PNM MATCHING FUNDS ON BEHALF OF CARTER CHERRY
PNM MATCHING FUNDS ON BEHALF OF ALWYN VANDERWALT
CHELLE & JEFF PORTER
DAVID & SANDRA POWELL
ERIC PURINGTON
MICHAEL & CHERYL QUAINANCE
BEVERLY QUINLAN
GRIFF RADULSKI
RAIL RUNNER
KATHLEEN RAMSAY, DVM

JESSICA & ERIC RASBAND	EMILIANO SALAZAR	VICKI SIMS	KUMIKO STYES	VENTANA ANIMAL CLINIC
PAULA RAY	ISAAC SALAZAR	ANN SINGER	REBECCA SZYMANSKI	RONALD VILLIOTTI
JAMES REIST	STEPHEN SALETTA	SOUTHWEST VETERINARY	DAVEDDA & TONY THOMAS	TOM WADDELL
ANN RHODES	CAROLYN (SAMI) SANBORN	MEDICAL CENTER	RONALD THOMAS	KATIE WADE-MATTHEWS
LARRY & KIM RIMER	CATHERINE SANDEL	MARIE SOUTHWORTH	NANCY THONEN	MEAGAN WAGONER
RHONDA RIVERA	ALLISON SCHACHT	BRAD AND VICTORIA STAMM	SEI & PAT TOKUDA	MARY WALSH
LIZZIE ROBERTS	ROBBIE SCHELL	DOROTHY STERMER	CAROL TROELLER	MONIQUE WHITE
LARITA ROHLA	DIANNE SCHLIES	JUSTIN STEVENSON (RD	UNIVERSITY OF NEW MEXICO	MICKIE WHITLOCK
DONNA ROYER	AMANDA SCHLUTER	WILDLIFE MANAGEMENT &	LAURIE VAN VLIET	CHRISTIE WILCOX
MANDY & EDWARD RUDEN	LISA SCHULTER	CONSULTING)	ALWYN VANDERWALT	GAIL WOMACK
SUSAN RUSSO	BARI LEE SILVER	THOMAS STEWART	JOHN VANTLAND	MARY WOODWARD
SANTA FE RAPTOR CENTER	STEPHANIE SIMS	STUDENTS AT SY JACKSON	ROBERT VARGAS	STEVE YOUTSEY
		ELEMENTARY		

Join Our Growing Membership

Hawks Aloft, Inc. is a non-profit, 501(c)3 organization incorporated in 1994 and based in Albuquerque, New Mexico. We work to conserve indigenous wild birds and their habitats through avian research, rescue, conservation, education, and cooperation with other organizations.

Our Mission = Your Mission

Our avian constituents are not just raptors, as our name might imply. We care about all birds and the habitats that support them. Our approach to conservation is expansive, allowing us to reach more people with our message.

For example, our extensive avian research yields data to support sound land management decisions. This information is critical when issues arise that might disrupt bird habitats.

We also believe that education, especially of young people, is vital to our future, as the students of today will become the leaders of tomorrow. Our avian ambassadors, live, permanently injured birds that visit classrooms and attend events throughout the state, help motivate people to care about birds and their habitats. Member funds help feed and



house our cadre of 27 educational raptors, all of which are non-releasable due to their injuries.

In addition, we perform rescues of injured and orphaned raptors, corvids, and other birds through our "avian ambulance" services. Our wide network of volunteers has rescued birds in every corner of the state.

Finally, cooperation with other organizations increases our effectiveness and supports community awareness of the importance of conservation.

We are a New Mexico organization, serving the needs of birds in New Mexico and the people who care about them. Isn't that your mission, too? You are reading our magazine because you care about birds and conservation. There are numerous ways you can help us, but the first and most important step is to join us!

Burrowing Owl photo by John Van't Land

YES, I WANT TO JOIN HAWKS ALOFT!

MEMBER BENEFITS INCLUDE:

- A SUBSCRIPTION TO THE HAI FLIER, OUR MONTHLY E-NEWSLETTER FILLED WITH CURRENT NEWS AND UPDATES
- A SUBSCRIPTION TO *ALOFT*, THE ANNUAL JOURNAL OF HAWKS ALOFT
- INVITATIONS TO SPECIAL EVENTS AND FIELD TRIPS
- DISCOUNTS ON SELECTED HAWKS ALOFT MERCHANDISE
- DISCOUNTS AT WILD BIRDS UNLIMITED (WITH YOUR HAWKS ALOFT MEMBERSHIP CARD)
- MEMBERS WHO DONATE AT THE COOPER'S HAWK LEVEL OR HIGHER WILL RECEIVE EARLY INVITATIONS VIA E-MAIL TO EXCLUSIVE SPECIAL EVENTS SUCH AS THE ARMENDARIS BAT CAVES TRIP!

BUT MOST IMPORTANTLY, AS A MEMBER YOU WILL RECEIVE THE SATISFACTION OF KNOWING THAT YOU ARE SUPPORTING AVIAN CONSERVATION, RESEARCH, RESCUE, AND EDUCATION—BECAUSE THAT IS YOUR MISSION TOO!

PLEASE JOIN TODAY!

Membership is very reasonably priced:

- | | | | | | |
|--|---------|---|-------|---|-------|
| <input type="checkbox"/> Golden Eagle | \$1,000 | <input type="checkbox"/> Ferruginous Hawk | \$500 | <input type="checkbox"/> Prairie Falcon | \$250 |
| <input type="checkbox"/> Red-tailed Hawk | \$150 | <input type="checkbox"/> Cooper's Hawk | \$75 | <input type="checkbox"/> Family | \$50 |
| <input type="checkbox"/> Individual | \$35 | <input type="checkbox"/> Student/Senior | \$20 | | |

Please help support our conservation, research, and educational efforts with a tax-deductible contribution.

MEMBERSHIPS ARE FOR ONE YEAR AND THE RENEWAL CYCLE IS INDIVIDUAL, BASED ON THE DATE OF YOUR INITIAL MEMBERSHIP CONTRIBUTION. ALL CONTRIBUTIONS ARE TAX DEDUCTIBLE.

CORPORATE MEMBERSHIPS ARE ALSO AVAILABLE.

NAME: _____

ADDRESS: _____

PHONE: _____ EMAIL: _____

PLEASE MAKE CHECKS PAYABLE TO HAWKS ALOFT, INC., AND USE THE ENCLOSED ENVELOPE TO SEND YOUR PAYMENT.

- Please contact me about volunteer opportunities