



Managing Wildlife Damage: Eastern Chipmunk (*Tamias striatus*)

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INTRODUCTION

Eastern chipmunks (*Tamias striatus*) are found across eastern North America from southern Canada to the Gulf of Mexico (Figure 1). Eastern chipmunks are a brightly colored rodent, distinguished by two white and black stripes along the back. Due to their charming look and distinct “chips” sound, people enjoy watching them in their yards. Chipmunks’ diet consists of grains, nuts, berries, seeds, mushrooms, and insects. Chipmunks can cause structural damage by burrowing under patios, foundations, or walls. They will also damage flowers, seedlings, grass, bird seed, and pet food if not properly stored.

TAXONOMY

Class Mammalia

Order Rodentia

Family Sciuridae

Genus – *Tamias*

species – *striatus*

Common Name – Eastern chipmunk

Worldwide, there are 50 genera and 268 species in Sciuridae which includes squirrels and chipmunks. Twenty-five species of chipmunks are found in the genus *Tamias*, but only one in North America. The scientific name, *Tamias striatus*, means striped squirrel with cheek pouches.

STATUS

The Eastern chipmunk is not threatened and is common in suburban areas. In Georgia, the Eastern chipmunk is found in forests of the piedmont and the northern mountainous regions. The chipmunk is found throughout the eastern United States, except the coastal plain. No other member of the Sciuridae family looks like the Eastern chipmunk. There are fifteen species of chipmunks in the genus *Eutamias* (western chipmunks) but the Eastern chipmunk is the only species of the genus *Tamias*, in North America.



**Figure 1: Current eastern chipmunk
Distribution Across North America**
(Photograph from NatureWorks.com).

NATURAL HISTORY

Identification. Eastern chipmunk pelage is reddish-brown with white fur on its stomach. On their back, they have two white stripes each bordered by two black stripes (Figure 2). The eyes have light stripes above and below and pouched cheeks to store and carry food. Adult chipmunks typically weigh 3-4 ounces. Nose to rump length is 5-6 inches with a 3-4-inch hairy tail. Chipmunks are distinguished from ground squirrels by the presence of the stripe through the eye on chipmunks which is absent in ground squirrels.

Habitat. Eastern chipmunks inhabit deciduous and mixed forest dominated by mature hardwoods. In the northeast, they prefer hardwoods that contain sugar maple and beech with an open understory. In the southeast, hardwood forests and suburban yards are the preferred habitat. Chipmunks prefer to burrow under wood piles, rock piles, stump holes, concrete walkways, and patios. Eastern chipmunks occur typically in mature woodlots at sites with a high tree density and a low shrub density. They are more common in forest habitats including mast producing hardwoods, oak-hickory, and mixed pine-hardwood cover types, than in grass or shrub habitats, although they occur here as well as brushy areas. In these forest habitats, chipmunks will construct a series of elaborate connecting tunnels that range from 12-30 feet in length and 2 inches in diameter.

Reproduction. The mating system for the eastern chipmunk is polygynous. A female will mate repeatedly with multiple males during an estrous period that lasts 6-7 hours. Females can produce litters of two to nine young each breeding season. Breeding typically occurs in March with the first of two litters born in April-June and the second in August-October. The gestation period is 28-31 days. Age, available food resources and environment all influence frequency of litters. Newborns weigh around 0.1 ounce. These newborns are altricial meaning they rely on the mother for a short time after birth. Young chipmunks will open their eyes after 30 days and emerge from the burrow at 40 days. At that time the female will abandon them and move to a different burrow. Sexual maturity is 12 months. The lifespan for an adult chipmunk can be up to 8 years in captivity but they rarely live past 3 years in the wild.

Feeding. Eastern chipmunks feed on a seasonal supply of seeds, fruits, mushrooms, and nuts. In suburban areas, they feed readily on bird seed, plant bulbs, and acorns. Eastern chipmunks prefer low tannin white oak (*Q. alba*) to northern red oak (*Q. rubra*) acorns; beechnuts are also a favorite food when available. Chipmunks transport food to their underground burrows via cheek pouches. They can carry as many as 30 beechnuts in their cheek pouches. At the end of fall, the burrows can contain up to 6000 nuts. Chipmunks also scatter hoard food in various locations around their home range. These scatter hoards act as an alternative food supply when their main food source is destroyed or stolen.

Behavior. Chipmunks rarely present threats to humans. Eastern chipmunks spend the majority of their time gathering and storing food for winter. They are very vocal and move quickly while gathering food while staying alert to danger. Chipmunks are territorial animals and rarely become abundant enough to cause damage. Throughout the winter, eastern chipmunks remain in their underground burrows in varying stages of torpor (deep sleep). They may not truly hibernate in southern habitats and may appear above ground in favorably warm weather. They may range over an acre, but individual territories can be only 150 feet across. Densities in the wild can reach up to 20+ animals per acre if food and cover are available; however, typical densities in the wild are two-four per acre. Eastern chipmunk population densities are correlated to prior year acorn crop. Highest densities are often found in urban landscapes with abundant food and cover – especially bird seed.



Figure 2: Eastern chipmunk (Photograph from Kevin D. Arvin).

DISEASE

Chipmunks can be reservoirs for zoonotic disease (animal to human transmission) such as, salmonella, hantavirus, Rocky Mountain spotted fever, encephalitis, rabies, leptospirosis, and the plague. Some of these diseases are directly spread via direct contact with the chipmunk, feces, or urine, and other are transmitted indirectly by ticks and fleas. Chipmunks host vectors such as fleas and ticks which are more likely to infect humans with chipmunk diseases than chipmunks themselves. Flu-like symptoms are the typical symptoms in humans. Generally, the risk to humans is minimal unless populations are high, sick individuals are abundant, or people purposefully capture and handle chipmunks.

DAMAGE ISSUES

Alone, chipmunks rarely cause significant damage; however, chipmunks in large numbers can cause structural damage to homes by burrowing under stairs, decks, foundations, or retention walls. They will feed on bird seed, ornamental flowers, shrubs, and pet food if not properly stored.

ECONOMICS

Chipmunks are considered a minor agriculture pest. They rarely cause economic damage but there can be instances where prevention and control methods are considered. Most chipmunk damage involve costs under \$200 to homeowners. Chipmunks are most destructive to home structures and ornamental plants requiring homeowners to invest in control methods.

HUMAN USE

Chipmunks can be beneficial to humans and the ecosystem. Chipmunk feces contains seed and spores which spreads tree and other plant species. Their feces also contain mycorrhiza, a fungus that increases water and nutrient absorption in plants.

CONTROL

Habitat Modification. Avoid planting landscaping features such as shrubs, trees, and bushes adjacent to the foundation of a home, patio or building. This cover provides protection for the chipmunks that will attempt to access the structure. Wood piles, rock piles, brush piles, leaf debris, and ground cover shrubs or ivy should be removed to minimize chipmunk cover. This debris can also make it difficult to spot a burrow for control methods. Place bird feeders at least 30 feet from a home or building to prevent attracting chipmunks. Cut the grass short around the edge of the home which will provide less cover for the chipmunks.

Exclusion. Sealing holes around cable lines, gas lines, dryer vents, and air conditioning lines will prevent chipmunks from entering building or home. Use wire screens or caulk to seal these holes. Use wire mesh on gutter downspouts to prevent chipmunks from clogging and backing up water. Use ¼-inch (0.6-cm) mesh hardware cloth to exclude chipmunks. Be sure to clean gutters if there are no gutter guards in place. Chipmunks will enter house through open garage doors and pet doors. Close and secure doors and dryer vents to prevent entry.

Repellants. Some taste repellants such as Bitrex, thiram, or ammonium salts of high fatty acids can be applied to protect ornamental plants and seeds. Multiple applications of the repellant are required for optimal efficacy. Repellants do not provide complete damage control and can be expensive. Hav-a-Hart Critter Ridder®, RoPel®, Hinder®, Big Game Repellent® are products that can be purchased from any garden supply store. As with any repellants, efficacy depends on severity of the problem and timing of application.

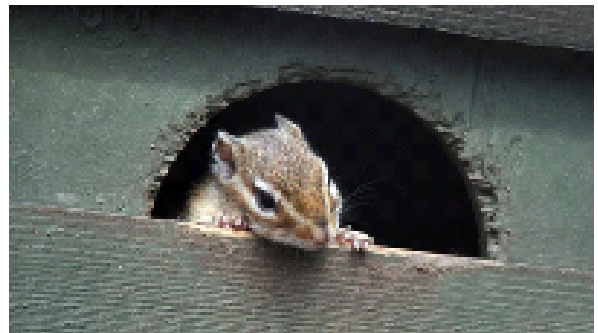


Figure 3: *Chipmunk damage to a house.* (Photograph from Realtor.com).

Lethal Control. Lethal methods such as trapping, and pesticide use are the most practical and effective with method of eliminating chipmunks. There are a total of 12 pesticides in various formulations registered in the state of Georgia for controlling chipmunks. These toxicants are applied to burrows either by pellets and are ingested or inhaled by the animal. Shooting can also be effective if it is safe and legal. A .22 caliber rifle or air rifle (0.177 caliber) must be used. Using baited live-catch traps such as a Hav-a-Hart®, Tomahawk®, or standard mouse traps can be used to catch chipmunks. Baits such as peanut butter, seeds, nuts, fruit, or grains can be used. Place the trap along burrow openings or travel corridors. Releasing live animals into unfamiliar territory usually results in high mortality and it is illegal in most states to release trapped animals on county, state, or federal land. Chipmunks are a non-game species in Georgia; therefore, it is illegal to kill any species unless specifically permitted by regulations. Georgia Department of Natural Resources says homeowners may protect their property from mammals causing damage but does not allow citizens to kill wildlife out of season.



Figure 4: Chipmunk caught in a Hav-a-Hart® trap. (Photograph from K-State Research and Extension).

FURTHER READING

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IMAGE CREDIT:

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

Figure 2: <https://www.forestryimages.org/>

Figure 3: <https://www.realtor.com/advice/home-improvement/how-to-get-rid-of-chipmunks/>

Figure 4: <https://www.johnson.k-state.edu/natural-resources/agent-articles/nuisance-wildlife/how-to-trap-chipmunks.html>

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