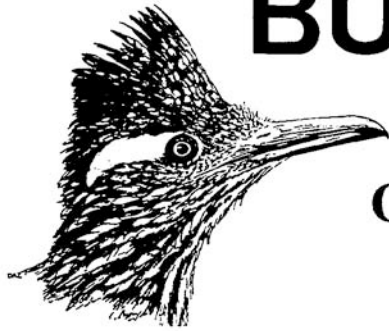


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BREEDING BIRDS OF THE RIO CHAMA WILDLIFE AND FISHING AREA, RIO ARRIBA COUNTY, NEW MEXICO

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More species of birds have been recorded in New Mexico than in any other landlocked state except for its western neighbor Arizona. Of 493 avian species verified in New Mexico, 285 species definitely breed (or bred) in the state (Williams 1997a). With a surface area of nearly 31 million ha, however, there remains much to be learned about breeding bird populations and their distribution in New Mexico.

The New Mexico Department of Game and Fish (NMGF) owns and manages more than 67 thousand ha in parcels, both large and small, throughout the state. Though most management areas were acquired for their value for game animals, these areas also provide habitat for many of the state's native non-game species as well. Detailed inventories of non-game wildlife have not been undertaken on most NMGF properties. This paper summarizes the results of point counts and nest searches conducted on the Rio Chama Wildlife and Fishing Area (RCWFA) in north central Rio Arriba County during the spring and summer of 1997.

This project was funded by the Conservation Services Division of NMGF; B. L. Morrison acquired funds and administered the contract. Unpublished reports and maps cited herein are available through the NMGF. Reviews by S. O. Williams III and J. S. Findley helped finalize this manuscript. T. G. Smith prepared Figure 1.

STUDY AREA

The Rio Chama Wildlife and Fishing Area (RCWFA), located in north central New Mexico (Fig. 1), was purchased with Federal Aid monies in 1953. The area encompasses about 5250 ha of mixed habitats, most of it in a large triangular block bordered by the Rio Chama on the north, El Vado Reservoir on the west, and State Highway 112 on the south and southeast sides. A small portion of the southwest corner of this large area is leased to the New Mexico State Parks Division, and is managed as part of El Vado Lake State Park. The Rio Chama below El Vado Dam is also bordered by the RCWFA, first on the west, then on the east shore, and the Rio Nutrias serves as the south border of these smaller areas (Fig. 1).

Elevations range from 2106 m on the El Vado Reservoir shore to 2329 m on El Vado Mountain. The Rio Chama enters the RCWFA on its northeast corner in a 25 m deep canyon (hereafter Chama Canyon) that deepens to 180 m below the Heron Dam outflow, before the surrounding hills drop off to the eastern shore of El Vado Reservoir. This upper reach of the Rio Chama is about 14 km long. Departing El Vado Dam, the lower Rio Chama flows through another canyon; by the time it reaches the Rio Nutrias, it is 120 m below Lightning Point. Cliffs that rim both canyons are generally less than 10 m high. The slopes from the rim to the river, though generally steep, are usually vegetated rather than rock or bare ground. At this elevation and latitude ponderosa pine (*Pinus ponderosa*) should predominate forested areas, but timber harvest prior to state acquisition continually removed large trees, allowing the pinyon (*Pinus edulis*), juniper (*Juniperus monosperma*, *J. utahensis*), and oak (*Quercus gambelli*) understory to expand and dominate many areas, though they retain a sparse overstory of ponderosa pine. Some areas dominated by ponderosa pine do exist, and other areas, particularly east of El Vado Mountain, are climax Pinyon-Juniper Woodland. Large areas to the west and north of El Vado Mountain and in the northwest portion of the RCWFA have little top soil; ponderosa pines grow through cracks in the solid sandstone caprock. Sagebrush (*Artemisia tridentata tridentata*, *A. t. nova*) fills drainages and adjacent uplands, and fingers of sagebrush extend into wooded areas. Forested north-facing slopes of Chama Canyon are dominated by Douglas-fir (*Pseudotsuga menziesii*); where accessible to past logging efforts, the stands are young and often dense. Oak brush and ponderosa pine predominate in drier areas in the canyon. This area of mixed conifer forest is the largest between Golondrina Mesa to the southwest and the San Juan Mountains to the northeast, both about 15 km distant.

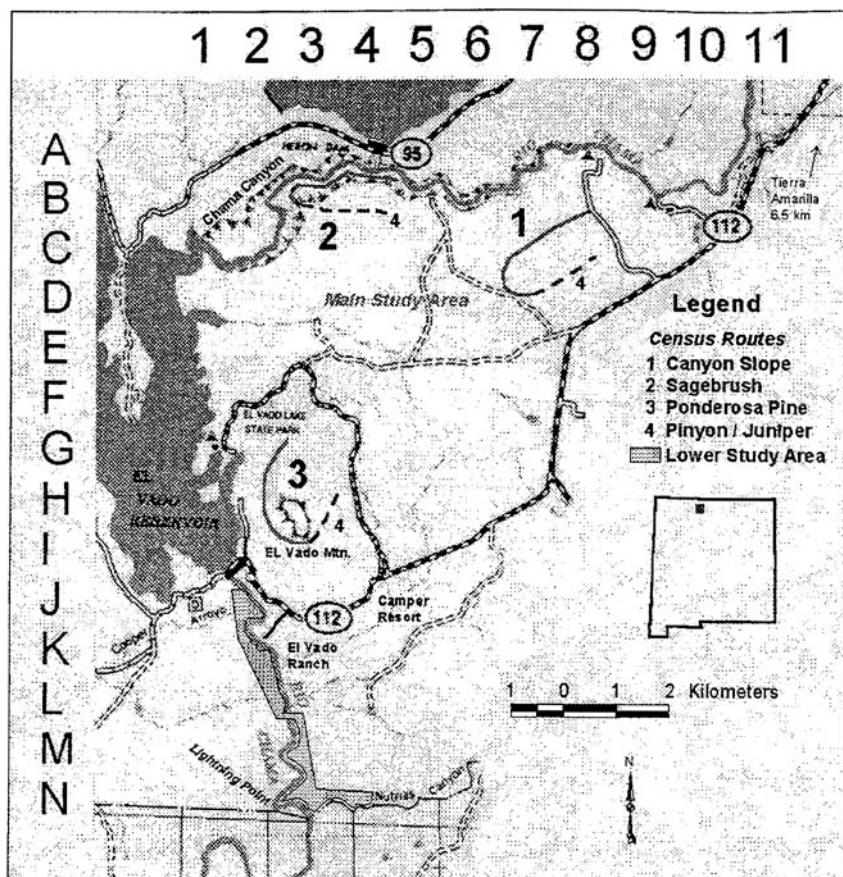


Fig. 1. Rio Chama Wildlife and Fishing Area and vicinity, Rio Arriba County, New Mexico.

Previous work (Blythe and Heft, unpub¹ map; 1988) identified 17 plant communities and 17 mixed communities in the RCWFA. For the purposes of this study, these were lumped into 4 broad habitat types: Sagebrush, Pinyon-Juniper Woodland, Ponderosa Pine Forest, and Canyon Slopes, the latter containing both mixed conifer forest and areas of oakbrush.

RCWFA contains few named geographic points. In order to record locations of census routes and nest sites we utilized the UTM grid system on topographic maps to divide the RCWFA into 1 km square blocks. The north-south axis was marked from A to N and the west-east axis marked from 1-11 (Fig. 1). Thus every block has an alpha-numeric code (e.g., A-1). The northwest corner of A-1 has UTM coordinates of 406,000 m North and 344,000 m East.

METHODS

Birds were counted 4 times during the peak of breeding activity (May-June 1997). About 75 point counts (Hutto et al. 1986) were conducted on 3 mornings at approximately 2-week intervals. The 3 routes each concentrated on one habitat (Canyon Slopes, Sagebrush, Ponderosa Pine) outbound and looped back through Pinyon-Juniper Woodland toward the starting point (Fig. 1). The Canyon Slopes route started at the upper Rio Chama footbridge (B-4) followed the Rio Chama Trail west until it reached the rim (Canyon Slopes habitat), then returned. The Sagebrush route went west from a road to an upper Rio Chama campground (C-8), then returned. The Ponderosa Pine route began on a road to El Vado Lake State Park (F-2), went south along the west side of El Vado Mountain, and returned. Count points were 200 m (paced) apart and averaged 25 per route or morning.

We remained at each count point for 6 minutes, recording all birds seen or heard during that period. Distances to birds were estimated at 25 m intervals out to 100 m, then lumped for the 100 to 200 m interval. Care was taken not to record the same bird(s) from 2 or more adjacent points. Counts were initiated approximately one half hour before sunrise and completed within 4.5 hrs. All counts were completed on days with winds of less than 10 mph.

Total count points by habitat were: Ponderosa Pine - 80, Pinyon-Juniper - 74, Sagebrush - 74, and Canyon Slopes - 70. Some Sagebrush count points included stringers or edges of Pinyon-Juniper habitat within their 200 m radius and, because of past logging practices, many Pinyon-Juniper count points included scattered, or clumps of, ponderosa pines.

Frequency of occurrence was calculated by habitat type for each bird species recorded during point counts. Relative abundance for each species was based on the following categories:

- a) abundant - recorded at > 40% of total point counts within a habitat type,
- b) common - recorded at 20-40% of total point counts within a habitat type,
- c) fairly common - recorded at 10-20% of total point counts within a habitat type, and
- d) uncommon - recorded at < 10% of total point counts within a habitat type.

No species was considered rare unless it was considered rare in New Mexico (Williams 1997b), given the short duration of this study.

We actively monitored breeding behavior of most bird species found on the RCWFA in order to document actual breeding. We spent the morning hours walking slowly through a selected habitat, or quietly sitting watching potential breeders for cues to their nests. The upper Rio Chama was canoed 3 times, the lower Rio Chama once, to search for broods or nests of water birds. We utilized the definitions developed for Breeding Bird Atlases, as described by Corman (1994), to define breeding (Appendix A). Species were categorized as possible, probable, or confirmed breeding species in the RCWFA based on adult behaviors, sightings of young, or actual nests documented.

RESULTS

Field work on the RCWFA was initiated in January 1997, was most intense between May and July, and continued with occasional visits through early April 1998. During that period we documented 124 species of birds, 92 that were possible, probable, or confirmed breeding species. Migrants and winter residents were also documented (Appendix B).

Seventeen species of birds occurred at frequencies of greater than 20% within at least one habitat in the RCWFA during point counts conducted during this study (Table 1). Another 13 species were fairly common, occurring at frequencies of greater than > 10%. Abundance status is provided for all summering species in the annotated checklist below.

We found 139 nests of 53 species of birds, and documented breeding by another 11 species through adult behavior or sightings of fledged young (Appendix A), for a total of 64 breeding species recorded. All 53 nesting species and 8 of 11 breeding species that definitely nested on the RCWFA are denoted in the following narratives by an *. The other 3 breeding species, all waterfowl seen with altricial young that may have been hatched in nests outside the RCWFA, are denoted with a +. We found nests of 3 additional species adjacent to the RCWFA; these species are also marked with a +. All nests found are described in the narratives and their general locations (i.e., A-1) within the study area are referenced to Fig. 1, except for the nests of hawks and falcons. Fourteen species that probably (*P*) nested in the RCWFA in 1997 and 6 species that possibly nested in 1997 or probably nest occasionally (*O*) in the RCWFA are also noted.

Table 1. Avian species with a frequency of occurrence on point counts > 20% in at least one habitat, Rio Chama Wildlife and Fishing Area, May-June, 1997.

| Species | Sagebrush | Pinyon/Juniper | Ponderosa Pine | Canyon Slope |
|-------------------------|-----------|----------------|----------------|--------------|
| Western Wood-Pewee | .01 | .05 | .45 | .11 |
| Ash-throated Flycatcher | .23 | .22 | .26 | .11 |
| Violet-green Swallow | .08 | .15 | .41 | .24 |
| Steller's Jay | .01 | .04 | .16 | .24 |
| Mountain Chickadee | .11 | .18 | .26 | .37 |
| House Wren | | .01 | .24 | .04 |
| American Robin | .03 | .14 | .18 | .33 |
| Plumbeous Vireo | .15 | .19 | .33 | .07 |
| Virginia's Warbler | .04 | .22 | .20 | .57 |
| Yellow-rumped Warbler | | .03 | .01 | .30 |
| Western Tanager | .04 | .07 | .34 | .29 |
| Black-headed Grosbeak | .03 | .20 | .26 | .27 |
| Green-tailed Towhee | .42 | | | |
| Spotted Towhee | .22 | .59 | .21 | .10 |
| Chipping Sparrow | .32 | .43 | .29 | .06 |
| Vesper Sparrow | .69 | .07 | | |
| Brown-headed Cowbird | .04 | .14 | .29 | .19 |

ANNOTATED CHECKLIST OF SUMMER BIRDS

^O**Western Grebe** (*Aechmophorus occidentalis*) - Common summer resident on El Vado Reservoir. These grebes may have nested in partially submerged willows (H-1) offshore of El Vado Lake State Park, though no nests were found there in 1998.

^P**Turkey Vulture** (*Cathartes aura*) - Common summer resident. Vultures roosted in snags and dead-topped trees in the upper Chama Canyon above the footbridge (B-4/5). Efforts to locate a nest in the same area were unsuccessful. At least 50 were present on 4 July 1997.

+**Canada Goose** (*Branta canadensis*) - Uncommon summer resident. Adults with a brood of 3 nearly adult-sized young were seen on the upper Rio Chama (B-10) on 19 June 1997.

+**Mallard** (*Anas platyrhynchos*) - Resident. Widespread in summer and concentrated along Rio Chama in winter. A female and brood of 10 small young were on the upper Rio Chama on 19 June 1997. Wintering birds were present on Rio Chama at El Vado Ranch (K-2) on 28 January 1997 and 7 January 1998.

+**Common Merganser** (*Mergus merganser*) - Fairly common resident in open water. Two broods were seen in the last 1500 m above the upper El Vado Reservoir boat ramp (D-2) on 11 July 1997. One female herded 6 recently hatched young while the 4 young in the other brood were nearly full grown. Another brood of 3 to 5 half-grown young were seen on the upper Rio Chama (B-11) on 14 July and a late brood of 6 small young was on the lower Rio Chama (L-2) on 19 July 1997.

***Osprey** (*Pandion haliaetus*) - A nest, first active in 1990 (Stahlecker, unpubl. notes), on the shore of El Vado Reservoir was occupied by adults on 31 March 1997. They hatched 3 young which had fledged by 20 July 1997. A pair was again present on 1 April 1998. The male from another territory was seen carrying a fish along the upper Rio Chama on 11 July 1997 and another male was seen the same day in upper El Vado Reservoir.

^P**Sharp-shinned Hawk** (*Accipiter striatus*) - Uncommon summer resident; we had 5 sightings during the study, most in suitable nesting habitat, but no nests were found.

^P**Cooper's Hawk** (*Accipiter cooperii*) - Fairly common summer resident and probable breeding species. Regularly seen (> 10 sightings), including an adult female carrying food once, but no nests were found.

***Northern Goshawk** (*Accipiter gentilis*) - Irregularly seen (2 sightings), uncommon resident. A nest found on 10 July 1997 was vocally defended by the adult female. It contained 2 large young that had fledged 3 days later.

***Red-tailed Hawk** (*Buteo jamaicensis*) - Breeding resident. Two large nestlings found on 12 June 1997 had fledged a week later. At least 2 other territories were occupied in the Management Area during the summer of 1997, but nests were not found.

^o**Golden Eagle** (*Aquila chrysaetos*) - Rarely seen resident; inactive nests in several locations on the RCWFA. Known to have used one of those nests in 1986 (Stahlecker, unpubl. field notes). Sighting dates include 4 March, 26 May, and 4 June 1997, and 7 January 1998. All sightings were of adults; a pair was soaring together on 4 June.

***American Kestrel** (*Falco sparverius*) - Common summer resident, nesting in woodpecker holes in ponderosa pine snags. We identified 6 nest sites based on adult activity, but were not fortunate enough to observe fledglings.

***Spotted Sandpiper** (*Actitis macularia*) - Common summer resident along the Rio Chama throughout the study area. A female was flushed from 4 eggs in a nest on 3 June 1997 on the upper Rio Chama (B-10). Sightings of an adult with small young on 19 June and intermediate sized young on 11 July 1997, 400 m upstream, were likely proof of another successful breeding effort.

Band-tailed Pigeon (*Columba fasciata*) - Uncommon summer visitor. A small flock was seen 22 June 1997 in Chama Canyon (B-4).

***Mourning Dove** (*Zenaida macroura*) - Fairly common, widespread summer resident. Heard in all 4 habitat types at frequencies ranging from 3 to 11 % of stations. Four nests were found: 1) a ground nest on 17 June 1997 (B-11) contained 1 egg; 2) a nest in a juniper (K-2) contained an incubating/brooding adult on 22 June 1997 and 3 nestlings on 4 July 1997; 3) a nest in a ponderosa pine (N-3) incubating/brooding adult on when discovered on 25 June 1997; and 4) another ground nest (B-8) with an incubating adult on 16 July 1997 contained one egg and 2 small young on 1 August 1997.

^P**Flammulated Owl** (*Otus flammeolus*) - Common summer resident, particularly in areas with a ponderosa pine overstory. All records were from night surveys with audio tapes. First heard 13 May 1997 on El Vado Mountain (I-3, H-3, G-3); 7 were heard there 22 May 1997. Nine or 10 were heard in about 3 km of road (F-5 to E-7) on 26 May 1997. Two were heard along the road to the campground on the upper Rio Chama (D-9) on 20 June and (E-9) on 27 May 1997. Three more responded to the tape (E-3) on 2 June 1997. One seen 22 June 1997 was within Chama Canyon (B-4) in mixed conifer forest; 3 more were heard in the canyon (C-3) on 9 July 1997. Efforts to attract recently fledged young to the tape broadcast (Stahlecker 1997) were unsuccessful on 12 July 1997, though 3 owls were heard (F-5).

^P**Great Horned Owl** (*Bubo virginianus*) - Resident, probably occurs throughout the RCWFA. Territorial males heard (G-2) on 13 May and (K-2) on 14 July 1997. Another adult was seen (I-6) in daylight on 4 July 1997.

^P**Northern Pygmy-Owl** (*Glaucidium gnoma*) - Uncommon resident. One called and was subsequently seen (I-3) on El Vado Mountain during daytime point counts on 6 May 1997. Another was likely heard 27 June 1997 (C-10) during systematic nighttime owl surveys.

***Common Nighthawk** (*Chordeiles minor*) - Common summer resident, though not regularly encountered because of its crepuscular habits. Seven ground nests were found by accidentally flushing incubating birds. Dates ranged from 9 June to 25 June 1997 for nests with eggs; 3 nests contained single eggs and 3 contained 2 eggs ($x = 1.5$). On 5 July 1997 an adult was flushed from a nest with 2 hatched out eggs. Its mate was roosting nearby, but the nestlings could not be found.

^P**Common Poorwill** (*Phalaenoptilus nuttallii*) - Common summer resident. Five were heard calling on 13 May 1997 during owl surveys near the center of the wildlife area. Also a ground nester, but nests were not found.

+**White-throated Swift** (*Aeronautes saxatalis*) - Common summer resident, regularly seen foraging over the RCWFA, particularly around canyons. Not known to nest on cliffs on the RCWFA, though individuals were seen entering potential nest sites near Lightning Point (N-3 on 11 July 1997 and in upper Chama Canyon (B-11) on 8 July 1997.

***Black-chinned Hummingbird** (*Archilochus alexandri*) - Uncommon summer resident, seen mostly along the lower and upper Rio Chama. A female was incubating in a nest on a juniper branch across from El Vado Ranch (K-2) on 8 and 21 June 1997. The nestlings were found dead a week later.

***Broad-tailed Hummingbird** (*Selasphorus platycercus*) - Fairly common summer resident encountered throughout the RCWFA, though seldom recorded at count points. Five nests were found, 3 in junipers, 2 in ponderosa pines. The earliest nest encountered (D-9) was found 26 May and had fledged young by 20 June 1997. Another nest found (K-2) during incubation on 5 June fledged 1 of 2 young on 22 June 1997. Other nests under incubation were found on 16 June (2 eggs; B-11) and 17 June (2 eggs: C-5). The final nest (I-4) found was under construction on 18 June 1997.

^P**Williamson's Sapsucker** (*Sphyrapicus thyroideus*) - Uncommon and local summer resident; sightings only in a small area (G-2) on 6 May 1997 and 24 June 1997. Possibly nested, but not documented.

***Hairy Woodpecker** (*Picoides villosus*) - Uncommon resident. Recorded only once each in 80 Ponderosa Pine and 70 Canyon Slopes point count stations. Nestlings were being fed in a juniper cavity (H-9) on 18 and 21 June 1997.

***Northern Flicker** (*Colaptes auratus*) - Fairly common resident, recorded in all habitats in low frequencies. Most often encountered on Ponderosa Pine census route where they were seen or heard at 10% of the stations. A pair were at a cavity in a ponderosa pine snag (N-3) on 10 June 1997 and the female spent most of her time inside. Another adult pair were feeding fully grown, noisy, nestlings at a cavity in a live ponderosa pine (H-2) on 15 June 1997. A short-tailed fledgling was seen 13 July 1997 in upper Chama Canyon (C-6).

***Olive-sided Flycatcher** (*Contopus cooperi*) - Localized summer resident, seen or heard in tall mixed conifer forest on north slopes, mostly in Chama Canyon. Recorded once each on Canyon and Ponderosa Pine point count routes. A nest was found 10m high on a long horizontal limb of a tall Douglas-fir (B-11) on 2 July 1997 because the adult pair was busy feeding at least 2 nestlings.

***Western Wood-Pewee** (*Contopus sordidulus*) - Common summer resident, most frequently recorded (45%) on Ponderosa Pine point counts. Also recorded in all other habitats, but much less frequently (1-11%; Table 1). Three nests were found while pairs were actively building. Two (B-I0) were discovered on 3 June 1997 and another was found (N-3) 10 June 1997. No further nest visits were recorded.

***Gray Flycatcher** (*Empidonax wrightii*) - Summer resident, fairly common on Pinyon-Juniper Woodland point counts (14%). Also recorded on 8% of Ponderosa Pine and Sagebrush point counts. Five nests were found, one in a pinyon and 4 in junipers.. The earliest nest was found (F-5) under construction on 11 May 1997, but was damaged and empty on 24 May 1997. Another nest found 4 June 1997 (D-6) was complete but without eggs. Nest 3 (D-6) contained 2 large young near fledging on 19 June 1997. Both adults were busy feeding 4 large young in Nest 4 (B-9) on 20 June 1997. The final nest found was under construction on 23 June, but appeared to have been damaged by a predator on 4 July 1997.

***Dusky Flycatcher** (*Empidonax oberholseri*) - Fairly common summer resident, recorded on all wooded census routes, but most frequently (7%) on Canyon Slopes. A nest was found 24 June 1997 in a Douglas-fir (K-2) in a fork on one of the lower limbs. The agitated female gave the diagnostic call 25 June, but no adults were found on 4 July. A family group was in Chama Canyon (B-5) on 10 July 1997.

***Cordilleran Flycatcher** (*Empidonax occidentalis*) - Common summer resident in mixed conifer forest of upper Chama Canyon, especially along the small cliffs at the canyon rim. Recorded on 11 % of Canyon point counts; not recorded in any other habitat. Two nests were found, both on cliffs. One was under construction (B-11) on 19 June 1997, adults were repeatedly taking food to the other nest (B-9) on 2 July 1997. Singing males were heard every 100-150 m along the south rim of upper Chama Canyon on 11 and 13 July, 1997.

* **Ash-throated Flycatcher** (*Myiarchus cinerascens*) - Common and widespread summer resident in all forest types. Frequency on point counts exceeded 20% in all but Canyon Slopes (11%) habitat (Table 1). Six active nest cavities in trees and snags were found. The first occupied cavity (N-3) was found 10 June 1997. Adults were delivering food to cavities on 18 June (H-4), 20 June (B-8), and 22 June (B-4) 1997. Probable second nesting attempts were found 24 June (K-2) and 1 July (L-2) 1997.

Black Phoebe (*Sayornis nigricans*) - Recorded twice; at El Vado Lake State Park (G-1) on 24 May 1997 and at the El Vado Ranch footbridge (K-2) on 21 June 1997. No evidence of nesting was found. These were unusually northerly and high elevation records for this species (Hubbard 1978).

+**Say's Phoebe** (*Sayornis saya*) - Uncommon summer resident near cliffs within the RCWFA, seen north of the abandoned airport (D-3) on 28 May, on 5 June along the upper Chama Canyon rim (B-11), and along cliffs (K-2) on 12 June 1997. Successfully raised young on a cabin ledge at El Vado Ranch in late June 1997, across the Rio Chama from NMGF lands.

^o**Cassin's Kingbird** (*Tyrannus vociferans*) - Uncommon summer resident on woodland edges. Recorded near lower Rio Chama (N-3) on 10 June and 8 July 1997. Also seen upstream (M-2) on 24 June and 14 July 1997 (K-2). The single sighting near the upper Rio Chama (B-11) occurred 9 July 1997.

***Plumbeous Vireo** (*Vireo plumbeus*) -Common summer resident, present in all wooded areas. Recorded in greatest frequency (33%) in Ponderosa Pine point counts. We found 5 nests. An adult was incubating (G-2) in a nest found 27 May 1997. A male was singing while incubating on a nest found 25 May (C-8), an adult was on the nest on 9 June. Three other completed nests without eggs but with attending pairs were found (C-9, 9 June 1997; B-8, 20 June 1997; I-4, 28 June 1997); none were revisited.

***Warbling Vireo** (*Vireo gilvus*) - Uncommon summer resident. Recorded twice (3%) each on Ponderosa Pine and Canyon Slope point count routes. A nest found in a Douglas-fir in the upper Rio Chama flood plain on 19 June 1997 contained 5 eggs; 3 were cowbird eggs. Incubation continued on 20 June, but the nest was found destroyed on 25 June 1997.

***Steller's Jay** (*Cyanocitta stelleri*) - Common resident, recorded on 24% of Canyon and 16% of Ponderosa Pine point counts. Two adults were attending young in a nest found in mixed conifer forest, upper Chama Canyon, on 23 June 1997.

***Western Scrub-Jay** (*Aphelocoma californica*) - Fairly common resident in and near Pinyon-Juniper Woodland. Recorded on 5% of Pinyon-Juniper and 16% of Sagebrush point counts. A nest found 2 June 1997 (G-2) had 3 large young, one outside of the nest. A second nest found 19 June 1997 (B-4) had a female incubating 3 eggs.

^p**Pinyon Jay** (*Gymnorhinus cyanocephalus*) -Uncommon resident, flocks irregularly encountered but recorded in 6 different blocks. Recorded only once on all point counts, at a Pinyon-Juniper station. No nests were found, but nesting likely occurs on RCWFA, perhaps at a different season (Baicich and Harrison 1997) than during our intensive study.

^P**Clark's Nutcracker** (*Nucifraga columbiana*) - Fairly common resident, flying flocks were recorded in all habitat types. Most frequently recorded at Ponderosa Pine (11%) stations, but the largest flocks were seen over Canyon Slope stations. Nutcrackers usually nests earlier (Baicich and Harrison 1997) than when (May to July) we searched for nests.

^O**Black-billed Magpie** (*Pica pica*) - Uncommon; resident in El Vado Lake State Park and at El Vado Ranch. Occasionally seen along the upper Rio Chama. Not recorded within 200 m of any point count stations.

^P**American Crow** (*Corvus brachyrhynchos*) - Uncommon resident, recorded on only 2 (3%) stations on the Ponderosa Pine census route. Seen carrying potential nest material (I-4) on 22 May 1997, but breeding not confirmed on the RCWFA.

***Common Raven** (*Corvus corax*) - Resident in small numbers, recorded in all habitats (freq. range 3-9%). A nest in a tall Douglas-fir in Chama Canyon (B-5) contained 2 nearly fledged young on 13 June 1997. Remains of nestlings in a cliff nest (B-11) discovered 8 July 1997 indicated that they had been killed by a predator, probably avian.

***Violet-green Swallow** (*Tachycineta thalassina*) - Abundant summer resident, nesting in tree cavities and foraging throughout the RCWFA. Most frequent at Ponderosa Pine (41 %) and Canyon (24%) count points. Ten cavities frequented by adults were found (G-2, H-2, I-2, K-2, G-3, N-3, B-4, C-6) between 27 May and 14 July 1997.

^O**Northern Rough-winged Swallow** (*Stelgidopteryx serripennis*) - Migrant and possible summer resident near the river. Recorded 12 June 1997 below El Vado Ranch (K-2) and on 17 June 1997 along the upper Rio Chama (B-11).

* **Cliff Swallow** (*Petrochelidon pyrrhonota*) - Abundant summer resident (April - August), building their mud nests in colonies under overhangs of cliffs adjacent to the Rio Chama. We located 8 active colonies (B-7, B-10, B-11, K-2, L-2, N-3) between 3 June and 8 July 1997 but did not attempt to count occupied nests.

+**Barn Swallow** (*Hirundo rustica*) - Uncommon summer resident. Suitable nest sites apparently not present within the RCWFA, but nests were found on buildings (El Vado Ranch [K-2], El Vado Camping Resort [J-3]), adjacent to the NMGF lands.

***Mountain Chickadee** (*Poecile gambeli*) - Common resident, most frequently recorded at Ponderosa Pine (26%) and Canyon (37%) count points, but also regular in Pinyon-Juniper (18%) and woodland edges of Sagebrush (11 %) areas. A female was visible incubating in a ponderosa pine cavity (B-9) on 27 May and was likely brooding young on 21 June 1997.

^P**Juniper Titmouse** (*Baeolophus griseus*) - Uncommon resident in Pinyon-Juniper woodland. Not recorded during point counts, but encountered in 5 blocks (C-9, C-11, G-3, G-4, and H-4). Agitated parents in H-4 on 18 June 1997 indicated that a nest or dependent young were nearby.

***Bushtit** (*Psaltiriparus minimus*) - Fairly common but not regularly encountered resident in all wooded habitats and edges. Recorded most frequently (11%) on Pinyon-Juniper count points. Four nests were found. A trio was present at a recently completed nest (I-3) in a pinyon on 28 May 1997. An adult pair was delivering food to a nest (C-10) in a juniper on 3 June. Two adults were observed entering a nest (D-6) hanging from a ponderosa pine branch on 4 June. Two adults were delivering food to a nest in a pinyon on 5 July 1997.

^P**Red-breasted Nuthatch** (*Sitta canadensis*) - Uncommon resident and probable breeding species in wooded habitats; recorded most frequently (4%) at Canyon Slopes count stations. No nests were found.

***White-breasted Nuthatch** (*Sitta carolinensis*) - Fairly common resident in forest and woodlands, most frequently encountered at Pinyon-Juniper (19%) and Ponderosa Pine (11 %) count points. A pair occupied a

cavity in a snag (I-4) on 18 June. Both adults were busy feeding 4 large young in another snag cavity (K-2) on 22 June 1997.

***Pygmy Nuthatch** (*Sitta pygmaea*) - Fairly uncommon resident in forests; recorded at 10% of Ponderosa Pine and 3% of Canyon count points. On 28 June 1997 agitated adults repeatedly visited a cavity low in a lightning struck ponderosa pine (C-8), from which emanated the soft begging calls of nestlings.

^P**Brown Creeper** (*Certhia americana*) - Uncommon resident, found only in mixed conifer forests in Chama Canyon. Recorded on only 3% of Canyon Slopes point counts. Two were seen 21 April 1997 and one 24 June near the foot bridge (B-5) across the Rio Chama. Two more were found 13 July 1997 farther upstream (B-7). Probable breeding species, but no nests were found.

***Rock Wren** (*Salpinctes obsoletus*) - Fairly common resident in areas with cliffs, escarpments, or other rocky habitats. Frequently counted at Ponderosa Pine (19%) stations in an area where scattered pines grew in cracks on the caprock slopes. Adults were carrying food to 3 young in a rocky side canyon (B-11) of the upper Rio Chama on 19 June 1997.

***Canyon Wren** (*Catherpes mexicanus*) - Fairly common resident among cliffs along the Rio Chama. Not recorded on any census route, but regular in suitable habitat. A nest was found in a narrow canyon on the east side of El Vado Reservoir (B-3) on 7 July 1997. The adult pair was carrying food to a nest 3 m up in an overhung crack in the cliff.

***House Wren** (*Troglodytes aedon*) - Common summer resident in Ponderosa Pine, where they were recorded at 24% of count points, and along the upper Rio Chama, where 2 nests were found in inactive Cliff Swallow colonies. On 27 May 1997 an adult was carrying nest material to a broken off ponderosa pine limb (G-2). A male delivered food to a female inside a nest in an inactive Cliff Swallow colony (B-8) on 20 June 1997. Adults were repeatedly carrying food a swallow nest (B-9) and a crack in a juniper (B-10) on 2 July 1997.

***American Dipper** (*Cinclus mexicanus*) - Uncommon resident along the Rio Chama. Fledged young were present below El Vado Dam on 25 May and near the El Vado Ranch foot bridge on 5 June 1997 and old nests were found near both locations. An adult brought food to at least 2 begging nestlings in a riverside nest 800 m below the Heron Dam outflow (B-4) on 19 June 1997. An old nest was less than 3 m away. Also seen upstream in Chama Canyon (B-7) on 11 July 1997.

***Blue-gray Gnatcatcher** (*Poliophtila caerulea*) - Fairly common summer resident, recorded most frequently in Pinyon-Juniper (11%) and woodland edges of the Sagebrush (4%) census routes. Three nests were found. A pair was completing a nest on a juniper limb (C-9) on 4 June 1997. The male visited the incubating female on another nest (B-11) in a juniper on 5 June 1997. The last nest found was being built by the pair low in a ponderosa pine (N-3) on 10 June 1997.

***Western Bluebird** (*Sialia mexicanus*) - Fairly common resident of open wooded areas, nesting in tree cavities. This species was most frequently found in Pinyon-Juniper (11 %) and Ponderosa Pine (10%), but also regularly recorded at Sagebrush (7%) stations. An early nester; the female was incubating in the first nest found (F-3) on 13 May 1997. Another nest, probably with eggs, was found 6 June when the female entered the cavity and remained (B-7). All other nests found contained visible young (I-4, 22 May 1997), begging nestlings (D-6; 4 June 1997), or were found because adults were carrying food into a cavity (B-8, 20 June 1997; F-5, 5 July 1997; E-6, 6 July 1997; G-2, 10 July 1997). Adults carrying food were observed in another block (H-2) on 14 June 1997.

***Mountain Bluebird** (*Sialia currucoides*) - Fairly common resident in more open habitats than its congener. This species was most frequently found along woodland edges at Sagebrush (12%) stations, but seldom seen at Pinyon-Juniper (1%) and Ponderosa Pine (1%) stations. A pair was squabbling with a Western Bluebird pair at a nest cavity on the Ponderosa Pine census route on 6 May 1997 but were not seen in that area again. Three nests were found. On 25 May 1997 the female of a pair at a cavity (C-9) entered

and did not reappear. Adults took food into cavities on 5 and 19 June 1997 (B-11) and 20 June 1997 (B-9). Recently fledged young (1+) protected by nervous adults were also encountered 15 June 1997 (D-7).

***Townsend's Solitaire** (*Myadestes townsendi*) - Common winter resident, fairly common May migrant in Canyon habitat, with 80% of summer records there during that month. However, at least one pair nested on the RCWFA; they were observed feeding recently fledged young on 7 July 1997 (B-3).

***Hermit Thrush** (*Catharus guttatus*) - Fairly common summer resident in Chama Canyon (16%), and the mixed habitats found at Pinyon-Juniper (4%) stations. No nests were found but an adult was seen with nest material (B-4) on 22 June 1997 and another was observed carrying food (B-8) on 9 July 1997.

* **American Robin** (*Turdus migratorius*) - Common summer resident, most frequently recorded along the Canyon (33%) census route, but fairly common in Ponderosa Pine (18%) and Pinyon-Juniper (14%) habitats as well. Six nests were found. The nest checked most frequently (K-2) was freshly built (wet mud) on 5 June, had an adult incubating 12 and 21 (4 eggs) June, and large young out on nearby branches on 3 July 1997. Two other nests (B-8, B-9) had incubating adults in late May and had apparently fledged their young by 21 June. Nestlings were in nests found 5 June (B-11) and 4 July (B-5) 1997. A late nest was being built on 25 June 1997. Two adults and at least one fledgling were seen along the upper Rio Chama (B-10) on 11 July 1997.

***Northern Mockingbird** (*Mimus polyglottos*) - Uncommon summer resident. A singing male was present at the RCWFA northeast boundary throughout May and June. A nest, with a female incubating 3 eggs, was in a sagebrush adjacent to NM 112 on 24 June 1997. The nest was sagging and empty in early July and presumed to have failed.

European Starling (*Sturnus vulgaris*) - Uncommon year-round resident. Recorded only in extreme northeast part of wildlife area (B-11), where 3 birds were seen on 4 June 1997.

***Virginia's Warbler** (*Vermivora virginiae*) - The most common and widespread of the warblers found in the RCWFA. In the Canyon Slopes, with its extensive understory and brushy areas, Virginia's Warblers were recorded on 57% of all point counts. They were also recorded at 20% of Ponderosa Pine stations and 22% of Pinyon-Juniper stations. Despite this abundance, we were unable to locate an active nest of this secretive species. However, adults carrying food were recorded in 4 occasions; 19 June (B-9 and G-2), 24 June (B-4), and 30 June (E-7) 1997. Dependent young were also seen (P-7) on 5 June 1997.

***Yellow Warbler** (*Dendroica petechia*) - Locally common summer resident, but only where willows or alders were present adjacent to the Rio Chama. A pair was constructing a nest adjacent to the upper Rio Chama (B-8) on 26 May 1997. Another upper Rio Chama nest (B-11) that contained one warbler and one cowbird egg on 5 June had been blown out of the nest tree on 16 June 1997. The final nest, found 22 June on the lower Rio Chama (K-2) had fledged a Brown-headed Cowbird on 4 July 1997.

***Yellow-rumped Warbler** (*Dendroica coronata*) - Common summer resident in mixed conifer forests of Chama Canyon, where recorded at 33% of count points. No nests were found, but an adult with fledged young was seen near the canyon rim (B-4) on 4 July 1997 and an adult carried food into the canyon (B-5) on 13 July 1997.

***Black-throated Gray Warbler** (*Dendroica nigrescens*) - Uncommon summer resident in Pinyon-Juniper Woodland, but not recorded during point counts. Adults were observed carrying food 10 June (N-3) and 19 June 1997 (B-9).

***Grace's Warbler** (*Dendroica graciae*) - Fairly common summer resident in Ponderosa Pine; recorded on 15% of stations in that habitat. None of their nests, usually built high in trees, were found but an adult carrying food was seen (B-8) on 20 June 1997.

^o**Common Yellowthroat** (*Geothlypis trichas*) - Uncommon summer resident. A singing male was present

along the upper Rio Chama (B-11) on 17 June 1997.

***Western Tanager** (*Piranga ludoviciana*) - Common summer resident in forested habitats; recorded at 34% of Ponderosa Pine and 29% of Canyon count points. Five nests were found, 3 in ponderosa pines and 2 in Douglas-firs. Nest status ranged from construction (H-3) on 28 May 1997 and (B-9) on 3 June 1997, incubation (E-7) on 9 June 1997, a nest (K-2) with 2-3 small young on 4 June 1997, and a food delivery (N-3) by the male 10 June 1997.

***Green-tailed Towhee** (*Pipilo chlorurus*) - Common summer resident in Sagebrush. These towhees were the most frequently (42%) recorded species in that habitat. One nest was found on 21 June 1997. It contained 2 eggs and 1 hatchling. Both adults were carrying food to the nest; the female also spent time incubating the eggs. Recently fledged young were also seen (D-5) on 21 June 1997, and another pair of adults was feeding fledged young (E-3) on 5 July 1997.

***Spotted Towhee** (*Pipilo maculatus*) - Common summer resident of brushy areas throughout the wildlife area. Recorded on 59% of count points in Pinyon-Juniper woodlands, but they were also common in woodland edges of the Sagebrush (22%) and Ponderosa Pine (21%) census routes. We found 2 nests; in one (I-4) found 22 May 1997 the female was incubating 4 eggs. A late nest (E-7) had a female incubating 3 eggs on 31 July and 1 August 1997.

***Chipping Sparrow** (*Spizella passerina*) - Common summer resident in all but Canyon Slopes (6%); frequently encountered at Pinyon-Juniper (43%), Sagebrush (32%), and Ponderosa Pine (29%) stations. We found 5 nests, 2 in sagebrush, 2 in junipers, and one in a pinyon. The first nest found (C-9) was completed and attended by a pair on 17 June 1997, but did not contain eggs. Adults were feeding 3 young (D-5) on 21 June, 4 young (B-11) on 24 June, and 3 young (B-8) on 9 July 1997 at 3 other nests. A female was flushed off 3 eggs in the last nest (B-9) found on 16 July 1997.

***Brewer's Sparrow** (*Spizella breweri*) - This sagebrush obligate nesting species was fairly common at count points in that habitat (18%). Adults were feeding 3 small nestlings in nest in a sagebrush (B-11) on 24 June 1997.

***Vesper Sparrow** (*Pooecetes gramineus*) - Abundant summer resident in Sagebrush where they were recorded at 69% of the stations. We found 2 of the ground nests of this species. A female was flushed from 4 eggs (D-6) on 24 May 1997; by 13 June the nest was empty and it appeared that the nestlings had fledged successfully. The second nest (B-11) was also found during incubation on 17 June 1997. The male brought food to the female, who was incubating 3 eggs.

°**Lark Sparrow** (*Chondestes grammacus*) - Uncommon summer resident or migrant, recorded only (I-4) on 22 May 1997.

***Song Sparrow** (*Melospiza melodia*) - Localized summer resident, found in willows and other brush near the Rio Chama. A nest (B-11) found 1 July 1997 contained 4 young. The female brought food while the male perched nearby.

***Dark-eyed Junco** (*Junco hyemalis*) - Uncommon resident. Not recorded in any habitat during point counts, but an adult was seen carrying food (B-3) on 14 July 1997.

***Black-headed Grosbeak** (*Pheucticus melanocephalus*) - Widespread, common summer resident in wooded habitats; recorded at 20-27% of point count stations in those 3 habitat types (Table 1). Grosbeaks building a nest in a Gambel's oak (*Quercus gambelli*) were discovered on 25 May 1997 (G-2). On 14 June the female was incubating or brooding, and on 24 June 3 large, well-feathered young filled the nest. Dependent young were also encountered (K-2) 22 June and (B-9) 2 July 1997.

°**Blue Grosbeak** (*Guiraca caerulea*) - Uncommon summer resident. A singing male was in the lower Rio Chama (M-2) on 8 July 1997, but no nest was found.

°**Lazuli Bunting** (*Passerina amoena*) - Uncommon summer resident. Singing males were found in limited deciduous brush along lower (M-2) and upper (B-11) Rio Chama. The latter male was singing on 19 June, 11 July, and 14 July 1997, but no mate or nest were observed. The other male (M-2) visited a possible nest site on 8 July 1997, but a nest was not found.

°**Indigo Bunting** (*Passerina cyanea*) - A singing male was on the north side of the upper Rio Chama (B-10), just outside of the RCWFA, on 11 July 1997.

***Red-winged Blackbird** (*Agelaius tricolor*) - Summer resident at a pond with emergent cattails (E-3). Two nests were found there on 20 June 1997; one contained 2 half-grown young and the other contained 2 hatchlings and 2 eggs. A singing male was in partially submerged willows in upper El Vado Reservoir (C-2) on 13 and 19 June 1997.

***Western Meadowlark** (*Sturnella neglecta*) - Uncommon summer resident in open sagebrush areas. Found only near the center of the RCWFA (C-5, D-5), where an adult was observed feeding recently fledged young on 21 June 1997, near the El Vado Lake State Park turnoff from NM Highway 112 (I-4), and in the lower Rio Chama flood plain (N-3).

***Brewer's Blackbird** (*Euphagus cyanocephalus*) - Locally common summer resident in wet grasslands, especially adjacent to the Rio Chama and man-made ponds. Recorded only at Sagebrush (14%) stations during point counts. Nests colonially; discovery of three nests in sagebrush adjacent to the upper Rio Chama (B-8) 20 June 1997, one with 3 well-grown young, one with 4 eggs and one with 2 eggs, drew a dozen agitated adults. Another nest found the same day, in a Russian olive (*Elaeagnus angustifolia*) near a pond (C-5), contained 4 eggs. Recently fledged Brewer's Blackbirds were seen by the pond. The last 2 nests were on a shrubby island in the upper Rio Chama on 14 July 1997. Two females were taking mouthfuls of insects into the brush; one nest was visible from shore.

***Brown-headed Cowbird** (*Molothrus ater*) - Common summer resident, recorded most frequently in Ponderosa Pine (29%), but also fairly common on Canyon Slopes (19%) and in Pinyon-Juniper (14%). Uncommon only in Sagebrush (4%). They parasitized one Warbling Vireo (B-9), 2 Yellow Warbler (B-11, K-2), and one House Finch (K-9) nests that we found.

***Bullock's Oriole** (*Icterus bullockii*) - Uncommon breeding species due to lack of a well developed deciduous riparian zone. A typical hanging nest was found high in a tall ponderosa pine (N-3) on 25 June 1997. The male sang nearby, spent several minutes in the nest, then chased a "pair" of cowbirds from the stand.

***Cassin's Finch** (*Carpodacus cassini*) - Uncommon resident, not encountered during point counts. A pair was building a nest in a large ponderosa pine (K-2) on 23 June 1997. The male sang intermittently.

***House Finch** (*Carpodacus mexicanus*) - Uncommon resident, not recorded during point counts. A pair was building a nest in a juniper (K-2) on 30 June 1997. The female was incubating 1 cowbird and 3 finch eggs on 4 July. The cowbird egg was removed; on 6 July there were 4 House Finch eggs in the nest.

°**Red Crossbill** (*Loxia curvirostra*) - Uncommon resident. Infrequently encountered (3% each) in the three wooded habitats during point counts. No nests were found.

***Pine Siskin** (*Carduelis pinus*) - Uncommon resident. Infrequently recorded (3-5%) in the three wooded habitats during point counts. An adult was observed building a nest 15 m up in a ponderosa pine (C-4) on 15 July 1997. It made at least 5 trips with pine needles to the site, though the nest was still rudimentary.

***Lesser Goldfinch** (*Carduelis psaltria*) - Uncommon summer resident, Not recorded during point counts, but regularly encountered near water. A late arriving and nesting species; nests found high in ponderosa pines (B-11) on 1 July and (B-8) on 8 July 1997 were under construction, though the female was on a nest in a juniper (K-2) on 1 July 1997.

DISCUSSION

Of 92 species we recorded in suitable breeding habitat within the RCWFA in May-July 1997, we confirmed breeding by 64 species on the study area and 3 species bred nearby. Thus we recorded breeding by a high percentage (73%) of potential nesting species in or very near the RCWFA, adding significantly to the ornithological data base for northern Rio Arriba County and New Mexico.

Sage Thrashers (*Oreoscoptes montanus*), Sage Sparrows (*Amphispiza belli*), and Brewer's Sparrows are almost entirely dependent (obligate breeders) on sagebrush as breeding habitat and Green-tailed Towhees and Vesper Sparrows are near obligate breeding species in this habitat type (Braun et al. 1976). However, Sage Thrashers and Sage Sparrows were conspicuously missing as breeding species in sagebrush areas of the RCWFA. Both species were prominent breeders in sagebrush at Urraca Wildlife Area (UWA) in 1995 (Stahlecker 1996; Baseline wildlife populations in sagebrush habitat in the Urraca Wildlife Management Area, Taos County, New Mexico), though Sage Thrashers were lacking at the BLM's Rio Grande Wild and Scenic Recreation Area (RGWSRA) in 1985 (Stahlecker et al. 1989). These areas, about 15 miles apart in Taos County, are comparable in elevation, latitude, and climate to the RCWFA. Sagebrush densities in both the RCWFA and the RGWSRA were lower than in the UWA, probably due to past management efforts on behalf of big game and livestock.

The mix of habitats studied in the RGWSRA (Stahlecker et al. 1989) was quite similar to that of the RCWFA Canyon Slopes habitat there were dry west-facing slopes; the Upland Forest habitat there was more comparable to the Canyon Slopes habitat in the RCWFA. Summer bird lists were comparable in size (105 [RCWFA] vs. 113 [RGWSRA]) and overlap between species lists was greater than 90%. However, they used spot-mapping to census breeding birds instead of point counts and did not search for nests.

While Juniper Titmice, Townsend's Solitaires, Black-throated Gray Warblers, and Dark-eyed Juncos were uncommon in the wooded habitats in the RCWFA in 1997, the same species were among the most abundant breeding birds in similar habitats on the RGWSRA in 1985 (Stahlecker et al. 1989). The RCWFA had better and larger areas of ponderosa pine and mixed conifer forests, so that populations of Cordilleran Flycatchers, Ash-throated Flycatchers, House Wrens, Hermit Thrushes, Yellow-rumped Warblers, and Western Tanagers were more abundant than on the RGWSRA in 1985. Breeding populations of other species appeared quite comparable to the senior author, who participated in both studies.

In a recent 6 year study on the 13,350 ha National Rifle Association Whittington Center (NRAWC) in Colfax County, New Mexico, Goguen et al. (1998) confirmed breeding by 69 of 107 species recorded during the summers of 1992-97. Both study areas had mixed conifer/ponderosa pine forests, oak brush, and pinyon-juniper woodlands. NRAWC had short-grass prairie while RCWFA had sagebrush/grasslands. The NRAWC was about 2.5 times as large as the RCWFA. The two studies had 46 nesting species in common. Eight species not recorded at RCWFA bred at NRAWC while five species not recorded at NRAWC nested at RCWFA. There were 28 species, 15 at NRAWC at 13 at RCWFA, that were confirmed breeders at only one study area but were present at both. Differences can be attributed to study lengths, area sizes, habitat differences, and geographical (Great Plains edge vs. Intermountain Basin) locales. Similar efforts to confirm nesting are needed in other regions in New Mexico.

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Appendix A. Summary of categories for documenting breeding bird activity (Corman 1994).

Obs. = Observed; Non-breeder or migrant observed during breeding season, but not believed to be breeding. Species in unlikely breeding habitat, out of normal range, no indication of breeding.

Possible Breeders:

- Species observed (or heard) in suitable nesting habitat during the breeding season. Also for species without true songs (woodpeckers, corvids, raptors).

X - Singing male present in suitable habitat during its breeding season.

Probable Breeders:

P - Pair observed in suitable habitat during their breeding season.

S - Permanent territory presumed through song at the same location on at least 2 occasions 7 or more days apart.

T - Permanent territory presumed through defense of breeding territory (chasing individuals of same species).

C - Courtship behavior or copulation between a male and female. This includes courtship displays or food exchanges.

N - Visiting probable nest site, but no further evidence obtained. This applies to a bird which consistently flies into the same likely nest site, but which provides insufficient behavior for upgrading to confirmed. Useful code for cavity-nesters.

A - Agitated behavior or anxiety calls of adult, indicating nest site or young in the vicinity.

B - Nest building by some species of wrens or excavation of cavities by woodpeckers. Males of some wrens build nests whether females are present or not. Likewise, cavity excavation by a woodpecker is not proof that it will be a nest site.

Confirmed:

CN - Bird seen carrying nesting material (sticks, grass, mud, cobwebs). Applies to all species but House Wrens (in our area).

NB - Nest building seen at the actual nest site, excluding House Wrens.

DD - Distraction displays, defense of unknown nest or young or injury feigning.

UN - Used nest or eggshells found, but only if carefully identified.

FL - Recently fledged young of altricial species incapable of sustained flight or downy young of precocial

species restricted to the natal area by dependence on adults or by limited mobility.

ON - Occupied nest indicated by adult entering or leaving nest site in circumstances indicating an occupied nest, including those in high trees, cliffs, cavities, and burrows where the contents of the nest and incubating or brooding adult cannot be seen.

CF - Adults seen carrying food, excluding raptors or corvids in our area.

FY - Adults seen feeding fledged young. Begging cowbirds confirms both species.

FS - Adults seen carrying fecal sac. Many passerines carry sacs away from the nest.

NE - Nest with eggs found. Cowbird eggs confirm both the cowbird and the host.

NY - Nest with young seen (open nest) or heard (cavity). Cowbird young confirms both species.

Appendix B. Migrant and wintering species documented on the Rio Chama Wildlife and Fishing Area, January 1997 through April 1998.

| Common Name | Scientific Name | Migrant/winter resident? | Sightings (# of birds) |
|----------------------|-----------------------------------|--------------------------|------------------------|
| Common Loon | <i>Gavia immer</i> | Migrant | 1 (1) |
| Horned Grebe | <i>Podiceps auritus</i> | Migrant | 2 (2) |
| Eared Grebe | <i>Podiceps nigricollis</i> | Migrant | 1 (2) |
| Clark's Grebe | <i>Aechmophorus clarkii</i> | Migrant | 2 (2) |
| Great Blue Heron | <i>Ardea herodias</i> | Migrant | 2 (4) |
| Snowy Egret | <i>Egretta thula</i> | Migrant | 1 (1) |
| Gadwall | <i>Anas strepera</i> | Winter Resident | 4 (>100) |
| American Wigeon | <i>Anas americana</i> | Winter Resident | 1 (10) |
| Northern Shoveler | <i>Anas clypeata</i> | Migrant | 1 (20) |
| Green-winged Teal | <i>Anas crecca</i> | Winter Resident | 2 (10) |
| Ring-necked Duck | <i>Aythya collaris</i> | Winter Resident | 1 (2) |
| Lesser Scaup | <i>Aythya affinis</i> | Migrant | 1 (10) |
| Bufflehead | <i>Bucephala albeola</i> | Winter Resident | 4 (>200) |
| Common Goldeneye | <i>Bucephala clangula</i> | Winter Resident | 4 (>250) |
| Barrow's Goldeneye | <i>Bucephala islandica</i> | Winter Resident | 1 (1) |
| Hooded Merganser | <i>Lophodytes cucullatus</i> | Winter Resident | 1 (1) |
| Ruddy Duck | <i>Oxyura jamaicensis</i> | Migrant | 1 (1) |
| Bald Eagle | <i>Haliaeetus leucocephalus</i> | Winter Resident | 2 (5) |
| Rough-legged Hawk | <i>Buteo lagopus</i> | Winter Resident | 1 (1) |
| Peregrine Falcon | <i>Falco peregrinus</i> | Migrant | 2 (3) |
| Bonaparte's Gull | <i>Larus philadelphia</i> | Migrant | 1 (6) |
| Rufous Hummingbird | <i>Selasphorus rufus</i> | Migrant | 2 (2) |
| Northern Shrike | <i>Lanius excubitor</i> | Winter Resident | 2 (2) |
| Tree Swallow | <i>Tachycineta bicolor</i> | Migrant | 1 (20) |
| Ruby-crowned Kinglet | <i>Regulus calendula</i> | Migrant | >5 (>15) |
| Wilson's Warbler | <i>Wilsonia pusilla</i> | Migrant | 1 (1) |
| Lincoln's Sparrow | <i>Melospiza lincolnii</i> | Migrant | 1 (1) |
| American Goldfinch | <i>Carduelis tristis</i> | Migrant | 1 (1) |
| Evening Grosbeak | <i>Coccothraustes vespertinus</i> | Migrant | 1 (1) |

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1997 NEW MEXICO NORTH AMERICAN MIGRATION COUNT

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The year 1997 marked the sixth consecutive year for New Mexico participation in the North American Migration Count (NAMC), which takes place each year on the second Saturday in May. The primary goal of the NAMC is to provide "a picture in time" of migration on the same day across the continent of North America. The count is patterned, with some modifications, after a number of other volunteer surveys. The boundaries for the counts are county or parish borders, and all counts occur on a single designated day. This data-gathering event is a valuable addition to our attempts to learn more about distribution and population dynamics of birds. These data are especially valuable when analyzing continent-wide totals as they pertain to neotropical migrants and events occurring in their populations. This growing database will continue to increase in value as years pass and

participation increases.

The 1997 count occurred on 10 May. Coverage in 1997 included 14 counties, the highest number yet covered. Table 1 presents summary statistics for this year's counts. Table 2 summarizes the counts over the past six years. Lincoln and Sandoval counties were counted again in 1997, after not being counted in 1996. Dona Ana County, which had been counted previously, was not counted in 1997. Important factors in the interpretation of data gathered in this survey are the lack of observers and undercoverage in most areas.

The 14 counts produced a number of new species records. The species count stayed the same as in 1996 at 268. Even with the addition of another county, and with only two fewer observers than in 1996, the number of individual birds counted dropped by 11%. Increases occurred in party-hours (3.6%) and party-miles (25.4%). Several compilers commented that migration was slow and that some wintering species were late in departing. They believed that this was due in part to a cooler-than-normal spring.

Grant County again produced the most species with 178, followed closely by Eddy County with 172, and San Juan with 136. The highest numbers of individuals were found in Grant, Eddy, and Chaves counties. High counts for species were in Grant (96.25), Eddy (47.1), and Chaves (26). In high counts of species for each of the counties, most have a fractional number. In cases where two counties had the same high number, each county received a tabulation of 0.5, a county that was in a three-way tie would receive 0.3, and so on.

Only four species were found on all 13 counts (except Bernalillo): Mourning Dove, Barn Swallow, American Robin, and Brown-headed Cowbird. Several unusual species were recorded on count day and they are covered in the county summaries that follow. Evening Grosbeaks remained late and were found even on the southern counts in Chaves and Eddy counties.

Overall coverage in the state continues to improve, although there are several areas in which a county count would be especially valuable. Most current counts also have a general lack of observers to cover the county well, which is characteristic of most surveys of this type in New Mexico. The eastern tier of counties are still not adequately covered. A count from the 'bootheel' of New Mexico would be especially valuable because of the large number of species that are largely restricted to that corner of the state. Better and consistent coverage in the Rio Grande Valley, especially in Dona Ana and Socorro counties, would add much to the overall understanding of bird migration on a specific day statewide.

The 1998 North American Migration Count was conducted on 9 May and the results will appear in a future NMOS Bulletin. The 1999 count will take place on Saturday, 8 May. Those interested in taking part in an on-going count, or initiating a new one in a county not yet covered, should contact me at the above address. For a copy of the complete species list of the 1997 results, send me a self-addressed, stamped envelope.

BERNALILLO COUNTY: Participation in Bernalillo County dropped to a single feeder watcher and resulted in a much less typical count for an area that can be especially rich.

CHAVES COUNTY: As usual, Chaves County did very well. Six species noted were not found elsewhere in the state on count day: Hooded Merganser, Willet, Whimbrel, Black Tern, Eurasian Collared-Dove, and Chimney Swift. Chimney Swifts are being recorded regularly from the Pecos Vally eastward. Nineteen species of shorebirds were recorded in New Mexico on count day. Eight of those 12 represented state high counts for count day.

DE BACA COUNTY: Five Grasshopper Sparrows were a good find in this area, as were 2 late Osprey.

EDDY COUNTY: Good weather helped the Eddy County count establish a new species high for the county at 172. Better coverage in the Guadalupe Mountains resulted in a higher species count, although several montane species were missed. Species found in Eddy County that were not recorded elsewhere were: Horned Grebe, Neotropic Cormorant, Northern Pintail, Harris's Hawk, Lesser Yellowlegs, Baird's Sandpiper, Stilt Sandpiper, Lesser Nighthawk, Cave Swallow, Brown Thrasher, and Orchard Oriole.

GRANT COUNTY: Grant County again was the top count in the number of species, the number of species found only in the county, the highest number of individuals, and in the number of high counts for species. Species recorded on this count not found elsewhere in the state include: Northern Goshawk, Common Black-Hawk, Montezuma Quail, Spotted Owl, Common Poorwill, Whip-poor-will, Anna's Hummingbird, Gila Woodpecker, Greater Pewee, Willow Flycatcher, Brown-crested Flycatcher, Purple Martin, Mexican Jay, Bridled Titmouse, Brown Creeper, Black-tailed Gnatcatcher, American Pipit, Hutton's Vireo, Red-faced Warbler, Painted Redstart, Olive Warbler, Abert's Towhee, and Black-chinned Sparrow. Twenty-two observers were only slightly behind the high number of observers in San Juan County. Nothing highly unusual was recorded, but it was good to see that a number of species on the threatened/endangered list, or on lists of concern, continues to occur in Grant County: Common Black Hawk (22), Spotted Owl (8), Gila Woodpecker (8), Bell's Vireo (9), and Abert's Towhee (4).

LEA COUNTY: Two independent parties surveyed Lea County on count day: Pat McCasland in the southern part, and Doug Emkalns and Bruce Neville in the northern part. Twenty-eight Scissor-tailed Flycatchers were recorded, a high number for a species that is becoming more and more restricted in the state. Observers in Eddy County found only 4 in an area where it was once very common. Unusual birds recorded were a well-described Semipalmated Sandpiper by Emkalns and Neville, and late Savannah Sparrows by McCasland.

LINCOLN COUNTY: The count in Lincoln County, turned up three species found nowhere else: a late Merlin, 2 Magnificent Hummingbirds, and an American Dipper. An unusual find was 2 Ospreys.

LOS ALAMOS COUNTY: The Red-naped Sapsucker was found only on this count. A Black-and-white Warbler may have been a first county record. A good number (49) of Band-tailed Pigeons were found for a species that seems to have declined elsewhere in the state.

McKINLEY COUNTY: In a one-person effort on the Zuni Indian Reservation in McKinley County, David Cleary found 113 species and 2,166 individuals. Bufflehead was found on this count and on no other count in the state. With additional observers, this count could be one of the high counts in the state. A Little Blue Heron was seen for several days, but was not located on count day. Eighteen species of ducks were found in New Mexico on count day, and highs for six of them came from McKinley County.

MORA COUNTY: High counts were recorded for 2 species regarded as unusual on count day: Prairie Falcon and Eastern Kingbird.

SANDOVAL COUNTY: Cassin's Vireo was found only on this count. Unusual finds included Least Tern along the Rio Grande, and Summer and Hepatic tanagers in the Corrales Bosque. As with many other counts, very few warblers were recorded, often an indication of cold spring temperatures.

SAN JUAN COUNTY: The San Juan count had the greatest number of observers, 23. Six species were found on this count and nowhere else in the state on count day: Wood Duck, Canvasback, Solitary Sandpiper, Common Snipe, California Gull, and Blue-winged Warbler. The warbler was photographed and represents a first record for the county. A Purple Finch observed at a feeder was late. A White-winged Dove gives further evidence that this bird has gradually occupied much of the lower-elevation areas in the state.

SANTA FE COUNTY: Species found in Santa Fe County that were not recorded elsewhere in the state on count day: Ferruginous Hawk, Hammond's Flycatcher, Gray Jay, Bendire's Thrasher, and Clay-colored Sparrow. This was the highest species total for Santa Fe County. Unusual finds included: two Ospreys, Bendire's Thrasher, and Clay-colored Sparrow. Large decreases were noted in high mountain breeding species such as House Wren, MacGillivray's Warbler, Wilson's Warbler, and White-crowned Sparrow.

TAOS COUNTY: Fifteen Marsh Wrens on this count seemed to be a high number. Warblers were generally in low numbers, although 7 different species were recorded.

Table 2. Historical Comparison of New Mexico NMAC Counts

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 |
|-------------------|--------|--------|--------|--------|--------|--------|
| Total Counties | 3 | 5 | 10 | 11 | 13 | 14 |
| Total Species | 222 | 218 | 260 | 256 | 268 | 268 |
| Total Individuals | 13,969 | 15,538 | 33,374 | 40,584 | 43,246 | 38,504 |
| Party-Hours | 182 | 118 | 445 | 500 | 467 | 484 |
| Party-Miles | 894 | 676 | 2,251 | 2,768 | 2,468 | 3,097 |
| Total Observers | 33 | 59 | 101 | 151 | 139 | 137 |

(For space considerations, Table 1 appears on the following page.)

Table 1. County summary of 1997 North American Migration Count in New Mexico

| County | No. Species | No. Individ. | No. High Cts. | Unique Spp. | No. Observers | Compiler |
|------------|-------------|--------------|---------------|-------------|---------------|--------------------|
| Bernalillo | 11 | 168 | 0.00 | 0 | 1 | Jeff Myers |
| Chaves | 110 | 5,512 | 29.00 | 6 | 16 | Sherry Bixler |
| De Baca | 51 | 411 | 5.10 | 0 | 1 | Roger Hoppe |
| Eddy | 172 | 7,906 | 47.10 | 11 | 20 | Steve West |
| Grant | 178 | 8,117 | 96.25 | 23 | 22 | Ralph Fisher |
| Lea | 70 | 1,528 | 3.50 | 0 | 3 | (two parties) |
| Lincoln | 69 | 1,056 | 8.30 | 3 | 11 | Anita Powell |
| Los Alamos | 73 | 1,639 | 2.75 | 1 | 9 | Pat Snider |
| McKinley | 113 | 2,166 | 14.50 | 1 | 1 | David Cleary |
| Mora | 65 | 498 | 2.00 | 2 | 2 | Scott Vail |
| Sandoval | 101 | 893 | 6.55 | 1 | 2 | Terry Brownell |
| San Juan | 136 | 3,967 | 26.60 | 6 | 23 | John Rees |
| Santa Fe | 119 | 3,552 | 23.00 | 5 | 19 | Christopher Rustay |
| Taos | 87 | 1,091 | 3.25 | 0 | 6 | Karen Epperson |
| Totals | 268 | 38,504 | 267.90 | 59 | 136 | |

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GREAT BLUE HERON PREDATION ON A SOLITARY SANDPIPER

CHRISTOPHER RUSTAY
Hawks Aloft, Albuquerque, NM

On Aug. 17, 1998 I was driving on route 26, from Hatch to Deming in the Las Uvas Valley. I stopped at a small playa at the west end of the valley. At the playa there were three Great Blue Herons (*Ardea herodias*) and two Solitary Sandpipers (*Tringa solitaria*). While watching one of the Great Blue Herons grabbed one of the Solitary Sandpiper and hit the bird several times against the ground. I moved closer to watch this happening and, apparently moved too closely as the heron became edgy and then started to fly off; the Solitary Sandpiper still dangling from its bill.

ERRATA

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 ...

Please add these corrections to your copy of vol. 26, no. 3.