NMOS BULLETIN

New Mexico Ornithological Society

Vol. 35, No. 2 **2007**

CONTENTS

Articles

Announcements and Information

THE NEW MEXICO ORNITHOLOGICAL SOCIETY, INC.

Post Office Box 3068, Albuquerque, New Mexico 87190-3068
www.nmosbirds.org

OFFICERS FOR 2006 – 2008

President:
Roland Shook, 3306 Royal Drive, Silver City, NM 88061
tyranidae@hotmail.com

Vice-President:
Dave Krueper, 105 Mission Ridge Road, Corrales, NM 87048
dkrueper@comcast.net

Secretary:
Nancy Cox, 4426 San Isidro Street NW, Albuquerque, NM 87107
sora@spinn.net

Treasurer:
Jerry Oldenettel, 499 Farm-to-Market Road, Socorro, NM 87801
borealowl@aol.com

Director:
Tim Reeves, 5101 Piñon Hills Boulevard, Farmington, NM 87402
treeves@sisna.com

Director:
Janet Ruth, 105 Mission Ridge Road, Corrales, NM 87048
janet_ruth@usgs.gov

Director:
Martha Desmond, New Mexico State University, P. O. Box 30003, MSC 4901, Las Cruces, NM 88003-8003; mdesmond@nmsu.edu

Editors, *NMOS Field Notes*:

Editor:
Sartor O. Williams III, 1819 Meadowview Drive NW, Albuquerque, NM 87104; sunbittern@earthlink.net

Assistant Editor:
William H. Howe, P. O. Box 461, Albuquerque, NM 87103
whhowe@comcast.net

Editor, *NMOS Bulletin*:
Robert H. Doster, 6119 Black Ridge Drive NW, Albuquerque, NM 87120; calcarius@comcast.net

A NOTE FROM THE PRESIDENT

NMOS gathered at Washington Ranch for their annual meeting on 5 May 2007. It was very nice to see a good turnout with interesting papers, opportunities to socialize and to enjoy good birding. A special thanks to Steve West who organized the meetings and was the keynote speaker.

The Officers of NMOS met on the Friday prior to the meeting and discussed several items. Of special note was the release of the NMOS database in a searchable form. This was much anticipated, and came after a lengthy time to enter the data and fine tune the program. A special thanks to Mary Alice Root and Rayo McCollough for all their work on this project. You can link to the database via the NMOS homepage.

The Florence Merriam Bailey Lifetime Achievement Award was presented to Pat Snider, Mary Alice Root, and Dale Zimmerman for their extraordinary commitment and dedication to NMOS over an extended period of time. The only other person to receive this award was Barbara McKnight at the 1982 NMOS meeting, which celebrated the 20th anniversary of NMOS. An awards committee is being formed which will decide on the criteria and accept nominations for future awardees. In addition to the lifetime awards, John DeLong and David Griffin each received the Ryan Beaulieu Research Grant for $1000. Congratulations to all.

After careful thought, the Officers voted to increase the yearly NMOS dues to $20 for an individual, $30 for a family, $10 for a student, and $50 for a supporting member. A lifetime membership will increase to $500. The increase will be effective 1 January 2008. The last time dues were increased was 1993. The Officers have a number of ideas for the use of the additional money. One idea discussed is to add at least one color photo to each addition of the *Bulletin*. Even with the increase, membership in NMOS is a real bargain.

One additional item discussed was a major overhaul of the NMOS web site. Janet Ruth and Bruce Neville are playing a major role in this activity. Thanks.

It has been very heartening to see such active and dedicated group of officers who work well together. If you have ideas or suggestions, just e-mail any one of us. The officers will be meeting again in early August.

— Roland

DISTRIBUTION AND DENSITY OF FLAMMULATED OWLS IN WESTERN NEW MEXICO

DAVID P. ARSENAULT
Sierra Nevada Avian Center
Post Office Box 23, Quincy, CA 95971
dave@aviancenter.com

Abstract.—Surveys of Flammulated Owl (*Otus flammeolus*) were conducted in five mountain ranges in western New Mexico to estimate the density and distribution of territorial males. Flammulated Owls were moderately abundant throughout the survey areas, particularly in pine-oak forest as well as cottonwood and aspen groves within coniferous forest. The results show that owl density varied significantly between study areas and that territory density varied between areas with similar cavity density. The results also suggest that the presence or absence of cavities is a primary influence on the distribution of this species, but it is not the sole indicator of habitat quality.

Flammulated Owls (*Otus flammeolus*) are Neotropical migrants whose summer breeding range extends from southern British Columbia to the mountains of central Mexico, and whose wintering grounds extend from central Mexico south to northern Central America (McCallum 1994). As a migrant with a high degree of intermixing between populations (Arsenault et al. 2005), this species can colonize remote areas with suitable habitat. They occur in isolated mountain ranges surrounded by vast areas of desert in Arizona, Nevada, and New Mexico. For example, Flammulated Owls breed in at least eleven mountain ranges in Nevada, including forest patches as small as 40 hectares (Dunham et al. 1996, Arsenault et al. 2003).

Flammulated Owls occur throughout New Mexico's montane coniferous and mixed coniferous-deciduous forest (Dick-Peddie 1993). They have been reported during the breeding season in the Animas, Black, Guadalupe, Jemez, Magdalena, Mogollon, Sacramento, San Mateo, Sandia, Sangre de Cristo, Santa Fe, Tularosa, and Zuni Mountains in New Mexico (Ligon 1961, Balda et al. 1975, Johnson and

Zwank 1990, Hurley and Gorresen 1991, McCallum 1994, McCallum et al. 1995, Arsenault et al. 2005, B. Britton, pers. comm.). Flammulated Owls have been detected in mountains as small and remote as Horse Mountain (~15 mi. SW of Datil at the edge of the Plains of San Agustin, May 13, 1998 DPA). They likely breed in the Peloncillo Mountains in the southwest and the Chuska, San Pedro, Taos, and Tusas Mountains in the north as well.

The Flammulated Owl's primary nesting habitat is montane coniferous forest generally comprised of a yellow pine, such as ponderosa pine (Pinus ponderosa), mixed with other conifers, such as Douglas fir (*Pseudotsuga menziesii*) at higher elevations (McCallum 1994). This owl will also breed in lower elevation yellow pine forest mixed with pinyon pine (*Pinus edulis*) and juniper (*Juniperus* spp.), as well as conifer forests (yellow pine and/or fir) mixed with deciduous trees including quaking aspen (*Populus tremuloides*), cottonwood (*Populus* spp.), and Gambel Oak (*Quercus gambelii*) (Bent 1938, Marshall 1939, Johnson and Russell 1962, Winter 1974, Marcot and Hill 1980, Bull et al. 1990, Dunham et al. 1996, Groves et al. 1997). Reynolds and Linkhart (1992) and Linkhart (2001) found that Flammulated Owls preferred old-growth forests for nesting in Colorado.

The Flammulated Owl's use of old-growth forest may relate to cavity and prey availability. However, second-growth forests can also provide the habitat components necessary for this species. Studies have found that owls use small forest patches (Dunham et al. 1996) and habitat without yellow pine (Powers et al. 1996, Marti 1997, Oleyar 2000). In New Mexico, Flammulated Owls nested in areas ranging widely in tree species composition, canopy closure, and tree density. This included dense habitat types such as aspen stands in Douglas fir forest with no ponderosa or other pines present and dense Gambel oak-ponderosa pine forest with high oak densities due to extensive historic logging of ponderosa pine (Arsenault 1999 and 2004). In Utah, Marti (1997) and Oleyar (2000) found owls in forests dominated by quaking aspen and big-toothed maple (*Acer grandidentatum*) with no yellow pine. Similarly, Powers et al. (1996) located owls in mixed-deciduous forest in Idaho without yellow pine. These studies indicate that this species may not be as limited by old-growth ponderosa pine as earlier studies suggested (Reynolds and Linkhart 1992).

I conducted standardized nighttime surveys in five mountain ranges in western New Mexico to characterize the distribution and density of Flammulated Owl territories, as well as determine indicators of habitat quality and its relationship with owl density and reproduction.

METHODS

Study Area.—Survey transects and study areas were located between 2000 m and 2700 m in montane coniferous and mixed deciduous forests in the Black Range, San Mateo, Magdalena, Zuni, and Jemez Mountains of western New Mexico. Forests within the survey areas consisted primarily of ponderosa pine and Gambel oak with herbaceous understories and scattered shrubs. Remnant groves of narrowleaf cottonwood (*Populus angustifolia*) occurred in some riparian areas. Ponderosa pine was mixed with quaking aspen and Douglas fir at higher elevations, and with pinyon pine at lower elevations.

Transect Surveys.—Survey areas were defined by transects located in suitable Flammulated Owl habitat defined as all montane coniferous and mixed deciduous forest similar to that used by Flammulated Owls as reported in the literature (see introduction). Transects were located in any accessible area that provided the best aural aspect for surveys including roads, trails, canyon bottoms, ridgelines, and slopes (Fig. 1) and survey points were spaced 350 to 500 m from each other (Groves et al. 1997). Transect surveys were conducted from May through June, 1996 to 1998 by stopping at survey points and listening for 5 minutes for Flammulated Owls calling, after which a male territorial call was vocally imitated or a recording was played for 1 to 2 minutes, and then the observer listened for calling owls for an additional 10 minutes. Each transect was surveyed at least 2 times in a breeding season (mid May to beginning of July) and in two consecutive years.

Study Area Surveys.—Study areas were chosen based on the location of owl territories detected during transect surveys. Thirteen study areas were chosen and they were surveyed systematically by walking parallel transects no more than 150 m apart and vocally imitating Flammulated Owl calls at least every 250 m. The study areas were surveyed in one or two years. Surveys were not conducted when

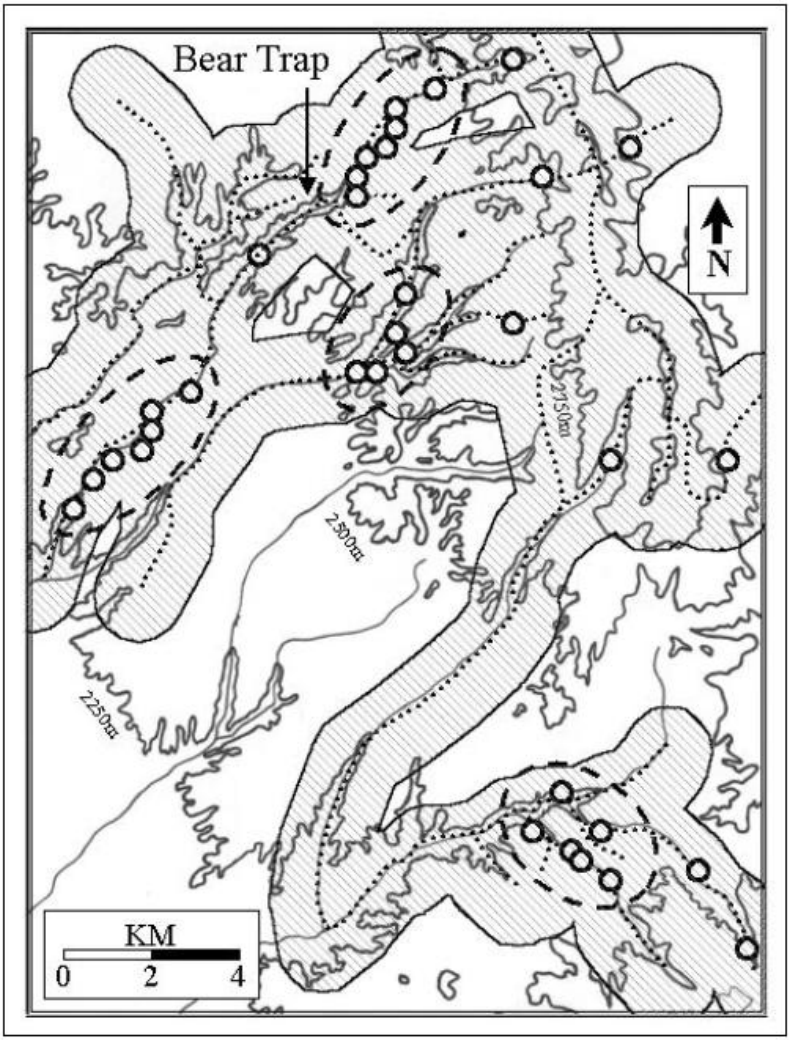

FIGURE 1. The distribution of Flammulated Owls detected in the northern San Mateo Mountains, New Mexico. Small circles represent owl territories, dotted lines encircle study areas (Lower and Upper Bear Trap, Big Pigeon, and West Red), and the large shaded area is the approximate survey area.

wind speed was greater than approximately five km/hr because of reduced probability of detecting owls.

Spot Mapping.—In study areas, locations of owls heard during nighttime surveys as well as during daytime nest and roost searches, were spot-mapped (Robbins 1970). Two pinhole cameras mounted on telescopic poles (Proudfoot 1996) were used to search the survey areas systematically two to three times each year for nesting cavities and to monitor nests during the breeding season (mid-May through June). Standardized methods were also used for nest finding, such as observing cavities at dusk, and for determining territory boundaries, such as observing territorial interactions and calling behavior (Reynolds and Linkhart 1984). Each nest was visited from one to six times (mean = 2.9 ± 1.2 visits) from egg laying to fledging to determine reproductive success in three core study areas (Surprise, Upper Bear Trap, Lower Bear Trap). Reproductive success summed across years (1996 to 1998), including failed nests, was compared with cavity density and the proportion of breeding males. A male was considered a non-breeder if a female or nest-site was never located within his territory, and he continued to call through the breeding season (Reynolds and Linkhart 1987).

In three study areas (Surprise, Upper Bear Trap, Lower Bear Trap), I mapped all of the cavities that were large enough (≥ 3.5 cm diameter entrance) for owls and in good condition for breeding (i.e., intact cavity floor and not filled with debris) to estimate the density of available nesting cavities. The size of each study area was estimated by drawing a convex polygon around the perimeter of all territories estimated with spot mapping.

Territory Density.—The densities of owls along transects were calculated as the number of males detected every one km of transect, equivalent to 100 ha with a 500 m detection distance included on either side of the transect (approximate survey area). Nearest-Neighbor Distance (NND) was calculated as the distance between the estimated centers of adjacent territories (based on spot mapping). The nearest-neighbor distance data set was examined for skewness, normality, outliers and influential observations, homogeneity of variances, and autocorrelation (Wilkinson et al. 1996). Nearest-Neighbor Distances were compared among study areas with ANOVA and Tukey's pairwise

mean comparison method using SYSTAT 7.0 (Wilkinson et al. 1996). All means are reported ± standard error (SE).

RESULTS

Owls were detected in montane forest at elevations ranging from 2070 to 2680 m (Table 1). Owls were observed on 86 territories along 149 km of transect (mean = 0.7 ± 0.3 territories/km). Owl nests were located in coniferous and mixed deciduous forest composed of pinyon pine, ponderosa pine, narrowleaf cottonwood, Gambel oak, quaking aspen, and Douglas fir.

TABLE 1. Density of Flammulated Owl territories along survey transects.

Mountain range	Total length of transects (km)	Elevation (m) where owls were detected	Number of territories	Territories/ 1 km
Black	76	2260-2440	26	0.3
San Mateo	31	2260-2530	28	0.9
Magdalena	17	2070-2620	9	0.5
Zuni	15	2290-2680	17	1.1
Jemez	10	2500-2620	6	0.6
Total	149	2070-2680	86	-
Mean	30	-	17	0.7

Study areas ranged from 175 to 800 ha in size and contained 3 to 11 territories, with densities of 1.3 to 5.7 territories every 100 ha (Table 2). The average nearest-neighbor distance (NND) within aggregations ranged from 330 to 900 m (Table 2). Nearest Neighbor Distance in four study areas in the San Mateo Mountains (U. Bear Trap, Big Pigeon, L. Bear Trap and West Red) were not significantly different from one another ($P > 0.5$). In contrast, owls were spaced significantly closer to one another in Surprise, and significantly farther from one another in 74 Draw, compared to other locations ($P < 0.5$). The density of cavities

available to nesting owls in three study areas was nearly identical (Table 3). Reproductive success (average number of young fledged per female) was also similar between the three areas (Table 3). However, the proportion of males that nested in each area varied (from 57% to 83%), as did territory density and nearest-neighbor distance (Table 3).

TABLE 2. Density of Flammulated Owl territories in thirteen study areas.

Mountain range	Study area	Size (ha)[1]	Number of territories	Territories/ 100 ha	Nearest neighbor (m) mean ± SE
Black	Indian Cr.	250	4	1.6	700 ± 245
	Scales	300	4	1.3	900 ± 115
	74 Draw	800	11	1.4	855 ± 165 *a*[2]
San Mateo	Big Pigeon	250	5	2.0	580 ± 76 *ab*
	West Red	350	6	1.7	758 ± 306 *a*
	L. Bear Trap	350	7	2.0	600 ± 100 *a*
	U. Bear Trap	350	7	2.0	500 ± 200 *b*
Magdalena	Mill	200	3	1.5	717 ± 29
	Water	175	3	1.7	567 ± 115
Zuni	CWG	200	4	2.0	438 ± 144
	Sedgewick	175	3	1.7	650 ± 0
	Oso Ridge	175	10	5.7	330 ± 177 *b*
Jemez	Barley	175	3	1.7	567 ± 115
Mean		288	5.4	2.0	621 ± 237

[1]Estimated by drawing a convex polygon around the perimeter of all territories.
[2]Means followed by the same letter are not significantly different ($P > 0.05$, Tukey's HSD).

TABLE 3. Owl and cavity densities and productivity for three Flammulated Owl study areas.

Study area	Size (ha)	Territories/ 100 ha	NND ± SE	Cavities/ 100 ha	Number of males	Number of breeding males	Fledged young per female ± SE
Surprise	175	6.8	259 ± 90	30	12	10 (83)	2.1 ± 0.9
U. Bear Trap	75	5.3	369 ± 181	28	4	3 (75)	2.3 ± 0.5
L. Bear Trap	200	3.5	526 ± 219	30	7	4 (57)	2.0 ± 0.8

DISCUSSION

Suitable nesting cavities may be a potentially limiting resource in apparently suitable owl habitat. Flammulated Owls are obligate secondary cavity-nesting birds and in New Mexico use cavities excavated by Acorn Woodpeckers (*Melanerpes formicivorus*) and Northern Flickers (*Colaptes auratus*) (Arsenault 2004). The distribution of Acorn Woodpeckers is closely associated with oaks (a major food item) and with snags (standing dead trees) or dead tree limbs for use as storage granaries (Stacey and Koenig 1984, Koenig et al. 1995), which were provided by Gambel oak and narrowleaf cottonwood in many of the study areas. The distribution of Northern Flickers is limited mostly by suitably soft wood or the presence of knotholes or other existing cavities for excavation of nest-sites (Moore 1995), as was provided by ponderosa pine snags and large quaking aspen in study areas.

The distribution of Flammulated Owls in study areas may have been influenced by the presence of suitable nesting cavities. Peterson and Gauthier (1985) noted that the distribution of cavities was naturally clumped in parkland habitat and boreal forest in British Columbia. This might be due to the distribution of suitable substrates for cavity

excavation by woodpeckers. In New Mexico, however, the density and spacing of owls where cavities were present was not related to the density of these cavities.

The density of owl territories varied significantly between study areas, but there was low variation in Nearest-Neighbor Distance within each study area. This indicates that habitat with suitable nesting cavities was saturated with owl territories. Nearest-Neighbor Distance (i.e. owl density) in an area may have been related to the proportion of males that were nesting, a possible indicator of habitat quality. However, the sample size was too small to adequately test this hypothesis. The number of young fledged per female was very similar between three core study areas, regardless of owl density. Therefore, higher density study areas produced more young per area than those with lower density. The close association between the presence of owls and suitable nesting cavities emphasizes the importance of woodpeckers and their habitat needs for the conservation of secondary cavity-nesting birds (Arsenault 2004).

ACKNOWLEDGEMENTS

I thank the many field workers and volunteers, but especially John Corbett, Kelly Ward and Cliff Wilson, for their invaluable assistance. Financial and logistical support was provided by the Cooper Ornithological Society, Hawks Aloft Inc., National Science Foundation (Grant DEB 9302247), North American Bluebird Society, Sigma Xi, Turner Foundation, University of Nevada, and the U.S. Forest Service Black Range District (Gila National Forest).

LITERATURE CITED

ARSENAULT, D.P. 1999. The ecology of Flammulated Owls: nest-site preferences, spatial structure, and mating system. M.S. Thesis, University of Nevada- Reno, Reno, NV. 89 pp.

ARSENAULT, D.P. 2004. Differentiating nest sites of primary and secondary cavity-nesting birds in New Mexico. Journal of Field Ornithology 75:257-265.

ARSENAULT, D.P., L. NEEL AND G.E. WILSON. 2003. Flammulated Owls in the Spring Mountains, Nevada. Great Basin Birds 6:45-51.

ARSENAULT, D.P., P.B. STACEY AND G.A. HOELZER. 2005. Mark-recapture and DNA fingerprinting data reveal high breeding site fidelity, low natal philopatry, and low levels of genetic population differentiation in Flammulated Owls. Auk 122:329-337.

BALDA, R.P., B.C. MCKNIGHT AND C.D. JOHNSON. 1975. Flammulated Owl Migration in the Southwestern United States. Wilson Bulletin 87:520-533.

BENT, A.C. 1938. Flammulated Screech Owl, *Otus flammeolus*, Life Histories of North American Birds of Prey. U. S. National Museum Special Bulletin 170:291-295.

BULL, E.L., A.L. WRIGHT AND M.G. HENJUM. 1990. Nesting habitat of Flammulated Owls in Oregon. Journal of Raptor Research 24:52-55.

DICK-PEDDIE, W.A. 1993. New Mexico Vegetation: Past, Present, and Future. University of New Mexico Press, Albuquerque.

DUNHAM, S., L. BUTCHER, D.A. CHARLET AND J.M. REED. 1996. Breeding range and conservation of Flammulated Owls (*Otus flammeolus*) in Nevada. Journal of Raptor Research 30:189-193.

GROVES, C., T. FREDERICK, G. FREDERICK, E. ATKINSON, M. ATKINSON, J. SHEPHERD AND G. SERVHEEN. 1997. Density, distribution and habitat of Flammulated Owls in Idaho. Great Basin Naturalist 57:116-123.

HURLEY, T. AND M. GORRESEN. 1991. Notes on owl species detected during the 1991 Sandia Spotted Owl survey. Unpublished report, U.S. Forest Service, Albuquerque, NM.

JOHNSON, E.D. AND P.J. ZWANK. 1990. Flammulated Owl biology on the Sacramento unit of the Lincoln National Forest. Unpublished report, U.S. Forest Service, Las Cruces, NM. 63 pp.

JOHNSON, N.K. AND W.C. RUSSELL. 1962. Distributional data on certain owls in the western Great Basin. Condor 64:513-514.

KOENIG, W.D., P.B. STACEY, M.T. STANBACK, AND R.L. MUMME. 1995. Acorn Woodpecker (*Melanerpes formicivorus*). *In*: A. Poole and F. Gill, eds., The Birds of North America, No.194. The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C. 24 pp.

LIGON, J.S. 1961. New Mexico Birds and Where to Find Them. The University of New Mexico Press and New Mexico Department of Game and Fish.

LINKHART, B.D. 2001. Life history characteristics and habitat quality of Flammulated Owls (*Otus flammeolus*) in Colorado. Ph.D. Dissertation, University of Colorado, Boulder.

MARCOT, B.G. AND R. HILL. 1980. Flammulated Owls in northwestern California. Western Birds 11:141-149.

MARSHALL, J.T. 1939. Territorial behavior of the Flammulated Screech-owl. Condor 41:71-78.

MARTI, C.D. 1997. Flammulated Owls (*Otus flammeolus*) breeding in deciduous forests. Biology and Conservation of Owls of the Northern Hemisphere: 2nd International Symposium, Winnipeg, Manitoba. U.S. Forest Service Gen. Tech. Rep.

MCCALLUM, A.D. 1994. Flammulated Owl (*Otus flammeolus*). *In*: A. Poole and F. Gill, eds., The Birds of North America, No. 93. The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C. 24 pp.

MCCALLUM, D.A., F.R. GELBACH AND S.W. WEBB. 1995. Life History and ecology of Flammulated Owls in a marginal New Mexico population. Wilson Bulletin 107:530-537.

MOORE, W.S. 1995. Northern Flicker (*Colaptes auratus*). *In*: A. Poole and F. Gill, eds., The Birds of North America, No.166. The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C. 28 pp.

OLEYAR, M.D. 2000. Flammulated Owl (*Otus flammeolus*) breeding ecology in aspen forests of northern Utah: including responses to ski area development. M.S. Thesis, Boise State University, Boise, ID. 58 pp.

PETERSON, B. AND G. GAUTHIER. 1985. Nest-site use by cavity-nesting birds of the Caribou Parkland, British Columbia. Wilson Bulletin 97:319-331

POWERS, L.R., A. DALE, P.A. GAEDE, C. RODES, L. NELSON, J.J. DEAN AND J.D. MAY. 1996. Nesting and food habits of the Flammulated Owl (*Otus flammeolus*) in south-central Idaho. Journal of Raptor Research 30:15-20.

PROUDFOOT, G.A. 1996. Miniature video-board camera used to inspect natural and artificial nest cavities. Wildlife Society Bulletin 24:528-530.

REYNOLDS, R.T. AND B.D. LINKHART. 1984. Methods and materials for capturing and monitoring Flammulated Owls. Great Basin Naturalist 44:49-51.

REYNOLDS, R.T. AND B.D. LINKHART. 1987. The nesting biology of Flammulated Owls in Colorado. Symposium on the Biology and Conservation of Northern Forest Owls, Winnipeg, Manitoba. U.S. Forest Service Gen. Tech. Rep.

REYNOLDS, R.T. AND B.D. LINKHART. 1992. Flammulated Owls in ponderosa pine: evidence of preference for old growth. Old-growth Forests in the Southwest and Rocky Mountains Region. U.S. Forest Service Gen. Tech Rep.

ROBBINS, C.S. 1970. Recommendations for an international standard for a mapping method in bird census work. Audubon Field Notes 24:723-726.

STACEY, P.B. AND W.D. KOENIG. 1984. Cooperative breeding in the Acorn Woodpecker. Scientific American 251:114-121.

WILKINSON, L., G. BLANK, AND C. GRUBER. 1996. Desktop Data Analysis with SYSTAT. Prentice Hall, Upper Saddle River, NJ. 798 pp.

WINTER, J. 1974. The distribution of the Flammulated Owl in California. Western Birds 5:25-44.

ZELENY, L. 1977. Nesting box programs for bluebirds and other passerines. Pp. 55-60 *In*: S.A. Temple, ed., Endangered Birds: Management Techniques for Preserving Threatened Species. The University of Wisconsin Press, Madison.

* * *

ABSTRACTS FROM THE NMOS 45TH ANNUAL MEETING

The following abstracts are from the papers presented 5 May 2007 at the 45th Annual Meeting of the New Mexico Ornithological Society held at Washington Ranch and Retreat, Eddy County, NM. Abstracts are listed in order of the presentations. For papers with multiple authors, the presenting author's name is underlined.

BIRDS OF THE MELROST MIGRANT TRAP, ROOSEVELT COUNTY, NEW MEXICO. John E. Parmeter, 1325 Paisano NE, Albuquerque, NM 87112; jp972@earthlink.com

Since its discovery by birders in the spring of 1991, the Melrose Migrant Trap has been one of the state's most heavily birded locations. This talk will present an overview of the avifauna of this oasis, which is located on State Trust Land approximately ten miles west of the town of Melrose and just north of US Highway 60. Through 2006, a total of 246 species – nearly 48% of all species recorded in New Mexico - have been found at this location. This total includes 43 species that have been found at the trap only once, 17 that have been found twice, 36 that have been found three to five times, and 150 that have been found six or more times. The list of 43 species recorded only once includes nine water birds, ten montane and foothill species, nine eastern vagrants, two western vagrants, two Mexican vagrants, and eleven others that are not easily categorized. A total of 37 species that are on the review list of the New Mexico Bird Records Committee have been recorded at the trap. There have been approximately 152 records of review list species that have been documented either by hard evidence (photos, videotape) or by substantive written details. These records are nearly equally divided between spring and fall. The number of records of rarities has increased in recent years as coverage has increased. In the five years from 2002-2006 the trap averaged 19 documented records of review list species per year (sigma = 7.6), with a high of 31 such records in 2005 and a low of 12 in 2003. Length-of-stay analysis indicates that ca. 73% of these rarities are seen only on a single day, with fall birds being only slightly more likely than spring birds to stay longer.

A PRELIMINARY DISTRIBUTIONAL ANALYSIS OF PUBLISHED BIRD RECORDS FROM THE GILA RIVER VALLEY OF NEW MEXICO. Roland S. Shook (tyranidae@hotmail.com) and Dale A. Zimmerman, Dept. of Natural Sciences, Western New Mexico University, Silver City, NM 88061

The New Mexico bird records published in *Birds of New Mexico* by Florence M. Bailey, *Revised Check-list of the Birds of New Mexico* by John P. Hubbard, the New Mexico Ornithological Society's *Field Notes*, and National Audubon Society's *Audubon Field Notes* and successive publications will be analyzed as to their distribution from the Arizona border to the upper reaches of the West, Middle, and East Forks of the Gila River. Analysis will show which portions of the Gila River Valley have been historically studied, and to what degree, as well as, which portions are lacking in documentation of the avifauna.

LANDBIRD SURVEYS DURING FALL MIGRATION IN THE BIG BURRO MOUNTAINS, GRANT COUNTY, NEW MEXICO, 2006.
David J. Griffin, Griffin Biological Services, 2311 Webb Road, Las Cruces, New Mexico 88012; GriffinBio@msn.com

Avian surveys were conducted between 11 August and 13 October 2006 using distance sampling and the point transect method to determine densities of fall migrant landbirds in the Big Burro Mountains, New Mexico. Forty-nine species were detected during surveys and an additional 25 species were observed incidental to surveys. Eight species (16.3%) were considered to be long-distance Neotropical ("passage") migrants, 5 species (10.2%) were considered short-distance ("temperate") migrants, and 37 species (75.5%) were considered breeding residents (note: the total adds up to 50 due to the presence of both breeding and wintering migrant forms of Dark-eyed Junco). Additionally, 2 temperate migrants were considered to be winter residents in the Big Burro Mountains. The timing of migration for both passage and temperate migrants was spread relatively evenly throughout the survey period, however the number of passage migrant species peaked during the first 4 survey periods (12 August to 1 September), while temperate migrant species peaked during the last four survey periods (22 September to 13 October). Migrant abundances during surveys accounted for 7% to 38% of all birds observed throughout the survey period (mean = 17.6% of all birds/survey). Due to small sample sizes for all migrant landbirds, reliable density estimates could not be generated. Sample sizes were small for most resident bird species as well and density estimates were generated for only the 5 most abundant resident species (i.e., Hairy Woodpecker, Northern Flicker, Steller's Jay, White-breasted Nuthatch, and Mountain Chickadee). Summaries of abundance were reported for the most abundant migrants.

RE-EVALUATING THE EVALUATION OF AERIAL SURVEY METHODS FOR LESSER PRAIRIE-CHICKENS IN TEXAS AND NEW MEXICO. Hope D. Woodward, Dept. of Biology, New Mexico State University, Las Cruces, NM 88003; towi@nmsu.edu

Since the 1800s, the range-wide population of Lesser Prairie-Chicken (*Tympanuchus pallidicinctus* - LPCH) has declined by 92%. The species became a candidate for protection under the Federal Endangered Species Act in 1998. Efforts to document total number of active breeding display sites (leks' indices of population) in the Texas south plains have been hindered by inaccessibility. Under the assumption that detection probability results from conducting aerial surveys over known active leks in one habitat type (shinnnery oak- or sandsage- dominant) can be extrapolated to unsurveyed areas of similar habitat, in 2005 researchers began evaluating aerial survey methods as an alternative to conducting ground surveys on inaccessible private land. Detection probability results from individual helicopter surveys conducted during the 2006 pilot year ranged from 14% to 67%. The majority of lek detections were made over anthropogenic sites. I argue that this method is overly simplistic and based on a flawed set of assumptions. Given that the main goal of such research is to estimate numbers of leks on unsurveyed and inaccessible land where leks are presumed to exist, I propose a GIS-based approach that considers known lek numbers and locations, remote sensing, landscape, land use, habitat, and ecological and biological variables (including known lek occurrence) to create a predictive model for lek occurrence. Such a sophisticated habitat suitability model can then be tested on land units managed for LPCH. Detection probability analyses should incorporate lek density, area, and type and observer efficiency and visibility indices.

LANDSCAPE EFFECTS ON ABUNDANCE AND MOVEMENT PATTERNS OF WINTERING RED-TAILED (*Buteo jamaicensis*) AND FERRUGINOUS (*Buteo regalis*) HAWKS IN EASTERN NEW MEXICO. Holly A. Marchman (marchman@enmu.edu) and Gregory S. Keller, Dept. of Biology, Eastern New Mexico University, Portales, NM 88130

Populations of Red-tailed (*Buteo jamaicensis*) and Ferruginous (*Buteo regalis*) hawks currently are declining in short-grass prairie of eastern New Mexico. These raptor species are important due to their response to human disturbance and fragmentation of their habitats and their role as predators on small mammals. Research has mainly focused on breeding success and territory acquisition, yet there is a substantial need for winter data of hawks as a source

of basic scientific knowledge. Some raptors adjust to various levels of disturbance in different ways. We will examine on a landscape level, if fragmentation of natural grasslands affects habitat use, movement, and condition of hawks during winter 2006-2008. Raptors will be surveyed at points located along 4-km transects in active cropland, pasture, and natural grasslands to estimate abundance. We will capture red-tailed and ferruginous hawks and attach transmitters to radio track individuals. Physiological data will be taken to assess several factors including fat stores and parasite load. Given the ecological role of these two raptor species, understanding winter population status and individual condition is critical to conservation of these species in New Mexico.

MOUNTAIN PLOVERS IN TAOS COUNTY, NEW MEXICO. Mike M. Stake, Hawks Aloft, Inc., P.O. Box 10028, Albuquerque, New Mexico, 87184; mstake@hawksaloft

A sizeable Mountain Plover (*Charadrius montanus*) population breeds on the Bureau of Land Management's North Unit in northern Taos County, New Mexico. Initial monitoring determined general distribution patterns for Mountain Plovers on the North Unit, but a standardized method of estimating density and population size was needed. Beginning in 2004, we employed distance sampling with a model-selection approach to calculate density, estimate population size, and determine temporal changes. We surveyed off-road transects in July of 2004, but failed to record a sufficient number of plovers to calculate density. We modified our methods in 2005 and 2006 by conducting roadside point count surveys earlier in the season. Using point counts with the same model-selection approach, we calculated a density of 1.9 plovers/km2. Projecting plover density on the entire 50,000-ha site yields an estimated population of 950 plovers, whereas projecting the density only on documented habitat from 2001-2006 yields an estimate of 146 plovers. We suggest that the true population size currently resides between those figures. Continued point count monitoring will help identify any changes in Mountain Plover density. Although Mountain Plover density on the North Unit is considerably less than densities reported for populations in other regions, the large size of the North Unit, along with BLM management practices that generally support the continued existence of plovers, makes this a valuable site for Mountain Plover conservation in New Mexico.

BIOLOGICAL REVIEW OF THE GRAY VIREO IN NEW MEXICO.
John P. DeLong (jpdelong@comcast.net), Eagle Environmental, Inc., 2314 Hollywood Ave NW, Albuquerque, NM 87104, and Sartor O. Williams III,., New Mexico Department of Game and Fish, P.O. Box 25112, Santa Fe, NM 87504

We compiled published and unpublished records of Gray Vireos in the state of New Mexico and produced an overview of the distribution, status, and biology of the species in the state. We identified 49 population sites in 20 of New Mexico's 33 counties and estimated a maximum number of documented territories at 418. The largest known concentrations in the state are located in the Guadalupe Mountains (92 territories), Manzanita Mountains (60), Navajo Dam area (44), Caja del Rio area (25), and the Quebradas area (25); smaller but significant concentrations (10 to 17 territories) are in the Organ Mountains, San Andres NWR, the La Plata area, the Ladron Mountains, the Counselor area, near Glenwood, and in the vicinity of Zuni. Gray Vireos breed in pinyon pine-Utah juniper woodlands, one-seed juniper savannas, mixed juniper-oak woodlands, and desert riparian communities. Gray Vireos typically nest in juniper trees, although other tree and shrub species are used. The breeding phenology of Gray Vireos in New Mexico is: nest construction from late April through late June, incubation from early May through mid-July, hatching from mid-May through late July, and fledging from late May through early August. Breeding success is low in the state (usually ≤33%), in large part due to abandonment following brood-parasitism by the Brown-headed Cowbird. Parasitism rates are usually more than 50%, ranging 0-71%. Threats to the species include habitat loss, disturbance from construction and development, habitat alteration from livestock grazing, and Brown-headed Cowbird brood parasitism.

ABUNDANCE AND DISTRIBUTION OF ARIZONA GRQSSHOPPER SPARROW (*Ammodramus savannarum ammolegus*): CURRENT AND HISTORICAL SURVEYS.
Janet M. Ruth, U. S. Geological Survey, UNM Biology Department, Albuquerque, NM 87131; janet_ruth@usgs.gov

The Arizona Grasshopper Sparrow is a subspecies that breeds in desert grasslands of southeastern Arizona and southwestern New Mexico in the United States, and in adjacent parts of northern Sonora and Chihuahua, Mexico. Roads surveyed in 1982 and 1987 in Arizona and New Mexico were relocated and roadside survey protocols were repeated in 2004 and 2005 to

identify changes in distribution or abundance of the subspecies in the subsequent 17 years, particularly in light of potential habitat degradation or losses during that time. Both numbers of singing males, and mean singing male density (number of singing males per survey point) show a pattern of increase from 1982 to 1987 and a subsequent decline to the present. Present bird numbers/density are intermediate in value between 1982 and 1987 values. The Sonoita and San Rafael valleys in Arizona, and the Animas Valley in New Mexico remain the areas supporting both the greatest numbers and densities of Arizona Grasshopper Sparrows in the United States. Small populations remain in the Altar, Sulphur Springs, San Bernardino and San Pedro valleys in Arizona.

* * *

DUES INCREASE FOR 2008

The current dues amounts for New Mexico Ornithological Society membership have been unchanged since 1993. Beginning 1 January 2008, dues will increase from their current level. Members wishing to renew before the prices increase are encouraged to do so. Changes to the dues schedule are shown below.

Membership category	Current dues	Dues effective 1 January 2008
Regular	$10	$20
Family	$15	$30
Student	$5	$10
Supporting	$35	$50
Life	$300	$500

* * *

This issue of the *NMOS Bulletin* published 25 June 2007.

NEW MEXICO ORNITHOLOGICAL SOCIETY

— Founded 1962 —

The New Mexico Ornithological Society was organized to gather and disseminate accurate information concerning the bird life of New Mexico; to promote interest in and appreciation of the value of birds, both aesthetic and economic, to further effective conservation of the state's avifauna; to facilitate opportunity for acquaintance and fellowship among those interested in birds and nature; and to issue publications as a means of furthering these ends.

Membership and Subscriptions: Membership in the New Mexico Ornithological Society is open to anyone with an interest in birds. Memberships are for a calendar year and annual dues are payable 1 January. Dues are: Regular Membership $10; Family $15; Student $5; Supporting $35; Life $300. Address for the New Mexico Ornithological Society: Post Office Box 3068, Albuquerque, NM 87190-3068.

NMOS BULLETIN

The *Bulletin* is published quarterly; subscription is by membership in NMOS. The *Bulletin* serves two primary purposes: (1) to publish articles of scientific merit concerning the distribution, abundance, status, behavior, and ecology of the avifauna of New Mexico and its contiguous regions; and (2) to publish news and announcements deemed of interest to the New Mexico ornithological community.

NMOS members are encouraged to submit articles and news. Articles received are subject to review and editing. Published articles are noted in major abstracting services. Please submit articles in double-spaced electronic format, such as a Microsoft Word document, by e-mail to the Editor (see inside front cover). Refer to recent issues of the *Bulletin* for examples of style. News items may be submitted to the Editor by way of e-mail.

www.nmosbirds.org

New Mexico Ornithological Society
P.O. Box 3068
Albuquerque, NM 87190-3068

NON-PROFIT
ORGANIZATION
U.S. POSTAGE
PAID
PERMIT NO. 623
ALBUQUERQUE, NM

ADDRESS SERVICE REQUESTED