

Vole Report

Context

In the inaugural year of gardening, the top challenge of gardening was pests eating things...particularly the voles. As such, a volunteer was requested to conduct some research and see what could be done about the issue.

Facts about voles

Voles are known for their tendency to dig. They make tunnels in the soil and create golf ball-sized exit holes in existing mole tunnels. They construct well-defined, crisscrossing tunnels, or "runways" at or near the surface of the ground, about 2 inches wide. The runways result from the voles eating vegetation, like the roots of grass and perennials. Like many other rodents, they enjoy a vegetarian diet, gnawing away at the stems of plants and grass blades.

Once voles establish a colony, they breed quickly, so controlling the spread is essential. Voles can breed at any time of year, with peak breeding in spring and summer. They reproduce quickly which can add up to a large vole infestation in a short amount of time. The average lifespan of a vole is 6 months to a year.

Their frenzied activity does subside. Vole populations cycle, and about every 3 to 5 years there will be a population boom. Mild winters with good snowfall can help to increase vole populations.

Voles like dense, heavy vegetative cover, weeds, and meadows because it provides them with protection from predators and provides nesting material. Voles need cover to survive and will avoid open areas. They prefer heavy vegetation, as it provides protection from predators.

They are more active midday to early evening. They aren't very good climbers.

These destructive rodents stay active throughout winter, eating plant roots, bulbs and bark while snow cover hides their activities.

What attracts voles?

Voles are attracted to yards and gardens by food sources and places to hide. Unlike mice and rats, they do not typically seek shelter inside of buildings. Voles appear in landscaped areas in greater numbers during relatively mild but snowy winters. You are most likely to see damage when local populations peak, which can occur cyclically every three to five years. A single female vole can produce 15 to 50 young per year. These rodents typically live about 12 months. Voles nest in grassy clumps above ground or in tunnels extending several inches below ground.

A vole pest problem is most likely to arise in yards where voles have abundant amounts of vegetation and debris to hide under and build their nests.

What do voles eat?

Primarily herbivores, the preferred food of voles is the stems and blades of grass. They will also eat roots, bulbs, and tubers, feasting on the bark and roots of trees and shrubs primarily in fall and winter when other food is more scarce. Other food sources may include insects, dead animals, vegetables, fruits, seeds, and nuts.

Observed behaviour

Reported by one reader of Almanac: "They dig under my carrots, pulling them down, and eating them. There's just a row of holes where the carrots were. Kind of amusing, like a bugs bunny cartoon."

Plants that repel voles

Voles will avoid most plants in the allium family, e.g. garlic, onions, and chives. Other plants include citronella, mint, thyme, and pepper.

Homemade repellents

Water can be infused with a variety of ingredients that voles find distasteful, including castor oil, citronella, crushed mint leaves, cedar, thyme, garlic, onion, cayenne powder or chili pepper. Mix one of these ingredients with water, or soap and water. Spread around areas where voles are present, repeating after it rains.

Castor oil is a proven repellent to moles, voles and other digging pests. Peppermint oil is believed to irritate the nasal passages of rodents. These oils can be found in pharmacies, health stores and possibly hardware or superstores.

Remedies

Modify their habitat

Voles like dense, heavy vegetative cover, weeds, and meadows because it provides them with protection from predators. Cut back brush, mow, weed, and create a clean space.

In small areas, trapping may be an effective way of reducing vole populations. If you've chosen to set live traps, for example, you can expect to spend about 3-4 weeks whittling down your vole population.

Repellants can be used but will need to be reapplied frequently because they dissipate with rain. After several applications the voles become accustomed to the smell, reducing the effectiveness of the repellent.

Voles dislike crossing sharp gravel. When planting perennials or bulbs, add a gritty substance, like perlite or sharp gravel, in the bottom and up the sides of the hole at planting time to protect the roots and bulbs. Plant garlic in the bulb and perennial beds to help repel voles, as they dislike the scent.

Most vole species are poor climbers, so physical barriers can be an effective way of keeping them from damaging plants.

Fencing

Protect vegetable plots or other garden areas with a wire fence around the perimeter. Mesh size should be 1/4 inch or less. Make sure the fence extends at least 12 inches above the ground, with the bottom edge buried 6 to 10 inches below the soil surface to prevent voles from digging underneath.

Gravel

Gravel makes an effective barrier, as voles don't like to dig through a layer of small rocks. Mix coarse gravel into flower beds or create a moat of gravel around beds to keep voles out. When planting bulbs, add gravel to the planting hole.

Make friends with an owl

Voies are desirable wildlife hors d'oeuvres, so place hawk and owl nest boxes and perches in problem areas to help keep vole populations in check. Only larger owls, such as barn owls and great horned owls, feast on voles, moles, mice, chipmunks, squirrels, rabbits and occasionally reptiles such as snakes.

Build a nest and place it in a secluded location about 12 feet off the ground. The hole of the box should be facing away from prevailing winds.

<https://www.familyhandyman.com/article/rodent-control-attract-owls/>

Instructions on how to build a nest box and how to install it in a tree can be found on Youtube by searching 'build owl nest box'. A few samples follow:

- Great horned owl (just an open box?): <https://www.youtube.com/watch?v=LTe4J-4HgSM>
- Barred owl: <https://www.youtube.com/watch?v=8rHatxMC5T8>
- Barn owl: https://www.youtube.com/watch?v=zr8qLyAFI_k
- How to erect a barn owl nest box: <https://www.youtube.com/watch?v=GF1b034ejv0>

Pray for rain

April showers do more than bring May flowers. They keep rodent populations in check. Many animals – both adults and their young – who nest along or in the ground are susceptible to drowning in heavy rains.

Used kitty litter

Some suggest that used kitty litter will repel moles and voles when sprinkled every three feet. However, whether it actually works is questionable, and finding the right places to treat could be daunting. Also, you may decide it isn't worth handling used kitty litter for doubtful results. Used kitty litter can carry both the Toxoplasmosis parasite and E. coli bacteria, and you absolutely should not apply it to a vegetable garden.

Feedback from gardeners

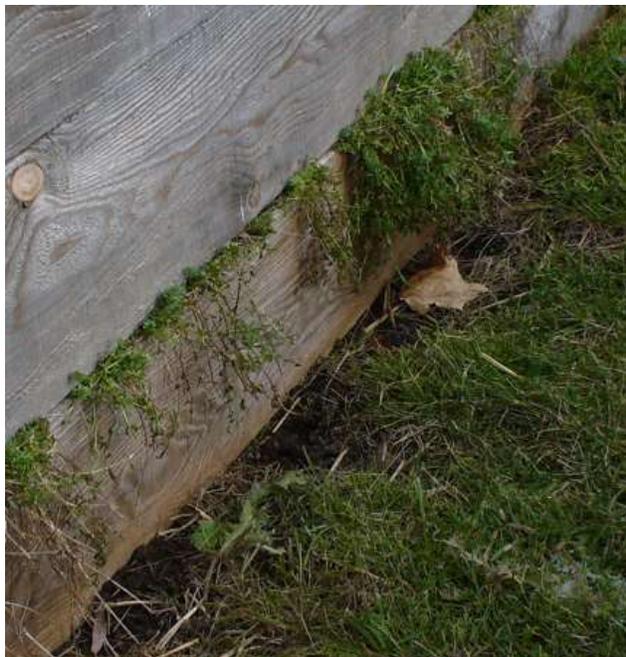
Only two gardeners provided feedback from the survey. They are referred to below as A and B.

1. A and B: No vole activity was observed until September, then a great deal until November as other plots were shutting down.
2. They ate (A) carrots, all her remaining salads, bok choy, kale (B) swiss chard, kale and beets.
3. They did not touch (A) the thyme, strawberries, tomatoes, eggplant, runner beans, peas and borage. (B) oregano, thyme, chives, green pepper, brussel sprouts, and onions.
4. (A) added hoops and a net over her plot in mid-summer because something kept eating her kale and it stopped. (B) was spraying garlic water on the leaves to deter beetles and grasshoppers, but that would not have affected the voles as they come from below ground.
5. Strategies being contemplated for 2022: (A) Installing a metal wire net between hers and the neighbour's plot because she thinks "the voles are not coming from underneath the plots - because of the fabric, rocks and sand - but more likely they go from plot to plot by going underneath the separating plank as the separation between plots does not go all the way down."

(B) plans to shovel out the weeds around her plot, leaving only bare ground; regularly throw chopped up garlic or peppermint in the holes made by the voles under the planks; plant onions around susceptible vegetables; and pour garlic water around the leafy greens in the fall to deter rodents coming from below.

Construction faults facilitate vole activity

Gravel is reportedly a deterrent to voles and was layered at the bottom of each plot, which had previously been lined with landscape fabric. The fabric is clearly not taut across each wall as weeds are growing between planks, as witnessed in the two photographs inserted below. That space between the fabric and the wall enables the voles to climb pass the gravel and sand layers, and into the soil where it can set up runways across the plots.



In the construction of the garden beds, landscape fabric was stapled to the planks but, when the gravel was dumped into the bed, it caused the fabric to pull away from the walls. This might help identify the voles' entry points, as they can only reach the soil through the gap left between the fabric and the planks so weeds growing between planks are an indicator of possible vole activity. Inserting dog or human hair or other repellent in those key areas might help reduce the problem. However, if the adjacent plot with whom a half wall is shared does not engage in similar deterring efforts, the voles will be able to cross over through runways in the soil.

Photograph of a vole passageway, taken in late November when the weeds had died back:



Assessment of Remedies

Suggestions	Potential
Cut back weeds around the plots: ask gardeners to do it or purchase a gas-operated weed trimmer	A necessity
Install owl or hawk nests in adjacent trees	Worth considering
Educate gardeners about plants that deter voles	Worth considering
Educate gardeners about homemade mixtures	Worth considering
Trapping	Not feasible
Apply store bought repellent	Not feasible, plus they get used to it
Insert fence under plants	Not feasible
Spread used kitty litter	Could transmit bacteria

*Prepared by Diane Morin for the Goldenrod Community Garden
February 2022*