

**BREEDING ECOLOGY OF THE MOUNTAIN PLOVER IN OKLAHOMA**

BY JOHN S. SHACKFORD

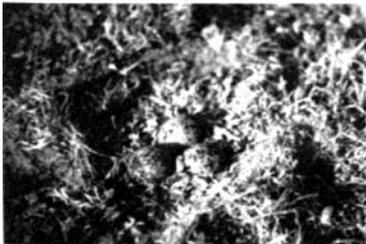
Biologists have long recognized that, throughout its range, the Mountain Plover (*Charadrius montanus*) shows little variability with respect to its breeding habitat requirements. An early naturalist (Hoskins 1893) wrote: "The mountain plover builds its nest on open prairie." Recently, Terres (1980) stated that this bird places its nest "on bare open ground on bare rolling dry prairie or plains . . ." Most other references also stipulate that preferred breeding sites are almost always in native short-grass prairie. Johnsgard (1979) stated that "Mountain Plovers are essentially limited to the short-grass plains [for breeding habitat] but at times occur on sandy semiarid flats supporting some brush and cacti." In 1978, at Arkansas River Valley lakes in southeastern Colorado, Chase and Loeffler (1978) reported three Mountain Plover nests "with young" at Horse Creek Reservoir in Bent and Otero counties, and up to 800 birds at Adobe Creek Reservoir in Bent and Kiowa counties. Both of these reservoirs were built on dry lake beds. Chase and Robinson (1979) found three nests at lakes nearby in 1979 and two more at Adobe Creek Reservoir.



1



2



**MOUNTAIN PLOVERS AND NESTS**

*Pictures of Mountain Plover adult, Photo 1, and its chick, Photo 2, were taken on 25 May 1986. Photo 3, taken on 23 April 1986, shows a nest in shortgrass prairie within a prairie dog colony. Photo 4, taken 10 July 1986, is of a nest located in a cultivated field of sorghum. All photos were taken in central Cimarron County by John S. Shackford.*

Flowers (1985) summarized breeding records of the Mountain Plover for Oklahoma. During the spring and summer of 1986, I studied the nesting ecology of this increasingly rare bird in the Oklahoma Panhandle. Rather than using a random sample method, I investigated extensive stretches of potential breeding habitats, i.e., shortgrass prairie, particularly in prairie dog (*Cynomys ludovicianus*) colonies. In addition, I spent considerable time searching for potential nest sites in Cimarron County during a prairie dog survey I conducted from September 1987 through May 1990.

Records of confirmed plover nesting and breeding behavior for the period 1986-1990 are shown in Table 1. At Site 2, I found a nest containing three eggs, but these were tabulated after hatching. I banded two young birds at Site 6. At Site 22, I discovered two chicks approximately two-thirds grown and at least two other younger birds.

Table 1. Locations where Mountain Plover nests or breeding activities were observed in Cimarron County, Oklahoma, 1986-90 (\*=confirmed nesting).

SITE NO.	DATE	SECT. NO.- T(N)-R(E)	BREED. CODE <sup>1</sup>	ADULTS-YOUNG- AGE UNKN.-EGGS	HABITAT <sup>2</sup>
*1.	04/09/86	N1/2-29-1-1	NE	1-0-0-1	Pr nr Dt
*2.	04/22/86	SW1/4-06-4-5	NE, PY	2-1-2-NA	Dt
3.	04/23/86	NW1/4-02-3-2	C	4-0-0-NA	Dt
4.	05/09/86	NW1/2-24-3-4	SB	2-0-0-NA	Dt
5.	05/10/86	SW1/4-36-4-2	SB	2-0-0-NA	Dt
*6.	05/22/86	SE1/4-31-4-6	PY	2-3-0-0	Dt
7.	05/25/86	NE1/4-06-3-6	SB	1-0-0-NA	Dt
8.	05/26/86	W1/2-23-4-2	C	1-0-0-NA	Pr
*9.	05/26/86	E1/2-16-1-3	PY	3-2-0-0	Dt
*10.	05/27/86	SW1/4-26-3-5	PY	2-1-0-0	Pr nr Dt
11.	06/06/86	SE1/4-01-4-4	C	1-0-0-NA	Pr
12.	06/06/86	NE1/4-07-4-5	C	1-0-0-NA	Pl nr Dt
13.	06/06/86	SW1/4-10-4-5	A	2-0-0-NA	Pr nr Dt
14.	06/06/86	NW1/4-21-4-5	C	2-0-0-NA	Pl
15.	06/08/86	NW1/4-26-4-5	C	1-0-0-NA	Pl
16.	06/22/86	SE1/4-17-4-6	A	2-0-0-NA	Pl
17.	06/22/86	NE1/4-22-4-6	Fl	2-1-0-NA	Pl F
18.	07/05/86	SE1/4-10-3-5	Fl	0-1-5-NA	Pl nr W
*19.	07/10/86	NW1/4-02-4-6	NE	2-0-0-3	Cu
20.	07/11/86	SW1/4-11-4-6	Fl	0-1-5-NA	Pl
21.	07/14/86	NE1/4-29-4-6	A or Fl	1-0-1-NA	Pl nr W
*22.	06/28/88	SW1/4-06-4-5	PY	4-4-0-0	Dt
23.	05/15/89	NW1/4-15-4-5	SB	2-0-0-NA	Dt
24.	05/25/90	NW1/4-29-4-5	A	3-0-0-NA	Pl
*25.	05/27/90	NW1/4-27-6-4	PY	2-5-0-0	Dt
Totals				45-19-13-04	

<sup>1</sup> A-two or more adults  
 C-courtship flights and calls  
 Fl-fledged young  
 NE-nest with egg(s)  
 PY-precocial (non-flying) young  
 SB-Scrape building

<sup>2</sup> Cu-Cultivated  
 Dt-Dogtown  
 F-furrows  
 nr-near  
 Pl-plowed  
 Pr-prairie  
 W-Water

These data and that in Table 2 show that native grasses in prairie dog towns provide important breeding habitat for the Mountain Plover in Oklahoma. In prairie away from dogtowns, I found only two individual birds engaged in courtship activity. Surprisingly, 40% of the breeding season records were in plowed fields. On at least two occasions, I saw two or more adults together in this atypical habitat. Two other times, I witnessed courtship behavior, and in three more instances saw fledged young plovers. One nest containing three eggs was in a field of maize (*Sorghum* sp.) averaging about eight inches high. A farmer had plowed around the nest after he flushed an adult from it. Another farmer stated that he had counted 19 adults and two young "field snipes" on three square miles he plowed in 1986. Wershler (1989) reported a nest in a field of Russian wild rye (*Elymus junceus*) in Alberta, but breeding records in this type habitat are rare. I saw no evidence to indicate that the plovers were invading these fields for feeding. Birds observed at Sites 18 and 21 may have moved to water from hatching or nesting areas to drink, bathe or feed. However, because nearly all the surrounding land was under cultivation, there is great likelihood that they nested or hatched in this habitat. In 1986, I searched for nests in cultivated fields only during the latter half of that nesting period (between 5 June and 14 July). Otherwise, the percentage of breeding territories there might have been even higher.

Table 2. Habitat types in which Mountain Plovers bred in Oklahoma 1986-1990 (% of total).

HABITAT TYPE	CONFIRMED BREEDING RECORDS	KNOWN OR PROBABLE TERRITORY	TOTAL
<b>NATIVE GRASSLAND</b>			
Dogtown	5 (20)	5 (20)	10 (40)
Within 1/4 mile of dogtown	2 (8)	1 (4)	3 (12)
No dogtown nearby	-	2 (8)	2 (8)
Subtotal	7 (28)	8 (32)	15 (60)
<b>CULTIVATED FIELD</b>			
Maize, 8" high	1 (4)	-	1 (4)
Barren			
Flat			
Upland	-	5 (20)	5 (20)
Near water	-	2 (8)	2 (8)
Near dogtown	-	1 (4)	1 (4)
Deeply furrowed	-	1 (4)	1 (4)
Subtotal	1 (4)	9 (36)	10 (40)
<b>TOTALS</b>	<b>8 (32)</b>	<b>17 (68)</b>	<b>25 (100)</b>

These findings indicate that, except where prairie dog colonies are present, Mountain Plovers may prefer cultivated land to shortgrass prairie for nesting. Most investigators have neglected to search these disturbed areas for plover nests. There are reports as early as 1879 (Grinnell 1918) of wintering Mountain Plovers feeding in agricultural areas of California. Breeding in this type habitat may be more widespread than commonly known.

In Oklahoma, Mountain Plovers tended to select nest sites in areas with the shortest vegetation. This preference makes prairie dog colonies ideal breeding sites. Typical disturbed areas chosen for nesting were large tracts under cultivation and devoid of vegetation for at least part of the spring. However, these fields are usually tilled several times prior to planting. Unfortunately, this often occurs during a critical phase of the plover's breeding cycle. Nests in such situations are usually doomed.

From the earliest hatch date (22 May; Shackford *op. cit.*) until 14 July, by which time most chicks had already fledged, I saw 35 birds in native prairie (including dogtowns) and 28 on cultivated land. Of the 35 prairie birds, 15 proved to be juveniles, all but four thought to be four days old or less, and 20 were adults. This is a young/adult ratio of 0.75/1. In cultivated fields, only three of the 26 plovers observed fit young-of-the-year criteria (all suspected of being at least 40 days of age), 14 were adults, and the remaining nine I could not age. This yields a young/adult ratio of 0.21/1, suggesting that nesting success on tilled ground may be lower than that in prairie. However, nesting success cannot be compared directly in these different habitats because of the great age discrepancy between juvenile birds.

A belt of cultivated land several miles wide bisected Cimarron County diagonally from northeast to southwest, east of which I found no plovers, regardless of habitat. In the easternmost legal range containing plovers (6E), I observed them at seven different locations, five on plowed fields. The other two sites with birds were those farthest west. Soil Conservation Service maps (Murphy 1960) indicate that there is no significant change in soil type anywhere within Range 6E. Therefore, cultivation may be important in limiting the eastward distribution of this species. The only nest discovered in plowed ground failed. A torrential downpour of about four inches on 13 July mired the eggs in mud, causing the nest to be abandoned. On untilled native prairie, excess rainfall probably would have quickly run off.

Prior to 1986, only three Mountain Plover breeding records were of nests with eggs. One of these, found in 1860 "west of Fort Cobb" by C. S. McCarthy (Nice 1931) had no exact date. The earliest of the other two was 17 May 1955 and the latest 30 June 1910 (Sutton 1967; Tate 1923). The earliest nest in my study was discovered by Dana Base on 9 April 1986, 38 days earlier than the 1955 nest. My latest (last known with eggs on 13 July 1986), was later than the 1910 nest by 13 days. These new extremes thus expand the known egg season in Oklahoma by 51 days. According to Johnsgard (1979 *op. cit.*) the earliest known date for eggs throughout the species' range is 17 April. Thus, 9 April appears to be a new early egg date for the species.

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## GENERAL NOTES

**Nesting of the Anhinga in McCurtain County, Oklahoma.** — In fresh water situations, Anhingas (*Anhinga anhinga*) inhabit "swamps, lakes and sluggish streams at low elevations" (American Ornithologists' Union, 1983, Check-list of North American birds, Allen Press, Lawrence, Kansas, p. 40). This type of habitat typifies McCurtain County, in the southeastern corner of Oklahoma. Within this wettest and lowest area of the state live numerous species of plants and animals typical of the Gulf Coastal Plain.

There are at least 31 records for the Anhinga in Oklahoma dating back to 1913 (Nice, M.M., 1931, Birds of Oklahoma, Rev. ed., Publ. Univ. Oklahoma Biol. Surv., Vol. 3, No. 1, pp. 54-55). Nesting has been documented six times in McCurtain and Sequoyah counties (Nice, M.M., 1938, *Auk* 55:121-122; Norton, P.W., 1973, *Bull. Oklahoma Ornithol. Soc.* 6:12-13). There have been no published records for this species for the state since 1980, when two were seen in Tulsa County (Jennings, R.G., 1981, *Bull. Oklahoma Ornithol. Soc.* 14:12-13), and there are no winter records (Sutton, G.M., 1974, A check-list of Oklahoma birds, *Contrib. Stovall Mus. Sci. & Hist.* No. 1, Univ. Oklahoma, Norman, p. 3). It is an irregular summer and fall visitant recorded from 9 April to 29 October and reported from McCurtain, LeFlore, Tulsa, Osage, Payne, Oklahoma, Murray, Johnston, Grady and Alfalfa counties and from Canton Reservoir and Lake Altus (Sutton, G.M., 1967, Oklahoma birds, Univ. Oklahoma Press, Norman, p. 21).

On 1 May 1991, I visited a heron rookery on the Little River National Wildlife Refuge approximately 6.5 km south of Broken Bow, in southern McCurtain County.

There I identified 14 Anhingas (*Anhinga anhinga*) and discovered at least two active nests. Also in this heronry were approximately 80 Great Blue Heron (*Ardea herodias*) nests and 20 of the Great Egret (*Casmerodius albus*). The Great Blues began building nests here about 1 March, but the rookery had grown considerably in two months.

Several Arkansas heronries along the Little River bottom were within 50 km of the one near Broken Bow. On 30 April 1991, I made an aerial tour of this section of the river just east of the Arkansas state line and saw four different rookeries that contained active Anhinga nests, indicating a viable breeding population in the region.

Near this site prior to 1991 I had observed a young or female Anhinga in September 1987 and a flock of 19 birds on 21 April 1989. I had also found 12 Anhingas on 5 May 1989 in a Cattle Egret (*Bubulcus ibis*) - Little Blue Heron (*Egretta caerulea*) rookery just west of the Mountain Fork River approximately 13 km east of Broken Bow, 6.5 km north of its confluence with Little River. However, I was not able to confirm nesting at that time. The willow trees that supported this large breeding colony were cut late in 1990 and I have no idea where these herons will nest in the future.

The two Anhinga nests were built in Bald Cypress (*Taxodium distichum*) trees approximately 20 m tall growing in a round oxbow lake some 350 m in diameter. At almost every level in these trees, ardeid nests had also been constructed. Many of the male Anhingas were vigorously displaying by rotating their slightly opened wings, much as man would if he placed his fists on his chest and alternately rotated his elbows. Several times I watched males, wings half open, raise their long tails straight up, then slightly fan them, revealing the white tips of each feather. This striking display is probably the source for the local name "water turkey." One male I saw carrying a green cypress bough in his bill flew into a tree, possibly to use the needles as nest lining material (see Bent, A.C., 1922, Bull. U.S. Natl. Mus. No. 121, p. 231). On 15 May, I found six additional Anhinga nests here.

The last known McCurtain County breeding record was in 1937, when H.S. Davis and others located an estimated 10 pairs of Anhingas nesting in a rookery 11.3 km south of Eagletown (Nice 1938). This site is approximately 16 km east of the heronry described above and about an equal distance west of the nearest one with active Anhinga nests in Arkansas. — Berlin A. Heck, *Manager, Little River National Wildlife Refuge, P.O. Box 340, Broken Bow, Oklahoma 74728, 20 May 1991.*

**An invasion of the Steller's Jay into the Oklahoma Panhandle.**—The Steller's Jay (*Cyanocitta stelleri*) is considered an irregular winter visitor to Oklahoma (Sutton, G. M., 1974, A check-list of Oklahoma birds, Contrib. Stovall Mus. Sci. & Hist. No. 1, Univ. Oklahoma, Norman, p. 28). It is a resident of the Rocky Mountains about 100 miles west of the Panhandle (AOU Check-list, 1983, p. 500). During the winter of 1989–90, however, a remarkable irruption of these jays occurred in the Black Mesa country of northwest Cimarron County, far western Oklahoma.

Approximately 10 records for Steller's Jays exist for the state, all but two from Cimarron County, where one to "about 20" birds have been recorded, with extreme dates of 30 September and 11 May (Sutton, G. M., 1967, Oklahoma birds, Univ.

Oklahoma Press, Norman, p. 372; [1982], Species summaries of Oklahoma bird records, Oklahoma Mus. Nat. Hist., Univ. Oklahoma, Norman). The two records east of the Panhandle were of single birds. One was observed near Hinton, in Caddo County, southwestern Oklahoma, on the unusual date of 2 July 1955 (Sutton 1967, *op. cit.*). The other lingered in Woodward County of northwest Oklahoma from 20 November 1960 until about 31 March 1961 (Baumgartner, F. M., 1961, Aud. Field Notes 15:55, 341). Sanford D. Schemnitz first recorded this species in the state on 4 October 1954 when he saw one jay about 7 miles north of Boise City (Sutton 1967; [1982], *op. cit.*).

Participants of the Kenton, Oklahoma, Christmas Bird Count of 31 December 1989 tallied an unprecedented 57 Steller's Jays (Amer. Birds 44:860, 1990). By contrast, it has been seen on this count only twice during the past 20 years: singletons were recorded on the counts of 29 December 1980 and 2 January 1982 (Amer. Birds 35:625, 1981; 36:653, 1982). The invasion was already under way by September, for on the 21st, Don Verser of Bartlesville and his brother M. L. Verser found two of them along Texakeet Creek 4 miles south of Kenton. This is apparently a new early fall date for the species in Oklahoma.

I had learned of Don Verser's sighting when he and Steve Metz visited Oklahoma City in late October, but this had not prepared me for the raucous flock of Steller's Jays that greeted me when I drove up to Laurance Regnier's remote ranch house 4 miles south of Kenton on 30 December 1989. Crested like a Blue Jay but larger, these birds were dark blue save for a wash of sable over their heads and upper backs. I could even discern the white streaking on their foreheads and above their eyes, a trait unique to the Rocky Mountain race, *C. s. macrolopha* (National Geographic Society, 1987, Field guide to the birds of North America, Wash., D.C., p. 302). Mr. Regnier feeds birds during the winter, and he estimated that at least two dozen Steller's Jays had visited his feeders at one time or another during the past few months. Throughout the afternoon, a bitterly cold day with occasional snow flurries, I observed and photographed the jays. Interestingly, I sometimes saw three different species of jay feeding side-by-side: Blue Jay (*C. cristata*), Scrub Jay (*Aphelocoma coerulescens*) and Steller's Jay.

The next day, I participated in the Kenton Christmas Bird Count, in which the 57 Steller's Jays were recorded. Blue Jays, Scrub Jays and Pinyon Jays (*Gymnorhinus cyanocephalus*) also were seen during the count.

I saw Steller's Jays every day until I left on 3 January 1990, but on 7 January a party from Tulsa and Bartlesville that included Don Verser, Steve Metz, Melinda Droege, Jim Woodward, Michael L. Gray, Bonnie Gall and George Hansen arrived and also saw them. Verser and Gray made a return visit on 4 March and encountered an estimated 20 jays in the Regnier yard. Mr. Regnier informed me in July 1990 that the Steller's Jays had lingered around his house until about the first part of April, but he did not record the exact date of their departure. The Steller's Jay invasion of 1989-90 was noted not only in Oklahoma, but also in the neighboring states of Kansas (The Horned Lark 17(6):14, 22, 1990), Texas, and Nebraska (Amer. Birds 44:452, 1990). When I visited Capulin Mountain National Monument in northeastern New Mexico in May 1990, a ranger there commented on the extraordinary numbers of Steller's Jays which had been present the previous winter. Whether triggered by food shortages farther west, severe weather conditions, or perhaps exceptional reproductive success in 1989, this invasion onto the southern Great Plains was truly remarkable.—Mitchell Oliphant, 3113 N. Virginia, Oklahoma City, Oklahoma 73118, 15 December 1990.

**A Sharp-tailed Sparrow in Creek County, Oklahoma.** — On 13 December 1988, I stopped at a field containing approximately 10 acres of fairly tall mixed grasses about 14 miles south of Bristow in southern Creek County, Oklahoma. At the other end of this pasture were several acres of nearly barren ground where I hoped to find Smith's Longspurs (*Calcarius pictus*). The only longspur I heard that day was the Lapland (*C. lapponicus*). However, as I walked back through the taller grasses, a small sparrow repeatedly flushed ahead of me, flew a short way, then "flopped" back down into the grass. It flew with head up and tail down. This behavior was suggestive of both LeConte's Sparrow (*Ammodramus leconteii*) and Sharp-tailed Sparrow (*A. caudacutus*), both of which I had studied in North Dakota.

After about 20 minutes, the diminutive bird finally landed in a six-foot shrub, allowing me to approach to within perhaps 25 feet. For at least 15 minutes, I scrutinized it very closely from this distance. It was richly buffy below, with faint breast streaking. The eyebrow was also buff and the earpatch a faint grayish. Unlike the whitish central crown stripe of a LeConte's Sparrow, this bird's stripe was gray, closely matching the gray unstreaked nape (LeConte's has a streaked nape). The white stripes on the bird's almost black back were very conspicuous. In addition, the wings were uniformly dark, lacking bars, and the belly was noticeably whitish. There was no doubt that this bird was a Sharp-tailed Sparrow. In fact, it showed several characters of the richly colored *nelsoni* race which has been taken before in Oklahoma (see Sutton, G.M., 1967, Oklahoma birds, Univ. Oklahoma Press, p. 610).

According to Sutton (1967, *loc. cit.*; [1982], Species summaries of Oklahoma bird records, Oklahoma Mus. Nat. Hist., Univ. Oklahoma, Norman), *Ammodramus caudacutus* is a transient, probably statewide, that has been seen several times in fall between 27 September and 17 November (Beaver, Cleveland, Murray, Wagoner, Noble, Osage, and Tulsa counties) and at least twice in spring (Tulsa and Washington counties) from 9 March to 3 May. On 6 and 7 May 1990, three or four birds were observed in Tulsa County by Walter J. and Margaret Davis, Jeff Webster and others (1990, *Amer. Birds* 44:457).

This constitutes the first record of this species for Creek County. It is to be looked for throughout Oklahoma during migration in rank vegetation, particularly in low-lying moist places. — Joseph Himmel, 1848 14th Ave., Greeley, Colorado 80631, 30 May 1989.

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