



# Managing Wildlife Damage: Tree Squirrels

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## INTRODUCTION

Tree squirrels are members of the rodent family. They include the fox squirrel (*Sciurus niger*), the eastern gray squirrel (*Sciurus carolinensis*), and the southern flying squirrel (*Glaucomys volans*). These species are all located throughout most of the eastern United States and are found in all suitable habitat in Georgia. Gray squirrels are quite common; fox squirrels are less common than grays. Flying squirrels are often common in appropriate habitat.

## TAXONOMY

Class Mammalia

Order Rodentia

Family Sciuridae

Genus – *Sciurus* (for grey and fox squirrel)

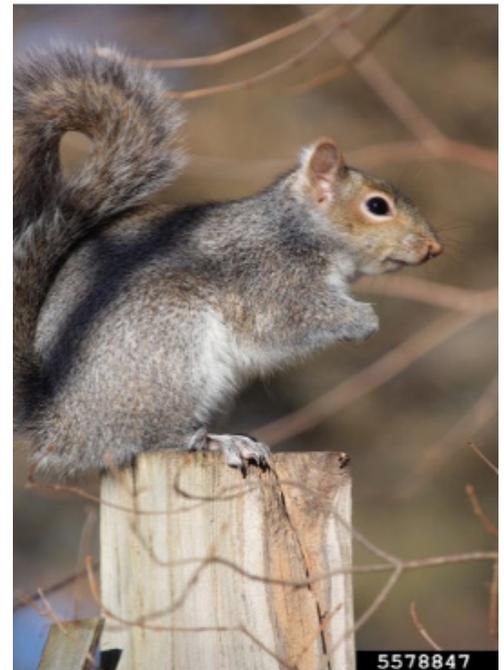
Genus – *Glaucomys* (for flying squirrel)

Species – see description below

Worldwide, there are 58 genera in Family Sciuridae with 285 species. The Family includes marmots, ground squirrels, chipmunks, and prairie dogs. There are 7 species in the Genus *Sciurus* and 3 species in the Genus *Glaucomys*. The Family includes members of the Genus *Tamiasciurus* but the red squirrel is rare in Georgia, occurring only at the highest elevations in northeast corner of the state.

## STATUS

In Georgia, eastern gray squirrels (Figure 1) as well as eastern fox squirrels (Figure 2) are considered game animals. There is a closed season for harvest for eastern gray squirrels and eastern fox squirrels. The season runs from the middle of August until the end of February. There is a bag limit of 12 squirrels per day. The southern flying squirrel is listed by the International Union for Conservation of Nature (IUCN; <https://www.iucnredlist.org/>) as a species of least concern, and there is no open season for harvest for this animal. All non-game wildlife in Georgia is protected.



**Figure 1:** *Eastern Gray Squirrel*.  
(Photograph from bugwood.org)

### NATURAL HISTORY

**Identification.** The eastern gray squirrel is a medium sized rodent, weighing between 0.75 and 1.5 lbs. It has a bushy tail, grayish-brown fur, and a white underbelly (Figure 1). Fur color and size can vary depending on geographic region. The eastern fox squirrel is the largest tree squirrel in the eastern United States, weighing between 1 and 3 pounds. Fox squirrels fur color is highly variable; however, the most common colors in Georgia are silver and black. In Georgia they often present with a lighter body color and a darker fur color on their head (Figure 2). The southern flying squirrel is the smallest tree squirrel, weighing approximately 2.5 ounces. It has pale brown fur and a white underbelly (Figure 3). It has furred membranes along its body, which are a pale gray-brown color.



Figure 2: *Fox Squirrel* (Photograph from bugwood.org).



Figure 3: *Southern Flying Squirrel* (Photograph from bugwood.org).

**Habitat.** All three species of squirrel can exploit a variety of environments. In the southern United States these species live in oak-hickory forests as well as mixed forests of pine and hardwood. They are also found in suburban environments where large trees are present.

**Reproduction.** Eastern gray squirrels and eastern fox squirrels reach sexual maturity at one year old. They breed twice a year from December-January and again in June. The gestation period for these species is 42 to 45 days. Cavities are the preferred nest site for these species and the average litter size is 3 (range 2-4). Young are born hairless, blind, and with their ears closed. They are weaned at 10 to 12 weeks old and begin to explore outside the nest at this time. Southern flying squirrels breed once or twice a year. They have a litter size of 2-4. Southern flying squirrels spend winters together in groups of 3-8. Young often spend the winter with their mother in these groups. They also nest in tree cavities but readily use birdhouses.

**Feeding.** Fox and gray squirrels both eat a large variety of foods. Squirrels cannot digest cellulose, instead feeding on items rich in carbohydrates, fats, and proteins. They feed on hard mast during the fall and early winter, often hoarding food for later use. During late winter and early spring, tree buds are a preferred food. In the summer, they feed on soft mast such as fruits and berries. They also feed opportunistically on other foods such as corn, cultivated fruit, and feed placed by humans to attract wildlife especially birds. Southern flying squirrels are the most carnivorous of these species, eating bird eggs, insects, and other animal matter in addition to hard and soft mast.

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**Behavior.** Fox and gray squirrels are active during the day. They nest in tree cavities, human made structures, or in leaf nests. They construct these leaf nests by filling a frame of sticks with dried leaves and lining it with materials such as leaves, bark, or corn husks. They have highly variable home range sizes depending on the availability of resources. Southern flying squirrels are nocturnal animals. They nest in tree cavities and readily use bird houses. Gray and flying squirrels will often enter human structures like barns and attics. All three species communicate through vocalizations.

**Disease.** Squirrels can be reservoirs for several different diseases that have the potential to cause humans harm. These diseases include Lyme Disease, Rocky Mountain spotted fever, and Leptospirosis. The most common of these diseases are Rocky Mountain spotted fever and Leptospirosis. Squirrels also serve as hosts for parasites such as fleas and botflies which present as large subcutaneous nodules. Botfly larvae are most noticeable in late summer. These parasites – often called “wolves” or “warbles” by hunters and homeowners – don’t seem to harm an otherwise healthy squirrel. The larvae are subcutaneous and don’t affect the meat. However, the larvae are unsightly, so squirrels harvested in the early season are usually discarded. Frost and cool weather usually eliminate botflies in the fall.

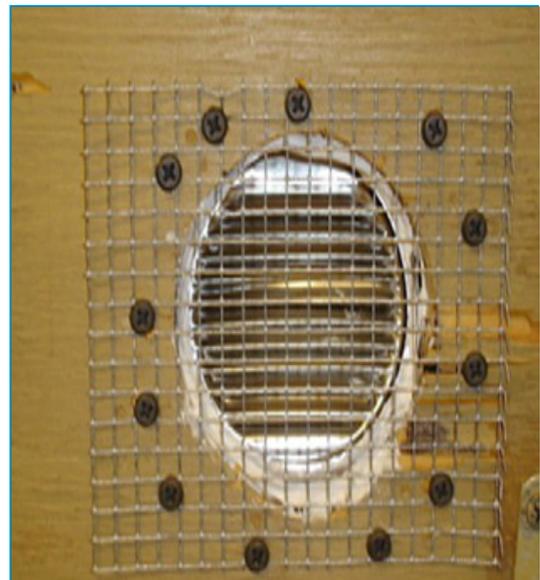
**Damage Issues.** Tree squirrels cause damage in suburban areas by chewing on structures, trees, and electric lines. They chew on siding to gain access to attics for nesting. Flying squirrels are prone to making nests in attics and other hard to access areas due to their small size. They may chew on insulation and wires, which poses a fire hazard. Gray squirrels also use feeders intended for birds and often damage them by chewing on openings to enlarge them. Squirrels also chew bark from the branches and trunk of trees, damaging them in the process. In the southeast, fox squirrels do this to loblolly and other pines. In addition, they also eat cones which can interfere with the forest regeneration. They can also pose a risk to orchards where they eat the fruit and damage the trees by chewing the bark. Both gray and fox squirrels can reduce the yield of backyard fruit trees such as apples and peaches but rarely cause significant damage in commercial orchards.

**Economics.** Tree squirrels are an important game animal to hunters, who value them for their meat and fur. Thousands of gray and fox squirrels are harvested every year in the state of Georgia. The damage squirrels inflict to residential structures, trees, and agriculture is the greatest cost associated with them. They cause an unknown amount of damage to homeowners, forest managers, and the agriculture industry.

### Control.

**Habitat Modification.** In suburban areas you can use habitat modification methods such as trimming trees and tree limbs to approximately 6 to 8 feet away from buildings. You can also supply them with an alternative food source to deter them from causing damage at bird feeders. In an agricultural setting it may also be beneficial to remove other trees near high value crops.

**Exclusion.** Exclusion techniques have proven to be the most effective way of preventing tree and property damage caused by squirrels. In order to protect individual trees, you can encircle them with a two-foot-wide collar of metal six feet off the ground. This can also be done on poles which support bird feeders to prevent squirrels from accessing them. In order to prevent squirrels from traveling along wires, you can run wires through two-foot sections of lightweight plastic pipe. The pipe will rotate on the wire, which will cause squirrels to fall and



**Figure 4:** Hardware cloth - 0.5-inch mesh - used for exclusion from buildings.

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prevent access along this route. To prevent squirrels from accessing attics and other parts of buildings openings should be closed off using 0.5-inch wire mesh (Figure 4). It is important to ensure no squirrels are inside the space when it is blocked. Traps should be placed inside once the opening has been closed off to remove any squirrels that have been trapped inside. There are also one-way doors which can be installed in openings to allow squirrels to leave and prevent them from returning.

**Repellents.** There are few repellents available for use on squirrels. There are taste repellents such as Ropel that contain the bittering agent denatonium saccharide which can be applied to seeds, plants, siding, and outdoor furniture. These taste repellents have a limited success rate. There are also capsaicin-containing taste repellents such as Miller hot sauce that can be applied to fruit trees and crops before the fruit or vegetable is on the plant (Figure 5). These repellents leave a warm sensation in the animal's mouth, which is believed to cause the animal to avoid that plant in the future. These repellents have a variable success rate depending on the availability of other food sources in the area.

Polybutenes are another form of repellent used to deter squirrels from climbing. This material is a sticky substance that is applied to outdoor structures such as buildings and railings. It sticks to the feet of the squirrels that attempt to climb the structure, which frustrates the squirrels and deters them from returning to that area. Polybutenes are messy and to minimize the mess it is recommended to use masking tape to block off areas that are not treated with polybutenes.

**Toxicants.** No toxicants are currently registered in Georgia for use on squirrels.

**Trapping.** Wire cage traps and box traps can be used to capture squirrels alive. They are commonly used alongside exclusion techniques in order to remove squirrels that have been trapped inside. When using these traps, they should be prebaited by tying the doors open to let the squirrels get used to feeding inside the traps. Apple slices, nuts, sunflower seeds, and peanut butter all work well as bait for squirrels. Once the traps have been prebaited they should be set and checked twice daily. Ideally the traps will be checked once in the morning and once in the evening. Trapped squirrels should not be moved because research suggests translocated individuals have high mortality. Translocation disrupts social behavior and is highly stressful.

Exclusion or other means should be used to reduce damage. If that fails, lethal control may be necessary.



Figure 5: Miller Hot Sauce

### FURTHER READING

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### ILLUSTRATION ACKNOWLEDGEMENTS

- Figure 1: <http://fishesofgeorgia.uga.edu/gawildlife/images/Mammalia/RegionMaps/snigerrm.gif>
- Figure 2: Steven Katovich, U.S. Forest Service, Bugwood.org
- Figure 3: Joy Viola, Northeastern University, Bugwood.org
- Figure 4: Sturgis Mckeever, Georgia Southern University, Bugwood.org
- Figure 5: <http://www.doyourownpestcontrol.com/images/products/exclusiontechniques4.jpg>
- Figure 6 : [https://cdn2.bigcommerce.com/server3800/28117/products/217/images/449/DEE\\_1090\\_\\_%2087585.1336399814.462.464.jpg?c=2](https://cdn2.bigcommerce.com/server3800/28117/products/217/images/449/DEE_1090__%2087585.1336399814.462.464.jpg?c=2)

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