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Virchow, Dallas R.; Hygnstrom, Scott E.; and Ferraro, Dennis M., "G03-1526 Prevention and Control of Rabbit Damage" (2003). *Historical Materials from University of Nebraska-Lincoln Extension*. 1729.
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Prevention and Control of Rabbit Damage

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This NebGuide describes how to identify rabbit damage and recommends proper methods of control, such as fencing, habitat modification, repellents, trapping, and shooting to reduce damage to tolerable levels.

Cottontail rabbits (*Sylvilagus* spp.) (Figure 1) and jackrabbits (*Lepus* spp.) (Figure 2) are found in most of Nebraska. The eastern cottontail (*S. floridanus*) lives throughout the state while the desert cottontail (*S. audubonii*) lives only in western Nebraska. Black-tailed (*L. californicus*) and white-tailed jackrabbits (*L. townsendii*) are most common in the western two-thirds of Nebraska.

People often mistakenly think of rabbits as rodents because rabbits have large incisors similar to squirrels, rats, and mice. Rabbits and hares, however, have a second pair of smaller incisors behind the first pair and are classified as lagomorphs. Since many people know both cottontails and jackrabbits as “rabbits,” this NebGuide will use the term in referring to both.

Rabbit Facts

Cottontails

- Rabbits with young born naked, helpless, and their eyes closed.
- Breed: February through August
- Gestation period: 28 days
- Litter size: three to five young
- Young cottontails remain in the maternal nest for up to 14 days.
- Adult size: 2 to 4 pounds

- Habitat: woody and dense vegetation in rural and urban areas

Jackrabbits

- True hare with young born well-furred and their eyes open.
- Breed: February through August
- Gestation period: 43 days
- Litter size: three to five young
- Young jackrabbits remain in the maternal nest only a day.
- Adult size: 3 to 8 pounds
- Habitat: open rangelands or cultivated fields

Rabbits can bear two to six litters per year because females can breed immediately after the birth of a litter and because breeding stimulates ovulation. Cottontail nests are shallow, cup-shaped depressions that are lined with fur. Fur is also placed above the young rabbits to protect them. The young and their nests remain well hidden, even in closely-mown turf. Nests of young rabbits should not be disturbed as the dam will return to care for them at a safe time.

Cottontails seek shelter under brush piles, dense shrubs, and buildings or escape into holes. When threatened, cottontails accelerate quickly with large bounds to gain distance, then run a zig-zag course to escape a predator. Jackrabbits rely on their speed (up to 40 miles per hour) in open areas to outrun predators.

Cottontails in rural areas spend their entire lives on just a few acres, while cottontails in urban areas may not venture far from a single backyard. Jackrabbits in open rangelands may travel several miles from shelter to seek out areas with their preferred food.



Figure 1. Eastern cottontail rabbit.



Figure 2. Black-tailed jackrabbit.

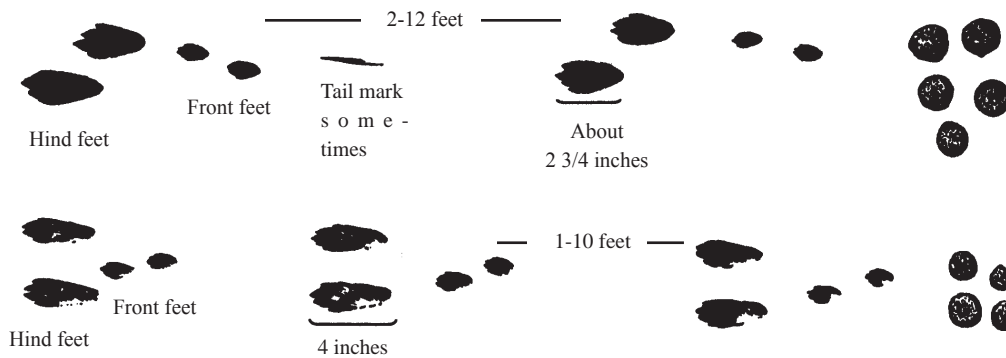


Figure 3. Tracks and droppings of jackrabbit (above) and cottontail (below).

Rabbits have unique digestive systems that allow them to get nourishment when only low nutrient foods are available, such as during winter. Rabbits have a unique behavior, known as “coprophagy” in which they eat their own feces to gain nutrients that weren’t absorbed the first time through.

Ecological and Recreational Importance

Rabbits fill an ecological role as medium-sized herbivores. In rural and remote areas, rabbits are an important food for coyotes, bobcats, foxes, badgers, mountain lions, eagles, and hawks. Rabbits also are valuable as game species. About 10,000 rabbit hunters harvest between 50,000 and 100,000 rabbits each year in Nebraska. Many other people also enjoy rabbits as wildlife viewing opportunities.

Economic Importance

Rabbits can cause damage any time of the year. During spring, rabbits prefer young, growing vegetation, like tulips, garden vegetables (carrots, peas, beans, lettuce, beets) and grass. In winter, rabbits gnaw tender bark off of young trees and shrubs and eat the green, inner bark. Much damage can occur during cold winters with snow cover. On open rangelands, the greatest damage can occur during years of drought that are synchronous with high jackrabbit populations.

Disease Significance

Rabbits serve as reservoirs of diseases, some of which may affect humans through direct contact with diseased tissue (tularemia) or their vectors (Lyme disease). Avoid direct contact with rabbits that are found dead or behaving abnormally. Fleshy finger-like growths caused by viruses occasionally appear on rabbits but these are of little consequence to human health.

Signs of Rabbits and Identification of Damage

Rabbits are active throughout the day or during warmer periods of days during winter. You can identify the presence of rabbits or the damage they cause by their tracks, droppings, and markings. Tracks made by their hind feet are much longer than the forefeet and are placed as pairs ahead of the slightly staggered front feet in the snow or soft earth (Figure 3). Toe prints are indistinct because the toes are well-furred. The tracks of tree squirrels are similar but smaller and often end at the base of trees. Rabbit droppings are pea-sized individual pellets. Gnaw marks of rabbits are irregularly placed on trees and shrubs at a few inches above ground or, occasionally, on exposed roots. Rabbits can remove young bark on woody trunks and stems higher

than three feet when deep snow exists. A mark left by a pair of cottontail incisors is about 1/4 to 3/8 inches wide. Tree squirrels leave marks of similar size on the upper surface of low branches of trees. Birds tend to shred plants and leave small pieces of the plants on the ground. Rabbits clip off pencil-sized stems cleanly at a 45° angle while deer leave a jagged, torn edge on stems of this size or larger.

Prevention and Control of Damage

The presence of rabbits does not always result in economic damage to plants. Before using a control program, estimate the expected level of damage and compare the time and costs of control to the value of the plants being protected. Most 2- to 3-foot high shrubs can survive having most of the one and two-year old twigs removed. However, the desirable bud, flower or fruit development may be impaired. The key to effective and economical rabbit control is being able to predict and intercept damage with methods that are commensurate to the predicted loss in value.

Exclusion

A 1-inch mesh fence of poultry netting (chicken wire) works well to protect gardens or perennial flower beds from rabbit damage. Bury the bottom edge of the fence about 4 inches below the ground to prevent rabbits, particularly jackrabbits, from digging under it. The buried portion can be splayed outward from the protected area to better prevent digging. Use a fence two feet high against cottontails and three feet high against jackrabbits. You may need to build the fence higher to exclude rabbits when snow cover is present or predicted. A two-foot high fence made of poultry netting and 3/8-inch fence rods spaced at 3 feet apart can protect a 25- x 50-foot garden space for as little as \$50 at 2003 prices (\$0.33 per foot). You can extend the life of the chicken wire, welded wire, or hardware cloth fence by taking it down each fall and storing it out of the weather. Plastic poultry netting is now available in neutral colors but it is more expensive than wire mesh.

You may want to exclude rabbits from an entire backyard. Fences are most easily installed as additions to existing structures (Figure 4). Perimeter fences of welded wire mesh of 1-inch x 2-inch or 1-inch (hardware cloth, hail screen) excludes young rabbits, but mesh of 2- x 3-inch or chain link fence does not.

For small flower beds, construct a lightweight frame at the anticipated height of the flower blossoms and shape a plastic mesh netting over it. Colors of plastic mesh are available that blend into the background environment.



Figure 4. A rabbit fence added to an existing fence.

Nurseries, tree farms, and other large areas, can be protected with a double-strand electric fence or electrified plastic-net fence. Place electric wires at 3 to 4 inches and at 8 to 12 inches above the ground.

To protect individual trees and shrubs, place cylinders of commercial plastics, fabrics, paper, or poultry netting around the trunks supported by stakes (Figure 5). Be sure to recognize when stems grow through the netting and become susceptible to rabbit damage.

Habitat Modification and Plant Selection

Remove materials that provide shelter to rabbits to guard against future damage or while using direct methods of control. Remove brush piles and tall weeds, particularly those located near new windbreaks. Mow or spray to remove vegetation within 3 to 4 feet of recently planted trees and shrubs. Some trees and shrubs may need protection for as long as 10 years before they become resistant to rabbit damage. Conversely, to guard against jackrabbit damage, you should encourage taller and more dense vegetation.

We do not recommend supplying alternate foods for rabbits as a method to reduce damage to desired plants. One exception may be for short-term control until other direct methods of control can be used. Alfalfa or clover are good alternate foods for rabbits. Rabbits are selective but will quickly switch to other foods. The availability of alternate foods may attract more rabbits and lead to further damage.

Although rabbits eat most plants when food is in short supply, some seem to be preferred. Among trees, preferred species are thin-barked (elm, cottonwood, willow). Among herbaceous plants, preferred species are within the rose and lily families. Nebraska horticulturists and others have

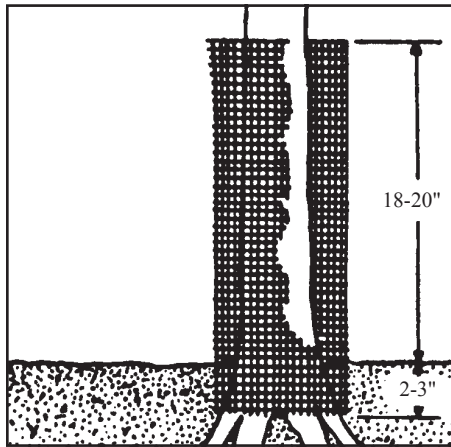


Figure 5. A cylinder of hardware cloth or other wire mesh can protect trees from rabbit damage.

compiled the following partial list of species most often eaten by rabbits.

Most Often Eaten

Annuals and Perennials

Asters
 Hostas
 Hybrid lilies—Asiatic, Oriental
 Impatiens—young flowers on young plants
 Pansies
 Tulips

Shrubs and Young Trees

Amelanchier spp. (serviceberry, juneberry)
Aronia spp. (black chokeberry, red chokeberry)
 Baldcypress
 Eastern white pine
Euonymus spp. (burning bush, wahoo)
 Honeylocust
Hydrangea quercifolia (oakleaf hydrangea)
Malus spp., (apples, flowering crabapples)
Prunus spp. (plum, cherry, almond, peach)

Plants with strong aromas or dense hair are typically avoided by rabbits. Some rarely eaten species are black walnut, juniper, magnolia, redbud, spruce, fir, barberry, buckthorn, coralberry, cinquefoil, cotoneaster, sage, skunkbush sumac, and viburnum. Selecting plants from published plant lists that show rabbit-resistance has only general usefulness because of the variability of site-specific conditions.

Frightening Devices

Scarecrows, owl or snake effigies, spinning aluminum pie pans and glass jars of water have been used to frighten rabbits. Commercial water-driven scarecrows with motion detectors are available that spray water when movement occurs near them. In general, frightening devices may be limited in range to a few feet and short-lived in effect as rabbits habituate to them.

Repellents

Chemical repellents are also short-lived in their effect and those that have offensive tastes need to be reapplied to plants after sprinkler irrigation, rain, or new growth occurs. The life and effectiveness of some repellents can be extended by mixing them with a sticker such as Roplex™ or an anti-transpirant, such as VaporGuard™ or Wiltpruf™. Most rabbit repellents are not registered for use on plants destined for human consumption.

Odor repellents, such as those containing ammonium or potassium salts of fatty acids (Hinder™, Grant's, M-pede™), soaps, eggs (Big Game Repellent™, Deer-Away™, Get Away™), thiram fungicide (Spotrete™) bone meal, blood meal (Repel™), predator urine or feces (Shake-Away™), or garlic (Plant Pro-tec,) are typically applied to soil in the perimeter area to repel rabbits. Naphthalene is another ingredient of commercial repellents (Dr. T's™, Enoz Skat™) but the similar chemical in mothballs is illegal for use outdoors. Small bars of commercial soaps, such as Irish Spring™ or Dial™, are sometimes used as repellents by hanging them from low branches. Odors are dissipated by wind and water and repellents may need to be re-applied.

Contact repellents repel by taste and are usually applied directly to the plant. Examples are those containing capsaicin or hot pepper extract (Scoot™, Shotgun™; Deer-off™, Bulb guard™) or denatonium saccharide (RoPel™), a bittering agent. Some odor and taste repellents contain more than one active ingredient. Check the label for proper application rate, method, and proper site before applying any repellent.

Toxicants

Zinc phosphide is currently the only toxic material labeled for rabbit control in Nebraska. It is a restricted use pesticide and users must obtain a pesticide applicator's license. Among rabbit species, only the black-tailed jackrabbit, can legally be controlled using this product. Toxicants should be applied only as prescribed on the label and as a last resort or as part of a larger program to control damage.

Trapping or Shooting

Both trapping and shooting can be used to temporarily reduce local populations of rabbits. Fall reductions of rabbits may reduce winter damage to trees and shrubs. Trapping generally takes more time and removes fewer animals than does shooting. Trapping is generally not effective for jackrabbits. Many types of box traps are available for cottontails, including single-door and double-door styles (*Figure 6*). Select traps that have a 7-inch minimum clearance door. Rabbits enter traps most easily during winter and early spring when food is scarce. Good cold-weather baits include cabbage, ear corn, dried apple and dried alfalfa or clover. Warm weather baits include carrots, lettuce, apples, and fresh flowers such as pansies or tulips. Replace with fresh baits and check traps daily. During winter, place traps in sheltered areas and cover them with heavy canvas or cloth to guard the captured animal against cold. During summer, place traps in shaded areas and away from menacing dogs and cats.

Consider placing boards or 1-foot high fences alongside traps to help funnel rabbits into the traps. Approach a trapped rabbit slowly and quietly to keep the animal from injuring itself. Rabbits should be released safely in areas with suitable habitat and where they are not likely to cause future problems.

Cottontails and jackrabbits are game species in Nebraska. Rabbit hunting with firearms is allowed during the fall and winter with a small game hunting permit. Nebraska code allows the removal of rabbits within municipalities that cause damage to personal property. In most cities and towns, the local animal control or law enforcement agency can authorize live-trapping and transporting of rabbits. Firearms cannot legally be discharged within most municipalities.

In damage situations, the Nebraska Game and Parks Commission may grant permission to live-trap and transport rabbits or to shoot rabbits outside of the hunting season. See the Nebraska Game and Parks Commission or municipal authority for details.

Integrated Pest Management

A combination of methods usually works best to control rabbit damage and the methods selected depends on the

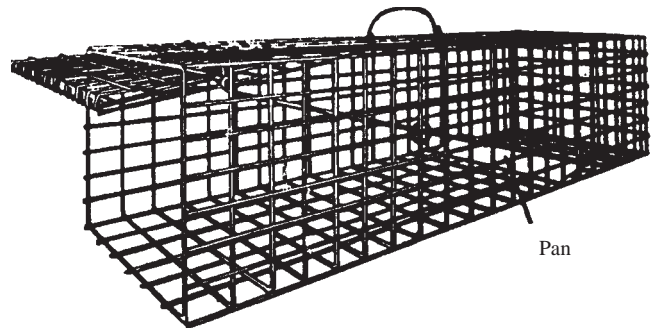


Figure 6. A cage-type live trap.

situation. For a windbreak in a rural area, the best combination of methods may be for the owner to plant older, less-browsed species of trees, and to add a different species each year. The owner might then apply a commercial repellent with a sticker-spreader at several times during the winter during the first few years of tree growth.

For the gardener, the best approach may be to build a rabbit-proof fence to guard young sprouting plants. For the owner of a perennial flower bed, the best approach may be to use motion-activated water sprays or a vigilant dog during the day to distract rabbits. The bed owner might also resort to a low, aesthetic plastic-mesh fence as flower blossoms emerge. Keeping the soil wet may also repel rabbits from gardens or flower beds. For the owner of young trees and shrubs in a backyard, the methods of choice may be in using low fences around clusters of plants, individual tree wraps, or tree wraps incorporated with chemical repellents.

For additional information see:

“Cottontail Rabbits” and “Jackrabbits and Other Hares” In: *Prevention and Control of Wildlife Damage*, S. Hygnstrom, R. Timm and G. Larson, eds., University of Nebraska–Lincoln Extension Division. The book is available at your local extension office or at the Web site The Internet Center for Wildlife Damage Management located at <http://icwdm.org>.

Acknowledgments

The authors thank Kelly Feehan, Barb Ogg, Kim Todd, and Rich Lodes, all of University of Nebraska–Lincoln Extension, Richard Bischof and Scott Taylor of Nebraska Game and Parks Commission for reviewing the manuscript and Trish Freeman, School of Natural Resources, for her suggestions.

This publication has been peer reviewed.

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**Index: Wildlife Management
Animal Damage Control**

Issued September 2003

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