Tim W. Clark

Department of Zoology
University of Wisconsin
Madison, Wisconsin

Ecological Notes on Deer Mice in Grand Teton National Park, Wyoming

Abstract

Habitat affinities, food uses, and reproductive data are presented and discussed for 44 deer mice (*Peromyscus maniculatus artemisiae*) from Grand Teton National Park, Wyoming.

Introduction

In a survey of the small mammal communities of Grand Teton National Park some data were gathered on 44 deer mice (*Peromyscus maniculatus artemisiae*). This paper presents information on occupancy of plant communities, food uses, and reproduction. Other members of the small mammal complex have already been reported on (Clark, 1971a, 1971b, 1973a, 1973b).

Methods

Small-mammal trapping was conducted from June to July, 1968, and from May to July, 1969. The proportion of live and snap traps was uniform among the six plant communities trapped: trapping procedures are detailed by Clark (1973b). The six lowland plant communities trapped to determine habitat affinities are described by Clark (1971a) and Reed (1952). Examination of stomach contents follows Clark (1971a), and checks of reproductive status are after Clark (1973b).

Results and Discussion

Habitat affinities were based on the plant community in which capture was greatest per species (Maxell and Brown, 1968). Only three communities yielded deer mice and 99 percent of these mice were trapped in two communities (Table 1). Both these communities containing numerous deer mice possessed woody overstory vegetation and were the driest stages of the hydrosere succession represented by the six communities. The other four communities frequently contained standing water of varying depths.

In the Great Basin Divide of central Wyoming, Maxell (1973) found deer mice most abundant in the shrub-grass communities where vegetative cover exceeded 40 percent. Deer mice, according to his study, seemed to be limited only by the presence of other rodents in high numbers. The four communities not yielding deer mice contained high numbers of microtines (Clark, 1973b). In the high plains of eastern Wyoming, Maxell and Brown (1968) found deer mice in large numbers in the mountain mahogany-juniper grass community type. In the Beartooth Mountains of Wyoming

TABLE 1. Deer mouse distribution in relation to plant communities in Grand Teton National Park, Wyoming.

Plant Community	Trap Days	No. Mice Caught (Capture per 100 trap days)
Sedge-Meadow	1,704	0 (0.0)
Sedge-Grass Meadow	1,595	0 (0.0)
Shrub-Swamp	1,380	0 (0.0)
Shrub-Sedge-Grass-Savanna	1,653	1 (0.1)
Lowland Aspen	2,071	33 (1.6)
Big Sagebrush	1,633	10 (0.6)
Totals	10,036	44 (0.4)

and Montana, Pattie and Verbeek (1967) found deer mice inhabiting krummholz, rock stripes, fellfield, and dry meadow in decreasing order of preference. In northern Wisconsin, Clark (1972) found that deer mice significantly preferred moderate woody cover and that no deer mice were trapped from wet soil areas.

Deer mice were omnivorous (Table 2). The majority of identifiable material was

TABLE 2. Stomach contents of 39 deer mice in Grand Teton National Park, Wyoming. Figures are mean volumetric estimates calculated to the nearest 1 percent. Figures in parentheses are percent frequencies of occurrence.

Stomach Contents	Volumetric Estimates	(Percent Frequencies)
Green Plant Materials	3.0	(8.0)
Seed Fragments	7.0	(2.0)
Arthropods	48.0	(80.0)
Other Animal Tissue	8.0	(15.0)
Unidentified	33.0	(100.0)

animal matter (56 percent), showing the predominant carnivorous component of deer mice diet. Plant materials represented 10 percent and 33 percent was unidentifiable.

Food habits of deer mice from other studies and areas show the mice to be clearly omnivorous. Analyses by Williams (1955) of 125 mice from Colorado forests showed that in July, arthropod remains constituted 80 percent of stomach contents by volume, but seeds made up only 15 percent. These values compare favorably with estimates of food uses in my study. Williams (1959) examined stomach contents of 122 deer mice from Wyoming and Colorado, some of them taken in the forests of regions in my study area: seeds were the major food item (33-79 percent) in all deer mice trapped in Wyoming. Arthropods comprised 8-28 percent of the total diet. These estimates of stomach contents contrast with deer mice diets in northern Wisconsin (Clark, 1972): deer mice (N=20) diet was made up of green plants (47 percent) and seeds (44 percent).

Reproductive status was determined for all the adults (N=23) captured. Only one of the 14 males examined had abdominal testes; the rest were scrotal (Table 3). Limited sample sizes did not provide a basis for detailed accounts of trends in reproductive characteristics. However, changes in testis lengths and weights tended to correspond with those of seminal vesicle lengths and weights. Of females (N=9) only four were found to be pregnant, and the mean litter size based on embryo counts was 6.2 (range 4-7).

TABLE 3. Reproductive status of 13 male deer mice from Grand Teton National Park, Wyoming.

Reproductive Parameter	Period							
	24-31 May (N=1)		1-15 June (N=7)		16-30 June (N=4)		1-15 July (N=1)	
	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range	$\bar{X}$	Range
Testis Lengths (mm)	10	—	10.8	(10-11)	8.5	(5-10)	10	—
Testis Weights (mg)	0.390	—	0.384	(0.330-0.502)	0.318	(0.078-0.369)	0.412	—
Seminal Vesicle Lengths (mm)	11	—	14.9	(13-17)	14.0	(11-17)	15.0	—
Seminal Vesicle Weights (mg)	0.170	—	0.253	(0.210-0.402)	0.231	(0.126-0.405)	0.391	—

Long (1964) lists reproductive records of seven *P. m. artemisiae* from northwestern Wyoming and records the mean litter size based on embryos from five females as 6.0 (range 5-7). Reproduction in *P. m. nebrascensis* was studied in the Laramie Basin of Wyoming by Brown (1966). He found adult females in breeding condition from April to August each year: the overall mean number of *corpora lutea* per breeding female was 5.77 ± 0.46, and embryos averaged 5.31 ± 0.49. Maxell (1973) found a mean embryo size of 5.5 (range 4-8) in the Great Divide Basin of Wyoming.

Literature Cited

Brown, L. N. 1966. Reproduction of *Peromyscus maniculatus* in the Laramie Basin of Wyoming. Amer. Middl. Nat. 76: 183-189.

Clark, T. W. 1971a. Ecology of the western jumping mouse in Grand Teton National Park, Wyoming. Northwest Sci. 45: 229-238.

————. 1971b. Aberrant coloration in *Microtus pennsylvanicus* from Grand Teton, National Park. Northwest Sci. 45: 227-228.

————. 1972. An ecological survey of the mammals of northcentral Wisconsin. Mus. Nat. Hist., Rept. Fauna and Flora of Wisc., No. 8: 1-36.

————. 1973a. Distribution and reproduction of shrews in Grand Teton National Park, Wyoming. Northwest Sci. 47: 128-131.

————. 1973b. Local distribution and interspecies interactions in microtines, Grand Teton National Park, Wyoming. Great Basin Nat. 33: 205-217.

Long, C. A. 1964. Comments on reproduction in the deer mouse of Wyoming. Trans. Kan. Acad. Sci. 67: 149-153.

Maxell, M. H., and L. N. Brown. 1968. Ecological distributions of rodents on the high plains of eastern Wyoming. Southwestern Nat. 13: 143-158.

Maxell, M. H. 1973. Rodent Ecology and Pronghorn Energy Relations in the Great Divide Basin of Wyoming. Ph.D. thesis. Univ. Wyo. 208 p.

Pattie, D. L., and N. A. M. Verbeek. 1967. Alpine mammals of the Beartooth Mountains. Northwest Sci. 41: 110-117.

Reed, J. E. 1952. The vegetation of Jackson Hole Wildlife Park, Wyoming. Amer. Midl. Nat. 48: 700-729.

Williams, O. 1955. The food of mice and shrews in Colorado montane forests. Univ. Colo. Studies, Biol. Ser. No. 3: 109-114.

————. 1959. Food habits of the deer mouse. J. Mammal. 40: 415-419.

Received October 17, 1974.
Accepted for publication November 19, 1974.