

LIFE HISTORY STRATEGIES OF THE MONTANE VOLE, Microtus montanus

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Objectives

Emphasis in microtine rodent biology has historically been placed on population regulation and the population cycle. Until recently, little attention has been directed to behavior and sociality in microtine rodents, but work on the sociobiology of the montane vole (Jannett, 1978, 1980, 1981, 1982, 1984) is serving to integrate various aspects of the biology of this species so that its life history characteristics can be interpreted in an evolutionary framework. Work undertaken in 1984 continues previously initiated surveys of various topics, such as synchrony of population events in different populations, survivorship, scent gland development, patterns of cranial and dental variation, population trends in a sympatric species of vole (M. longicaudus), and reproduction in a primary predator, the shorttail weasel (Mustela erminea). In addition, work in 1984 was initiated with C. Welsh on age variation in the chemical composition of male M. montanus preputial glands.

Methods

Microtus montanus were trapped in four populations in late May, two populations in late July, and over a three-week period in October in seven sample lines and two gridded areas, each of which replicated samples from the same areas made in 1971-1977, 1982, and 1983. Most samples were run for only two days so that impact on the respective populations would be minimized. Eyes were removed for age determination upon lens weight (Gourley and Jannett, 1975). Preputial glands were frozen at the Research Center. A trap line for shorttail weasels was set over a very wide area in October as in previous years. Three populations of Microtus longicaudus were sampled in October.

Results

Microtus montanus: Population levels of this species in fall, 1983, had been higher than in any previous year of trapping. The three populations sampled in May, 1984, had varying numbers of voles, and numbers were clearly fewer where there had been the most spring flooding. In July and October there were moderate numbers of voles in all sites, and in general far fewer animals than there had been in 1983. There were no males with scrotal testes in three sites, and no parous or first-pregnancy females at one other. In the remaining five sites there appeared to be a correlation between the percentage of adult males among all adults, and the percentage of females still lactating and/or pregnant

(Figure 1).

This relationship was also found in 1983 and supports the hypothesis that continued breeding in the late fall is the result of stimulation of females by males (Jannett, 1984b).

Material for age structure has not yet been analyzed.

Microtus longicaudus: Numbers of voles at three sites remained similar to those in 1983 despite declines in the numbers of M. montanus.

Mustela erminea: Two females were secured incidental to vole trapping, but none were taken in the trap line for this species.

Conclusions

There is a pattern in microtine demography in which breeding ceases earlier in years of very high density (Krebs and Myers, 1974). Making short-term samples of voles in proximate populations within a few weeks reveals that variability in the length of the breeding season can occur in the same year, and that such populations also vary in demographic patterns.

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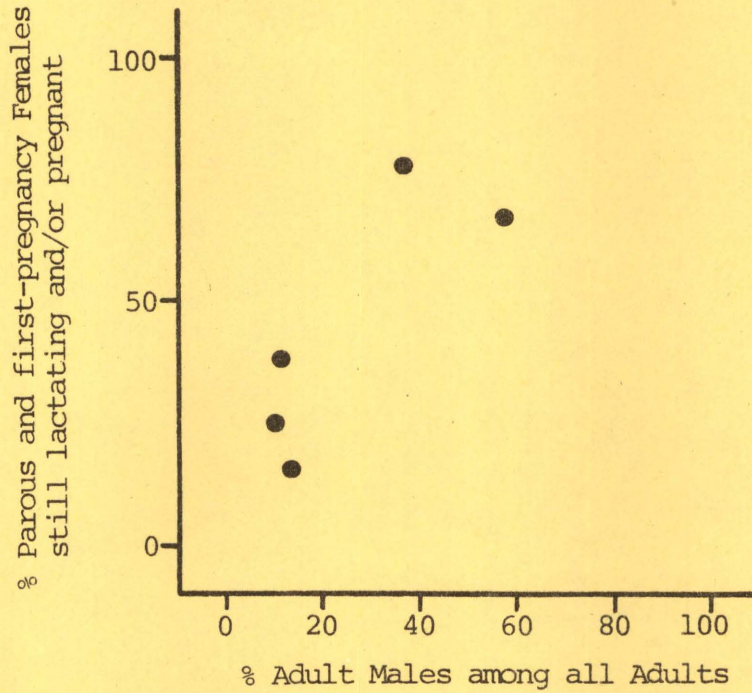


Figure 1. Percentages of adult males among all adults versus percentages of adult females reproductively active in October, based on initial gross examinations of specimens. (n = 35 adult females)

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. I also thank Dr. Ken Diem for the loan of Research Center traps.