A New Marginal Record for the Fulvous Harvest Mouse In Oklahoma

JOHN W. GOERTZ[1], Oklahoma Cooperative Wildlife Research Unit, Stillwater, Oklahoma

Previous to 1960, the western marginal records for the fulvous harvest mouse *(Reithrodontomys fulvescens aurantius* J. A. Allen) were located at Noble, and one and one-half miles northeast of Dougherty in the southern half of Oklahoma (Elliot, 1899, as *Reithrodontomys crysotis)*, and at Sapulpa (Blair, 1939) in the northern half of Oklahoma. From 4 June 1960 through 22 June 1961 a total of 34 fulvous harvest mice (identified by Dr. Bryan P. Glass, Oklahoma State University) were taken in the vicinity of Lake Carl Blackwell, Payne County, Oklahoma. The Western-most locality represented in this collection of 34 specimens is in the NW ¼ of the SW ¼, Sec. 13, T.19 N., R.1 W., Payne County, Oklahoma. This capture was approximately 67 air miles from the Sapulpa record to the east, 72 air miles from the Noble and 125 miles from the Dougherty records to the south. It is, in addition, about 78 air miles southwest of Kansas record located some one and one-half miles southwest of Cedarvale (Sprague, 1939).

The Oklahoma records for the fulvous harvest mouse are:

Adair Co., Stilwell (Howell, 1914: 49).

Adair Co., 2 miles S of Stilwell (Oklahoma State University mammal collection).

Choctaw Co., one and one-half miles NE of Hugo (OSU).

Cleveland Co., Noble (Elliot, 1899: 295 as *crysotis).*

Creek Co., Sapulpa (Blair, 1939: 118).

Latimer Co., Eastern Oklahoma A and M College farm, Wilburton (OSU).

LeFlore Co., 1 mile NW of Smithville (Blair, 1939: 118).

Murray Co., 10 miles SE of Davis (OSU).

Murray Co., one and one-half miles NE of Dougherty (Elliot, 1899: 281 as *crysotis).*

Muskogee Co., 3 miles W of Bragg (OSU).

Muskogee Co., 3 miles E of Wainwright (Blair, 1939: 118).

Pottawatomie Co., Tecumseh (Blair, 1939: 118).

Payne Co., NW ¼ of SW ¼, Sec. 13, T.19 N., R.1 W., 12 miles west of Stillwater, Payne County, Oklahoma.

Of interest is one specimen of the fulvous harvest mouse in the OSU mammal collection taken from Pine Bluff Military Reservation near Pine Bluff, Arkansas. This specimen is an eastern marginal record for the

[1]Research fellow, Division of General Medical Sciences, National Institutes of Health and sponsored by the Zoology Department and Oklahoma Cooperative Wildlife Research Unit (contribution No. 846, Zoology Department, Oklahoma State University.

area south of the record at Beebe, Arkansas, listed by Howell (1914).

The nine specimens of the fulvous mouse collected at Mount Scott, Comanche County, Oklahoma (Howell, 1914, as *Reithrodontomys fulvescens intermedius)*, and one specimen taken 8 miles northwest of Indiahoma, Oklahoma (McMurray, 1945 as *Reithrodontomys fulvescens intermedius)*, were assigned by Russel (1953) to *Reithrodontomys fulvescens laceyi*. No additional specimens of this group have been recorded for the general area of Mount Scott (Glass and Halloran, 1961).

The relative scarcity of the fulvous harvest mouse can be attested by the fact that of all the records listed above only nine specimens made up the greatest catch for any one general area (by Howell, 1914). Little is actually known of this species and for this reason some additional notes, obtained through the collection of the 34 mice, will be given.

That the fulvous harvest mouse is rather scarce in Payne County is indicated by the fact that 73,864 trap nights caught only 34 animals. On a 20-acre 171-livetrap grid located 13 miles west of Stillwater none was captured in 39,964 trap nights during a 24-month period. Another 140-livetrap grid of 16 acres, 7 miles west of Stillwater, failed to capture a single fulvous harvest mouse in 19,050 trap nights during a 16-month period. All 34 animals were captured during 15 months of snaptrapping (14,850 trap nights).

The sex and age-class ratios of the 34 mice were: 18 adult males, 1 juvenile male, 13 adult females, and 2 juvenile females. Among the adult females, 4 of the 13 animals were pregnant, three of them had 3 embryos each and one had 4 ambryos. Two additional females had uterine scars of 3 and 4 respectively. These six animals were captured in April and May of 1961. The two females showing uterine scars and four other females (October, 1960) were lactating at the time of capture. Cockrum (1952) and Svihla (1930) each reported an instance of a female fulvous harvest mouse containing two embryos. Testes were scrotal in position in 15 of the 18 adult males. Length of testes varied from 3 to 6 mm in four individuals (2 abdominal and 2 scrotal in position), one each captured during October and November of 1960 and one each captured during February and March of 1961. Length of testes varied from 7 to 10 mm (1 being abdominal and 13 being scrotal in position) during April, May and June of 1960 and 1961.

Although the fulvous harvest mouse resembles the plains harvest mouse *(Reithdrodontomys montanus)* in general appearance it differs in a number of ways. The most obvious external features are its bright fulvous sides, its long tail and its relatively large size.

The measurements of 31 adult fulvous harvest mice captured were: total lengths of adult males 141-189 mm (average 162.67) and adult females 145-185 (average 162.15). In all cases the tail was longer than the head and body length combined— tails of males being 72-98 (average 85.70) and females 80-92 (average 85.00) mm. The weights of adult males ranged from 9-15 grams (average 12.05) while females were 9-16 (average 12.08).

Fulvous harvest mice were taken on 16 of 201 snaptrap transects averaging 675 feet in length. Twenty-five snaptraps were set along each transect at five-pace intervals for a period of three days. Areas were selected where the vegetation would be similar throughout the entire length of the transect. Each transect was measured for occurrence of plant species along one side of a meter stick; in addition, per cent density and height of grassy cover was measured (Table I). Numerals after the

plant species names represent the number of times each plant occurred per 20 one-meter samples (e.g., under transect 41, *Andropogon scoparius* occurred along 17 of the 20 one-meter line transects). The range in degree of grassy cover is also shown; the lower numeral represents the least and the larger numeral represents the greatest degree of cover found along a particular transect (e.g., under transect 41, this is represented by the numerals 52-100). The average per cent cover is the average of the grassy cover along all 20 one-meter line transects. This is represented by 89 per cent under transect 41. In the same way the average height of cover is shown as 137 millimeters.

TABLE 1. Numbers of fulvous harvest mice taken on 16 snaptrap transects of 25 traps each for 75 trap nights, in relation to the occurrence of plant species, and percent density and height of grassy cover. Numerals after plant names indicate occurrence of per 20 one-meter samples along each transect. Only plants occurring five or more times are included. All animals were collected within two miles of Lake Carl Blackwell, Payne County, Oklahoma.

Transect Number	41	95	97	98	108	119	124	147	150	164	171	174	175	177	178	194
Captures	2	1	4	5	1	2	1	1	2	1	2	1	4	5	5	1
Elymus canadensis																19
Cynodon dactylon								10				8				
Aristida purpurascens						6										
Sporobolus asper							10							12		
Triodia flava										5						
Bromus japonicus	8			10	6		13	8		10			17			
Leptoloma cognatum	8			7						5	7					
Panicum scribnerianum						5					11					
Panicum capillare															9	
Panicum virgatum									5		5					
Andropogon gerardi						12	6		15	12	8	16		19	11	20
Andropogon scoparius	17	20		17		19	7	17	18		13	10			15	19
Andropogon ternarius	9	11						6								
Andropogon saccharoides		7					10	9						8		
Sorghum halepense			20				7						18			
Sorghastrum nutans				14	19	17	7	7	7		7					
Galium sp.																9
Lespedeza virginica	7														5	
Melilotus spp.							14								7	
Cassia fasciculata		9				7		13						14		
Gutierrizia dracunculoides	7															
Chrysopsis spp.	7															
Aster spp.	9	12						10	7	9						
Erigeron spp.	5							9		6			14			
Ambrosia psilostachya		9					14		5		6	18		15		
Achillea lanulosa															7	
Artemisia ludoviciana					13	8					8	7		13	12	12
Rhus spp.	8				6				4		12	15				
Amorpha fruticosa					14											
Quercus marilandica												10				
Range in degree of cover in per cent	52 to 100	57 to 100	100 to 100	22 to 100	6 to 100	46 to 100	21 to 100	53 to 100	22 to 100	19 to 95	50 to 97	41 to 100	46 to 100	45 to 98	56 to 96	86 to 100
Average per cent cover per 20 one-meter samples	89	69	100	82	79	88	75	82	95	59	77	95	85	69	84	95
Average height of cover per 20 one-meter samples in millimeters	137	154	500	295	500	292	193	246	324	155	209	266	259	193	307	500

The presence of dense and deep stands of perennial grass appears to be the most important single feature determining the habitat preference of the fulvous harvest mouse. These grassy forms persist as cover from one growing season to the next. No one species of perennial grass can be selected as more important than another species since the fulvous harvest mouse was found in stands dominated by Johnson grass *(Sorghum halepense)*, Indian grass *(Sorghastrum nutans)*, little blue stem *(Andropogon scoparius)* and big blue stem *(Andropogon gerardi)* as well as mixed stands of these and other grasses. This suggests that at least in central Oklahoma, this mouse prefers the mid- and tall-grass perennial life-form type. Table I shows that sumac *(Rhus* sp.) and Louisiana sage *(Artemesia ludoviciana)* are frequent associates. Such plants, in combination with the grasses, should be of advantage to a species that prefers heavy cover.

Although Table I indicates that the degree of grassy cover, per one-meter line transect, was as low as 6 per cent (one sample on transect 108) the average per cent grassy cover per 20 one-meter samples is never under 59 per cent (transect 164). This also seems to suggest a striking preference for heavy cover. Mice were not found on areas where the average height of cover, per 20 one-meter line transects was less than 137 mm. Thus, the fulvous harvest mouse was found on areas where the average per cent of grassy cover was at least 59 per cent in combination with a height of grassy cover not less than 137 mm.

In considerable contrast, the plains harvest mouse is found on the open prairie where grassy cover, per unit area, is often less than 25 per cent and height of cover is less than 100 mm. Thus, the two species of harvest mice inhabiting central Oklahoma differ not only in external physical characteristics but in the type of habitat used as well.

It is my pleasure to thank A. M. Stebler and Bryan P. Glass, who have critically read and aided in the preparation of this manuscript.

LITERATURE CITED

Blair, Frank W. 1939. Faunal relationships and geographic distribution of mammals in Oklahoma. Am. Midland Naturalist, 22: 85-133.

Cockrum, E. Lendell. 1952. Mammals of Kansas. Univ. Kansas Publ., Mus. Nat. Hist., 7 (1): 1-303.

Elliot, Daniel G. 1899. List of mammals obtained by Thaddeus Surber, collector for the museum, Oklahoma and Indian Territory. Field Columb. Mus., Zool. Ser., 1 (16): 291-303.

Glass, Bryan P. and Arthur F. Halloran. 1961. The small mammals of the Wichita Mountains Wildlife Refuge, Oklahoma. J. Mammal., 42 (2): 234-239.

Howell, Arthur H. 1914. Revision of the American harvest mice. N. Am. Fauna, 36: 1-97.

McMurray, Frank B. 1945. Three shrews, *Cryptotis parva*, eaten by a feral house cat. J. Mammal., 26 (1): 94.

Russel, Robert J. 1953. Mammals of Cook County, Texas. Texas J. Sci., 5: 454-464.

Svihla, Ruth Dowell. 1930. Notes on the golden harvest mouse. J. Mammal., 11(1): 53-54.

Sprague, James M. 1939. Mammal distribution records for Kansas. J. Mammal., 20 (1): 102-103.