



 DOUG BROWN
PHOTOGRAPHY

A male American Kestrel feeds after a successful hunt. Photo by Doug Brown.

Starline Ad



ALOFT

THE JOURNAL OF
HAWKS ALOFT INC.



- 3 Avian Use of Middle Rio Grande Bosque Before and After Drought**
- 4 The Age of Plastic**
- 5 Hawks Aloft Panama Tour**
- 6 Raptor Surveys in Rio Grande and Estancia Valleys**
- 8-10 Raptor Monitoring Reports**
- 11 Avian Response to Wildfire in Jemez CFLRP**
- 12 Collaboration with PNM Resources**
- 13 Species Profile: Ferruginous Hawk**
- 15 New Mexico Birder: Arlette Miller**
- 16 25 Year Retrospective**
- 20 Raptor Rescue in New Mexico**
- 24 Meet the Hawks Aloft Education Programs**

HAWKS ALOFT, INC.



PO Box 10028 • Albuquerque, NM 87184

(505) 828-9455

WWW.HAWKSALOFT.ORG

WHO WE ARE:

BOARD OF DIRECTORS

Carter Cherry, *Chair*

Alwyn Vanderwalt, *Vice Chair*

Mary Chappelle, *Secretary & Treasurer*

Terry Edwards, *Director*

STAFF & ASSOCIATES

Gail Garber, *Executive Director*

Ellie Althoff, *Education and Outreach Coord.*

Steve Elkins, *Graphic Designer*

Trevor Fetz Ph.D., *Lead Avian Biologist*

Angela Green, *Office Manager*

Maggie Grimason, *Senior Editor*

Katrina Hucks, *Avian Biologist and*

Raptor Rescue Coordinator

Mike Hill, *GIS Specialist*

Gerald Hobart, *Raptor Survey Project Mgr.*

Amanda Schluter, *Biologist*

Arlette Miller, *Raptor Rescue Dispatcher*

Contributors – Cynthia Figueroa-McInteer,

Tom Mayer

Photographers – Keith Bauer, Craig Benkman, Doug Brown, Alan Murphy, David Powell, Larry Rimer, Tony Thomas

ON THE FRONT COVER:

Info

ON THE BACK COVER:

Info

OUR MISSION

Hawks Aloft, Inc. works to conserve indigenous wild birds and their habitats through avian research, conservation education, raptor rescue, 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) 2018 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: Hawks Aloft Celebrates 25 Years!

by Gail Garber

In preparation for this momentous anniversary—our 25th—I dug out copies of our earliest newsletters. Yes, we still have them all, going as far back as 1994, when our 8 page black and white newsletter was done entirely in-house and published 3 times a year, complete with membership meeting schedules and field trips. What a trip down memory lane! Two years later, in 1996, Steve Elkins assumed the volunteer position of graphic designer, and our newsletter became the magazine, Aloft: The Journal of Hawks Aloft, with the cover graphic we still use today. Color printing wasn't in the scope of our magazine until 2003 when we published the first issue with a color cover. Today Aloft is full color throughout and still designed entirely by Steve, who remains our dedicated volunteer graphic designer.

It seems impossible that it was indeed 25 years ago that several of us sat around my decrepit kitchen table and plotted out the course for our nestling organization. Richard Becker and Blue Sky Natural Beverage Company became the first corporate sponsor for our education program, donating \$100 per month; we used education birds borrowed from Wildlife Rescue of New Mexico. We had a full-time educator and I was the half-time director. We had not yet acquired our nonprofit IRS status but, with optimism born of ignorance, we applied to the Frost Foundation for our first education grant, requesting \$5,000. They must have felt sorry for us as the award we received, \$10,000 was double our request!

One generous couple, Jerry and Sally Mayeux, believed strongly in our cause. Sally was a CPA and became our first chairwoman. It was Sally who successfully authored the application for our 501©3 status achieving that goal in a short 90 days. Jerry also was a board member and both were actively involved in all aspects of Hawks Aloft during our infancy. Indeed, the Mayeux's underwrote our expenses that first year. Were it not for their generosity, I am not sure Hawks Aloft would be here today.

In the beginning, we only dreamt of one day conducting meaningful avian research. While collectively we had strong backgrounds in conservation education, research was not our strong suit. One of our board members, Jim Place, and his friend Jerry Hobart, developed a project within the Rio Grande and Estancia valleys to monitor raptor populations during the summer and winter months, times when raptors would be residents. They established 20-mile-long routes with designated stops at each mile. Two surveyors would count all raptors observed and their distance from the observation point. Everyone was a volunteer and there was zero funding for any aspect of the study. Like our other efforts, this has expanded and now has 8 routes, each of which is surveyed once a month, for 6 months of the year, always with 2 or more observers. As of June 2018, our volunteers had conducted 1,161 surveys, driven 234,094 total miles, and recorded 50,306 raptors. A total of 15,770 volunteer hours were expended in this effort.

Over the course of our 25 years, much has changed at Hawks Aloft and yet we remain true to our roots as a largely volunteer driven organization. Today, we have a diverse team of some 70-90 volunteers who contribute to various aspects of our organization, ranging from field technicians and researchers to photographers, bird handlers, and educators, woodworkers, and of course, our beloved graphic designer. Are you interested in joining the Hawks Aloft family? Check for opportunities on our website at hawksaloft.org. ■

Comparison of Avian Use in the Middle Rio Grande Bosque Before and After Exceptional Drought

by Trevor Fetz

In 2004, Hawks Aloft began the Middle Rio Grande Songbird Study (MRGSS). This project monitors avian use at 81 transects (averaging 800 meters long) over a 79-mile stretch of the middle Rio Grande bosque between Rio Rancho and the La Joya Waterfowl Management Area. Surveys are conducted during the three summer months (June through August) and the three winter months (December through February). Over the first 14 years of this study a number of our survey sites have experienced significant changes that impacted avian use, including catastrophic wildfire, extensive restoration work, thinning projects, and increased human use. But, the biggest impact on the study area as a whole has been long-term, exceptional drought. During the first seven years of surveys precipitation levels in the middle Rio Grande valley were near or above normal. But, by the onset of the winter 2011 field season, the entire study area was in the grip of exceptional drought. The 2011 water year (September 2010 through August 2011) is the driest 12-month period on record for the middle Rio Grande valley (www.ncdc.noaa.gov). Drought conditions persisted for the next two years, with the period from September 2010 through August 2012 being the driest 24-month period on record and the period from September 2010 through August 2013 being the second-driest 36-month period on record. Conditions improved in 2014, with above normal precipitation during the 2014 water year. Nevertheless, recovery from long-term drought was slow, as illustrated by the fact the 48-month period between September 2010 and August 2014 was still the seventh-driest on record. In order to assess the impact of the drought, I compared avian use during the seven project years prior to long-term drought (2004-2010) to avian use during the seven years since the onset of drought (2011-2017).

Not surprisingly, avian use during the seven pre-drought years was generally higher than the seven years following the onset of drought. Cumulatively across the study area, summer avian density in 2004-2010 (706 birds/100 acres) was significantly higher than 2011-2017 (570 birds/100 acres; Tukey-Kramer test). Similarly, winter avian density in 2004-2010 (587 birds/100 acres) was significantly higher than 2011-2017 (454 birds/100 acres). Summer avian species richness in 2004-2010 (24.6 species/transect at densities ≥ 1.5 birds/100 acres) also was significantly higher than 2011-2017 (22.6 species/transect; Tukey-Kramer test). But, winter avian richness in 2004-2010 (15.7 species/transect) was virtually the same as 2011-2017 (15.6 species/transect).

Trends within specific community and structure (C/S) types (i.e. habitat types) were generally similar to the project-wide trends, but there

were some exceptions. During summer, avian density was higher in 2004-2010 than 2011-2017 at 14 of 17 C/S types with sufficient sample sizes for analysis during both time periods, with density in 2004-2010 significantly higher at 11 of those C/S types (Tukey-Kramer tests). There were no significant differences between time periods at any of the three C/S types where summer density was higher in 2011-2017. Summer avian richness trends mirrored summer density trends, as richness also was higher in 2004-2010 than 2011-2017 at 14 of 17 C/S types, with richness in 2004-2010 significantly higher at three of those C/S types. There were no significant differences between time periods at any of the three C/S types where summer richness was higher in 2011-2017.

During winter, avian density was higher in 2004-2010 than 2011-2017 at 14 of 17 C/S types, with density in winter 2004-2010 significantly higher at four of those C/S types (Tukey-Kramer tests). There were no significant differences in winter density between time periods at any of the three C/S types where density was higher in 2011-2017. The change in winter richness was less dramatic than density, as richness was higher in 2004-2010 at 11 of 17 C/S types, with none of the differences between time periods being statistically significant.

Among C/S types supporting higher avian density and/or richness in



See **Bosque Drought** page 18 ▶

CONSERVATION

The Age of Plastic



By Maggie Grimason



Plastics in the environment can cause harm to animals in many ways. Our oceans are becoming more and more polluted with plastic, impacting such species as the Laysan Albatross (left). Artwork (above) by Marilyn Rea-Menzies.

In landlocked New Mexico, it may be easy to overlook the environmental issues that are most directly impacting other biomes—at least in this moment—like the world's oceans. Yet, consider this: the equivalent of one garbage truck of plastic is being dumped into the ocean every single minute. Although, New Mexico is hundreds of miles from the nearest coast, casual buyers of single-use plastics, as well as large-scale industrial entities, are contributing to this troubling amount of pollution and its impact on bird species. In recent years, the far-reaching impacts of human consumption have become increasingly apparent.

The impact on some bird species is well documented—take the Laysan Albatross, for example. This large, narrow-winged seabird is particularly vulnerable—as are other varieties of albatross—because these plastics are often a substrate for flying fish eggs, a considerable dietary source. Other species of albatross are vulnerable, too, often foraging by skimming their beaks across the water's surface. Along the way, they pick up all sorts of human produced detritus along with their next meal. Researchers of the Laysan Albatross in particular have documented dead individuals with fishing line, bottle caps, plastic bags, fragments of water bottles, balloons, buttons, cigarette lighters, and styrofoam inside their stomachs.

This beautiful bird species—with a wingspan of more than six feet, who can spend years at sea and only come ashore to breed—isn't the only one impacted by plastics. According to a study published by Proceedings of the National Academy of Sciences in 2016, 60% of seabird species studied had plastic in their gut. In other parts of the globe, like remote Svalbard, sandwiched between Norway and the North Pole, 87.5% of fulmars were found with plastics in their stomachs. Since fulmars—a genus of seabird that resemble gulls—are not able to regurgitate, they are particularly vulnerable to the effects of consuming plastic.

By the count of the same study mentioned above, 186 species, from 42 genera, within 10 families are impacted, and that is just among species that have been studied so far. Meanwhile, by National Geographic's tally, there has been an overall 67% decline in seabird populations worldwide

between 1950 and 2010, happening apace with increases in plastic production—an industry that has continued to grow massively.

Every single piece of plastic that has ever been produced still exists on Earth. That is the nature of the substance. With a lifespan of 450 to more than 600 years, it is shocking that most plastics offer us just a few hours of utility; we purchase and discard them at a rapid-fire pace. It is estimated that 19 billion pounds of plastic end up in the ocean each year, and that number is expected to double by 2025. To put this all into greater perspective, by 2050, a number of researchers have forecasted that the world's oceans will contain more plastic than fish, by weight. Already floating in the Pacific Ocean is what has informally been dubbed "The Great Pacific Garbage Patch," where 80,000 tons of plastic have created an island in a powerful gyre. The problem is enormous in its scope—in 2018 already considered by some to be at crisis level, with no signs of abating.

While the impacts on bird species are well-documented and broad, other species have been suffering apace with them. In the spring of 2018, for example, a young sperm whale washed up on the coast of Spain. Local biologists performed a necropsy to determine the whale's cause of death and were shocked to find 64 pounds of plastic in the animal's stomach and intestines. It was determined that this created the infection that ultimately killed the young whale. Dolphins have been shown poisoning their own calves with milk that carries microplastics. (Microplastics themselves loom as a massive problem, though not yet well researched—they are remnants of larger plastics that have broken down over time, and have turned up in fish, fertilizers, table salt, and 93% of bottled waters, speaking to the eventuality that the problem of plastics will soon impact our own species more directly.) Sea turtles, like sea birds, both consume plastics and become entangled in them, contributing to the 100 million marine animals that die each year because of ocean debris, as reported by the Sea Turtle Conservancy.

In the United States, we produce 40% of global plastic waste—of this

See **Climate Change** page 27 ▶

Discover the Darién Region of Panama with Hawks Aloft and the Canopy Family

By Katrina Hucks

November 9-18, 2019

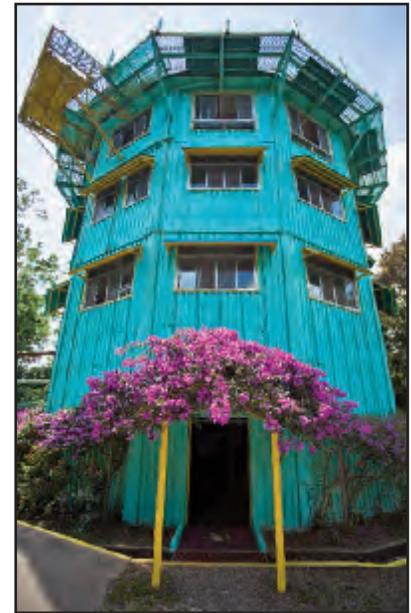
Join Katrina Hucks, Gail Garber, and Canopy Family guides on this Panamanian adventure!

Before I began working at Hawks Aloft, I was fortunate to experience this incredible sight at the Canopy Tower as the official hawk counter. From October-November, thousands of raptors funneled overhead, and I was mesmerized! Joining the kettles of migratory raptors were King Vultures, Short-tailed Hawks, Black Hawk-Eagles, and even Magnificent Frigatebirds and Wood Storks! Thousands of resident Black Vultures joined the kettles too. While watching the raptors, I also got to see both two-toed and three-toed sloths, iguanas, coatis, and an incredible variety of both resident and migratory songbirds. Panama is a bird-lover's paradise.

A country rich in culture and biodiversity, Panama also separates Central and South America. According to Panama Wildlife Conservation (2018), Panama boasts 10,444 plant, 255 mammal, 972 bird, and 222 amphibian species. This biodiversity hotspot is a must-visit country for those interested in tropical wildlife. Panama has a variety of habitats ranging from beaches and marshes to volcanos and montane rainforests. The Panama Canal bisects the country roughly in the center, creating eastern and western Panama. The northern and southern tracts of the country are bordered by the Caribbean Sea and the Pacific Ocean, respectively.

The Darién region of eastern Panama is untouched by roads, making it one of the most undisturbed tracts of rainforest in the world. River systems form the roads in this tropical forest system. During our tour, we will utilize these waterways to explore rich biodiversity and learn about the Embera culture. Our lodging will be at Canopy Camp Darién, the newest Canopy Family lodge, situated near the end of the Pan-American Highway (Yes! Part of the same highway system that runs through Albuquerque!). Emerge from your platform tent in the mornings to enjoy coffee on the veranda, surrounded by toucans, hummingbirds, and capuchins. For photographers, Panama is your playground. Enjoy wildlife photography, picturesque landscapes, fascinating architecture, as well as stunning sunrises and sunsets.

During your time at the Canopy Camp, you will bird the area looking for Olive-backed Quail-Dove, Tiny Hawk, Blue Cotinga, Golden-green Woodpecker, and others. Visit the Fundación Tierra Nueva, a non-profit that supports the "sustainable development of people of the Darién Rainforest." Go owling at the end of the day, targeting birds like Crested and Black-and-white Owl, Great Potoo, and nocturnal mammals. We will explore the areas around Lajas Blancas, an Embera community, search



Caption

for the elusive and powerful Harpy or Crested Eagle, and listen to the chatter of macaws.

Toward the end of the trip, we will explore the Canal Zone of Panama, one that has been more classically developed than other parts of Panama. We will stay at the Canopy Tower, a unique military radar structure that has been transformed into an ecolodge, in Soberanía National Park. Each night, listen for the Túngara frogs calling from puddles. Wake to a symphony of birds outside your window; just feet away from the treetops! Enjoy your morning coffee on the deck of the Canopy Tower, with views of the surrounding rainforest, Panama City, and the Culebra Cut of the Panama Canal. Listen to mantled howler monkeys booming in the forest, and watch the sloths munch on leaves. Enjoy birding in one of the most productive areas of Panama, the famous Pipeline Road. Prepare for rain, as it is the green season of Panama, but also prepare to see lush forests, fruiting and flowering vegetation, and enjoy the wildlife around you.

November in Panama is an incredible time of year. The towering forests are green and full of life. When you look to the skies, you may be lucky enough to see the "river of raptors" that occurs twice a year when raptors such as Broad-winged Hawk, Swainson's Hawk, and Turkey Vulture migrate in impressive numbers to and from their breeding grounds. ■

Save the date! Join us in November 2019! For details, including itinerary and pricing, visit <http://hawksaloft.org/member-events/>

RESEARCH

Raptor Surveys of the Rio Grande & Estancia Valleys

Winter 2017/2018 and Summer 2018

This year, Hawks Aloft completed the 24th year of raptor surveys in the Rio Grande and Estancia valleys of New Mexico. During winter surveys, our volunteers recorded a total of 756 raptors, along 462 miles of survey route—approximately 164 raptors per hundred miles. On the summer surveys, 1,628 raptors were recorded along 452 miles of survey route, for an average of 360 raptors per hundred miles.

Continued Good Times for the American Kestrel: American Kestrel numbers continue to be observed at all-time or near all-time highs in most areas (the two Armendaris Ranch routes are exceptions). On August 31, Chuck Brandt and Larry Rimer surveyed 49 American Kestrels on the South Socorro route—the highest number of kestrels recorded on any of our routes since surveys began in 1994. The previous high number for a single survey was 47 on the same route, in 2017. This year, both the McIntosh and Socorro areas also recorded the largest number of winter American Kestrels since surveys began.

SPECIES	AREA / YEAR	Birds/100 miles										Avg	Std. Dev
		08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18		
Bald Eagle	Belen	2	4	1	5	2	1	4	2	1	0	4	4
	Socorro	4	4	9	6	2	5	0	2	2	4	6	5
	Armendaris Lake	13	2	2	3	0	0	0	0	0	2	16	35
	Armendaris Grassland	0	0	0	0	0	0	0	0	0	0	0	0
	McIntosh	0	7	1	0	0	1	1	0	0	0	1	1
Golden Eagles	Belen	0	0	0	0	0	0	1	0	1	0	0	1
	Socorro	0	1	0	0	0	0	1	0	0	0	1	1
	Armendaris Lake	12	5	0	10	8	3	5	7	5	5	7	4
	Armendaris Grassland	15	13	5	10	13	8	12	0	10	10	9	4
	McIntosh	6	7	10	6	11	11	6	1	2	7	6	4
Northern Harrier	Belen	8	8	8	7	8	4	9	8	8	8	10	5
	Socorro	14	20	21	27	18	18	8	10	10	12	16	7
	Armendaris Lake	2	3	0	3	0	2	8	2	0	2	6	7
	Armendaris Grassland	12	3	8	8	2	8	5	3	12	7	7	3
	McIntosh	8	6	6	3	6	1	3	6	8	2	5	3
Red-tailed Hawk	Belen	48	55	60	66	67	72	93	66	70	91	66	11
	Socorro	70	56	96	69	58	81	88	65	81	89	81	18
	Armendaris Lake	15	17	5	10	3	20	45	45	20	18	36	40
	Armendaris Grassland	13	30	8	23	5	10	33	29	27	40	20	12
	McIntosh	24	24	15	44	25	22	12	26	16	36	20	8
Hough-legged Hawk	Belen	1	0	0	0	0	1	1	0	1	1	0	0
	Socorro	0	0	0	1	1	4	1	0	0	0	1	1
	McIntosh	2	6	5	4	7	8	2	6	6	2	5	1
Ferruginous Hawk	Belen	2	1	0	2	2	2	0	2	2	1	3	2
	Socorro	2	4	4	13	4	7	10	6	14	4	9	4
	Armendaris Lake	0	2	0	0	0	0	0	0	0	0	0	0
	Armendaris Grassland	3	7	2	3	0	0	5	0	5	2	4	4
	McIntosh	47	58	61	46	95	88	69	60	26	52	52	20
Prairie Falcon	Armendaris Grassland	5	0	0	0	10	3	13	10	13	2	6	6
	McIntosh	6	4	6	2	6	3	6	5	2	2	5	3
American Kestrel	Belen	50	37	19	30	26	32	55	60	53	45	47	12
	Socorro	65	22	49	54	45	73	91	86	120	142	80	25
	Armendaris Lake	5	3	0	8	0	5	18	1	8	5	5	5
	Armendaris Grassland	40	5	5	10	13	5	32	10	18	13	15	11
	McIntosh	27	17	27	24	21	22	31	30	26	43	25	6
Total Raptors	Belen	142	135	112	135	134	146	203	152	163	163	163	27
	Socorro	180	138	212	206	155	212	228	188	256	273	234	47
	Armendaris Lake	68	47	10	43	22	45	118	83	52	38	95	87
	Armendaris Grassland	122	83	58	63	63	38	113	76	98	83	78	24
	McIntosh	166	122	169	176	219	199	176	176	106	166	166	36

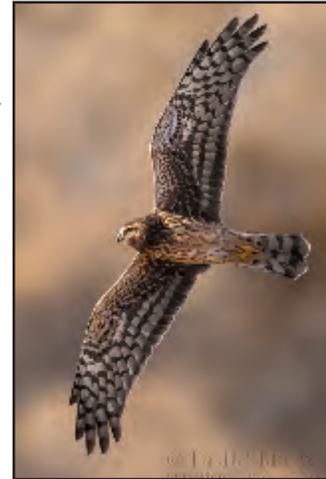
Swainson's Hawks: The number of Swainson's Hawks recorded this summer declined a bit from the record numbers recorded in 2017. Nonetheless, among all areas, numbers were at or above long-term averages. The exception was the McIntosh area—the number of Swainson's Hawks recorded there was 333 per 100 survey miles, far exceeding the previous number of 229 recorded just last year.

Record Survey: In June, Steve Youtsey and Martin Schelble recorded 183 raptors on the McIntosh north-south route. This is, by far, a record number and consisted of 111 Swainson's Hawks, 70 Turkey Vultures, and 2 unidentifiable raptors. What makes this even more unusual is that all observations were recorded in the first 10 miles of the 20-mile survey. (The survey was aborted due to unforeseen conditions.)

These surveys are accomplished entirely through the time, expertise, and vehicle miles (10,618 total miles) donated by the following volunteers: Chuck Brandt, Mary Bruesch, Ed Chappelle, Gill Clarke, Gail Garber, Roger Grimshaw, Jerry Hobart, Bonnie Long, 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.)

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.



SPECIES	AREA / YEAR	Birds/100 miles										Avg	St. Dev
		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018		
Turkey Vulture	Belen	176	118	154	161	131	94	122	90	173	121	117	41
	Socorro	242	196	198	181	239	140	139	167	125	153	216	68
	Armendaris Lake	185	173	243	190	214	185	192	177	177	148	209	41
	Armendaris Grassland	118	233	68	177	105	100	130	165	115	52	113	58
	McIntosh	178	127	219	104	146	107	119	129	183	238	148	53
Golden Eagles	Armendaris Lake	2	0	3	3	5	3	27	17	0	0	5	7
	Armendaris Grassland	0	2	0	2	0	0	0	2	3	2	1	1
	McIntosh	2	1	2	0	2	3	1	3	3	0	1	1
[No other areas have a significant number of Golden Eagles in the summer.]													
Swainson's Hawk	Belen	21	19	16	25	29	19	25	29	51	43	23	13
	Socorro	39	19	27	39	29	37	30	56	62	35	32	21
	Armendaris Lake	2	0	5	2	5	12	8	7	2	13	6	6
	Armendaris Grassland	110	58	48	72	73	45	113	43	117	78	77	26
	McIntosh	83	94	131	139	91	128	151	179	229	333	114	67
Red-tailed Hawk	Belen	1	1	1	2	2	2	2	4	3	11	3	3
	Socorro	0	2	2	1	1	2	4	2	1	1	1	1
	Armendaris Lake	5	7	3	2	4	3	5	15	12	8	6	3
	Armendaris Grassland	10	0	3	5	8	0	8	5	2	12	6	5
	McIntosh	7	7	9	4	5	6	3	9	11	7	6	3
Ferruginous Hawk	McIntosh	6	28	6	5	14	17	9	6	17	6	13	7
[No other areas have a significant number of Ferruginous Hawks in the summer.]													
Prairie Falcon	Armendaris Grassland	3	0	0	2	3	3	7	3	0	0	3	3
	McIntosh	2	2	1	1	2	1	2	0	2	0	1	1
[No other areas have a significant number of Prairie Falcons in the summer.]													
American Kestrel	Belen	24	10	11	12	10	24	32	21	59	36	27	14
	Socorro	75	31	32	42	61	56	87	83	153	152	71	31
	Armendaris Lake	22	5	5	5	8	8	62	5	7	7	11	13
	Armendaris Grassland	43	5	3	8	15	8	10	13	12	17	15	11
	McIntosh	9	12	21	29	19	17	38	55	53	39	24	12
Total Raptors	Belen	239	158	200	222	191	156	216	192	344	272	196	56
	Socorro	370	272	272	279	350	261	280	328	390	361	342	65
	Armendaris Lake	237	178	265	205	250	245	330	263	233	230	253	40
	Armendaris Grassland	350	345	142	292	236	165	338	302	308	195	258	81
	McIntosh	335	322	414	331	328	321	346	395	527	649	354	93

CONSERVATION

A Story of Drought: Raptor Monitoring at El Segundo Coal Mine

By Amanda Schluterv

Driving the unmarked roads while surveying at El Segundo Coal Mine can be unnerving, as they are all navigated based on memory. With views for miles, few landmarks for reference, and a sinuous road system, it is easy to become disoriented. As historical nest sites are checked and new sites are found, it becomes ever more apparent that drought has been severe in this area. Dry grasses crunch underfoot as we check nest after nest, each time finding emptiness within. In previous years, small mammals were often observed, but these animals were a rarity in 2018. With some of the lowest winter snowpack since at least 2000, it is no surprise that the grasses are dead and prey-base is absent.

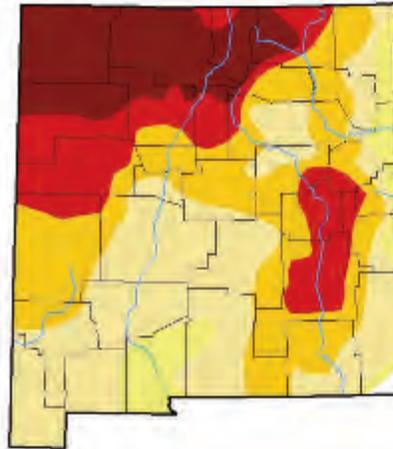
For the past 12 years, Hawks Aloft has monitored breeding raptors at El Segundo Coal Mine, managed by Peabody. El Segundo Coal Mine is located on property owned by Peabody, Elkins and Fernandez Cattle Companies, about 36 miles northwest of Grants, New Mexico. The mine has been active since 2008 and is one of the last active coal mines in the state. The mine uses surface blasting, draglines, bulldozers and other heavy equipment to excavate the coal deposits. It then ships the coal to several electric utilities and co-ops in the southwest via the BNSF railroad. In 2017, El Segundo Coal Mine produced 4.8 million tons of coal, employed 226 people and provided \$310 million in economic benefits.

The state of New Mexico requires active mines to monitor breeding raptor populations in order to evaluate the effects of mining operations on nearby wildlife populations. The mine is home to a wide variety of nesting raptors including Golden Eagle, Ferruginous Hawk, Red-tailed Hawk, Great Horned Owl, Long-eared Owl, American Kestrel, Prairie Falcon, Western Screech Owl, Burrowing Owl, and Common Raven. Monitoring for raptors and ravens begins in March, when species like Golden Eagles and Great Horned Owls have established territories and begin nesting. Other species, like ravens, hawks, and falcons are just establishing their territories and begin

nesting in late March or April. Surveyors searched the buffer zone surrounding the mine for raptors and examined areas conducive to nest building. The majority of habitat surrounding the mine is grassland with abundant pinon-juniper and large bluffs. After nesting territories were determined, subsequent visits were scheduled to coincide with the presence of nestlings and to determine nests were successful.

Winter precipitation for 2017 and 2018 was very low for all of New Mexico, but significantly lower for the northwestern portion of the state. The precipitation data collected at El Segundo Mine for November and December 2017 was 0 inches; January 2018 was 0.24 inches; February 2018 was 0.54; and March 2018 was 0.68 inches. Having little to no live grasses in the survey area affected prey populations. Our surveyors did not observe any prairie dogs for the entirety of the field season and noted a reduced number of other small mammals. This had a significant impact on the breeding raptors and ravens in the area. Only 12 active territories were located: two American Kestrel, four Common Raven, two Great Horned Owl, two Ferruginous Hawk, and two Red-tailed Hawk. Only five active nests were monitored: One Ferruginous Hawk, three Common Raven and one American Kestrel. Of these, only three nests successfully fledged young: Two Common Raven and one American Kestrel. Comparatively, in 2017, we had 15 active nests with 13 of them successfully fledging young.

Historical data have shown that negative



Caption

effects of drought are not typically seen during breeding raptor populations until one or two seasons after the drought, but this year's data seems to suggest that low precipitation over winter can cause immediate impacts to breeding raptor populations. Perhaps the prey population had not fully recovered from previous years of drought and had an immediate impact on breeding raptors. The cumulative data will be analyzed to look at long term raptor monitoring trends in the area.

Monitoring at El Segundo Coal Mine will continue for the year of 2019. This long-term study provides important information about breeding raptors in the southwest. The drought outlook for northwestern New Mexico is predicted to persist through December of 2018 and, if so, next year's breeding season might be just as dire. Thank you to David Mayerson, Glenda Moore, and Lisa Schluter for volunteering their time to help monitoring raptors at El Segundo mine. ■

Monitoring Raptors on the Upper Rio Grande Gorge and San Antonio Gorge

By Amanda Schluter

Listening to static on the radio, we pattered down bumpy dirt roads headed towards the Rio Grande Gorge. With views of the Sangre de Cristo, Ute, and San Antonio Mountains that extend up to 50 miles, the vastness of the landscape of the Rio Grande del Norte National Monument (RGDN) was humbling. Along with the amazing views, there is a variety of megafauna too -- bighorn sheep, elk, pronghorn, coyotes, and mountain lions. When we reached the end of the road, we got out and meandered through sagebrush, making our way closer and closer to the edge of the gorge. As the day and our work progressed, the winds picked up to speeds that made standing nearly impossible. After hours of surveying in the wind and the heat, we made our way back to camp, heating our dinners and jovially talking over beers, before collapsing in our tents with Great Horned Owls serenading us to sleep. We woke up the next morning to the sound of birds singing and started surveying all over again.

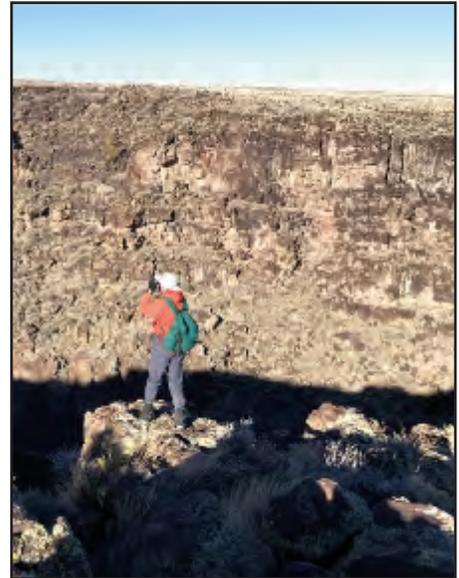
Hawks Aloft has monitored raptors and corvids in the RGDN since the early 2000's. The survey area includes 66 kilometers of the upper Rio Grande Gorge from the New Mexico-Colorado border south to Pilar, NM, as well as 6 miles of the San Antonio gorge, further to the west. At the state line, the gorge is narrow and very shallow. But, as you travel south, the gorge widens to between 0.8 and 1 mile at the rim and can be over 240 meters deep. Raptors that nest along the upper Rio Grande gorge include Golden Eagle, Red-tailed Hawk, Swainson's Hawk, Ferruginous Hawk, Prairie Falcon, Peregrine Falcon, American Kestrel, Burrowing Owl and Great Horned Owl.

Starting in March, Hawks Aloft biologists and volunteers drove and hiked along both sides of the Upper Rio Grande and San Antonio gorges in search of raptors and corvids setting up their territories. Golden Eagles and Great Horned Owls began nesting in late February and early March, requiring an early start to the project when snow was still falling in northern New Mexico. Red-tailed Hawks and falcons

nest later in the season and their young don't fledge until late-June through early-July. Once birds began nesting, visits were scheduled periodically throughout the breeding season to determine the reproductive outcome of each territory. This was often easier said than done. Falcon nests are notoriously hard to locate because they generally use a scrape on a ledge that is often hidden in a cliff face. Hawk nests, while typically easier to spot, can blend in when viewing them from over a mile away. Getting nestling numbers also can be difficult because they are often hunkered down in the bottom of the nest. Observers often spend forty minutes to an hour at each vantage point in order to get a complete understanding of the raptor territory.

In 2018, we monitored 16 active nests and 10 occupied territories. By comparison, there were 18 active nests and 12 occupied territories in 2017. In 2005, the most productive year, we monitored 24 nests, and the lowest number of active nests was recorded in 2003 with 12. Among the active nests in 2018, 13 successfully fledged young. Of these, just a single nest fledged more than one offspring this year. Additionally, for Red-tailed Hawk, of the five documented active nests, only three of pairs successfully fledged young. We observed Great Horned Owls in 2018 but did not locate any nesting birds. We also did not detect any Burrowing Owls in the study area, unlike previous years. In 2017, 12 of the 18 nests successfully fledged young with one nest fledging 3 chicks, 7 nests fledging 2 chicks, and 4 nests fledging one chick. Although the data need further analysis, it seems likely that the dry winter had a substantially negative impact on breeding raptors in 2018.

Monitoring breeding raptors in the Rio Grande del Norte will continue in 2019. It will be interesting to see the amount of snow New Mexico gets over this winter and how it affects the breeding raptors during the upcoming season. Thank you to Larry Rimer, Bob Kipp, Roger Grimshaw, and Susan Russo for volunteering their time and mileage. ■



Caption

RESEARCH

Raptor Monitoring in the Middle Rio Grande Bosque

By Katrina Hucks

Summer provides a unique opportunity for interested people to volunteer with Hawks Aloft. One dedicated group in particular covers many miles of bosque each year searching for nesting raptors. These surveyors return time and again to watch raptors raise their young. This year, 2018, was the 15th consecutive year of raptor monitoring in the Middle Rio Grande bosque.

The Middle Rio Grande bosque raptor monitoring project surveys roughly 70 miles of bosque habitat. Raptors often reuse the same nests, and these nests remain on the landscape well after the breeding season concludes. Our long-term data of these nests stretches back more than a decade, to 2004. Surveyors visit an area of the bosque at least once per survey period during three consecutive 24-day periods. After the third period, surveyors focus their efforts only on active nests in their area. Surveyors look for evidence of active nesting, such as feathers, whitewash, new sticks on established nests, and newly constructed nests.

Multiple surveyors found 2018 to be the least productive year recorded in their survey areas. For wildlife in general, 2018 was a rough year, but raptor populations in particular suffered. Drought-stricken areas proved hostile environments in which to raise offspring. Additionally, there were multiple fires in the bosque during nesting season. Fires directly affect wildlife by burning and altering habitat, smoke pollution, and by reducing the prey base. This year was significant in that drought effects were widespread. The 2018 drought season started with reduced snowpack accumulation in the southern Rocky Mountains (NIDIS 2018; USDA 2018). We saw minimal winter precipitation in Albuquerque as well, resulting in a drier spring leading into an even drier summer (NIDIS 2018; USDA 2018). Monsoons provided some relief, but did not allow all species, prey and predators alike, to recover.

Despite the harsh environmental conditions, the nesting season was successful for many raptor pairs. This year was the first year that Osprey were recorded nesting in the Middle Rio Grande bosque. The pair observed built a nest in the Sandia Lakes area of the Pueblo of Sandia, adjacent to bosque habitat, where they would have plenty of fish available.

The species that nested in the bosque this year included Cooper's Hawk, Great Horned Owl, American Kestrel, Swainson's Hawk, Common Black Hawk, and Osprey. Over the last several years, Common Black



Caption

Hawks have been nesting in the bosque south of Albuquerque, and have started nesting in the greater Albuquerque area. Several other species

such as Common Raven, Peregrine Falcon, and Red-tailed Hawk were present in the bosque this season, but no nests of these species were found.

In 2018, 63 territories and active nests were documented throughout the study area. Three raptor pairs were present in various areas of the bosque throughout the nesting season, but never initiated a nest. Of the 60 pairs that initiated nests, 14 nests failed, producing no chicks. The remaining 46 nests fledged 1-4 chicks.

Compared to previous years, this nesting season was less productive. The 60 active nests initiated in 2018 represented a substantially lower number than each of the previous four years (2014-2017), when there were 86, 94, 85, and 73 active nests, respectively. Additionally, no corvid nests were found, species that historically have been fairly common in the bosque.

The Middle Rio Grande bosque nest monitoring project is sponsored by the United States Army Corps of Engineers and TetraTech. We thank the dedicated team of staff and volunteers that check these nests each year: Wendy Brown, Ed Clark, Charles Cummings, Vicki Dern, Trevor Fetz, Gail Garber, Joan Hashimoto, Kay Jackson, Bob Kipp, Maurice Mackey, Arlette Miller, Natalie Nunez, David Parsons, Chellye Porter, Larry Rimer, Renee Robillard, Allison Schacht, Dianne Schlies, Amanda Schluter, Mary Walsh, and Christie Wilcox. ■



Caption

By Amanda Schluter

High in the Jemez Mountains is the Valles Caldera National Preserve, a unique and magnificent place that is truly a must-see for anyone that gets the opportunity. It has amazing vistas of vast grassland valleys encircled by mountains and cut through by meandering streams, making these expansive lands not just a national preserve, but a national treasure! Visitors can fish in San Antonio Creek and the East Fork of the Jemez River, check out the historical cabin district where major motion pictures have been filmed, and hike the north and south rims of the Caldera with views of Valle Grande and the surrounding mountains. In addition to the spectacular scenery, a variety of wildlife call the Caldera home including elk, deer, prairie dogs, mountain lions, bears, badgers, and a variety of birds. The Valles Caldera was formed about 1.25 million years ago after a volcanic eruption, creating vast mountain meadows, rugged volcanic hills, and mountain streams. In 1876, the Baca family acquired the property through a land grant. It changed ownership numerous times over the years until the Valles Caldera Preservation Act of 2000 was signed by President Clinton, creating the preserve.

The second largest fire in New Mexico's history, the Los Conchas fire, burned 150,000 acres in 2011, including lands within the Santa Fe National Forest, the Valles Caldera National Preserve, and the pueblos of Jemez and Santa Clara and threatened the communities of Cochiti and Los Alamos. The following year, the Southwest Jemez Collaborative Forest Restoration Project (CFLRP) was created—a long-term forest and watershed restoration strategy to increase the landscape's resilience to severe wildfire and other large-scale disturbances. To this end a diverse cadre of partners, work collaboratively to balance economic, cultural,

Response to Wildfire by Avian Communities in the Southwest Jemez CFLRP

social and ecological values while improving the health of the ecosystem. More than 40 stakeholder groups worked together to develop the forest landscape restoration strategy.

For the last seven years, Hawks Aloft has conducted avian point count surveys in the Preserve and the Jemez Ranger District of the Santa Fe National Forest as part of this project. These surveys consist of observers going to designated points, where they spend ten minutes observing and recording all birds that are seen and heard within a 120 meter buffer. Each point is surveyed three times between mid-May and mid-July. The points are located in a variety of habitats including ponderosa pine, mixed conifer, riparian, mountain meadow and grassland. Since 2012, we have established a total of 201 points, including 53 in areas burned during the 2011 Los Conchas Fire, the 2013 Thompson Ridge Fire, and the 2014 Pino Fire.

In 2018, we surveyed 11 routes comprising 116 points. Extreme fire danger due to exceptionally dry winter conditions caused both the Valles Caldera National Preserve and the Santa Fe National Forest to shut down completely from June 6 to July 16. Anticipating these closures, surveys were pushed up in May, enabling us to complete two rounds prior to the closure. Data for 2018 have not yet been analyzed.

Cumulatively, from 2012 to 2017, overall bird densities have significantly decreased from 2.09 birds/ha in 2012 to 1.54 birds/ha in 2017 (Turkey-Kramer Test). The habitat types with the highest cumulative densities were mixed conifer (1.94 birds/ha), mixed conifer burn (1.90 birds/ha), riparian (1.74 birds/ha), and ponderosa pine (1.74 birds/ha). Habitat types with the highest species richness were riparian (78 species), ponderosa pine (74 species), mixed conifer (63 species), mixed conifer burn (55 species), and ponderosa pine burn (55 species). Overall avian richness varied among years, but was highest in 2014 with 84 species and lowest in 2015 with 70 species.

Banco Bonito, a site located in the far southwestern corner of the Caldera, is of particular interest because it has points that have been treated with thinning and controlled burns located directly adjacent to points that have not been treated, allowing direct comparison. Preliminary data show that understory treatment to this ponderosa pine forest may have a net benefit to avian density with 1.97 birds/ha at treated points compared to 1.54 birds/ha at untreated points. But, avian richness was higher at untreated points (47 species) than treated points (41 species).

A total of 117 bird species were recorded from 2012 to 2017 in the study area, including 44 species of conservation concern as scored by

see **Jemez** page 21 ▶

RESEARCH

Collaboration with PNM Resources: The Energy Sector

By Katrina Hucks

In 2018, we added something new to the suite of projects our biologists work on during the summer field season. PNM Resources contracted Hawks Aloft to conduct a comprehensive survey of transmission towers between Clines Corners and Clovis. This line supplies power to much of eastern New Mexico, and to other industries, such as wind energy facilities. In early 2018, it became apparent to the company that various bird activity may have caused power outages across the line. When raptors defecate, they create a long, viscous “stream” of excrement. These streams can land on energized parts of the structure and cause a power outage. Similarly, dangling material in raptor and corvid nests can become dislodged and can cause outages. When building nests, corvids will use varied available materials, such as orange twine and baling wire, that are widely abundant in agricultural landscapes, such as much of eastern New Mexico. These materials can dangle from the nests and create other problems. PNM asked us to survey the transmission structures to determine any conditions that could be causing outages along this line.

Surveyors included Larry Rimer, Trevor Fetz, Amanda Schluter, Lisa Schluter, Ellie Althoff, interns Adam Johnson and Ian Pollitt, and myself. The survey targeted nesting raptor and corvid activity as well as birds perching on towers. In this area, there were very few trees available for nesting and perching, making these structures especially attractive to birds. We surveyed 680 structures covering over 170 highway miles, monitoring activities and observing structures, many of which contained multiple nests. These structures were large, with ample platforms for nesting. The transmission line often did not parallel major roads, so 4x4 vehicles were necessary to complete the surveys.

Surveying in these areas provided ample opportunities for wildlife viewing, including raptor species: Red-tailed Hawk, Swainson’s Hawk, Golden Eagle, Common Raven, Chihuahuan Raven, Great Horned Owl, and Burrowing Owl. Many other bird species also were recorded, including ones not often seen in New Mexico, like Red-headed Woodpecker, Scissor-tailed Flycatcher, and Northern Bobwhite. We also spotted pronghorn, black-tailed jackrabbit, mule deer, American badger, round-tailed horned lizard, western box turtle, bull snake, western diamond-back rattlesnake and more! We often found ourselves in conversation with local ranchers about the purpose of the project and the importance of raptors in the landscape.

The surveys themselves presented unique challenges—to navigate the area, we used GPS, maps, atlases, and exploring on foot to discover the most efficient ways to monitor the lines. The roads needed to access



the sites were often unmaintained, which meant that surveys during the monsoon season were often muddy. Curious cows and horses were constant companions when searching for raptor and corvid nests on the structures.

Caption

Initial analysis shows that outages may correlate with areas of high Red-tailed Hawk activity, a common nesting raptor on these structures. We found several nests with dangling twine, wire, or sticks that may eventually become a problem, but the major issue seems to be concentrated in areas where streams of excrement from raptor species hit the conductors of the transmission structure. We’re looking forward to knowing if these correlations will change as more data are added.

Despite the challenges of the project, we were rewarded with incredible views, awe-inspiring storms, gorgeous sunrises and sunsets, and fascinating experiences with New Mexico’s wildlife. Additionally, this opportunity to collaborate with the energy sector on important issues was a valuable experience for all of us, and illustrated how birds can adapt to the presence of humans in the environment. We look forward to collaborating with PNM Resources again in the future! ■

Species Profile

An Anthropogenic Allergy: The Story of the Ferruginous Hawk

By Ellie Althoff, Amanda Schluter, and Katrina Hucks

Soaring above the expansive vistas of western grasslands and shrublands, a regal, pale hawk scans the earth below in search of prey. His keenly sharp eyes lock on a sudden movement—an unsuspecting prairie dog. Diving downward, he swiftly captures his prey, and flies directly to an isolated tree with its base rubbed bare by cattle, resembling a lollypop. In the upper branches of the tree rests a gigantic, basket-shaped nest, where the pale hawk delivers the prize to his larger, dark-morph mate. She tears the food into bite-sized pieces and carefully feeds their young, not yet visible above the lip of the nest. This huge nest has been added to each year, hosting many generations of Ferruginous Hawks (*Buteo regalis*), and will continue to do so until the tree dies. It is apparent as the young grow that some will resemble their father with pale flight and contour feathers, while others will take after their dark-morph mother. In a few short weeks, the young will fledge and another generation of Ferruginous Hawks will enter the world.

The largest hawk in North America, Ferruginous Hawks capture the attention of people and prey alike. Boasting a grey head, mischievous grin, uniform white or dark brown underparts, and the rusty-colored shoulders and legs for which it is named, the Ferruginous Hawk is a perfect fit for the western grasslands it inhabits. A formidable predator to many mammalian species, their interactions with humans have warranted concern and conservation action in the past. Populations of Ferruginous Hawks in Canada declined 64% from 1992-2005 (COSEWIC 2008). In the United States, several states have historically listed Ferruginous Hawks as a species of special concern (Ng et al. 2017). Currently, populations of Ferruginous Hawk are ranked as stable and categorized as Least Concern by the International Union for Conservation of Nature (IUCN). Despite their lack of current ranking, it is important to understand how human interactions affect this species and how we can best protect them for the future.

Ferruginous Hawks prey upon a multitude of species such as rabbits, squirrels, prairie dogs, and pocket gophers while supplementing their diet with a collection of birds, reptiles, and insects. They capture prey using a variety of strategies, including hovering above the ground, searching on the wing, hunting from a nearby perch, or stalking prey on the ground. Their diet, rich in mammalian prey, can be negatively affected by rodenticide use. According to Vyas et al. (2016), when faced with a choice between an untreated sub-colony of prairie dogs and a sub-colony treated by Rozol poisoning, Ferruginous Hawks heavily favored



treated individuals, likely because they were easier to capture. Rodenticides are popular in agricultural lands that formerly were prime Ferruginous Hawk habitat, and those that continue to pursue prey in these areas, are susceptible to secondary poisoning. This is especially concerning given the nearly 44 million acres of farmland in New Mexico.

Agricultural development is not the only anthropogenic factor that negatively affects Ferruginous Hawk. Highways, recreational development, and industry also have caused varying levels of disturbance to the rust-colored raptor. Whether it is a car hurtling at 75 mph or a person wandering on a trail below their nest, these interactions carry energy costs for Ferruginous Hawks. Disturbance to all species of birds, including Ferruginous Hawk, reduces the time and energy necessary to maintain their health and that of their offspring; however, not all disturbances are created equal. Nordell et al. (2017) discovered that Ferruginous Hawks tend to initiate flight more frequently when approached by humans on foot than when located near a high traffic area, hypothesizing that this may have been learned behavior from parents or that hunting practices caused fearful individuals to be more successful, demonstrating just how pervasive human impacts can be to this species throughout time.

Ferruginous Hawks occur in the western United States and Canada, where grasslands are prevalent. The abundant grasslands of New Mexico host one of the southernmost breeding grounds for this species. The



Caption

see **Species Profile** page 23 ▶

SPECIES PROFILE



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

On staff at Hawks Aloft are 30 permanently injured, non-releasable birds of prey. Some have been injured by an impact with a car, some have collided with powerlines—and one corvid and one Turkey Vulture were imprinted from an early age, never learning how to live among their own species. 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 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 bird call
 - a printed copy of your adopted bird's unique story and a biological description of its species
 - a one year Hawks Aloft membership (which 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 who share these values. If you choose to make a raptor adoption a gift to a loved one, 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 at hawksaloft.org/adopt-a-raptor-program

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

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

YES! YES! YES! YES! YES! YES! YES! YES! YES! 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	Northern Saw-whet Owl	\$35	American Crow	\$35
Merlin	\$50	Cooper's Hawk	\$50	Great Horned Owl	\$60	Barn Owl	\$60
Red-tailed Hawk	\$75	Swainson's Hawk	\$75	Prairie Falcon	\$100	Ferruginous Hawk	\$100
Flammulated Owl	\$100	Rough-legged Hawk	\$100	Spotted Owl	\$100		

**Adopt All
25 Birds
\$1000**

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

After years of working in journalism and later as a customs broker, Arlette Miller had the life-changing experience volunteering for a research project to monitor the Cooper's Hawks residing in her neighborhood. A lifelong affinity for hiking, camping and the outdoors made her a natural fit for this manner of research. She quickly took to it and was soon introduced to Hawks Aloft where she began assisting with more field surveys, and with a broader spectrum of bird species. As Arlette became more familiar with New Mexico's raptors, she came to admire their "intelligence and fierceness," as she put it. After her recent retirement—in-between jewelry making sessions, another hobby of hers—she has taken on the role of coordinating many of our rescue operations as the Raptor Rescue Dispatcher. Arlette's is the voice you'll likely hear on the other end of the line if you dial through to our 24/7 hotline for birds in need. One Saturday afternoon, Arlette took the time to unpack her experiences at Hawks Aloft and share what she enjoys about the demanding—but rewarding work—of wildlife rescue.

What got you hooked working with birds?

I found that in doing bird surveys, I really enjoyed being in the bosque as much as learning about the birds. I've always been into just being outdoors—camping and hiking and that sort of thing. Once you start becoming attuned to birds, knowing what species they are, it feels like you're getting a real education.

What do you like about the Raptor Rescue side of things?

I think I learn something every day in different rescue situations. Just getting the birds to the right kind of help, spreading the word about Hawks Aloft and letting people know that we're available is really great for me. People are so dedicated to getting help for injured birds. It's real-



Caption

Arlette Miller

ly impressive that they care so much. I really want to help those people. You see so much cynicism these days, so much division. It's nice to see people come together to rescue a bird.

Is that—seeing people rally around an animal—what keeps you motivated?

Yeah, and it helps that all the birds are so cute. Also, the learning factor is really motivating. And, I don't mind driving, which is a good thing, because I drive all over the state! It's good to have a purpose when you're retired.

Do you have a favorite bird species?

Whatever I'm watching at the moment. They're all fascinating when you observe and learn about them. It's interesting to get a sense of how their minds work—even when I just see them hunting in my backyard, like a Cooper's Hawk eyeing some sparrows at the bird feeder.

How about a favorite place to hike and camp in New Mexico?

The Apache Kid Wilderness Area is really cool. It's usually deserted, which is my favorite thing about it. You see turkeys, bears, and other animals. It's really beautiful.

Did you ever expect that you'd be doing this with your life?

No! But it's wonderful to see the program evolving along with the organization. I'm really proud to be a part of it and offer the help that I do. ■



RETROSPECTIVE

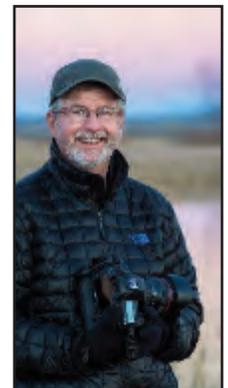
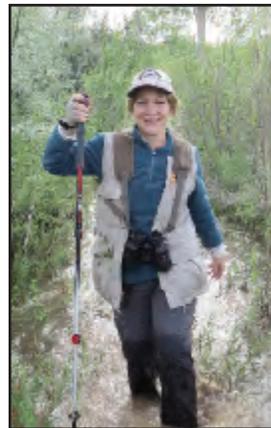
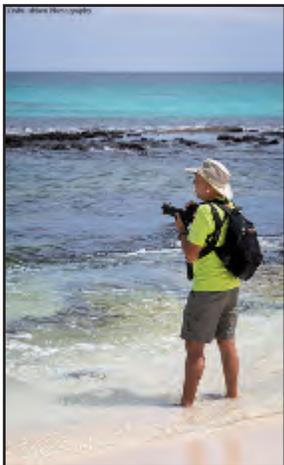
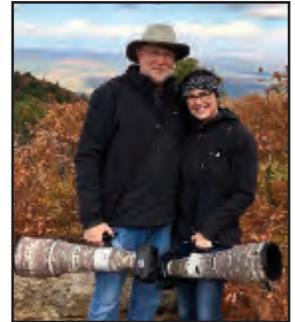
Twenty-Five Years!

A Restrospective of Our First Quarter Century!

By Gail Garber

It seems like yesterday that the original founders gathered around my rickety kitchen table to form Hawks Aloft – the little organization that faced long odds. Thanks to funders, Jerry and Sally Mayeux, Blue Sky Natural Beverage Company, and the Frost Foundation, we didn't just hang on; we flourished. As I began drafting this essay, I realized that the story would be impossibly long and boring-beyond-belief to summarize each year. The old saying, "A picture is worth a thousand words!" is absolute; in the interest of this philosophy, we will let photos tell the story.

100 Words = 25 years! Enjoy!





RETROSPECTIVE



RESEARCH

page 3 **Bosque Drought**

2011-

2017, all but one either included a significant non-native vegetation component or were subjected to a recent catastrophic disturbance (understory clearing or fire). During summer, pure salt cedar (*Tamarix* spp.) stands (classified as SC 5) supported both higher avian density and richness in 2011-2017 than 2004-2010. Pure stands of Russian olive (*Elaeagnus angustifolia*; classified as RO 5) also supported a higher density in 2011-2017, but lower richness. Stands comprised of mature, burned cottonwood (*Populus fremontii*) with relatively sparse understory (classified as BURN 2) also supported higher density and richness in 2011-2017. Finally, mature cottonwood stands with a mechanically cleared understory (classified as C-2 artificial) supported higher summer richness (but lower summer density) in 2011-2017. During winter, SC 5, C-2 artificial, and mature cottonwood stands with a mulberry (*Morus* spp.)-dominated understory (classified as C/MB 1) supported both higher avian density and richness in 2011-2017. Winter avian richness also was higher in 2011-2017 in BURN 2, mature cottonwood stands with a Russian olive-dominated understory (classified as C/RO 1) and marsh habitat with open water (classified as MH 5-OW). The reasons for higher avian use in these C/S types during post-drought years are unclear. But, there are a couple of likely possibilities. First, understory clearing had essentially ceased on our survey routes by the onset of drought. Thus, the slow, but steady re-growth of understory vegetation likely attracted increasing numbers of birds to C-2 artificial sites. Similarly, vegetation growth at BURN 2 sites during years following the fires attracted increasing numbers of birds. Second, at sites incorporating substantial components of non-native vegetation (especially salt cedar and Russian olive), it is possible that the ability of these plants to better tolerate exceptionally dry conditions than native plants attracted increasing numbers of birds. This was particularly apparent in SC 5, where the increased number of birds in recent years has been noticeable during surveys even though the increases have not been statistically significant. SC 5 was the only C/S type where both avian density and richness were higher in summer and winter in 2011-2017.

Although decreased avian use in 2011-2017 was the predominant trend at both the study-area and individual C/S type levels, the response of individual bird species was more variable. Species-level changes were analyzed by comparing detection rates (total number of detections divided by total number of surveys) for each species for pre- and post-drought years. Because the data for individual species were not normally distributed, non-parametric Wilcoxon signed-rank tests were used to determine statistical significance. A total of 252 bird species were documented during the first 14 years of surveys. But, the majority of these species were rarely encountered, making it inappropriate to use them in any comparisons of pre- and post-drought density levels. The best information came from the most common species. During summer, 17 of the 25 most common species were detected at higher rates in 2004-2010 than 2011-2017, with the decrease in 2011-2017 being significant for 11 of those species (Wilcoxon signed-rank tests; see Table 1). In contrast, eight of the 25 most common summer species were detected at higher rates in 2011-2017, with two species increasing significantly. Among the 10 most common summer species, six decreased significantly in 2011-2017 (Black-chinned Hummingbird, Spotted Towhee, Blue Grosbeak, Mourning Dove, Lesser Goldfinch, and Black-headed Grosbeak) and one (Yellow-breasted Chat) increased significantly in 2011-2017. Among the species we have confirmed breeding in the bosque, 35 experienced significant changes in detection rates between periods, with 21 species significantly decreasing and 14 significantly increasing. A complete list of all 46 species that experienced significant changes in detection rates during summer between 2004-2010 and 2011-

Species	DR 1	DR 2	Change	B or M
Black-chinned Hummingbird	16.967	12.345	down	B
Spotted Towhee	6.850	6.267	down	B
Blue Grosbeak	3.937	3.118	down	B
Yellow-breasted Chat	2.878	3.493	up	B
Mourning Dove	3.515	2.834	down	B
Lesser Goldfinch	1.837	1.643	down	B
Black-headed Grosbeak	2.053	1.341	down	B
Bush-tit	1.291	1.816	up	B
Red-winged Blackbird	1.365	0.892	down	B
Brown-headed Cowbird	1.398	0.850	down	B
Downy Woodpecker	0.970	0.790	down	B
Northern Flicker	0.579	0.428	down	B
Wilson's Warbler	0.606	0.354	down	M
Western Wood-Pewee	0.285	0.414	up	B
Cliff Swallow	0.154	0.405	up	B
American Kestrel	0.245	0.314	up	B
Virginia's Warbler	0.384	0.173	down	M
American Coot	0.422	0.129	down	B
Gray Catbird	0.358	0.190	down	B
Eastern Bluebird	0.175	0.372	up	B
Bullock's Oriole	0.309	0.236	down	B
MacGillivray's Warbler	0.242	0.206	down	M
Rufous Hummingbird	0.284	0.108	down	M
Ring-necked Pheasant	0.262	0.122	down	B
Western Tanager	0.203	0.173	down	M
White-winged Dove	0.109	0.235	up	B
Lark Sparrow	0.192	0.115	down	B
European Starling	0.107	0.162	up	B
Lazuli Bunting	0.172	0.083	down	B
Hairy Woodpecker	0.077	0.127	up	B
Western Bluebird	0.004	0.155	up	B
Great Blue Heron	0.074	0.053	down	B
Snowy Egret	0.073	0.039	down	B
Calliope Hummingbird	0.082	0.007	down	M
Bank Swallow	0.055	0.023	down	B
Ladder-backed Woodpecker	0.033	0.045	up	B
Mountain Chickadee	0.041	0.025	down	B
Lucy's Warbler	0.001	0.053	up	B
Blue-gray Gnatcatcher	0.030	0.014	down	M
Red-breasted Nuthatch	0.025	0.017	down	M
Olive-sided Flycatcher	0.019	0.012	down	M
Cassin's Sparrow	0.027	0.004	down	B
Townsend's Warbler	0.018	0.005	down	M
Verdin	0.000	0.015	up	B
Belt's Vireo	0.000	0.008	up	B
Black-throated Gray Warbler	0.007	0.001	down	M

Table 1. List of summer species experiencing a significant change in detection rates between 2004-2010 and 2011-2017. Wilcoxon signed-rank tests were used to make statistical comparisons between time periods. Species are listed in descending order from most common to least common based on their abundance across all years of the study. DR1 = detection rate during 2004-2010; DR2 = detection rate during 2011-2017; B = species was documented breeding in the study area; M = species was only documented as a migrant in the study area. In the change column, "down" indicates a species significantly decreased in 2011-2017 relative to 2004-2010 and "up" indicates a species significantly increased in 2011-2017.

See **Bosque Drought** page 19 ▶

Species	DR 1	DR 2	Change	R or W
Dark-eyed Junco	8.779	5.368	down	W
White-crowned Sparrow	3.633	5.425	up	W
American Robin	6.590	2.323	down	R
Spotted Towhee	3.079	2.856	down	R
Red-winged Blackbird	1.821	1.133	down	R
Northern Flicker	1.401	1.202	down	R
Bushtit	0.721	0.898	up	R
Yellow-rumped Warbler	0.906	0.732	down	W
Black-capped Chickadee	0.837	0.635	down	R
American Goldfinch	0.810	0.551	down	W
Mourning Dove	0.570	0.744	up	R
American Wigeon	0.664	0.418	down	W
Hermit Thrush	0.619	0.419	down	W
Downy Woodpecker	0.518	0.452	down	R
Western Bluebird	0.314	0.628	up	R
Eastern Bluebird	0.373	0.477	up	R
Ruby-crowned Kinglet	0.422	0.382	down	W
Cedar Waxwing	0.449	0.256	down	R
Lesser Goldfinch	0.185	0.390	up	R
White-winged Dove	0.192	0.359	up	R
Mountain Bluebird	0.375	0.086	down	W
Pine Siskin	0.260	0.161	down	W
Gadwall	0.237	0.163	down	W
Wood Duck	0.071	0.274	up	R
Marsh Wren	0.088	0.198	up	W
Mountain Chickadee	0.217	0.069	down	R
Northern Shoveler	0.063	0.179	up	W
Brown Creeper	0.154	0.075	down	W
Ring-necked Pheasant	0.138	0.063	down	R
White-throated Sparrow	0.130	0.070	down	W
Northern Pintail	0.134	0.039	down	W
American Kestrel	0.048	0.101	up	R
Great Blue Heron	0.074	0.053	down	R
Black Phoebe	0.036	0.063	up	R
Ladder-backed Woodpecker	0.017	0.030	up	R
Common Merganser	0.032	0.012	down	W
Say's Phoebe	0.016	0.026	up	R
Verdin	0.000	0.008	up	R

Table 2. List of winter species experiencing a significant change in detection rates between 2004-2010 and 2011-2017. Wilcoxon signed-rank tests were used to make statistical comparisons between time periods. Species are listed in descending order from most common to least common based on their abundance across all years of the study. DR1 = detection rate during 2004-2010; DR2 = detection rate during 2011-2017; R = resident species; W = wintering species only. In the change column, "down" indicates a species significantly decreased in 2011-2017 relative to 2004-2010 and "up" indicates a species significantly increased in 2011-2017.

2017 is provided in Table 1. A total of 32 species significantly decreased during summer and 14 species significantly increased.

Of particular note among breeding species that significantly increased in 2011-2017 are several that were virtually absent from the bosque during summer when we began the study. These include Eastern Bluebird, Western Bluebird, Lucy's Warbler, Verdin, and Bell's Vireo. Both bluebird species are now regular breeders in areas of the bosque with a mature cottonwood canopy and sparse to moderate understory and in burned areas with cottonwood snags. Except for 2005, we had no Western Bluebird detections during 2004-2010. Eastern Bluebird was present during summer at very low levels in 2004-2006, but numbers began increasing in 2007. Other than single detections of Lucy's Warbler in 2007 and Bell's Vireo in 2009, we did not detect either species during 2004-2010. Similarly, we did not have any Verdin detections during summer prior to 2013. All three of these species are expanding their range northward in New Mexico, presumably due to climate change. Lucy's Warbler is now a common breeder throughout the southern portion of our study area as far north as Los Lunas. Verdin has been increasing in the bosque since 2013, with breeding likely as far north as Belen. Bell's Vireo has been present in small numbers throughout the study area (with rare breeding documented) since 2014. Also notable is the change in trends among breeding woodpecker species. Both Downy Woodpecker and Northern Flicker significantly decreased in 2011-2017, while Hairy Woodpecker and Ladder-backed Woodpecker significantly increased. Reasons for the dichotomy in trends between these four woodpeckers are



Caption

unclear, but unfavorable conditions at higher elevations may have driven Hairy Woodpeckers and Ladder-backed Woodpeckers into the bosque. And, interspecies competition may be a factor in the decreases of Downy Woodpecker (which is the smallest) and Northern Flicker (which is relatively meek).

Among the 25 most common wintering species, 17 have decreased since 2004-2010, with 12 decreasing significantly, while eight have increased, including five significantly (Wilcoxon signed-rank tests; see Table 2). Five of the 10 most common wintering species experienced significant changes in detection rates between 2004-2010 and 2011-2017, with four species decreasing (Dark-eyed Junco, American Robin, Spotted Towhee, Red-winged Blackbird) and one increasing (White-crowned Sparrow). It is notable that Spotted Towhee and Red-winged Blackbird had significantly lower detection rates in 2011-2017 during both summer and winter. Other resident species that significantly decreased during both seasons included Northern Flicker, Downy Woodpecker, Ring-necked Pheasant, Great Blue Heron, and Mountain Chickadee. In contrast, seven species (Bushtit, Eastern Bluebird, Western Bluebird, White-winged Dove, American Kestrel, Ladder-backed Woodpecker, Verdin) significantly increased in 2011-2017 during both summer and winter. In two cases (Mourning Dove and Lesser Goldfinch), species significantly increased during winter in 2011-2017, but significantly decreased during summer in 2011-2017. A complete list of all 38 species that experienced significant changes in detection rates during winter between 2004-2010 and 2011-2017 is provided in Table 2. A total of 23 species significantly decreased during winter and 15 species significantly increased.

There are a number of factors that impact the avian community in the middle Rio Grande bosque and, in some cases, the results of these factors are variable among species. Further, the reasons behind

See **Bosque Drought** page 27 ▶

EDUCATIONAL AMBASSADOR



By Katrina Hucks

In 2017, we had a whopping 150 rescues. For the year of 2018, we are on a trajectory to blow that number out of the water! In the last four years, the Raptor Rescue Hotline has become a well-known resource for New Mexico and even far beyond—we've received calls from states as far as New Jersey! The hotline provides a valuable service to injured birds and those concerned for their welfare. In 2018, we fielded calls about everything from hummingbirds and doves to herons, as well as the raptors, corvids, and roadrunners we've always handled. We have a crew of dedicated volunteers that will drive day or night across the state of New Mexico to rescue these birds. A huge thanks goes out to Arlette Miller, our Raptor Rescue Dispatcher, for manning the hotline and personally rescuing many of the birds.

The year started out steadily, although it quickly became apparent that the hotline had gained significant traction. The thing that stands out in my mind is that, not only did we continue to get more rescue calls, but we got calls for species that we rarely take in—or have never taken in at all. For example, in the past 24 years, we had taken in only two eagles, but that changed in 2018. As of 1 September 2018, we had taken in a total of eight eagles, and had two additional calls for eagles that had died. Illegal activity in northwestern New Mexico created a spike in eagle intakes. It began with a young Bald Eagle that had been shot in the wing, had its tail feathers plucked, and was left for dead. David Mikesic and the Navajo Nation Zoo staff worked with Hawks Aloft to get the eagle the care it needed. Two Golden Eagles with the same story soon followed suit. Veterinarians Kathleen Ramsay, Kari Atkinson, Ray Hudgell, and Mike Melloy operated on these birds, and rehabilitators Lori Paras and Lisa Morgan assisted with their care and recovery. The two Golden Eagles, originally recovered from the Navajo Nation, were released into the Navajo Nation Zoo Eagle Sanctuary, as they were not able to be returned to the wild. It was a long, exhausting journey for everyone involved, but we were ecstatic to see these beautiful eagles prospering at the eagle sanctuary.

Another continual trial has been calls about fledgling birds—many of which end up on the ground when they are learning to fly. Exploring

Caption

their nearby environment is an important part of the fledging process. We spent the summer educating our volunteers and callers about fledging birds. We were able to mitigate some cases of "bird-napping" but still took in several young birds with legitimate injuries. Many of those babies were successfully rehabilitated and taught to hunt for live prey before being released.

One of the exciting things that happened this year the first annual meeting of the New Mexico Wildlife Rehabilitators' Alliance. This conference included people from throughout the state of New Mexico and states as far distant as Oregon, including wildlife rehabilitators, veterinarians, energy representatives, state and federal fish and wildlife service agencies, and other interested individuals. The conference included presentations from experts in many different fields, ranging from talks from energy representatives from Avangrid Renewables and the impacts of various energy processes on wildlife by representatives from PNM. US Fish & Wildlife Service and New Mexico Department of Game and Fish personnel spoke about the permitting processes for rehabilitation in both New Mexico and the broader U.S. Veterinarians and rehabilitators from throughout the state covered topics ranging from basic wildlife rehabilitation, from basic exams and using the Wildlife Rehabilitation Medical Database (WRMD) as a collaborative tool, to specifics like beak repair and salt toxicity. The New Mexico Falconers' Association presented falconry techniques for rehabilitating and training rescue birds. Overall, it was a wonderful time for everyone involved in these fields to come together and share ideas. As the stories above go to show, cooperation amongst these groups is paramount to the successful rehabilitation and release of wildlife in New Mexico. We hope to continue to build on this event and these connections in the future.

Many thanks to the raptor rescue team and transporters from all backgrounds, for all their help this year: Nirankar Ambriz, Daniel Archuleta, Mary Bruesch, Mary & Ed Chappelle, Joanne Dahringer, Tim Florence, Shannon Harrison, Ty Horak, Denise Inight, Kaiti & Kyle King, Jeannine Kinzer, Dean Klassy, Bill & Laura McCammon, Evelyn McGarry, Arlette Miller, Julie Morales, David Mikesic & Navajo Nation Zoo staff, Eliane Notah, Amanda Rael, James Robinson, Larry & Kim Rimer, Bruce & Anita Sisk, and Frank Wilson. A huge thank you also goes to our veterinarians and rehabilitators across New Mexico that work to help get these birds the care they need: Alameda Park Zoo, Kariana Atkinson (Petroglyph Animal Hospital), Linda Contos (Ventana Animal Clinic), Ray Hudgell (Petroglyph Animal Hospital), Daniel Levenson (Southwest Veterinary Center), Mike Melloy (Petroglyph and Coronado Pet Hospital), Dennis Miller (Gila Wildlife Rehab), Lisa Morgan, New Mexico Wildlife Center, On a Wing and a Prayer, Lori Paras (Santa Fe Raptor Center), Kathleen Ramsay (Cottonwood Veterinary Clinic), Sammie Uhrig (Desert Willow Veterinary Services), and Wildlife Rescue of New Mexico. ■

A Beautiful Buzzard

By Ellie Althoff

In comparison to the vibrant blues, deep greens, and other festive colors many other bird species boast, beauty is not always defined as a dark brown chest, red head, and pale bill. However, our newest educational ambassador is just that. A Turkey Vulture, she was named Beauty to highlight the innate elegance that these creatures possess despite a host of negative stereotypes about them. Her journey to us includes elements of both compassion and ignorance through which we all can learn a valuable lesson: Wildlife should stay wild.

Imagine you are on a walk one day: In the distance you see a small white bundle of fluff motionless on the ground. It looks peculiar, but blends in well with the rocky hills and pale vegetation of the New Mexico landscape. As you pass by the object, you hear a small hiss and suddenly two wings emerge as it awkwardly stumbles back and forth. Taking a step backward, you realize that it is a bird, a Turkey Vulture nestling, with a pronounced gray head and a black beak, surrounded by white downy feathers. As you continue to stare, watching the bird try to balance, you notice that it has a chest wound. What do you do?

Five years ago, an unknown person was posed with this exact question; they chose to rescue the bird. The young Turkey Vulture was brought into their home where its wounds would eventually heal.

Years later, a noise complaint warranted a visit from the US Fish and Wildlife Service to the home, where a cursory investigation turned up something abnormal: A Turkey Vulture. This led to a frantic call to Hawks Aloft, which was met with confusion and concern. The Raptor Rescue Coordinator, Katrina Hucks, anticipated a complicated case with extensive injuries when she received the call on a cold day in January. At this time of the year, Turkey Vultures should be basking in the Central American sun, not in the grip of a New Mexican winter. Yet, when the



vulture arrived, her immediate comfort around humans and playful nature proved to Katrina that she was indeed an imprinted bird.

Imprinting occurs when a young animal is raised in captivity, becoming familiar with humans and prevented from learning the necessary behaviors to succeed in the wild. Imprinting impacts a raptor's ability to fly, reproduce, and can lead to behavioral problems such as food begging, aggression, and excessive screaming. Despite Beauty's perfectly healthy physique, her mental state made it impossible for release back to the wild.

In addition to repercussions for the imprinted animal, it also is illegal and unsafe to possess any raptors. Despite the person's compassion for this vulture, it is important to understand that the correct action is always to take the bird to a rehabilitator or wildlife rescue organization. These professionals understand the dangers of imprinting and take preventative measures with the intent of releasing the bird back into the wild successfully.

Today, Beauty is enjoying the company of another educational ambassador, a Swainson's Hawk named Idaho. She is being trained to perch on the glove, go in and out of her travel box, and fight her urge to perch in the highest available spot. Her comfort around humans and impressive wingspan will make her a perfect educational ambassador to teach the next generation how to respond to wildlife in need of rescue, and just how beautiful this species is! ■



Caption

◀ page 11 Jemez

New Mexico Avian Conservation Partners (NMACP). One species of concern of particular interest is Grace's Warbler, a mountain pine specialist of the southwestern United States and Central America. Our cumulative data show that they are found primarily in unburned ponderosa pine and mixed conifer habitats. As pine obligates, Grace's Warbler is negatively affected by catastrophic fire. Other species of concern that also were more abundant in unburned sites included Mountain Chickadee, Pygmy Nuthatch, and Steller's Jay. In contrast, some species of concern were more abundant at burned sites. One of these is Mountain Bluebird, which has a preference for high elevation prairies bordered by trees, an abundant habitat in the Valles Caldera. Other bird species that were more abundant at burned points included House Wren, Chipping Sparrow and Western Bluebird.

The first six years of data for the Southwester Jemez CFRLP have been enlightening in terms of avian response to wildfire, highlighting the complexity of population dynamics within different habitat types.



Western Bluebird. Photo by Keith Bauer

Once analyzed, the data from 2018 will further enhance our understanding of the avian community in this magical area. It was a real joy to once again be able to participate in the Jemez CFLRP songbird study; we are privileged to be able to explore beauty of the Valles Caldera and Santa Fe National Forest. We thank Bob Parmenter of the National Park Service and Susan Harrelson of the U.S. Forest Service for their assistance on this project. Thank you Bill Musser, Kathleen Musser, and Lisa Schluter for volunteering to assist surveyors on back country routes. ■

EDUCATION

Hawks Aloft becomes STEM Ready!

By Ellie Althoff

As an organization with multiple objectives written into our mission statement—like research, rehabilitation, and education—Hawks Aloft prides itself on offering science-based and data-driven environmental education to over 22,000 people annually in classrooms, public lands, and at outreach events. Participants enjoy these enriching programs year round thanks to our dedicated education team and volunteer base who are always committed to improving curriculum and updating presentation standards. Often, the curriculum and expectations have been guided by our public school system's science standards while considering the needs of each classroom. With newly adopted standards across the state, we will continue to adapt and improve our educational programming.

Since 2003, New Mexico has been operating under the same, outdated set of science standards. Fortunately, as of July 2018, New Mexico has adopted what they call New Mexico Stem Ready!. New Mexico Stem Ready! is simply the Next Generation Science Standards (NGSS) that 19 other states and the District of Columbia have adopted, in addition to 6 unique dictates. The new standards promote student-centered learning so that students are not just learning about science, but also practicing it. To accomplish this, three elements work together: disciplinary core ideas, scientific and engineering practices, and cross-cutting concepts.

In order to better prepare for these new standards, I was a representative to the Introduction to NM Stem Ready! Science Standards: A Deep Dive into Next Generation Science Standards (NGSS) workshop hosted by the Environmental Education Association of New Mexico (EEANM). Two full days of discussion and lecture offered many resources for educators adopting these updated policies, like a lesson screener, Project Learning Tree activity guide, and a host of activity suggestions. Most importantly, we now have a clear action plan to become aligned with New Mexico Stem Ready!.

Among many other objectives, one important goal of New Mexico Stem Ready! is to address equity in science education. With nearly one third of children in New Mexico living in

poverty, Native American high school graduation rates hovering at 47% in Albuquerque Public Schools, and fewer than 30% of the world's researchers as women, we will be making adjustments to ensure that assessments, topics offered, and educational techniques are benefiting all students equally.

We know that aligning curriculum to new science standards is overwhelming to both teachers and educational institutions. Under the implementation timeline, the state will continue offering administrative webinars, leadership trainings, and various other professional development opportunities to assist teachers during the transition. In addition to this formal education, teachers benefit from the new standards as interpreted by an outside organization—Hawks Aloft. By understanding and implementing New Mexico Stem Ready!, we can reduce pressure on teachers one lesson at a time and demonstrate how these new standards function in new and exciting new ways.

We have already begun to adjust our techniques to align with New Mexico Stem Ready! guidelines in order to deliver information and experiences more effectively. Education specialist, Seymour Papert, notes the difference between educational styles as children age saying, "when you go to school, the trauma is that you must stop learning and you must now accept being taught." In response to Papert and New Mexico Stem Ready!, we will further incorporate student-focused presentations. In these, students will be active participants—making observations, discussing with peers, and asking questions to learn about the live raptors as opposed to sitting silently.

New Mexico Stem Ready! has set a prece-

Caption

dent of high quality science standards. With the guidelines set forth by New Mexico Stem Ready! and by preparing our educators well, we can help the next generation become engaged and accomplished scientists. ■



page 13 Raptor Survey

global population, based on Breeding Bird Survey (BBS) data, is estimated to be 110,000 (PIFSC 2016); however, there are huge discrepancies for population estimates for Ferruginous Hawk among various sources throughout their range. Over a decade ago, when population estimates were lower, New Mexico, boasted roughly 3.4% of the global population (PIFSC 2013). New Mexico hosts a much greater number of Ferruginous Hawks during winter months, as more northerly nesting birds congregate in the grasslands of our state. Because estimates of Ferruginous Hawk populations vary widely, more research on population dynamics and movements, especially in the southwestern US, are crucial. New Mexico Partners in Flight (NMPFI) does not consider them to be a species of concern; however, Ferruginous Hawk has been understudied in this region. Hawks Aloft performed a study on Ferruginous Hawks in rural and exurban regions of New Mexico, evaluating nesting (1998-2005) and dietary specializations (2004-2005) in the Estancia Valley and the Plains of San Agustin. Keeley et al. (2016) discovered that exurban areas that hosted a greater number of colonies of Gunnison's prairie dogs, contributed to the overall success of nesting Ferruginous Hawks relative to rural areas with fewer prairie dog colonies.

Hawks Aloft also has conducted driving surveys for raptors in New Mexico since 1995. This study showed an increase in wintering populations of Ferruginous Hawks compared to a more stable population during the summer (Figure 1). These trends correlate with BBS data for New Mexico (Sauer et al. 2017; Figure 2). It is possible the warmer winters caused by climate change influence the behavior of wintering Ferruginous Hawks, allowing them to migrate earlier in response to changes in prey communities and phenology (Watson et al. 2018). Studies such as these are vital to understanding population dynamics of Ferruginous Hawks with varying climate conditions and prey base. Hawks Aloft studies measuring prey dynamics and productivity in New Mexico ended in 2005. Thus, descriptive population dynamics and a comprehensive study of Ferruginous Hawks and their threats in New Mexico is necessary to determine change in populations, particularly considering rapid human population growth and urbanization in recent years, as well as changes in prey availability.

There are several ways humans can assist Ferruginous Hawks in our increasingly anthropogenic world. For example, one could advocate for building nesting platforms in suitable habitat where natural substrates are lacking. Studies have shown that natural substrates like trees or cliffs

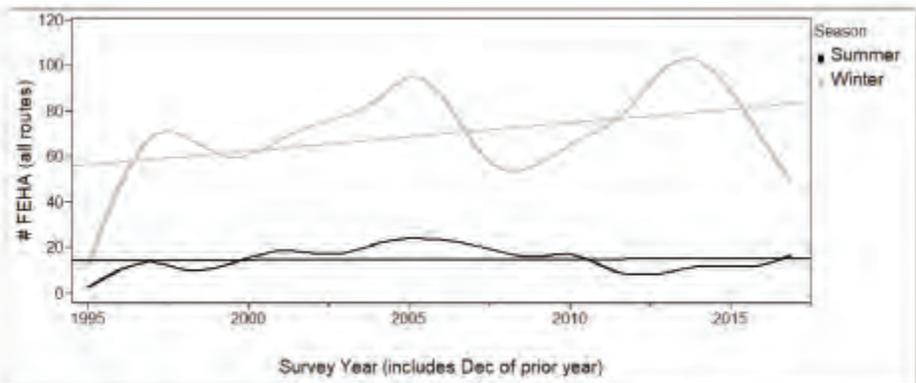
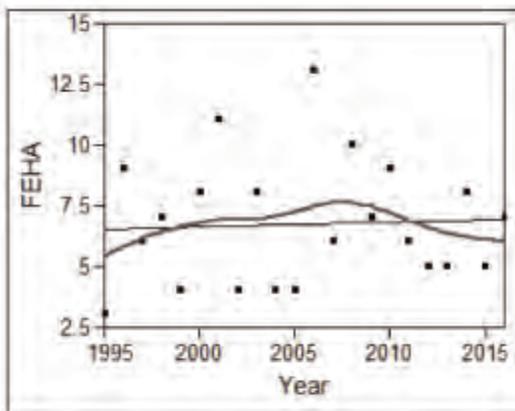


Figure 1. Seasonal trends for Ferruginous Hawk in central New Mexico.



Caption

Figure 2. Number of Ferruginous Hawks detected during Breeding Bird Surveys in New Mexico.



can be less productive than anthropogenic structures (Wallace et al. 2015). During the breeding season, female Ferruginous Hawks target larger rabbits, while male Ferruginous Hawks favor pocket gophers (Keeley and Bechard 2017). If either of those populations decline, the likelihood of a successful nest significantly decreases. Creating and managing habitats with ample open spaces that support small mammal communities will benefit Ferruginous Hawks.

While protecting endangered and threatened species should be a priority in wildlife conservation, it is imperative to not lose sight of species that are vulnerable to changing conditions, habitats, and environmental policies. The Migratory Bird Treaty Act protects species among Canada, the United States, and Mexico; however, it is still important to consider migratory species when creating state- and national-level conservation policies. The Ferruginous Hawk is a regal raptor, deserving of our respect and attention. As we learn about the threats facing Ferruginous Hawks and their requirements for subsisting across the landscape, we can hope to see them soaring for years to come. ■

Meet the Hawks Aloft Education Programs



By Ellie Althoff
 In addition to research, conservation, and rescue, we provide environmental education to all ages as it relates to raptors and their habitats. As such, Hawks Aloft delivers multiple types of education programs including: **Living with the Landscape, Reading with Raptors, Birds of Prey, Adult Education Programs, and Community Outreach Booths.**

Reading with Raptors

Reading with Raptors is a single-visit program for our youngest students in Pre-K to first grade. In this program, educators bring one or two birds to the classroom and read an age appropriate, bird-themed book to the students that draws a specific connection to the birds they meet. After being introduced to these birds, students participate in an interactive activity such as a puppet show, bird artifact discovery, or the "build-a-raptor" exercise.

Birds of Prey

The Birds of Prey program also is a single-visit program that can be adapted to grade levels 1 through 12. During this program, students learn about raptor adaptations through discussion and activities. Students have a chance to see these adaptations in our live birds as they participate in interactive games, learning about avian adaptations and their local environment. During the 2017-18 school year Hawks Aloft presented this lesson across New Mexico.

Living with the Landscape

Living with the Landscape is the Hawks Aloft flagship program—a grant-funded, comprehensive, year-long program offered free to Title 1 elementary schools in the Albuquerque metropolitan area. Each classroom in the selected schools receives at least two visits from our educators and several of our live, non-releasable raptors. Additionally, the program offers all fourth and fifth grade students a chance to connect with their



Caption

local environment by visiting a natural area, while fifth grade students also develop and implement a conservation project on or near their school grounds. To reach students' larger community, we host a family conservation night at the school where students, siblings, and parents are invited to share their knowledge with their families. Living with the Landscape will provide this program to four schools during the 2018-2019 school year.

If you are interested in participating in the Living with the Landscape program, applications will be accepted in April and May for the 2019-2020 school year.

Adult Education Programs

Adult education programs offered through Hawks Aloft include a variety of topics for a wide range of audiences, including Life and Times

See **Education Programs** page 25 ▶



◀ page 24 **Education Programs**

of New Mexico Raptors, Raptor Identification, and All About Owls. Each program is presented with live, non-releasable birds of prey and include a slideshow presentation that details the individual bird's history in addition to how it fits into the New Mexico landscape.

Corporate programs are offered to service linemen and other professional groups that can benefit from increased awareness and understanding of bird behavior and the legalities around them. These programs inform employees on the rules and regulations as well as provide guidelines on how to safely handle injured or abandoned wildlife.

Community Outreach Booths

Hawks Aloft is often invited to events throughout New Mexico and neighboring states. Our booths are designed to engage audiences of all ages that encourage individuals in the community to make positive choices for the environment. All of this work could not be done without the help of our spectacular volunteers.

Program Fees

\$175: Up to two 1-hour programs on the same day in the same location, within the Albuquerque Metro Area. Each additional program on that day is \$100.

\$300: Programs more than 50 miles away, plus mileage.

\$300: Outreach Booth events within the Albuquerque area or \$300 PLUS mileage for events more than 50 miles away. ■

Feathered Dreams: Odes to Wing'd Things

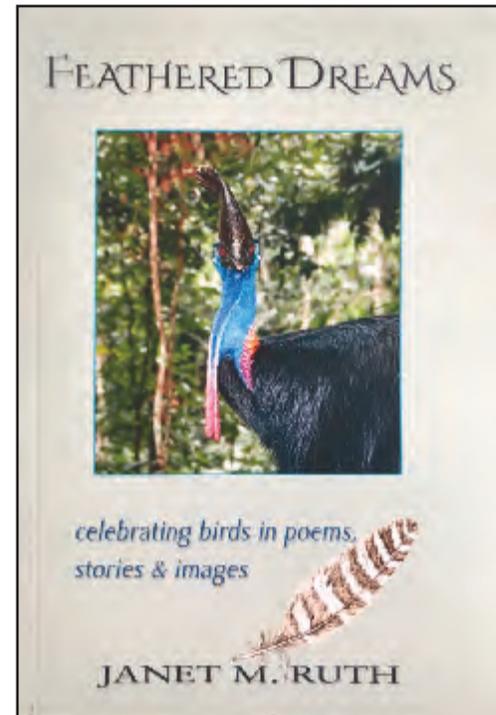
By Maggie Grimason

"Life changes,/ bones ache, joints grind/
muscles protest. Restless nights toss,/ waves
of heat flicker where there are no flames./ I
confront the approach of winter./ Yet sea-
sons/ hold both departures—and arrivals."
So writes Janet M. Ruth in her poem
"Canticle for Change," from the collection
Feathered Dreams.

Ruth wears many hats—she is not just a poet, but an ornithologist. As such, she is uniquely qualified—with her artist's eye on the world and scientist's understanding of it—to author such a collection, an ode to avian life. Written to mark 2018, The Year of the Bird, as dubbed by *National Geographic*, Cornell Ornithology Lab, and many other organizations, the book celebrates what that designation does—the bird as an earthly animal, but also its unique place in mythology—how it often symbolizes heavenly messages and the interconnectedness of all of all life; the proverbial "canary in the coal mine."

Through verse and prose, Ruth explores the world overhead with a deep understanding of both language and biology. Individual species, migrations, and a multitude of landscapes are rendered cleanly, tempered with great affection, through her crystalline writing. A well-timed, and well-made ode to a kingdom of creatures that share the world with us.

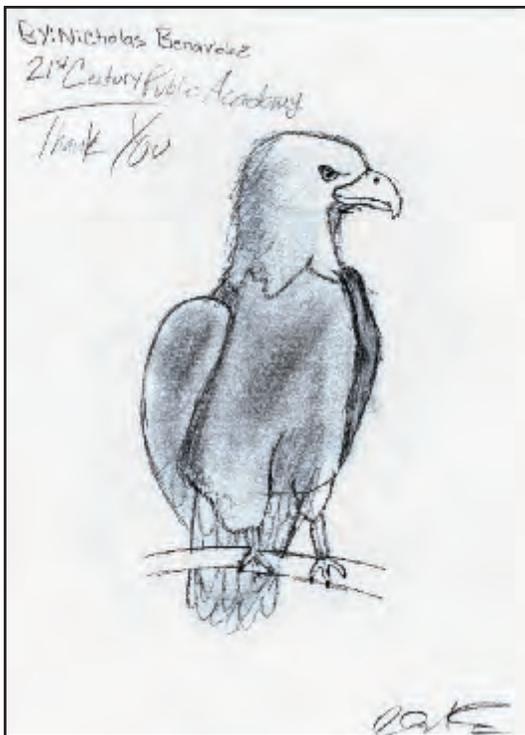
Find *Feathered Dreams* on our online store, at hawksaloft.org/store



FINANCIALS

Children's Artwork

Caption



◀ page 19 **Bosque Drought**

changes in abundance of individual species can be complex and difficult to determine. For example, many species are only present during winter and their numbers are impacted by factors on their breeding grounds. Even for resident species determining causation for population trends can be complex as individuals of these species are joined during the winter by conspecifics that breed elsewhere. Similarly, many summer residents are Neotropical migrants that are impacted by factors on their wintering grounds. Further, some species pass through the bosque during summer only as migrants. Nevertheless, the consistent decreases in avian density and richness at the scales of both the entire study area and individual C/S types, and the decreases documented for a majority of species in 2011-2017 clearly indicate that the long-term drought had a significantly negative impact on the avian community in the bosque. We observed some recovery from drought as conditions improved in 2015-2017. But, renewed drought conditions in 2018 are likely to shift trends back towards the negative. ■



Caption

◀ page 4 **Plastic**

number, an estimated 14% of plastics are recycled, more than 40% go to landfills, and an approximate 32% end up in ecosystems like the ocean. Many of these are ingested by sea creatures and enter into the food chain at large, creating disruptions that resonate. A report by Rolf Halden in the Annual Review of Public Health reported that plastics and their additives don't just surround us—they are inside us. Virtually every human tested had remnants of plastic or chemical compounds used to create plastic in their blood and urine, likely ingested with our food and water.

The problem of plastics is of such global concern, it is likely only to move towards a long-term solution under the direction of a global coalition. In December 2017, 200 countries signed a United Nations resolution to eliminate ocean plastic—one step in the right direction.

In the meantime, many consumers have been quick to discontinue the use of plastic bags and straws as they've become increasingly aware of their detriment to the natural world. There are many more ways that each of us can reduce our contributions to this massive problem—purchasing goods packaged in cardboard as opposed to plastic, buying as much as possible from bulk bins (using reusable bags!), using glass containers multiple times, packing lunch instead of buying takeout, using matches instead of lighters. Most importantly, continue voting with your dollars and as much as possible—maintaining pressure on local decision-makers in these arenas. Since plastics production is closely tied to the fossil fuels industry (4-8% of crude oil is used in plastic production per the Proceedings

of the National Academy of Sciences) a far-reaching view on conservation with attention to how these concerns are all interconnected is vital to global health. Educating ourselves and sharing what we learn with others doesn't just improve conditions in distant oceans and the health of seabirds that many of us have never seen with our own eyes—but the whole world, and in little ways, our home in the high desert, too. ■

Financials

Hawks Aloft, Inc. 2017 Financial Report

	<u>2017</u>
Income	
<i>Contracts and Grants</i>	
Government Contracts	\$ 160,576.16
Private Contracts & Grants	\$ 210,139.93
Education Program & Grants	\$ 10,010.00
Total Contracts and Grants	\$ 380,726.09
<i>Donations</i>	
Cash	\$ 48,454.88
Raffle Ticket Sales	\$ 2,230.00
Non-Cash	\$ 200.00
Capital Campaign	\$ -
Total Donations	\$ 50,884.88
<i>Operations/Sales</i>	\$ 20,250.70
<i>NM Avian Protection</i>	\$ 5,125.00
Total Income	\$ 456,986.67
<i>Cost of Goods Sold</i>	\$ 3,109.03
Gross Profit	\$ 453,877.64
Expenses	
<i>Payroll</i>	
Research	\$ 138,858.14
Education/Outreach	\$ 58,502.47
Administration	\$ 37,803.65
Raptor Rescue	\$ 10,036.41
Membership Services*	\$ 12,447.44
Fundraising	\$ 2,253.15
Total Payroll	\$ 259,901.27
<i>Bird Care</i>	\$ 21,493.79
<i>Bird Care-Rescue</i>	\$ 1,977.88
<i>Facilities & Utilities</i>	\$ 21,989.19
<i>Office</i>	\$ 5,285.05
<i>Other**</i>	\$ 18,434.21
<i>Professional Services (Research)</i>	\$ 102,224.80
<i>Transportation/Travel</i>	\$ 23,823.33
Total Expenses	\$ 455,129.52
Net Income	\$ (1,251.88)

*Includes online newsletter, Aloft, member events, etc.

**Includes business meals, conferences, fundraising, etc.

RESEARCH

Twenty-Five Years of Hawks Aloft Quilts

By Gail Garber

Just as it's hard to believe that we are celebrating 25 years as an organization, it is equally amazing that we have already designed, stitched, and raffled 25 quilts! With my nearly 40 year background as a quilter, it seemed as natural as could be that we would stitch a quilt and raffle it off to raise funds. Those early quilts were pretty simple, but over the years the designs have become ever more complex.

Early on, we followed the long-established traditions of passing out fabric with instructions and asking quilters to return their portion, which, once collected, would be assembled into a quilt top that was then quilted on a home sewing machine by one of my friends, often Donna Barnitz. However, Hawks Aloft was definitely short on volunteers who knew how to quilt or even how to use a sewing machine!

Eventually, we evolved a system in which I, with help from friends, notably Donna, and later Barb Deshler, designed the quilt. With a little pre-stitching for the tricky parts, the rest of the quilt relied on small sections (blocks) that could be sewn on a paper pattern, thereby greatly increasing accuracy. We began hosting weekend-long quilting retreats and attracted our non-sewing volunteers with promises of learning, food, fun, and libations in the mountains. And what fun we did have! So much so that many of the regular participants acquired the expertise necessary to stitch paper foundation blocks and returned year after year!

These days, the cast and crew are set for each quilt retreat at least one year in advance and we gather at my Jemez Mountain cabin, where our limit is 12 humans in cramped conditions. Everyone has their job to do: Ed Chappelle and Rick Deshler cut all the fabric in the appropriate sizes for each section; Barb Deshler and Donna Barnitz help with design and pre-sewing; Mary Chappelle, Cynthia Figueroa-McInteer, and Sami Sanborn not only stitch, but also teach less experienced folks and troubleshoot when problems arise; Steve Elkins is a stitcher and also our official photographer; Chellye Porter, Liz Roberts, and Allison Schacht are super-sewers with their noses to the sewing machines all day long. In 2018, Carol Bauer joined us for the first time and seemed to enjoy the process as well as the camaraderie. Once the top is done, we deliver it to Tisha Cavanaugh (Quilt Icing), who stitches the layers together adding another layer of beauty and dimension to the Hawks Aloft raffle quilt.

If you would like to join us in the future, please let me know. I will add your name to the lengthy wait list as it is very rare for anyone to drop out and, as stated above, space is very limited. We hope you enjoy the 2018 quilt and look forward to #26, which should debut at the Festival of the Cranes in Monte Vista, Colorado the second weekend in March. ■

Purchase raffle tickets for the 2018 Quilt before December 1!
See the order form on page 29.



The 2018 quilt

Join Our Growing Membership

Hawks Aloft, Inc. is a nonprofit, 501(C)3 organization 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.

Membership funds help us provide the highest quality housing, food, and medical care to our group of 30 Avian Ambassadors. These permanently injured, non-releasable birds visit classrooms and attend events throughout the state, educating the public and students about birds and their habitats. We believe that conservation education, especially for young people, is vital for our future.

Your donations also make it possible for us to rescue birds, including raptors and corvids, through our Raptor Rescue Hotline. Because our network of volunteers is extensive, we rescue birds throughout the state and transport them to the appropriate medical facility and/or wildlife rehabilitator.

Besides education and rescue, we perform research on a variety of different bird species. This research yields information to support sound land management decisions—essential when situations arise that might disturb bird habitats. Additionally, we cooperate with other organizations to boost our efficacy and to support community awareness of conservation efforts. Remember, we can't do it without you!



Ferruginous Hawk.
Photo by Larry Rimer

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!

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"/> Spotted Owl | \$250 |
| <input type="checkbox"/> Red-tailed Hawk | \$150 | <input type="checkbox"/> Cooper's Hawk | \$100 | <input type="checkbox"/> Family | \$75 |
| <input type="checkbox"/> Individual | \$45 | <input type="checkbox"/> Student/Senior | \$25 | | |

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

Quilt Raffle 2016 To Benefit Conservation Education in NM

\$1.00 each / 6 for \$5.00 Drawing December 2, 2017

Please indicate quantity of tickets ____.

Name _____ Phone _____

Address _____

City _____ State _____ Zip _____

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

FROM THE HEART

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

Individual Donors & Volunteers

DANIEL ABRAM
NIRANKAR AMBRIZ
DANIEL ARCHULETA
ARTHUR & CATHERINE
ARENHOLZ
JOAN ARMER
ART ENHANCEMENT
JORDAN ASHLEY
KARIANA ATKINSON, DVM
SHERRIE AUHLL
PATRICIA BAILEY
JOANIE BARBIER
LINDA BARKER
DAVID BARFIELD
DONNA BARNITZ
CAROL BAUER
KEITH BAUER PHOTOGRAPHY
JANET BEASLEY
SOPHIA & DONNA BOROWSKY
NANCY BOWSHER
JEFF & LOUISE BRADLEY
CHARLES BRANDT
BRANT TOURS
WILLIAM & LUCIE BRENNAN
DOUG BROWN PHOTOGRAPHY
KRISTIN BROWN PHOTOGRAPHY
WENDY BROWN
DAVID BUCKLEY
MARY BRUESCH
KAY & JACK BURGESS
KENT BURGESSER, DVM
LORETTA BURNHAM
JOE CAIRNS
KERRI CAMPBELL
BARBARA CANNON
TISHA CAVANAUGH (QUILT
ICING)
DENNIS CHAMBERLAIN
NIELS CHAPMAN
ED & MARY CHAPPELLE
TIM CHAPPELLE
CARTER & SUSAN CHERRY
ED CLARK
GIL CLARKE
DAVID COMINGS
LINDA CONTOS

JAMES COOK
COOPERAGE RESTAURANTS
COTTONWOOD REHAB
LIDA CROOKS
CHARLES CUMMINGS
PATRICIA CUMMINGS
JOANNE DAHRINGER
JUDY DAVENPORT
BRIGITTE DE SAINT PHALLE
VICKI DERN
DESERT WILLOW WILDLIFE
REHAB
RICK & BARBARA DESHLER
DAVID DEWITT
LINDA DILISIO
KELLY DiNATALE
FRANK DOBRUSHKEN
COSMOS DOHNER
PAUL DOMSKI
SHEILA DOUCETTE
TERRY EDWARDS
VIRGINIA EDLEY
SANDRA EICHENBERG
PENNY ELLISTON
ELKHORN LODGE
CAROL EMERSON
CYNTHIA FIGUEROA-McINTEER
DENISE FLIGNER
TIM FLORENCE
PATRICIA FOLSOM
CHARLES FREYE
KAREN GARCIA
DANA & MARION GEBEL
TONY GIANCOLA
M. REBECCA GRACEY
ROGER GRIMSHAW
NANCY HALL
KELLY HALLER
LINDA HAMLIN
NANCY HAMILL
SUSAN HARRELSON
JANET HARRIS
SHANNON HARRISON
MICHAEL HARTSHORNE
JOAN & FRED HASHIMOTO
BARBARA & DICK HAWKINS
JAN HENDERSON
LEAH HENZLER
LOIS HERRMANN

GERALD HOBART
EVONNE HOLDER
ANITA HOLTZ
JANET HOOVER
TY HORAK
MELISSA HOWARD
RAY HUDGELL DVM
ONDREA HUMMEL
DENISE INIGHT
KAY JACKSON
THERESA KAPS
CHARLES & SHERRI KARAIAAN
KATHRYN KARNOWSKY
JAMES KEENER
CONNIE KELLEY
GAVIN KENARD, DVM
KAITI & KYLE KING
SUSAN KING
JEANNINE KINZER
BOB KIPP
DEAN KLASSY
JUDY KNAPP
JERRETT KOENIGSBERG
REBECCA KRAIMER
JONATHAN KRAVITZ
LESLIE KUHN
MARSHA KUHNLEY
LAURA KUSTER
LAURENCE LATTMAN
MELISSA LAUER
DANIEL LEVENSON, DVM
JEROME LEVINE
JUDY LIDDELL
BONNIE LONG
DWAYNE & MARJ
LONGENBAUGH
ANTHONY LOPEZ
MOLLY LORD
SUE LYONS
DOUGLAS MAAHS
MAURICE MACKEY
MOLLY & RICHARD MADDEN
KRISTIN MADDEN
BRANT MAGIC
ANNIE MARQUEZ
MARY O'NETTE PRODUCTIONS
JANET MATHEWS
TOM & EDEL MAYER
DAVID MAYERSON

BILL & LAURA MCCAMMON
EVELYN MCGARRY
LAURA MCNAMARA
CARRIE MCNEIL
MIKE MELLO, DVM
JO MICKELSON
DAVID MIKESIC
ARLETTE MILLER
DENNIS MILLER
JUDITH MILLER
MICHAEL & SHERI MILONE
CAROL MITCHELL
GLENDA MOORE
JULIE MORALES
LISA MORGAN
BARBARA MORRISON
ALAN MURPHY
BILL & KATHLEEN MUSSER
NAVAJO NATION ZOO STAFF
NEW MEXICO WILDLIFE CENTER
NICHOLS RANCH
NICK & KRIS NICOLAUS
ELIANE NOTAH
NATALIE NUNEZ
MARSHA O'KEEFE
ON A WING AND A PRAYER
LORI PARAS
RYAN PARKER
DAVE PARSONS
DARL PATRICK
DANIEL PAULSEN
JUDITH PEARSON
JAN PENDLETON
SHIRLEY PINO
CHELLEY & JEFF PORTER
DAVID & SANDRA POWELL
ERIC PURINGTON
MICHAEL & CHERYL
QUAINTANCE
QUILTS OLE
BEVERLY QUINLAN
AMANDA RAE
BRAD RAISHER
KATHLEEN RAMSAY
HILDEGARD REISER
ANN RHODES
MICHAEL RICH
DONALD & MARY RICHARDSON
LARRY & KIM RIMER
RHONDA RIVERA
LIZ ROBERTS
RENEE ROBILLARD
JAMES ROBINSON
ED RODGERS

LINDA ROGERS
LARITA ROHLA
DONNA ROYER
AMANDA RUDEN
SUSAN RUSSO
CAROLYN 'SAM' SANBORN
SONYA RAE SANDOVAL
SANTA FE RAPTOR CENTER
ALLISON SCHACHT
SCOTT & PAULA SCHERBROECK
MARTIN SCHELBLE
DIANNE SCHLIES
LYNNE & LISA SCHLUTER
LESLIE SCHMICK
DENNIS SEGURA
LINDA SHANK
STEPHANIE SHIRLEY
SHARLENE & BRUCE SHORT
CHRISTINE SIBONA
VIRGINIA SILLERUD
BARI LEE SILVER
BRUCE & ANITA SISK
TYLER SLADEN
SUE SMALL
RETA SODERHOLM
MARIE SOUTHWORTH
ALICE STACEY
MARGUERITE STACY
BRAD STAMM
THOMAS STEWART
MIRINISA STEWART-TENGCO
BARBARA STEWART-HAGER
SUSAN STIGER
STITCHOLOGY
KUMKO STYES
VIRGINIA SUNDERLAND
MITZI TADLOCK
TAU MASTER
GREG TINDEL
RONALD THOMAS
TONY & DAVEDDA THOMAS
TONY THOMAS PHOTOGRAPHY
NANCY THONEN
LAURA THURGOOD
DIANA TOERGE
ANDREW TORRE
CINDY TREME
ELIOT TREME
MONA TREMPER
CAROL TROELLER
K. TRUJILLO
MICHELLE TRUMFIO
SAMMIE UHRIG, DVM
GAYLE VANCE

FROM THE HEART

- | | | | | |
|--|--|--|---|--|
| ALWYN & SUNEL
VANDERWALT | ALBUQUERQUE MODERN
QUILT GUILD | DOUBLE EAGLE ELEMENTARY
SCHOOL | LOMA COLORADO LIBRARY
SCHOOL | SOCORRO PUBLIC LIBRARY |
| STEPHEN VENDER | ALBUQUERQUE OASIS | EL RANCHO DE LAS
GOLONDRINAS | LOS NIÑOS MONTESSORI
SCHOOL | SONEPAR USA |
| BETHANY VIENS | AMAZON SMILE FOUNDATION | EYE CARE FOR ANIMALS | LOS RANCHOS ELEMENTARY
SCHOOL | SOUTHWEST VETERINARY
MEDICAL CENTER |
| RONALD VILLIOTTI | AMERICAN TOWER | FARMERS' ELECTRIC
COOPERATIVE | MANZANO DAY SCHOOL | SOUTHWEST CHEROKEE
TOWNSHIP |
| GARY & KAREN WALKER | ANN SILVA'S BERNINA SEWING
CENTER | FESTIVAL OF THE CRANES –
BOSQUE DEL APACHE NWR | MARY O'NETTE PRODUCTIONS | STATE BAR OF NEW MEXICO |
| MARY WALSH | ART ENHANCEMENT | FESTIVAL OF THE CRANES –
MONTE VISTA NWR, CO | McFARLAND CASCADE | SUMMIT CONSTRUCTION |
| REUBEN WEISZ | AVANGRID RENEWABLES | FIRST UNITARIAN CHURCH
ANIMAL ADVOCATES | MITCHELL ELEMENTARY
SCHOOL | SUNSET MESA MOMS |
| MAYBELLE 'MICKEY'
WHITLOCK | KEITH BAUER/GREG BASCO
PHOTOGRAPHY | FOUR CORNERS BIRD CLUB | MONTE VISTA CRANE
FESTIVAL | TED TURNER EXPEDITIONS |
| CHRISTIE WILCOX | BEAR CANYON ESTATES | FRIENDS OF THE RIO GRANDE
NATURE CENTER | MONTEZUMA ELEMENTARY
SCHOOL | TETRA TECH |
| WILDLIFE RESCUE OF NEW
MEXICO, INC. | BETTY'S BATH AND DAY SPA | FRIENDS OF THE VALLE DO
ORO NATIONAL WILDLIFE
REFUGE | NATIONAL HISPANIC
CULTURAL CENTER | THE ASK ACADEMY |
| FRANK WILSON | BINKY FOUNDATION | GATHERING OF NATIONS | NATIONAL PARK SERVICE | THE COOPERAGE |
| NANCY WILSON | BUREAU OF LAND
MANAGEMENT | GRANTS AG DAY | NICHOLS RANCHO | THE VERDES FOUNDATION |
| WINNIE & WADES | BURRELL'S COLLEGE OF
OSTEOPATHIC MEDICINE | GRASSROOTS YOGA | PEABODY ENERGY | TRICKLOCK |
| TEDI WITT | CALVARY CHRISTIAN
ACADEMY | HIPSTITCH | PETROGLYPH ANIMAL
HOSPITAL | TALLES CALDERA NATIONAL
PRESERVE |
| SUSAN WOLTERSTORFF | CENTRAL NEW MEXICO
AUDUBON SOCIETY | HODGIN ELEMENTARY
SCHOOL | PNM RESOURCES
FOUNDATION | VENTANA ANIMAL CLINIC |
| STEVE YOUTSEY | CENTRAL NEW MEXICO
AUDUBON SOCIETY | INDIAN PUEBLO CULTURAL
CENTER | PUBLIC SERVICE COMPANY OF
NEW MEXICO (PNM) | VILLAGE OF LOS RANCHOS
FARM CAMP |
| THEODORE & JEANNETTE
ZIPES | CHAPARRAL ELEMENTARY
SCHOOL | INTEL CORPORATION | PULTE HOMES | WEEKLY ALIBI |
| | COCA-COLA FOUNDATION | KEITH BAUER/GREG BASCO
PHOTOGRAPHY | QUILTS OLE | WILD BIRDS UNLIMITED—
ALBUQUERQUE |
| | COLDWELL BANKER | KROGER | ROUTE 66 ELEMENTARY
SCHOOL | WILD BIRD UNLIMITED—LAS
CRUCES |
| | CORONADO PET HOSPITAL | LAND OF ENCHANTMENT
WILDLIFE FOUNDATION | SAN FELIPE DE NERI
CATHOLIC SCHOOLS | WILDSIDE NATURE TOURS |
| | DEPARTMENT OF
TRANSPORTATION | | SANI YOGA | WOMACK WEALTH
MANAGEMENT |
| | | | SEVEN BAR ELEMENTARY | |

Corporate, Foundation & Government Agencies

- ADOBE LITTLE THEATER
- ALAMEDA PARK ZOO
- ALBUQUERQUE COMMUNITY
FOUNDATION
- ALBUQUERQUE CONVENTION
& VISITORS BUREAU

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.

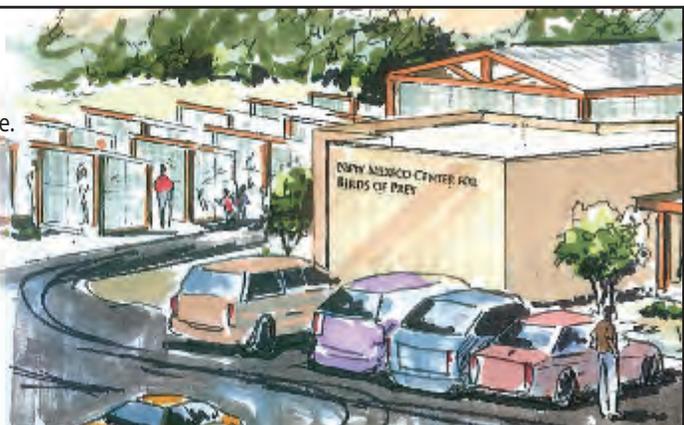
Name _____

Address _____

City, State, Zip _____

Amount of my donation _____

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



H
Aloft
site h
A:
vast
their
orga
Tl
with
at 50