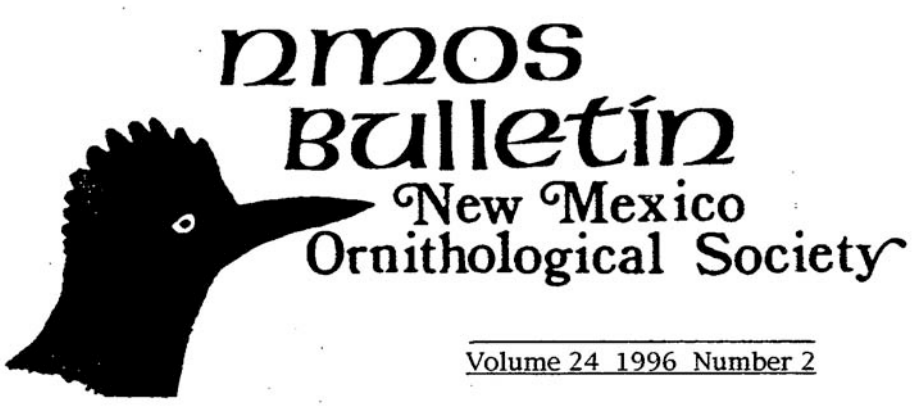

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P.O. Box 3068, Albuquerque, NM 87190-3068

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RECENT CHANGES TO THE AOU CHECK-LIST AFFECTING NEW MEXICO BIRDS

SARTOR O. WILLIAMS III, 65 Verano Loop, Santa Fe, NM 87505

The recently-published fortieth supplement to the American Ornithologists' Union *Check-list of North American Birds (Auk* 112:819-830, 1995) contains several changes that relate to New Mexico birds; these are summarized below. The fortieth supplement is the sixth since the 1983 publication of the sixth edition of the *Check-list* (supplements appear at two-year intervals); a seventh edition of the *Check-list* is anticipated soon.

The Great Egret is moved from the genus *Casmerodius* to the genus *Ardea,* where it will be *Ardea alba.* This change is based on published studies of skeletal characters and DNA-DNA hybridization.

The English name of *Elanoides forficatus* is changed to Swallow-tailed Kite. The modifier "American" is dropped because the African species formerly called by the same name is now called Scissor-tailed Kite.

For grammatical reasons, the specific name of *Pluvialis dominica* (American Golden Plover) is changed to *dominicus.*

Published studies on genetic, morphological, and behavioral differences support recognition of at least three species in the *Aphelocoma* "Scrub Jay" complex: Florida Scrub-Jay, *A. coerulescens,* Island Scrub-Jay, *A. insularis,* and Western Scrub-Jay, *A. californica.* Note that the group name is retained, but it now must be hyphenated to "Scrub-Jay." Also, be aware that the new Western Scrub-Jay, to which New Mexico birds are referred, includes two distinct groups, *californica* and *woodhousei,* that may, pending studies, be split further into two full species.

The English name of *Aphelocoma ultramarina* is changed from Gray-breasted Jay to Mexican Jay. This is a return to the use of a previously established name, which many New Mexicans (myself included) never really managed to abandon in the first place.

The Rufous-sided Towhee is split into Eastern Towhee, *Pipilo erythrophthalmus,* and Spotted Towhee, *P. maculatus,* With the latter being the common New Mexico species. The two differ in vocalizations, dorsal plumage, and nature and extent of sexual dimorphism. Supporting this split are published data strongly suggestive of assortive mating in a narrow Great Plains hybrid zone as well as molecular studies showing a lack of shared mitochondrial haplotypes between the two groups. The Eastern Towhee has been reported in New Mexico on a very few occasions, but as yet is unconfirmed by specimen, photograph, or diagnostic audiotape.

The erstwhile Northern Oriole is (re)split into Baltimore Oriole, *I. galbula* and Bullock's Oriole, *I. bullockii* (plus Black-backed Oriole, ***I. abeillei,*** of central Mexico). Published studies indicate that the Great Plains hybrid zone apparently is stable, with little introgression beyond its borders. Additionally, the numerous differences between the two (e.g., male, female, and immature plumages, thermoregulatory abilities, allele frequencies, number of molts and molt-migration schedule, nest-site placement and dispersion, and body size) strongly argue these should be treated as biological species. Both Baltimore and Bullock's orioles occur in New Mexico; hence, the state gains a species by this split.

Other changes not directly affecting New Mexico birds but of interest to New Mexicans include splitting the Gilded Flicker from Northern Flicker, Bicknell's Thrush from Gray-cheeked Thrush, and Sharp-tailed Sparrow into two full species. Readers, especially those prone to judge such changes as arbitrary (or worse), are encouraged to seek out and read the fuIl12-page supplement plus the references cited therein, so they may better understand the evidence and reasoning behind these decisions.

Received 6 March 1996

BIRDS OF SANTA ROSA RESERVOIR, GUADALUPE COUNTY, NEW MEXICO

DALE W. STAHLECKER, Eagle Environmental, Inc., 30 Fonda Road, Santa Fe, NM 87505

Santa Rosa Dam, built on the Pecos River near Santa Rosa, Guadalupe County, New Mexico, was completed by the U. S. Army Corps of Engineers (COE) in July 1981. The normal flood pool of Santa Rosa Reservoir is 1580 ha (3900 acres). Though this area has been under Federal (COE) and State (New Mexico Parks and Recreation Division) management for more than a decade, its avifauna is poorly documented. Between May 1994 and June 1995, I used standardized censuses and general observations to accumulate information on the kinds and numbers of birds that occur at Santa Rosa Reservoir.

METHODS

My primary method of documenting the birds of Santa Rosa Reservoir was a 40-stop census route. The census was patterned after the Breeding Bird Survey (BBS), a continent-wide system of bird censuses that are organized and summarized by the U. S. and Canadian federal wildlife agencies. Standard BBS routes are 39.4 km (25 miles) long and consist of 50 stops spaced at 0.8 km (0.5 mile) intervals. All birds heard and seen within 0.4 km (0.25 mile) of each stop during a 3-minute observation period are recorded (Peterjohn and Sauer 1993).

My census route at Santa Rosa Reservoir began on the northwest side of the main lake, then followed existing roads across the dam and circumscribed the lake, ending on its northeast side (Fig. 1). Because of rough roads, particularly on the west side of the reservoir, only 40 stops could be completed within the first 4.5 hours after sunrise, as required by the BBS census protocol.

BBS counts are conducted once annually, usually in June (Peterjohn and Sauer 1993). I used the same protocol, but conducted counts monthly from May 1994 to June 1995. I supplemented data on bird numbers by searching the lake, ponds, and other habitats (e.g., riparian areas) that were not fully covered by the 40-stop count. I also reviewed New Mexico Ornithological Society's (NMOS) *Field Notes* and *American Birds/Audubon Field Notes* for the period 1981-1995 for other avian records for Santa Rosa Reservoir. I used New Mexico Department of Game and Fish Department (NMG&F) data from waterfowl and Bald Eagle surveys to further document bird occurrences and populations. Finally, I incorporated species documented by C. M. Rustay in his visits to the reservoir for the period 1987-95.

Birds recorded on the 40-stop census route were totaled for each month's count and their frequency of occurrence (no. stations recorded/40 stations) calculated. Seasons of use were divided into Summer (June - July), Autumn (August - November), Winter (December - February), and Spring (March -May); this is the same seasonal breakdown used by *NMOS Field Notes* and *American Bird/Audubon Field Notes* (Anonymous 1994).

STUDY AREA

Santa Rosa Reservoir is located in Guadalupe County in east-central New Mexico. My census route passed through juniper woodland (25%), shortgrass prairie (25%), and a savannah of scattered junipers in grassland (50%). Additional habitats available to birds included a riparian zone of trees and bushes adjacent to the reservoir and the Pecos River, the open water and shoreline of the lake and two adjacent stock ponds that predate the lake, and the cliffs of the narrow canyon in the upper reaches of the reservoir. Place names of importance to the following annotated checklist are given in Fig. 1.

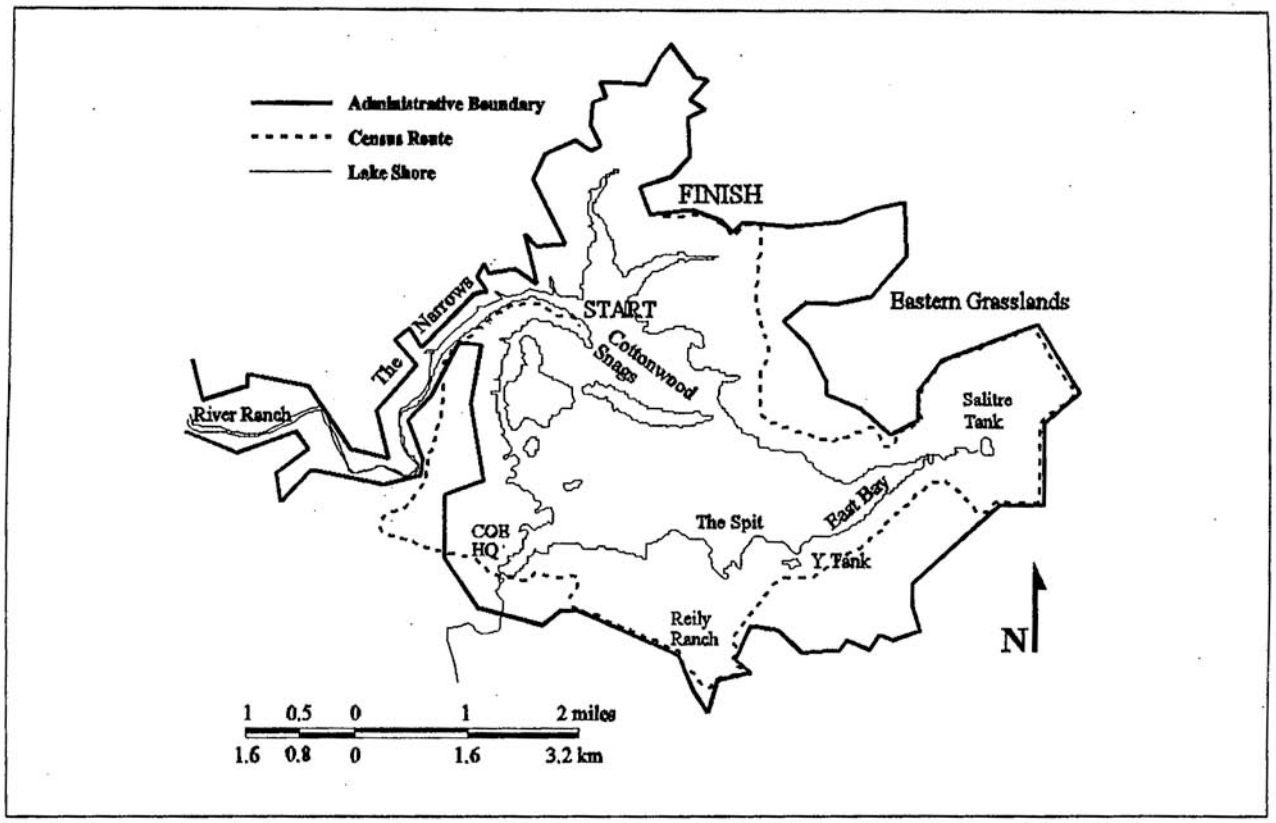

Fig. 1. Census route and primary observation areas at Santa Rosa Reservoir, New Mexico, May 1994 through June 1995.

ANNOTATED CHECKLIST

Status and relative abundance in the annotated checklist follow the standards prescribed by Hubbard (1978). Status descriptions are as follows: *Resident* - present in an area yearlong, generally as a breeder, *summer resident* - present in the warmer months, generally as a breeder, *winter resident* - present in the colder months, and *migrant* - present in an area between summer and winter. Relative abundance descriptions include: *abundant* - very high density for the species or group in question, *common* - high density, *fairly common* - moderate density; *uncommon* - low density; and *rare* - very low density. *Vagrant* is also used to describe a species that was seen well outside of its normal range. Relative abundance of migrants is generally not given because the migration period was not sampled proportional to the activity that occurs at that time. Because this study was conducted for only one year and field visits were limited to one day/month, frequencies of occurrence *(regular, irregular, occasional, casual;* Hubbard 1978) are not given. I also sometimes use the prepositions *potential* and *probable* where a species is likely to be present in other periods than documented by this study. Use of these prepositions was based on Hubbard (1978), other literature sources, or personal experience in similar habitats.

Common Loon *(Gavia immer)* - Migrant and uncommon winter resident. One was on the main body of the lake on 15 November 1994 and 5 were there on 20 December 1994.

Pied-billed Grebe *(Podilymbus podiceps)* - Migrant and uncommon winter resident. One was on East Bay on 6 September, 2 were on Salitre Tank on 18 October 1994, and 3 were seen on the main lake on 20 December 1994.

Horned Grebe *(Podiceps auritus)* - Rare migrant and possible winter resident. Though searched for, was not found during this study. Rustay saw one on the reservoir on 17 March 1993.

Eared Grebe *(Podiceps nigricollis)* - Migrant and uncommon winter resident. One was on Salitre Tank on 18 October 1994, 2 were at the dam on 20 December 1994 and another was there on 25 April 1995.

Western Grebe *(Aechmophorus occidentalis)* - Migrant and possible winter resident. Seven were counted on the main body of the lake on 15 November 1994.

American White Pelican *(Pelecanus erythrorhynchos)* - Migrant. A flock of about 25 were on the Spit on 27 March 1995. Singles were also seen there on 6-7 September 1994 and again on 25 April 1995.

Double-crested Cormorant *(Phalacrocorax auritus)* - Common summer resident, nesting in standing dead cottonwoods in the old river channel in the north central portion of main lake, where first discovered breeding 1985 (R Hayes, NMOS Field Notes 24(2): 16). There were 39 nests on 23 May 1994 with adults incubating at 35. Twenty-eight of 31 nests on 26 June 1995 had attending adults. The adult population was about 60-75 in both 1994 and 1995. Uncommon during non-breeding season, though one was present on 14 January 1995.

Great Blue Heron *(Ardea herodias)* - Not known to breed in area, but fairly common much of year. One or two birds present on most censuses, usually near the dam or at Y Tank. Six were seen on 23 August 1995.

Great Egret *(Casmerodius albus)* - Migrant. One was at Y Tank on 6 and 7 September 1994.

Snowy Egret *(Egretta thula)* - Migrant. One was on East Bay on 23 May 1994 and 2 were at Y Tank on 6-7 September 1994.

Cattle Egret *(Bubulcus ibis)* - Migrant. An adult in breeding plumage was seen at Salitre Tank on 25 April 1995.

Black-crowned Night-Heron *(Nycticorax nycticorax)* - Present from July through September 1994. Five, including 2 juveniles, were in the trees at Y Tank on 23 August 1994, but no nests were found.

White-faced Ibis *(Plegadis chihi)* - Migrant. Two were at Salitre Tank on 23 May 1994 and singles were at Y Tank on 23 August and 7 September 1994.

Greater White-fronted Goose *(Anser albifrons)* - Migrant. Not seen during this study, but 5 were seen by Rustay on 13 October 1992.

Snow Goose *(Chen caerulescens)* - Migrant. Twenty five were present at or near the Spit on 15 November 1994, and at least one tarried at the lake into late November 1994. NMG&F recorded single Snow Geese on 15 December 1987 and 15 November 1989. Rustay saw 10 on 9 December 1989 and 2 on 13 October 1992.

Canada Goose *(Branta canadensis)* - Migrant and uncommon to abundant winter resident. High count on NMG&F aerial surveys was 293 on 9 October 1992. Few were present during winter of 1994-1995. Notable were 6 of these geese at Salitre Tank on 4 May 1995; they were probably yearlings and/or unpaired 2-year olds, since most adults are nesting or have small young at that time elsewhere in New Mexico.

Wood Duck *(Aix sponsa)* - Migrant. A male was seen on East Bay and later on Salitre Tank on 23 August 1994.

Green-winged Teal *(Anas crecca)* - Most common of the three teal species. Regularly seen throughout fall, winter, and spring. About 30 were at Y Tank on 23 August 1994, 20 on East Bay on 18 October 1994, and smaller numbers were seen throughout the winter and spring. NMG&F combines all three teal species during aerial counts; their highest teal count was 310 on 1l October 1989.

Mallard *(Anas platyrhynchos)* - Resident with larger numbers present between August and May. A female with 3 small young was at Salitre Tank on 26 June 1995. Approximately half of an estimated thousand water birds (including American Coots) on 15 November 1994 were Mallards. NMG&F count the same morning was 492 Mallards. The highest NMG&F Mallard count was 4,844 on 13 November 1990 when over 7,000 dabbling ducks were on the reservoir.

Northern Pintail *(Anas acuta)* - Migrant and common winter resident. There were 50 on 7 September 1994 at Y Tank, 50-75 were at Salitre Tank on 19 February 1995, and lesser numbers were seen throughout the winter and spring. The highest NMG&F count was 175 on 15 November 1989.

Blue-winged Teal *(Anas discors)* - Migrant, peaking earlier in fall (August and September) than most other waterfowl. Forty at Y Tank on 23 August 1994 may have included some of the following species. A breeding plumage male was at Salitre Tank on 25 April 1995.

Cinnamon Teal *(Anas cyanoptera)* - Migrant. Eclipse males and all females are difficult to distinguish from the previous species, so may have been missed during fall migration. A breeding plumage male was at Salitre Tank on 25 April 1995.

Northern Shoveler *(Anas clypeata)* - Migrant and common winter resident. There were 15 at Salitre Tank on 7 September 1994, 140-150 there on 27 March 1995, and 50 there on 25 April 1995. The highest NMG&F count was 855 on 13 November 1991, when over 7,000 dabbling ducks were present on the reservoir.

Gadwall *(Anas strepera)* - Migrant, common winter resident, and rare breeding species. A female and 10 large young were at Salitre Tank on 23 August 1994. Regularly seen between August and May, less often in summer. Highest NMG&F count was 293 on 9 October 1992.

American Wigeon *(Anas americana)* - Migrant and common winter resident. About 50 were on the East Bay on 18 October 1994, lesser numbers recorded throughout the nonbreeding year. The highest NMG&F count was 1,140 on 13 November 1990 when over 7,000 dabbling ducks were on the reservoir.

Canvasback *(Aythya valisineria)* - Not recorded during this survey. However, 32 were counted on 2 January 1991 during NMG&F Department aerial counts.

Redhead *(Aythya americana)* - Migrant and uncommon winter resident. At least 75 were on East Bay on 18 October and about 100 were there on 15 November 1994. Six remained on 20 December 1994. The highest NMG&F count was 40 on 15 November 1989.

Ring-necked Duck *(Aythya collaris)* - Migrant and fairly common winter resident. Five males were at Salitre Tank on 18 October 1994 and a mixed flock of 15 were on East Bay on 15 November 1994. The highest NMG&F count was 245 on 12 December 1990.

Lesser Scaup *(Aythya affiinis)* - Migrant and fairly common winter resident. Two males were at Salitre Tank on 27 March 1995. On aerial surveys NMG&F lumps this species with Greater Scaup *(A. marila)* but Lesser Scaup are much more common in New Mexico. The highest scaup count recorded at Santa Rosa Reservoir was 207 on 15 November 1989.

Common Goldeneye *(Bucephala clangula)* - Fairly common winter resident in open water. At least 20 were present on 20 December 1994 and at least 5 were on the lake on 14 January 1995.

Bufflehead *(BucephaIa albeola)* - Migrant and common winter resident. There were 15 at Salitre Tank on 15 November 1994, 20 were seen on the lake and ponds on 20 December 1994, a peak count of 50 were at Salitre Tank on 14 January 1995, and 25 were still there on 19 February 1995. NMG&F reported 35 on the reservoir on 15 December 1987.

Common Merganser *(Mergus merganser)* - Common to abundant winter resident in open water. NMG&F counted 173 on 4 January 1995, and an estimated 150 were present on 14 January 1995. NMG&F's highest count for Santa Rosa Reservoir was 2,211 on 4 January 1993.

Ruddy Duck *(Oxyura jamaicensis)* - Migrant. Only 3 at Salitre Tank on 18 October 1994 and 2 there on 25 April 1995 but Rustay saw 55 on 13 October 1995.

Turkey Vulture *(Cathartes aura)* - Uncommon summer resident, seen irregularly in small numbers. Highest count on the 40-stop route was 4 on 23 May 1994.

Osprey *(Pandion haliaetus)* - One migrant was in the vicinity of Y Tank and the south shore on 6-7 September 1994.

Bald Eagle *(Haliaeetus leucocephalus)* - Common winter resident; present in 1994-95 on counts conducted from October to February. Peak ground count was 23 (11 adults, 12 immatures) on 14 January 1995. NMG&F reported 25 (no age breakdown) during the waterfowl count of 10 January 1995; windy conditions on their aerial Bald Eagle count on 11 January limited their total to 12 (6 adults, 6 immatures). Highest NMG&F count on the waterfowl survey was 38 (13 adults, 25 immatures) on 4 January 1990. Highest NMG&F counts during the annual Bald Eagle count were 40 (13 adults, 27 immatures) on 15 January 1990 and 41 (16 adults, 25 immatures) on 13 January 1993. .

Northern Harrier *(Circus cyaneus)* - Migrant and uncommon winter resident. An adult female was foraging along the south shore on 15 November 1994 and an adult male was near Reily Ranch on 14 January 1995. Also seen 9 December 1989 by Rustay.

Cooper's Hawk *(Accipiter cooperii)* - Migrant. Two were seen on the 7 September 1994 40-stop count.

Common Black-Hawk *(Buteogallus subtilis)* - Vagrant. An adult was photographed in the River Ranch area in the spring of 1985 by Roy C. Hayes (New Mexico photo/tape file #1985-45).

Swainson's Hawk *(Buteo swainsoni*) - Migrant and possible breeding resident. One adult was seen on 23 May 1994, and 3 migrants were seen during the 40-stop count on 7 September 1994. A pair was present at the cottonwood adjacent to Salitre Tank on 4 May 1995; a flimsy nest, typical of this species, was in the tree on 26 June 1995, but no adult hawks were seen.

Red-tailed Hawk *(Buteo jamaicensis)* - Fairly common resident. Nested at Reily Ranch in 1994 and there were two nests (one in which small young were visible) in the vicinity of River Ranch on 4 May 1995. Seen on most (10 of14) of 40-stop counts.

Ferruginous Hawk *(Buteo regalis)* - Uncommon winter resident. One individual apparently wintered in the eastern grassland area. Sightings were on 15 November and 20 December 1994 and 19 February 1995.

American Kestrel *(Falco sparverius)* - Fairly common resident; seen on many (6 of 14) of 40-stop counts. At least 2 pairs were nesting in cavities in dead cottonwoods near River Ranch on 4 May 1995.

Prairie Falcon *(Falco mexicanus)* - Uncommon resident. Adult male and female were seen separateIy in the narrows 22-23 May 1994, but no nest was found. An adult female was hunting shorebirds on East Bay mudflats on 23 August 1994; another was in the same vicinity on 20 December 1994.

Peregrine Falcon *(Falco peregrinus)* - Migrant. A hunting female interrupted the shorebird count at Y Tank on 23 August 1994, but did not capture prey.

Wild Turkey *(Meleagris gallopavo)* - Uncommon resident. Gobbling males were heard before dawn on 19 February 1995 downstream of River Ranch.

Scaled Quail *(Callipepla squamata)* - Uncommon resident. Though undoubtedly present year-round, the only sighting during this survey was of a pair in the eastern grassland area on 4 May 1995.

American Coot *(Fulica americana)* - Migrant and common to abundant winter resident. The ground estimate on 18 October 1994 was 1,400; NMG&F aerial estimate for the same day was 1,185. Declined to 228 on the 10 January 1995 aerial count and less than 200 by ground estimate on 14 January 1995.

Sandhill Crane *(Grus canadensis)* - Migrant. Not recorded during this survey, but 44 were counted on 11 October 1988 during a NMG&F Department aerial count.

Semipalmated Plover *(Charadrius semipalmatus)* - Migrant. Three were at Y Tank on 23 September 1994.

Piping Plover *(Charadrius melodius)* - Vagrant. One was carefully studied on the south shore of the reservoir near Y Tank on 25 April 1995. Details were reviewed by the NMOS Bird Records Committee, which accepted the record. This

is only the fifth New Mexico report.

Killdeer *(Charadrius vociferus)* - Fairly common summer resident, present on 6 of 8 April- September 40-stop counts. A dozen Killdeers on the mudflats of East Bay on 23 August 1994 were migrants or a pre-migratory gathering of local birds.

American Avocet *(Recurvirostra americana)* - Migrant. Only one fall migrant (15 November 1994) was seen, that at Y Tank. More common in spring: 12 were at Y Tank and along the south shore on 25 April 1995 and 9 were at Salitre Tank on 4 May 1995.

Greater Yellowlegs *(Tringa melanoleuca)* - Abundant fall migrant; uncommon in spring. About 40 were at Y Tank on 23 August 1994,4 were there on 7 September 1994, and 11 were there on 18 October 1994. One was also seen on 25 April 1995 and 2 were seen on 26 June 1995 at Y Tank

Lesser Yellowlegs *(Tringa flavipes)* - Migrant. Recorded only on 23 August 1994, when about 20% of 50 yellowlegs at Y Tank were this species.

Willet *(Catoptrophorus semipalmatus)* - Migrant. Two were on the Spit on 23 August 1994.

Spotted Sandpiper *(Actitis macularia)* - Migrant and uncommon/rare winter resident. Two were on the north shore near the narrows and 2 were at Salitre Tank on 7 September 1994. A wintering bird was at River Ranch on 14 January 1995.

Long-billed Curlew *(Numenius americanus)* - Migrant. Two were in flight north of East Bay on 23 August 1994.

Marbled Godwit *(Limosa fedoa)* - Migrant. Seven were found in three small groups on 25 April 1995 and 7 were at the Spit on 4 May 1995.

Western Sandpiper *(Calidris mauri)* - Abundant spring and autumn migrant, found in several loca1es. About half of an estimated 200 "peeps" (this and the following species) on 23 August 1994 were of this species. Twenty-nine "peeps" at Salitre Tank on 25 April 1995.

Least Sandpiper *(Calidris minutilla)* - Abundant spring and autumn migrant (see above).

Long-billed Dowitcher *(Limnodromus scolopaceus)* - Migrant. Not seen during fall migration, but 1 was at Salitre Tank on 23 May 1994, 2 were at Salitre Tank and 5 were at Y Tank on 25 April 1995, and 5 were at Salitre Tank on 4 May 1995.

Wilson's Phalarope *(Phalaropus tricolor)* - Abundant spring migrant; 96 were at Salitre Tank on 25 April 1995 and 75 there on 4 May 1995.

Franklin's Gull *(Larus pipixcan)* - Migrant. Thirteen in breeding plumage were on the Spit on 25 April 1995, one remained until 4 May 1995.

Ring-billed Gull *(Larus delawarensis)* - Migrant and common to uncommon winter resident. Two were at the Spit on 7 September 1994 and 7 were near the dam on 18 October 1994. By 15 November there were 40 present, and they remained through 20 December 1994. Only two were recorded on 14 January 1995 and then none were found until 25 April 1995 when 15 were present.

Arctic Tern *(Sterna paradisaea)* - Vagrant. An immature female, initially thought to be a Common Tern (S. *hirundo),* was first seen by John P. Hubbard on 23 September 1991 and was collected the same day by James R. Vaught (NMOS Field Notes 30[4]:53). This was the first record of the species in New Mexico.

Forster's Tern *(Sterna forsteri)* - Migrant. Ten to fifteen were foraging in the main lake on 25 April 1995. Four were at the Spit on 4 May 1995.

Black Tern *(Chlidonias niger)* - Migrant. More than 50 were foraging over the main lake on 23 May 1994. Autumn migrants included 2 on the Spit on 23 August 1994 and 3 there on 7 September 1994.

Mourning Dove *(Zenaida macroura)* - Resident, most common between April and October. The highest count on the 40-stop route was 15 on 26 June 1995.

Greater Roadrunner *(Geococcyx californianus)* - Resident, though irregularly seen. Recorded on only 3 of 14 40-stop counts, but 4 were seen on 14 January 1995.

Great Homed Owl *(Bubo virginianus)* - Resident, regularly heard (8 of 14) on 40-stop route, usually in vicinity of the narrows. Also seen at Reily Ranch on 22 May 1994 and 24 April 1995.

Common Nighthawk *(Chordeiles minor)* - Fairly common summer resident. Recorded from May to July on 40-stop route with a peak count of l0 on 19 July 1994.

Common Poorwill *(Phalaenoptilus nuttallii)* - Uncommon summer resident. Usually heard before start of 40-stop route (> 1/2 hour before sunrise).

White-throated Swift *(Aeronautes saxatalis)* - Migrant and possible summer resident in canyon portion of reservoir. Seen near River Ranch on 16 May 1994.

Belted Kingfisher *(Ceryle alcyon)* - Possible summer resident, though only recorded once: one was seen foraging below the spillway on 4 May 1995.

Ladder-backed Woodpecker *(Picoides scalaris)* - Uncommon resident. An individual was regularly encountered on the 40-stop route (7 of 14) in juniper woodland to the west of the lake.

Northern Flicker *(Colaptes auratus)* - Common resident in juniper woodlands and savannahs. Recorded on 7 of 14 counts with a high count of 8 on 15 November 1994.

Western Wood-Pewee *(Contopus sordidulus)* - Migrant and possible summer resident. Two were on the 40-stop route on 23 May 1994 and one was at Reily Ranch on 7 September 1994.

Willow Flycatcher *(Empidonax traillii)* - A migrant *Empidonax,* likely this species, was seen at River Ranch on 4 May 1995.

Say's Phoebe *(Sayonis phoebe)* - Fairly common summer resident near cliffs and buildings. The highest count was 7 on 25 April 1995, when migrants might also have been present.

Ash-throated Flycatcher *(Myiarchus cinerascens)* - Common summer resident in juniper woodlands. High count of 12 was recorded on 23 May 1994.

Cassin's Kingbird *(Tyrannus vociferans)* - Common summer resident in juniper woodlands. The high count was 24 on 4 May 1995; again, migrants may have added to the total.

Western Kingbird *(Tyrannus verticalis)* - Uncommon summer resident, preferring deciduous trees. Consistently found only at Corps of Engineer's headquarters.

Eastern Kingbird *(Tyrannus tyrannus)* - Migrant, possibly breeds some years. One seen 7 September 1994 on eastern grasslands during the 40-stop count.

Horned Lark *(Eremophilia alpestris)* - Resident in small numbers in grassland area; seen on 12 of 14 counts. The high count was 60 larks seen on 18 October 1994.

Northern Rough-winged Swallow *(Stelgidopteryx serripennis)* - Migrant and possible summer resident.

Recorded on 4 May 1995 at River Ranch and at the spillway.

Cliff Swallow *(Hirundo pyrrhonota)* - Abundant summer resident (April - August) , building their mud nests under overhangs of cliffs within the narrows. The largest colony (>200 nests) in both 1994 and 1995 was under the water control tower bridge near the dam.

Barn Swallow *(Hirundo rustica)* - Uncommon summer resident. Seen in the vicinity of Corps of Engineers office on 23 May 1994; may have nested there. Three were also seen on the 40-stop count of 7 September 1994 and Rustay saw 3 on 5 July 1987.

Scrub Jay *(Aphelocoma coerulescens)* - Fairly common resident in juniper woodlands. Recorded on 13 of 14 40-stop counts; the high count of 11 was on 25 April 1995.

Pinyon Jay *(Gymnorhinus cyanocephalus)* - Fairly common resident, but flocks were irregularly encountered. Recorded on only 4 of 14 40-stop counts.

American Crow *(Corvus brachyrhynchos)* - Uncommon resident. More than 40 were at River Ranch on 18 October 1994.

Chihuahuan Raven *(Corvus cryptoleucus)* - Possible resident. Not recorded during this study, but seen by Rustay on 12 February 1992 within 8 km of the reservoir. Similar to following species.

Common Raven *(Corvus corax)* - Uncommon resident. Recorded on all 14 40-stop counts.

Mountain Chickadee *(Parus gambeli)* - Expected (Hubbard 1978), but not encoutered during this study or by Rustay. Reported to COE on 11 January 1996 by a visiting birdwatcher.

Plain Titmouse *(Parus inornatus)* - Common resident in juniper woodland, recorded on 9 of 14 40-stop counts. The high count was 7 on 7 September 1994.

Bushtit *(Psaltriparus minimus)* - Uncommon resident in juniper; heard only twice in 14 counts. Rustay also saw 2 on 13 October 1992 and 12 were reported to COE on 11 January 1996.

Cactus Wren *(Campylorhynchus brunneicapillus)*- Vagrant. I did not observe this species, but Rustay saw one 22 September 1994, which was during the period covered by this study.

Rock Wren *(Salpinctes obsoletus)* - Summer resident in areas with cliffs, escarpments, or other rocky habitats. Documented on 10 of 14 40-stop counts with high counts of 7 in April, August, and September of 1994. Not recorded from December through March.

Canyon Wren *(Catherpes mexicanus)* - Resident in the narrows between the main lake and River Ranch and beyond. Heard on 5 of 14 counts; 3 were recorded on 23 August 1994.

Bewick's Wren *(Thryomanes bewickii)* - Resident in juniper woodland. Present on 5 of 12 counts, with a high of 11 counted on 25 April 1995 .

House Wren *(Troglodytes aedon)* - Migrant. One was seen 4 May 1995 at River Ranch.

Ruby-crowned Kinglet *(Regulus calendula)* - Migrant and uncommon winter resident. One was at Salitre Tank on 18 October 1994, another was at River Ranch on 14 January 1995.

Blue-gray Gnatcatcher *(Polioptila caerulea)* - Migrant. Two were seen at River Ranch and another was below the spillway on 4 May 1995.

Eastern Bluebird *(Sialia sialis)* - Uncommon winter resident; potentially breeding almost anywhere in

eastern New Mexico (Hubbard 1978). Four were seen on the eastern grassland area on 20 December 1994.

Western Bluebird *(Sialia mexicana)* - Migrant and uncommon winter resident. The high count was 12 on 18 October 1994. One was at River Ranch on 14 January 1995. The ratio of Western to Mountain Bluebirds at a watering trough on 14 January was about 1 Western for 50 Mountains.

Mountain Bluebird *(Sialia currucoides)* - Abundant winter resident, particularly in juniper woodland. The high count on the 40-stop route was 103 on 20 December 1994. Rustay saw 175 on 17 March 1993; Mountain Bluebirds are early spring migrants.

Townsend's Solitaire *(Myadestes townsendi)* - Fairly common winter resident in juniper woodland. Sixteen were counted on the 40-stop route on 15 November 1994, 3-8 during winter months (Dec-Jan). Five were at River Ranch on 14 January 1995.

American Robin *(Turdus migratorius)* - Abundant winter resident, also in juniper woodland. The highest count was 128 on 15 November 1994. Twenty were below the spillway on 20 December 1994 and 50 were at River Ranch on 14 January 1995.

Northern Mockingbird *(Mimus polyglottos)* - Abundant summer resident in juniper woodland and juniper savannah. Activity peaked in June of each year, with 53 recorded on 25 June 1994 and 50 on 26 June 1995. Uncommon/rare in winter; singles recorded on 20 December 1994 and 14 January 1995.

Sage Thrasher *(Oreoscoptes montanus)* - Migrant and uncommon winter resident in juniper woodland and brushy areas. Thirty were seen 22 September 1994 (C. Rustay); 3 were at River Ranch on 18 October 1994. Seven were recorded on the 20 December 1994 count, but only one was seen on 14 January 1995 and none were recorded during the remainder of the winter.

Curve-billed Thrasher *(Toxostoma curvirostre)* - Rare resident. A singing male was recorded in the same area of juniper woodland west of the reservoir on 19 February and 27 March 1995.

American Pipit *(Anthus rubescens)* - Migrant and potential winter resident. A flock of at least 10 were found along the south shore of the lake on 15 November 1994; Rustay recorded 2 on 17 March 1993.

Cedar Waxwing *(Bombycilla cedrorum)* - Uncommon winter resident. One was at a watering trough in juniper woodland on 14 January 1995; 3 more were at Reily Ranch the same morning. One also recorded by Rustay on 17 March 1993.

Loggerhead Shrike *(Lanius ludovicianus)* - Uncommon resident, regularly recorded (11 of 14) on 40-stop route. Usually just 1 was sighted, but 5 were counted on 23 August 1994 and 6 on 25 April 1995 during migration periods.

European Starling *(Sturnus vulgaris)* - Winter resident, flocks of 15 and 25 were encountered on the 40-stop route on 15 November 1994 and 19 February 1995, respectively. A single bird was at River Ranch on 14 January 1995. No evidence of breeding in the area, even at River Ranch on 4 May 1995, where cavities in cottonwood snags were available.

Yellow Warbler *(Dendroica petechia)* - A migrant was seen at River Ranch on 4 May 1995.

Yellow-rumped Warbler *(Dendroica coronata)* - Migrant and possible winter resident. One was seen on the 23 August 1994 40-stop count and two were at Salitre Tank on 18 October 1994. Rustay also saw singles on 13 October 1992 and 13 October 1995.

Common Yellowthroat *(Geothlypis trichas)* - Migrant and possible summer resident. One was heard below near the dam on 23 May 1994.

Wilson's Warbler *(Wilsonia pusilla)* - Migrant. One on 23 August, 3 each on 6 and 7 September 1994 in brush near Solitre and Y Tanks.

Yellow-breasted Chat *(Icteria virens)* - Uncommon summer resident. One was heard along the Pecos River below the dam on 19 July 1994.

Black-headed Grosbeak *(Pheucticus melanocephalus)* - Uncommon summer resident in juniper woodland. One was recorded on 23 May 1994 and another on 25 April 1995 on the 40-stop route.

Blue Grosbeak *(Guiraca caerulea)* - Uncommon summer resident. A pair was seen on the 40-stop count on 23 May 1994. Three males were singing from tamarisk near the mouth of narrows on 26 June 1995. Three also recorded on 5 July 1987 by Rustay.

Green-tailed Towhee *(Pipilo chlorurus)* - Migrant. One was in brush near Y Tank on 6 September 1994 and 5 were at River Ranch on 4 May 1995.

Rufous-sided (Spotted) Towhee *(Pipilo erythrophthalmus)* - Uncommon resident of juniper woodlands. Singing males were recorded on 25 June 1994 (1), 27 March 1995 (2), and 26 June 1995 (2) on the 40-stop route.

Canyon Towhee *(Pipilo fuscus)* - Uncommon resident in juniper woodland and savannah. Found throughout spring and summer on the 40-stop route, with a peak count of 5 on 23 August 1995. Only encountered once (14 January 1995) during winter (December through February) censuses.

Cassin's Sparrow *(Aimophila cassinii)* - Abundant summer resident; encountered on May through September 40-stop counts in eastern grasslands. Peak counts came in June each year; 34 were counted on 25 June 1994 and 27 on 26 June 1995.

Chipping Sparrow *(Spizella passerina)* - Migrant and possible summer resident. High count on the 40-stop route was 12 on 25 April 1995; 26 were at Salitre Tank on 7 September 1994.

Clay-colored Sparrow *(Spizella pallida)* - Autumn migrant. Four or five present near Y Tank on 6-7 September 1994. One also seen 22 September 1994 by Rustay.

Vesper Sparrow *(Pooecetes gramineus)* - Migrant. One was recorded on 7 September 1994 and another on 27 March 1995 on the 40-stop route.

Lark Sparrow *(Chondestes grammacus)* - Abundant summer resident in grassland and savannah. Peak counts were 24 on 4 May 1995 and 19 on 25 June 1994. Also abundant in July 1987 (Rustay).

Sage Sparrow *(Amphispiza belli)* - Migrant. Four were counted on the 18 October 1994 40-stop count.

Lark Bunting *(Calamospiza melanocorys)* - Migrant. A female was encountered on the grasslands during the 7 September 1994 40-stop count. Rustay also reported one on 5 July 1987.

Savannah Sparrow *(Passerculus sandwichensis)* - Migrant. One was at River Ranch on 4 May 1995. Rustay also recorded one on 13 October 1995.

Grasshopper Sparrow *(Ammodramus savannarum)* - Rare summer resident. A singing male was recorded on both 26 June and 19 July 1994 40-stop counts, though at stations one mile apart.

Song Sparrow *(Melospiza melodia)* - Migrant and common winter resident in brushy areas. Three were at Y Tank on 18 October 1994, 2 were below the spillway on 20 December 1994, and 5 were at River Ranch on 14 January 1995.

White-crowned Sparrow *(Zonotrichia leucophrys)* - Migrant and common winter resident in same areas as the Song Sparrow. Fifty were at River Ranch on 14 January 1995, and at least 10 were still there on 4 May 1995. One recorded on 13 October 1995 by Rustay.

Dark-eyed Junco *(Junco hyemalis)* - The Oregon race *(J. h. oreganus)* is a migrant and common winter resident, occurring on the 40-stop count between October and February. High count was 28 on 14 January 1995. At least 50, including one of the gray-headed southwestern race *(J. h. caniceps)* were present at River Ranch the same day. More than 20 were below the spillway along the Pecos River on 20 December 1994.

Chestnut-collared Longspur *(Calcarius ornatus)* - I did not observe this species, but Rustay saw 60 on 22 September 1994, which was during the period covered by this study.

Red-winged Blackbird *(Agelaius phoeniceus)* - Abundant summer resident. Singing male redwings were spaced at 100-200 m intervals in the tamarisk and smaIl cottonwoods along the lake shore in both 1994 and 1995.

Eastern Meadowlark *(Sturnella magna)* - Songs of this species were occasionally heard in the eastern grassland area. Also recorded 5 July 1987 by Rustay. Most meadowlarks were of the following species.

Western Meadowlark *(Sturnella neglecta)* - Abundant summer resident in the eastern grasslands. Fifty were counted in both May and June 1994 while 51 and 47 were counted during the same months in 1995.

Yellow-headed Blackbird *(Xanthocephalus xanthocephalus)* - Migrant. About 10 were at Y Tank on 6-7 September 1994.

Brewer's Blackbird *(Euphagus cyanocephalus)* - Migrant. Three were counted on the 25 April 1995 40-stop count.

Brown-headed Cowbird *(Molothrus ater)* - Uncommon summer resident. Five were counted on both May and June 1995 counts.

Orchard Oriole *(Icterus spurius)* - Migrant. An adult male was seen at River Ranch on 4 May 1995.

Northern (Bullock's) Oriole *(Icterus galbula)* - Migrant and rare summer resident. Recorded on the 40-stop route on 25 June 1994 (1), 23 August 1994 (2), and 4 May 1995 (1). .

Scott's Oriole *(Icterus parisorom)* - Rare summer resident. A male was heard and seen on 23 May 1995 in juniper woodland west of the main lake on the 40-stop route. Two were also seen on 5 July 1987 by Rustay.

House Finch *(Carpodacus mexicanus)* - Common resident; recorded on 13 of 14 40-stop counts. The highest count was 13 on 19 July 1994.

Pine Siskin *(Carduelis pinus)* - Migrant and possible winter resident. Twenty were counted on the 40-stop route on 7 September 1994.

American Goldfinch *(Carduelis tristis)* - Migrant and potential winter resident. Twenty-one were counted on the 40-stop route on 7 September 1994.

POPULATIONS

Western Meadowlarks and Northern Mockingbirds were the most abundant spring and summer birds, both in numbers counted and in frequency of occurrence, in both 1994 and 1995 (Table 1). Mockingbirds were most abundant in woodland and meadowlarks in prairie; both utilized juniper savannah habitat. Cliff Swallows were actually most numerous, but almost all were present at the nesting colony near the dam. Cassin's Sparrows, another grassland species, were third in abundance; Mourning Doves, Ash-throated

Flycatchers, and Lark Sparrows were also recorded at more than 20% of stations at least one month during spring and summer.

During August through October many of the breeding species remained at Santa Rosa, but became less vocal and were not recorded in the same numbers or frequencies. Only three species were recorded at more than 20% of stations (Scrub Jay, Northern Mockingbird, and Western Meadowlark) during this period and each for only one month. By November, the predominant birds were Mountain Bluebirds and American Robins; they remained so throughout the winter months (Table 1).

Table 1. Three most frequently encountered (number of stations/total stations) species during each month of census on the 40-stop route, May 1994 through June 1995.

	1994									1995				
	Spg	Summer		Autumn				Winter			Spring			Sum
Species	My	Jn	Jl	Ag	Sp	Oc	Nv	Dc	Jr	Fb	Mr	Ap	My	Jn
Western Meadowlark	.75	.73	.50	.28	.48						.73	.68	.78	.70
Northern Mockingbird	.68	.63	.38		.28							.20	.68	.63
Lark Sparrow	.25	.23	.28										.43	.30
Say's Phoebe												.18		
Scrub Jay				.20	.28									
Rock Wren				.15										
Common Raven						.15		.15	.13	.15				
Townsend's Solitaire						.15	.25		.13		.18			
Horned Lark						.13					.15			
Pine Siskin						.13								
Mountain Bluebird							.70	.60	.63	.55				
American Robin							.55	.45	.55	.50				
Dark-eyed Junco									.13					
Bald Eagle										.15				

DISCUSSION

A total of 140 species of birds was recorded during once-a-month counts at Santa Rosa Reservoir between May 1994 and June 1995. Another 10 species were documented a) in NMG&F files, b) in *NMOS Field Notes/American Birds/Audubon Field Notes,* c) from C. Rustay's field notes, and d) from COE files, bringing the total species count to 150. Three additional species should be considered hypothetical:

Red-throated Loon *(Gavia stellata)* - C. Rustay and J. Yancey has submitted details of a potential sighting of this species on 17 February 1996 to the NMOS Bird Records Committee.

Glossy Ibis *(Plegadis falcinellus)* - A dark ibis, possibly of this species, was studied in detail on 25 April 1995 at Salitre Tank. **It** was not accepted by the NMOS Bird Records Committee because there were no photographs and an incomplete description; one filmed with a video camera near Fort Sumner, De Baca County, in 14 April 1995 was New Mexico's first record.

Laughing Gull *(Larus atricilla)* - C. Rustay has submitted details of a potential sighting of this species on 13 October 1995 to the NMOS Bird Records Committee.

The strategy of monthly counts was successful in documenting the cycles of avian life at Santa Rosa Reservoir. Probably more than 90 percent of year-round, summer, and winter residents have now been documented. One shortcoming, a consequence of surveying only one day per month, was that during spring and autumn many migrant species may have been missed. Thirteen species of migrant shorebirds were documented in just 4 days of observation in August, September, April and May. More intensive (weekly or twice weekly) visits during those months likely would markedly increase the number of shorebird and other migrant species detected at Santa Rosa. Likewise, more regular visits to the riparian vegetation along the Pecos River both up and down stream of the reservoir during the same months should increase the detection of migrant land birds.

The checklist of birds at Santa Rosa Reservoir will continue to grow if ponds, mudflats, and riparian areas are visited by competent birdwatchers during migration. Unfortunately, those areas are currently behind locked gates and

inaccessible by road, although they can be accessed on foot or by boat from the lake. To open these closed areas to both bird watching and non-bird watching publics, however, could increase the amount of disturbance and limit use by shyer species such as herons, egrets, and raptors. One of the latter, the Bald Eagle, receives special consideration as a threatened species protected by the Endangered Species Act.

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ABSTRACTS OF THE 34TH ANNUAL MEETING OF THE NEW MEXICO ORNITHOLOGICAL SOCIETY, 2 March 1996

COSTA'S HUMMINGBIRDS ON THE SAN ANDRES NATIONAL WILDLIFE REFUGE

Weisenberger, M. E.[1], and W. H. Howe[2], [1]San Andres National Wildlife Refuge, P.O. Box 756, Las Cruces, NM 88004; [2]U.S. Fish and Wildlife Service, Division of Fishery and Migratory Bird Resources, P.O. Box 1306, Albuquerque, NM 87103

The Costa's hummingbird (*Calypte costae*) is primarily a Sonoran Desert bird that is common in the lowlands of Arizona, Sonora, southern California, and Baja California. Its distribution in New Mexico is generally limited to the extreme southwestern comer of the state. In 1995, two adult males were observed on the San Andres National Wildlife Refuge from 29 March to at least 25 May. Both individuals were found in the San Andres Mountains in Mayberry Canyon, a desert riparian habitat dominated on the canyon floor by seep willow (*Baccharis glutinosa*) and small amounts of Goodding willow (*Salix gooddingii*), cottonwood (*Populus freemontii*) and salt cedar (*Tamarix pentandra*). Both males exhibited territorial and courtship behavior, including vocalizations during flight and while perched. Despite hours of searching, no females could be located. These easternmost records of this species in New Mexico were documented with field notes, slides, and video tape. This occurrence, plus one historical sight record from the same vicinity, suggest that Costa's hummingbirds may occasionally breed in this remote, relatively unstudied mountain range.

THE PRELIMINARY DATA ON THE MIGRATION OF WILLOW FLYCATCHER *(Empidonax traillii).*

Yong, Wang[1], Deborah M. Finch[1], Frank R. Moore[2], and Mike D. Means[1].
[1]USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Albuquerque, NM 87106, [2]Departrnent of Biological Sciences, University of Southern Mississippi, Hattiesburg, MS 39406.

The willow flycatcher *(Empidonax traillii),* one of the ten North American species in the genus Empidonax, breeds extensively from southern British Columbia east to Maine, and south to California, Arkansas, and Virginia. It winters in Middle America from Veracruz and Oaxaca south to Panama. In many parts of the Southwest, the species has declined through the twentieth century, primarily due to loss of riparian habitat, brood parasitism by brown-headed cowbirds *(Molothrus ater),* and invasion of riparian habitat by exotic tamarisk *(Tamarix* sp.). The subspecies *E. t. extimus* was formally listed as an endangered species in 1995. Most of the current knowledge of the willow flycatchers based on accounts of its biology and habitat use during the breeding season. The migration routes and destinations of the willow flycatcher are not well understood. The species' stopover biology en route and habitat use during migration is not reported. Spring and fall migrations are critical times that can account for up to one third of willow flycatcher's annual cycle. During spring and fall migration, willow flycatchers must negotiate unfamiliar terrain, avoid predators, survive unfavorable weather, and find enough food to replenish depleted energy stores. Fall is an especially difficult time for hatching-year birds, owing to their lack of experience with flight routes and new habitat and food resources. How well the willow flycatchers 'offset' costs of migration, i.e. satisfy their energy demands and meet contingencies that arise en route, determines the success of an individual's migration as well as the future status of the population itself. The persistence of this migratory species depends on its ability to find favorable conditions for survival throughout their annual cycle including migration. Consequently, factors associated with the migration or en route ecology of willow flycatcher must figure in any conservation programs. This research is designed to collect baseline information on migration, stopover ecology, and the use of riparian habitats of the Middle Rio Grande by the willow flycatcher during their spring and fall migrations. The objectives include: (1) to determine the volume and timing of spring and fall migration, (2) to investigate the subspecies composition and their variation in timing and relative abundance, (3) to examine the physiology and behavior of the willow flycatcher during stopover. We addressed questions: (a) How long do willow flycatchers stay at riparian stopover sites? (b) What is their energetic status when they stopover? (c) Do they (re)deposit energy stores during stopover? (d) How do these aspects vary between seasons?

AVIAN SPECIES OF SPECIAL CONCERN: OCCURRENCE, HABITAT ASSOCIATIONS, AND POTENTIAL ADVERSE IMPACTS AT WHITE SANDS MISSILE RANGE.

North, B.R., and B.C. Thompson, New Mexico Cooperative Fish and Wildlife Research Unit, P.O. Box 30003, Department 4901, New Mexico State University, Las Cruces, NM 88003.

White Sands Missile Range (WSMR) includes about 800,000 ha of south central New Mexico. The enclosed landscape is ecologically diverse ranging from barren sandy dunes, and desert playas to coniferous woodlands. Since access to this site is restricted, much remains to be learned about the birds of WSMR, their habitat preferences, and timing of activity such as breeding season, or spring and fall migration. Twenty-one vegetation-land cover categories representing WSMR were determined by combining both the NM Gap Analysis and the NM Natural Heritage Program classification schemes. All species of birds encountered will be noted along with reference to these habitat associations and timing to establish a baseline data set. In addition several species of birds will be surveyed specifically to determine presence and activity. These are: southwestern willow flycatcher *(Empidonax traillii extimus),* white-faced ibis *(Plegadis chihi),* interior least tern *(Sterna antillarum athalassos),* snowy plover *(Charadrius alexandrinus),* piping plover *(C. melodus),* and mountain plover *(C. montanus).* Neotropical migratory birds and raptors will also be surveyed. Raptor association and use of utility poles will be noted and compared to naturally used sites. Migration pathways will be examined by conducting mist netting along an elevational gradient from 1200 to 2100 m in selected representative sites. Field work on this project begins in April 1996, and will continue until December 1997.

RECENT INTEREST IN THE EARLY EVOLUTION OF BIRDS HAS INCREASED OUR KNOWLEDGE AND HAS CHALLENGED OLD THEORIES: AN UPDATE ON THE AVIAN FOSSIL RECORD IN NEW MEXICO

Mary Alice Root and Gary Morgan, New Mexico Museum of Natural History and Science, Albuquerque, NM 87104

The New Mexico Museum of Natural History and Science has specimens of bird fossils from several locations in New Mexico: *Ichthyornis* from the Cretaceous Period, *Diatryma* from the Eocene, flamingos *(Phoenicopterus)* from the Pliocene, numerous species from the Pleistocene, plus Miocene fossil bird tracks. The Pliocene flamingo bones, from a site near Silver City, are the most recent addition. Collection records of other museums are being scanned for further New Mexico records. Before our museum was established in the early 1980's, all specimens from New Mexico were collected by outside museums and institutions, and by private collectors. It is hoped to develop a complete record of avian fossil specimens collected in New Mexico, and to secure casts for our collection, when possible. The origins and relationships of the specimens are being studied in light of new information available in the literature.

COMPARATIVE GENETIC VARIATION IN ISLAND POPULATIONS OF VIREOS IN PUERTO RICO AND JAMAICA.

Zwartjes, P.W. Department of Biology, University of New Mexico, Albuquerque, NM 87131-1091.

The amount of genetic variation within populations of organisms which inhabit islands or other insular habitats has been the subject of much theoretical research, and, with the advent of modern DNA technologies, empirical research as well. More recently, scientists interested in issues related to conservation biology have recognized the importance of genetic variation in determining the susceptibility of a species to extinction. I have been conducting research to address questions of relative levels of genetic variation in bird populations, specifically the system of breeding populations of the genus *Vireo* on the islands of Puerto Rico and Jamaica. Puerto Rico contains one endemic species of *Vireo* and Jamaica has two; in the breeding season, each is also home to a breeding population of the migrant Black-whiskered Vireo which breeds throughout the Caribbean. The research hypothesis is that the island populations of the migrant vireo, with a larger overall population and more extensive range, will exhibit higher levels of genetic variation than the endemic vireos of the island. Preliminary data reveal that the level of polymorphism (number of genetic markers which differ between individuals) in the Puerto Rican Vireo is substantially lower than that in the Puerto Rican population of the Black-whiskered Vireo. The planned analysis of two populations of Puerto Rican Vireo, the Jamaican vireos, related forms of *Vireo* in North America and additional populations of Black-whiskered Vireo, are also discussed.

WHAT CAN WE LEARN FROM BIRD DISTRIBUTIONS PREDICTED BY THE NEW MEXICO GAP ANALYSIS PROJECT?

Bruce C. Thompson, Mary Ann Hughes, Robert A. Deitner, and Patrick. J. Crist,
New Mexico Cooperative Fish and Wildlife Research Unit, Box 30003, Dept 4901,
New Mexico State University, Las Cruces, NM 88003-0003; and
David L. Garber, Department of Geography, Box 30001, Dept MAP,
New Mexico State University, Las Cruces, NM 88003.

The New Mexico Gap Analysis Project (NMGAP) used county, watershed, vegetation, soils, temperature, precipitation, terrain, and hydrological data organized in a data base and geographic information system to predict year-round distributions for about 340 bird species. These distributions were developed from likely associations of each species with the various information layers based on past and recent records of occurrence and review with species experts. The Biota Information System of New Mexico (BISON-M) was relied upon heavily for background information. Resultant distribution maps appear to be fairly accurate representations of area where suitable habitat for individual species can be expected to occur. In some cases because of limitations in the information layers, mapped distributions will not reflect every known recent location and thus, will not be considered complete by some experts. Nonetheless, the NMGAP distributions represent a first step in automated, digital information that can be queried to better incorporate bird interests in conservation planning. Also, new information developed for the database can be used to update BISON-M and for further research hypotheses. Representative examples of predicted distributions will be illustrated and discussed.

METABOLIC RATE AND BODY TEMPERATURE REGULATION IN A SMALL TROPICAL NON-PASSERINE, THE PUERTO RICAN TODY

Merola-Zwartjes, M. Department of Biology, University of New Mexico, Albuquerque, NM 87131.

The Puerto Rican Tody, *Todus mexicanus*, is a member of the avian order Coraciiformes. All members of this primarily tropical order nest in cavities, and so far as is known, most also roost in cavities at night. Cavity roosting confers great energetic savings to birds utilizing this strategy, and is particularly beneficial for small birds which are particularly susceptible to heat loss at low ambient temperatures. It is therefore initially surprising that the Puerto Rican Tody, weighing in at only 6g, is an exception to the coraciiform rule of nocturnal cavity roosting. I investigated the response of the Tody to its thermal environment in terms of metabolic rate and body temperature regulation. I found that the metabolic rate of the Tody is normal for a bird of its small size (0.076 ± 0.01 kJ/gh), but that the body temperature is relatively low, averaging just 36°C. In addition the Tody shows a high degree of flexibility in body temperature regulation, and allows its body temperature to fluctuate in accordance with ambient temperature to a greater degree than expected in a classically homeothermic animal. At very low environmental temperatures Todies may even go into torpor; this is the first finding of torpor in the order Coraciiformes. I also found evidence of climatic adaptation in Tody metabolic rates by comparing samples from two different habitats on the island of Puerto Rico. Although the Tody does not gain the energetic benefit of nocturnal cavity roosting, this tiny tropical bird employs a variety of other physiological strategies to save energy when environmental temperatures drop.

THE CASE OF THE SOPRANO JUNGLEFOWL: DO BIRD VOCALIZATIONS REVEAL DEVELOPMENTAL HEALTH?

F. Bryant Furlow, Michael C. Marshall, and Rebecca Kimball, Biology Department, University of New Mexico, Albuquerque, NM 87131-1091

Many evolutionary theorists believe that vocalizations and other animal signals used to communicate with potential mates or rivals will be metabolically expensive to produce, thus revealing the signaller's quality (i.e., desirability as a mate or fighting ability as an opponent). For instance, only healthy males can sing breeding songs if singing is exhausting work. However, experiments reported in the scientific literature show that roosters' crows are not energetically costly to produce. We propose that crows nevertheless reveal a rooster's developmental health. Only males able to overcome developmental stress--such as malnutrition and disease--should be able to develop body parts capable of producing a "healthy" crow. In a preliminary test of this hypothesis, we analyzed the acoustical structure of 19 red junglefowl roosters' crows and correlated crow parameters (such as pitch and duration) with indicators of male developmental health. We found that high-pitched crows are produced by developmentally inferior males, and conclude that crow pitch may honestly advertise fighting ability to competitors.

THERE GOES THE NEIGHBORHOOD: COMPLEX INTERACTIONS BETWEEN SQUIRRELS, CROSSBILLS AND LODGEPOLE PINE.

Benkman, C. W., Dept of Biology, New Mexico State University, Las Cruces, NM 88003

Indirect interactions between species that share resources or predators influence the structure of biological communities. Most studies on indirect interactions have focused on the effects resulting from short-tenn changes in the abundance or distribution of prey (resources) or predators. Although these studies are and will continue to be critical to our understanding of ecological communities, future studies that examine the evolutionary consequences of these interactions will be valuable for further evaluating the general importance of these complex interactions. I will discuss tests a series of hypotheses concerning how various direct and indirect interactions between red squirrels *(Tamiasciurus hudsonicus)* and Red Crossbills *(Loxia curvirostra),* as seed predators and competitors, and Rocky Mountain lodge pole pine *(Pinus contorta* spp. *latifolia),* as prey, influence their evolution and how they interact. The hypotheses and preliminary results can be summarized as follows. (1) Differences in cone structure among sites are related to the presence and absence of red squirrels and crossbills. (2) When red squirrels are present, they suppress crossbill abundance

and overwhelm selection on conifer cones by crossbills. The evolutionary effect of squirrels on cone structure may in turn indirectly influence the morphological evolution of crossbills. (3) When red squirrels are absent, crossbills increase in abundance and more strongly interact with lodge pole pine and exert strong selection on cone structure. This leads to coevolution between crossbills and conifers as crossbills evolve in response to changes in cone structure. Such coevolution may have even promoted speciation in crossbills. Red squirrels, therefore, alter how crossbills interact with their prey and retard coevolution between crossbills and conifers. This also alters the path of adaptive radiation.

DOCUMENTED AVIAN RARITIES IN SAN JUAN COUNTY, NEW MEXICO. PART 1: LOONS-EAGLES.

Tim Reeves, Department of Computer Information Systems, San Juan College, Farmington, NM 87402

Sightings during 1993, 1994, and 1995 of accidental, rare, and uncommon birds in San Juan County, NM, are documented by color slides (part 1 of 2). Choice of species treated is based on *Rare and Unusual Birds of New Mexico* (Huntington & Huntington, 1983) and those species shown in light face type in *Birds of New Mexico Field Check-List* (NMOS, 1991). Locations and dates on which the documenting photographs were taken are listed. Location names follow the *New Mexico Bird Finding Guide* (Zimmerman, et al., 1992) and as follows: ARCO Ponds -located on Navajo 36, 0.6 mile W of NM 371 just SW of Farmington; Berg-Animas Park -located in Farmington, along Animas River; Navajo Dam - the town/P. O., including San Juan River below the dam; Farmington Lake, near E limit of Farmington, N of US 550 (Beeline Resevoir of maps); Kiwanis Park - Farmington, 30th St W of Main St; NAPI Sewage Ponds -located E of NM 371, 0.25 miles S of 3003; NIIP/NAPI - Navajo Indian Irrigation Project/Navajo Agricultural Products Industry; and Ojo Amarillo Sewage Ponds -located ca 9 mi SW of Farmington, S of Navajo 36, 1 mile W of 3005. Sightings brought to my attention by other birders have initials listed after the date and birders accompanying me when slides were taken are listed after the date with "w/" (BC = Bob Carr, CLUB = Four Corners Bird Club field trip participants, DE = Doug Emkalns, LL= Les Lesperance, NEM = Nell Mahon, SNM = Scott & Nell Mahon, BN = Bruce Neville, JR = John Rees, JJR = John & Jan Rees, LR = Linda Reeves, AS = Alan Schmierer, LS = Lori Schmierer). Slides are shown of the following species (copies of selected slides are on file with NMOS): LOONS: Common Loon (Farmington Lake, 3 NOV 1995; Morgan Lake, 17 NOV 1995); GREBES: Horned Grebe (Farmington Lake, 16 & 17 OCT 1995), Clark's Grebe (Morgan Lake, 24 SEP 1994; B-Square Ranch, 8 NOV 1995); SWANS, GEESE, DUCKS: Tundra Swan (pond on NIIP/NAPI, 5 DEC 1993, JJR), Greater White-fronted Goose (B-Square Ranch, 20 NOV 1993; 8 NOV 1995), Greater Scaup (Farmington Lake, 9 & 29 DEC 1995), Surf Scoter (ARCO Ponds, 18 OCT 1994, JJR; Farmington Lake, 8 NOV 1995; Navajo Dam, 24 NOV 1995, w/DE,BN), White-winged Scoter (Farmington Lake, 3 NOV 1995), Barrow's Goldeneye (San Juan River below Navajo Dam, 26 NOV 1994; B-Square Ranch, 2 DEC 1995), Hooded Merganser (Morgan Lake, 3 NOV 1995), Red-breasted Merganser (Farmington Lake, 2 APR 1995); KITES, HAWKS, EAGLES: Osprey (Morgan Lake, 17 SEP 1994, w/JJR; 16 APR 1995; Farmington Lake, 24 & 31 MAR 1995); Northern Goshawk (Farmington, 26 DEC 1995), Zone-tailed Hawk (B-Square Ranch, 11 MAY 1995, w/BC); Harlan's race Red-tailed Hawk (Flora Vista, 8 DEC 1995).

DOCUMENTED AVIAN RARITIES IN SAN JUAN COUNTY, NEW MEXICO. PART 2: SANDPIPERS - WOOD-WARBLERS.

Tim Reeves, Department of Computer Information Systems, San Juan College, Farmington, NM 87402

Sightings during 1993, 1994, and 1995 of accidental, rare, and uncommon birds in San Juan County, NM, are documented by color slides (part 2 of 2). Refer to *Documented Avian Rarities in San Juan County, New Mexico. Part* 1: *Loons - Eagles* (Reeves, this publication) for references, abbreviations, and details on locations. Slides are shown of the following species (copies of selected slides are on file with NMOS): SANDPIPERS, PHALAROPES: Whimbrel (Ojo Amarillo Sewage Ponds, 11 JUL 1995, LL), Sanderling (Farmington Lake, 27 APR 1995; Morgan Lake, 3 MAY 1995; 6 OCT 1995), Semipalmated Sandpiper (Farmington Lake, 27 APR 1995), Pectoral Sandpiper (NAPI Sewage Ponds, 7 OCT 1995), Dunlin (Ojo Amarillo Sewage Ponds, 5 NOV 1994, w/CLUB; 19 DEC 1994, w/JR,AS), Stilt Sandpiper (Ojo Amarillo

Sewage Ponds, 21 & 26 AUG 1994); SKUAS, GULLS, TERNS, SKIMMERS: Sabine's Gull (Morgan Lake, 30 SEP & 1 OCT 1994, w/JJR; 6 OCT 1995), Common Tern (Morgan Lake, 29 & 30 SEP 1995); PIGEONS, DOVES: Inca Dove (Bloomfield, 13 DEC 1995, NEM); CUCKOOS, ROADRUNNERS, ANIS: Yellow-billed Cuckoo (Blanco, 29 JUN 1995, w/LS); WOODPECKERS: Northern Flicker (Yellow-shafted female, Berg-Animas Park, 18 JAN 1995, JJR; atypical or hybrid male, Kiwanis Park, 3 FEB 1995); JAYS, MAGPIES, CROWS: partial albino Scrub Jay (Farmington, 10 & 11 SEP 1995, w/LR); THRUSHES: Eastern Bluebird (Berg-Animas Park, 16 JAN 1995, JJR); SHRIKES: Northern Shrike (Farmington, 16 DEC 1994, w/LR); and WOOD-WARBLERS: Northern Parula (Bloomfield, 13 & 15 DEC 1995, NEM, w/SNM), Chestnut-sided Warbler (Middle Chaco Oasis, 9 OCT 1994, w/JJR).

BOTTERI'S SPARROW IN NEW MEXICO: STATUS AND MANAGEMENT IMPLICATIONS.

Sartor O. Williams **III**, New Mexico Department of Game and Fish,
P.O. Box 25112, Santa Fe, NM 87504

Botteri's Sparrow *(Aimophila botterii)* is a little-known grassland species that breeds locally from southern Arizona and southern Texas south to Costa Rica; it winters from Mexico south through the breeding range. It was first reported in New Mexico near Rodeo in 1977, but was not found there in subsequent years. In 1991, up to four were documented in the Animas Valley, and small numbers (up to five) were recorded there each year 1992-1994. The only additional New Mexico record was of a single bird in the Hachita Valley in 1992. The species is considered a tall grass specialist; in Arizona, it favors remnant stands of giant sacaton *(Sporobolus wrightii)* with scattered shrubs and small trees. In 1995, I surveyed areas of giant sacaton on private land in the Animas Creek floodplain in the Animas Valley 9-10 June, 13-14 June, 18-19 July, and 31 Ju1y-l August. In midJune, Botteri's Sparrows were conspicuously singing and defending territories. By mid-July, 21 discrete territories had been identified and mapped, and pairs in at least three territories were observed carrying food. On 1 August, at least one juvenile was observed. Available information suggests this tall grass sparrow is sensitive to burning and to livestock grazing. The discovery of this population provides an opportunity to investigate the relationships between fire and/or grazing and breeding by Botteri's Sparrows in New Mexico. Recommendations include monitoring the population in subsequent years, describing the habitat in relation to occupancy and breeding success, and maintaining the current mosaic of tall, dense, mature sacaton stands in the Animas Creek floodplain in the Animas Valley.