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VOLES



ALTHOUGH RARELY SEEN, voles are surprisingly common in many cities (Figure 95). In the heart of Washington, D.C., even the President's garden has been occupied by voles. The White House maintains almost seventy thousand square feet of the popular ground cover *Euyonomus*, a plant susceptible to vole damage as these small creatures gnaw and girdle plant stems, causing their dieback. The beds began to look terrible in the mid-1980s, and meetings were convened, options discussed, and plans drawn. Somehow, before action of any sort could be agreed on and taken, the vole population seemed to crash, with damage declining to a point where it could be accepted. Like those of many small rodents, vole populations can swell seemingly overnight. Even then, voles are far more likely to be a serious concern to commercial agriculture than to homeowners, and most of the strategies that have been developed to deal with them reflect that.

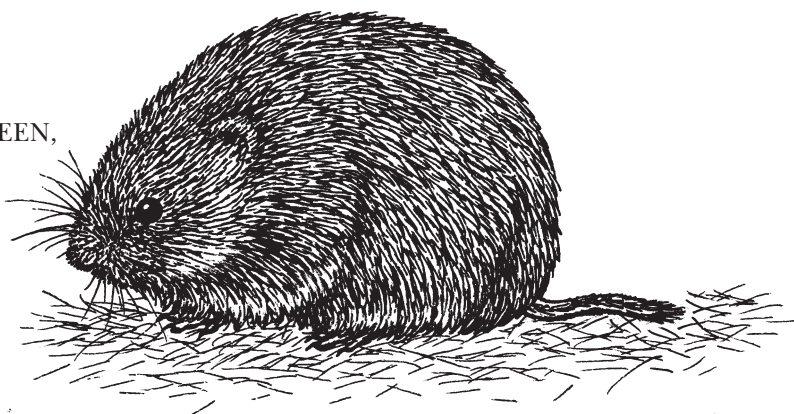


Figure 95 *Vole*

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- ◆ Voles are not mice, nor even as closely related to them as they are to muskrats.
 - ◆ If voles are not mice, and mice are not moles, and voles are called meadow mice—no wonder many people are confused.
 - ◆ Keep the cat indoors. Unless kitty brings one in, the chances are you will never even see a vole.
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Classification and Range

Voles, also known as meadow mice, are not mice but members of a large and complex group of rodents called arviculids. There are approximately twenty species in the genus *Microtus* alone, depending on the latest consensus of the experts, but only some six or seven are generally considered to cause significant problems for human beings. All are mouse-size (six- to eight-inch) animals that weigh about four to five ounces and have stocky, compact bodies. Their ears and eyes are small relative to other common mouse-like animals. Their most distinguishing physical feature is a relatively short tail, less than three inches long. Both house (*Mus musculus*) and deer (*Peromyscus spp.*) mice, with which voles are often confused, have tails that are at least as long as their bodies.

The voles who most often cause damage are the prairie vole (*M. ochrogaster*), meadow vole (*M. pennsylvanicus*), pine or woodland vole (*M. pinetorum*), montane or mountain vole (*M. montanus*), Oregon vole (*M. oregoni*), and California vole (*M. californicus*). Meadow and prairie voles cause surface damage, while woodland voles cause damage beneath the soil. The pine and Oregon voles spend almost all their time underground, thus making control methods different. Because there is extensive range overlap of some species, precise species identification is important when dealing with these animals.

Habits

With so many different types of voles throughout North America, it is not surprising that they live in a wide variety of habitats. Even in one habitat, different species of voles may overlap, avoiding direct competition by exploiting specialized niches. Several species are considered to be agricultural pests, having moved easily from traditional habitats into commercial fruit orchards, crop fields, and pastures. The affinity of some voles for forest edges with moist loose soil high in organic matter easily brings them into residen-

tial areas and occasional conflict with homeowners.

Voles are primarily herbivores (plant eaters) and are not to be confused with moles, who almost exclusively eat insects. Voles forage on grasses, flowers, seeds, vegetables, fruits, bulbs, and roots, although they will occasionally consume animal matter such as insects and snails. In winter voles make tunnels beneath the snow and gnaw the bark from trees and shrubs under its protection. They also hoard food in underground caches holding as much as a gallon of stored nuts and berries. Historically, Native Americans often raided these caches to supplement their own winter diet.

Voles usually only live about one year, but they make up for their short lives by prolific breeding. In the wild there may be four or five litters each summer, and even more in warm climates, where they can breed year-round. Depending on the species and geographic region, the average litter size varies from two to five young. Within three weeks of birth, females may breed again, with gestation only twenty to twenty-three days. With this kind of reproductive potential, populations can expand rapidly. Populations in orchards can attain high concentrations, because landscaping practices such as mowing (which leaves a protective layer of thatch) and fertilization (which results in dense ground cover) inadvertently create optimal vole habitat. Vole populations are cyclical. During spans of about three to six years, vole populations experience dramatic fluctuations. Years in which populations grow rapidly are sometimes called “mouse years.”

While all species of voles do some burrowing, certain specialists, such as the pine and Oregon voles, are almost entirely subterranean. Others, including the meadow vole, construct obvious runways on the surface of the ground, clipping and mowing in their own fashion to maintain a network of trails partly covered by overlapping vegetation. These are easily seen on close examination and may be especially obvious after snow melts and the trampled runway grass stands

out. Nests are usually well built and provide refuge from weather extremes as well as places to rest and raise young. Voles may spend the bulk of their day in these, coming out to feed for short periods during both day and night.

Public Health Concerns

Voles are not considered to be a significant source of any infectious disease that can be transmitted to people. They are known, however, to host such communicable diseases as tularemia and bubonic plague.

Problems

The worst damage done by voles is to agricultural crops; orchards are most likely to suffer damage. They may also damage fruit trees in yards and parks. Voles debark fruit trees under the cover of snow and can kill the trees by complete girdling. Voles also feed on the roots of fruit trees, primarily during the winter. These may be more attractive than because apple tree roots, for example, contain more sugar and starch during the winter than in any other season. In winter voles seem to spend more time close to their nests, and, because these are frequently located near tree trunks, roots may be eaten more frequently. Typical vole damage occurs within the first decade after planting, because, as trees mature, they are better able to survive and fend off damage.

Voles will use mole tunnels to reach plant roots and bulbs and, in fact, voles often cause damage that is blamed on moles. Shrubs such as blackberries and raspberries and occasional garden vegetables may be damaged, as may plants in growing frames and greenhouses and certain shrubs and bulbs in the ornamental garden.

Solutions

Tolerance

Because of their prolific breeding potential and high susceptibility to predation, vole populations may wax and wane dramatically. Such fluctuations mean that sometimes a “problem” with voles will resolve itself without any active intervention at all. Correctly identifying voles as the cause of the damage, evaluating its extent, and determining acceptable limits of damage are critical to making plans for intervention with voles. Sometimes the best solution to vole problems is patience and the understanding that what happens today may not happen tomorrow.

Habitat Modification

The control of vole damage should focus on habitat management to make conditions less favorable for these animals. Agricultural practices undoubtedly support large vole populations, especially where crops they prefer are planted in large blocks. Support for high-density populations may be reduced through soil cultivation practices that inhibit the development of burrow systems and reduce ground cover. Frequent, close mowing in orchards may reduce both cover and “carrying capacity” (the number of individuals in a population the environment will support) for these animals and can be an important part of an integrated approach to population management.

Clearing vegetative debris from grassy areas next to gardens and crops is often a useful prevention measure, as might be clearing vegetation from a three-foot radius around the base of a tree or shrub that has been attacked. However, because woodland voles remain below ground, this tactic may not affect their activities. In northern climates snow may provide cover for voles at the time of year when plant damage is most likely. Clearing snow away from the base of trees may be helpful when just a few trees need to be protected. Deep beds of mulch also encourage voles by allowing them to move through tunnels between the mulch and the

ground. Reducing the layer of mulch to one to two inches may discourage voles.

Tulips and hostas are favorite foods of voles and may occasionally sustain much damage. Homeowners whose plants are repeatedly assaulted by voles should consider substitute plants, such as daffodil (*Narcissus spp.*), crown imperial (*Fritterlaria spp.*), and grape hyacinth (*Muscari spp.*), which voles find less palatable. Another approach is to plant voles' ornamental favorites in large pots rather than directly in the garden. To prevent voles from gnawing on tree bark, try wrapping plastic, metal, or cloth barriers around the trunks of individual trees. Tar paper may also be used for this purpose.

Repellents

Voiles' damage to ornamental flower beds typically comes from their consuming bulbs of plants such as lily and tulip. Soaking bulbs in one of the capsaicin repellents registered for voiles before planting could provide some deterrence in areas where this is a serious problem.

Predators

Voiles are important in the diet of many predators, including snakes, hawks, owls, foxes, coyotes, weasels, mink, and badgers. Predators do not eliminate prey species entirely. Natural predation, however, can help keep numbers down to a point where other management strategies become far more effective. Raptors can be particularly helpful, and erecting nest boxes for species such as barn owls and kestrels can encourage their presence. It is also possible to attract hawks and owls by erecting T-shaped wood or metal perches these predators can use as observation posts to scan fields for voiles and other small mammals.

A Last Word

Eradicating any species from the landscape is rarely possible, and, in the few cases where it has been achieved, it has been to remove small populations of nonnative species. There

is a debate concerning the wisdom of such efforts. For a native species, that debate has swung from whole-hearted approval of the destruction of entire groups, such as the predator eradication programs our government sponsored not too many years ago, to embracing the ecological appropriateness of complete biological communities. The lowly voiles have not quite made it to the standard of acceptance and appreciation that the grizzly and timber wolf have, but they are equally deserving of our understanding and respect. Their day, one hopes, is coming, too.

Resources

Although there are many studies of voiles with published findings, we could not locate any general natural histories of these animals that we could recommend for further reading. Along with better recognition then, we can hope that better understanding will come someday soon as well.

