The Mammals of Harmon County, Oklahoma[1]

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The present report constitutes the first attempt to comprehensively survey the mammals of Harmon County, Oklahoma. Before 1939 few surveys had been made of the mammalian fauna of southwestern Oklahoma, although an expedition under the command of Captain R. B. Marcy in 1852 (Marcy, 1854) made collections of and observations on mammals as part of a geographical survey along the tributaries of the Red River. The expedition traversed the Prairie Dog Town Fork of the Red River in the vicinity of Harmon Co. Barnett (1934), Conover (1927), and Steele (1964) recorded comments on mammal observations made by early settlers from 1880 to 1900. Bailey's (1905) account of Texas mammals is partly applicable to southwestern Oklahoma.

Blair (1939, 1954) presents the most comprehensive information on the mammals of southwestern Oklahoma and adjacent areas, including information on some species in Harmon Co.

Since 1954 there have been a few studies of areas near Harmon Co. Halloran and Glass (1959) and Glass and Halloran (1961) reported on the mammals of the Wichita Mountains. Milstead and Tinkle (1959), Packard and Garner (1964), Dalquest (1968), and Packard and Judd (1968) provided records for areas in Texas adjacent to or near Harmon Co.

Present Survey

Most collecting was in the southwestern quadrant of the county (Fig. 1). In December 1959, a 1.5-acre study area was established 5 miles SW of Hollis to sample rodent populations. This area (live-trap study area) was enlarged to five acres in July 1961, and live-trapped in July and August 1961-1962; May, November, and December 1961; August and September 1963; and March 1964, for a total of 61 days and 2,963 trap nights. Additional trapping (1,387 trap nights) was conducted at 34 other localities (Fig. 1) from 1959 to 1968.

Wood rat dens were investigated at several areas in the county (Fig. 1). Preston and Martin (1963) reported on investigations of 208 dens in the county during the period December 1960 to July 1961. Preston and

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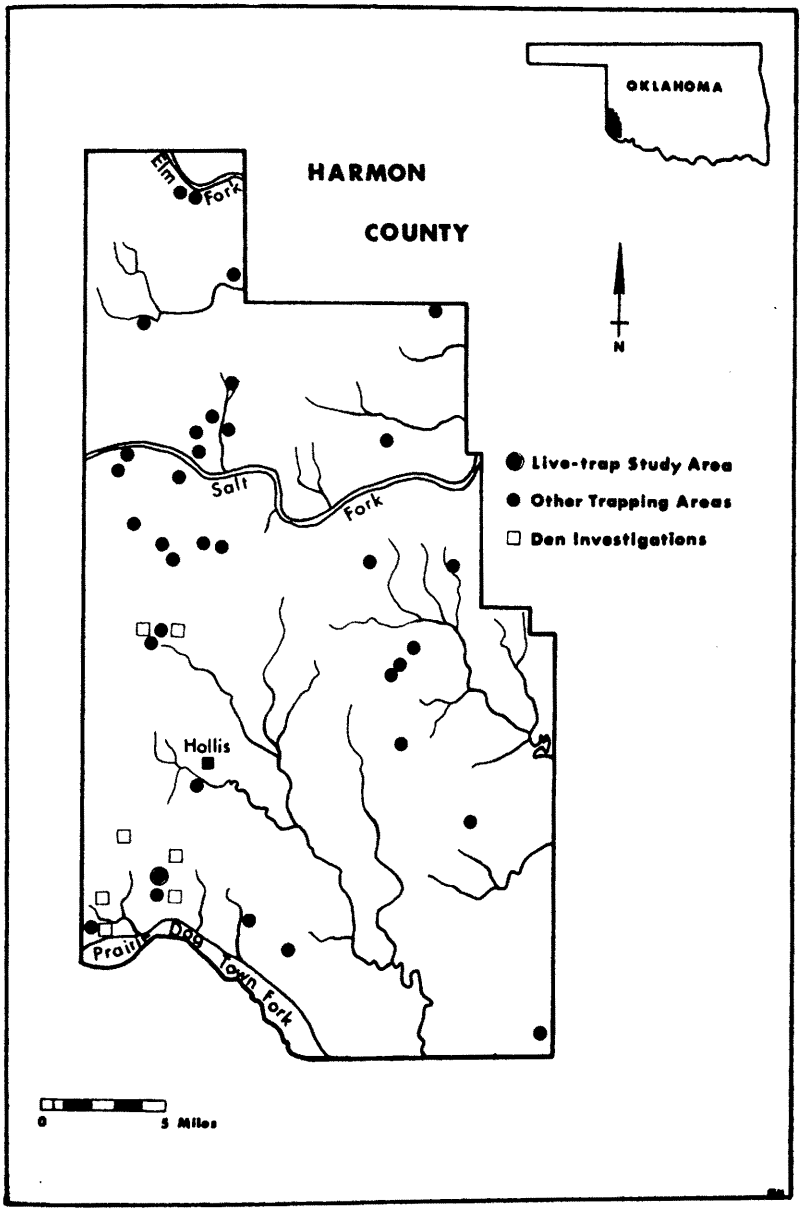

Fig. 1. Map of Harmon County showing locations of trapping areas and wood rat (*Neotoma*) den investigations.

party inspected 399 additional dens between August 1961 and November 1963. Field parties from Oklahoma State University (Baker and Spencer, 1965) and Texas Tech University investigated dens on these same areas in November 1964 and July 1968, respectively.

Surveys of the road systems of the county revealed many mammals that had been killed by automobiles, and some of these were prepared as museum specimens. Road surveys, initiated by Preston in August 1959, provided numerous sight records of mammals. He continued the surveys in August 1961-1962, aided by members of the Natural Science Club, Fort Worth Museum of Science and History. Preston made further surveys during two-week periods in September 1963-1965. Martin gathered records from June to August in 1963-1964, and for brief periods during the summer of 1965, March 1966, and fall of 1968. Some residents of the county provided information about areas that were not otherwise investigated.

Specimens of most mammal species were collected and prepared as standard museum study skins with skulls or preserved in alcohol. The collections were deposited in the Fort Worth Museum of Science and History (FWM), Oklahoma State University (OAM), and Texas Tech University (TT). Additional specimens in the Stovall Museum, University of Oklahoma (OU) were examined. Literature records were also important sources of information.

Description of the County

Harmon Co. was originally a part of Greer Co., Texas, but the area was included in Oklahoma following a U.S. Supreme Court decision in 1896 (Barnett, 1934). Presently the county has an area of 532 square miles. Three forks of the Red River pass through the county, with the Prairie Dog Town Fork forming the southern boundary with Texas (Fig. 1).

Permian outcrops are exposed over a large portion of the county, principally in upland areas away from the stream valleys where younger Cretaceous deposits occur. The Permian outcrops consist primarily of Blaine gypsum, Dog Creek shale, and Whitehouse sandstone (Clifton, 1927).

The annual rainfall varies from 22 to 23 inches in the south to 25 to 26 inches in the north (United States Weather Bureau, 1965). July is the hottest month with a maximum between 95 and 100 F (record high, 117 F). January is the coldest month, with a minimum between 25 to 26 F (record low, — 15 F).

Vegetation Types

In this study five major vegetation types (four of which are figured) were recognized (Fig. 2). The boundaries for these types are somewhat arbitrary, representing trends in distribution of dominant species. The nomenclature of Bruner (1931), Blair and Hubbell (1938), and Waterfall (1966) is used for the plant species listed under these vegetation types.

Mixed Grass.—This area occupies the upper quarter of the county (Fig. 2). According to Bruner (1931) the characteristic tall dominant grasses of this area are silver bluestem (*Andropogon saccharoides*) and little bluestem (*Andropogon scoparius*). Blue gramma (*Bouteloua gracilis*), hairy gramma (*Bouteloua hirsuta*), and sideoats gramma (*Bouteloua curtipendula*) are characteristic short grasses. Bruner (1931) suggests that overgrazing frequently results in the short-grass condition becoming dominant.

In the county this vegetation type is occupied by rangeland and small areas of dryland cotton farming.

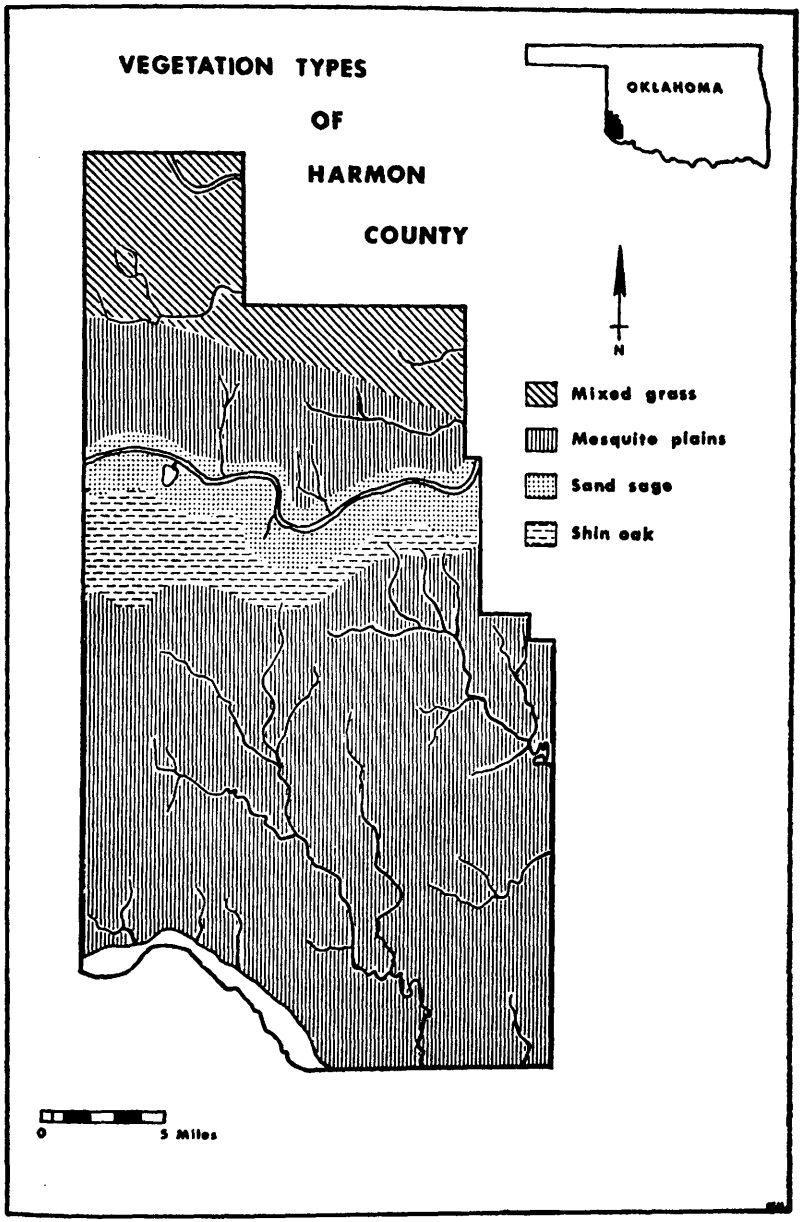

Fig. 2. Vegetation types of Harmon County. Four of the five types discussed are shown.

Mesquite Plains.—The Mesquite Plains biotic district of Blair and Hubbell (1938) is the most extensive in the county, occurring both north and south of the Salt Fork (Fig. 2). Blue gramma, hairy gramma, and buffalo grass (*Buchloe dactyloides*) are characteristic short grass dominants (Bruner, 1931). Mesquite (*Prosopis glandulosa*) and prickly pear (*Opuntia* sp.) are abundant on some of the rangeland in this vegetation type.

Most of this area is now under cultivation with typical irrigated crops being cotton, grain sorghum, and small grains.

Shin Oak.—This vegetation type occupies a narrow belt (not illustrated) north of the Salt Fork and a more extensive area (Fig. 2) south of this tributary. Several species of oak (*Quercus*), the sand plum (*Prunus angustifolia*), and the sand bluestem (*Andropogon hallii*) are characteristic plants of this area (Bruner, 1931).

Sand Sage.—This vegetation type occurs along the edges of the shin oak, on both sides of the Salt Fork (Fig. 2). The dominant species is sand sage (*Artemisia filifolia*) although sand plum also occurs in more moist situations. Bruner (1931) states that sand sage is frequently associated with tall grasses in a "post-climax" condition.

Riparian.—This vegetation type (not illustrated in Fig. 2) occurs along the three forks of the Red River and their tributaries. This type encompasses much of the area around Lake Hall (10 miles N, 1 mile W Hollis). Along the Elm Fork, the dominant species are mesquite, juniper (*Juniperus* sp.), and hackberry (*Celtis reticulata*). Soapberry (*Sapindus drummondii*) is common along the Salt Fork. Hackberry, mesquite, and chittamwood (*Bumelia lanuginosa*) are common in the immediate area of Lake Hall. Mesquite and tamarix (*Tamarix gallica*) are widespread along the Prairie Dog Town Fork.

SPECIES ACCOUNTS

The following accounts cite records of occurrence in the county and pertinent surrounding areas. Subspecific determinations were made when sufficient specimens were available. The arrangement of the species follows Hall and Kelson (1959) and vernacular names are those of Hall (1965). Comments on each species include general distribution, abundance, and occurrence in particular vegetation areas, when such information is available.

Under each account the total number of *specimens examined* is given, followed by the number examined from each specific locality (arrangement of localities is north to south, and west to east at similar latitudes), and an abbreviated reference to the museum where the specimens are deposited. Sight records (including road kills) and literature records are listed under the section *other records*. A total of 630 specimens was examined. All locality data refer to Harmon Co., Oklahoma, unless a different Oklahoma county or another state is specified.

Didelphis marsupialis virginiana Kerr

Opossum

Opossums likely occur throughout the county but sight records and road kills were primarily in the southwestern part. Blair (1954) noted that this species was common along streams in the mesquite plains.

Specimens examined.—None.

Other records.—Sight: 10 miles N Hollis; 1 mile N Hollis; 3 miles W Hollis; 3 miles E Hollis; 2 miles W, 4 miles S Hollis. Literature: TEXAS. *Wilbarger Co.*: Vernon (Bailey, 1905).

Cryptotis parva (Say)

Least Shrew

A skull of this species was found in an owl pellet collected by Donald Klovstad (personal communication) near the Greer-Harmon county line.

Specimen examined:—1, from: *Greer Co.*: 2 miles S Reed (FWM).

Other records.—Literature: *Comanche Co.*: Wichita Mountains Wildlife Refuge (Glass and Halloran, 1961). TEXAS. *Hutchison Co.*: 9 miles E Stinnett (Blair, 1954). *Wheeler Co.*: Old Mobeetie (Stickel and Stickel, 1948). *Floyd Co.*: 2 miles N South Plains (Packard and Garner, 1964). *Hardeman Co.* (Dalquest, 1968).

Notiosorex crawfordi crawfordi (Coues)

Desert Shrew

Preston and Martin (1963) cited the occurrence of this species in the mesquite plains of Harmon Co. Their investigations of 208 wood rat dens produced 20 *Notiosorex* from December 1960 to December 1961. No additional shews were found in 399 dens inspected in July and August 1962 and August 1963-1964. Donald Klovstad (personal communication) found two *Notiosorex* skulls in owl pellets at the entrance of a cave, 2 miles S of Reed. Baker and Spencer (1965) captured two *Notiosorex* while searching 80 dens S and NW of Hollis.

This shrew occurs irregularly in the county and its distribution appears to be limited to the mesquite plains. *Notiosorex* was often found in association with other occupants of a den, usually *Neotoma micropus* and *Peromyscus maniculatus*. In Harmon Co. this shrew is apparently dependent on the wood rat for sources of refuge.

Specimens examined.—22, from: 6 miles N, 2 miles W Hollis, 1 (FWM); 4 miles S Hollis (1, FWM; 1, OAM); 5 miles S Hollis, 3(FWM); 4 miles S, 1½ miles W Hollis, 1 (OAM); 5½ miles S Hollis, 13 (FWM). *Greer Co.*: 2 miles S Reed, 2 (FWM).

Scalopus aquaticus intermedius (Elliot)

Eastern Mole

On two occasions, December 1961 and July 1964, a road-killed specimen of the eastern mole was found in the shin oak area north of Hollis. Numerous field signs were seen throughout the county where sand was abundant. Mole diggings were never seen in the mesquite plains except along the sandy floodplain of Buck Creek, SW of Hollis. Specimens were assigned to *S. a. intermedius* after Davis (1942).

Specimen examined.—1, from: 5½ miles N, 2 miles W Hollis (FWM).

Other records.—Sight: 7 miles N, 1½ miles W Hollis. Literature: Buck Creek, SW Hollis (Blair, 1954). TEXAS. *Hardeman Co.* (Dalquest, 1968).

Myotis velifer incautus (J. A. Allen)

Cave Myotis

Glass (1955) collected specimens of *Myotis velifer* along with representatives of *Plecotus townsendii* and *Pipistrellus subflavus* from a cave near Reed, Oklahoma. Glass and Ward (1959) reported that *Myotis velifer incautus* is the most widespread species of the genus in Oklahoma, occurring frequently in gypsum caves. At Jester Cave, 3 miles N of Jester, Greer Co., these bats were very numerous during July and August 1963-1964.

Specimens examined.— 25, from: 3 miles W, 1½ miles S Reed, 7 (OAM; Glass, 1955). *Greer Co.:* Jester Cave, 3 miles N Jester, 16 (FWM); 2 miles S Reed, 2 (FWM).

Pipistrellus subflavus subflavus (F. Cuvier)

Eastern Pipistrelle

Glass (1955) reported on specimens of this species taken from a cave in Harmon Co. We did not secure additional specimens and followed Davis (1959) who assigned Glass's specimens to *P. s. subflavus.*

Specimens examined.—2, from: 3 miles W, 1 mile S Reed (OAM; Glass, 1955).

Plecotus townsendii pallescens (Miller)

Towsend's Big-eared Bat

Specimens of this bat were collected in Harmon Co. by a field party from Oklahoma State University (Glass, 1955). One *Plecotus townsendii* was taken from a side tunnel of Jester Cave, Greer Co., on 8 August 1964, by a field crew from the Fort Worth Museum of Science and History. We follow Handley (1959) in assigning the specimens from Harmon Co. to *P. t. pallescens.*

Specimens examined.— 12, from: 3 miles W, 1 mile S Reed, 9 (OAM; Glass, 1955). *Greer Co.:* 2 miles S Reed, 3 (FWM).

Other records.— Sight: *Greer Co.:* Jester Cave, 3 miles N Jester. Literature: TEXAS. *Hardeman Co.* (Dalquest, 1968); Panther Cave, 22 miles SE Childress (Blair, 1954; Milstead and Tinkle, 1959).

Tadarida brasiliensis mexicana (Saussure)

Brazilian Free-tailed Bat

One specimen of this species was shot, N of Hollis on 5 August 1964, as it flew about a mercury vapor light. The species probably ranges widely over the county during the summer months since a large population inhabits Reed Cave in nearby Greer Co.

Specimens examined.—41, from: 3 miles W, 1½ miles SSE Reed, 3 (OAM). *Greer Co.:* Reed Cave, 2 miles W, 1½ miles S Reed, 38 (FWM).

Other record.— Sight: 1 mile N Hollis.

Dasypus novemcinctus Linnaeus

Nine-banded Armadillo

A local resident, B. J. DeFoor (personal communication), reported that his dogs killed an armadillo 9 miles N and 3 miles W of Hollis in April 1968. DeFoor also stated that the species had been seen at Lake Hall (10 miles N, 1 mile W Hollis). Gardner (1948) reported a single specimen from the Wichita Mountains Wildlife Refuge. Until 1968 no local residents reported having seen armadillos in Harmon Co. Apparently the armadillo has spread into the county fairly recently or has been undetected in recent years.

Sylvilagus floridanus llanensis Blair

Eastern Cottontail

In Harmon Co. *Sylvilagus floridanus* appears to be ecologically separated from *S. audubonii,* the former occurring in brushy, riparian situations, and the latter in the mesquite plains. The specimens were assigned to *S. f. llanensis* after Blair (1938).

Specimens examined.— 2, from: 11½ miles N, 3½ miles W Hollis, 1 (OAM); 8 miles N, 1½ miles W Hollis, 1 (TT).

Other records.— Literature: *Jackson Co.:* 14 miles S Olustee (Blair, 1954). TEXAS. *Wilbarger Co.:* Vernon (Nelson, 1909). 15 miles S Vernon (Blair, 1954).

Sylvilagus audubonii neomexicanus Nelson

Desert Cottontail

Two specimens of this species were collected in an active prairie dog town in the mesquite plains. When disturbed these rabbits frequently hid in the entrances of the prairie dog burrows. Additional specimens were collected in Childress Co., Texas, adjacent to Harmon Co. We follow Nelson (1909) in assigning these specimens to *S. a. neomexicanus.*

Specimens examined.— 6, from: 2 miles W, 1 mile N Hollis, 2 (TT). TEXAS. *Childress Co.:* 8 miles SW Hollis, 4 (FWM).

Other records.—Literature: *Jackson Co.:* 14 miles S Olustee (Blair, 1954). TEXAS. *Hardeman Co.* and *Wilbarger Co.* (Dalquest, 1968).

Lepus californicus melanotis Mearns

Black-tailed Jack Rabbit

This species appears to be distributed widely in the county although most of the records are in the mesquite plains southwest of Hollis. The specimens were referred to *L. c. melanotis* after Nelson (1909).

Specimens examined.— 4, from: 12½ miles N, 3¾ miles W Hollis, 1 (TT); Hollis, 1 (FWM). TEXAS. *Hardeman Co.:* 3 miles W, 8 miles S Hollis, 1 (FWM). *Childress Co.:* 8 miles SW Hollis, 1 (FWM).

Spermophilus tridecemlineatus texensis Merriam

Thirteen-lined Ground Squirrel

This ground squirrel was observed or collected in several localities in the mesquite plains, but never in sandy areas. In this respect the species differed from *Spermophilus spilosoma,* which was found both in sandy areas and the tight soil of the mesquite plains. We follow Howell (1938) and assign the specimens to *S. t. texensis,* since the pelage had a distinct reddish tinge.

Specimens examined.— 2, from: 1 mile W, 1 mile S Reed, 1 (OU); 2¼ miles W, ¾ mile N Hollis, 1 (OAM).

Other records.—Sight: 2½ miles W, 3 miles S Hollis; 3½ miles E, 3 miles S Hollis; 3 miles E, 4 miles S Hollis. *Literature:* TEXAS. *Wilbarger Co.:* Vernon (Howell, 1938).

Spermophilus spilosoma marginatus V. Bailey

Spotted Ground Squirrel

This species occurs principally in the mesquite plains on both sandy and tight soils, and is usually found in groups of several individuals. In Harmon Co. the sandy areas always support this species rather than *Spermophilus tridecemlineatus.* The spotted ground squirrel was frequently seen at the edges of cotton fields, and in late July and August the animals were observed gathering cotton bolls.

On the live-trap area SW of Hollis this species occurred infrequently on the area in July 1961, August 1962, and September 1963. On two

occasions, 30 December 1960 and 30 December 1961, specimens were captured during the winter months. These winter captures support the observations of Howell (1938) and McMurry (1947) who suggested that hibernation is probably not complete in the species.

The specimens were assigned to *S. s. marginatus* after Howell (1938).

Specimens examined.—7, from: 8 miles N, 1½ miles W Hollis, 1 (TT); 3½ miles S, 1 mile W Hollis, 2 (FWM); 4½ miles S, 2 miles W Hollis, 1 (FWM); 4½ miles S Hollis, 2 (FWM); 5½ miles S Hollis, 1 (FWM).

Other records.—Sight: 6 miles N, 2 miles W Hollis; 2 miles N, 2 miles E Hollis; 4 miles S, 2½ miles E Hollis.

Cynomys ludovicianus (Ord)

Black-tailed Prairie Dog

The prairie dog formerly inhabited much of the county, but its range is now greatly reduced. Marcy (1854) reported a very extensive dog town, 25 miles in diameter, about 20 miles W of the southwestern boundary of the county. Cottam and Caroline (1965) reported four towns in Collingsworth, four in Hardeman, and three in Childress counties, Texas, which border Harmon Co. on the west and south. Jack D. Tyler (personal communication) found five active towns in Harmon Co. while conducting a survey of prairie dogs in western Oklahoma during 1966-1967. He noted that the largest town contained an estimated 220 individuals. Prior to his survey we had noted that two towns in the county had been exterminated during the period of our study. These towns were located 1½ miles S, and 10 miles N of Hollis, respectively. At the present time the remaining dog towns appear to be thriving. However, their future largely rests with the preferences of the farmer or rancher on whose land the respective towns are situated.

Specimens examined.—None.

Other records.—Sight: 20½ miles N, 3¾ miles W Hollis; 18½ miles N, 1 mile W Hollis; 14½ miles N, ½ mile E Hollis; 10½ miles N, 5 miles E. Hollis; 2 miles W, ¾ mile N Hollis.

Sciurus niger rufiventer E. Geoffroy Saint-Hilaire

Fox Squirrel

In Harmon Co. this species is found along stream valleys, shelter belts, and in isolated wooded areas. All records are in the mesquite plains and sand sage areas. The one available specimen is tentatively assigned to *S. n. rufiventer* (Hall and Kelson, 1959).

Specimen examined.—1, from: 10 miles S, ½ miles E Gould (OAM).

Other records.—Sight: 10 miles N, ½ mile W Hollis; 4½ miles N Hollis.

Geomys bursarius major Davis

Plains Pocket Gopher

This species is abundant throughout the sandy and loamy soils of the county. Fresh burrowing activity was frequently seen after late summer and fall rains. The shin oak and sand sage areas supported large populations of gophers. The populations were discontinuous where interrupted by tight, compact soil. The specimens were assigned to *G. b. major* after Baker and Glass (1951).

Specimens examined.— 9, from: 13½ miles N Hollis, 1 (OAM); 10 miles N, 1 mile W Hollis, 1 (TT); 8 miles N Hollis, 1 (TT); 2 miles N Hollis, 2 (FWM); 1½ miles N Gould, 1 (TT); 1 mile SW Hollis, 2 (OAM); 3 miles W, 7 miles S Hollis, 1 (OAM).

Other records.—Literature: TEXAS. *Childress Co.:* Childress (Bailey, 1905). *Wilbarger Co.:* Vernon (Bailey, 1905).

Perognathus flavescens copei Rhoads

Plains Pocket Mouse

One specimen of this species was collected in a sandy field in the shin-oak area. This specimen represents the first record for the species in southwestern Oklahoma. Nomenclature follows Osgood (1900).

Specimen examined.—1, from: 10 miles N, 2 miles W Hollis (FWM).

Other records.— TEXAS. *Hutchinson Co.:* Bugbee Creek (Blair, 1954). *Wilbarger Co.:* Vernon (Dalquest, 1968).

Perognathus merriami merriami J. A. Allen

Merriam's Pocket Mouse

Numerous individuals of this species were found in the mesquite plains. On the live-trap area it was the most frequently captured mammal during July and August and accounted for 27% of the total captures during 1961. None was taken during December 1961-1962, and few were taken during December 1961 and May 1962. A home range of 0.08 acres was computed for a female individual with a maximum travel distance of 190 ft. This species was the only mammal on the live-trap area that was consistently trapped in the most barren and eroded situations.

Specimens examined.—37, from: 6 miles E. 1 mile S Vinson, 18 (OU); 4 miles S Hollis, 1 (FWM); 5 miles S Hollis, 1 (FWM); 5½ miles SW Hollis, 16 (FWM); 6 miles S, 2½ miles W Hollis, 1 (TT).

Perognathus hispidus paradoxus Merriam

Hispid Pocket Mouse

This species was found throughout the county in all vegetation types and major trapping sites. Pocket mice were captured regularly on the live-trap area, although never in large numbers. In the winter months (1961-1962) they made up 5-6% of the captures and in July and August accounted for 13%. These mice were usually captured in areas that had good grass cover. We follow Glass (1947) in referring specimens to *P. h. paradoxus.*

Specimens examined.—32, from: 18 miles N, 9½ miles E Hollis, 3 (TT); 17 miles N, 2½ miles W Hollis, 2 (TT); 15 miles N, 1½ miles E Hollis, 2 (TT); 13 miles N Hollis, 1 (FWM); 6 miles E, 1 mile S Vinson, 10 (OU); 5.3 miles N Hollis, 1 (FWM); 4½ miles N, ½ mile W Gould, 1 (TT); 4½ miles N Gould, 1 (TT); 4½ miles S, 2 miles W Hollis, 11 (FWM).

Dipodomys ordii richardsoni (J. A. Allen)

Ord's Kangaroo Rat

In sandy areas the kangaroo rat was the most frequently trapped mammal. On moonless nights the species was frequently seen along roads in these areas. Trapping produced specimens at all stations in the sand sage and shin oak, and in sandy areas in the mesquite plains. We follow Setzer (1949) in assigning the specimens to *D. o. richardsoni.*

Specimens examined.— 81, from: 19 miles N, 1½ miles E Hollis, 2 (TT); 17 miles N, 2½ miles W Hollis, 4 (TT); 6 miles E, 1 mile S Vinson, 1 (OU); 13.9 miles N Hollis, 17 (FWM); 13½ miles N Hollis, 1 (OAM); 13 miles N Hollis, 7 (FWM); 11 miles N Hollis (12, FWN; 2, OAM); 10 miles N, 2 miles W Hollis, 1 (FWM); 8¾ miles N, 2 miles W Hollis, 1 (FWM); 8½ miles N, 2 miles W Hollis, 2 (OAM); 8 miles N, 1½ miles W (2, FWN; 1, OAM); 8½ miles N Hollis, 14 (FWM); 8½ miles N, 1½ miles W Gould, 1 (TT); 6 miles N, 2 miles W Hollis, 4 (FWM); 6 miles N Hollis, 2 (FWM); 5 miles N, 1 mile W Hollis, 1 (FWM); 3½ miles W Hollis, 1 (OAM); 2 miles W Hollis, 4 (FWM); 10 miles S, 2 miles W Gould, 1 (OAM).

Reithrodontomys montanus griseus V. Bailey

Plains Harvest Mouse

All specimens of this species were taken in the mesquite plains. Preston and Martin (1963) reported finding three harvest mice in a wood rat den north of Hollis. In December 1961 this species accounted for 12.5% of the captures on the live-trap area south of Hollis. We follow Hooper (1952) in assigning the specimens to *R. m. griseus.*

Specimens examined.— 9, from: 6 miles E, 1 mile S Vinson, 1 (OU); 8½ miles N, 2 miles W Hollis, 1 (OAM); 7 miles N Hollis, 1 (FWM); 6 miles N, 2 miles W Hollis, 1 (FWM); 6 miles N Hollis, 3 (FWM); 4½ miles N Gould, 1 (TT); 5½ miles S Hollis, 1 (FWM).

Peromyscus maniculatus luteus Osgood

Deer Mouse

The deer mouse was collected at all major localities in the mesquite plains and mixed grass areas. It was also recorded from several localities in the shin oak area. The species was frequently trapped on upland Permian outcrops ca. 13-14 miles N of Hollis. We tentatively follow Jones (1958) in referring our specimens to *P. m. luteus,* although the deer mice in Harmon Co. are considerably darker than representatives of *P. m. luteus* from Nebraska (see Judd, 1970, for color comments on this subspecies).

Specimens examined.—31 from: 25 miles N, 1 mile W Hollis, 1 (TT); 6 miles E, 1 mile S Vinson, 8 (OU); 6½ miles SE Vinson, 1 (OU); 13.9 miles N Hollis, 1 (FWM); 13 miles N Hollis, 1 (FWM); 12½ miles N, 7½ miles E Hollis, 4 (TT); 11 miles N Hollis, 1 (FWM); 8¾ miles N, 2 miles W Hollis, 1 (FWM); 8½ miles N Hollis, 1 (FWM); 6 miles N Hollis, 1 (FWM); 1 mile N, 2 miles W Hollis, 1 (FWM); 5½ miles S Hollis, 10 (FWM).

Peromyscus leucopus tornillo Mearns

White-footed Mouse

This species was found at most major collecting areas in the county, although most specimens were collected in riparian or lowland situations. In the mesquite plains the white-footed mouse was frequently found in association with the deer mouse. Blair (1954) indicated that *P. leucopus* has a dendritic distribution throughout the Mesquite-grass Plains biotic district. Our evidence indicates that the white-footed mouse has a much wider distribution in Harmon Co. Tentatively, we have referred our specimens to *P. l. tornillo* (Hall and Kelson, 1959).

Specimens examined.— 33, from: 15 miles N, 1½ miles E Hollis, 1 (TT); 6 miles E, 1 mile S Vinson, 10 (OU); 13.9 miles N Hollis, 2 (FWM); 13½ miles N Hollis, 4 (OAM); 13 miles N Hollis, 3 (FWM); 12½ miles

N, 7½ miles E Hollis, 1 (TT); 10 miles N, 1 mile W Hollis, Lake Hall, 6 (TT); 5 miles N Hollis, 1 (FWM); 5½ miles S Hollis, 4 (FWM); 7½ miles S, 3 miles E Hollis, 1 (TT).

Peromyscus sp.

The distributions of the deer mouse and the white-footed mouse are not mutually exclusive in Harmon Co., and both species are found in close association at several localities. Some individuals could not be assigned definitely to either *P. maniculatus* or *P. leucopus*, and have been grouped under this heading. The morphological characters (e.g., degree of color demarcation on tail, texture of pelage, and standard skin and skull measurements) commonly used to separate the two species were not conclusive in making specific determinations on these specimens.

Specimens examined.—31, from (museum abbreviations and catalog numbers in parentheses): 25 miles N, 1 mile W Hollis, Elm Fork (TT 8079); 6 miles E, 1 mile S Vinson (OU 2524-2525); 13.9 miles N Hollis (FWM 292, 426, 481-482, 526, 676-677, 679, 681-684); 13.6 miles N Hollis (FWM 692, 724); 13 miles N Hollis (FWM 208, 223-224, 230); 11 miles N Hollis (FWM 78-80, 86-87); 6 miles N Hollis (FWM 427); 4½ miles S, 2 miles W Hollis (FWM 1300-1301); 5½ miles S Hollis (FWM 430, 584).

Onychomys leucogaster breviauritus Hollister

Northern Grasshopper Mouse

Grasshopper mice were collected primarily in the mesquite plains. *Onychomys* accounted for 6% of the total captures on the live-trap area in December 1960-1961; however, in July and August 1961 they represented only 1.5% of the total. The specimens from Harmon Co. were referred to *O. l. breviauritus* after Hollister (1915).

Specimens examined.— 35, from: 17 miles N, 2½ miles W Hollis, 1 (TT); 6 miles E, 1 mile S Vinson, 2 (OU); 6½ miles SE Vinson, 2 (OU); 13.9 miles N Hollis, 6 (FWM); 13½ miles N Hollis, 2 (OAM); 13 miles N Hollis (1, FWM; 1 OAM); 12½ miles N, 7½ miles E Hollis, 1 (TT); 11 miles N, 4 miles W Hollis, 1 (OAM); 11 miles N Hollis, 3 (FWM); 10 miles N, 2 miles W Hollis, 1 (FWM); 8½ miles N, 2 miles W Hollis, 1 (OAM); 8½ miles N Hollis, 6 (FWM); 8 miles N, 1½ miles W Gould, 1 (TT); 6 miles N, 2 miles W Hollis, 3 (FWM); 6 miles N Hollis, 1 (FWM); 4½ miles N, ½ mile W Gould, 1 (TT); 5½ miles S Hollis, 1 (FWM).

Sigmodon hispidus texianus (Audubon and Bachman)

Hispid Cotton Rat

The cotton rat was trapped at numerous localities in the county where there was sufficient grass cover. On the live-trap area they accounted for 20% of the December 1960-1961 captures, but the July-August 1961 total was 13%. The population level of December 1961 was the highest recorded on the live-trap area from December 1960 to March 1964. The specimens were referred to *S. h. texianus*, after Hall and Kilson (1959).

Specimens examined.— 20, from: 6 miles E, 1 mile S Vinson, 3 (OU); 13½ miles N Hollis, 1 (OAM); 11 miles N Hollis, 1 (FWM); 10 miles N, 1 mile W Hollis, 3 (TT); 8½ miles N Hollis, 1 (FWM); 6 miles N, 2 miles W Hollis, 2 (FWM); 6 miles N Hollis, 5 (FWM); 5.3 miles N Hollis, 1 (FWM); 5 miles N Hollis, 1 (FWM); 5½ miles S Hollis, 2 (FWM).

Neotoma micropus micropus Baird

Southern Plains Wood Rat

On the live-trap area wood rats accounted for the majority of the captures in December. They made up 49% of the captures in December 1960, 32% in November-December 1961, and 25% in July-August 1961. Investigations of 609 wood rat dens from December 1960 to November 1963 produced over 220 wood rat captures. When prickly pear is available the wood rats construct domed dens, utilizing cut or living cactus. In late August many wood rat dens contain large quantities of mesquite beans; in November and December the dens contain portions of prickly pear and ragweed (*Ambrosia* sp.).

In July and August dens containing adult females were found with one or more young (usually two, rarely one or three). Adult males were not found with females, with one exception, although subadult males were found in dens containing females with suckling young. Females apparently give birth to at least two litters per year. A female captured in December 1960 gave birth to a pair on 5 or 6 May 1961. This female was placed in a cage containing several males on 17 June and gave birth to a second litter on 5 September of the same year. The capture of juveniles and subadults during May, August, and December further indicates that more than one litter per year is produced.

The specimens were assigned to *N. m. micropus* after Goldman (1910). No specimens of *N. albigula* were secured although this species is found near Lazare, Hardeman Co., Texas (Dalquest, 1968; Packard and Judd, 1968).

Specimens examined.—176, from: 25 miles N, 1 mile W Hollis, 7 (TT); 6 miles E, 1 mile S Vinson, 17 (OU); 13.9 miles N Hollis, 2 (FWM); 13½ miles N Hollis, 3 (OAM); 13 miles N Hollis, 1 (OAM); 12½ miles N, 3½ miles W Hollis, 1 (TT); 11 miles N Hollis, 5 (FWM); 9½ miles N, 3½ miles W Hollis, 1 (OAM); 6 miles N, 2 miles W Hollis (8, FWM; 3, OAM); 6 miles N Hollis, 48 (FWM); 5½ miles N, 2 miles W Hollis (1, OAM; 8, TT); 5.3 miles N Hollis, 6 (FWM); 5 miles N, 2 miles W Hollis, 1 (TT); 4½ miles N, ½ mile W Gould, 2 (TT); 2½ miles S, 11 miles E Hollis, 1 (TT); 4 miles S, 1½ miles W Hollis, 1 (OAM); 4½ miles S, 2 miles W Hollis, 14 (FWM); 5½ miles S Hollis, 45 (FWM); 7½ miles S, 3 miles E Hollis, 1 (TT).

Ondatra zibethica (Linnaeus)

Muskrat

Muskrats are present at several localities in the sand sage areas north of Hollis. Whether these populations represent native stock or introductions is unknown. Blair (1954) and Hollister (1911) reported native populations along Bugbee Creek and the Canadian River, Texas, respectively. In Harmon Co. the muskrats live in large ponds and small lakes and make their homes in the banks of these reservoirs.

Specimens examined.—None.

Other records.—Sight: 11½ miles N, 4¼ miles W Hollis; 10 miles N, 1 mile W Hollis, Lake Hall.

Mus musculus Linnaeus

House Mouse

Feral populations of the house mouse were found at two localities, although more populations may exist at abandoned homesteads or in towns.

Specimens examined.— 2, from: ½ mile N Hollis, 1; 4½ miles S, 2 miles W Hollis, 1.

Erethizon dorsatum (Linnaeus)

Porcupine

Prior to 1966 few residents in Harmon Co. had seen porcupines, although they were known to occur along the Elm Fork (R. B. Blacksher, personal communication). One crushed specimen was recovered from a road south of the Elm Fork in July 1965. Conversations with local residents in 1968 indicate that the species is seen frequently in the northern quarter of the county.

Specimen examined.— 1, from: 24 miles N Hollis (TT).

Other records.— Literature: *Comanche Co.:* 10 miles N Wichita Mountains Wildlife Refuge; boundary of Wichita Mountains Wildlife Refuge (McMurry, 1944). *Jackson Co.:* near Eldorado (McMurry, 1944). TEXAS. *Hardeman Co.* and *Wilbarger Co.* (Dalquest, 1968).

Canis latrans Say

Coyote

Coyotes are widely distributed throughout the county. Local residents report that many coyotes are killed by trappers in the Elm Fork area. Coyote hunting with dogs is a popular sport with several natives in the area (B. J. DeFoor, personal communication).

Specimens examined.— (skulls only) 3, from: *Harmon Co.,* no specific locality, 2 (TT); 5½ miles S Hollis, 1 (FWM).

Vulpes vulpes (Linnaeus)

Red Fox

Local residents reported seeing the red fox on several occasions but we did not substantiate any of these records. Jim Wilham (personal communication) reported that fox hunters released several individuals in the vicinity of Gould, Harmon Co., in the early 1960's. One red fox was seen at Mangum, Greer Co., in the summer of 1963. Most residents and hunters, however, have never seen the red fox in the county (see Glass and Halloran, 1960, for records in western Oklahoma counties).

Urocyon cinereoargenteus (Schreber)

Gray Fox

There is one unsubstantiated sight record of a gray fox observed SW of Hollis by a local resident. As with the red fox, most residents and hunters have never seen a gray fox in the county. This is somewhat surprising in view of its occurrence in the Wichita Mountains Wildlife Refuge (Halloran and Glass, 1959) and in northcentral Texas (Dalquest, 1968).

Procyon lotor (Linnaeus)

Raccoon

Racoons occur along the major streams and rivers in the county. Most records are in the mesquite plains but they are also common along the Elm Fork according to R. B. Blacksher (personal communication). Blair (1954) reported that raccoons were common at most collecting stations in the Mesquite Plains biotic district.

Specimen examined.— None.

Other records.— Sight: 17 miles N, ½ mile E Hollis; 1 mile N, 5 miles W Hollis; TEXAS. *Childress Co.:* ca. 17 miles W, 4 miles S Hollis.

Taxidea taxus (Schreber)

Badger

Badgers were observed at many localities but most records were NW or SW of Hollis. Signs of digging activity (either burrowing or foraging) were observed at the live-trap area, and at several locations in the sandy soil areas NW of Hollis.

Specimen examined.— 1, from: 5 miles S Gould (FWM).

Other records.— Sight: 5 miles N, 2 miles W Hollis; 2 miles E, 2 miles N Hollis; 5 miles W, 1½ miles N Hollis; 5 miles S, 4½ miles W Hollis; 5 miles S, 2 miles W Hollis; 6 miles S, ½ mile W Hollis.

Spilogale putorius (Linnaeus)

Spotted Skunk

On two occasions, 25 July 1963 and 2 August 1963, a road-kill spotted skunk was found near Hollis and Gould, respectively. Local residents report that the spotted skunk (or "civet cat") is seen infrequently in the county, and is less abundant today (1968) compared with previous years (1930-1940).

Specimens examined.— None

Other records.— Sight: ½ mile S Hollis; Gould. Literature: *Comanche Co.:* Wichita Mountains (Howell, 1906). *Jackson Co.:* Blair (Van Gelder, 1959).

Mephitis mephitis (Schreber)

Striped Skunk

No striped skunks were collected although they were seen on numerous occasions, principally in the summer of 1964 and spring of 1966.

Specimens examined.—None.

Other records.—Sight: 15 miles N, 10 miles E Hollis; 13 miles N Hollis; 9 miles N Hollis; 6 miles N, 4 miles W Hollis; 5 miles N, 4 miles W Hollis; 3 miles N, 5 miles W Hollis; 2 miles W Hollis; 1 mile S, 10 miles W Hollis.

Lynx rufus (Schreber)

Bobcat

Bobcats are numerous in the sand sage and shin oak areas N of Hollis and are frequently hunted with dogs in that region (B. J. DeFoor, personal communication). The single specimen obtained was killed by dogs owned by DeFoor.

Specimen examined.— 1, from: 9 miles N, 3 miles W Hollis (TT).

Other records.—Sight: 19 miles N, 1 mile E Hollis; 5 miles S, 2½ miles W Hollis; 6 miles S, 1 mile W Hollis.

Odocoileus virginianus (Zimmerman)

White-tailed Deer

The white-tailed deer reputedly occurs along the Salt Fork and NW of Hollis in the shin oak areas (Carl Crosnoe, personal communication). Marcy (1854) reported seeing deer in the southwestern part of the county in 1852. Blair (1954) and Dalquest (1968) reported that the native dee-

of this area were exterminated prior to 1930, and the present populations are the result of restocking.

Antilocapra americana (Ord)

Pronghorn

The pronghorn was extirpated from this region slightly before 1900 (Halloran and Glass, 1959). Marcy (1854) reported that pronghorns were present in the southwestern portion of the county in 1852. The pronghorn was abundant around Olustee, Jackson Co., when the first settlers arrived during 1885 to 1890 (Barnett, 1934). Conover (1927) reported that it was numerous following the decline of the bison around 1880.

Bison bison (Linnaeus)

Bison

Although extirpated from Harmon Co., a captive herd of bison is maintained in the Wichita Mountains Wildlife Refuge from stock obtained from the New York Zoological Society in 1907 (Halloran and Glass, 1959).

Marcy (1854) reported seeing several bison in the vicinity of Harmon Co. in 1852. Bison remains were last seen in the county when the first settlers arrived about 1885. These settlers collected bison bones to sell as souvenirs and burned buffalo chips for fuel (Steele, 1964). Extensive hunting, starting about 1875, greatly accelerated the decline of bison in the area, although changing land use would eventually have produced the same result (Conover, 1927; Barnett, 1934).

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