

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE WYOMING SOIL CONSERVATION SERVICE

Biology No. 108

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Subject: MONTANE VOLE*

General

The montane vole (Microtus montanus) is frequently found in moist meadowlands, bogs, and in aspen woodland, but also occurs in drier meadows and mountain grasslands.

Distribution of this mammal is influenced by a "constellation of factors ranging from a complex of abiotic environmental gradients to biotic regulators including diseases, predators, and intra and interspecific competition." The meadow vole occurs at elevations between 6,000 ft (1,800 m) and 11,000 ft (3,300 m) in Colorado.

Food

Their diet consists principally of the green portions of grasses, sedges, and some forbs. Montane voles, like other voles, have evergrowing cheekteeth adapted for abrasive forage. Seeds are occasionally eaten. In the winter, the bark of small shrubs and trees are utilized.

Water Requirements

No specific information was found regarding the water requirements of the montane vole. One study found that their water needs are significantly lower than those of the meadow vole (Microtus pennsylvanicus). He suggested that "the water balance of the montane vole is better adapted for dry habitats than is that of the meadow vole."



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*Information taken from Ecoregion M3113 Handbook and Habitat Suitability Index Models, Wildlife Species Narratives (literature searches), U.S. Fish and Wildlife Service, various dates between 1978-1984.

Cover Requirements

Montane voles appear to have a wide ecological tolerance; they use both moist mountain meadows drier grassland, but do not usually and occur in heavily forested areas.

Where the montane vole occurs with the meadow vole, the montane vole occupies the drier situations, leaving the moist, grassy areas to the meadow vole. One researcher believes the interaction between the two species results in meadow voles occupying areas of preferred habitat with montane voles avoiding these areas. When meadow vole numbers in moist areas are reduced, the montane vole moves into the vacated habitat.

In Montana, favorable habitat included areas dominated by grasses such as big brome (Bromus marginatus), smooth brome (Bromus inermis), orchardgrass (Dactylis glomerata), Idaho fescue (Festuca idahoensis), and bluegrass (Poa spp.). The montane vole was most likely to occur in areas with grass cover ranging from about 30 to 80 percent. The montane vole was most abundant where total canopy coverage of the herbaceous and shrub layers ranged between 65 and 100 percent.

The distribution of the montane vole in Montana was favorably correlated with dryness of the substrate. Areas with soil moisture greater than 20 percent had low vole densities. The optimum soil moisture content for the montane vole ranged between 0 to 20 percent.

One study of the montane vole dealt with its sympatric relationship to the meadow vole; hence this data on cover requirements and optimum soil moisture may differ in areas where the montane vole occurs alone.

Reproductive Requirements

The bell-shaped nest of the montane vole is built of grass and most often situated along its runway (see section on special habitat requirements). Superficial roots of aspen provide abundant nesting holes.

Special Habitat Requirements

Available ground litter appears to be important to the montane vole because of its well-developed instinct to build runways which serve as foraging paths. Active runways are littered with short 1- to 3-inch (2.5 to 7.6 cm) neatly-clipped bits of grass. One study found that the montane vole was most common in areas with moderate amounts of ground litter.

Interspersion Requirements

Home range size of the montane vole varies depending on the presence or absence of the meadow vole. The montane vole has a larger home range when the meadow vole is present in the same area. Its home range may need to be larger to compensate for areas made unavailable by the presence of the meadow vole. Average home range size for the montane vole living sympatrically is 205.4 yd² (171.7 m²) in the summer and 11.5 yd² (9.6 m²) in the winter. Home range size is significantly smaller

and spacing between individuals is closer for the montane vole in habitats where the meadow vole is absent. Average home range size when the montane vole occurs alone is 91.5 yd^2 (76.5 m^2) in the winter.

Special Considerations

Because the montane vole utilizes the bark of small shrubs and trees in the winter, it may cause damage to orchards.