

Population Dynamics of Microtine Rodents

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Project Number 110

During 1969-70, crucial information was obtained concerning populations and responses of Microtus montanus. In summer and fall of 1969, Microtus montanus reached peak densities in excess of 200 mice per acre. Breeding continued into October of 1969. By May, 1970 the densities had decreased to minimum levels (less than 10 per acre). Extremely low densities persisted through the summer and into the fall of 1970. Quite obviously, the peak and crash of the microtine cycle occurred in the winter of 1969-70. In contrast to 1969, breeding had ceased by the first week in September of 1970.

A sample (40) of males was captured alive in fall 1969 and returned to the laboratory at Tulane University. In a controlled experiment, these males demonstrated a strong pineal and gonadal response to green plant supplements in the diet. These results provide strong evidence of the effect of green plant food on reproductive activity, even at the end of the breeding season. In another series of experiments we have demonstrated that the activity cycles of this species are apparently influenced strongly by levels of pineal serotonin. It appears that we have found a component of the biological clock in Microtus montanus.

The following publications have been or are being prepared from this study:

Negus, N. C., and P. J. Berger. 1970.

Pineal weight response to a dietary variable in Microtus montanus. Experientia (in press).

Berger, P. J., and N. C. Negus. 1970.

Activity rhythms in Microtus montanus: the role of the pineal gland. (Submitted to Journal of Experimental Zoology).

Negus, N. C. 1970.

The dynamics of Microtus montanus populations in Jackson Hole, Wyoming from 1960-1970. (In preparation).

This study was aided greatly by a grant-in-aid from the New York Zoological Society in 1969.