

STUDIES ON AND RELATED TO "CYCLIC"
MICROTUS MONTANUS POPULATIONS

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Objectives

Multiannual fluctuations in population densities of microtine rodents have attracted much attention from ecologists because they challenge existing hypotheses of population regulation. Yet many aspects of the basic biology of voles and lemmings, even those related to the population cycle, remain wholly or largely uninvestigated.

During previous work on the social structure of *Microtus montanus* in Jackson Hole (Jannett, 1977), a considerable amount of material and data were collected on other diverse topics. I am, therefore, continuing work on *M. montanus* through the course of the cycle in numerous "populations" and on ecologically related species.

I am studying these topics:

1. Individual growth, dispersal, and survivorship in different density populations of *M. montanus*;
2. Variations in the tending bond in *M. montanus* in field populations;
3. The development of three scent glands (preputial, hip, and anal) in *M. montanus* in the field;
4. Patterns of cranial variation in *M. montanus* over the course of the population cycle;
5. Dental variation in *M. montanus* over the course of the population cycle;
6. Synchrony in population levels of *M. montanus* in fields of different sizes and vegetation types;
7. Observations of the behavior of field-trapped *M. montanus* in dyadic encounters;
8. Blastocyst and placental scar counts in the shorttail weasel, *Mustela erminea*, over the course of the microtine cycle; and
9. Changes in the numbers of *Microtus longicaudus* over the course of the *M. montanus* population cycle.

Procedures

Since the field season in 1977 extended only from late September until early November, only removal trapping was undertaken. After animals were sacrificed,

standard measurements were made, skulls and eyes were removed, and all carcasses were preserved in fluid. Skulls were subsequently cleaned to verify species identification, and dried eye lenses were weighed to the nearest 0.001 mg on an electrobalance.

Results

Population levels were similar to those encountered in 1976 in the seven fields sampled for M. montanus and the first three gridded areas trapped out. Two areas which are essentially dispersal sinks had nearly the same number of individuals as in the previous year, one area had fewer animals apparently because of changing edaphic conditions, and the largest gridded area had an increase in the number of voles following the population low of 1976.

In only one gridded area was there an obviously smaller population than was trapped in 1976. Nevertheless, it exhibited, as in 1976, delayed maturation of young. As in previously studied high density populations (Jannett, 1977), the overall sex ratio was 1:1 whereas the sex ratio among the older individuals, as determined by the lens technique for aging (Gourley and Jannett, 1975), favored the females. As in previous years, the measure of lens weight in estimating age also indicated the differential growth between males and females as expressed in head-body length and body weight (Fig. 1).

An additional albino M. montanus was trapped in 1977.

Microtus longicaudus was sampled at three sites in the vicinity of the Research Station and at one site in Bridger-Teton National Forest. Significantly fewer voles were trapped at one of these sites than had been taken in previous years.

Acknowledgments

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Literature Cited

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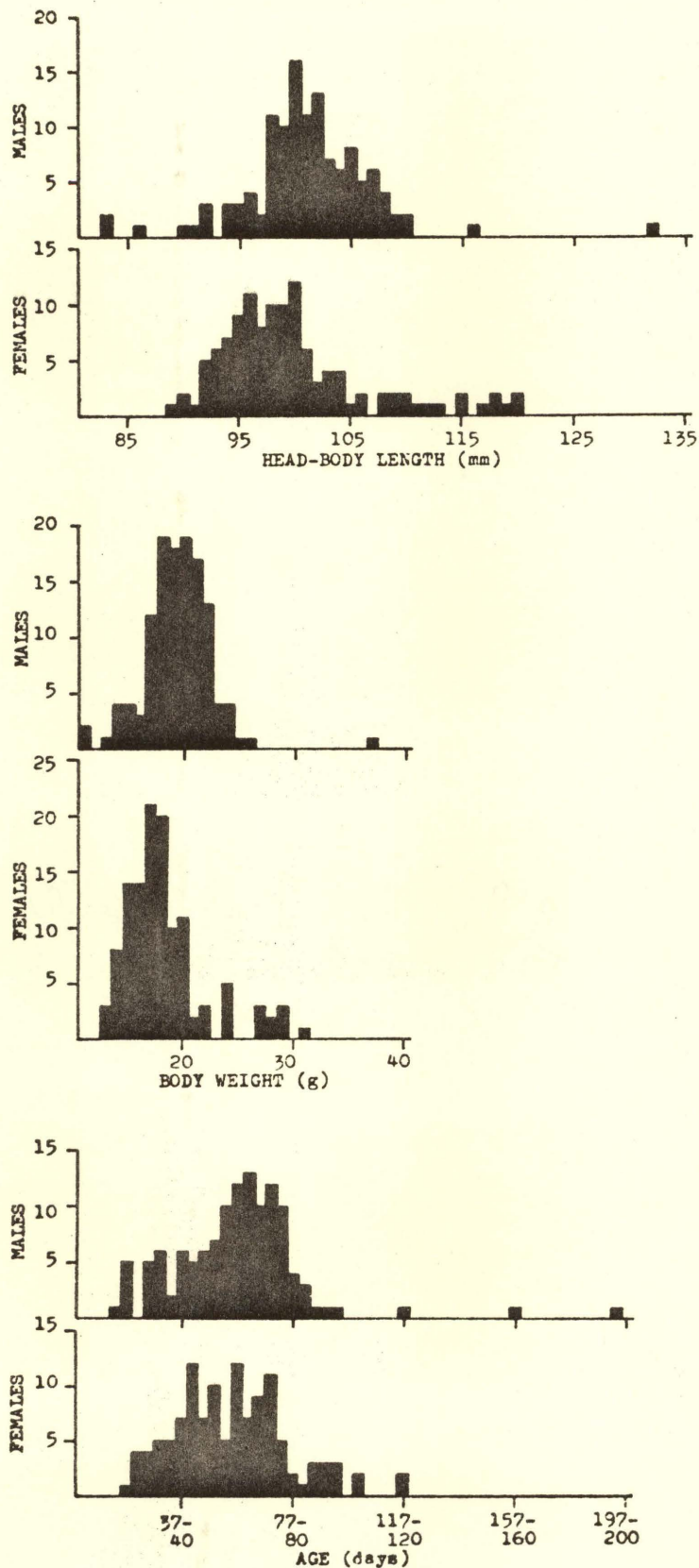


Figure 1. Head-body length, body weight, and age distributions of *M. montanus* trapped in the highest density grid in 1977. N=243.