At one time or another, everyone has seen rabbits zig-zagging across a lawn or field. The occasional appearance of a rabbit in the yard is a welcome sight. However, an abundance of rabbits can cause damage to gardens, shrubs, and saplings. This fact sheet will help you identify rabbit damage and find ways to reduce it.

Eastern cottontail (Sylvilagus floridanus) rabbits are abundant throughout Pennsylvania. They appear gray or brownish gray, with a characteristic rusty brown spot on the nape of the neck. They have large ears and the hind feet are much larger than the forefeet. The tail is short and white on the undersurface, and its similarity to a cotton ball is the origin of this rabbit’s common name. The New England cottontail (Sylvilagus transitionalis) is occasionally found in the northeastern, south central, and southwestern counties, and closely resembles the eastern cottontail.

**General Biology**

Cottontails typically live only 12 to 15 months, but they have a high reproductive rate and can raise as many as six litters, averaging five young per litter, in a year. Usually, first litters are born as early as late March and are weaned in five weeks. Rabbits give birth in a shallow depression in the ground. Weather, disease, predators, encounters with cars and hunters, and other mortality factors combine to keep the population down.

Cottontails are active year-round and can be seen at dawn and dusk. Eastern cottontails tend to concentrate in favorable habitat such as brushy fence rows or field edges, brush piles, or landscaped backyards where food and cover are suitable. They need cover such as burrows or brush piles to escape predators. Eastern cottontails are rarely found in thick shrubbery or dense forests. The New England cottontail prefers more forested habitat and is rarely a problem species. Cottontails generally spend their entire lives in an area of 10 acres or less. Lack of food or cover is usually the motivation for a rabbit to relocate. In suburban areas, rabbits are numerous and mobile enough to fill any “empty” habitat created when other rabbits are removed. Population density varies with habitat quality, but three to five rabbits per acre is a reasonable average.

Contrary to popular belief, cottontails do not dig their own burrows. Cottontails use natural cavities or burrows excavated by woodchucks or other animals. Underground dens are used primarily in extremely cold or wet weather and to escape pursuit. Brush piles and other areas of cover are often used as alternatives to burrows. In spring and fall, rabbits use a grass or weed shelter called a “form.” The form is a nestlike cavity on the surface of the ground, usually made in dense cover. It gives the rabbit some protection from weather, but is largely used for concealment. Lush green vegetative growth provides both food and shelter, so there is little need for a form during the summer months.

**Description of Damage**

Rabbits can feed on plants in your yard year-round. They eat flowers and vegetables in spring and summer, and in fall and winter, they eat woody plants. Only a few garden crops, such as tomatoes, seem to be immune from rabbit problems. Rabbits will eat most flowers, but tender flower shoots such as young tulip stems are a favored meal. Rabbits damage woody plants by gnawing bark or clipping off branches, stems, and buds. In winter, when the ground is covered with snow for long periods, rabbits can severely damage landscape plants, orchards, forest plantations, and park trees and shrubs. Some young plants are clipped off at snow height, and larger trees and shrubs may be killed when rabbits remove a large amount of the bark.

In addition, the character of the bark on woody plants influences rabbit browsing. Most young trees have smooth, thin bark with green food material just beneath it. Such bark provides an easy food source for rabbits. The thick, rough bark of older trees often discourages gnaw-
to control damage and the only way to control damage in areas where rabbit populations are high. In areas with moderate damage, repellents have been used successfully to reduce damage. Because of the cottontail’s high reproductive potential, trapping and other lethal techniques are not effective over long time periods. If the property owner does not feel he or she can properly handle the damage control techniques necessary, many wildlife pest control operators are available throughout the state that deal with wildlife problems. Contact your county extension office or consult the yellow pages for information regarding these operators.

**Exclusion**

One of the best ways to protect a backyard garden or berry patch is to put up a fence. A 2-foot, chicken-wire fence with the bottom tight to the ground or buried a few inches is sufficient. Wire mesh that is 1 inch or smaller will keep young rabbits from getting through. A more substantial fence of welded wire, chain link, or hog wire will keep rabbits, pets, and children out of the garden and can be used to trellis vine crops. The lower 1.5 to 2 inches should be covered with small-mesh wire. A fence may seem costly, but with proper care it will last many years and reduce damage caused by rabbits and other animals.

Cylinders of 0.25-inch wire hardware cloth will protect young orchard trees or landscape plants. The cylinders should extend higher than a rabbit’s reach while standing on the expected snow depth and should stand 1 to 2 inches out from the tree trunk. Cylinders commonly damage vegetation at a height of 2 to 3 feet, depending on the snow depth in winter. Larger mesh sizes, 0.5 to 0.75 inch, can be used to reduce cost, but be sure the cylinder stands far enough away from the tree trunk that rabbits cannot eat through the holes. Commercial tree guards or tree wrap are other alternatives. Several types of paper wrap are available, but they are designed to protect trees from sun or other damage. Consult your local garden center for advice. When rabbits are abundant and food is in short supply, only hardware cloth will guarantee protection. Small-mesh (0.25-inch) hardware cloth also protects against vole damage. A dome or cage of chicken wire secured over a small flower bed will allow vulnerable plants such as tulips to get a good start before they are left unprotected.
Repellents
Several chemical repellents discourage rabbit browsing. For best results, use repellents and other damage control methods at the first sign of damage. Always follow the directions for application on the container exactly. Since pesticide registrations change frequently, check with your local extension office for information on repellents or other new products available for use in your area. Remember that some repellents are poisonous and must be stored and used safely.

Most rabbit repellents are contact or taste repellents that render the treated plant parts distasteful. Taste repellents protect only the parts of the plant they contact; new growth that emerges after application is not protected and heavy rains may necessitate reapplication. Odor repellents protect plants within a limited area, and do not need to be touching the plant. The degree of efficacy is highly variable depending on the behavior and number of rabbits and the alternative food sources that are available to them. When rabbits are abundant, use other control techniques along with chemical repellents.

On consumable plants: Hinder is a repellent that is currently available for use on consumable plants such as vegetables and fruits. It consists of ammonium soaps of higher fatty acids. It is an odor repellent that may be sprayed or painted on the foliage. Hinder has been found to be effective at repelling rabbits and deer from crops and ornamental plants. Miller Hot Sauce, which contains capsaicin (the hot in hot sauce), can be applied to fruit trees and vegetable crops. However, it must be applied either before fruits or vegetables are on the plants or after they have been removed. Capsaicin is a taste repellent. The warm sensation it leaves in the throat of the animal is believed to cause the animal to avoid eating that plant again. The effectiveness of capsaicin-containing repellents is variable and depends on the availability of other food sources.

On nonconsumable plants: In addition to capsaicin-containing repellents and Hinder, there are many repellents that may be applied to nonconsumable plants. Many commercially available rabbit repellents contain the fungicide thiram, which can be purchased in a ready-to-use form. Thiram products are effective but can be dangerous because they are skin irritants. These products are taste repellents that can be painted or sprayed on the trunk and foliage of ornamentals and dormant fruit trees.

Some repellents contain a mixture of tobacco dust and dried blood meal. Place these substances among the plants, but not on them. They are not to be used near food crops. These products are odor repellents. As always, remember to read the labels.

Repellents containing denatonium saccharide, such as Ro-Pel, have been found to be less effective. There is little evidence to suggest that the bittering agent, denatonium saccharide, works as a mammal repellent. These products are taste repellents that may only be applied to plants during the dormant season. Because it is a taste repellent, the new growth in the spring is not protected.

Live Trapping
Trapping can be used to remove rabbits from problem areas. The first step is to get a well-built and well-designed live trap. Several excellent styles of commercial live traps are available from garden centers, hardware stores, and seed catalogs. Most commercial traps are wire and last indefinitely with proper care. Live traps often can be rented from animal control offices or pest control companies.

Finding bait is not a problem because dry corn or dried apples make very good year-round bait. Dried leafy alfalfa and clover are good cold-weather baits. Apples, carrots, cabbage, and other fresh green vegetables are good baits in warmer weather, but these soft baits become mushy and ineffective once frozen. For best results, use baits that are similar to what the target rabbits are feeding on.

There are a few easy steps to placing a trap:
- Place traps where you know rabbits feed or rest. Check for runways along the edge of cover. To locate an active runway, look for rabbit droppings and clipped twigs.
- Place sticks in the ground in front of the trap to guide the rabbit into the trap.
- In winter, face traps away from prevailing winds to keep snow and dry leaves from interfering with the door.
- Move traps if they fail to make a catch within a week.

Check traps twice daily to replenish bait or remove the catch. Pennsylvania law requires that traps be checked every 24 hours, but they really should be checked every 12 hours, particularly in suburban areas where neighborhood pets may be caught. Position the bait at the rear of the trap.

A commercial wire trap can be made more effective by covering it with canvas or some other dark material, which will cause the trap to resemble a safe, secure environment. Be sure the covering does not interfere with the trap’s mechanism.

If the rabbit was using a hole or burrow under a building, trapping and then releasing the animal after blocking the hole will alleviate problems. Trapping and removing individual rabbits is effective only if they are excluded from the problem area. Simple removal will not reduce damage for long because rabbits from other areas will move in. Use trapping as an additional damage control technique along with exclusionary methods such as fencing. Release trapped rabbits in suitable habitat where they will not cause problems to other landowners.

Habitat Modification
Although frequently overlooked, removing brush piles, weed patches, dumps, and other debris from near gar-
Dens can be a useful way to manage rabbits. Keeping your grass mowed will remove potential cover that may attract cottontails to your garden. Filling old woodchuck or skunk burrows will remove their potential as rabbit homes. Habitat modification is especially effective in suburban areas where fewer suitable habitats are likely to be available. Habitat modification may remove rabbit habitat, but it will also change the environment around your home, including changing the habitat for rabbit predators. Cottontails are not the only creatures that inhabit the brush piles and weed patches. Always weigh the consequences before carrying out any form of habitat management.

**Lethal Methods**

Because of the cottontail’s reproductive potential, no lethal control is effective for more than a limited time period. Exclusion techniques provide long-term, nonlethal control. Lethal methods such as trapping and destroying or shooting are only effective if used in conjunction with other techniques, such as fencing.

**Toxicants**

There are no toxicants or fumigants registered for use against rabbits. Poisoning rabbits is not recommended or legal.

**Shooting**

Shooting is a method of control, but make sure that local firearms laws allow it and that it is done safely. Because they are a game species, contact the Pennsylvania Game Commission for regulations on the shooting of rabbits. If the animal is causing damage, it may be shot without a permit. Removing rabbits in one year does not guarantee that the rabbit population will be low in the next year.

**Other Methods**

Encouraging the rabbit’s natural enemies, or at least not interfering with them, can help reduce rabbit populations. Hawks, owls, foxes, mink, weasels, and snakes all help control rabbits. Many of these species live in the brush piles and tall weeds that the rabbits live in.

Nylon bags of human or dog hair placed around the perimeter of gardens are reported to repel rabbits. Research is being conducted to test the efficacy of this method.

**Summary**

The most effective method of reducing damage to your garden or other vegetation is fencing or other forms of exclusion. After fencing the animals out of areas where you do not want them, you can watch them in your yard without worrying about what potential harm they may cause your gardens. More active methods of control are occasionally necessary to reduce damage, but complete extermination is not necessary, desirable, or even possible.