

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, 1984a) 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 1986 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*).

Methods

In October, 18 samples were made in the Moran area and in the Grassy Lake district. These efforts included three gridded areas and 15 transects, many of which replicated samples in 1971-1977 and 1982-1987. Two new sample sites added in 1987 were north of GTNP along the Grassy Lake Road. Most samples were run for only 2 days so that impact on the respective populations would be minimized. Eyes were removed for age determination upon lens weight (Gourley and Jannett, 1975). As in previous years, three populations of *Microtus longicaudus* were sampled in October. However, because there was no snow cover in late October, no effort was made to secure shorttail weasels.

Results

There were disparate changes in the numbers of voles at the 16 sites south of the Grassy Lake district. Numbers increased in all sites with primary habitat, except one, by 33% to 110%. In secondary habitat, there was no pattern; numbers varied from +54% to -94%.

In the Grassy Lake district, both populations decreased, by 33% and 66%, respectively.

None of the parous females at any of the sites was pregnant or lactating. There were no pregnant nulliparous females.

Microtus logicaudus: Numbers of voles at 2 of the 3 sites remained similar to those in previous years. The population largely disappeared at the third site, the first such occurrence at any of these three sites in 13 years of their being monitored.

Mustela erminea: No ermine was secured incidental to vole work.

Conclusions

Krebs and Myers (1974) concluded that there is a general pattern in microtine demography in which breeding ceases earlier in years of very high density. Making short-term samples of M. montanus in proximate populations within a few weeks in October, 1984 demonstrated that variability in the length of the "breeding season" occurred in the same year at high densities and that it was correlated with the operational sex ratio (Jannett, 1984b). In subsequent years, sampling a number of populations showed the "breeding season" to be of variable duration even at very low densities. The complete cessation of breeding in all populations by October this year was, it would seem most reasonable to conclude, a response to the dramatic drought conditions.

By adding two more northerly sites in 1987, where populations were considerably higher than in most previously established sites, a greater range of densities was covered within one year than had been heretofore found. This region, it was suggested, may have populations which would eventually be shown to be in different demographic phases than those more southerly populations. In 1988, this proved to be the case. All but one of the more southerly populations in primary habitat increased. Both of the previously "high" populations in the Grassy Lake district decreased dramatically.

Literature Cited

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