Some Biological Notes on the Plains Harvest Mouse[1]

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This paper presents life history data accumulated on the plains harvest mouse *(Reithrodontomys montanus)* during a two-year trapping period extending from October 1959 through September 1961. A total of 97 individual mice was trapped 150 times in either livetraps or snaptraps in the vicinity of Lake Carl Blackwell, Payne County, Oklahoma in a total of 74,206 trapnights. In view of the fact that 1,434 individual cotton rats *(Sigmodon hispidus)* were captured in the same number of trapnights (Goertz, 1962a), This species of harvest mouse can be considered relatively scarce, if trapping indicates actual density.

On a 20-acre 171-livetrap grid (Grid 1) 25 plains harvest mice were captured 32 times in 40,106 trapnights, and on a 16-acre 140-livetrap grid (Grid 2) 34 were taken 70 times in 19,050 trapnights during a 16-month period. A total of 38 mice were captured during 15 months of snap-trapping in a total of 14,850 trapnights.

The sex ratio of the 97 plains harvest mice was 53 males, 41 females and 3 unidentified as to sex. Of 13 snap-trapped females, 6 were pregnant, two with 3 embryos and four with 4 embryos each. One female gave birth to a litter of 4 in a live trap. The pregnant females were captured in February, May, June, July and November.

Different individual females were known to have been lactating during each month of the year except August, September, and October. However, no captures of plains harvest mice were made during these three months. Testes were scrotal in position in 26 of 76 captures of males. The scrotal position existed in some males in each month except August, September, and October (no captures) and June (1 capture). Testes varied in size from 3-6 mm (av. 4.2 mm) for 20 snap-trapped males measured during the months listed above.

Reproduction data, including extended testes, lactation, and embryo counts, seem to indicate that breeding in this species is carried out at any time of the year in central Oklahoma.

The total lengths of 35 of 38 snap-trapped mice were measured: 95 to 129 mm (av. 113.3 mm) for 22 males and 106-to 133 (av. 117.5 mm) for 13 females. Weights of 53 males varied from 5 to 15 gm (av. 7.8 gm) for the greatest known weight of any individual. Females weighed from 6 to 16 gm (av. 9.8 gm). All but a few animals of 5 and 6 gm were adults. Males tended to remain about 7, 8, or 9 gm regardless of the time between the first and last capture although this was 2 to 5 months in some cases. Females averaged somewhat heavier than males, apparently because some were carrying young.

Only four mice were captured during the first year of trapping (October 1959 through September 1960). In the second year of trapping, 4,010 trap nights per month, mice were captured during every month except August, but only one was taken during the October-September period. Captures increased after October to 5 in November, 14 in December, 21 in January, 27 in February and then decreased to 25 in March, 24 in April, 13 in May, 2 in June, 3 in July, 0 in August, and 7 in the final month of

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September. The reason for the low number of captures in the first year is not known. However, the weather was extremely cold during the winter of 1959-60. In addition, cotton rat numbers had been extremely high through February of the same period (Goertz, 1962a). Other factors, including low numbers of plains harvest mice, may have resulted in few captures. The second year, cotton rat numbers were low and the weather was mild. This may have resulted in better trapping conditions for the plains harvest mouse. The higher rate of capture during the cold months of the second year may have resulted because bait may have been more attractive during this period.

Living in close association with the plains harvest mouse in Payne County, Oklahoma, is the fulvous harvest mouse *(Reithrodontomys fulvescens)*. Of considerable interest is the distributional relationship of the two species of harvest mice as far as apparent habitat prefrences are concerned. Goertz (1962b) found that the fulvous harvest mouse captures were associated with 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.

Plains harvest mice were captured along 28 of 198 snaptrap lines where 25 snaptraps were set along each transect at five-pace intervals for three days. In addition, 63 of 311 permanent livetrap locations captured mice on Grids 1 and 2. Each transect, as well as each live trap site, was measured for per cent density and height of grassy cover. Areas used for snaptrap lines were selected where the vegetation would be similar throughout the entire length of the transect. Twenty one-meter samples of grass density and height were taken along each transect of approximately 675 feet. Per cent cover along the 28 transects where mice were captured averaged from 9.6 to 92.5 per set of 20 one-meter samples. Thus, for a total of 560 one-meter measurements, the overall average per cent density of grassy cover was 62.5 per cent. This compares with 82.6 per cent (320 measurements) for the fulvous harvest mouse taken during the same time period in the same series of 198 transects of snaptraps. Fulvous harvest mice were taken from 5 transects along with plains harvest mice. In each case the plains harvest mouse captures were taken where the height and density of cover was less than at trap sites where the fulvous mouse was taken. Average height of cover along the 28 transects yielding the plains harvest mouse ranged from 21 to 408 mm. The overall average was 254 mm for the plains harvest mouse as compared with an average of 275.6 mm for the fulvous harvest mouse.

At 23 livetrap sites on Grid 1 a total of two one-meter samples was taken at each trap in February and again in August of 1960-61. The per cent density of cover varied from 55.9 in February, with 2 measurements at each of 23 traps, to 70.3 in August for an average of 63.1. At the same time, the height of cover ranged from 160.0 to 226.9 mm for an average of 193.5 mm.

To summarize, the overall average per cent cover at sites where the fulvous harvest mouse was captured was 82.6 per cent while for the plains harvest mouse it was 62.5, 63.1 and 64.0 per cent (snaptraps and live trap captures). Height of cover averaged 275.6 mm for the fulvous harvest mouse as compared with averages of 254.0, 226.0 and 183.1 for the plains harvest mouse. The plains harvest mouse was captured in association with the pocket mouse *(Perognathus hispidus)*, and the deer mouse *(Peromyscus maniculatus)*. The fulvous harvest mouse was captured from the same lines in which large numbers of cotton rats were captured. This mouse was often captured in dense thickets of grass, weeds, and brush. In all cases, the plains harvest mouse was taken in open grassy areas.

A total of 59 mice was captured in livetraps. Of this number, 20 males and 17 females were captured only one time. A total of 22 animals was captured two or more times. From these captures some idea of the distance traveled can be discerned. The greatest distance traveled between any two traps for animals trapped twice is as follows: 0 feet in 10 days, 66 in 14, 209 in 18, and 528 feet in 11 days for females; and 0 feet in 3 days, 396 in 2, 93 in 27, 132 in 27, 264 in 27 and 608 feet in 154 days for males. Females captured three times traveled 148 feet in 29 days and 280 feet in 70 days while five males captured the same number of times traveled 66 feet in 49 days, 66 in 60, 93 in 11, 148 in 29 and 417 feet in 48 days. Two females captured four times traveled 66 and 594 feet in 44 and 76 days respectively. One female captured five times traveled 264 feet in 11 days while a male captured five times traveled 66 feet in 113 days. The greatest distance traveled by a female captured six times was 66 feet in a period of 59 days. The overall average distance traveled by 10 females captured two or more times was 222 feet with the average time between first and last capture dates being 35 days. Males averaged 196 feet in an average time period of 46 days between first and last capture.

The homestead areas of males captured two or more times varied from 0.10 acres to 1.10 acres for an average of 0.42 acres per male. Females had homestead areas ranging from 0.10 to 1.0 acres for an average of 0.51 acres. Because of the small sample, the apparently greater movements of the females can not be substantiated as occurring regularly.

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