

EXTENSION NOTES



PROTECTING TREES FROM VOLE DAMAGE

Voles are members of the mouse family that live in fields throughout North America. Commonly known as field mice, they are an important source of food for hawks, owls, snakes and larger mammals. In fact, when vole populations peak every three or four years, foxes, wolves and hawks feed on little else.

In winter months, when food is scarce, voles can damage tree seedlings by feeding on the roots, stem and twigs. Voles frequently remove strips of bark from around trees, usually within 30 centimetres of the ground. This kind of damage, called girdling, stops the flow of nutrients, water and other materials to and from a tree's root system, eventually killing the tree.

This Extension Note provides information on ways of reducing vole damage in orchards and tree plantations.

THE VOLE

There are several species of voles in Ontario. The most common is the meadow vole, which is found throughout the province. Meadow voles are dark brown with grey bellies. Adults are nine to 19 centimetres long from the nose to the tip of the tail. Their tails are about twice as long as their hind feet. Their ears are furred and rise slightly above their heads.

Other common voles are pine voles and redback voles. Pine voles are plentiful in the southwestern part of the province. They are light brown and slightly smaller than the meadow vole, with a



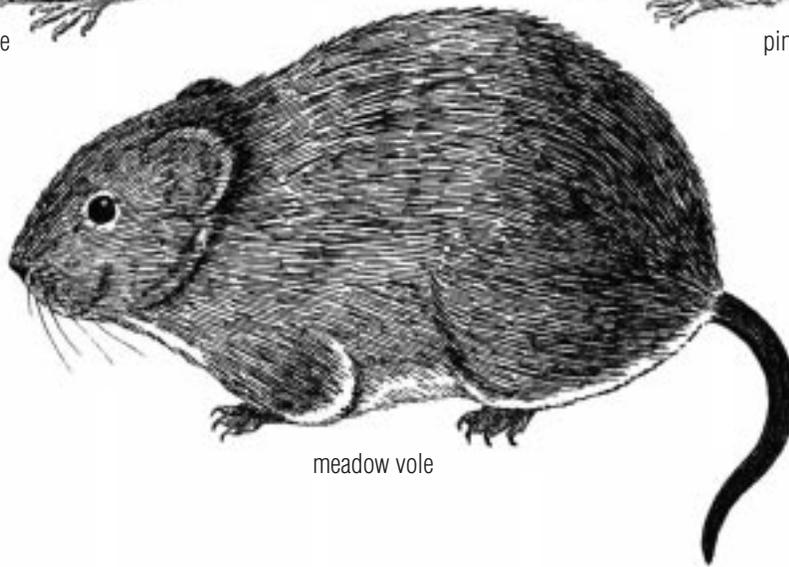
In the winter when other foods are scarce, voles remove and eat strips of bark from trees. This damage eventually kills a tree.



redback vole



pine vole



meadow vole

Three common species of voles in Ontario are the meadow vole, the pine vole and the redback vole.

maximum length of about 13 centimetres. The tails of pine voles are shorter, its eyes are somewhat sunken and its ears are hardly visible. Redback voles are found throughout Ontario. They come in two color phases — red or grey. They have reddish backs and grey sides and are about nine to 17 centimetres long.

Like many small mammals, vole populations are linked to the population cycles of larger predators. Vole populations rise and fall in three or four-year-cycles. At the low end of the cycle, there can be less than 100 animals in each hectare of old field habitat and less than 380 in marsh habitat. At the high end of the cycle, populations can climb to 1000 voles a hectare.

Unless measures are taken to protect tree saplings during the population peaks, voles can kill all of the trees in a plantation.

HABITAT

Meadow voles prefer to live in wet meadows, but are also found in dryer areas where there is an abundance of grasses and sedges. By gnawing off the tips of the grass and then trampling down the stems, voles build paths for travel. The

grass growing along the sides of these paths eventually arches over and provides protection from predators. In winter, these runways continue to be used under a blanket of snow.

DIET

Voies feed primarily on grasses and sedges. But in the winter, when food supplies are scarce, they strip and eat bark from the roots, stems and twigs of shrubs and trees.



PROTECTING TREES AND SHRUBS

REMOVING VOLE HABITAT

Eliminating grass cover during the growing season can protect tree seedlings from vole damage by encouraging voles to go elsewhere for food and cover and making them more vulnerable to predators, which keep vole populations in check naturally. Removing grasses and weeds also protects tree seedlings from competition for food, water and sunlight.

Cut the grass at the planting site and in surrounding fields at regular intervals a year prior to planting trees. The following spring, during planting season, make sure the rows of seedlings are spaced wide enough apart to allow for continued mowing. Growing cover crops, such as wild white clover and creeping red fescue, is another way of reducing grass cover without using herbicides.

PROVIDING ALTERNATIVE FOODS

One way of discouraging voles from feeding on trees is to provide them with a food they like better, such as sunflower seeds. Alternative foods can be spread manually on the ground or by air. They should be dispensed when other foods are most scarce and damage is most likely — during the winter and immediately after the snow melts.

TREE SHELTERS AND GUARDS

Tree shelters and guards can protect hardwood trees from damage by voles and other rodents. Tree shelters are plastic tubes that are placed around seedlings when they are planted. Like small greenhouses, the tubes allow light to reach the seedling and trap heat and moisture. A tree shelter will protect a tree from rodent girdling for about five years.

There are two common types of tree guards — tubes and those made of spiralling plastic. Both keep voles away from young trees. When installing tree guards, bury the bottom of the guard about five centimetres below the top of the soil or build up a mound of soil at the bottom of the guard. Tree guards should be checked and adjusted annually to prevent the guards from interfering with trunk growth.

If you are making your own guards, do not use dark colored materials or tar paper. During sunny winter days, these materials can increase the temperature of the bark, which might cause injuries when temperatures drop at night. Heavy aluminum foil or thin metal sheets should also be avoided.

REPELLENTS

Bitter and unpleasant tasting repellents can discourage voles and other rodents from feeding on trees.

Thiram, marketed under various trade names, is one of the better known repellents. Another option, denatonium



Tree shelters protect trees from damage by voles, rabbits and other rodents.

benzoate, should be applied with more caution. Do not use it on food, edible plants, fruits, fruit trees or maple trees that are tapped for sap. This repellent spoils the taste of maple syrup.

Repellents should be applied late in the fall when trunks and branches are dry, leaves have fallen and temperatures are still above freezing.



Tree guards are an effective way of protecting trees from rodent damage. These 12-inch guards have been cut down from 24-inch guards to reduce the cost.

Vole damage kills a tree by stopping the flow of nutrients, water and other materials to and from a tree's root system.

POISONS

Poisons have been used in the past to kill voles and other rodents. However, they are not as effective as habitat removal and other strategies. As long as the habitat remains, new voles will quickly migrate in to replace those that were killed. Poisons also pose risks to humans and wildlife.

Further Reading:

- *Extension Note: Cover Crops Reduce Herbicide Use in Hardwood Plantations*, The LandOwner Resource Centre, January 1995
- *OMAF Fact Sheet: Rodent and Deer Control in Orchards*, AGDEX — 210/681, August 1989

- *The Mammals of Canada*, A.W.F. Banfield, University of Toronto Press, 1974
- *Extension Note: Tree Shelters Help Hardwood Trees Grow Faster*, The Landowner Resource Centre, 1995 revised

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