

# AN EXTINCT SUBSPECIES OF SHARP-TAILED GROUSE FROM NEW MEXICO

ROBERT W. DICKERMAN and JOHN P. HUBBARD, University of New Mexico Museum of Southwestern Biology, Albuquerque, New Mexico 87131 and New Mexico Department of Game and Fish, Santa Fe, New Mexico 87504

The Sharp-tailed Grouse, *Tympanuchus phasianellus* (Linnaeus), reached the southern limits of its historic range in northeastern New Mexico, where a population occupied Johnson and adjacent mesas in Colfax and perhaps Union counties (Ligon 1927, Bailey 1928). Since first reported, the New Mexico population has been variously assigned to the prairie subspecies *T. p. campestris* (Ridgway), the Columbian *T. p. columbianus* (Ord), or the high-plains form *T. p. jamesi* (Lincoln) (e.g., A.O.U. 1886, 1895, 1931, 1957, Ligon 1927, Friedmann 1941, Aldrich and Duvall 1955, and Aldrich 1963). However, our study of the known specimens reveals that the New Mexico population was a distinct and undescribed subspecies, which diminished in numbers until presumably absorbed by an introduced population of *jamesi* in the early 1950s. Since then, the species has entirely died out in the state, with the last specific report having been in 1954 (Merrill 1967).

## BACKGROUND

The Sharp-tailed Grouse was first attributed to New Mexico by the A.O.U. (1886, 1895), which included the state within the range of *T. p. campestris* (type locality: Illinois). At that time, only this and two other subspecies were recognized: *T. p. phasianellus* of boreal North America (type locality: Hudson Bay) and *T. p. columbianus* of southwestern Canada and the Great Basin region (type locality: Columbia River). The basis for New Mexico's inclusion in this grouse's range may have been three U.S. National Museum of Natural History specimens (USNM 11485-11487) taken at Fort Massachusetts. However, this site was actually in the San Luis Valley of central-southern Colorado (Figure 1), although administered under the U.S. Army's "Department of New Mexico" command (Frazer 1963).

Fort Massachusetts was active from 1852 until 1858, when replaced by Fort Garland (Frazer 1963). Only USNM 11486 from the Fort Massachusetts series remains at the U.S. National Museum of Natural History, number 11485 having been exchanged to the University of Kentucky in 1872 and 11487 to the Cleveland Museum of Natural History in 1877 (we did not attempt to relocate either of these specimens). The original label on no. 11486 bears the locality "Ft. Mass, NM" and gives the collector as "Capt. Bowman." A Captain Andrew W. Bowman was assigned to the Department of New Mexico in 1852 (Frazer 1963) and thus may have collected these grouse. Although aged and foxed, the USNM specimen appears to be *columbianus*—not *jamesi* as postulated by Giesen and Braun (1993). *Columbianus* has been documented elsewhere in southwestern Colorado near Pagosa Springs (Lincoln 1917), about 150 km southwest of Fort Massachusetts (Figure 1).

Interestingly, Ridgway (1884) did not cite New Mexico in describing *campestris*, which he attributed to Illinois, the Dakotas, Nebraska, and the eastern parts of Montana, Wyoming, and Colorado. However, he later expanded this taxon's range to include eastern New Mexico (Ridgway 1887). Subsequently, the A.O.U. (1910) omitted New Mexico from the range of this species, as did Lincoln (1917) in his description of *T. p. jamesi* (type locality: 3 miles [5 km] west of Castle Rock, Douglas Co., Colorado). A decade later, Ligon (1927) settled the issue of this grouse's occurrence in New Mexico by collecting three specimens on Johnson Mesa in Colfax County on 24 November 1926 (Figure 1).

Ligon (1927) ascribed his specimens to *T. p. columbianus*, on the basis of the identification of one (JSL 1185) sent to the Biological Survey in January 1927 (Ligon unpublished). This specimen is now in the University of California Museum of Vertebrate Zoology (MVZ 100267), having been received as part of the Allan Brooks collection. While indeed annotated as *columbianus*, none of the three labels indicates who made this determination. The other two Ligon specimens (JSL 1183 and 1184), originally mounted for the New Mexico Department of Game and Fish, were recently donated to the Museum of Southwestern Biology of the University of New Mexico (MSB 9984 and 9985). These specimens appear not to have been previously examined for a determination of their subspecific identity.

Ligon's (1927) allocation of the New Mexico grouse population to *T. p. columbianus* was subsequently followed by Bailey (1928), the A.O.U. (1931, 1957), Wetmore (1936), and Friedmann (1941). On the other hand, Aldrich and Duvall (1955), Aldrich (1963), Miller and Gaul (1980), and Hoag and Braun (1990) treated it as *T. p. jamesi*. We suspect the latter was based on geographic probability rather than specimen examination, given that *jamesi* occurs east of the Rocky Mountains and *columbianus* to the west. Hoag and Braun (1990) revealed the existence of six additional New Mexico specimens of this species in the American Museum of Natural History (AMNH 353690–353695; formerly in the collection of Jonathan Dwight). These were taken by Austin Paul Smith on 5 and 8 October 1918 at Folsom, 7500 feet (2286 m), Union County (Figure 1). However, Folsom is at 1979 m (6492 feet), so we suspect that the specimens actually came from the nearby uplands. For example, about 17 km west of Folsom is the Sewell (Sewall?) Ranch, Colfax County, where native Sharp-tails persisted as late as 1952 (Merrill 1967). In fact, this ranch was the site of the only transplant of this species in the state: 21 North Dakota *T. p. jamesi* released by the New Mexico Department of Game and Fish on 11 March 1952 (Merrill 1967).

Our knowledge of the historic status of this grouse in New Mexico stems mainly from Ligon's 1926 account from Colfax County (Ligon 1927, 1961, Bailey 1928). He found about 75 birds in three flocks on Johnson Mesa and lesser numbers on Fisher Peak and Barillo mesas (2438–2743 m), all east and northeast of Raton (Figure 1). These mesas are part of an igneous extrusion reaching a maximum elevation of 2922 m in the high plains (1500–2000 m) of northeastern New Mexico and adjacent Colorado. The mesas support grasslands (and formerly grain fields and other croplands), with dense stands of oaks (*Quercus* spp.), conifers, and other

## EXTINCT SUBSPECIES OF SHARP-TAILED GROUSE

woody growth on steeper slopes. Ligon (1961) believed that waste grain was an important source of winter food for these grouse, while rank grasslands, shrublands, and wooded areas served other needs. Settlers, who had occupied this area by the 1860s, told Ligon of a longtime familiarity with this species, reporting that it was more common there prior to 1926.

We know of no historic records of Sharp-tailed Grouse in that part of Colorado immediately adjacent to northeastern New Mexico, i.e., Las Animas County (e.g., Lincoln 1917, Hoag and Braun 1990). Nonetheless, we believe the species undoubtedly occurred there, as Fisher Peak Mesa

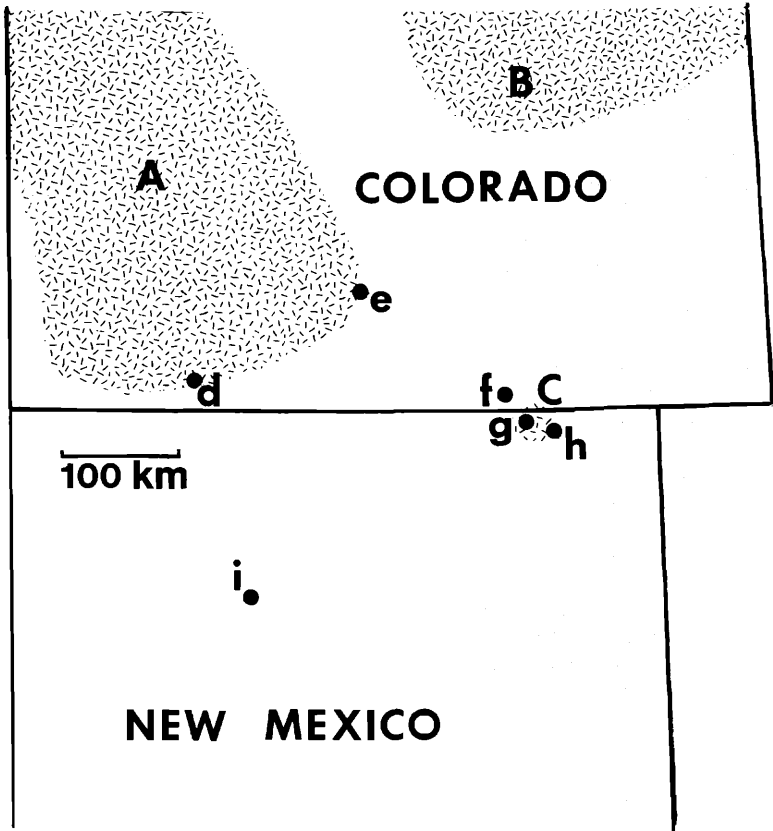


Figure 1. Historic distribution of the Sharp-tailed Grouse in New Mexico and southern Colorado (hatched areas): A, *Tympanuchus phasianellus columbianus* (Columbian subspecies); B, *T. p. jamesi* (plains subspecies); C, *T. p. hueyi* (New Mexico subspecies). Other localities: d, Pagosa Springs; e, Fort Massachusetts; f, Trinidad; g, Fisher Peak, Barillo, and Johnson mesas; h, Folsom; i, Jemez Springs.

occupies both states. Specimens of *T. p. jamesi* exist from eastern Colorado as far south as Elbert and Douglas counties (Figure 1), and this form is also reliably recorded from El Paso County (Hoag and Braun 1990). A gap of about 230 km appears to have separated *jamesi* from the grouse population to the south, with the most obvious divide being the Arkansas River. Some authors (e.g., Aldrich and Duvall 1955, Aldrich 1963) have postulated that Sharp-tailed Grouse historically occurred over much of southeastern Colorado. However, we question this, as well as unsubstantiated records from Oklahoma (Sutton 1967) and Texas (Oberholser 1974). Finally, even though this species undoubtedly once occurred in Kansas (e.g., Johnston 1965), the only reported specimen (Hoag and Braun 1990) is actually a Lesser Prairie Chicken (*T. pallidicinctus*)—fide David Willard (in litt.).

Other than the failed introduction by the New Mexico Department of Game and Fish in 1952, the only attempts to restore Sharp-tailed Grouse to the mesa country of New Mexico and Colorado have been by the Colorado Division of Wildlife (Hoag and Braun 1990, Braun et al. 1992). These involved transplants of *jamesi* east of Trinidad (north of Fisher Peak and Raton mesas) in Las Animas County from 1987 to 1989. These birds apparently failed to survive, and it was the prospect of more releases that led us to investigate the subspecific affinity of the historic grouse population of that area. Given that population is now extinct, its subspecific status may seem moot—even though it now proves to have been a distinct form. However, this is not only a matter of historic interest; it could help explain the failure of transplanted *jamesi* to survive in northeastern New Mexico and adjacent Colorado. There, the mosaic of grasslands, shrublands, woodlands, and forests constitutes habitats more associated with *columbianus*, rather than the shrubby grasslands generally occupied by *jamesi*. On the other hand, habitats in this mesa country may be so degraded that no Sharp-tailed Grouse of any stock is likely to prosper, at least until significant improvements are made.

Whatever its prospects for restoration in northeastern New Mexico and nearby Colorado, the Sharp-tailed Grouse was certainly once a viable member of the area's historic avifauna. Furthermore, there is evidence that the species was even more widespread in the not too distant past. For example, Wetmore (1936) reported the distal part of a tibiotarsus of this grouse from near Jemez Springs, Sandoval County, New Mexico (Figure 1), which is about 180 km south of the southernmost range of *T. p. columbianus* in Colorado and 255 km southwest of the northeastern New Mexico population. This specimen was found in a cave containing numerous avian remains, dating from about A.D. 1300 and associated with prehistoric man. Even earlier, during the Pleistocene epoch, forests and associated grouse habitats spread over wide areas of northern New Mexico and adjacent Colorado (e.g., Martin and Mehringer 1965). These habitats have retreated upslope over the last 12,000 years, contracting grouse populations and making them highly vulnerable to extirpation. Oscillations in climate (e.g., drought), man-induced changes in habitat, and other factors no doubt combined to eliminate most of these populations—of which that in northeastern New Mexico is a prime example.

## SOUTHERN FORMS OF THE SHARP-TAILED GROUSE

The Sharp-tailed Grouse in the southwestern United States [California (formerly) to Colorado] is currently split into two subspecies, *T. p. jamesi* east of the Rockies and *T. p. columbianus* to the west (Figure 1). Lincoln (1917) also believed that *T. p. campestris* occurred in northeastern Colorado, but populations there and northward to Alberta and Saskatchewan are now considered *jamesi* (e.g., A.O.U. 1957, Aldrich 1963, Andrews and Righter 1992). *Jamesi* was originally described as differing from *columbianus* in having paler and grayer upperparts, including the rump and upper tail-coverts (Lincoln 1917). *Jamesi* was also said to have the pileum and occiput more narrowly edged (not banded) with rufous, the nape more rufous, to lack dark barring on the lower hind-neck, back, and wing coverts, to have the dark markings of the underparts more extensive and somewhat broader and paler (due to a median band of pale grayish-buff), the throat creamy white and immaculate or rarely with small dark spots (versus ochraceous and consistently spotted in *columbianus*), and the wings and tail longer, the tarsus shorter, and the bill stouter and more acutely curved (see Table 1). Friedmann (1941), who recognized these as valid taxa, mistakenly reversed the characters of their upperpart coloration, calling *columbianus* "paler...brownish grayish olive" or "grayish tawny olive," contrasted to "buckhorn brown" in *jamesi*. His measurements confirm Lincoln's (1917) claim that *jamesi* averages longer in wing and especially tail than *columbianus*. Contrary to Lincoln, Friedmann's measurements also show that the tarsus in *jamesi* averages longer and the bill stouter than in *columbianus*.

We examined a series of *T. p. columbianus* ( $N = 50$ ) and *T. p. jamesi* ( $N = 49$ ) and confirmed their separability on the basis of plumage, particularly upperpart coloration and throat pattern. In addition, we found the dark ventral markings of *jamesi* average broader and paler than those of *columbianus*. We also confirmed the findings of Hellmayr and Conover (1942) that only specimens in fresh fall plumage are suitable for color and

**Table 1** Characteristics of Three Subspecies of Sharp-tailed Grouse in Southwestern North America

Character	<i>jamesi</i>	<i>hueyi</i>	<i>columbianus</i>
Hue of underparts	paler	medium	darker
Tone of upperparts	grayish brown	tawny brown	ruddy brown
Dorsal markings	less extensive	more extensive	more extensive
Throat coloration	brighter, whiter	duller, buffier	duller, buffier
Throat markings	none to very light	light to moderate	moderate to heavy
Width of ventral markings	broader	broader	narrower
Hue of ventral markings	paler	medium	darker
Wing length	longer	longer	shorter

pattern comparisons. Specimens taken later show various degrees of wear, soiling, and bleaching, which is not surprising given the environments occupied by these grouse. For example, the type and four paratypes of *jamesi* (Denver Museum of Natural History 4951–4953, 4979, and 4981), taken in February and March, are more worn and soiled than a large series from October and November. In particular, worn birds differ in having the pale tips of the feathers narrower, producing bolder and more contrasting patterning.

## THE NEW MEXICO SHARP-TAILED GROUSE

We compared the nine known specimens of New Mexico Sharp-tailed Grouse with *T. p. columbianus* and *T. p. jamesi* and found they differ consistently and significantly from these taxa. Differences were particularly evident in the 1918 series taken by Smith in the Folsom area (see below). By contrast, the Ligon specimens (Johnson Mesa, 1926) are paler, no doubt faded by sustained exposure to light in the mounted birds and probably also in the study skin. Given these findings, we describe the New Mexico population as a new subspecies:

### ***Tympanuchus phasianellus hueyi***, new subspecies

*Holotype*. Male, AMNH 353691 (originally 49866 in the collection of Jonathan Dwight), collected on 8 October 1918 by Austin Paul Smith. The type locality is in the vicinity of Folsom, 7500 feet [2286 m], Union [perhaps actually Colfax] County, New Mexico

*Diagnosis*. Similar to *T. p. jamesi*, but the ground color of the upperparts is darker, less grayish brown; dark barring and mottling more extensive on the upper back, tertials, inner secondaries, crown, and nape; throat duller, buffier, and more extensively spotted with dark; dark markings on the breast, sides, and abdomen slightly darker. Differs from *T. p. columbianus* in having the upperparts paler, less ruddy brown; throat somewhat less heavily spotted with dark; dark markings of the underparts paler, somewhat broader, and averaging less extensive on abdomen (Table 1). Wing lengths of *hueyi* (mean 210.6 mm, range 206–214 in males,  $N = 4$ ; mean 204.6, range 200.5–206 in females,  $N = 5$ ) are similar to those given by Friedmann (1941) for *jamesi* (mean 210.3, range 199–223 in males,  $N = 34$ ; mean 205.9, range 195–221 in females,  $N = 52$ ) and thus average larger than those of *columbianus* (mean 202.4, range 194–210 in males,  $N = 15$ ; mean 194.5, range 186–201 in females,  $N = 12$ ). Tail lengths were not measurable in *hueyi*, as most specimens are in molt. We did not measure tarsus length, while bill measurements overlap those of *jamesi* and *columbianus*.

*Distribution*. Formerly occurred on Johnson, Barillo, and Fisher Peak mesas (2286–2922 m) in Colfax and Union (?) counties, New Mexico (e.g., Ligon 1927, Bailey 1928), and probably in adjacent Las Animas County, Colorado (Figure 1). This endemic subspecies is now presumed extinct, with the last native birds having been seen on the Sewell Ranch (west of Folsom) in Colfax County in 1952 (Merrill 1967).

## EXTINCT SUBSPECIES OF SHARP-TAILED GROUSE

*Specimens examined.* *T. p. columbianus* (50). British Columbia: Ducks—8; Okanagan—38; Washington: Yakima Co., Yakima—1; Oregon: Malheur Co., Ironside—1; Colorado: Costilla Co., Fort Massachusetts—1; Routt Co., Egeria Park—1. *T. p. jamesi* (49). Alberta: Calgary—1; Duffield—3; Morrin—1; Red Deer—5; Vermilion—4; Walsh—1; Saskatchewan: Maple Creek—1; Montana: Chouteau Co., Shonkin—1; Dawson Co., 5 mi. [8.3 km] E of Glendive—1; Roosevelt Co., Culbertson—1. South Dakota: Custer Co., locality?—2; Wyoming: Converse Co., Douglas—1; Sheridan Co., Bear Lodge—1. Colorado: Adams Co., Bennett—2, locality?—2; Douglas Co., Castle Rock—7, locality?—3; county?, Denver—1; Weld Co., Masters—1; Wray Co., locality?—2; Yuma Co., locality?—1; Nebraska: Blaine (or Thomas) Co., Halsey—1; Cherry Co., locality?—1; Morrill Co., Bridgeport—4; Thomas Co., locality?—1. *T. p. hueyi* (9). New Mexico: Union [Colfax?] Co., Folsom—6; Colfax Co., Johnson Mesa, 20 mi. [32 km] E of Raton—3.

*Remarks.* Although vernacular names are no longer widely applied to subspecies of North American birds, their retention for game species is useful to wildlife managers and others. Therefore, we recommend that *hueyi* be known as the New Mexico Sharp-tailed Grouse. The extinction of this subspecies probably stemmed mainly from the effects of human settlement and occupancy of its range in the late nineteenth and first half of the twentieth century. Although the clearing of land for farming and overgrazing (exacerbated by periodic drought) certainly contributed to this process (Ligon 1927, 1961, Merrill 1967), extinction probably eventuated from a combination of factors. Ironically, grain-farming and the ancillary growth of weeds may have initially benefited this population, whereas later conversion of farmland to pastures and grazing probably sounded its death knell. Thus, despite having survived the trauma of the post-Pleistocene era, the New Mexico Sharp-tailed Grouse must now be added to the list of extinct North American taxa—which is a loss to us all.

*Etymology.* We name this extinct subspecies in honor of William S. Huey, former director of the New Mexico Department of Game and Fish, in recognition of his significant role in conserving wildlife and its habitats in New Mexico, North America, and around the world.

## SUMMARY

An extinct subspecies of the Sharp-tailed Grouse, *Tympanuchus phasianellus hueyi*, is described from northeastern New Mexico, where it occurred on Johnson, Barillo, and Fisher Peak mesas in Colfax (and perhaps Union) County and probably adjacent Colorado (Las Animas County). It differed from *T. p. jamesi* mainly in being darker, less grayish, and more heavily marked and from *columbianus* in being paler, less ruddy, more lightly marked, and longer-winged. *Hueyi* persisted until 1952, when four birds were reported on the Sewell Ranch west of Folsom, New Mexico. These were presumably soon absorbed by a transplant there of 21 plains Sharp-tailed Grouse (*T. p. jamesi*), and no birds of either subspecies were reported in this area or elsewhere in northeastern New Mexico after 1954.

## EXTINCT SUBSPECIES OF SHARP-TAILED GROUSE

### ACKNOWLEDGMENTS

We are grateful to those that provided help during this study, including the curatorial staffs at the American Museum of Natural History, Denver Museum of Natural History, and U.S. National Museum of Natural History. We appreciate the loan of material from these collections, as well as from the Museum of Vertebrate Zoology. Clait E. Braun, Howard Campbell, Wes Cook, George Merrill, Roxie Laybourne, and David Willard kindly supplied us with information, while Dr. Braun, William S. Huey, Paul Johnsgard, Kenneth C. Parkes, Philip Unitt, and Sartor O. Williams III kindly read and provided valuable comments on earlier drafts of this paper.

### LITERATURE CITED

- Aldrich, J. W. 1963. Geographic orientation in North American Tetraonidae. *J. Wildlife Mgmt.* 27:529-545.
- Aldrich, J. W., and Duvall, A. J. 1955. Distribution of American gallinaceous game birds. U.S. Dept. Interior, Fish and Wildlife Circular 34:1-30.
- Andrews, R., and Righter, R. 1992. *Colorado Birds*. Denver Mus. Nat. Hist., Denver.
- A.O.U. 1886. Check-list of North American Birds, 1st ed. Am. Ornithol. Union, Cambridge, MA.
- A.O.U. 1895. Check-list of North American Birds, 2nd ed. Am. Ornithol. Union, New York.
- A.O.U. 1910. Check-list of North American Birds, 3rd ed. Am. Ornithol. Union, New York.
- A.O.U. 1931. Check-list of North American Birds, 4th ed. Am. Ornithol. Union, Lancaster, PA.
- A.O.U. 1957. Check-list of North American Birds, 5th ed. Am. Ornithol. Union, Baltimore.
- Bailey, F. M. 1928. *Birds of New Mexico*. N. M. Dept. Game and Fish, Santa Fe.
- Braun, C. E., Davies, R. B., Dennis, J. R., Green, K. A., and Sheppard, J. L. 1992. *Plains Sharp-tailed Grouse Recovery Plan*. Colorado Div. Wildlife, Denver, CO.
- Frazer, R. W. (ed.). 1963. *Mansfield on the Condition of the Western Forts 1853-54*. Univ. Okla. Press, Norman.
- Friedmann, H. 1941. The birds of North and Middle America, part 9. *U.S. Natl. Mus. Bull.* 50.
- Giesen, K. M., and Braun, C. E. 1993. Status and distribution of the Columbian Sharp-tailed Grouse in Colorado. *Prairie Nat.* 25:237-242.
- Hellmayr, C. E., and Conover, B. 1942. *Catalogue of birds of the Americas*, part I, no. 1. *Field Mus. Nat. Hist., Zool. Ser.* 13.
- Hoag, A. W., and Braun, C. E. 1990. Status and distribution of the Plains Sharp-tailed Grouse in Colorado. *Prairie Nat.* 22:97-102.
- Johnston, R. F. 1965. A directory to the birds of Kansas. *Univ. Kan. Mus. Nat. Hist. Misc. Publ.* 1:1-67.
- Ligon, J. S. 1927. *Wildlife of New Mexico, Its Conservation and Management*. N. M. Dept. Game and Fish, Santa Fe.
- Ligon, J. S. 1961. *New Mexico Birds and Where to Find Them*. Univ. N. M. Press, Albuquerque.



## EXTINCT SUBSPECIES OF SHARP-TAILED GROUSE

- Lincoln, F. C. 1917. A review of the genus *Pedioecetes* in Colorado. Proc. Biol. Soc. Washington 30:83-86.
- Martin, P. S., and Mehninger, P. J. Jr. 1965. Pleistocene pollen analysis and biogeography of the Southwest, in *The Quaternary of the United States* (H. E. Wright, Jr., and D. G. Frey, eds.), pp. 433-451. 7th Congress Int. Assoc. Quaternary Res., Princeton Univ. Press, Princeton, N.J.
- Merrill, G.W. 1967. Plains Sharp-tailed Grouse. Pp. 118-119 in *New Mexico Wildlife Management*, N.M. Dept. Game and Fish, Santa Fe.
- Miller, G. C., and Graul, W. D. 1980. Status of Sharp-tailed Grouse in North America, in *Proceedings of the Prairie Grouse Symposium* (P. A. Vohs and F. L. Knopf, eds.), pp. 18-28. Okla. State Univ., Stillwater.
- Oberholser, H. C. 1974. *The Birds of Texas*, part 1. Univ. Tex. Press, Austin.
- Ridgway, R. 1884 [= 1885]. Descriptions of some new North American birds. Proc. Biol. Soc. Washington 2:89-95.
- Ridgway, R. 1887. *A Manual of North American Birds*. J. B. Lippincott Co., Philadelphia.
- Sutton, G. C. 1967. *Oklahoma Birds*. Univ. Okla. Press, Norman.
- Wetmore, A. 1936. The range of the Sharp-tailed Grouse in New Mexico. Condor 38:90.

*Accepted 6 March 1994*