

Voles

Species:

- Meadow vole, *Microtis pennsylvanicus*
- Pine vole, *Microtus pinetorum*

Size:

4–7 $\frac{1}{2}$ " long; $\frac{1}{2}$ – $2\frac{1}{2}$ ounces. Meadow vole is larger than the pine vole. The meadow vole's tail is longer than its hind foot; the pine vole's tail is shorter than its hind foot.

Signs of their presence:

- High vegetation, when mowed, reveals a network of small, crisscrossing tunnels, 1–2" wide, "roofed over" by vegetation, at the soil surface. If the lawn's mowed, will see pathways, not tunnels. Similar tunnels through mulched garden beds and tree and shrub borders. (They also tunnel under plastic and paper mulch.) Tunnels are particularly well displayed during winter thaws.
- Scat piles at tunnel crossroads and scattered along tunnels, $\frac{1}{4}$ " long, cylindrical (mouse scat fits same description).
- Plant cuttings, $\frac{1}{4}$ – $\frac{1}{2}$ " long, scattered through tunnels.
- For the pine vole, a subterranean burrower, small holes mark the entryway to their burrows. Burrows are 3–4" below ground, or occasionally just below the soil surface; in this case they resemble small mole tunnels. Pine voles may take over the abandoned burrows of moles or short-tailed shrews—and even make surface tunnels at times.
- Girdled trees and shrubs, especially seedlings and saplings up to about 15 years old. Ornamental and orchard plantings are equally at risk. Tooth marks ($\frac{1}{8}$ " wide, $\frac{3}{8}$ " long) make a crosshatch pattern near the ground or snow line. (Rabbit gnaw marks are larger and not as distinct; they clip right through branches with a clean, oblique cut.)

Diet:

Green plants, roots, tubers, bark, mushrooms, and occasionally snails, insects, carrion, and each other's young. They store food for the winter (grains, tubers, bulbs, and rootstock). Pine voles generally eat roots and tubers. Like rabbits, hares, and beavers, they eat their feces to extract more nutrients from grasses and tree bark, which are difficult to digest.

Typical activity patterns:

Social style: Generally solitary, except female with young.

Daily activity: All day and night, with alternating periods of rest and feeding.

Hibernator? No. In fact, voles may even breed and bear young through the winter if snow cover is deep enough to provide sufficient insulation for their nests.

Migrates? No.

Where found:

Distribution in NY and the Northeast: Abundant and widespread in rural and suburban areas. The pine vole is mostly found in the Hudson Valley, Long Island, and further south. Population densities vary wildly, often in four-year cycles.

Habitat: Fields and moist, meadowy bottomlands, but adapt well to suburban woodlots, gardens, and ornamental plantings as well as orchards. Pine voles prefer deciduous forests, brushy areas, and orchards with dense vegetation. They are excellent swimmers and decent climbers (though the pine vole is a bit clumsy).

Territory and home range: Females are scrappy fighters and territorial toward other females; males are not territorial. Females' home ranges cover roughly 75 square yards, males' about 200 square yards. The home ranges of the males may overlap those of several females and other males as well.

Breeding habits:

Pair bonding style: Polygamous.

Breeding dates: Year round as the weather permits. Gestation takes about 20–23 days.

Birth period: Year round as the weather permits.

Litter size: 3–5, average 4. May see as few as one pup or as many as nine.

Weaning dates: Between 2–3 weeks of age. Females may breed within days of being weaned. (Males are sexually mature at 45 days old.)

Amount of time young remain with parents beyond weaning date: Not long!

Common nuisance situations:

Time of year: Any time of year. The type of damage changes seasonally:

- Early spring (mid-April through end of May): can ruin lawns, golf courses, some perennial bulbs (especially tulips and irises), newly planted vegetables (peas, beans), and some ornamental shrubs
- Spring and summer: they damage hay, leafy vegetables, and legumes (beans and peas)
- Summer and fall: voles eat root crops (carrots, beets, potatoes, as well as kohlrabi)

- Fall (Sept. through Nov.): they damage lawns, golf courses, fruit trees, and some perennial bulbs
- Fall and winter: they will girdle trees and shrubs, (especially fruit trees and some ornamental shrubs). Look for the damage up to the level of the deepest snow cover.

What are they doing?

- Burrow through and damage lawns and golf course turf.
- Girdle some fruit trees and ornamental shrubs.
- Eat flower bulbs, especially tulips and irises.
- Eat some vegetables in gardens and farms, especially legumes (peas, beans) and root crops (carrots, beets, potatoes).
- Chow on hay crops. A population of 100 voles/ acre may reduce the crop by a half-ton over the course of a season.
- Disease risks: minimal because of their infrequent contact with people, but voles can carry tularemia.

De-bunking myths about voles:

- Voles are often confused for moles. Here's how to tell them apart:

VOLES have:	Moles have:
small eyes	very small eyes
small, but definitely noticeable ears	no external ears
furry noses	a naked, pointy snout
small, mouse-like feet	large front feet that are turned sideways, and big claws. (Excellent shovels).

Legal status in New York:

Unprotected.

Best practices

If your strategy includes lethal control, plan to reduce vole populations before the first winter snow.

Protect ornamental plantings and lawns:

- Mow closely under and around ornamental trees and shrubs; remove vegetation and pruned branches.
- Pull mulch away from the bases of trees.
- Make vole guards for trees. The guards must be large enough to allow 5 years growth. Circle the tree with 1/4" hardware cloth that's buried 3-6" deep. The tree

guards should be taller than the anticipated snow depth by about 3-4 inches.

- Mow lawns regularly.

Protect garden crops:

- Remove vegetation, ground covers, and brush piles or other plant litter near crops.
- Tilling before planting annual crops destroys tunnels and removes cover.
- Small areas may be fenced with 1/4" hardware cloth that's buried 3-6" deep.

Protect orchard crops:

- Follow recommendations for ornamental plantings.
- Consider the relative economic and environmental value of tilling or close mowing between rows and applying herbicide in rows to reduce cover. Rotary mowers cut closer than sickle bar mowers do.
- Mow adjacent strips and drainage ditches; work to reduce vole populations in older orchard blocks (where trees are too big to be vulnerable) that border younger blocks. Clean up windfall apples.
- Trap intensively over a 5-day period. Trapping can reduce vole populations by 90 percent.
- Encourage predators. (Voles provide 85% of a hawk's or owl's diet. All the other carnivores—foxes, skunks, weasels, coyotes—rely on them, too.) However, voles are so good at reproducing that predators alone won't give ultimate control.

For NWCOs with a commercial pesticide applicator license:

- Repellents may give short-term protection against meadow voles (they don't do much against pine voles). There are thiram-based and capsaicin-based repellents.
- Poisons (zinc phosphide) will work, and may make economic sense in some situations.

Trapping strategies:

To increase your success, trap intensively for several days. More is better.

Live traps:

- Set cage traps in their runways. Bait with apple chunks.
- Place larger multiple-capture traps (Ketch-All®) in the runways with the door facing the runway. For meadow voles, use a larger multiple capture trap such as the Ketch-All® or a 3x3x8" Sherman trap.

Lethal traps:

- The familiar mouse trap is called a “snap-back trap.” Look for ones with expanded “triggers” (properly, it would be called the “pan” but you’re more likely to hear it referred to as a “trigger”) or a clothespin design, because they’re easier to set.
- For pine voles, use the mouse-sized snap-back trap (preferably, a design such as the Victor Quick Kill trap, which has a lid over the bait cover. Only animals that are motivated to seek the bait will lift the lid. This means that an animal can accidentally step on the lid without triggering the trap. The trap will not fire if it’s picked up. In addition to being more selective than the traditional mouse trap, this design is also more effective, because the location of the bait cup positions the mole in the perfect strike position.)
- For the larger meadow vole, you may want to switch to a larger trap.
- Place traps in the runways, spaced every 15–20 feet. Cover the trap with a bent shingle “roof.”
- Set snap traps in pairs. This is much more effective. Two sets work well:
 - Side-by-side, perpendicular to the runway, with the trigger snapping into the runway
 - “Back-to-back” in the runway (set them parallel, or in the same direction, as the runway)with the triggers snapping to the outside of the trap so it can catch a vole from either direction
- Bait with apple chunks.
- To protect young children, place traps in a cage trap with 1” mesh, a bait station, a coffee can with both ends cut out, or in PVC pipe (remember to test that the trap will spring within its container).
- Wildlife rehabilitators may appreciate donations of voles, which are used to feed some snakes, birds of prey, and other animals. Be sure that no poisons have been used during previous control efforts. You can double-bag the voles and freeze them.

Preferred killing methods:

- Lethal trap
- CO₂ chamber
- Cervical dislocation

Acceptable killing methods:

- Pesticides

Control strategies that don’t work particularly well, or aren’t legal in New York:

- Rubber snakes, owl silhouettes, ultrasonics, and moving streamers don’t do much over the long haul.
- Repellents don’t work well against pine voles.