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CHIPMUNKS

Fig. 1. Eastern chipmunk, *Tamias striatus*

Damage Prevention and Control Methods

Exclusion

Rodent-proof construction will exclude chipmunks from structures.

Use 1/4-inch (0.6-cm) mesh hardware cloth to exclude chipmunks from gardens and flower beds.

Habitat Modification

Store food items, such as bird seed and dog food, in rodent-proof containers.

Ground covers, shrubs, and wood piles should not be located adjacent to structure foundations.

Frightening

Not effective.

Repellents

Area repellents. Naphthalene (moth flakes or moth balls) may be effective if liberally applied in confined places.

Taste repellents. Repellents containing bitrex, thiram, or ammonium soaps of higher fatty acids applied to flower bulbs, seeds, and vegetation (not for human consumption) may control feeding damage.

Toxicants

None are federally registered. Check with local extension agents or a USDA-APHIS-ADC personnel for possible Special Local Needs 24(c) registrations.

Fumigants

Generally impractical.

Trapping

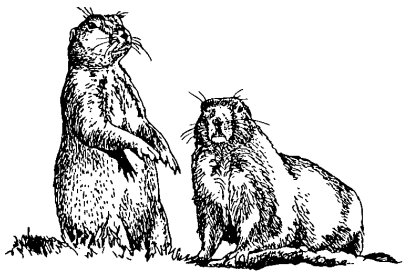
Rat-sized snap traps.

Live (box or cage) traps.

Glue boards.

Shooting

Small gauge shotguns or .22-caliber rifles.



PREVENTION AND CONTROL OF WILDLIFE DAMAGE — 1994

Cooperative Extension Division
Institute of Agriculture and Natural Resources
University of Nebraska - Lincoln

United States Department of Agriculture
Animal and Plant Health Inspection Service
Animal Damage Control

Great Plains Agricultural Council
Wildlife Committee

Identification

Fifteen species of native chipmunks of the genus *Eutamias* and one of the genus *Tamias* are found in North America. The eastern chipmunk *(Tamias striatus)* and the least chipmunk *(Eutamias minimas)*, discussed here, are the two most widely distributed and notable species. Behavior and damage is similar among all species of native chipmunks. Therefore, damage control recommendations are similar for all species.

The eastern chipmunk is a small, brownish, ground-dwelling squirrel. It is typically 5 to 6 inches (13 to 15 cm) long and weighs about 3 ounces (90 g). It has two tan and five blackish longitudinal stripes on its back, and two tan and two brownish stripes on each side of its face. The longitudinal stripes end at the reddish rump. The tail is 3 to 4 inches (8 to 10 cm) long and hairy, but it is not bushy (Fig. 1).

The least chipmunk is the smallest of the chipmunks. It is typically 3 2/3 to 4 1/2 inches (9 to 11 cm) long and weighs 1 to 2 ounces (35 to 70 g). The color varies from a faint yellowish gray with tawny dark stripes (Badlands, South Dakota) to a grayish tawny brown with black stripes (Wisconsin and Michigan). The stripes, however, continue to the base of the tail on all least chipmunks.

Chipmunks are often confused with thirteen-lined ground squirrels *(Spermophilus tridecemlineatus),* also called "striped gophers," and red squirrels *(Tamiasciurus hudsonicus).* The thirteen-lined ground squirrel is yellowish, lacks the facial stripes, and its tail is not as hairy as the chipmunk's. As this squirrel's name implies, it has 13 stripes extending from the shoulder to the tail on each side and on its back. When startled, a ground squirrel carries its tail horizontally along the ground; the chipmunk carries its tail upright. The thirteen-lined ground squirrel's call sounds like a high-pitched squeak, whereas chipmunks have a rather sharp "chuck-chuck-chuck" call. The red squirrel is very vocal and has a high-pitched chatter. It is larger than the chipmunk, has a bushier tail and lacks the longitudinal stripes of the chipmunk. Red squirrels spend a great deal of time in trees, while chipmunks spend most of their time on the ground, although they can climb trees.

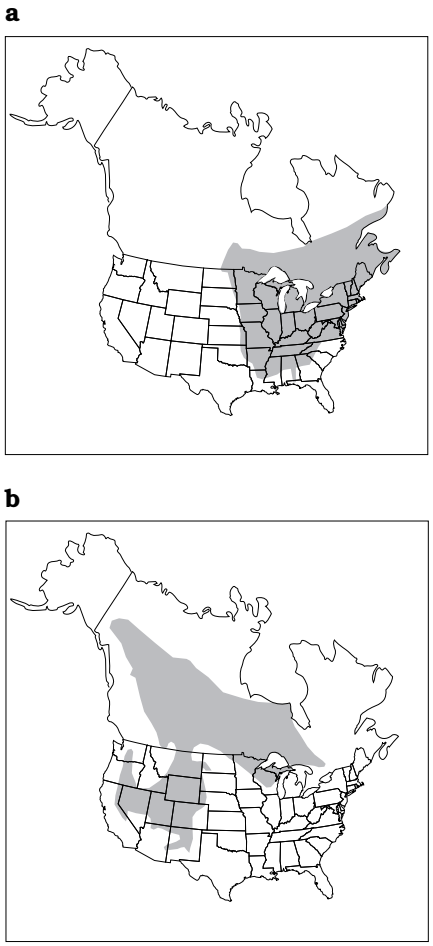


Fig. 2. Range of the eastern (a) and least chipmunk (b) in North America.

Range

The eastern chipmunk's range includes most of the eastern United States. The least chipmunk's range includes most of Canada, the US Rocky Mountains, the Great Basin, and parts of the upper Midwest (Fig. 2).

Habitat and General Biology

Eastern chipmunks typically inhabit mature woodlands and woodlot edges, but they also inhabit areas in and around suburban and rural homes. Chipmunks are generally solitary except during courtship or when rearing young.

The least chipmunk inhabits low sagebrush deserts, high mountain coniferous forests, and northern mixed hardwood forests.

The home range of a chipmunk may be up to 1/2 acre (0.2 ha), but the adult only defends a territory about 50 feet (15.2 m) around the burrow entrance. Chipmunks are most active during the early morning and late afternoon.

Chipmunk burrows often are well-hidden near objects or buildings (for example, stumps, wood piles or brush piles, basements, and garages). The burrow entrance is usually about 2 inches (5 cm) in diameter. There are no obvious mounds of dirt around the entrance because the chipmunk carries the dirt in its cheek pouches and scatters it away from the burrow, making the burrow entrance less conspicuous.

In most cases, the chipmunk's main tunnel is 20 to 30 feet (6 m to 9 m) in length, but complex burrow systems occur where cover is sparse. Burrow systems normally include a nesting chamber, one or two food storage chambers, various side pockets connected to the main tunnel, and separate escape tunnels.

With the onset of cold weather, chipmunks enter a restless hibernation and are relatively inactive from late fall through the winter months. Chipmunks do not enter a deep hibernation as do ground squirrels, but rely on the cache of food they have brought to their burrow. Some individuals become active on warm, sunny days during the winter. Most chipmunks emerge from hibernation in early March.

Eastern chipmunks mate two times a year, during early spring and again during the summer or early fall. There is a 31-day gestation period. Two to 5 young are born in April to May and again in August to October. The young are sexually mature within 1 year. Adults may live up to 3 years.

Adult least chipmunks mate over a period of 4 to 6 weeks from April to mid-July. Least chipmunks produce 1 litter of 2 to 7 young in May or June. Occasionally a second litter is produced in the fall.

Chipmunk pups appear above ground when they are 4 to 6 weeks old — 2/3 the size of an adult. Young will leave the burrow at 6 to 8 weeks.

Population densities of chipmunks are typically 2 to 4 animals per acre (5 to 10/ha). Eastern chipmunk population densities may be as high as 10 animals per acre (24/ha), however, if sufficient food and cover are available. Home ranges often overlap among individuals.

Food Habits

The diet of chipmunks consists primarily of grains, nuts, berries, seeds, mushrooms, insects, and carrion. Although chipmunks are mostly ground-dwelling rodents, they regularly climb trees in the fall to gather nuts, fruits, and seeds. Chipmunks cache food in their burrows throughout the year. By storing and scattering seeds, they promote the growth of various plants.

Chipmunks also prey on young birds and bird eggs. Chipmunks themselves serve as prey for several predators.

Damage and Damage Identification

Throughout their North American range, chipmunks are considered minor agricultural pests. Most conflicts with chipmunks are nuisance problems. When chipmunks are present in large numbers they can cause structural damage by burrowing under patios, stairs, retention walls, or foundations. They may also consume flower bulbs, seeds, or seedlings, as well as bird seed, grass seed, and pet food that is not stored in rodent-proof storage containers. In New England, chipmunks and tree squirrels cause considerable damage to maple sugar tubing systems by gnawing the tubes.

Legal Status

Chipmunks are not protected by federal law, but state and local regulations may apply. Most states allow landowners or tenants to take chipmunks when they are causing or about to cause damage. Some states, (for example, Georgia, North Carolina, and Arkansas) require a permit to kill nongame animals. Other states are currently developing laws to protect all nongame species. Consult your local conservation agency or USDA-APHIS-ADC personnel for the legal status of chipmunks in your state.

Damage Prevention and Control

Exclusion

Chipmunks should be excluded from buildings wherever possible. Use hardware cloth with 1/4-inch (0.6-cm) mesh, caulking, or other appropriate materials to close openings where they could gain entry.

Hardware cloth may also be used to exclude chipmunks from flower beds. Seeds and bulbs can be covered by 1/4-inch (0.6-cm) hardware cloth and the cloth itself should be covered with soil. The cloth should extend at least 1 foot (30 cm) past each margin of the planting. Exclusion is less expensive in the long run than trapping, where high populations of chipmunks exist.

Cultural Methods and Habitat Modifications

Landscaping features, such as ground cover, trees, and shrubs, should not be planted in continuous fashion connecting wooded areas with the foundations of homes. They provide protection for chipmunks that may attempt to gain access into the home. It is also difficult to detect chipmunk burrows that are adjacent to foundations when wood piles, debris, or plantings of ground cover provide above-ground protection.

Place bird feeders at least 15 to 30 feet (5 to 10 m) away from buildings so spilled bird seed does not attract and support chipmunks near them.

Repellents

Naphthalene flakes ("moth flakes") may repel chipmunks from attics, summer cabins, and storage areas when applied liberally (4 to 5 pounds of naphthalene flakes per 2,000 square feet [1.0 to 1.2 kg/100 m^2]). Use caution, however, in occupied buildings, as the odor may also be objectionable or irritating to people or pets.

There are currently no federally registered repellents for controlling rodent damage to seeds, although some states have Special Local Needs 24(c) registrations for this purpose. Taste repellents containing bitrex, thiram, or ammonium soaps of higher fatty acids can be used to protect flower bulbs, seeds, and foliage not intended for human consumption. Multiple applications of repellents are required. Repellents can be expensive and usually do not provide 100% reduction in damage to horticultural plantings.

Toxicants

There are no toxic baits registered for controlling chipmunks. Baits that are used against rats and mice in and around homes will also kill chipmunks although they are not labeled for such use and cannot be recommended. Moreover, chipmunks that die from consuming a toxic bait inside structures may create an odor problem for several days. Some states have Special Local Needs 24(c) registrations for chipmunk control for site-specific use.

Consult a professional pest control operator or USDA-APHIS-ADC biologist if chipmunks are numerous or persistent.

Fumigants

Fumigants are generally ineffective because of the difficulty in locating the openings to chipmunk burrows and because of the complexity of burrows.

Aluminum phosphide is a Restricted Use Pesticide that is registered in many states for the control of burrowing rodents. It is available in a tablet form, which when dropped into the burrow reacts with the moisture in the soil and generates toxic phosphine gas.

Aluminum phosphide, however, cannot be used in, under, or even near occupied buildings because there is a danger of the fumigant seeping into buildings.

Gas cartridges are registered for the control of burrowing rodents and are available from garden supply centers, hardware stores, seed catalogs, or the USDA-APHIS-ADC program. Chipmunk burrows may have to be enlarged to accommodate the commercially or federally produced gas cartridges. Gas cartridges should not be used under or around buildings or near fire hazards since they burn with an open flame and produce a tremendous amount of heat. Carbon monoxide and carbon dioxide gases are produced while the cartridges burn; thus, the rodents die from asphyxiation.

Trapping

Trapping is the most practical method of eliminating chipmunks in most home situations. Live-catch wire-mesh traps or common rat snap traps can be used to catch chipmunks. Common live-trap models include the Tomahawk (Nos. 102, 201) and Havahart (Nos. 0745, 1020, 1025) traps. Check the **Supplies and Materials** section for additional manufacturers of live-catch traps.

A variety of baits can be used to lure chipmunks into live traps, including peanut butter, nutmeats, pumpkin or sunflower seeds, raisins, prune slices, or common breakfast cereal grains. Place the trap along the pathways where chipmunks have been seen frequently. The trap should be securely placed so there is no movement of the trap prematurely when the animal enters. Trap movement may prematurely set off the trap and scare the chipmunk away. A helpful tip is to "prebait" the trap for 2 to 3 days by wiring the trap doors open. This will condition the chipmunk to associate the new metal object in its territory with the new free food source. Set the trap after the chipmunk is actively feeding on the bait in and around the trap. Live traps can be purchased from local hardware stores, department stores, pest control companies, or rented from local animal shelters.

Check traps frequently to remove captured chipmunks and release any nontarget animals caught in them. Avoid direct contact with trapped chipmunks. Transport and release live-trapped chipmunks several miles from the point of capture (in areas where they will not bother someone else), or euthanize by placing in a carbon dioxide chamber.

Common rat snap traps can be used to kill chipmunks if these traps are isolated from children, pets, or wildlife. They can be set in the same manner as live traps but hard baits should be tied to the trap trigger. Prebait snap traps by not setting the trap until the animal has been conditioned to take the bait without disturbance for 2 to 3 days. Small amounts of extra bait may be placed around the traps to make them more attractive. Set the snap traps perpendicular to the chipmunk's pathway or in pairs along travel routes with the triggers facing away from each other. Set the trigger arm so that the trigger is sensitive and easily sprung.

To avoid killing songbirds in rat snap traps, it is advisable to place the traps under a small box with openings that allow only chipmunks access to the baited trap. The box must allow enough clearance so the trap operates properly. Conceal snap traps that are set against structures by leaning boards over them. Small amounts of bait can be placed at the openings as an attractant.

Shooting

Where shooting is legal, use a small-gauge shotgun or a .22-caliber rifle with bird shot or C.B. cap loads. Chipmunks are nervous and alert, so they make difficult targets. The best time to attempt shooting is on bright sunny days during the early morning.

Economics of Damage and Control

The majority of chipmunk damage involves minimal economic loss (under $200). Homeowners report that chipmunks are quite destructive when it comes to their burrowing activities around structures. This damage warrants an investment in control to protect structural integrity of stairs, patios, and foundations. Their consumption of seeds, flower bulbs, fruit, and vegetables is often a nuisance.

Acknowledgments

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Figure 1 from Schwartz and Schwartz (1981).

Figure 2 from Burt and Grossenheider (1976).

For Additional Information

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