

SOCIAL DYNAMICS OF THE MONTANE VOLE, MICROTUS MONTANUS,
AND THEIR POPULATION CONSEQUENCES

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The social structure of a mammalian species is a basic feature of its life history. Although a knowledge of the social system is prerequisite to understanding various reproductive and endocrinologic phenomena seen by other workers studying Microtus, Mus, and Peromyscus in the laboratory, behavior and sociality of Microtus in the field have been overlooked because they are difficult to study and because emphasis in microtine research has been placed on the microtine population "cycle".

There are two general areas of interest in my work: the description of the social system and how it changes with changing density; and the documentation of the initiation and cessation of breeding seasonally and of the reproductive parameters which I believe are related to the social environment. The work includes the following specific endeavors:

1. Observations and experiments to describe the social relationships within the population.
2. Experimental work on behavior in a large enclosure and in open fields.
3. Population estimates made from capture-recapture programs in grided areas. An index of density changes in other fields which have been trapped can be figured from a trap-night yield.
4. Trap-out of grids in mid-season and during the fall. An aging scheme has been worked out in the lab utilizing eye lens weights of known-age animals.
5. Collection of animals during the spring, summer and fall for reproductive data.
6. Removal of some animals in a small field to ascertain the effect of removal trapping on the nature of groups of animals.

Other work done and to be done at the Research Station:

1. Projects completed or near completion
 1. Drum-marking by Arvicola richardsoni (Rodentia: Muridae) and its taxonomic significance. Amer. Midl. Nat., in press.
 2. The "hip glands" of Microtus longicaudus and M. pennsylvanicus (Rodentia: Muridae), voles "without" hip glands. (Manuscript)

3. The uncut m₁ of Arvicola richardsoni, Microtus longicaudus, and M. montanus. (Manuscript; note)
4. The behavior of Arvicola richardsoni in the laboratory. (In preparation)
5. Effect of castration and testosterone replacement on the flank glands and drumming behavior of Arvicola richardsoni. (In preparation)

Nos. 4 & 5 are by my wife and are to be taken from a Master's thesis to be submitted to the faculty of the graduate school of Syracuse University.

II. Projects to be continued in 1974

1. Selected aspects of the behavior of Eutamias in the field.
2. Marking behavior of some small mammals.
3. Reproduction and other aspects of the biology of three species of Sorex in Jackson Hole.
4. Reproduction and other aspects of the biology of Peromyscus, Clethrionomys, and Thomomys in Jackson Hole.
5. Reproduction and other aspects of the biology of three species of Eutamias in Jackson Hole.*
6. Growth, development, and reproduction of Arvicola richardsoni in the field and in the laboratory.*

*All chipmunks (Eutamias) and water voles (Arvicola) are being collected outside of GTNP.

Collection of material for Nos. 3-6 should be completed in 1975 when I intend to finish the dissertation research.

III. Work done in support of the dissertation on Microtus montanus

An aging scheme for pine voles (Pitymys pinetorum) and montane voles (Microtus montanus) incorporating the lens weight. (With R. S. Gourley; in preparation).

This project was done at Cornell University. There will be five or six additional papers and notes, all but one of which are supported at least in part by the New York Zoological Society (i.e., some work was initiated in a lab colony at the university and is being completed at the Station.)

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