

BREEDING ECOLOGY OF THE MOUNTAIN PLOVER IN OKLAHOMA

BY JOHN S. SHACKFORD

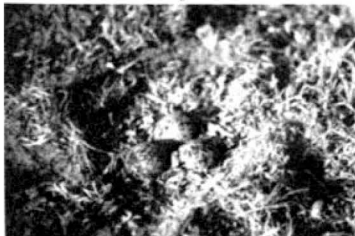
Biologists have long recognized that, throughout its range, the Mountain Plover (*Charadrius montanus*) shows little variability with respect to its breeding habitat requirements. An early naturalist (Hoskins 1893) wrote: "The mountain plover builds its nest on open prairie." Recently, Terres (1980) 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 ¹	ADULTS-YOUNG- AGE UNKN.-EGGS	HABITAT ²
*1.	04/09/86	N1/2-29-1	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	

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

²Cu-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
NATIVE GRASSLAND			
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)
CULTIVATED FIELD			
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)
TOTALS	8 (32)	17 (68)	25 (100)

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.