

# Tree Squirrel

## Ecology & Damage Management

Tree squirrels are native to Wisconsin and are among the most common and frequently observed rodents in the state. They belong to the family *Sciuridae* along with chipmunks, groundhogs, prairie dogs, and ground squirrels. Wisconsin has five species of tree squirrel: the red squirrel, eastern gray squirrel, fox squirrel, and the southern and northern flying squirrel. Although people may get frustrated at times with their presence, squirrels provide many valuable ecosystem services, including serving as prey for other animals and dispersing seeds for a variety of plants.

### DESCRIPTION

Wisconsin's tree squirrels are active throughout the year. They have muscular bodies with thick fur and distinct bushy tails that appear nearly as large as their body in both length and girth. The family name *Sciuridae* means "shade-tail." Although squirrels use their tails as umbrellas, the main function of the tail is for balance, which is critical to their lifestyle in the trees. In addition, flying squirrels use their broad, flat tails to maneuver while gliding through the air. Both males and females for each of the tree squirrel species look alike. The red, eastern gray, and fox squirrels are active during the day (diurnal), while the two flying squirrel species are active at night (nocturnal). The diets of all the tree squirrels vary broadly from acorns and seeds to insects, fungi, and even bird eggs and nestlings.

**"...the main function of the tail is for balance, which is critical to their lifestyle in the trees."**



An acrobatic squirrel climbs on a bird feeder.



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### **Red Squirrel** (*Tamiasciurus hudsonicus*)

The red squirrel (Figure 1) is a relatively small species of tree squirrel. Their body measures 7 to 9 inches long and their tail measures an additional 4 to 7 inches. As their name implies, their fur is distinctly red on the back and tail, with gray sides and a white belly and eye ring. Another noticeable feature are their prominent ears, with tufts of fur extending above the top of each ear. Although they can range throughout Wisconsin, they are commonly seen in the coniferous and mixed forests in the northern two-thirds of the state.



### **Eastern Gray Squirrel** (*Sciurus carolinensis*)

The eastern gray squirrel (Figure 2) is a medium-sized tree squirrel. Their body is 9 to 10 inches long with an 8-to-9-inch tail. They are mostly gray, with white on the belly, behind the ears, and at the tips of the tail hairs. There are numerous color morphs, including all black, all white, and blonde, among others. Eastern gray squirrels can be found in forested areas from rural to urban landscapes and are common throughout the state.



### **Fox Squirrel** (*Sciurus niger*)

The fox squirrel (Figure 3) is the largest of Wisconsin's tree squirrels with a body that measures 10 to 15 inches long, and a tail that measures 8 to 13 inches long. While occasionally mistaken for an eastern gray squirrel, the fox squirrel's fur is brown with black tips (as opposed to gray tipped with white as seen on the eastern gray squirrel), and the belly and tail are dull orange. They use mixed forested areas, and while they can be found throughout the state, they are uncommon in the northernmost part of Wisconsin.



### **Southern (*Glaucomys volans*) and Northern (*Glaucomys sabrinus*) Flying Squirrels**

Of the two flying squirrel species, the southern flying squirrel (Figure 4) is the smaller one, with a body length of 5 to 7 inches and a tail length measuring 3 to 5 inches. The northern flying squirrel (Figure 5) has a body length of 7 to 9 inches and a tail measuring 4 to 7 inches long. The belly fur on both is all white, but the base of the belly hair on the northern flying squirrel is gray, whereas the base is white on the southern species. Being nocturnal, both species have large eyes relative to their head to improve their night vision. Adapted to glide from tree to tree, flying squirrels have folds of skin (also known as patagia) that stretch between their wrists and ankles and their body. This fold of skin usually remains bunched in the armpits when not in use, but when deployed, gives the animal the appearance of a small kite. The tail is bushy like the other tree squirrels, but also broad and flat for minimal drag and to aid with steering while gliding through the air. Although the northern flying squirrel is larger, the southern flying squirrel has been expanding its range into the northern part of the state and outcompeting the northern flying squirrel, making the southern flying squirrel the more common of the two species throughout the state.

Photos: Southern Flying Squirrel – Missouri Department of Conservation; Northern Flying Squirrel – Steve Waller

## HABITS and HABITAT

The tree squirrels, as their names suggest, prefer habitats with an abundance of trees, though each species prefers different types of forests. The red squirrel is a resident of coniferous and mixed forests, preferring primarily conifer seeds as its food. Red squirrels are very territorial and are often heard before they are seen due to their loud chatter.

The fox and eastern gray squirrels occupy areas containing hardwoods like oaks, hickories, and other mast-producing trees, especially in city parks and residential areas. They prefer nuts and acorns but are omnivorous and will eat human trash and even nestlings. Although most commonly seen in trees, they are also content to forage on the ground. Eastern gray squirrels typically store food in one central location, whereas fox squirrels tend to store food in multiple locations. As a result, fox squirrels are good seed dispersers, and neglected or forgotten food stores are a source of new trees.

Northern flying squirrels reside in mixed forests containing mature hardwoods and pines, and southern flying squirrels prefer open hardwood forested areas with plenty of room to glide. Both species of flying squirrels are omnivorous, although the southern flying squirrel has a noted preference for hickory nuts.

The fox, eastern gray, red, and southern flying squirrels breed once in the winter (January–March) and again in early summer (May–July). The northern flying squirrel breeds only once per year (April–May). Gestation periods range from 38 to 45 days, depending on species, and litter sizes range from 1 to 7 young (averaging 3 to 4), again depending on species. Young are born naked and blind and rely on their parents for the first 2 to 3 months of their lives. All of the tree squirrels nest in natural tree cavities or abandoned woodpecker cavities. If cavities are not available, nests made from sticks and leaves, called dreys, are built on tree limbs or in crotches of trees.

## LEGAL STATUS

The northern flying squirrel is listed as a species of special concern, and both flying squirrel species are protected wild animals in Wisconsin. As such, they cannot be lethally removed without a Wisconsin Department of Natural Resources (WDNR) depredation permit. For more information and assistance, please contact your WDNR county biologist or conservation warden.

## IDENTIFYING SQUIRREL DAMAGE

Because most of the tree squirrel species are commonly seen, it is not unusual to catch an individual in the act of causing damage. For example, squirrels are often seen eating from bird feeders. On the occasions when squirrels cause damage and are not seen, it is necessary to identify squirrel damage by signs left, like droppings, tracks, and chew marks.



**FIGURE 6**  
Squirrel droppings.

Squirrel droppings (Figure 6) tend to have smooth, rounded ends, their color is brown to black, and squirrels tend to leave clusters of droppings in one place.

Flying squirrels create latrines where they defecate regularly. The size varies by species, with droppings from smaller squirrels like the flying and red squirrels measuring approximately  $\frac{1}{4}$  inches long and droppings from larger species like fox and eastern gray squirrels measuring up to  $\frac{3}{4}$  inches long. Squirrel droppings can contain a variety of diseases, so when cleaning up droppings, wear gloves and wash your hands prior to touching your mouth, eyes, or nose, or preparing or eating food. If removing droppings from enclosed spaces, it is recommended you wear a mask or bandana over your mouth and nose.

Regardless of species, all squirrels have four toes on the front foot and five toes on the back foot. The back foot has the appearance of elongated hands, and although squirrels have claws, the claws rarely show when examining squirrel tracks (Figure 7). Track sizes vary, depending on species, but the hind foot measures longer than the front foot. For example, the hind foot of southern flying squirrel measures  $\frac{1}{2}$  to  $1\frac{3}{8}$  inches long, and the fox squirrel's hind foot can be as long as  $2\frac{1}{2}$  inches in length.

The fox, eastern gray, and red squirrels are classified as an unprotected species under Wisconsin state law. Homeowners and landowners may lethally manage these three squirrel species without a license whenever damage is occurring on property rented or owned, as long as the lethal method chosen is legal to use at the location where management is occurring. Any animal live-trapped cannot be released on public or private land without permission from the owner of the land.



**FIGURE 7**  
Squirrel tracks.



**FIGURE 8**  
Squirrel chew damage.

Another sign of squirrel damage is gnawing or chew marks (Figure 8). Because squirrels are rodents and must file down their constantly growing front teeth (incisors), they routinely gnaw or chew on an assortment of materials like wood, brick, and even metal. Squirrels are known to gnaw their way into

## Identifying Squirrel Damage (continued)

attics, sheds, and other structures. Species-specific gnaw holes can be recognized by their size: fox and eastern gray squirrels make entry holes the approximate size of a baseball, red squirrels create entry holes roughly the size of a golf ball, and flying squirrels create entry holes about the size of a quarter.



FIGURE 9  
Squirrel pine cone feeding.

In addition to droppings, tracks, and chewing, squirrels leave signs as they cause damage to trees, lawns, and power or electrical lines. Squirrels eat a variety of nuts and pine cones, and leave the remains of nuts and pine cones on the ground (Figure 9). In fruit or nut orchards, squirrels eat the hard and soft mast and can inhibit future tree growth as they feed on both the nuts or fruit and terminal buds of branches. It is common for eastern gray squirrels to nip the terminal buds off hard and softwood trees and retrieve the terminal buds for nest building and food sources. Squirrels also strip bark off trees like cedar and arborvitae, which can allow insects and disease to attack the damaged tree(s). As squirrels bury and dig up nuts and other foods, they can damage lawns, albeit temporarily. They may also dig up bulbs planted in flower beds. Because of their chewing habits, they can damage power and electrical lines, causing power outages and electrical fires.

## CONTROLLING SQUIRREL DAMAGE

### NON-LETHAL CONTROL

#### Habitat Modification

Modifying habitat to discourage squirrels from a local area can be difficult because squirrels are able to use so many different habitat types. However, targeted and strategic habitat modification may be effective. For example, removing bird feeders will eliminate food that attracts and concentrates squirrels in an area. Alternatively, changing the type of seed or feeder used may be effective in preventing squirrels from eating bird seed. Although not a consistent solution, using safflower seed instead of sunflower seed may reduce squirrel use of feeders because safflower seed is more bitter than sunflower seed and not as appetizing to some squirrels. Birds do not have developed taste buds, thus don't notice the difference in seed and will continue to feed on safflower seeds. Using tube feeders (e.g., thistle or niger seed feeders) rather than hopper feeders, or squirrel-proof hopper feeders, will also prevent squirrels from accessing bird seed. Another habitat modification technique is to trim all tree limbs 6 to 8 feet away from your house so squirrels are not able to access your roof or bird feeders. In addition, any plant material growing up or alongside exterior walls should be removed to eliminate easy access to upper levels or roofs of houses and buildings.

#### Exclusion

Exclusion involves using some type of barrier to prevent squirrels from accessing a location where they are not welcome. Installing a chimney cap will prevent squirrels (and other cavity nesters like raccoons) from seeking refuge in your chimney. Securing gnaw-proof material like sheet metal, chicken wire, or hardware cloth over areas getting chewed on or access points into houses and buildings will prevent squirrels from accessing areas where they can cause damage. If a potential access point requires ventilation to be maintained, like a dryer, kitchen, or bathroom vent, make sure to use a barrier material that can breathe, like chicken wire or hardware cloth. Prior to blocking off an access point, ensure that squirrels are not living in the house or building and will be trapped inside. Similarly, ensure that young squirrels won't be trapped inside or separated from the mom. If squirrels are residing in a home or building, block off every access point but one or two. Over the remaining open access points affix a one-way squirrel-excluding device (Figure 10) that allows squirrels to exit the interior space but not return. Leave the one-way excluding device in place for up to a week, and then remove the device and seal the remaining access points.



One-way squirrel-excluding device.

Although potentially difficult and expensive, draping netting over trees can prevent squirrels from peeling bark, nipping off terminal buds, and damaging nuts and fruits. Alternatively, a baffle may be attached to the trunk of a tree(s) that would prevent a squirrel from climbing into the tree and causing damage. Baffles are likely not a suitable option for orchards or other areas where multiple trees need protection because of the cost and trouble to attach and maintain the baffles. If attaching a baffle to a tree, especially a young tree, check periodically to ensure the baffle is not constricting tree growth. For young trees that may be getting gnawed on, or to prevent anticipated chewing, tree guards can be installed around the tree trunks. As with baffles, tree guards should be checked periodically to ensure they are not restricting tree growth or accumulating debris or excess water between the tree and the tree guard, which could lead to insect or fungal issues, respectively.

Baffles may also be used on poles supporting bird feeders to prevent squirrels from accessing feeders from the ground. Alternatively, some hopper feeders have a weight-activated perch that closes off access to birdseed when squirrels mount the feeder. Other seed feeders are surrounded by 2-inch by 2-inch welded wire that birds can fit through to access the seed, but squirrels cannot.

To prevent squirrels from traveling on and chewing wires, sections of PVC or plastic tubing can be installed in 2-to-3-foot lengths. Slit the plastic tubing lengthwise and slide the wire through the slit. The PVC or tubing should be slightly larger in diameter than the wire so that it spins as a squirrel tries to walk on it. A licensed electrician should be called to install PVC or tubing on live wires.

### Repellents

Repellents are taste- or odor-based products that deter an animal because of an obnoxious taste or smell, respectively. Generally, repellents are a short-term solution, and their effectiveness may be variable. Naphthalene, or moth balls, are an example of an odor-based repellent that can be placed in enclosed spaces like an attic to prevent squirrels and other animals from inhabiting those areas. Naphthalene may create odor and breathing issues for human inhabitants of a home or building, so should only be used after careful consideration.

Ro-pel is a commercially available taste-based repellent that is often applied to flower bulbs, bird seed, and other items squirrels eat or chew on. Hot pepper sauce or capsaicin/cayenne pepper are home remedies that are often applied to foods or materials to prevent squirrels from eating or gnawing. As with substituting safflower for sunflower seed, birds are not affected by seed treated with a taste-based repellent.

Polybutenes are sticky materials applied to areas where squirrels are not welcome, such as balconies, railings, and downspouts. Polybutenes may cause discoloration and other marring of the surfaces where they are applied, so care should be taken before using broadly. In addition, polybutenes may lose their stickiness in colder temperatures and not be as effective compared to warmer months. Polybutenes may cause the fur on squirrels to mat so squirrels could lose their ability to keep themselves warm in colder months. Therefore, animal welfare should be considered when using this type of product during colder times of the year.

### Live Trapping

Live trapping squirrels (Figure 11) is a management option; however, it can seem like a losing endeavor because squirrels can be abundant in a local area and oftentimes the trapped and released squirrel is replaced relatively quickly by another squirrel. In addition, as mentioned in the “Legal Status” section, you must have permission from the landowner or manager to legally release a live trapped animal on land you do not own. Trapping a squirrel(s) living inside a structure and releasing the squirrel outside on the property where the structure exists is a good example of effective and efficient live trapping. If doing this, make sure to seal off all access points into the home or building immediately prior to or as soon as the squirrel is released.

Single door box or cage traps made from ½-inch by 1-inch 16-gauge galvanized wire and measuring 5 inches wide by 5 inches tall by 16 or 18 inches long are adequate. Trap(s) should be placed in the vicinity of where squirrels are seen, especially along travel ways. Any trap placed in an elevated surface should be properly secured. Traps can be baited with peanut butter, nuts, or a peanut butter and oat or nut mixture. On property you own or rent, it is legal to set a live trap without a trapping license in Wisconsin anytime of the year squirrel damage is occurring. However, all other trapping laws must be followed, including checking any open trap at least once every 24 hours.

If a squirrel is loose in a home or building, try to isolate the squirrel to a single room with a window. Open the window (and screen) and shut the door. Alternatively, the squirrel may be caught using a long-handled net. If it is necessary to handle the squirrel, thick leather gloves should be worn.

### Harassment

Scaring or harassing squirrels using loud noises (e.g., airhorns, banging pots and pans, etc.), motion (e.g., waving your arms, flagging tape blowing in the wind, etc.), or a combination may be effective on a very local scale and for a very short amount of time, but is unlikely to provide long-term relief. If using noises like an airhorn or louder, check with your local law enforcement office or zoning office to ensure you are not violating municipal noise ordinances.



FIGURE 11

Squirrel live trap.

### LETHAL CONTROL

Note: Northern and southern flying squirrels are protected species in Wisconsin and cannot be managed lethally without a depredation permit from the WDNR. Please contact your county WDNR biologist or conservation warden for assistance.

### Shooting

In areas where it is legal to discharge a firearm, fox, eastern gray, or red squirrels may be lethally removed without a hunting license and anytime of the year damage from any of these three species is occurring on property owned or rented.

### Trapping

Lethal trapping of fox, eastern gray, or red squirrels is legal anytime of the year squirrel damage is occurring on properties owned or rented. All other trapping laws must be followed, including checking any open trap at least once every 24 hours. Body gripping traps (#55) are effective and can be placed over access holes on the exterior of homes and buildings. Make sure the trap(s) are secured properly. Traps that are visible to the public should be checked as frequently as possible to avoid conflicts with neighbors or others who may not support trapping. Rat traps baited with peanut butter, nuts, or a peanut butter and oat or nut mixture may be effective to catch red squirrels or smaller fox and eastern gray squirrels that are inside areas like attics. Rat traps should not be used in exterior areas because of the risk of catching non-target animals.

### Toxicants

No toxicants are registered for the control of tree squirrels.

## REFERENCES

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# Tree Squirrel



This fact sheet is part of a series designed to help you successfully manage wildlife damage problems on your property. The series includes additional publications that focus on controlling damage from specific animals, plus an introduction to wildlife damage management.

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