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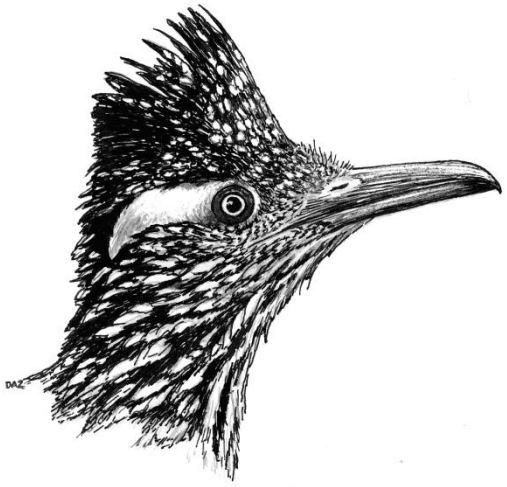

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MOLECULAR AND MORPHOLOGICAL EVIDENCE CONFIRM THE FIRST RECORD OF EASTERN WHIP-POOR-WILL (*CAPRIMULGUS VOCIFERUS*) FOR NEW MEXICO

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Abstract.—We report the first documented record for Eastern Whip-poor-will (*Caprimulgus vociferus*) in New Mexico. The bird was found on 8 October 2010, at the Melrose Migrant Trap, Roosevelt County. The bird was captured, photographed in detail, and released. Feathers were collected for DNA analysis. The wing chord measurement was within the published range for Eastern Whip-poor-will, but was considerably shorter than that of the Mexican Whip-poor-will (*C. arizonae*), a widespread breeding species elsewhere in New Mexico. Identification was confirmed by phylogenetic analysis of DNA sequence of the mitochondrial cytochrome *b* gene that was 0.5% and 5.5% divergent from published sequences for Eastern Whip-poor-will and Mexican Whip-poor-will, respectively.

INTRODUCTION

The whip-poor-will species complex (formerly *Caprimulgus vociferus*) was long considered to comprise a single, polytypic species with six subspecies (Peters 1940, Dickinson 2003). In 2010, the North American Classification Committee (NACC) of the American Ornithologists' Union (AOU) split Whip-poor-will into two full species that are allopatric: (1) the monotypic Eastern Whip-poor-will (*Caprimulgus vociferus*) which breeds in the eastern United States and southern Canada; and (2) the Mexican Whip-poor-will (*C. arizonae*), which includes five subspecies that breed from the southwestern United States to Honduras and El Salvador (AOU 2010). The split was justified on the basis of differences in vocalizations and mitochondrial and nuclear DNA. The Eastern Whip-poor-will had not been definitively documented in the state of New Mexico up to the present time (Williams 2010).

The Mexican Whip-poor-will summers in pine and pine-oak forests in southern California and from southern Nevada, northern Arizona, central New Mexico, and extreme western Texas, south through the highlands of Mexico, Guatemala, El Salvador and Honduras (AOU 2010). In New Mexico, the Mexican Whip-poor-will summers in all of the mountain ranges in the southwestern and south-central parts of the state and north to the Zuni, Jemez and Sangre de Cristo Mountains (Williams 2010), as well as in the Guadalupe Mountains (Ligon 1961) in the southeast. The northern limit of the species' breeding distribution in New Mexico has been successively adjusted northward from descriptions of the distribution that have been published over the past 83 years, having been described as near Chloride (ca. 33°20'N; Bailey 1928, AOU 1957), the Sacramento Mountains (ca. 33°30'N; Ligon 1961), the Datil and Magdalena Mountains (ca. 34°17'N; Hubbard 1978), the Sandia and Zuni Mountains (ca 35°23'N; Zimmerman and Huntington 1984) and the Jemez and Sangre de Cristo Mountains (ca. 36°8'N; Williams 2010). Although it is unknown whether this northward progression represents newly described distributional data or range expansion, there is evidence that the species may have expanded its range westward into southern California and northward into Nevada and Colorado

during the past three decades (Johnson 1994, Cink 2002). Breeding populations of the Mexican Whip-poor-will in the United States and northern Mexico are thought to be short-distance migrants that winter from central Mexico south to Honduras, but limits of the wintering range are poorly known (Cink 2002, AOU 2010). In New Mexico, birds depart from breeding areas between late August and late October (Ligon 1961). Spring arrival of United States populations occurs during late March to early May (Ligon 1961, Phillips et al. 1964, Oberholser 1974), though Bailey (1928) cited a report of this species singing as early as March 2, near Rodeo, New Mexico.

The Eastern Whip-poor-will summers from south-central Saskatchewan, southern Manitoba, central Ontario, southern Quebec, central New Brunswick and Nova Scotia south, east of the Great Plains (west to eastern North Dakota, southeastern South Dakota, eastern Nebraska, eastern Kansas and Oklahoma) to extreme northeastern Texas, Arkansas, northern Mississippi, north-central Alabama, central Georgia, South Carolina, east-central North Carolina and Virginia (AOU 1998). The species winters from northeastern Mexico, southern Texas, the Gulf coast and east-central South Carolina (casually farther north, on the Atlantic coast to New Jersey) south through Middle America to Costa Rica. Winter records exist for southern California, western Panama (western Chiriquí), and Cuba (AOU 1998). Eastern Whip-poor-will is a medium-distance circumgulf migrant. Similar to Mexican Whip-poor-will, spring migration in the eastern species is concentrated from late March to May with birds arriving on their northern breeding grounds by the beginning of May. Fall migration is protracted, with most individuals leaving the United States between early-September and late November and with a peak between mid-September and mid-October (Cink 2002).

Records of Eastern Whip-poor-will exist from southwestern states other than New Mexico. Arizona has a single accepted record comprised of a specimen (CUMV 27220) that was collected near Roosevelt, Gila County, 4 November 1952 (Phillips et al. 1964). Colorado has four documented records of Eastern Whip-poor-will that have been accepted by the Colorado Bird Records Committee (L. S. Semo, pers. comm.). Two of these records are from the fall; 14 September 1903 from Larimer County and 5 September 2008 from Pueblo County. The other two records are from spring; 20-21 May 2006 from El Paso County and 21-22 May 1992 from Moffat County. Interestingly, Colorado has six whip-poor-will records that are unidentified to species, all of which occurred between 1981-89, with four from May, one from July, and one from September (L. S. Semo pers. comm.). California has two records of Eastern Whip-poor-will, though it is unknown whether they correspond to the same individual. The first record was at Pt. Loma, San Diego County, 14 November 1970 (Craig 1971), and the second occurred at Coronado, San Diego County, 25 December 1971-25 March 1972 (Winter 1973).

While the two whip-poor-will species are allopatric during breeding and have distinct vocalizations, they present a severe identification challenge when they are encountered away from the breeding grounds. Whip-poor-wills are cryptic birds that are rarely seen during the day. They forage during the night or at dusk from the ground or an exposed perch and are usually only detected by vocalizations (Cink 2002). They rarely sing outside of the breeding or spring migration seasons. Eastern Whip-poor-will averages more white in the outer tail (r3-r5), shorter rictal bristles, grayer color on the rump and tail, and a shorter wing chord compared to Mexican Whip-poor-will, but these measurements overlap (Pyle 1997). Photos or written descriptions of non-singing birds may be insufficient for identification to species. Thus, measurements, song-recordings, and DNA analysis are the key tools for identifying whip-poor-wills to species.

In this paper, we describe a whip-poor-will from New Mexico that was found on 8 October 2010, and represents the ninth record for the eastern plains region of the state. Only one of the previous eight records was from fall, a bird found at Amistad, Union County, 2 October 2005

(Williams 2010). However, none of the previous records were documented by song-recordings or specimens and, as a result, there are no definitive records of either whip-poor-will species for the eastern plains region of New Mexico. We approach the identification of this most recent whip-poor-will record using analysis of measurements, plumage patterns, and mitochondrial DNA derived from plucked feathers.

METHODS

At 0930h on the morning of 8 October 2010, JO found a whip-poor-will at the North Roosevelt Trap (NRT, Melrose Migrant Trap) in Roosevelt County, New Mexico (34° 26.066´ N 103° 47.941´ W ± 200 meters; Fig. 1). The bird was roosting on a downed tree, approximately 0.5 m off the ground, in a small stand of silverleaf poplar (*Populus alba*). JO alerted others that were present, several of whom observed the bird. Given the possibility that the bird might represent a state record and considering the difficulty of whip-poor-will identification, JO, MJB, and NDP mist-netted, measured and photographed the whip-poor-will. An inner primary feather (p5), right rectrix number five (r5), and several contour feathers from the body were pulled and saved for DNA analysis. These materials were accessioned at the Museum of Southwestern Biology (MSB) at the University of New Mexico (catalog no. MSB 29872; http://arctos.database.museum/guid/MSB:Bird:29872). The bird, hereafter referred to as MSB 29872, was released shortly after capture and it promptly returned to its original roosting site. Although it was not measured in the field, we subsequently used digital calipers to measure the extent of white at the tip of the preserved r5 and we used that measurement to estimate the extent of white tips on other rectrices using digital photographs. Maximum extent of white, measured along the feather shaft, in the outer rectrices (r3-r5) was determined by the larger measurement in millimeters between the left or right rectrix. Photographs and measurements were compared to published compendia (Howell and Webb 1995, Pyle 1997) and to six male Mexican Whip-poor-will and two male Eastern Whip-poor-will specimens in the MSB collection. We restricted comparisons to male specimens because the prominent white tips on the outer rectrices confirmed that the bird was definitely a male.

Laboratory Methods. DNA was extracted from two feathers: the proximal tip of a rectrix and the proximal tip of a contour feather from the body, using Qiagen DNEasy kits following the manufacturer's protocol, but with the addition of 30 µl of 0.1 M dithiothreitol (DTT) to each extraction. The extractions were assayed for DNA content using a NanoDrop spectrophotometer (Thermo Fisher Scientific, Pittsburgh, PA). The mitochondrial cytochrome-*b* gene was amplified in duplicate in a 15 µl reaction using 2 µl of the DNA extract with reagents, primers, and protocols following Witt et al. (2010). Sequencing reactions using external primers utilized BigDye 3.1 chemistry (ABI) and were read using an ABI 3130 automated sequencer. We assembled sequence contigs for each of two replicate amplicons and inspected chromatograms manually using Sequencher 4.7 (GeneCodes, Ann Arbor, Mich.). We used the software package MUSCLE (Edgar 2004) for alignment with previously published cytochrome-*b* sequences from related *Caprimulgus* species, including all four sequences from a well-supported clade that includes the Mexican Whip-poor-will and the Eastern Whip-poor-will (Han et al. 2010). We used the program MEGA (Kumar et al. 2008) to calculate uncorrected pairwise distances and conduct distance-based phylogenetic analysis. We used the program Phyml (Guindon and Gascuel 2003) to conduct maximum-likelihood phylogenetic analysis using the default parameters (HKY85 model with gamma-distributed among-site rate variation) and simultaneous estimation of model parameters. We ran 500 bootstrap replicates of the maximum likelihood analysis to assess branch-node support.

RESULTS

Plumage patterns. The crown of MSB 29872 was gray with fine black streaking and mottling. There was an irregular but well defined black median stripe that did not reach the forecrown and was broken near the nape. The median crown stripe was edged in rufous (Fig 2). The lores and auriculars were tawny-buff with some black mottling at the rear of the auriculars. The throat was black, bordered on the lower end by a partial white collar. The bill was short, narrow and dark gray. The bird had rictal bristles that lined the side of the bill and extended beyond the tip of the bill. The breast and belly were grayish with black mottling. The lower belly and undertail coverts were off-white in color. The wing coverts were dark brownish with tawny spots, buff marbling, and buff tips. The primaries were dark brown and had orange-buff spots and mottling, creating a banded pattern. The outer primaries had strongly emarginated leading edges. The tertials were dark brown with large tawny spots and buff mottling near the tips. The mantle was grayish-brown with fine black vertical streaking and few buff-colored feathers intermixed. The rump had pale grayish mottling and fine streaking on a darker background (Fig. 1A). The central rectrices closely matched the pattern on the rump with pale gray mottling on a blackish background. The outer rectrices (r3-r5) were dark brownish-black with large white patches at the tips; the extent of white increasing from r5 to r3 (Fig. 1B). The white patches were edged with a strong buff wash. The overall plumage pattern and color of MSB 29872 showed greatest similarity to the Eastern Whip-poor-will when compared to male whip-poor-will specimens at the MSB (Fig. 1C). The background color of the rump and upper surface of the central rectrices is grayer in MSB 29872 and the Eastern Whip-poor-will specimens than in the Mexican Whip-poor-will specimens. Furthermore, the black bars along the shafts of the central rectrices are less prominent in MSB 29872 and the Eastern Whip-poor-will specimens. The two MSB Eastern Whip-poor-will specimens showed a clearly defined median crown stripe, like MSB 29872, whereas Mexican Whip-poor-will specimens showed an undefined median crown stripe (Fig 2). Mexican Whip-poor-will specimens have extensive rufous tipping and edging in the crown feathers, whereas Eastern Whip-poor-wills have rufous coloration limited to the edges of the median crown stripe (Fig 2).

Measurements. The wing chord of MSB 29872 measured 149mm. This is at the low end of the wing chord range reported for male Eastern Whip-poor-wills of 149-169 mm, but it is 13 mm below the wing chord range reported for male Mexican Whip-poor-wills of 162-179 mm (Pyle 1997). The tail of MSB 29872 measured 119mm. Pyle (1997) reports that male Eastern Whip-poor-wills have tail lengths ranging from (114-128 mm), whereas male Mexican Whip-poor-wills have a range of (114-135 mm). Measurements of the wing chord and tail for MSB specimens representing both whip-poor-will species were within the published ranges for these taxa. The maximum extent of white in r5 of MSB 29872 was 38 mm. Using this feather and several digital photographs of the spread tail, we estimated the extent of white present in r3 and r4 as 48 mm and 43 mm, respectively. The maximum extent of white in each of the three outer rectrices of MSB 29872 are compatible with measurements of male Eastern Whip-poor-wills (Table 1). The extent of white in r5 for MSB specimens of *C. arizonae* ranged from 27-31 mm, and the range given by Howell and Webb (1995) was 11-34 mm, substantially below the r5 measurement for MSB 29872. The measurements of the extent of white in r4 for *C. arizonae* extended as high as 48 mm (Howell and Webb 1995) and 44 mm (MSB specimens), and therefore overlapped with the 43 mm of MSB 29872 (Table 1). The 48 mm extent of white on r3 of MSB 29872 was larger than on any *C. arizonae* MSB specimen, though it overlaps with the range, 37-55 mm (Pyle 1997).

Figure 1. Photographs of MSB 29872 from the Melrose Migrant Trap, 8 October 2010. (A) Lateral view showing plumage details; (B) dorsal view of rectrices showing extent of white in r3-r5 and color of central rectrices; (C) dorsal view of specimen tails showing color of central rectrices; left: HY *C. arizonae* (MSB 23095), center: AHY *C. vociferus* (MSB21440): right: AHY *C. arizonae* (MSB 585).

Figure 2. Photograph of MSB 29872 crown detail (A) from the Melrose Migrant Trap, 8 October 2010 and specimens at the MSB. Top view of specimen crowns showing detail of median crown stripes; (B): AHY *C. arizonae* (MSB 585), (C): AHY *C. vociferus* (MSB 23901), (D): AHY *C. vociferus* (MSB 21440), (E): HY *C. arizonae* (MSB 23095).

TABLE 1. Maximum extent of white (mm) in the outer rectrices (r3-r5) of MSB 29872, existing Eastern Whip-poor-will and Mexican Whip-poor-will specimens in the MSB collection, and the published ranges of extent of white in the outer rectrices of the whip-poor-will species (Howell and Webb 1995, Pyle 1997).

	(r5)	(r4)	(r3)
(1) New Mexico specimen (MSB29872)	38	43	48
(2) *C. vociferus* (Howell and Webb)	26-45	42-60	--
(3) *C. vociferus* (Pyle, range of r3-r5)		-- (43-65) --	
(4) *C. vociferus* (San Diego)	29	43	45
(5) *C. vociferus* (MSB21440)	38	51	57
(6) *C. vociferus* (MSB23901)	48	58	62
(7) *C. arizonae* (Howell and Webb)	11-34	32-48	--
(8) *C. arizonae* (Pyle, range of r3-r5)		-- (37-55) --	
(9) *C. arizonae* (MSB1153)	27	35	37
(10) *C. arizonae* (MSB23095)	30	39	41
(11) *C. arizonae* (MSB496)	29	41	44
(12) *C. arizonae* (MSB585)	31	43	46
(13) *C. arizonae* (MSB2493)	31	41	44
(14) *C. arizonae* (MSB766)	31	44	46

DNA Sequence data. Two separate extractions from a rectrix and a contour body feather contained 5.2 and 9.0 ng/μL of DNA respectively. The cytochrome-b gene was successfully amplified and sequenced from both feather extractions. The sequences from the two extractions were assembled to produce a sequence of 984 base pairs. The chromatogram of the sequence was clean and unambiguous, with no double peaks or conflicts between the readings that would suggest the possibility that we had mistakenly sequenced a nuclear DNA pseudogene. Complete sequences were deposited on Genbank (accession no. HQ696494). Comparison of the sequence with a published sequence for Eastern Whip-poor-Will revealed a divergence level of 0.5% (Table 2). Divergence levels between MSB 29872 and other representatives of the genus *Caprimulgus*, were higher: 5.5 and 5.6% for two specimens of the Mexican Whip-poor-will, 6.1% for the Dusky Nightjar *C. saturatus* and 9.9% for the Buff-collared Nightjar *C. ridgwayi* (Table 2). Phylogenetic analysis based on maximum likelihood corroborated distance results; MSB 29872 sequence grouped with previously published sequence of an Eastern Whip-poor-will with strong bootstrap support (Figure 3). The five DNA substitutions observed between MSB 29872 and the published cytochrome-*b* sequence of the Eastern Whip-poor-will were all transitions and four were synonymous changes that did not affect encoded amino acid. The one non-synonymous change was at codon 309, where the published sequence (KU2457) contained methionine (GTA) and the sequence of MSB 29872 contained valine (ATA), both nonpolar, neutrally charged amino acids.

DISCUSSION

We can definitively identify MSB 29872 to one of the two whip-poor-will species based on plumage, size, and proportions. In the absence of vocal evidence, identification of whip-poor-wills to species in the field may be extremely difficult or impossible with certainty. The two species differ in several morphological features, but size ranges overlap. On average, Eastern Whip-poor-will has shorter wings, more white in the tail of males, and grayer color on the tail and rump. The extensive white patches in the tail indicate that MSB 29872 is a male; female whip-poor-wills have buffy tips to the outer tail feathers measuring less than 18 mm (Pyle 1997).

TABLE 2. Pairwise levels of percent sequence divergence (*p* distances) between the New Mexico individual and representatives of related species in the genus *Caprimulgus* based on 984 base pairs of the sequence of the cytochrome-*b* gene. Genbank accession numbers of the sequences used for this analysis: (1) HQ696494; (2), GU586635; (3) GU586634; (4) GU586652; (5) GU586657; (6) GU586658.

	(1)	(2)	(3)	(4)	(5)
(1) MSB 29872					
(2) *C. arizonae* OMVP406	0.056				
(3) *C. arizonae* MBM12900	0.055	0.001			
(4) *C. ridgewayi* Conacyt415	0.099	0.086	0.085		
(5) *C. saturatus* LSUMZ_B28251	0.061	0.058	0.057	0.099	
(6) *C. vociferus* KU2457	0.005	0.057	0.056	0.098	0.062

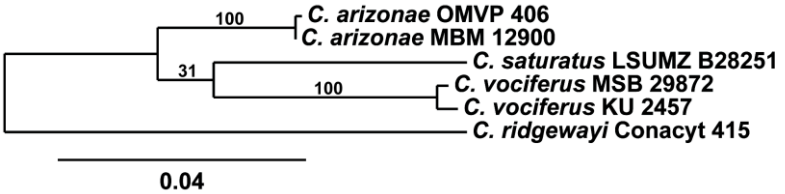

Figure 3. Cytochrome *b* phylogeny of the clade containing *Caprimulgus vociferus, C. arizonae,* and *C. saturatus*, (Han et al. 2009), with *C. ridgewayi* as an outgroup, showing the phylogenetic position of the New Mexico individual (MSB29872). Percent bootstrap support (out of 500 replicates) is shown at each node.

The wing chord of 149 mm places MSB 29872 at the low end of the range of Eastern Whip-poor-will and well below the range of Mexican Whip-poor-will. Although Eastern Whip-poor-will tails are shorter on average, the tail measurement of MSB 29872 was not useful for identification.

The extent of white at the tips of the outer rectrices differs between the two species, with Eastern Whip-poor-will averaging more extensive white tips overall. However, there is overlap and hatch-year (HY) birds average less white than after hatch-year (AHY) birds (Pyle 1997). MSB 29872 appears to be an HY based on narrow, tapered primaries, and narrow rectrices; however, it shows a primary covert pattern typical of an AHY bird. The first pre-basic molt includes variable number of wing coverts, from none to most or all (Pyle 1997), causing considerable difficulty in aging whip-poor-wills during fall. None of the six MSB Mexican Whip-poor-will specimens approaches the maximum extent of white present in r5 or r3 shown by MSB 29872, and the extent of white in r5 is above the range for that species by four mm (by Howell and Webb 1995). Strangely, the extent of white in r5 is at the lower end of the range of 37-55 mm provided by Pyle (1997) for r3-r5 of *C. arizonae*, and is below the range of 43-65 mm provided by the same source for *C. vociferus* (Table 1). Our specimen data show that the ranges of extent of white in r3-r5 given by Pyle are too high for *C. arizonae* for r5 and r4 (Table 1). The extent of white found in r3 of MSB 29872 fits with measurement data for three *C. vociferus* provided in Table 1 and is above the range of measurements for six *C. arizonae*, despite being compatible with ranges of measurements for both species according to Pyle (1997). In summary, the amount of white in the tail tips of MSB 29872 appears to be compatible with Eastern Whip-poor-will and too extensive for Mexican Whip-poor-will, but further studies of the range of variation in this characteristic are needed to resolve conflicts among published datasets and our specimen data.

The color of mottling on the central rectrices differs slightly between species with that of Eastern Whip-poor-will typically being gray, rather than the sandy brown of Mexican Whip-poor-will. This difference is difficult to assess on individual birds without direct comparison. Comparison of images of the tail of MSB 29872 with tails of other MSB specimens showed that the overall color and pattern was a closer match to the Eastern species. The background color of the central rectrices on the MSB 29872 closely matched the color of MSB 21440 and was markedly grayer than all five Mexican Whip-poor-will specimens (Fig. 1C). The median crown stripe shape and rufous in the crown limited to the edge of the median crown stripe shown by MSB 29872 is more similar to Eastern Whip-poor-will specimens (Fig 2). A larger sample size is needed to accurately assess whether these field marks differentiate plumage characteristics of Eastern and Mexican whip-poor-wills.

Mitochondrial DNA data confirm that the New Mexico specimen is an Eastern Whip-poor-will. The cytochrome-*b* sequences obtained for MSB 29872 were highly divergent from published sequences of Mexican Whip-poor-will and were extremely close to the single published sequence for Eastern Whip-poor-will. The high ratio of transition to transversions, the absence of stop codons, and the predominance of synonymous substitutions in the DNA sequence indicate that the sequence was mitochondrial in origin and did not represent a nuclear DNA pseudogene that could confound our analysis.

Phylogenetic evidence reveals a close relationship between the mitochondrial DNA haplotypes of MSB 29872 and the published sequence for Eastern Whip-poor-will, providing strong confirmation of the identification of the New Mexico individual to this species. We caution, however, that this conclusion rests on the assumption of reciprocal monophyly of the mitochondrial lineages of Eastern and Mexican whip-poor-wills on the basis of sequence from one Eastern and two Mexican individuals. The deep level of mitochondrial sequence divergence between these two taxa (5.5%), the corresponding divergence of nuclear gene sequences (Han et al. 2010), and their allopatric distributions strongly suggest that this assumption will hold even after more individuals are sampled from throughout the ranges of these two taxa. The NACC decision to consider the whip-poor-will complex as two species implied a judgment that the existing mitochondrial DNA data are sufficient to establish a high likelihood of reciprocal monophyly (AOU 2010).

It should be noted that the cytochrome-*b* sequence for the New Mexico individual was not identical to sequences published for the Eastern Whip-poor-will, but was divergent by 0.5%. This suggests that population structure may exist within the Eastern Whip-poor-will and that this vagrant is unlikely to have originated from the same population represented by the sequence on Genbank. The Genbank sequence originated from a specimen at the University of Kansas Museum of Natural History (Tissue no. 2457, specimen catalog no. KUNHM 89186) that was collected in the southwestern part of the species breeding distribution, Shannon County, Missouri, on 20 May 1998. A phylogeographic study with population-level sampling from throughout the ranges of Eastern and Mexican whip-poor-wills is warranted. Such a study is likely to reveal that the mtDNA variation that we observed has a geographic basis and might shed light on the geographic origins of vagrant Eastern Whip-poor-wills in southwestern North America.

The individual described in this paper represents the first documented record of Eastern Whip-poor-will for the state of New Mexico. This record might be expected on the basis of well-documented previous records in Arizona, Colorado, and California. Eastern Whip-poor-will has a large breeding rage in the eastern United States and southern Canada and it completes medium-distanced migrations in spring and fall. Eastern Whip-poor-will departs its breeding range between early September and late November with a migratory peak from mid-September

to mid-October. The present record fits well within the expected migration timing of the Eastern Whip-poor-will, as do the previous records from Arizona (4 November) and Colorado, and a previously unidentified whip-poor-will from the eastern plains of New Mexico on 2 October 2005 (Williams 2010). This distribution and migratory pattern fits the profile of a species that could be expected to occur irregularly in the state of New Mexico, especially on the eastern plains. We suggest that the dearth of previous records reflects a combination of the difficulty of finding this nocturnal species during migration, the extreme difficulty of identification, and lack of motivation by birders to identify taxa that were considered to be conspecific by the AOU before 2010.

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FLORENCE MERRIAM BAILEY LIFETIME ACHIEVEMENT AWARD
JOHN P. HUBBARD

John Hubbard was born in North Carolina, an Air Force kid who traveled with his parents, finishing high school in Silver City when his father retired. After a stint in the military, he attended Western New Mexico University where he was strongly influenced by Dale Zimmerman. He conducted his doctoral research on the relationship between Myrtle and Audubon's Warblers at University of Michigan, receiving his Ph.D. in 1966. From 1966–1969 he worked on a Smithsonian Institution study of avian migration across the Mediterranean Sea. He was then the curator of a private collection of Harold H. Bailey at Rockbridge Alum Springs, near Blacksburg, Virginia from 1969–1971. From there he moved on to become Curator of Birds for Delaware Museum of Natural History from 1971–1974. During this time he sponsored important collecting trips to Mexico, and spent two summers traveling with his family and collecting in New Mexico. In 1974 John moved to New Mexico where he was employed by the New Mexico Department of Game and Fish in the Endangered Species Program. He remained there until 1994 when he retired. He continues to serve as a Curatorial Associate in the Bird Division of the Museum of Southwestern Biology.

Even before John moved to New Mexico, he was contributing to the New Mexico Ornithological Society and New Mexico ornithology. He served as a co-editor of *NMOS Field Notes* from 1967–1974 from afar; when he moved to New Mexico he became the sole editor of Field Notes for several years and continued as a co-editor until 1981. He also served as editor of the *NMOS Bulletin* from 1976–1981 and as President of NMOS from 1979–1980.

During this time he also published many articles in the NMOS Bulletin, and he published a 1970 and 1978 version of the Check-list of the Birds of New Mexico. He contributed further to New Mexico and Southwest ornithology by compiling 17 years of Christmas Bird Counts (initially for New Mexico-Arizona-Nevada and eventually just for New Mexico (1973–1987). He also compiled over 60 seasons of reports for the Southwest Region for *American Birds,* often with co-authors (1975–1992).

In addition to the NMOS and other publications mentioned above, John has published many articles in peer-reviewed publications (*The Condor*, *The Auk*, *Wilson Bulletin*, *Southwestern Naturalist*, *Western Birds*, *Living Birds*, and *American Birds*) and professional reports for the New Mexico Department of Game and Fish. Many of these contributed to ornithological knowledge around the world.

Because of Hubbard's many years of gathering and dispensing avian information for New Mexico, we know much more about the status and distribution of birds in the state. Hubbard kept New Mexican ornithology alive and well during his long tenure in the state, and we know a great deal more about the unique avian resources here as a result.

* * *

NMOS RESEARCH GRANTS ANNOUNCEMENTS

The New Mexico Ornithological Society is pleased to announce the recipients of the 2011 Ryan Beaulieu Research Grant and the 2011 NMOS Research Grant. Each will receive $1,000 to support their research on New Mexico birds.

RYAN BEAULIEU RESEARCH GRANT

Bethany Abrahamson, University of New Mexico – Elevational distributions and inter-specific competition in New Mexico hummingbirds. The range of overlap between the Black-chinned Hummingbird of the New Mexico lowlands and the Broad-tailed Hummingbird of the mountains provides an ideal system for investigating the interplay of competitive dynamics and physiology. The direct interactions among elevation, competitive success, and distribution limits have not been fully studied in general, and competitive dynamics between these two species have not been studied. Bethany will identify the zone of overlap for these two species and then quantify relative abundance and record competitive interactions. Precisely defining the upper and lower range limits for these two species and the factors that play a role in setting those limits will be critical to predicting their response to climate change. This study will examine how competition, urban habitat components, temperature, and air density affect range limits and predicted responses to climate change. This study will be conducted in the Sandia Mountains along two elevational transects: San Antonito to the Sandia Crest, and Placitas to the Sandia Crest. Funds from this grant will pay for travel associated with this project and hummingbird food and feeder equipment.

NMOS RESEARCH GRANT

Ronald Treminio, New Mexico State University – The use of stable hydrogen isotopes to elucidate the molt pattern of Burrowing Owls breeding across the Great Plains. Molt patterns of the Burrowing Owl are not well understood. Some recent research results suggest that not all Burrowing Owls undergo a complete molt prior to migration. Ronald will use stable hydrogen isotopes to elucidate the molt patterns of Burrowing Owls across the Great Plains and use this information to trace migratory pathways and possibly winter locations. He predicts that owls may exhibit one or more of the following molt patterns: (1) a complete molt on the breeding grounds; (2) a molt migration where they molt en route to wintering grounds; and (3) molt suspension where they suspend molt until they reach their winter locations. Ronald will determine which pattern(s) are exhibited by determining the isotopic signature from a series of feather samples from adults and juveniles. This study is being conducted on seven grassland sites across the Great Plains. Funds from this grant will be used for travel and data collection at the two grassland sites in New Mexico – Kiowa National Grasslands and Armendaris Ranch.

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NEW MEXICO ORNITHOLOGICAL SOCIETY
FINANCIAL STATEMENT FOR 2010

Balance as of 12/31/10:	
Checking account balance	$ 8398.76
Petty cash	32.29
Interest left off last year	.07
Undeposited checks	348.00
Total	8779.12
Net Transactions from 1/1/10 to 12/31/10:	
Dues	2680.00
NM Bird Finding Guide sales	1694.00
NM Field Checklist sales	19.00
Annual meeting	320.86
Postage and shipping	-1512.57
Miscellaneous	-10.00
Grants	-1000.00
Database maintenance	-900.00
Printing	-2215.07
Storage unit rent	0
Interest	0.80
Total Transactions	-922.98
Total 2010 beginning balance plus transactions	7856.14
Balance as of 12/31/10:	
Checking account balance	7823.85
Petty cash balance	32.29
Checks outstanding	0.00
Undeposited checks	0.00
12/31 balance	$7856.14

Petty cash income and disbursements ($0.00 and $0.00) are included in the income and expense categories and above.

Date: January 2011 Submitted by: Jerry R. Oldenettel, Treasurer

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MATCH THE CHALLENGE: RESEARCH GRANTS ENDOWMENT

It has been a recent goal of NMOS to establish a permanent endowment for the Research Grants Fund. We would like to eventually generate a total of $50,000 which can permanently fund the grant, thus supporting research on the birds of New Mexico. Vice-President Jonathan Batkin recently approached the Thaw Charitable Trust to inquire about their interest in participating in this fund-raising effort, in effect matching our membership efforts. They have issued a challenge to our membership to raise $7,500 by the end of November 2011 which they will match if and when we achieve that goal. There are several ways that we can achieve this. A gift donation via our website (we now accept credit card payments via PayPal) is most certainly welcome; for those members who donate $500 to this effort, we can award you an honorary Life Membership to the Society. Two annual installment payments of $250 per year will also count toward this challenge and will result in an honorary Life Membership. Monies generated above and beyond our annual meeting expenses also count toward this challenge. Finally, see the announcement below. We hope that you will embrace this challenge and help the Society in its efforts to establish a permanent Research Grant Fund.

* * *

DALE A. ZIMMERMAN BIRD PRINTS AVAILABLE!

Thanks to the tremendous generosity of artist and NMOS Life Member Dale A. Zimmerman, we have the opportunity to acquire signed, limited edition prints of Dale's artwork depicting ten bird species representative of the diverse avifauna of New Mexico. Dale and his wife Marion have chosen ten of their favorite drawings, and we are having these printed and signed now. Among those chosen are such charismatic species as Painted Redstart, Montezuma Quail, Mexican Spotted Owl, Elegant Trogon, Lesser Prairie-Chicken, Bridled Titmouse, Black-throated Sparrow, and Greater Roadrunner. You can purchase these wonderful prints and help NMOS meet the Thaw Charitable Trust Challenge, which must be completed by November 2011. Time is short. You will be able to purchase the prints through our NMOS website (www.nmbirds.org), where you can view the choices and place your order. We also accept checks via our mailing address. Individual 8" x 11½" prints are available for $25 apiece, or you can get a pre-packaged set of five different species for $100. There will be two sets of five different prints offered, with each of the ten species if one purchases two sets for $200. Help us match the Challenge and acquire beautiful limited edition prints from one of New Mexico's premier artists and ornithologists. Once again, thank you for supporting NMOS!

Dave Krueper, NMOS President
Jonathan Batkin, NMOS Vice-President

* * *


DAZ

MEMBERSHIP DUES REMINDER

If you have not already paid your 2012 NMOS membership dues, please take a moment to do so now. You can now pay NMOS membership dues and donate to the NMOS on Paypal. You do not need to have a Paypal account and they accept any major credit card. The link to Paypal can be found on the NMOS web site (www.nmbirds.org).

* * *

SAVE THE DATE: NMOS 2012 MEETING

The 50th Annual meeting of the New Mexico Ornithological Society will be held on March 31, 2012, at the Best Western Rio Grande Inn, Albuquerque, New Mexico. Details will be posted on the NMOS web site and in the Bulletin as they become available.

* * *

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 $20; Family $30; Student $10; Supporting $50; Life $500. 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.nmbirds.org

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