



Managing Wildlife Damage: Eastern Cottontail Rabbits (*Sylvilagus floridanus*)

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INTRODUCTION

Eastern cottontail rabbits (*Sylvilagus floridanus*) are found across the eastern United States, southern Canada, eastern Mexico, Central America and portions of South America (Figure 1). Cottontail rabbits are a sought-after game species by small game hunters. Many people enjoy seeing them around their yards and neighborhoods. Rabbits are well accepted by humans when their numbers are managed correctly. However, they can inflict damage across a range of habitats from rural farms to suburban lawns. They often damage flowers, vegetable gardens, and landscape trees and shrubs.

TAXONOMY

Class *Mammalia*

Order *Lagomorpha*

Family *Leporidae*

Genus - *Sylvilagus*

Species - *floridanus*

Common Name - Eastern cottontail rabbit

There are 11 genera and 54 species in *Leporidae* which includes hares and rabbits. Six species of cottontail rabbits are found in the genus *Sylvilagus*. The scientific name, *Sylvilagus floridanus*, means forest hare of Florida.

STATUS

In Georgia, we have 4 native species of rabbits. The swamp rabbit (*Sylvilagus aquaticus*), Appalachian cottontail (*S. obscurus*), marsh rabbit (*S. palustris*), and eastern cottontail (*S. floridanus*). The eastern cottontail (Figure 2) is the most abundant and ranges across the entire state. The Appalachian cottontail is the rarest rabbit and inhabits the start of the Appalachian mountain chain in North Georgia. It is on the Georgia Protected Wildlife list. The swamp rabbit is the largest of the four and inhabits swamps in the Piedmont region of Georgia. The marsh rabbit is the smallest of the four and is found in the Upper Coastal Plain to the Georgia coast. There is a rabbit season for hunters which occurs from the mid-November to the end of February.



Figure 1: Current eastern cottontail Distribution Across North and Central America.

NATURAL HISTORY

Identification. Eastern cottontail rabbit pelage is grizzled black with an orange nape (Figure 2). The ears are edged with white and tipped black. The eye rings are a cream color. The tail can be described as gray brown above with a narrow white edge and cottony white underneath. This give the cottontail its' common name. The legs are a deep orange and the feet are large with a whiteish orange color. Adult rabbits typically weigh 2-4 pounds. Total length is 16-17 inches from nose to rump. Cottontail rabbits undergo two pelage molts a year. The spring molt results in a darker short summer coat. The fall molt produces longer grayer pelage with thicker underfur for the winter

Habitat. Cottontails are a generalist habitat species but prefer early succession habitats. These plant communities are typically dominated by a variety of grasses, herbaceous plants, shrubs, briar thickets, and small trees. Fields and pastures are also used as a preferred habitat.

Reproduction. The mating system for the eastern cottontail is polygynous. A male will mate with multiple females and no pair bond is formed. The mating ritual starts with a male chasing the female until she turns to face him. Cottontail rabbits are induced ovulators. They ovulate once they receive an external stimulus such as coitus (mating). Females produce several litters of two to six young each breeding season. Breeding typically occurs between March and August. The gestation period is 26 to 28 days. Females may begin breeding again before their young reach one day old. The female rabbit creates a nest cavity in tall grass or weeds. Newborn rabbits are altricial when born. This means young are born in an undeveloped state and require care and feeding by the female. Newborns weigh around 1 ounce. The female nurses' young once or twice a day. Young open their eyes around 2 weeks of age and leave the nest soon after.

Feeding. Eastern cottontails feed on grasses and legumes such as clover and lespedezas during the warmer months. They also consume large amounts of forbs, such as ragweed and crops, such as soybeans, when available. During the winter they shift to a diet of more twigs and bark of young trees. When plants are not available in the late winter, they opportunistically eat things such as snails and carrion. In milder climates like Georgia, some green vegetation is usually available year-round, so food habits change little across seasons.

Behavior. Eastern cottontails are solitary, except females caring for young. Home range sizes of female rabbits range from 1-15 acres and males use up to 100 acres. Cottontails use dense woody cover and burrow holes from other animals for escaping predators. North American rabbits rarely, if ever, dig a burrow. They rely on above ground nests, stump holes, or burrows created by other animals such as groundhogs (*Marmota monax*). The relationship between gopher tortoise or armadillo burrows and cottontail rabbits is unknown. They can run up to 18 miles per hour when evading predators. Cottontails are primarily nocturnal and rest throughout the day.

DISEASE

Rabbits are known to be reservoirs for zoonotic disease (animal to human transmission) such tularemia, pasteurellosis, ringworm, mycobacteriosis, cryptosporidiosis, and external parasites. These external parasites include ticks, fleas, mites, and lice. Rabbits can transmit bacteria through bites, scratches, skin to skin contact, and bodily fluids. The most common bacterial disease transmitted to humans is tularemia. It is transmitted through contact with an infected carcass. Common signs are skin ulcer,



Figure 2: Eastern cottontail.

inflamed eye, sore throat, or pneumonia. No cases in Georgia were reported by the CDC from 2008-2018, the latest year data are available. Untreated, mortality rate range from 5 to 15 percent.

DAMAGE ISSUES

Rabbits will feed on plants in lawns and damage ornamental plantings. They will consume garden plants, crops, flowers, and woody plants. Rabbits will mostly consume small twigs and other green plants left in the winter months. During late winter in the south rabbits have been known to strip bark from young trees (Figure 3). When feeding on young trees, they will girdle the bark and cambium layer around the tree as high as they can reach. This is mostly done more in the later winter months of northern states when green vegetation isn't available. This can kill trees if the damage is extensive enough.



Figure 3: Rabbit damage to a young tree.

ECONOMICS

Rabbits are a major prey item for numerous predators thus providing an important ecological service. Rabbits provide a recreational hunting opportunity, which generates some income for small economies and a sought-after food source. They have some value in the fur trade in the northern range where pelts are thicker due to the colder weather. They can be a pest for homeowners, gardeners, and farmers when damaging planted crops. A study in Nebraska found that cottontail rabbits caused \$2.2 million dollars of damage to major field crops annually. A study in Texas suggested that rabbits can consume up to 10% of biomass in food plots planted for deer. They also can transmit zoonotic diseases, which poses a threat to humans.

CONTROL

Habitat Modification. Removing brush piles and dens can help manage rabbits. Keeping yards maintained by cutting grass and disposing of leaves, sticks, and firewood piles will limit the amount of cover and reduce the number of rabbits attracted to the area. Destroying any burrows on the property will reduce the chance of rabbits using them for homes. Modification of habitat is most effective in urban areas where there may be less habitat available. However, rabbits do not require special habitat. A tree with low branches or a few shrubs in a foundation bed may provide adequate shelter and access to a garden or suburban yard. In many areas, dense thickets of vines such as Japanese honeysuckle (*Japonica lonicera*), kudzu (*Pueraria montana*), or dense areas of blackberry (*Rubus* spp.) make attractive rabbit habitat. Unmowed ditch banks and fence rows are ideal habitat.

Exclusion. One of the most effective ways to protect gardens and trees is to install fencing. A 2-foot tall chicken wire fence with a tight bottom buried a few inches deep will be effective. Wire mesh 1-inch or smaller will help keep out young rabbits. Orchards can install ¼-inch wire hardware cloth around young trees to prevent girdling. It is important to put the mesh far enough away from the tree that rabbits cannot chew through the holes to the tree. These methods provide long term control and may be the most cost-effective damage control method. However, fencing may not be appropriate for foundation plantings or large acreage.

Repellants. Many companies offer chemical repellants to prevent rabbit browsing. Repellants have great variability when used for cottontail rabbits. No repellants are 100% effective at deterring rabbits from eating desired plants. It is important to follow the instructions provided to apply them legally. Most can be applied to landscape or foundation plants. Some are labelled for use on vegetables but with restrictions. Read and follow all label instructions. Most repellent ingredients are exempt for pesticide regulations. Many repellants use common household products such as putrescent egg solids, oils (e.g., garlic, mint, rosemary, clove), fish or meat meal, blood meal, and other common items. The most common repellants are odor or taste repellants. New growth and heavy rains can decrease the effectiveness of the repellants which must be re-applied frequently.

Hinder® is an odor repellent that deters rabbits from consuming desirable plants. The active ingredient is ammonium soaps of higher fatty acids (13.8% active ingredient). Hot sauce (capsaicin) is another common ingredient in deer and rabbit repellents that can be applied to garden plants as a taste repellent. Plantskydd® is one of the more effective repellents used to deter rabbits. This is an animal blood-based product that is a taste and scent repellent. Other repellents that help deter rabbits include Bobbex-R, Bonide Repels All, Rabbit Stopper, and Bobbex Deer Repellent Canada. The general effectiveness of repellents is variable and depends on the other food sources available. In a 2014 study in Connecticut, eight repellents were tested with rabbits and alfalfa (*Medicago sativa*), johnny-jumpups (*Viola tricolor*), and lettuce (*Lactuca sativa*). No repellent was more effective than simple fencing. Of the repellents tested, Plantskydd (blood-meal product) provided the greatest control from rabbit herbivory.

Lethal Control. Rabbits reproduce quickly, which may require lethal control for effective long-term results. Lethal control is only effective for a limited amount of time unless applied consistently over time. Lethal methods such as trapping, or shooting are only effective with other control methods (such as exclusion) in place. There are no toxicants that are legal to use for poisoning rabbits. Shooting is an acceptable method of control in rural areas, but make sure local laws allow it. Since rabbits are a game species, they are managed by the Georgia Department of Natural Resources and property owners must comply with local hunting laws as well as city or county firearms ordinances. Removing rabbits from the population does not guarantee population reduction the following year.

FURTHER READING

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IMAGE CREDIT:

Figure 1 - <https://nhpbs.org/natureworks/easterncottontail.htm>

Figure 2 - <https://images.bugwood.org/>

Figure 3 - <https://hortnews.extension.iastate.edu/files/images/Rabbit%20damage%20crab%20apple%20copy.preview.jpg>

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