

A Vole Population Eruption and Its Effects
on an Alpine Landscape

Blair T. Carbaugh and James C. Halfpenny

The population of voles (Microtus montanus and M. longicaudus) increased dramatically during the 1987-88 winter. The disturbance occurred at the Long-Term Ecological Research site on Niwot Ridge (3,535 m), Front Range, Colorado. Trapping data from the nine previous years had documented three three-year cycles. The 1987-88 eruption occurred at the end of the third high and coincided with a very low snow year. Apparently the last eruption of a similar magnitude was about 30 years ago. When the snow melted in 1988, extensive areas of chewed plants and tunnels in the ground were obvious. Cushion plants (for example Silene acaulis), which may require over 50 years to grow, were reduced to minute pieces exposing the surface area to erosion or colonization. Vole disturbance continued into the fall with extensive burrowing activity exposing large areas to erosion. By the end of the summer it was apparent that sporadic population eruptions of voles may be a dominant force in shaping the landscape of the alpine tundra; the effect could be visible for decades, maybe even a century. We documented with maps the type of vole disturbance and its spatial extent in six plant communities. We plan to study continuing effects and recovery in the summer of 1989.