

## Tree squirrels

### Species:

- Gray squirrel, *Sciurus carolinensis*
- Red squirrel, *Tamiasciurus hudsonicus*
- Fox squirrel, *Sciurus niger*
- Northern flying squirrel, *Glaucomys sabrinus*
- Southern flying squirrel, *Glaucomys volans*

### Size:

*Gray*: 18–20" long; tail half that length; 1–1½ pounds.

*Red*: 12" long, same with the tail; about 5½ ounces.

*Fox squirrel*: 21" long, includes 9½" tail; nearly 2 pounds.

*Northern flying*: 10–11" includes 4½" tail; 3–4 ounces.

*Southern flying*: 9–10" includes 3 ½" tail; 1½–2½ ounces.

### Signs of their presence:

- The animals themselves. (Don't be surprised if people report seeing black or white squirrels. They're really gray squirrels—just a color variation.)
- Sounds: Red squirrels are loudest, with their sometimes birdlike, sometimes scolding, but seemingly endless chatter. Gray and fox squirrels also chatter, and during the mating season, they'll make a chucking bark as they chase each other. May hear chewing, pattering, scampering, scratching sounds in attic, eaves, and walls from early morning throughout the day—except for flying squirrels, which are nocturnal.
- Scat: Oval, smooth, roughly ¼" long. The scat of flying squirrels is often found in distinctive piles.
- Nests: Gray, fox, and flying squirrels make leaf nests, usually placed in a tree crotch, that are used summer and fall. The flying squirrel's nest is about 8" in diameter; those of the gray and fox squirrel are larger.
- Evidence of their feeding: Nipped twigs of spruce, hemlock, and pine trees; piles of gnawed hickory nuts and walnuts, or strips of acorn shell, between attic joists or in wall cavities (gray, fox, red, or flying); piles of pine cones, acorns, hickory nuts (red).
- Garden and crop damage: They eat flower bulbs and seeds, raid bird feeders, damage the equipment used for maple syrup collection, eat cherry blossoms and ripe pears, and chew on the bark of fruit trees. They may also strip bark, which they use in their nests.
- Building damage: Holes in vents, eaves, soffits, and fascia. Claw marks on siding. Tunnels in insulation. Chewed wires. Damage to stored household goods, either from their chewing, urine, or feces.

### Diet:

Opportunists, primarily herbivores. The flying squirrels are the most carnivorous of the lot, although all tree squirrels will eat bird eggs and nestlings. All of these tree squirrels store food for the winter. Red squirrels create one large cache, while gray and fox squirrels bury nuts singly, all over the place.

*Gray and fox squirrels* prefer the same foods: fall through winter, they eat fruits and nuts (especially acorns, hickory nuts, and walnuts) and bird seed, if available. In early spring, they switch to tree buds, then in summer, to fruits, berries, and succulent plants. They'll also eat insects; bird eggs; mushrooms; corn; garden, orchard, and field crops; and when very hungry, will chew tree bark and lick the sap.

Both *flying squirrels* tend to eat the same foods as the gray and fox squirrel, but they're more likely to eat bird eggs, nestlings, insects, and carrion.

*Red squirrels* prefer pine seeds and buds, but will eat many of the foods listed above. They're more carnivorous than gray and fox squirrels, but not as likely to eat meat as flying squirrels.

### Typical activity patterns:

*Social style*: Gray and fox squirrels are somewhat sociable. Red squirrels are solitary, except for female with dependant young. Flying squirrels are social, with as many as 15 or more nesting together.

*Daily activity*: All are diurnal except for the flying squirrels, which are nocturnal.

*Hibernator?* No.

*Migrates?* Not typical, but when food supplies crash, they may migrate in large numbers.

### Where found:

*Distribution in NY and the Northeast*: Everywhere. The fox squirrel has the most limited distribution of the group (in New York, it's found only in pockets in the most western part of the state). The gray squirrel is the most common and adaptable, but they're all comfortable in cities and suburbs.

*Habitat*: Wooded areas. Gray and fox squirrels prefer hardwood forests (fox squirrels like the forest edge); red squirrels prefer softwood forests or mixed hardwoods and conifers; flying squirrels also prefer softwood or mixed forests, but aren't as picky as red squirrels. Squirrels den in tree cavities, rock crevices, burrows, brush piles, deserted buildings, chimney flues, attics,

barns. Gray, fox, and flying squirrels also make leaf nests for use in the summer and fall. Red and flying squirrels prefer old woodpecker nest holes and hollow tree limbs.

*Territory and home range:* The red squirrel is strongly territorial, defending both food sources and den trees. Gray and fox squirrels are not, but may fight to establish dominance in common feeding grounds, such as around a bird feeder. Their home ranges are broadly overlapping and variable, generally about an acre. Flying squirrels are often found in large groups and are most likely not territorial.

**Breeding habits:**

*Pair bonding style:* Polygamous. Females raise young alone.

*Breeding dates:* Gray and fox squirrels: mid-December through January (fox squirrels mate in January). Red and northern flying squirrels: late winter. Southern flying: early spring. Gestation takes 40–45 days. Five to ten percent of older female gray squirrels may breed again in June.

*Birth period:* Gray and fox squirrels: February-March. Gray squirrels may have a “second” litter in June-July. Red and northern flying squirrels: April-May (red squirrels may continue into June). Southern flying squirrels: May-June.

*Litter size:* Gray squirrel: 2–4 young; fox squirrel: 2–4; red squirrel: 3–6; flying squirrels: 2–7 young.

*Weaning dates:* Gray squirrels begin leaving the nest at 10–12 weeks.

*Amount of time young remain with parents beyond weaning date:* Not long. Young female gray squirrels may stay with their mother for several months, although they won’t necessarily remain near the den site.

**Common nuisance situations:**

*Time of year:* Any time of year.

Customers calling from fall through winter (September through February) often complain about denning activity. Typically, an attic den could be home to 8–10 squirrels (red or gray squirrels) or dozens of flying squirrels (perhaps up to 50).

From March through May, most calls relate to their breeding, as females seek places to raise their young. That’s when you typically find one female and her young in the attic or wall.

*What are they doing?*

- They den in attics, walls, sheds, barns, and chimneys, annoying people with their noise and odors. Squirrels usually gain access via overhanging branches, power lines, or by climbing up the siding. They may fall into chimney and furnace flues, thus gaining entrance to the basement or interior of the house.
- Their nest materials might block a vent, causing a fire hazard.
- They chew and scratch wires (another fire hazard) and also damage attic vents, eaves, screens, bird feeders, siding, insulation, household goods, and the tubing used for maple syrup production.
- They run along power lines and sometimes short out transformers.
- Squirrels also eat garden, field, and orchard crops; bird seed; and newly planted vegetable seeds.
- They’ll strip the bark from trees, especially fruit trees and cedar.
- Disease risks: mange, cat scratch disease, typhus, rabies (rarely).

**Legal status in New York:**

Gray and fox squirrels are protected game species, with set seasons (the “black” squirrel is actually a gray squirrel that’s just darker). Red and both flying squirrels are unprotected. From ECL 11-0523:

“7. Whenever black, grey and fox squirrels, opossums or weasels are injuring property on occupied farms or lands or dwellings, they may be taken at any time in any manner, by the owners or occupants thereof or by a person authorized in writing by such owner or occupant.”

**Best practices**

*Remove artificial food sources (bird seed, pet food):*

- If anyone is feeding the squirrels, persuade them to stop.
- There are metal bird feeders that close once the squirrel jumps onto them, which are effective. Other feeder designs can be modified to make them more squirrel-proof. Place a stovepipe baffle (min. length 2½ ft.) on the pole, at least four feet off the ground. Or hang the feeder on a rope between two pulleys.
- Keep the area underneath the feeder clean.
- Enclose compost piles in a framed box using hardware cloth or welded wire; in a sturdy container, such as a 55-gallon drum; or in a commercial composter.
- Feed pets indoors.

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- Just so you know (and for those NWCOs with commercial pesticide applicator licenses)—there are brands of sunflower seed and suet that are treated with a repellent. The active ingredient is capsaicin, the chemical that makes hot peppers taste hot.

### *Protect vulnerable crops:*

- Plant bulbs within a cylinder of 1" poultry wire. Lay the wire in a trench then plant the bulbs in it. Add some dirt, finish wrapping the wire around the bulbs, then cover with soil.
- Another option for bulbs is to plant them, and then lay a piece of 1/2" hardware cloth over the soil surface to reduce the squirrels' ability to dig up the bulbs. The hardware cloth should extend at least a foot around the plantings, and be covered with soil. Its mesh must be large enough for the stems to grow through, so you may need to experiment with different sizes for different plants.
- Establish a barrier around gardens and fields with fences (wire mesh, electric, or combination wire/electric fence). Use 1/2" hardware cloth or welded wire. The fence must be 30" high, buried 6–12" deep, with a foot-wide "L"-shaped shelf that sticks out to prevent the squirrels from burrowing underneath it. Or use a 2-wire electric fence (if allowed by local ordinances) with one wire placed at 2" above ground, and the other at a height of 6". A combination fence should have a wire at 2" off the ground, and along the top of the fence.
- If there aren't any mammals nesting in the tree, wrap two-foot wide bands of sheet metal around fruit trees at 6–8 feet, to prevent squirrels from climbing the tree. This will only work if the squirrels can't leap from another tree or other object onto this tree. (Attach the band loosely, so the tree has room to grow. Don't staple the band onto the tree because that can prove dangerous if someone needs to cut down the tree.)
- For NWCOs with commercial pesticide applicator licenses: There are several repellents for use on maple sap collection equipment, lawns, gardens, outdoor furniture, and buildings.

### *Prevent entry into building:*

First step: Remove any current residents. Exclude them with a one-way door when the young are old enough to be mobile. (For squirrels in a chimney, see the rope trick, described in the second bullet under "if young are present...")

*If this is a preventive action, or there are no young present, can:*

- Replace plastic attic vents with metal designs that are securely attached to the building, or screen them with 1/2" hardware cloth. Attic vents are a common entry point for squirrels.
- Seal openings at the joints of siding, overhanging eaves, and where pipes and utility lines enter buildings. Plug gaps around water, gas, and heating pipes with latex caulk. For large holes around pipes, use galvanized metal pipe chase covers, sheet metal plates, mortar, plaster of paris, or cement.
- Cover chimney flues with commercial caps, and seal any gaps in the chimney's flashing.
- Wrap 2-foot wide bands of sheet metal around trees that are within jumping distance (10 feet) of the building (see notes above).
- Trim overhanging tree branches 10 feet away from the house.
- Screen gutter pipes, downspouts, and foundation drain pipes with 1/4" hardware cloth.

*If young are present, remove the entire family before blocking the entrance to their den:*

- If the young are older and mobile, install a one-way door over the entry hole. They'll leave but won't be able to re-enter. Make a squirrel excluder of 4" diameter plastic pipe, 18" long, mounted over the opening, pointing down at a 45-degree angle.
- If the squirrels are caught in a chimney, give them a way to climb out. Place a small weight on a rope that's 1" in diameter. Drop the rope down the chimney. (The weight helps you drop the rope all the way down, and then keeps the rope taut so the squirrels can climb it.) Once the squirrels have left, cap the chimney so they won't enter it again.
- First, a special caution about relocating squirrels. All of these squirrels rely on a cache of food to survive the winter, so if you move them too far away during that time, they'll probably starve to death. Not possibly—probably. Limit relocation to times when food is readily available.
- Trap and release strategies to reduce the risk of orphaning wildlife: The best way to prevent orphaning is to convince your customers to wait until the young are mobile before removing, repelling, or excluding the family from the site. If that's unacceptable, you can try to capture and remove both the female and all of her young and hope that she will retrieve them and continue to care for them. Some NWCOs are trying to refine removal

techniques to increase the chances that the female will retrieve her young. Here are their suggestions.

- Release red, gray, and fox squirrels on-site, during the day (flying squirrels should be released at dusk or in the evening because they are nocturnal).
- Locate the young by following trails made in attic insulation. Flying squirrels don't show signs of nursing, so assume young are present during the breeding season.
- Place the female and young in a release box. Many NWCOs use a simple cardboard box, others use a wooden nest box, such as a wood duck box, and some prefer plastic boxes. Match the size of the box and its entrance hole to the size of the species. (One NWCO recommends a 2x2x1 ft. box.)
- Make sure the animal cannot immediately get out of the box by covering the hole. Then move them to a quiet place outdoors. Unless they're likely to be disturbed, keep the box at ground level. Remove the cover so the female can get out of the box. Another option is to build a box with a sliding door. Leave the door open about an inch, to keep the heat inside but make it easy for the female to slide it fully open so she can retrieve her young.
- Some NWCOs prefer to use heated release boxes. Make sure that the box doesn't get too hot. You may want to provide heat in just one area. Also, assume that if you put something in the box, they will chew on it. Don't give them access to anything that they shouldn't eat, such as wires. That means that if you choose to use a household heating pad as the heat source, make sure the animals can't reach the wires. To avoid that problem, one NWCO builds his boxes with a double floor, placing the heating pad in the space between the floors. Other options for heat sources include microwaveable heating pads and warm soapstones.
- If you can't catch the female, put the young in the heated box and locate it as close to the entry site as possible, or put them in a nearby tree.
- The female may continue to care for her young. She may abandon them because of the trauma of capture. Check the next day to see if the young are still there. If so, they've probably been abandoned. There hasn't yet been enough research on this technique, so its effectiveness is unknown. It's likely to be more effective with older, more experienced females; younger females might abandon their young more readily.

### Trapping strategies:

- Set traps over the entry hole, or as close as you can.

#### *Live traps:*

- Install one-way doors, especially with the smaller squirrels, such as flying squirrels.
- Cage trap should be 6x6x24". Set and bait the trap, then prop it open for 2–3 days, so the squirrels will grow accustomed to feeding in it.
- Bait with apples, nuts, peanut butter, sunflower seeds.
- Multiple capture cage traps are available for use with flying squirrels. Place food in the trap; this may reduce their level of stress and the risk that they'll fight.

#### *Lethal traps:*

- Body-gripping trap: many new varieties have been released recently, so scan the markets. Options include: #110 (and a newer, slightly smaller version based on the #110, the #50-2); #120 (and its smaller cousin, the #60-2); #55; the 5x5 Buckeye; 3x3 Eradicator; and smaller Koros traps.
- Tunnel trap (cylinder with body-gripping trap inside). Less obvious to viewers. You can place a standard body-gripping trap in a wooden box or other container for an equally discreet effect.
- Modify the trigger to help ensure a top-to-bottom strike (which is more humane) and to prevent the squirrel from refusing to enter the trap. Squirrels don't like to have anything brush against their eyes or whiskers, so separate the trigger and center it on the top or bottom of the trap. Another option is to bend the trigger into a circle; you can add a piece of thin wire or monofilament line to complete the circle, if necessary. Proper positioning helps to ensure a cleaner, more humane catch.
- Rat-sized snap-back traps for the smaller squirrels (flying and red squirrels). Look for models that have "covers" over the bait (see chapter 5 for details).

### Preferred killing methods:

- CO<sub>2</sub> chamber
- Lethal trap
- Shooting, using an air rifle, a shotgun, or a .22 caliber rifle

### Acceptable killing methods:

- Stunning and cervical dislocation
- Stunning and chest compression