Voles and Moles in the Garden

Gardeners may be concerned with vole or mole presence and potential damage in the garden. Here is some information to guide you:

Start with a proper ID. Is it a mole or a vole?

	Moles	Voles
	 Photo: Stanislaw Szyalo (a-z-animals.com)	 Photo by Jack Kelly Clark
Classification	• Eulipotyphla (e.g. hedgehogs, shrews)	• Rodentia (e.g. hamsters, mice, rats)
Appearance	• Noticeably larger front paws used for digging tunnels • Velvety fur • Tiny ears & eyes hidden in fur to protect when digging in soil • Longer snout	• Similar to mouse • Clearly visible rounded ears • Typically brown or grey • Short tails (mice have longer tails about the length of their body)
Diet	• Carnivorous-grubs, slugs, earthworms, beetles • Larvae of Japanese beetles • Rarely eat plants	• Plant eaters (vole for vegetarian) • Seeds, roots, tubers, bulbs, grasses • bark of shrubs & trees especially in winter • occasionally insects, animal remains
Tunnels & Damage	• Tunnel near surface or deeper underground • Raised ridge tunnels or mini-soil volcano on surface, e.g. “molehills”	• Tunnel under snow, leaving round exit holes • Bare runways & dead patches in lawn in spring

Benefits	• Fertilize & aerate soil & subsoil, reducing compaction • Pest control services, e.g. eating grubs, slugs, earthworms	• Fertilize & aerate soil and reduce compaction • Food for predators such as owls, hawks, foxes, coyotes, snakes, weasels, martens
Biology & Reproduction	• Low reproduction rate • Solitary animal • Life span of 3-5 years • Do not hibernate • Rarely come to the surface • Prefer moist soil; move to irrigated soil during dry periods • Active day and night	• High reproduction rate • Several voles may live in same burrow • Short life spans (2 - 16 months) • Do not hibernate • Active day and night

Is it endangered or a species at risk?

- Woodland voles are a **protected** species. In Ontario, woodland voles are recorded in only 30 locations, in Kent, Lambton, Elgin, Halton, Haldimand, Norfolk and Hamilton-Wentworth counties. https://www.ontario.ca/page/woodland-vole
- The Eastern Mole is also a species of special concern.

Can I live with the damage?

- Voles and moles may cause some cosmetic damage (tunnels & bare patches) to lawn turf. Turf can be easily repaired in spring when you overseed and top dress your lawn.
- Moles can be beneficial. As they tunnel for food, they fertilize the soil and aerate it, reducing compaction.
- Moles offer valuable pest control services in your garden by eating grubs, slugs, and a variety of insects and earthworms. Note: Contrary to popular belief, all earthworms are invasive in Ontario and can damage soils.
- Mole damage to tubers and the roots of trees or shrubs is most likely incidental and the work of other small herbivores using the tunnel.
- Voles can also be beneficial. They aerate soil and lessen compaction. They are food for owls, hawks, foxes, coyotes, snakes, weasels, martens, etc.
- When vole populations are high they can cause significant damage to trees and shrubs.
- Populations of moles and voles fluctuate. Their activity peaks in spring and again in fall. Knowing that activity will decline may make it easier to tolerate damage.
- It is impossible to remove all voles or moles from your garden. Even if you are successful in driving moles or voles away, new individuals will move into the vacant territory.

- **Part of the joy of gardening is having the privilege to watch the many living creatures that**

Molehills in a residential lawn.
Photo credit: Troy Salzer

Network of Vole runways
https://www.canr.msu.edu/outreach/wildlife-voles-web.pdf

share our outdoor spaces.

Controls - Integrated Pest Management (IPM)

Integrated Pest Management (**IPM**) is an effective and environmentally sensitive approach to pest management that relies on a combination of approaches and practices. No single management method works all the time so methods should be combined to enhance the general effectiveness. Begin by assessing the risk posed by the pest and determining what, if any, action(s) is required. Use the best combination of these basic treatments:

- Cultural Practices
- Physical & Mechanical
- Biological
- Behavioral
- Chemical (repellents & poisons)

Cultural Practices

- **Reduce attractants** by cleaning up all possible food sources. Avoid using bird feeders and clean up any vegetables left in the garden at season's end.
- Choose deep-rooted perennials and grasses. These can withstand vole feeding better than plants with roots at tunnel level.
- Reduce vole habitat – Remove weeds, heavy mulch and dense vegetative cover which function as food and protection from predators.
- Moles may be attracted by grubs in lawns. Reduce grub numbers by adapting healthy lawn care practices, e.g. interplanting with a variety of grasses and groundcovers, watering deeply but less frequently, reducing lawn area.

- **Mulch** strawberries or other perennials **after the soil freezes**. Mulching before the soil freezes provides an ideal location for rodents to gain access to roots in unfrozen soil.
- **Pull mulch** away from trees & ornamentals to deter voles from chewing.
- Reduce or eliminate the use of mulch in your garden when vole populations are high.
- **Welcome natural predators** -Hawks, owls, coyotes, foxes and snakes can help keep vole & other rodent populations down. Add various dense shrubs and rocks to create a layered garden with habitat and shelter for predators.

Physical & Mechanical

- **Store seeds** (i.e. grass seed) and bird feed **in metal or glass** rodent-proof containers.
- Ensure composters are inaccessible to rodents or limit compost to garden plant materials that may be less attractive, e.g. dry leaves, grass clippings.
- **Coarse soil amendments** are an effective and easy means of protection. They deter voles from digging and pushing their noses into the soil. Gravel, cinder rock or pea gravel can be laid out around the base of fruit trees before winter or in problem garden areas. The barrier should be 20 cm (6 to 8 inches) deep and 30 cm (12 inches) or more wide. Expanded shale products (e.g. PermaTill, Earthmix, etc.) are commercially sold as vole barriers to protect plant roots.
- **Tree guards**: Commercial plastic tree guards, chicken wire, hardware cloth or small wire mesh (1/4 inch or smaller) wrapped around the base of trees and extending below the soil will help prevent tree girdling. Mesh needs to be 12 inches above ground and extend 6-10 inches into the soil. Talk to your local tree specialist for how to use these materials properly.
- "S**nap" mouse traps** – **Make sure you have determined that your vole or mole is <u>not</u> a species at risk before using traps.** Be aware that non-target animals may be trapped and killed. Look for vole burrows and runways in grass or mulch in or near the garden. Place the traps at right angles to the runways with the trigger end in the runway. Cover the trap with an inverted cardboard box or pan, allowing enough room for the trap to function. Set a large number of snap-traps (12 for a small garden) out at once for a one- or two-night period without bait to get them used to the traps. Traps can then be baited with a tiny dab of peanut butter or bacon for two or three nights. Bait may not be necessary as the voles will set the traps off when they pass through the runway. Check traps daily and carefully dispose of any rodents using gloves or a plastic bag over your hand. Always exercise extreme caution when handling a trap and keep them out of the reach of children and pets.
- Vole trapping fences may be suitable for reducing vole populations in orchards. The fences allow natural predators to more easily find them.

Biological

- Moles: Since grubs are their preferred food, reduction of the grub population often controls moles. Nematodes can be an effective control method for white grubs, provided soil can be kept moist enough. Keep in mind that nematodes will kill a number of other insects such as beneficial fireflies whose larvae eat snails and slugs.

- Borrowing a dog may be effective for both voles and moles.

Chemical (poisons & repellents)

- Before using any product, always read the label to make sure you are choosing the right product for the right pest. Follow all label directions and warnings carefully. Always look for a Pest Control Products (PCP) number on the label so you know the product has been approved by Health Canada.
- **Repellents:** There are two kinds of repellents, **contact** and **area**:
    - **Area repellents** repel by smell.
    - **Contact repellents** repel by taste. They are applied directly to plants to give them an extremely bitter and unpleasant taste. They should not be used on food, edible plants, or directly on the fruits or nuts of trees. Do not use them on sugar maple trees if the sap is being used to make syrup, since the taste of the maple syrup may be affected.
    - **Contact repellents** sprayed on plant surfaces are to deter **voles** from chewing plants. **Moles** rarely eat plants so **area repellents** would be more effective.
- **Repellents** need to be kept fresh for maximum effectiveness. Some of the commercially available animal repellents are:
    - Bonide Rabbit-Deer Repellent - It produces a very bad taste. Can be sprayed or brushed onto plants.
    - Hinder Deer and Rabbit Repellent - A soap-based product that repels by odour. It needs to be reapplied after heavy rain. Can be used on some food plants.
    - Ro-Pel TM- This has both odour and taste repellent properties. Spray it on both sides of the leaves of landscape plants.
    - Plantskydd TM – This is effective for up to six months for controlling deer, rabbits, voles and other small animals and does not need to be reapplied after watering or rain.
    - Bobbex TM - Deer and rabbit repellent and will also deter small animals. Can be used as a bulb-dip to prevent underground damage after planting.
- **Poison** – Keep in mind that poisoned baits can kill non-target wildlife and can result in poisoned carcasses which may kill desirable predators and pets (e.g. owls, hawks, foxes/ cats & dogs).
    - Baits are most effective when naturally occurring foods are limited.
    - **Moles**: Beware of mole baits using seeds or grain as moles do not normally eat them. "Baits are rarely taken by moles because they prefer to feed on soil insects. Some baits containing zinc phosphide are available only to licensed pest control operators. No registered baits are available to the general public."
    - **Voles**: Poison baits registered for the control of voles are available in home garden centres. Licensed pest control operators may have access to commercial baits containing different active ingredients.

Note about the use of cayenne pepper to deter pests

There are serious concerns about recommending the use of **cayenne pepper** to deter animals:

- **Animal cruelty**: Cayenne pepper can irritate skin and eyes of some creatures. For this reason, many forum members consider the use of cayenne cruel. Note: Birds are not negatively impacted.
- Cayenne may **negatively impact pollinators**, although permitting authorities (PMRA and EPA) have not yet considered it a significant risk. There is some research to indicate it may be toxic to honey bees and other beneficial insects.
- Cayenne pepper should not be used near ponds or any aquatic life.

References

- Government of Canada: Moles and Voles https://www.canada.ca/en/health-canada/services/pest-control-tips/moles-voles.html?fbclid=IwAR0yifKEuZto3AhNWtJsOr1hpqisZK9UZ6UEGOB00KA4rZX_UM_VLwzGH34
- Voles and Moles https://publications.gc.ca/collections/collection_2010/arla-pmra/H113-1-10-2010-eng.pdf
- Species at Risk in Ontario https://www.ontario.ca/page/species-risk-ontario
- Species of Special Concern in Ontario
    - Woodland Vole https://www.ontario.ca/page/woodland-vole
    - Eastern Mole https://www.ontario.ca/page/eastern-mole
    - Meadow Vole and Woodland Vole http://wildlifeofct.com/meadow%20vole%20and%20woodland%20vole.html
- Voles Wildlife management series for Midwestern farmers https://www.canr.msu.edu/outreach/wildlife-voles-web.pdf
- Caution: Moles at work https://www.canr.msu.edu/news/caution_moles_at_work
- **Voles (Meadow Mice) University of California** http://ipm.ucanr.edu/PMG/PESTNOTES/pn7439.html
- **Vole trapping fences - a new approach to migration barriers https://orgprints.org/id/eprint/17170/1/54_SC_B_Walther_O_Fuelling_S341bis345.pdf**
- Excavation Experts: Are Moles or Voles Ruining your Lawn? (Part 1) https://blog.epa.gov/2015/07/27/excavation-experts-are-moles-or-voles-ruining-your-lawn-part-1/
- Mole Facts https://www.havahart.com/mole-facts
- Controlling Nuisance Moles (University of Missouri) https://extension.missouri.edu/publications/g9440
- Capsaicin and Related Capsaicinoids (based on the Science Evaluation of this consultation document and Evaluation Report ERC2012-03,
- Capsaicin: Technical Fact Sheet: National Pesticide Information Center http://npic.orst.edu/factsheets/archive/Capsaicintech.html