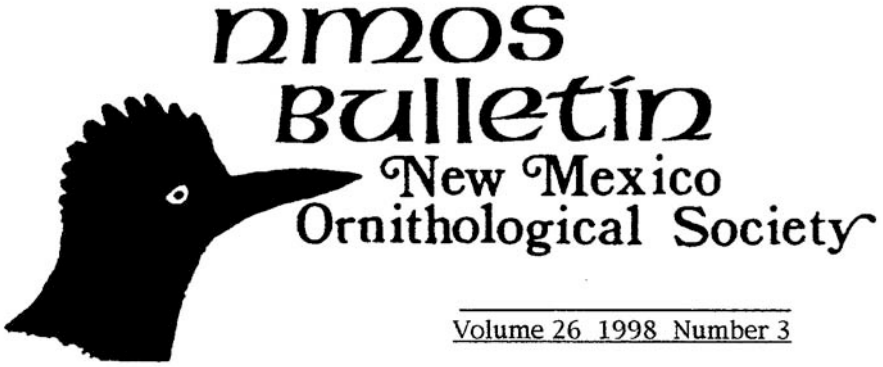

Volume 26 1998 Number 3

THE NEW MEXICO ORNITHOLOGICAL SOCIETY, INC.
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FIRST RECORD OF THE CURLEW SANDPIPER, *Calidris ferruginea,* FOR NEW MEXICO, WITH NOTES ON THE INLAND OCCURRENCES OF THE SPECIES IN NORTH AMERICA

BRUCE NEVILLE
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The Curlew Sandpiper *(Calidris ferruginea)* is an Old World sandpiper that appears annually in small numbers on the east coast of North America, less commonly along the Pacific coast, and irregularly throughout the interior of the continent (A.O.U. 1998). New Mexico's first record is reported here and is viewed in the context of historical inland reports of the species on the continent.

I. The New Mexico Record

At approximately 19:00 MDT on 4 May 1996, Douglas Emkalns noticed an unusual shorebird feeding with a flock of Wilson's Phalaropes *(Phalaropus tricolor)* and Western Sandpipers *(Calidris mauri)* in shallow water at the north end of Unit 16 in Bitter Lake National Wildlife Refuge, Chaves County, New Mexico. Through the telescope (Bushnell Spacemaster, 25x eyepiece), we could see that the bird had extensively reddish underparts. Initially believing it to be a Red Knot *(Calidris canutus),* we approached to get additional details for documentation for the New Mexico Bird Records Committee (NMBRC). As we approached to within about 50-75 m, we realized that several field marks were inconsistent with Red Knot and we simultaneously arrived at the conclusion that the bird must be a Curlew Sandpiper, a species not previously reported from New Mexico, in nearly complete alternate plumage.

The bird fed with a "sewing machine" motion, somewhat like a Stilt Sandpiper *(Calidris himantopus*). It occasionally stopped feeding to preen briefly, and it made two or three minor "runs" at Western Sandpipers. We observed the flock for approximately 40 minutes, until all birds flew out of sight.

The Curlew Sandpiper was slightly larger than the Wilson's Phalaropes with which it associated, and neither particularly plump nor slender. The bill was approximately 1.5 times the length of the head, black, rather thin, evenly downcurved over the distal half, and ended in a slender point. A distinct whitish halo was present on the face around the base of the bill. The head, neck, and breast were brick red, the color ending unevenly with some white mottling on the lower breast. The remaining underparts were white. A faint light line was present above the eye. The back was gray, with large dark centers to many of the coverts. The tarsi were black, as were the exposed portions of the tibiae, which were moderately long. The folded wings extended to the tip of the tail. In flight, the upper tail coverts were clear white, but this color did not extend in a wedge onto the back. The tail was dark, and the underwings were whitish. We did not notice a wing stripe, primarily because we were concentrating on the tail covert and tail pattern during the short flights. No vocalizations were heard.

On the morning of 5 May, we arrived back at the Refuge at approximately 08:00, to find that Larry Gorbet, Jerry Oldenettel, and John Parmeter had located the bird, then near the north end of Unit 15. Gorbet obtained still photographs, and Oldenettel secured video footage through his telescope. He was able to capture a frame from the video that was posted to the NMOS web page (http://biology.unm.eduJ~nmos/curlewsand _pc.html). The bird was still present when we left ca. 20 minutes later, but Steve West (pers. comm.) failed to locate it later that morning. To our knowledge, it was never seen again.

The record, with photographic documentation, was submitted to the NMBRC, and has been accepted (Williams 1997).

II. Inland Occurrences of Curlew Sandpipers in North America

To gain further insight into the species's status, I extracted all reports of Curlew Sandpipers from the seasonal reports of *Audubon Field Notes, American Birds, NAS Field Notes,* and *Field Notes* (hereafter, simply *"American Birds")* from Vol. 1, no. 2 (1947) through Vol. 51, no. 4 (1997). The following

information was noted, where given: state and location, first and last dates of observation, number of birds, age, plumage, sex, and observers. Other comments in the report were also recorded. In some cases, reports were only of "x" birds seen during the season in the region; such cases were treated as a single report, and in no case did they involve an inland report. The county involved, if not stated, was determined from a variety of gazetteers and atlases for all reports in the lower 48 states. All data were entered into a spreadsheet for sorting, counting, and graphing.

The first North American record of Curlew Sandpiper was apparently of two at Great Egg Harbor, New Jersey, in the spring of 1829, and the first inland record from Toronto, Ontario, ca. 1886 (Jourdain 1927). The species has nested at least twice in Alaska: two unsuccessful nests with eggs probably lost to jaegers *(Stercorarius* spp.) at Barrow in June and July 1962 (Holmes and Pitelka 1964), and at least two successful nests, of seven discovered, also at Barrow in July and August 1972 (Remsen, in Gibson and Byrd 1972). The Curlew Sandpiper is now reported annually on the east coast of North America, especially from Cape Cod to Cape Hatteras (specific locations of reports from these areas are often omitted from *American Birds).* There are sporadic occurrences in many inland states, so its appearance in New Mexico was not unexpected.

A total of 615 reports of Curlew Sandpiper were retrieved for 38 of the lower 48 states, Alaska, Hawaii, all 10 Canadian provinces, St. Pierre et Miquelon, and the West Indies. Of these, 502 (82%) were coastal, 110 (18%) were inland, and 3 (<0.5%) could not be placed in either category. Of the inland reports, at least 43 are from areas bordering the Great Lakes, including 23 of the 26 Ontario reports. A summary of all reports by state and province is given in Table I. Except as otherwise noted, all further discussion concerns only the 110 inland reports, which represent 26 states and 4 provinces. With three exceptions, all inland reports were of single birds. The exceptions are two birds each at Washington Boro, Pennsylvania, 14 Aug 1955 (Potter & Murray 1956); at Toronto, Ontario, 13 Oct 1989 (Weir 1990); and at Grand Bend, Lake Huron, Ontario, 15-17 May 1994 (Ridout 1994).

Age classes were: adult 24 (22%), immature/juvenile 6 (5%), and unspecified 80 (73%). Plumages were: alternate 16 (15%), basic 4 (4%), molting 2 (2%), "adult" 4 (4%), immature/juvenile 6 (5%), and unspecified 78 (71 %). Only 3 (3%) reports mentioned the sex of the bird, and in two cases, this was given as probable.

The monthly distribution of inland reports, based on the date of first discovery, is shown in Figure I. Plumage data are also given by month in Figure I. The number of reports per year is given in Figure 2; incomplete data for 1947 and 1997 are not included in Figure 2. Figure 3 shows the recorded length of stay for the inland reports; 53 (48%) of the birds were reported for only a single day. The median length of stay was two days. Only two inland reports involve visits of longer than 11 days; they are of 31 and 33 days.

Reports in *American Birds* generally have not been reviewed by state records committees by the time of publication. Except for some presumed screening by the seasonal editors, no critical evaluation of cited reports has been undertaken. I have not attempted to verify personally any of the reports used in this analysis. Of the 110 inland reports, only one (Cheyenne Bottoms, Kansas, 3 August 1972) is supported by a specimen (Williams 1972). Photographic or video documentation were noted for 22 reports (20%) and written details for 28 (25%); no mention of any documentation was made in 62 (56%) of the reports. (Totals add to greater than 110 in this case, as both photographs and written details were noted in 3 reports.) Even photographs may be equivocal, as was the case with Utah's first report (Howe 1979a,b; Sordahl 1978, 1979); because the possibility remains that the bird was a Curlew Sandpiper, that report is included in these analyses.

Inland reports of the Curlew Sandpiper are widely scattered throughout the continent. The "typical" inland report of Curlew Sandpiper is of a single adult bird in alternate plumage in May or July, which remains for one or two days and is not seen again. The preponderance of adults in alternate plumage (16 or 50% of 32 reported plumages) is explicable as that plumage is conspicuous and readily identified. The pre-alternate molt begins in mid-February or March and is generally completed by early to mid-May (Roselaar 1983; Zimmerman, pers. comm.), so northbound migrants are in nearly full alternate plumage. The peak in July probably reflects the large numbers of southbound shorebird migrants beginning during that month. The head and underparts are in full molt by late July, although molt is suspended during actual migration

(Roselaar 1983), and birds would show at least some chestnut feathers. The majority of birds reported in July and August are also in alternate, or at least "adult," plumage, although some "immatures" are reported beginning in August. As with many shorebirds, juveniles appear to move southward later than adults. Rather puzzling is a report of a "first-year" bird from the north end of the Salton Sea 16-26 April (McCaskie 1994). Sexual dimorphism is subtle in the species (Hayman, Marchant & Prater 1986), so it is not surprising that birds are rarely sexed in the field.

There were only 4 inland reports in the years from 1948 to 1966. Beginning in 1967, from one to three birds were reported almost annually from inland locations. In 1982 and thereafter, reports became more frequent, generally from four to six birds per year. The increased number of reports in 1967 may partly be explained by the appearance of the popular *"Golden Guide"* (Robbins *et at.* 1966), in which the Curlew Sandpiper was treated equally with more regular species. No similar "watershed" publication involving shorebirds appeared in the early 1980s to explain the rise in number of reports in that period, nor was there an obvious dramatic increase in birding activity.

First records for nine states and provinces have been made since 1990. (See Table 1.) South Carolina's initial record seems overdue, as reports from the Outer Banks of North Carolina have been routine since the early 1970s.

New Mexico's Bitter Lake record brings to 40 the number of states reporting Curlew Sandpiper, and to 26 the number with inland records. Our record is typical of inland reports: a single bird in nearly full alternate plumage, discovered in May, which stayed for parts of 2 days.

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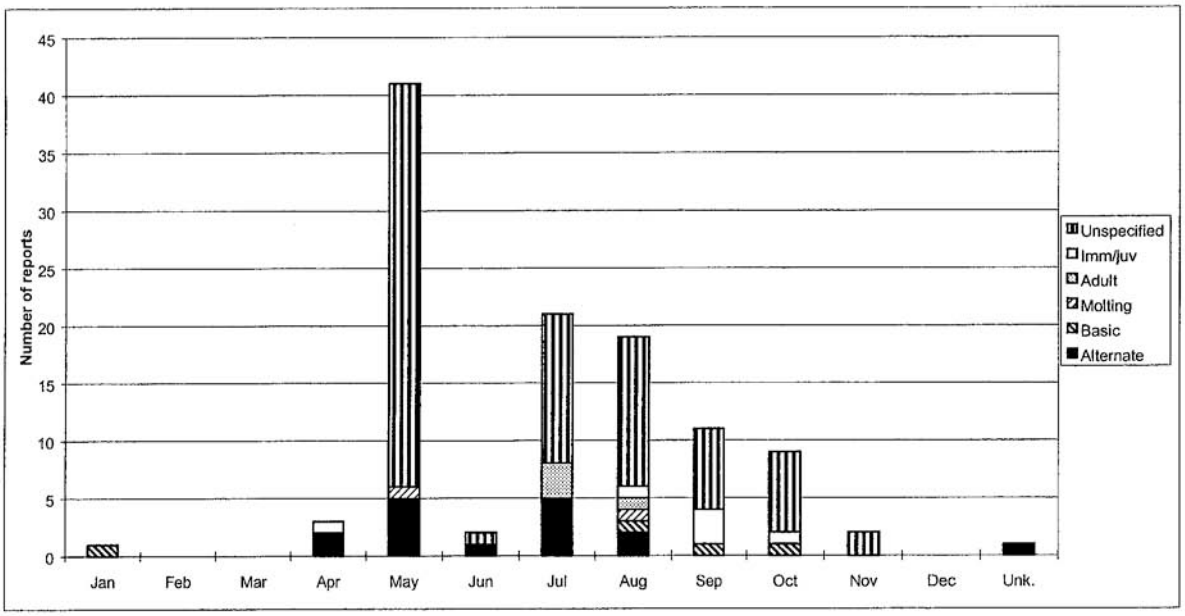
Received 20 July 1998

Table 1. Distribution of Curlew Sandpiper Reports by State and Province

	Coastal	Inland	Unknwn	Total	1st Rep *
Alaska	20	2		22	1972
Alabama	3			3	1972
Arizona				0	
Arkansas				0	
California	13	8		21	1972
Colorado				0	
Connecticut	6			6	1969
Delaware	62			62	1963
Florida	12	4	1	17	1949
Georgia	2			2	1960
Hawaii	5			5	1979
Idaho				0	
Illinois		9		9	1967
Indiana		1		1	1980
Iowa		2		2	1985
Kansas		2		2	1972
Kentucky		1		1	1994
Louisiana	5	1		6	1953
Maine	7			7	1970
Maryland	4			4	1959
Massachusetts	53			53	1948
Michigan		11		11	1975
Minnesota		1		1	1994
Mississippi	1			1	1980
Missouri				0	
Montana		1		1	1972
Nebraska				0	
Nevada		1		1	1995
New Hampshire	3			3	1961
New Jersey	95	1	1	97	1950
New Mexico		1		1	1996
New York	49	2		51	1948
North Carolina	42			42	1971
North Dakota		1		1	1982
Ohio		4		4	1984
Oklahoma				0	
Oregon	10			10	1976
Pennsylvania		3		3	1955
Rhode Island	8			8	1973
South Carolina	1			1	1991
South Dakota				0	
Tennessee		1		1	1993
Texas	11	6		17	1958
Utah		2		2	1978
Virginia	31	3		34	1956
Vermont		2		2	1991
Washington	4	1		5	1972
West Virginia				0	
Wisconsin		8		8	1968
Wyoming				0	
Alberta		2		2	1969
British Columbia	8			8	1977
Manitoba	1			1	1983
New Brunswick	5			5	1977
Newfoundland	3			3	1985
Nova Scotia	18			18	1969
Northwest Territories				0	
Ontario		26		26	1954
Prince Edward I.	1			1	1994
Quebec	10	2	1	13	1974
Saskatchewan		1		1	1994
Yukon Territory				0	
St. Pierre & Miquelon	2			2	1985
West Indies	2			2	1976
Region **	5			5	
Total	**502**	**110**	**3**	**615**	

Notes:
States/provinces with inland records in **bold face**
* Dates of first report refer to those reported in *American Birds* only. Some areas have earlier reports.
** Reports identified to *American Birds* region only.

Figure 1. Monthly distribution of inland reports of Curlew Sandpiper (n=110). Plumages are indicated.



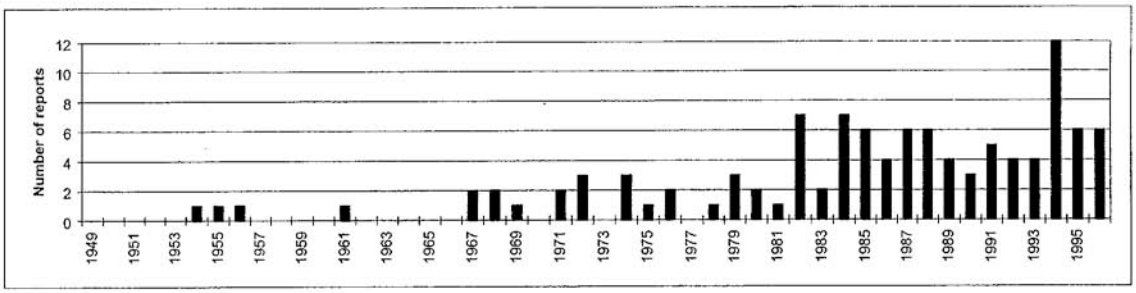


Figure 2. Yearly distribution of inland records of Curlew Sandpiper (n= 109; incomplete year 1997 omitted).

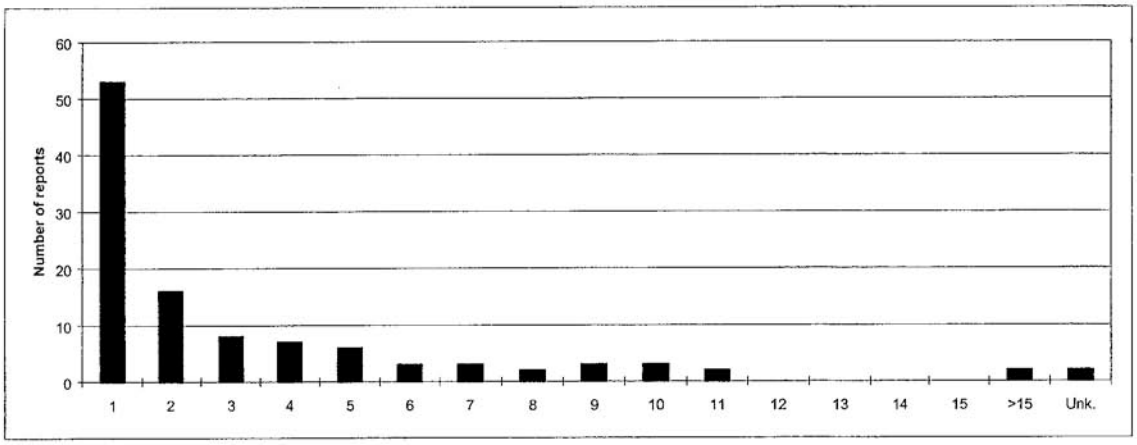


Figure 3. Recorded duration of inland reports of Curlew Sandpiper (n = 110).

Notes on the Curlew Sandpiper, by Dale Zimmerman

Although an abundant Old World shorebird, and not difficult to identify, *Calidris ferruginea* remains poorly known to many American birders. The species is more-or-less adequately, but not always realistically, figured in our field guides. Posture, proportions and plumage details are often inadequately treated. The accompanying photographs show some typical individuals in various plumages. For excellent color-photos of the brownish scaly-backed and buff-breasted juvenal plumage, see p. 308 of Dennis Paulson's *Shorebirds* of *the Pacific Northwest* (UBC Press,

University of Washington Press, 1993) and p. 397 in the National Audubon Society *Master Guide* to *Birding,* Vol. 1 (Alfred A. Knopf, Inc. 1983).

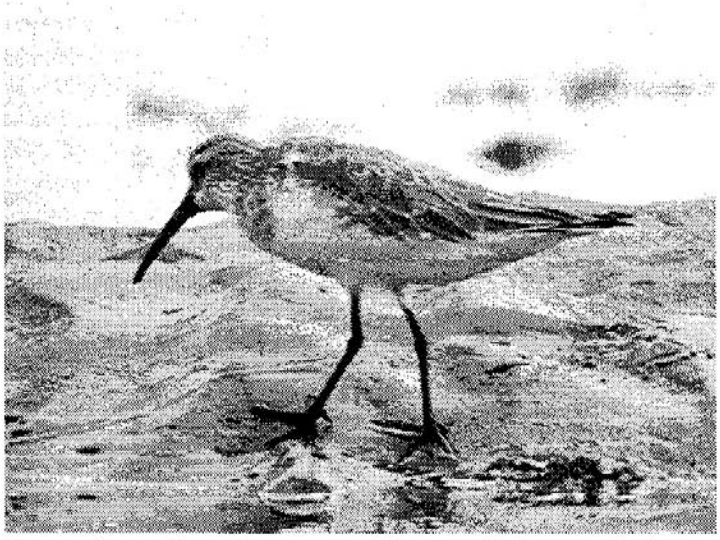


Fig. 1. Non-breeding Curlew Sandpiper, adult or bird in first basic plumage (the two apparently indistinguishable). Plumage paler than in similarly plumaged Dunlin, light gray-brown above, with buffy gray wash on breast which has darker gray-brown streaks. Bill same length as in Dunlin, but more slender and evenly decurved along distal 2/3 of its length, not just 20% longer than in a Dunlin, and tarsi longer as well. In addition, the neck is longer than a Dunlin's and so are the wings, the primaries extending well beyond the tail tip. (Malindi, Kenya 14 Jan. 1986, D. & M. Zimmerman)

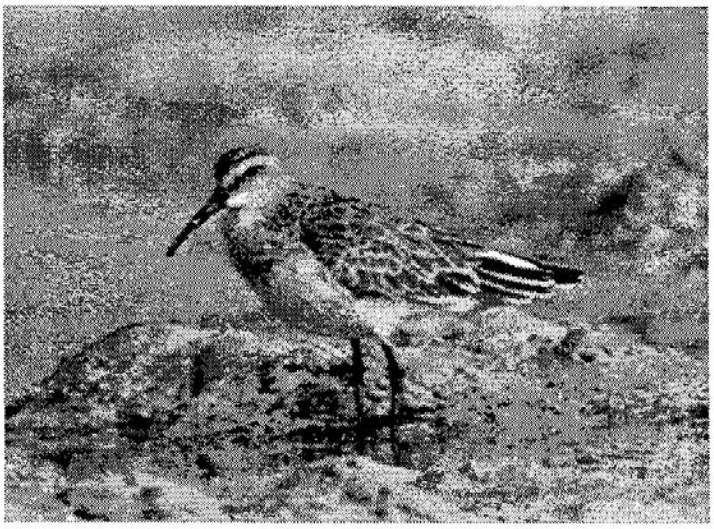


Fig. 2. Another non-breeding individual showing the prominent superciliary stripe, dark chest and white upper tail-coverts. (Malindi, Kenya, 14 Jan. 1986, D. & M. Zimmerman)

Editor's note, CORRECTION from V26#4: An unfortunate extensive omission during printing greatly altered the meaning of the caption for Fig. 1 (page 51) in Dale Zimmerman's "Notes on the Curlew Sandpiper" in *NMOS Bulletin* vol. 26, no. 3. Lines 10-15 of the original caption should read:

> **Bill same length as in Dunlin, but more slender and evenly decurved along distal 2/3 of its length, not just nearer the tip. Appears noticeably long-legged; tibial area (the true leg, above tibiotarsal joint) at least 20% longer than in a Dunlin, and tarsi longer as well.**

Another error occurred in printing the caption for Fig. 6 (page 52), the first line of which should read:

> **Curlew Sandpiper in partial alternate plumage ...**

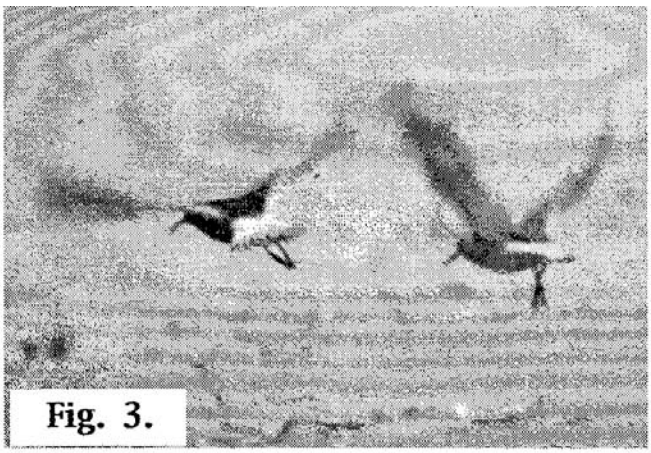


Fig. 3.

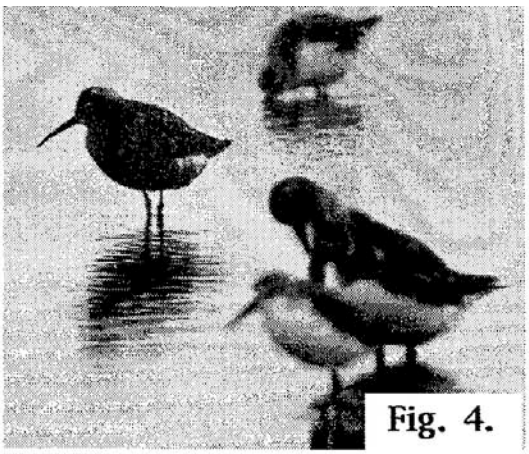


Fig. 4.

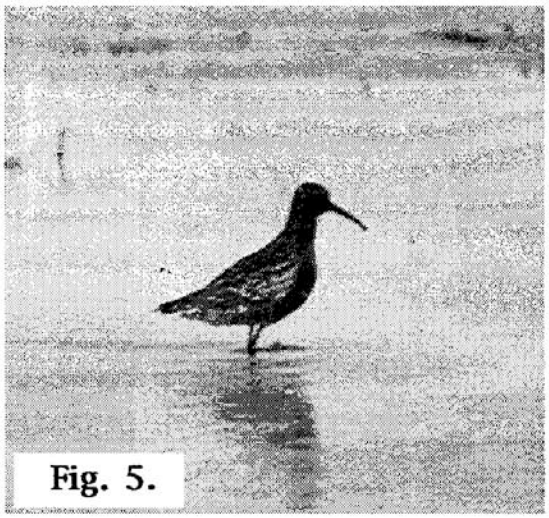


Fig. 5.

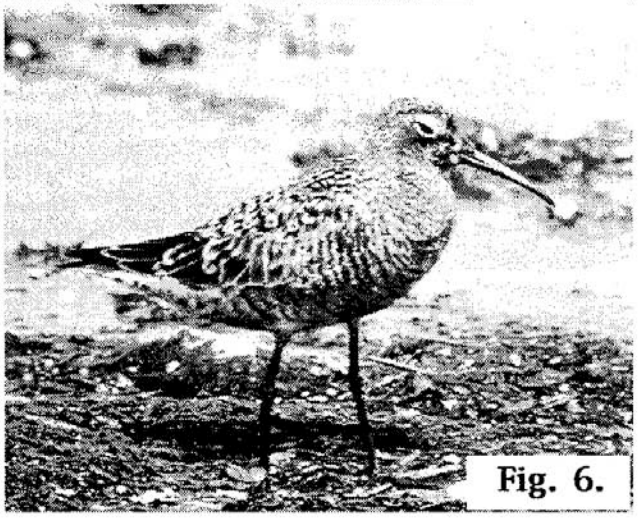


Fig. 6.

Fig. 3. Curlew Sandpipers taking flight, showing the bright white upper tail-coverts. Bird on left in alternate plumage, the other in basic plumage. (Although often referred to in field guides as a white "rump," the prominent white area is formed by the tail-coverts, and the white extends onto the lateral rectrix bases as well. The rump itself is largely brown, only narrowly white along the sides.) The birds' moderately conspicuous wing stripes are only suggested here owing to the blurred and angled wings in the photograph. Note in bird at left, the toes projecting completely beyond the tail. As a Curlew Sandpiper takes wing, it typically utters a soft, trilled, somewhat turnstone-like *churrup*. (Gobi Desert, Mongolia, 2 June 1981, D. Zimmerman)

Fig. 4. Largely chestnut-rufous, alternate-plumaged Curlew Sandpiper, resting (at left, with Western Sandpipers and Ruddy Turnstone) between feeding sessions. Curlew Sandpipers feed in water more than Dunlins, and are frequently in deep water, often almost to their bellies, like Stilt Sandpipers. (Salinas, Eduador, 14 Aug. 1991 [first Ecuadorian record], D. & M. Zimmerman)

Fig. 5. Alternate-plumaged Curlew Sandpiper, actively foraging, showing slim neck. (Gobi Desert, Mongolia, 2 June 1981, D. Zimmerman)

Fig. 6. Curlew Sandpiper in partial plumage, typical of many adults in April and May. The white eyelid feathering often is prominent, as is some white around the bill base, even on many birds in full alternate plumage. Note subtle bill curvature. (Near Nairobi, Kenya, 5 May 1987, David J. Pearson)

BREEDING BIRDS OF THE NRA WHITTINGTON CENTER, RATON, NEW MEXICO

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The NRA Whittington Center (NRAWC) is a National Rifle Association affiliated firearms shooting facility located along the eastern edge of the foothills of the Sangre de Cristo Mountains in northeastern New Mexico. Despite its role as one of the premiere firearms shooting facilities in the nation, the NRAWC remains largely undeveloped with much of its property managed for wildlife. Additionally, its location at a prairie-mountain interface results in a wide range of elevations and habitats, making it home to a diverse avifauna.

The bird communities in northeastern New Mexico have been mostly unstudied. We studied the breeding bird communities of the NRAWC from May through August 1992-1997 as part of an intensive research program examining the relationship between livestock grazing and songbirds (see Goguen and Mathews 1998 for an overview). Over the span of our six year study, we monitored bird populations and nesting success on the NRAWC, and gathered a nearly complete record of the breeding bird communities on this site. In this paper, we present an annotated list of 107 confirmed, probable, or possible breeding species of the NRAWC. We also offer a general description of the breeding bird communities of several common habitat types.

METHODS

Study Area

The 13,350 ha NRAWC lies within Colfax County, approximately 18 km south-southwest of the city of Raton, New Mexico. The region consists of mostly undeveloped rangelands, with the NRAWC bordered on the north, east, and south by cattle ranches, and on the west by forested foothills. On the NRAWC, elevations range from approximately 1,920 m to 2,470 m with prairie occupying the eastern third of the NRAWC and a hilly topography of forested ridges and canyons on the remainder. Three dominant habitat types, as well as several less expansive types, are distributed across the NRAWC according to elevation and solar aspect. Short-grass prairie dominated by blue grama *(Bouteloua gracilis)* occupies the lower elevations (<1,990 m). The NRAWC's prairies, like most in the region, have a long history of native and domestic grazing, but livestock grazing was discontinued on the site when the property was purchased by the National Rifle Association in 1973. Seasonal cattle grazing has since been re-introduced in some areas starting in 1996. Pinyon-juniper habitat occupies a narrow zone on the lower mountain slopes (1,990 - 2,130 m). On the NRAWC, these woodlands are dominated by pinyon pine *(Pinus edulis),* and range from an open savannah at the prairie interface to dense forest at higher elevations. One-seed juniper *(Juniperis monosperma)* is infrequently interspersed in this habitat. Oak *(Quercus gambelli* and *Q. undulata),* alder-leaf mountain mahogany *(Cercocarpus montanus),* and skunk-bush sumac *(Rhus odoratus)* are common understory shrub species. At elevations above 2,130 m pinyon-juniper is replaced by a mixed-conifer habitat of ponderosa pine *(Pinus ponderosa)* and Douglas-fir *(Pseudotsuga menziesii).* This habitat ranges from open ponderosa pine-dominated parkland to dense Douglas-fir forest, but usually consists of a mixture of both species.

Other habitats present on the NRAWC include oak brush, riparian, prairie arroyo, marsh, and human-developed. Oak brush habitat consists of large areas covered primarily by shrubby oak and mountain mahogany. Oak brush predominates on steep slopes at higher elevations where it typically occupies the drier south and west-facing mountainsides. Riparian habitat is distributed in valley bottoms along the Canadian River, and along several semi-permanent streams that drain the NRAWC. Narrow-leaf cottonwood *(Populus angustifolia)* and tree-sized Gambel' s oak present in this habitat provide a deciduous overstory component that is not present in any of the other habitats of the NRAWC. Prairie arroyo habitat consists of deep, steep-walled gullies created by rainfall drainage through the prairie. These arroyos generally contain running water only after heavy rainfall, and the steep walls, up to 8 m high, provide unique microhabitats and nesting

substrate for birds. Marsh habitat, consisting mostly of cattail *(Typha latifolia)* stands, is rare on the NRAWC and is generally limited to a few human-created sites. Finally, human-developed habitats include dirt roads, shooting ranges, and buildings.

Compilation and Classification of Bird Observations

Our nesting records, bird survey summaries, and personal field notebooks were reviewed for information concerning potential breeding birds on the NRAWC. For each species, we examined our evidence for breeding, and assigned a breeding status code based on the following criteria:

Confirmed = Nest and/or fledglings observed.
Probable = Adults exhibiting territorial or courtship behavior during the breeding season in suitable habitat, but breeding was not confirmed.
Possible = Adults have been present during the breeding season in suitable habitat but with little evidence of breeding activity.

We used an annotated format to present noteworthy information concerning evidence used in assessing breeding status, habitat use, and breeding abundance and regularity on the NRAWC. We described abundance of potentially breeding species as "common", "uncommon", or "rare". "Common" indicates that numerous individuals of the species were observed in proper habitat each year. "Uncommon" indicates that individuals were not readily observed in all proper habitat, but were observed at low densities each year. "Rare" indicates that the species was typically observed less than once per year. Specific evidence used to confirm breeding was generally only described for species for which our evidence was very limited (i.e., <3 nests or fledgling observations). For all other species, confirmation of breeding was typically based on our observations of several nests annually.

RESULTS AND DISCUSSION

We confirmed breeding for 69 bird species, and observed an additional 38 probable or possible breeding species (Appendix A). All of these species have previously been confirmed as breeding in New Mexico (Williams 1997). Because of the long duration and extent of our study, we believe we have acquired a nearly complete overview of the breeding species on the NRAWC. Still, we do not doubt that gaps exist. For example, owls tend to breed prior to our arrival on the site in May, and their nocturnal habits allow them to be easily overlooked. Annual variation in weather patterns on a regional basis also may have a strong influence on breeding abundance of some species (e.g., Northern Mockingbird, Mourning Dove; See Appendix A for scientific names of breeding birds), and future extreme weather events could result in new species using the NRAWC. Within pinyon-juniper habitats, the presence of a large pinyon nut crop can result in higher species diversity the following spring (Balda and Masters 1980) and may attract unusual breeding species (e.g., Red-breasted Nuthatch). Finally, our search effort for breeding species has concentrated in pinyon-juniper and mixed conifer habitats. Further work in other habitats should lead to additions to this list. For example, even in the sixth year of this study, we observed several new species.

Bird Communities

It is often useful to group bird species into communities based on habitat type to describe the typical avifauna, to allow comparison of the birds present in a given habitat across a geographic range, and to assess the "value" of the habitat in terms of avian diversity or the prominence of specialists. We examined the three principal habitat types of the NRAWC in terms of their bird communities, and found a wide range of species using each habitat.

Within prairie habitats, we recorded only 12 species as probable or confirmed breeders. Further, the irregular appearance of several species (e.g., Grasshopper and Cassin's sparrows) meant in most years even fewer species were present. The most common breeding species included Homed Lark, Vesper Sparrow, Lark Sparrow, and Western Meadowlark. Other species were present annually, but only in prairie sites with specific microhabitat components (e.g., disturbed sites for Killdeer, shrubs for Blue Grosbeak). Most species

(9) in this community were restricted to prairie habitats for breeding.

Within pinyon-juniper habitats, we recorded 48 confirmed or probable breeding species. The most common species included Western Scrub-Jay, Bushtit, Blue-gray Gnatcatcher, Virginia's Warbler, Spotted Towhee, Chipping Sparrow, and Brown-headed Cowbird. On the NRAWC, this habitat had the highest species richness, but was also the most intensively studied. Another factor contributing to the high diversity was probably its position between the other two habitats leading to species overlaps in both directions. Still, 14 species were restricted to pinyon-juniper including Gray Flycatcher, Western Scrub-Jay, Pinyon Jay, Juniper Titmouse, Bushtit, Blue-gray Gnatcatcher, Black-throated Gray Warbler, and Hepatic Tanager. Pinyon nut crops and drought both appeared to strongly influence community composition during our study.

Within mixed-conifer habitats, we recorded 45 confirmed or probable breeding species. Dominant breeding species included Northern Flicker, Pygmy Nuthatch, Virginia's Warbler, Yellow-rumped Warbler, Spotted Towhee, and Dark-eyed Junco. The bird community of this habitat exhibited considerable overlap with that of the pinyon-juniper, but contained 11 unique species including Dusky Flycatcher, Clark's Nutcracker, Brown Creeper, Townsend's Solitaire, and Hermit Thrush. Some of these species probably require the larger trees present in this habitat for nesting sites. This habitat also contained the most species classified as "possible" breeders, suggesting that further studies may confirm many additional species.

Cowbird Parasitism

Brood parasitism by the Brown-headed Cowbird deserves mention as it was extremely common within pinyon-juniper habitats, and present in varying degrees in other habitats. Cowbird parasitism often reduces the success and productivity of host nests (Mayfield 1965). This is particularly true in the nests of small hosts that are unable to support both a cowbird chick and their own (Marvil and Cruz 1989, Goguen and Mathews 1996). We confirmed cowbird parasitism in the nests of 12 species on the NRA WC (Table 1). Within pinyon-juniper habitat, the Blue-gray Gnatcatcher, Plumbeous Vireo, and Western Tanager are typically parasitized in >75% of nests, and the small gnatcatcher and vireo, in particular, suffered frequent nest failures as a result (Goguen and Mathews 1998). Fortunately, cowbird parasitism rates appear to drop in mixed conifer habitats (Goguen unpubl. data). Pinyon-juniper habitats are probably preferred by cowbirds because of their proximity to prairie feeding sites used by cowbirds, and their higher host densities relative to prairie habitats which may attract breeding cowbirds.

Table 1. Confirmed hosts of the Brown-headed Cowbird on the NRA Whittington Center, 1992-1997.

Western Wood-Pewee	Black-throated Gray Warbler
Gray Flycatcher	Western Tanager
Plumbeous Vireo	Spotted Towhee
Blue-gray Gnatcatcher	Chipping Sparrow
Virginia's Warbler	Black-headed Grosbeak
Yellow-rumped Warbler	Lesser Goldfinch

ACKNOWLEDGEMENTS

We thank the staff at the NRA Whittington Center for their support and assistance of our research on their facility. We also thank the many field workers who have assisted our research throughout the years. This paper benefitted from comments by J. Findley, M.A. Root, S.O. Williams III, and an anonymous reviewer. Funding was provided by the Global Climate Change Program of the U.S. Fish and Wildlife Service and National Biological Service as part of the B.B.I.R.D Program, the Caeser Kleberg Foundation through an endowment to Texas Tech University, U.S. Fish and Wildlife Service Region 2, and the Max McGraw Wildlife Foundation. Much of this research was conducted through the Texas Cooperative Fish and Wildlife Research Unit, which is jointly sponsored by the National Biological Service, Texas Parks and Wildlife Department, Texas Tech University, and the Wildlife Management Institute.

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APPENDIX A. -- Annotated species list of confirmed (Conf.; $n = 69$), probable (Prob.; $n = 15$), or possible (poss.; $n = 23$) breeding bird species on the NRA Whittington Center, 1992-1997. Nomenclature and species order follows Williams (1997).

Turkey Vulture *(Cathartes aura;* Prob.) -- A common summer resident observed in the skies above all habitat types, but breeding not confirmed.

Mallard *(Anas platyrhynchos;* Prob.) -- Occasionally seen in ponds on the NRAWC. Ducklings on a pond in mixed-conifer habitat in 1994 may have been this species.

Northern Harrier *(Circus cyaneus;* Poss.) -- Single birds occasionally seen hunting over the prairie during the spring and summer months. No pairs seen and no evidence of breeding activity. .

Sharp-shinned Hawk *(Accipiter striatus;* Prob.) -- Uncommon summer resident of pinyon-juniper and mixed conifer habitats.

Cooper's Hawk *(Accipiter cooperii;* Conf.) -- Uncommon summer resident of mixed conifer habitats. Only one nest was located (June 1997), but given the frequency of sightings, it is probably a regular nester.

Red-tailed Hawk *(Buteo jamaicensis;* Conf.) -- Uncommon nester in all forested habitats. Nests are often re-used in successive years.

Golden Eagle *(Aquila chrysaetos;* Conf.) -- Rare nester. One pair nested on cliffs on the southern edge of the property in 1992. The same site was re-used in 1997.

American Kestrel *(Falco sparverius;* Prob.) -- Uncommonly observed feeding in prairie and open riparian habitats of the site. Probably breeds in riparian habitats where large dead cottonwoods provide cavities.

Prairie Falcon *(Falco mexicanus;* Conf.) -- A single nest was occupied on cliffs along the eastern edge of the property all 6 years of our study.

Wild Turkey *(Meleagris gallopavo;* Conf.) -- An uncommon nester in pinyon-juniper, but common nester in mixed-conifer habitats.

Scaled Quail *(Callipepla squamata;* Prob.) -- A small, elusive covey, or several small coveys, are resident

in the prairies. Their continued presence year after year suggests breeding.

Killdeer *(Charadrius vociferus;* Conf.) -- Commonly observed in disturbed sites along the developed roadways of the prairie, particularly near intermittent streams and ponds. One nest located in June 1997.

Mourning Dove *(Zenaida macroura;* Conf.) -- Uncommon to rare nester in pinyon-juniper habitats. Large annual variation in nesting densities, with unusually numerous nests located in the dry season of 1996, suggests weather may have a strong influence on nesting frequency.

Band-tailed Pigeon *(Columba fasciata;* Poss.) -- Pairs and single birds observed only rarely in mixed-conifer habitats but call not heard. No evidence of breeding.

Greater Roadrunner *(Geococcyx californianus;* Conf.) -- A rare resident in the region, observed or heard on average less than once per year. Breeding status confirmed by one nest along an arroyo at the pinyon-juniper/prairie edge.

Barn Owl *(Tyto alba;* Prob.) -- Rarely observed in prairie habitats on the NRAWC. In 1995 a pair nested in a tunnel in an arroyo wall outside, but within 1 km, of the Center.

Flammulated Owl *(Otus flammeolus;* Poss.) -- Observed only once on the NRAWC (mixed-conifer habitat, 5 June 1995).

Western Screech-Owl *(Otus kennicottii;* Conf.) -- Observed rarely, but nearly annually, in pinyon-juniper, mixed-conifer, and riparian habitats. One nest with nestlings was located in 1996 in a natural cavity of a large Gambel's oak in riparian habitat.

Great Horned Owl *(Bubo virginianus;* Conf.) -- Commonly observed in all habitats on the NRAWC. This was the most commonly observed owl, with one nest found in pinyon-juniper habitat, and fledgling owls observed in both pinyon-juniper and mixed-conifer habitats.

Northern Pygmy-Owl *(Glaucidium gnoma;* Poss.) -- This species was observed twice on the NRAWC (20 February 1993,12 May 1996), in open, mixed-conifer habitat. No information on pairing or breeding.

Long-eared Owl *(Asio otus;* Poss.) -- Adult owls were uncommonly observed in May, particularly in forested valleys of pinyon-juniper habitat, but these may have been migrants only.

Northern Saw-whet Owl *(Aegolius acadicus;* Conf.) -- Only sighting involved a group of 3 fledglings in mixed-conifer habitat in late May 1992. No information on abundance or breeding regularity.

Common Poorwill *(Phalaenoptilus nuttallii;* Conf.) -- Commonly heard calling at lower elevations. Nests were located on slopes of open, pinyon-juniper habitat.

Common Nighthawk *(Chordeiles minor;* Conf.) -- Adults commonly observed flying above all habitats of the NRAWC. Nests frequently found in mixed conifer, pinyon-juniper, and prairie habitats.

Whip-poor-will *(Caprimulgus vociferus;* Poss) -- Heard singing on two separate occasions (May 1995 and 6 June 1997) in mixed-conifer valley bottoms. A very doubtful breeder, these observations more likely represent spring migrants that have overshot their typical breeding ranges.

White-throated Swift *(Aeronautes saxatalis;* Conf.) -- Commonly nests in colonies on cliff faces at numerous sites on the NRAWC.

Black-chinned Hummingbird *(Archilochus alexandri;* Prob.) -- Adults uncommon during the breeding season within pinyon-juniper habitats, but no nests located.

Broad-tailed Hummingbird *(Selasphorus platycercus;* Conf.) -- A common nester in riparian, pinyon-juniper, and mixed-conifer habitats.

Belted Kingfisher *(Ceryle alcyon;* Poss.) -- Individuals rarely observed near ponds and along the Canadian River during the breeding season.

Lewis's Woodpecker *(Melanerpes lewis;* Conf.) -- A rare summer resident of the riparian habitats of the NRAWC. A single nest was confirmed (1995), but sightings of adults in other canyons suggested breeding may occur at a number of sites.

Downy Woodpecker *(Picoides pubescens;* Conf.) -- Uncommon nester in all forested habitats.

Hairy Woodpecker *(Picoides villosus;* Conf.) -- Uncommon nester in riparian and pinyon-juniper habitats, but a common nester in mixed-conifer.

Northern Flicker *(Colaptes auratus;* Conf.) -- Common nester in all forested habitats and the most abundant primary excavator of nest cavities on the NRAWC.

Olive-sided Flycatcher *(Contopus borealis;* Poss.) -- Observed annually in pinyon-juniper and mixed-conifer habitats, but most were probably migrants. In 1997, singing was heard regularly at a mixed-conifer site during most of June and into July suggesting, at the least, a territorial male.

Western Wood-Pewee *(Contopus sordidulus;* Conf.) -- Common nester in riparian and pinyon-juniper habitats, and an uncommon nester in mixed-conifer habitat.

Dusky Flycatcher[1] *(Empidonax oberholseri;* Conf.) -- Common nester along the oakbrush/mixed-conifer edge, or within open, mixed-conifer habitat with a dense, shrubby understory.

Gray Flycatcher[1] *(Empidonax wrightii;* Conf.) -- Uncommon nester in dense, pinyon-juniper habitats, but a few nests were located in each year.

Cordilleran Flycatcher[1] *(Empidonax occidentalis;* Conf.) -- Common nester along moist valley bottoms in mixed-conifer or riparian habitats.

Say's Phoebe *(Sayornis saya;* Conf.) -- Common nester on buildings and bridges in the prairies. Also found occasionally nesting in natural rock crevices within pinyon-juniper habitats.

Ash-throated Flycatcher *(Myiarchus cinerascens;* Conf.) -- Uncommon nester within pinyon-juniper habitats.

Cassin's Kingbird *(Tyrannus vociferans;* Poss.) -- Adults observed rarely in prairie habitats.

Western Kingbird *(Tyrannus verticalis;* Prob.) -- Adults observed uncommonly in the prairies, but may breed near the prairie/pinyon-juniper edge.

Loggerhead Shrike *(Lanius ludovicianus;* Poss.) -- Rarely observed in shrubby sites on the prairies, but no observations of pairing or nesting.

Plumbeous Vireo *(Vireo plumbeus;* Conf.) -- Common nester in pinyon-juniper and mixed conifer habitats, and an uncommon nester in riparian habitats.

Warbling Vireo *(Vireo gilvus;* Prob.) -- Singing males were commonly observed through the breeding season in deciduous groves of Gambel's oak or trembling aspen *(Populus tremuloides)* in valley bottoms.

Steller's Jay *(Cyanocitta stelleri;* Conf.) -- A common nester in mixed-conifer habitats. A few nests were

also located in pinyon-juniper habitats, but generally near the ecotone between these woodlands and the mixed-conifer forests.

Western Scrub-Jay *(Aphelocoma californica;* Conf.) -- Commonly nested in pinyon-juniper habitats, particularly those with a dense shrub understory, as well as riparian and oak-brush habitats that were closely associated with pinyon-juniper.

Pinyon Jay *(Gymnorhinus cyanocephalus;* Conf.) -- Common nester in loose colonies within pinyon-juniper habitats. Colonies often contained >40 birds, but, based on numbers of nests observed, not all individuals appeared to be nesting simultaneously. Sites of nesting colonies, and timing of nesting, varied considerably from year to year.

Clark's Nutcracker *(Nucifraga columbiana;* Conf.) -- Breeding was confirmed in mixed-conifer habitats at high elevations by fledglings in early June 1997, but may not breed on the NRAWC every year.

Black-billed Magpie *(Pica pica;* Conf.) -- An uncommon nester in riparian habitats.

American Crow *(Corvus brachyrhynchos;* Conf.) -- Common nester in open, pinyon-juniper habitat along the prairie edge.

Common Raven *(Corvus corax;* Conf.) -- A common nester on cliff faces, or in large Douglas-firs in mixed-conifer habitats.

Horned Lark *(Eremophilia alpestris;* Prob.) -- Singing and pairing activities commonly observed on the prairie habitats. Nests were found in prairie habitats adjacent to the NRAWC.

Violet-green Swallow *(Tachycineta thalassina;* Conf.) -- Nested commonly in mixed-conifer habitats. Also nested in pinyon-juniper habitats at a few rare sites where large, dead cavity trees were available.

Northern Rough-winged Swallow *(Stelgidopteryx serripennis;* Prob.) -- Adults commonly observed aerial foraging above the Center, but nests were only observed in holes in prairie arroyo walls on lands adjacent to the NRAWC.

Barn Swallow *(Hirundo rustica;* Conf.) -- Common nester on buildings of the NRAWC.

Cliff Swallow *(Petrochelidon pyrrhonota;* Conf.) -- Large flocks commonly foraged above the NRAWC, most coming from colonies under bridges along U.S. Highway 64 to the east. However, small colonies nested annually under bridges and building eaves on the NRAWC.

Mountain Chickadee *(Poecile gambeli;* Conf.) -- Common nester in both mixed-conifer and pinyon-juniper habitats, but most abundant in mixed-conifer habitats.

Juniper Titmouse *(Baeolophus ridgwayi;* Conf.) -- Common nester in pinyon-juniper habitats.

Bushtit *(Psaltriparus minimus;* Conf.) -- Common nester in pinyon-juniper habitats.

Red-breasted Nuthatch *(Sitta canadensis;* Conf.) -- Typically only rarely observed nesting in mixed-conifer habitats (one confirmed nest 1994). However, in 1992 this species was common in pinyon-juniper habitats, with 18 nests located, 12 of which fledged young. This influx may have been due to a large pinyon nut crop in the autumn 1991. In most other years this species was not detected within pinyon-juniper habitats.

White-breasted Nuthatch *(Sitta carolinensis;* Conf.) -- Uncommon nester in mixed-conifer, pinyon-juniper, and riparian habitats.

Pygmy Nuthatch *(Sitta pygmaea;* Conf.) -- Common nester in mixed-conifer habitats, occasionally nesting in pinyon-juniper.

Brown Creeper *(Certhia americana;* Conf.) -- Uncommon nester in mixed conifer habitats.

Rock Wren *(Salpinctes obsoletus;* Conf.) -- Uncommon nester in open pinyon-juniper and prairie arroyo habitats.

Canyon Wren *(Catherpes mexicanus;* Prob.) -- Uncommonly observed on steep rocky slopes in open pinyon-juniper habitats.

Bewick's Wren *(Thryomanes bewickii;* Poss.) -- Individuals observed briefly within pinyon-juniper habitats in most years, but never present for > 1 day suggesting migrant status only.

House Wren *(Troglodytes aedon;* Conf.) -- Common nester in riparian habitats.

Golden-crowned Kinglet *(Regulus satrapa;* Poss.) -- Rarely observed, but a male held territory in mixed-conifer habitat during June 1997.

Blue-gray Gnatcatcher *(Polioptila caerulea;* Conf.) -- Common nester in pinyon-juniper habitats.

Western Bluebird *(Sialia mexicana;* Conf.) -- Uncommon nester in pinyon-juniper and open mixed-conifer habitats.

Mountain Bluebird *(Sialia currucoides;* Conf.) -- Uncommon nester in pinyon-juniper and open mixed-conifer habitats. Also nested regularly in holes in prairie arroyo walls near the pinyon-juniper edge.

Townsend's Solitaire *(Myadestes townsendi;* Conf.) -- Uncommon nester in mixed-conifer habitats. Only one nest was located (June 1997).

Hermit Thrush *(Catharus guttatus;* Conf.) -- Uncommon nester in mixed-conifer habitats. Only one nest was located (June 1994).

American Robin *(Turdus migratorius;* Conf.) -- Common nester in mixed-conifer, pinyon-juniper, and riparian habitats. Also nested on buildings within the prairies.

Northern Mockingbird *(Mimus polyglottos;* Conf.) -- Normally a rare summer visitor limited to the pinyon-juniper/prairie edge, but was a common breeding species in pinyon-juniper habitats in 1996, a drought year in the southwestern U.S.

European Starling *(Sturnus vulgaris;* Poss.) -- Observed nesting in box elders *(Acer negundo)* <0.5 km from the NRAWC, but rarely observed on the NRAWC itself.

Virginia's Warbler *(Vermivora virginiae;* Conf.) -- Common nester in sites with high shrub cover in pinyon-juniper, mixed-conifer, and oakbrush habitats.

Yellow Warbler *(Dendroica petechia;* Poss.) -- Rarely observed but may breed in willow *(Salix spp.)* thickets in riparian areas along the Canadian River.

Yellow-rumped Warbler *(Dendroica coronata;* Conf.) -- Common nester in mixed-conifer habitats. A single nest was located in pinyon-juniper habitat in 1997.

Black-throated Gray Warbler *(Dendroica nigrescens;* Conf) -- Uncommon nester in tall, dense pinyon-juniper stands.

Grace's Warbler *(Dendroica graciae;* Poss.) -- One singing male was observed on one day only (25 June 1997) in mixed-conifer habitats.

Hepatic Tanager *(Piranga flava;* Conf.) -- Rarely observed, but singing males were observed almost annually, and nesting was confirmed in pinyon-juniper habitat adjacent to the NRAWC in 1992, and on the NRAWC in 1997.

Western Tanager *(Piranga ludoviciana;* Conf.) -- Common nester in mixed conifer and pinyon-juniper habitats.

Green-tailed Towhee *(Pipilo chlorurus;* Poss.) -- Uncommon in May in pinyon-juniper as a migrant but rarely observed later in the season with no evidence of breeding.

Spotted Towhee *(Pipilo maculatus;* Conf.) -- The most abundant breeding species in pinyon-juniper, and a common nester in mixed-conifer and oakbrush habitats as well.

Canyon Towhee *(Pipilo fuscus;* Poss.) -- Was not observed on the NRAWC, but pairs, including one with fledglings, were observed in pinyon-juniper/prairie edge and prairie arroyo habitats as close as 200 m from the NRAWC boundary.

Cassin's Sparrow *(Aimophila cassinii;* Prob.) -- Singing males were common in some years in prairie habitats, and not detected in others. No observations of pairing were made.

Chipping Sparrow *(Spizella passerina;* Conf.) -- Common nester in pinyon-juniper habitats but largely absent from mixed-conifer.

Vesper Sparrow *(Pooecetes gramineus;* Conf.) -- The most common nesting sparrow in prairie habitats.

Lark Sparrow *(Chondestes grammacus;* Conf.) -- Common nester in prairie habitats along the pinyon-juniper edge and along prairie arroyos.

Lark Bunting *(Calamospiza melanocorys;* Poss.) -- Small groups were observed in prairie habitats of the NRAWC in June 1996 and 1997, but they may represent post-breeding flocks from adjacent areas.

Grasshopper Sparrow *(Ammodramus savannarum;* Prob.) -- Singing males were uncommon in some years in prairie habitats, and not detected in others. No observations of pairing were made.

Dark-eyed Junco *(Junco hymenalis;* Conf.) -- Common nester in mixed-conifer habitats.

Black-headed Grosbeak *(Pheucticus melanocephalus;* Conf.) -- Common nester in tall oakbrush habitats, and uncommon nester in shrubby pinyon-juniper and riparian habitats.

Blue Grosbeak *(Guiraca caerulea;* Prob.) -- Pairs regularly observed in prairie habitats that contained a large shrub component.

Dickcissel *(Spiza americana;* Poss.) -- Several males observed singing for several weeks at two prairie sites in 1997. Singing males were also common in irrigated fields adjacent to the NRAWC in the two years this field was visited (1996 and 1997).

Red-winged Blackbird *(Agelaius phoeniceus;* Conf.) -- Regular, but very local nester limited to a few cattail marshes in the prairies along intermittent creeks.

Western Meadowlark *(Sturnella neglecta;* Conf.) -- Common nester in prairie habitats.

Common Grackle *(Quiscalus quiscula;* Poss.) -- Occasionally seen in prairie habitats in July but no

evidence of breeding.

Brown-headed Cowbird *(Molothrus ater;* Conf.) -- Commonly parasitized nests in many habitats.

Bullock's Oriole *(Icterus bullockii;* Conf.) -- Uncommon nester in riparian habitats.

House Finch *(Carpodacus mexicanus;* Conf.) -- Rare visitor to pinyon-juniper habitat, but in 1992 and 1993 pairs nested in an ornamental tree on the lawn of the administration building.

Red Crossbill *(Loxia curvirostra;* Poss.) -- Uncommonly observed in flocks in mixed-conifer and pinyon-juniper habitats, particularly in 1992 following the large pinyon nut crop of 1991. Pairs could have bred in early spring before our arrival, however, we observed no evidence of breeding activity while we were present.

Lesser Goldfinch *(Carduelis psa/tria;* Com.) -- Common nester in pinyon-juniper habitats.

Evening Grosbeak *(Coccothraustes vespertinus;* Poss.) -- Rarely observed in pinyon-juniper and mixed-conifer habitats, but were more common in 1992 following the large pinyon crop of 1991.

House Sparrow *(Passer domesticus;* Poss.) -- Rarely observed on the lawns and buildings near the administration center.

[1] Identification of *Empidonax* flycatcher species was based on vocalizations.

Received 20 June 1998

THE SEVENTH EDITION OF THE A.O.U. CHECK-LIST

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The long-awaited 7th edition of the American Ornithologists' Union's (A.O.D.) *Checklist of North American Birds* is now available. As with the 6th edition, which was published in 1983, the 7th edition includes the species of North American birds from the Arctic through Panama plus the West Indies and the Hawaiian Islands. The 7th edition combines all taxonomic and other changes given in seven biannual Supplements, published in *The Auk* 1985-1997, plus other decisions published there in 1984, 1990, and 1998; it was compiled by the A.O.U.'s eight-member Committee on Classification and Nomenclature, commonly referred to as the "Check-list Committee."

All major changes have been previously reported to the New Mexico Ornithological Society, most recently in *NMOS Bulletin* 25(3): 47-49, 1997, wherein major changes in family sequence plus recent taxonomic splits were announced. With the publication of the 7th edition of the Check-list, we learned of several additional changes, and these are noted below.

The 41st Supplement *(Auk* 114: 542-552, 1997) incorrectly gave the scientific name *Baeolophus ridgwayi* for the newly-split Juniper Titmouse; due to reasons of nomenclatural priority, that scientific name has been corrected to *B. griseus.*

Within families, several minor changes in species sequence were made which differ from the sequence in the recently-published New Mexico list *(NMOS Bulletin* 25(3): 5166, 1997). Neotropic Cormorant now precedes Double-crested Cormorant. After Aplomado Falcon, the falcon sequence is now Gyrfalcon, Peregrine Falcon, and Prairie Falcon. White-tailed Ptarmigan now follows Sage Grouse and precedes Blue Grouse, and Sharp-tailed Grouse now precedes Lesser Prairie-Chicken. The quail sequence is now Scaled,

Gambel's, Northern Bobwhite, and Montezuma. Sabine's Gull now precedes Black-legged Kittiwake. Williamson's Sapsucker now precedes Yellow-bellied Sapsucker. Gray Flycatcher now follows Hammond's Flycatcher and precedes Dusky Flycatcher. Loggerhead Shrike now precedes Northern Shrike. After Gray Vireo, the vireo sequence is now Yellow-throated, Plumbeous, Cassin's and Blue-headed. After Bank Swallow, the swallow sequence is now Cliff, Cave, and Barn. Black-throated Green Warbler now follows Black-throated Gray Warbler and precedes Townsend's Warbler. Spotted Towhee now precedes Eastern Towhee. Cassin's Sparrow now precedes Botteri's Sparrow. Grasshopper Sparrow now precedes Baird's Sparrow.

The Check-list's preface explains the publication's history, background, and philosophy as well as taxonomic categories, geographic coverage, criteria for inclusion, and species concepts. As with the 6th edition, a detailed treatment of subspecies was not attempted, although some attention to "groups" within species (e.g., the eastern and western Whip-poor-wills, etc.) is provided. Noting that "many species of birds in some plumages, and some species in all plumages, cannot be identified safely in the field," the Committee properly "deplores the invasion of the primary distributional literature by an increasing volume of poorly documented reports."

All in all, the 829-page 7th edition of the AO.U. Check-list is an important achievement. An especially convenient new feature is a straight listing (38 pages) of the orders, families, and 2008 species of birds known from the AO.U. Check-list area. There is one particularly unfortunate typographical error--the "preferred 'citation" is given as "1983;" the correct publication date is 1998.

The 7th edition is available for $49.95 ($39.95 for AG.U. members) plus $4.00 shipping from: Max C. Thompson, Assistant to the Treasurer, A.O.U., Department of Biology, Southwestern College, 100 College Street, Winfield, Kansas, 67156.