
TREE SQUIRRELS

Integrated Pest Management for Home Gardeners and Landscape Professionals

There are four species of tree squirrels in California, excluding the small nocturnal flying squirrel, which is not considered a pest. Of the four, two species are native and two are introduced from the eastern part of the United States. In their natural habitats they eat a variety of foods including fungi, insects, bird eggs and young birds, pine nuts, and acorns, plus a wide range of other seeds.

Squirrels sometimes cause damage around homes and gardens, where they feed on immature and mature almonds, English and black walnuts, oranges, avocados, apples, apricots, and a variety of other plants. During ground foraging they may feed on strawberries, tomatoes, corn, and other crops. They also have a habit, principally in the fall, of digging holes in garden soil or in turf, where they bury nuts, acorns, or other seeds. This caching of food, which they may or may not ever retrieve, raises havoc in the garden and tears up a well-groomed lawn. They sometimes gnaw on telephone cables and may chew their way into wooden buildings or invade attics through gaps or broken vent screens. Tree squirrels carry certain diseases such as tularemia and ringworm that are transmissible to people. They are frequently infested with fleas, mites, and other ectoparasites.

Biology and Behavior

Tree squirrels are active during the day and are frequently seen in trees, running on utility lines, and foraging on the ground. Tree squirrels are easily distinguished from ground squirrels and chipmunks by their long bushy tails and lack of flecklike spots or



Figure 1. Western grey squirrel, *Sciurus griseus*

stripes, and the fact that they escape by climbing trees and other structures. All are chiefly arboreal, although the fox and western grey squirrels spend considerable time foraging on the ground. Tree squirrels do not hibernate and are active year-round. They are most active in early morning and late afternoon.

Eastern fox squirrels (*Sciurus niger*) were introduced from the eastern part of the United States and are well established in most major cities of California. Some people enjoy seeing them and introduced them into new territories. In some cities eastern fox squirrels have moved outward into agricultural land, especially in the southern part of the state, where they have become a pest of commercial crops. Eastern grey squirrels (*S. carolinensis*) were

originally introduced from the eastern United States into Golden Gate Park in San Francisco, California. They are also established in areas of Calaveras and San Joaquin counties in California and may be expanding their range.

Native western grey squirrels (*Sciurus griseus*) (Fig. 1) are found throughout much of California, primarily in oak woodlands of the foothills and valleys and in pine/oak forests, where they feed on a variety of seeds, fungi, and other plant materials. They also have a tendency to strip bark in order to access and feed on the cambium layer, causing injury to trees. Native Douglas squirrels (*Tamiasciurus douglasii*), sometimes called chickarees, are found in mostly conifer-forested regions of the north coastal area and along the Sierra Ne-

vada Mountain region. Because of the habitat in which they thrive, these two native tree squirrels are not usually pests, except for the damage they can do in forest regeneration projects. They may, however, become garden or home pests in some of the more remote rural areas.

Of the four tree squirrels, the eastern fox squirrel, sometimes called the red fox squirrel, is by far the most serious pest to homes and gardens in urban and suburban situations. This squirrel can be differentiated from the others by its brownish red-orange fur.

Tree squirrels naturally nest in tree cavities, enlarged woodpecker holes, or high in a tree in a spherical nest they construct of twigs, leaves, and shredded bark. Breeding occurs in the late winter or in the spring and, depending on the species of tree squirrel, produces one or two litters per year of three to five young. For those producing two litters, the breeding period is extended.

LEGAL STATUS

Tree squirrels are classified as game mammals by the state Fish and Game

Code and can be controlled only as provided by the hunting regulations. Any owner or tenant of land or property that is being damaged or destroyed or is in danger of being damaged or destroyed by grey squirrels must apply to the California Department of Fish and Game for a permit to control such squirrels. The Department, upon receipt of satisfactory evidence of actual or immediately threatened damage or destruction, may issue a revocable permit for the removal and disposition of such squirrels. When a permit to trap the grey squirrel is issued, the Department may designate the type of trap to be used and may also require that squirrels be released in parks or other nonagricultural areas. It is not legal to use poison baits to kill tree squirrels. Eastern fox squirrels found to be injuring growing crops or other property may be controlled at any time and in any legal manner by the owner or tenant of the premises without a permit.

MANAGEMENT

In urban and suburban areas tree squirrels are difficult to control because of their great mobility and because many people feed and provide

nest boxes for the squirrels in order to encourage their presence. It is relatively easy to keep squirrels out of buildings, but keeping them out of a yard or garden is a continuous challenge.

Monitoring Guidelines

The detection of tree squirrels is fairly easy because they are active during daylight hours and are highly visible. If tree squirrels visit your garden or yard on a regular basis, it is likely that damage will occur at certain stages of crop development, particularly with fruit and nut crops. If squirrels are seen in your trees, some kind of preventive action should be taken; squirrels can strip a tree of its crop in a short time.

Habitat Modification

Trees that overhang roofs or are close to telephone lines should be cut back to slow the movement of squirrels about the yard. Anything that can be done to make a garden less attractive to squirrels is helpful.

Exclusion

Screening or blocking all potential entrance sites such as small gaps under the eaves, overlapping roof sections, and knotholes, can prevent tree squirrel access to buildings. Because they often travel on overhead telephone lines, power lines, and fence tops, they frequently find entrances at about these heights. When even a small opening is found, they can enlarge it by gnawing. In the absence of an obvious entrance, they can gnaw and create an entrance into an attic. Sheet metal or 1/4-inch wire hardware cloth are suitable materials for closing entrances. When closing entry routes, be sure you haven't screened an animal inside the building. One way to test whether any squirrels are left is to plug the entrance with a loose wad of newspaper; if any remain inside they will remove the plug to get out.

It is virtually impossible to keep squirrels out of fruit or nut trees because of their superb climbing and jumping ability. Sometimes if there are other unprotected fruit or nut trees available to the squirrels, you can protect the crop of a single tree by netting it as you would

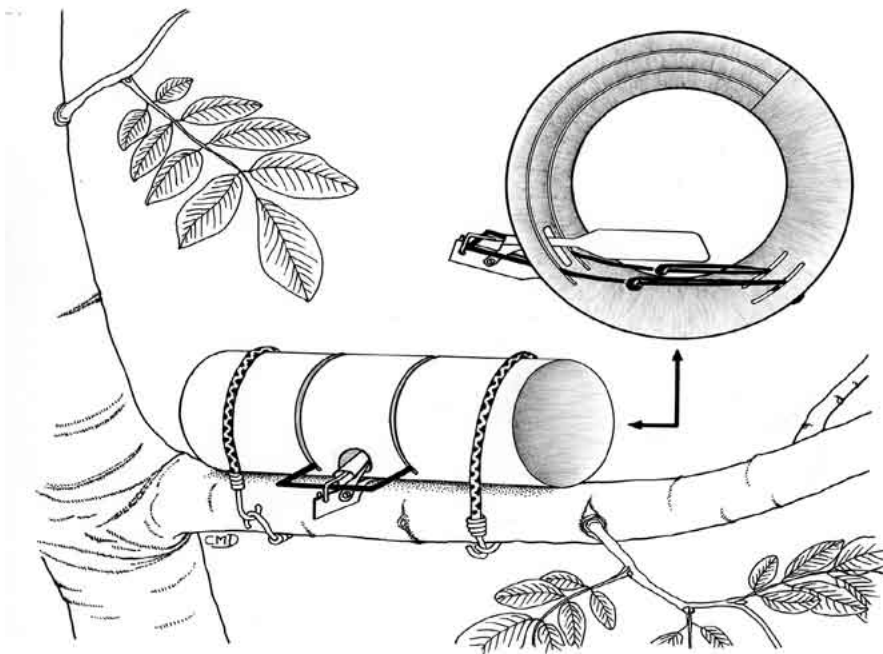


Figure 2. All-metal tunnel or tube trap.

to exclude depredating birds. While squirrels can readily gnaw through the plastic netting, they may not persist if sufficient alternative food is easily available.

Squirrels can be discouraged from digging up newly seeded or established crops by covering the rows with cage-like freestanding covers made of one-inch hexagon chicken wire.

If squirrels are present around bird feeders, they are usually able to raid them and steal the food. Numerous devices and methods are commercially available from specialty catalogs for physically excluding tree squirrels from feeders; some of these work better than others. Tree squirrels are amazingly clever and agile so just about any feeder is susceptible.

Trapping

Several types of kill traps are useful for tree squirrel removal, but they must be set in a way that will not accidentally trap nontarget animals, including pets. This can be accomplished by placing the trap in a tree, or on a rooftop, and/or inside a box or wire cage with entrances no larger than three inches in diameter. *Remember, only eastern fox tree squirrels can be killed without a hunting license or permit.*

All-metal tunnel or tube-type traps are becoming more popular for killing eastern fox tree squirrels (see Fig. 2). The design of these traps affords good protection to larger nontarget animals, and the trapped animal remains partially out-of-sight. The Conibear® #110 trap, a jaw-type body-gripping trap, is also an effective tree squirrel trap when set inside a trap box with the bait placed behind the trap. Several choker-type box traps are sold for removing tree squirrels. They look similar to those used for trapping pocket gophers except that the triggers are often reversed so that the bait must be pulled to activate instead of pushed, as is the case with pocket gopher traps (see Fig. 3). In fact, modifying certain wooden choker-type gopher traps can make a tree squirrel trap. To modify a gopher trap, lengthen the trigger slot

with a rattail file so the trigger can swing unhindered and the squirrel can pass beneath the unset trap. Remove the back and replace it with 1/4-inch mesh hardware cloth, which allows the squirrels to see the bait from both ends but prevents access without passing through the trap. For a dual-trap assembly, place two box traps back-to-back and secure them to a board (see Fig. 4).

Before placing traps, determine the squirrels' travel routes and locate traps in or as close to them as possible. Trees and rooftops are often good locations for placement (Fig. 5). Locate and secure traps so that they cannot be easily dislodged. Anchor them with a wire or light chain so a predator cannot carry the trap and the catch away. Bait the traps but do not set them for several days to allow the squirrels to steal the bait and become accustomed to the trap. Once the bait is regularly eaten, set the traps, and rebait, tying the bait to the trigger with fine thread or string. Use rubber or plastic gloves when handling dead squirrels. Place dead squirrels in a plastic bag and seal to confine any ectoparasites. The carcasses can then be discarded in a garbage can.

Sometimes ordinary rat snap traps are suggested for tree squirrels, but these are often not powerful enough to kill mature squirrels and are best not used. There are other kill traps available for squirrel-sized animals, but these are not always sold locally and may have to be ordered from a trapper supply firm.

Live-catch cage traps are also available, but once caught the squirrel must be disposed of, presenting a problem for some. Remember, releasing an eastern fox tree squirrel elsewhere is illegal. Considering this problem, live-catch traps are not recommended. A kill trap is usually the most effective way to thin out the population, though new squirrels will move in to fill the void. Trapping usually becomes an ongoing process once the neighborhood is populated with tree squirrels.

Other Control Methods

Although some chemical repellents are registered for use to keep tree squirrels out of an area, their effectiveness is questionable. There are also repellents that are added to birdseed that are supposed to prevent squirrels from feeding on the seeds, however, these, too, have shown little promise.

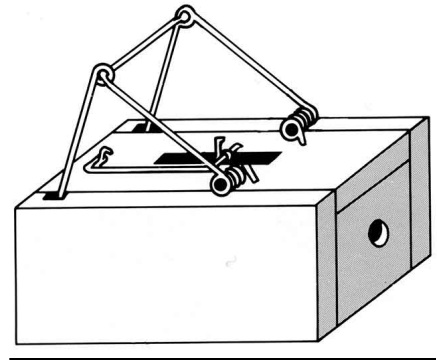


Figure 3. Box-type tree squirrel trap

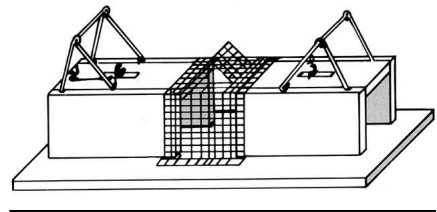


Figure 4. Dual-trap assembly. Two box traps placed back-to-back.

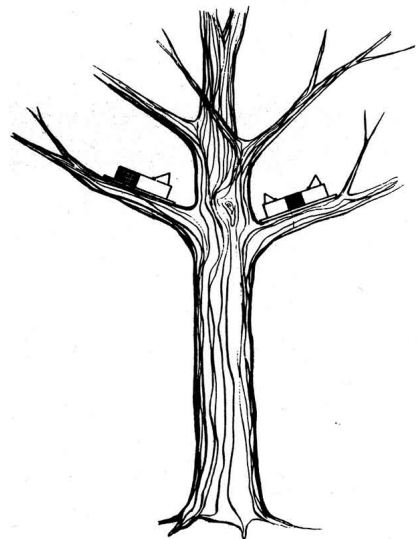


Figure 5. Box traps can be secured on a board to tree limbs.

Tree squirrels quickly become habituated to visual or sound frightening devices and pay little attention to them after a couple of days. A number of these devices are on the market, but none have proven very effective.

Where shooting is not prohibited, the eastern fox tree squirrel can be taken at close range with a pellet gun. Check with local authorities to determine if this method is legal in your area.

Tree squirrels are quick to escape when pursued by predators. Some dogs that have full run of the yard will keep squirrels at bay. Predators in urban and suburban areas generally have little effect on tree squirrel populations.

For more information contact the University of California Cooperative Extension or agricultural commissioner's office in your county. See your phone book for addresses and phone numbers.

AUTHORS: T. P. Salmon, D. A. Whisson, and R. E. Marsh

TECHNICAL EDITOR: M. L. Flint
COORDINATION, DESIGN, and
PRODUCTION: P. Galin

ILLUSTRATIONS: **Figs. 1, 2:** Christine Dewees; **Fig. 3, 4, 5:** *Wildlife Pest Control Around Gardens and Homes*. 1st ed. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 21385.

Produced by IPM Education and Publications, UC Statewide IPM Program, University of California, Davis, CA 95616-8620

This Pest Note is available on the World Wide Web (www.ipm.ucdavis.edu)



This publication has been anonymously peer reviewed for technical accuracy by University of California scientists and other qualified professionals. This review process was managed by the ANR Associate Editor for Pest Management.

To simplify information, trade names of products have been used. No endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned.

This material is partially based upon work supported by the Extension Service, U.S. Department of Agriculture, under special project Section 3(d), Integrated Pest Management.

COMPILED FROM

Salmon, T. P., D. A. Whisson, and R. E. Marsh. In press. *Wildlife Pest Control Around Gardens and Homes*. 2nd ed. Oakland: Univ. Calif. Agric. Nat. Res. Publ. 21385.

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Pesticides are poisonous. Always read and carefully follow all precautions and safety recommendations given on the container label. Store all chemicals in the original labeled containers in a locked cabinet or shed, away from food or feeds, and out of the reach of children, unauthorized persons, pets, and livestock.

Confine chemicals to the property being treated. Avoid drift onto neighboring properties, especially gardens containing fruits or vegetables ready to be picked.

Do not place containers containing pesticide in the trash or pour pesticides down sink or toilet. Either use the pesticide according to the label or take unwanted pesticides to a Household Hazardous Waste Collection site. Contact your county agricultural commissioner for additional information on safe container disposal and for the location of the Household Hazardous Waste Collection site nearest you. Dispose of empty containers by following label directions. Never reuse or burn the containers or dispose of them in such a manner that they may contaminate water supplies or natural waterways.

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