

FEEDING SELECTIVITY OF MONTANE AND LONG-TAILED VOLES (*Microtus montanus* and *M. longicaudus*)

FREDERICK J. JANNETT, JR. ♦ DEPARTMENT OF BIOLOGY
THE SCIENCE MUSEUM OF MINNESOTA ♦ ST. PAUL

♦ OBJECTIVES

The purpose of the research begun in 1989 is to ascertain how selectively voles of these species feed, and to assess vegetation as a factor in demographic processes in the two species. *Microtus longicaudus* exhibits relatively stable numbers while *M. montanus* has dramatic fluctuations in some habitats. The study sites for *M. montanus* have been chosen to include primary and secondary habitat, and proximate and isolated habitat patches. Vegetation has heretofore not been quantitatively analyzed.

♦ METHODS

Virtually all previous work on these species conducted by the author during 1971-1977, and 1982-1988) involved live trapping. The work of interest requires specimens obtained in Museum Special traps for stomach content analysis. The trapping begun in 1989 is a preliminary effort, the first purpose of which was to assess the efficacy of Museum Special traps. The number of sites where *M. longicaudus* is found is being increased across a spectrum of vegetation types. Only three populations of this species were monitored from 1982-1988. Also, at three sites with populations of *M. montanus*, live traps are still deployed to secure voles; it is hoped that, by replicating previous efforts at these three sites, work on food habits can be related to possible changes in vole numbers. For this end the three sites chosen for continued monitoring with live traps are one field having definite population fluctuations, one site peripheral to primary habitat, and one site of

secondary habitat.

Most trapping periods were limited to two days so that impact on the respective populations would be minimized. From fresh specimens, eyes were removed for age determination based upon lens weight (Gourley and Jannett, 1975).

♦ RESULTS

At two sites the populations of *M. montanus* decreased from October, 1991 to October, 1992 by 69% and 79%, respectively. But in secondary habitat, the number of voles in the sample (4) remained constant.

Breeding continued in one of the three populations of *M. montanus* in October. Of nine apparently parous females, the two at one site were still lactating. No other was pregnant or lactating. The sex ratios (males:females) of reproductively active and formerly reproductively active individuals in the two higher density populations were 1:2 and 1:1.5, respectively.

One or more *Microtus longicaudus* were obtained in six of the seven sites surveyed. These sites varied in exposure, gradient, and vegetation, and included a dry south-facing shrub community, cool ravine, north-facing timber stand, pond embankment, willow-sedge-grass community, and talus field. The only site where they were not found was dominated by grass-sage.

◆ DISCUSSION

The pattern of early cessation of seasonal breeding in a relatively high density population of *M. montanus* (Jannett 1978) has again been observed. In 1992, the higher of the two substantial populations exhibited no reproductive activity, whereas the less dense population had females still lactating. This was of additional significance in that the latter population had, nonetheless, declined from 1991, whereas continued fall breeding is usually seen in the increase phase of a vole "cycle" (Krebs and Myers 1974; Jannett 1984). Continued monitoring of the three representative *M. montanus* sites is showing the disparity in population size trends within one year. Whether there is concomitant disparity in morphological patterns among specimens awaits processing and analyses.

Eighteen populations of *M. montanus* were previously identified during 1982-1988, but only 15 populations of *M. longicaudus* have been "found" to date. I will identify 18 preliminary to vegetation and gut analyses. Negus and Findley (1959) secured no *Microtus longicaudus* from 17 quadrats in nine community types in and around Jackson Hole. They found it elsewhere and concluded that it was the least common species of *Microtus* in Jackson Hole. However, Clark and Stromberg (1987), in a more popular account, posited it in various habitats, including grassland and streamside. Long-term monitoring of *M. montanus* in this ongoing study indicates *M. longicaudus* is uncommon in open grassland dominated by *M. montanus*, but otherwise does show considerable habitat breadth. Streamside have not been included as yet in the search for additional populations and will be the focus of work in 1993.

◆ ACKNOWLEDGEMENTS

I thank the National Park Service for permission to work in Grand Teton National Park, and the University of Wyoming-National Park Service Research Center for its hospitality. This work was supported by the Science Museum of Minnesota.

◆ LITERATURE CITED

- Clark, T. W. and M. R. Stromberg. 1987. Mammals in Wyoming. University of Kansas, Mus. Nat. Hist., Publ. Ed. Ser. No. 10, 314 pp.
- Gourley, R. S. and F. J. Jannett, Jr. 1975. Pine and montane vole age estimates from eye lens weights. J. Wildl. Manage., 39: 550-556.
- Jannett, F. J., Jr. 1978. The density-dependent formation of extended maternal families of the montane vole, *Microtus montanus nanus*. Behav. Ecol. Sociobiol., 3: 245-263.
- _____. 1984. Reproduction of the montane vole, *Microtus montanus*, in subnivean populations. Special Publ. Carnegie Mus. Nat. Hist., 10: 215-224.
- Krebs, C. J. and J. H. Myers. 1974. Population cycles in small mammals. Adv. Ecol. Res., 8: 267-399.
- Negus, N. C. and J. S. Findley. 1959. Mammals of Jackson Hole, Wyoming. J. Mamm., 40: 371-381.