

Tree Squirrels

Tree squirrels include the fox squirrel (*Sciurus niger*), the eastern gray squirrel (*Sciurus carolinensis*), the red squirrel (*Tamiasciurus hudsonicus*), the southern flying squirrel (*Glaucomys volans*), and the northern flying squirrel (*Glaucomys sabrinus*). The eastern gray and the flying squirrels are usually the culprits if squirrel damage has occurred. Squirrels sometimes find their way into buildings through loose siding or ventilation screens. Once inside, they can damage walls, insulation, and electrical wires.

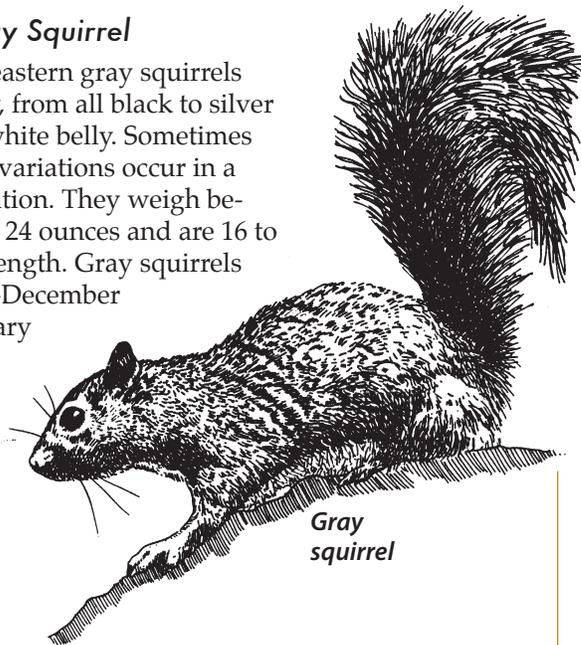
General Biology

All five squirrel species nest in tree cavities, human-made squirrel boxes, or leaf nests. Although squirrels prefer to nest in cavities, they often construct leaf nests by making a stick frame that is then filled with dry leaves and lined with leaves, strips of bark, corn husks, or other materials.

Home range size can vary from 1 to 100 acres depending on the season and the availability of food. Squirrels often seek mast-bearing (nuts and other hard fruits) forests in fall and favor tender buds of elms and maples in the spring. During fall, squirrels may travel 50 miles or more in search of better habitat.

Eastern Gray Squirrel

The color of eastern gray squirrels varies greatly, from all black to silver gray with a white belly. Sometimes several color variations occur in a single population. They weigh between 15 and 24 ounces and are 16 to 24 inches in length. Gray squirrels breed in mid-December or early January and again in June. During the breeding season, noisy mating chases take place when one or more



Gray squirrel



Red squirrel

Illustration by John Sidelinger

males pursue a female through the trees. When not breeding, the gray squirrel is solitary. They usually have two litters of one to eight pups. The young are weaned after they are two months old. The diet of the gray squirrel dictates its habitat. Gray squirrels can be found in any area that supplies sufficient amounts of nuts and seeds to sustain the population. Urban backyards also have become prime habitat for gray squirrels.

Fox Squirrel

Fox squirrels are rare in Pennsylvania. Their coats are variable in color. Some have a distinct reddish cast to their brownish-gray coat. Fox squirrel bellies are tan compared to the white bellies of gray squirrels. They are larger than gray squirrels, weighing 1.9 to 2.2 pounds, but they have the same body shape. Their breeding activities are similar to those of gray squirrels. Fox squirrels prefer oak-hickory habitat over much of their range.

Red Squirrel

The red squirrel has a red-brown upper body and white underparts. They have small ear tufts in the winter and often have a black stripe separating the dark upper color from the light belly. The amount of red in their fur varies from rust colored in winter to grayish red in summer. They are smaller than both the gray and the fox squirrel, weighing 4 to 8 ounces, and are between 9 and 13 inches in length. Red squirrels prefer coniferous forests, but they also can be found in mixed conifer and hardwood forests or sometimes in hardwood habitats. They do not confine themselves to trees and are commonly found on the ground. Red squirrels are solitary except during copulation. The breeding season is February through September. One to seven young are born in each of the





Flying squirrel

two litters. The young disperse after nine weeks.

Flying Squirrels

Flying squirrels are smaller than other tree squirrels. They are between 8 and 10 inches in length and weigh between 1.3 and 4 ounces. It can be difficult to distinguish between the two species of flying squirrels that occur in Pennsylvania;

both may be various shades of gray or brown above and lighter below. The most distinctive characteristics of flying squirrels are the broad webs of skin connecting the fore and hind legs at the wrists, and the distinctly flattened tail. They use this skin as a parachute when gliding from tree to tree. Flying squirrels can have two litters of two to four young each year. The young may stay with the mother through the winter when the squirrels commonly group together. The southern flying squirrel will share mixed coniferous and deciduous forests with the northern flying squirrel, but it prefers mature deciduous forests with abundant nut-producing trees. The northern flying squirrel is found in the northern and central counties of the state, whereas the southern flying squirrel can be found throughout the state. Flying squirrels are the only squirrels that are active at night.

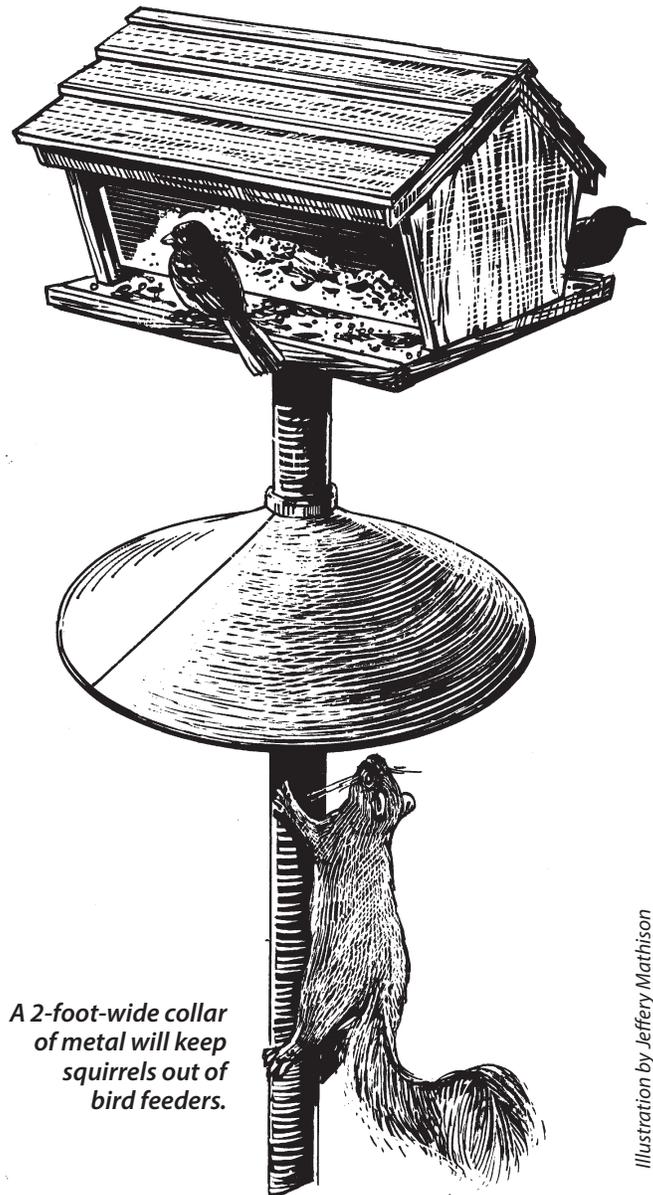
Food Habits

Fox and gray squirrels have similar food habits. They both eat a great variety of native foods. Typically, they feed on mast (wild tree fruits and nuts) in fall and early winter. Acorns, hickory nuts, walnuts, and osage orange fruits are favorite fall foods. Squirrels often hoard nuts for later use. Tree buds are a preferred food in late winter and early spring. In the summer, they eat fruits, berries, and succulent plant materials. Fungi, corn, and cultivated fruits are taken when available. During population peaks, when food is scarce, these squirrels may chew bark from a variety of trees. They also will eat insects and other animal matter. Red squirrels are heavily dependent on coniferous forests for cones and buds but also will eat a variety of other foods common to gray and fox squirrel diets. Red squirrels do not spend as much time in trees as the other squirrel species. They find a large percentage of their food on the forest floor. Flying squirrels' food habits are generally similar to those of other squirrels. However, they are the most carnivorous of all tree squirrels. They eat bird eggs and nestlings, insects, and other animal matter when available. Flying squirrels often occupy bird houses, especially bluebird houses.

Description of Damage

In residential areas, squirrels cause damage because of their tendency to gnaw on structures. They will chew siding and under eaves to make openings for their nests. Because of their small size, flying squirrels are prone to making nests in attics and other areas they can get into. Many mountain cabins have groups of flying squirrels living in the closets and between walls. Once they have made a nest, squirrels will chew on insulation and the insulation around wires. This habit is dangerous because the bare wires may cause a fire. They also travel along powerlines and may short out transformers.

The second most common complaint about squirrels is that they often take food at feeders intended for birds. Squirrels are adept climbers and can reach almost any feeder. In addition, they frequently damage bird feeders when they enlarge openings by chewing on them or when they gnaw on perches.



A 2-foot-wide collar of metal will keep squirrels out of bird feeders.

Other squirrel activities that cause complaints from homeowners are not commonly a significant source of damage. For example, squirrels occasionally damage lawns when they dig to bury or search for nuts. They chew bark and clip twigs on ornamental trees or shrubbery planted in yards and gardens. In addition, squirrels may eat planted seeds, mature fruits, or grains such as corn.

Legal Status

Fox and gray squirrels are classified as game animals. Therefore, the Pennsylvania Game Commission regulates the hunting of these animals. If squirrels are causing damage to property, the property owner does not need to have a hunting license in order to control the problem.

Damage Control

There are many ways to control squirrel damage. Exclusion techniques, such as blocking entrances into buildings, are the most effective way to control damage. Repellents can be used to keep squirrels out of areas where moderate damage is occurring. Trapping is the best way to remove squirrels from buildings. Licensed wildlife pest control operators are available throughout the state and most will trap and remove squirrels for homeowners. Contact your county extension office or consult the yellow pages for information about wildlife pest control operators.

Exclusion

Prevent squirrels from climbing power poles and individual trees by encircling them with a 2-foot-wide collar of metal 6 feet off the ground. To give trees adequate growing space, attach the metal collar using encircling wires held together with springs. Similarly, these squirrel baffles can be placed on poles that support bird feeders or bird houses. Many different squirrel-proof feeders are currently on the market that may deter squirrels. Prevent squirrels from traveling on wires by installing 2-foot sections of lightweight 2- to 3-inch-diameter plastic pipe. Slit the pipe lengthwise, spread it open, and place it over the wire. The pipe will rotate on the wire and cause traveling squirrels to tumble.

Close openings to attics and other parts of buildings, but make sure not to lock squirrels inside. Place traps inside as a precaution after openings are closed. A squirrel excluder can be improvised by mounting an 18-inch section of 4-inch plastic pipe over an opening. The pipe should point down at a 45-degree angle. A one-way door can also be used over an opening to let squirrels out and prevent them from returning. Close openings to buildings with heavy 0.5-inch wire mesh or make other suitable repairs. Custom-made wire-mesh fences topped with electrified wires usually will keep squirrels out of gardens, but this method is costly, and squirrels do not often cause much damage to gardens.

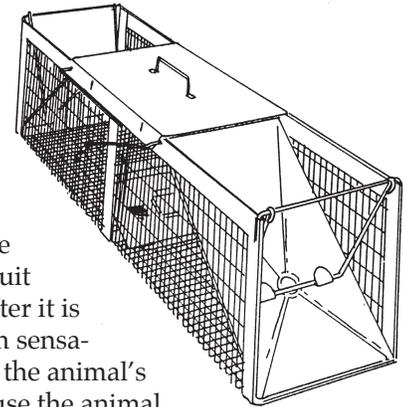
Habitat Modification

Trim trees and limbs to 6 to 8 feet away from buildings to prevent squirrels from jumping onto roofs. If squirrels are causing problems at bird feeders, consider providing an alternative food source. Wire or nail an ear of corn to a tree or wooden fence post away from where the squirrels are causing problems.

Repellents

There are very few repellents currently available for use on squirrels. Products that contain the bittering agent denatonium saccharide, such as Ro-pel, are taste repellents that can be applied to seeds, flowers, trees, shrubs, fences, siding, and outdoor furniture.

However, these products have had a very limited success rate. Miller Hot Sauce, which contains the taste repellent capsaicin, can be applied to fruit trees and vegetable crops only before the fruit or vegetable is on, or after it is off, the plant. The warm sensation capsaicin leaves in the animal's throat is believed to cause the animal to avoid eating that plant again. The effectiveness of capsaicin-containing repellents is variable depending on the availability of other food sources. Polybutenes are sticky materials that can be applied to buildings, railings, downspouts, and other areas to deter squirrels from climbing. They work by sticking to the squirrels' feet, which frustrates the animals and causes them to avoid the area. Because polybutenes can be messy, a pre-application of masking tape is recommended.



Toxicants

No fumigants or toxicants are federally registered for use on squirrels.

Trapping

Wire-cage traps and box traps can be used to capture squirrels alive. Prebait the traps by tying the doors open for two to three days to get squirrels accustomed to feeding in the traps. This practice will make it easier to capture a large number of squirrels in one area. Good baits are orange and apple slices, walnuts or pecans removed from the shell, and peanut butter. Other foods familiar to squirrels also may work well, such as corn or sunflower seeds. After prebaiting, set the traps and check them twice daily. It is most efficient and humane to check the traps in the morning and evening. Once the animal has been trapped and removed from the house or other building and the entrance holes closed, it may be released in the yard. However, make sure to block or

eliminate any access routes back to vulnerable areas of the building.

Other Methods

Often, several control methods used simultaneously are more successful than a single method. For example, to remove squirrels from an attic, watch the squirrels to determine where they enter, and then use deterrents, such as polybutenes, near the entrance. Placing lights in the attic also may deter squirrels from returning. After they appear to have left the building, use appropriate exclusion methods to keep them out. One or more baited traps will catch squirrels that are accidentally closed in. This last step is very important because locked-in squirrels may cause damage when they try to chew their way out.

Materials and Suppliers

The following are suppliers of control products. Many of these products can be purchased in local garden supply stores, feed mills, and department stores. If products are unavailable locally, they can likely be ordered from the following companies. This list is not necessarily complete, and the inclusion of names does not imply endorsement of a product by The Pennsylvania State University. Local laws may regulate the use of some tools and techniques and should be consulted before control activities are begun.

Repellents

Hot Sauce
(Capsaicin)
Miller Chemical and
Fertilizer Corp.
Box 333 120 Radio Rd.
Hanover, PA 17331
717-632-8921
800-233-2040
Fax: 717-632-4581
www.millerchemical.com

**4 the Squirrels
Repellent**
(Polybutenes)
B & G Chemicals and
Equipment Co., Inc.
10539 Maybank
Dallas, TX 75354-0428
214-357-5741
800-345-9387
Fax: 214-357-4541
www.bgchem.com

Cage or Box Traps

H. B. Sherman Traps, Inc.
3731 Peddie Drive
Tallahassee, FL 32303
850-575-8727
Fax: 850-575-4864
www.shermantraps.com

Tomahawk Live Trap Co.
Box 155
Hazelhurst, WI 54531
715-356-4600
800-27A-TRAP
Fax: 715-356-4611
www.livetraps.com

Wildlife Management Supplies

Critter Control
9435 E. Cherry Bend Rd.
Traverse City, MI 49684
800-451-6544
Fax: 231-947-9440
www.crittercontrol.com

Acknowledgments

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This publication was prepared by Shannon N. Thurston, assistant wildlife extension specialist, and Margaret C. Brittingham, professor of wildlife resources.

Gray squirrel on p. 1, flying squirrel on p. 2, and trap on p. 3 © Penn State College of Agricultural Sciences

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