

TREE SQUIRRELS

Facts about Oregon's Tree Squirrels
Life History
Nonnative Invasive Tree Squirrels
Viewing Squirrels
Preventing and Addressing Conflicts
Trapping and Relocating Squirrels
Squirrel Damage to Land or Crops
Species Status
Recommended Conservation Actions
Public Health Concerns



Western Gray Squirrel

FACTS ABOUT OREGON'S TREE SQUIRRELS

Oregon has four native tree squirrel species: The western gray, Douglas, American red and northern flying squirrels. As members of the rodent family, they have large incisor teeth, kept sharp by constant gnawing. While they often forage on the ground, when startled will quickly climb up the nearest tree. Active year-round, tree squirrels spend much of their time in the fall gathering and storing food. In fact, their food caching habits play an important role in forest regeneration and forest ecosystem processes, particularly by spreading fungi mycorrhizae, microbes vital for soil health and composition.

Tree squirrels have big, bushy tails that they use for many things, primarily balance. It enables the squirrel to maneuver quickly without falling. If a squirrel should fall, the tail acts as a sort of parachute and cushion. The tail also helps keep the squirrel warm in cold weather, and can be used to communicate with other each other and other animals.

Western gray squirrel

The western gray squirrel (*Sciurus griseus*) is the state's largest native tree squirrel. It has a creamy white belly and silvery gray fur, and ranges in length from 19 to 24 inches including the tail which is a bushy gray with black hairs. The backs of its ears may be slightly tawny in color during the winter. Western gray squirrels are found in low-elevation forested areas in parts of western and central Oregon. Though closely associated with oak woodland habitats, western gray squirrels are also found in pine, madrone and fir forests. They select larger patches of forested habitat usually away from human habitations. Western gray squirrels eat a variety of foods including fungi, acorns, fruit, berries, insects and conifer seeds and cones. When disturbed, it will give a hoarse barking call. Due to loss of oak woodlands, loss of large old trees, road-kill, disease and competition from invasive squirrels, western gray squirrel

populations are declining throughout Oregon. The species is classified as State Sensitive–Vulnerable in the Willamette Valley Ecoregion. In Washington, it was listed as a State Threatened species in 1993 and biologists continue to be concerned with possible extinction of the species.

Douglas squirrel

The Douglas squirrel (*Tamiasciurus douglasii*), sometimes called the chickaree or pine squirrel, has been declining over the past decades. While under pressure from invasive squirrels, the decline is likely due to the loss of its preferred habitat—mature mixed-conifer forests. Primarily found west of the Cascades, the species occurs as far east as The Dalles, John Day, Burns and Lakeview. The Douglas squirrel has grizzled dark brownish and gray fur with an orange underside. It is 10 to 14 inches long including the dark reddish brown tail. Distinctive black tufts on its ears become more prevalent during the winter months and its distinctive loud, chattering cry that can be heard throughout the forests particularly in the morning hours. This squirrel eats fir, pine, spruce, berries, mushrooms and hemlock cones and seeds.

American red squirrel

The American red squirrel (*Tamiasciurus hudsonicus*) is referred to, by some, as the chickaree or pine squirrel. Red squirrels are found most often in the higher elevation coniferous or and semi-open forests of the Blue and Willowa mountains of northeastern Oregon. They are about 12 inches long and with fur that ranges from dark red to grey along with a cream colored underside. Tail hairs have dark bands and buff colored tips, giving the tail a light fringed appearance. Red squirrels are known for being loud and raucous. They eat primarily conifer seeds in the winter, but during the spring and summer they add flowers, berries, eggs, nestling birds and insects to their diet.



Douglas squirrel



American red squirrel



Northern flying squirrel

Northern flying squirrel

The northern flying squirrel (*Glaucomys sabrinus*) is the most distinctive of all Oregon's squirrels, but because it is nocturnal, it is seldom seen. Contrary to its common name, this species doesn't actually fly, instead skin folds that extend from foreleg to hind leg allow it to glide from tree to tree. This adaptation requires the species to live in heavily forested areas. They are rarely found in open or fragmented habitats

or urban environments. West of the Cascades, flying squirrels have dark brown fur; eastern varieties are lighter brown in color. The bulk of their diet consists of fungi and lichens, but they also eat seeds, nuts, insects, bird eggs and nestlings and conifer cones. Twelve inches or less in length, they produce only a single litter each year.

LIFE HISTORY

Native tree squirrel species are territorial and will defend areas that average five acres or more. As they do not hibernate during the winter, they forage year-round. To ensure there is enough food, they make caches of nuts and grains, burying them at various sites in their territory. It is estimated each squirrel makes up to several thousand caches each season! Amazingly, they have very accurate spatial memories for the locations of their caches and use distant and nearby landmarks, as well as smell, to retrieve them.

Most squirrels nest in large holes in trees, usually abandoned woodpecker nests or naturally occurring hollows. If there are no tree holes available, squirrels will make leaf-and-stick nests called dreys which are conspicuous in winter. They have been known to construct nests underground in very cold environments.

Tree squirrels generally mate in winter or early spring, and, in late spring or early summer, after a gestation period of about six weeks kits are born. Average litter size is four. Young are weaned between 10 and 12 weeks,

and by three months of age most young squirrels are on their own. When a foraging season is particularly good, a second litter may be born. The young kits of the second litter usually stay with the mother through the winter.

Typically about half the squirrels in a population die each year. In the wild, squirrels more than four years old are rare. They are a natural food source for hawks, owls, coyotes, bobcat and snakes. They also die from parasites, disease and falls from trees. Other causes of mortality include collisions with motor vehicles, predation by domestic dogs and cats, falls from utility lines, and electrocution. Sources of natural predation seem to have little effect on squirrel populations.

NONNATIVE INVASIVE TREE SQUIRRELS

The Eastern gray squirrel and Eastern fox squirrel are nonnative invasive species of concern in the state. While their effects on Oregon's ecosystems are not fully understood, there is enough evidence to consider them a threat to native squirrel populations. They aggressively compete with native squirrels for food and nesting habitat, they require far less territory to persist, and they can spread disease to native populations. For example, the eastern gray squirrel can carry parapoxvir, a disease deadly to red squirrels.

Unfortunately, these nonnative squirrels have a high reproductive potential, high vagility (degree to which they can move or spread in an environment), diverse food habits and a high tolerance of human activity which is allowing them to expand their range. Range expansion is also enabled by people who, possibly thinking they are doing the right thing, illegally trap them in urban areas and release them in rural areas.

In an attempt to halt the spread of these species, a number of rules are in place:

- It is illegal to bring either of these species into the state.
- These squirrels cannot be relocated within the state (unless on the same property: for example, removing a squirrel from your attic to your yard).
- They cannot be rehabilitated—they must be humanely euthanized.



Eastern gray squirrel

Eastern gray squirrel

The Eastern gray squirrel (*Sciurus carolinensis*) was first introduced to Oregon in 1918 on Salem's Capitol grounds, before the dangers of invasive species were well understood. It has since spread. When it moves into a new subdivision or urban area, it typically replaces native squirrels in five to 10 years. Today, the species appears to be concentrated in the Willamette Valley, so there is hope that its spread can be contained. Native to the East Coast of North America and west to the Great Plains, it is similar in appearance to the western gray squirrel, but is slightly smaller (between 15 to 20 inches long) and has more brown and reddish coloration to its fur.



Squirrel nest

Eastern fox squirrel

The Eastern fox squirrel (*Sciurus niger*), also a native of the East Coast is a large squirrel, 18 to 24 inches long and has reddish-brown fur with a tan to reddish/orangish belly. Like the Eastern gray squirrel, it was intentionally introduced to urban areas in the early 1920s as pets and watchable wildlife. The fox squirrel has become the most common backyard squirrel in the Portland Metro area and is believed to have contributed to the decline of native squirrel species. Fox squirrels are notorious for breeding "out of season," meaning they breed nearly year-round with the exception of the winter months. Kits have been found after October 1 and before April.



Eastern fox squirrel

VIEWING SQUIRRELS

Squirrels are usually easy to spot. They are most active two to three hours after sunrise. Listen for the audible, frequent calls they make when startled or upset and loud scratching and chewing noises. When looking for them, look for branch “cuttings.” To gather nuts and seeds, they will cut small branches that contain clusters of nuts on them. Then, they climb down the tree, harvest the nuts, dispose of the cut twigs, and head off to cache their seeds. Discarded nuts, seeds and cones underneath trees are sure signs a squirrel is at work.

In winter, look for dreys (nests) in deciduous trees. They are constructed of twigs, mosses, bark and occasionally insulation and other man made elements. Look for dreys about 30 feet off the ground. They may look like bird nests, but dreys tend to be much larger and are usually found close to the trunk.

Tracks, scratch marks and droppings are other signs that point to squirrels. Tracks are most visible in mud or snow. Tracks of front feet appear as small clawed paws with four digits. The back feet are longer with four claws. Where squirrels have entered a house or other man-made structure, scratch marks can typically be seen near entry and exit points. Squirrel droppings (scat) are small, cylinders or spheres about ½ inch long. Scat coloration is black or brown and most easily found underneath trees with dreys or near bird feeders.

PREVENTING AND ADDRESSING CONFLICTS

In urban areas, squirrels can be troublesome. Here are a few suggestions that make living with squirrels easier.

Don't Feed Squirrels

- Squirrels that are fed by humans can lose their fear of people and become aggressive when they don't get food as expected.
- Remove bird feeders if squirrels are a problem.

Eliminate Access to Buildings

- Repair or replace loose or rotting siding, boards and shingles.
- Use a tall ladder to get a good view of the structure and potential entry points.
- Inspect attic and crawl spaces during the day so cracks and holes are illuminated.
- Close openings to buildings with heavy 1/4 to 1/2 inch wire mesh.
- Cover the dryer vent with a commercial vent screen designed to exclude animals without clogging lint.
- Install approved roof-vent caps that are designed to exclude squirrels.
- Trim limbs and trees to 6 to 8 feet away from buildings to prevent squirrels from jumping onto roofs.
- Remove vines or other plants that provide a squirrel a way to climb structures.

Prevent Squirrels from Climbing Isolated Trees to Gain Access to Structures

- Encircle isolated trees with a 2-foot wide collar of metal 6 feet off the ground.
- Attach metal using encircling wires held together with springs to allow for tree growth.

Prevent Squirrels from Traveling on Wires

- Contact your local electric/utility company for assistance with electrical wires. They may be able to install 2-foot sections of lightweight plastic pipe to the wires which rotates on the wire and prevents most squirrels from high-wire antics.

Remove a Squirrel from the House or a Fireplace

- Before you try and remove the squirrel, choose the window or door you want the squirrel to exit through and open it as wide as possible. Close all other doors, windows, curtains, blinds and light sources. Open the fireplace screen or door to the fireplace so the squirrel can exit. It will head toward the light.
- If the squirrel is in the chimney and cannot climb out, open the flue so it drops into the fireplace or drop a sturdy rope down the fireplace chamber so that the squirrel can climb out. Leave the area and the squirrel should climb out within 24 hours. When you are sure the squirrel has left, cap the chimney with a commercially engineered chimney cap to prevent re-entry.

Remove a Squirrel from the Attic

- The first question is: Do you have a lone squirrel or a nest? From March until September, assume you have baby squirrels, and call your local ODFW office for advice. Locate the nest by sprinkling flour on the attic floor to show the squirrels' tracks. You may choose to let a squirrel stay until the babies are old enough to leave the nest if it isn't posing a problem.



Douglas squirrel

- Squirrels without young can be encouraged to leave attic spaces by introducing light and noise, such as a radio. Human presence is often enough to cause the squirrel to leave.
- When you are sure there are no squirrels within the attic, close/seal all openings to prevent re-entry. The flour can be used to help locate points of entrance and exit.
- 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. If you seal a squirrel inside, it can cause a great deal of damage in its effort to get out.
- As a last resort, squirrels may be removed from an attic using the live-trapping method. See the Trapping and Moving Squirrels section for more information.

Protecting Gardens and Orchards

- Custom-designed wire mesh fences topped with electrified wires may effectively keep squirrels out of gardens or small orchards.
- Live-trapping or other squirrel removal techniques are generally not effective as other squirrels will move in to replace the ones that you have removed.
- Focus control efforts on physical barriers, habitat modification and deterrents. Taste repellents or predator sprays may be temporarily effective.

Squirrel Repellents

- Moth balls (naphthalene) may temporarily discourage squirrels from entering attics and other enclosed spaces, but use of naphthalene in attics of occupied buildings is not recommended, because it can cause distress to people.
- Ro-pel Animal and Bird Repellent is a commercial taste repellent that can be applied to seeds, bulbs, and flowers; trees and shrubs; poles and fences; siding and outdoor furniture. Capsaicin is also a taste repellent, registered for use on maple sap collecting equipment.

Injured or Orphaned Squirrels

- Do not pick up an injured or orphaned squirrel. Wildlife cannot be held in captivity or moved without a permit from ODFW (*ORS 497.308*).
- If you find an injured squirrel, call your local ODFW office for advice so staff can determine if the animal should be transferred to a licensed wildlife rehabilitation facility.
- Do not attempt to care for wildlife. Anyone caring for injured wildlife must have a valid wildlife rehabilitation permit from ODFW (*OAR 635-044*).
- Nonnative squirrels may not be rehabilitated for release back into the wild as they are considered invasive species. (*OAR 635-056*)



American Red Squirrel

- If you find an “orphaned” squirrel, leave it where it is. Mother squirrel is probably close by. Keep children and pet dogs and cats away and leave the animal alone.

TRAPPING AND RELOCATING TREE SQUIRRELS

Trapping and relocating squirrels is not recommended and generally, a permit from ODFW is required. Relocated squirrels may soon be replaced by others, and relocated animals can spread disease to other animals and create over concentrations of a species. They also have a low survival rate and generally become “nuisance wildlife” to someone else. Follow these guidelines:

- Important: It is unlawful to release any squirrel anywhere other than on your property without a permit from ODFW. For example, you may trap the squirrel in your attic or crawl space and release in your yard; you may not take it off your property and release it.
- Before you trap a squirrel, know what you are going to do with it. If you are considering relocating it to another area, you need the approval of your local ODFW wildlife biologist, and you will need a permit to transport it to a pre-approved location.
- If you have trapped a nonnative squirrel, it must be released on the same property where it was trapped, or it must be humanely euthanized. If you wish to transport it to a facility that will euthanize it, you must get a permit from ODFW.
- If you have trapped a native squirrel, it may be released on your property or with the approval of an ODFW wildlife biologist and a permit, it may be released at a pre-approved location.
- Following these rules, you may trap a squirrel on your property yourself or you may hire an ODFW-permitted Wildlife Control Operator who can also euthanize the animal if required. Contact your local ODFW office for a list, or visit ODFW’s website, Permits and Applications section.

SQUIRREL DAMAGE LAND OR CROPS

Tree squirrels are classified as Predatory Animals (Oregon Revised Statute 610.002) and as such they may be controlled (killed) by landowners or land managers if the animals are causing damage to land (lawns, gardens ornamentals, landscaping), livestock, agricultural crops or forest crops. (Oregon Revised Statute 498.012).

A permit is not needed from ODFW to kill squirrels unless the landowner wishes to transport a squirrel to a location where it will be euthanized. In that case, the local ODFW office must be contacted and a permit obtained.

SPECIES STATUS

Native Tree Squirrels

- The western gray squirrel is classified as a game mammal and therefore is the only native tree squirrel that may be legally hunted. See current Oregon Big Game Hunting Regulations on ODFW’s website for season and restrictions. Note: In the Willamette Valley Ecoregion, the western gray squirrel is classified as a State Sensitive Species–Vulnerable, which is why hunting restrictions are in place.
- The Douglas squirrel is classified as a Nongame Protected Wildlife species and cannot be hunted. (OAR 635-044).

- The American red squirrel is classified as a Nongame Protected Wildlife species and cannot be hunted. (OAR 635-044).
- The northern flying squirrel is classified as a Nongame Protected Wildlife species and cannot be hunted. (OAR 635-044).

NONNATIVE SPECIES

The Eastern gray and Eastern fox squirrels are considered invasive species as supported by OAR 635-056 which classifies them as Nonnative Prohibited Wildlife. Because these species are unprotected, they can be hunted year-round and there is no bag limit.

Note: If an injured or orphaned Eastern gray squirrel or Eastern fox squirrel is brought to a licensed wildlife rehabilitation facility, it must be humanely euthanized.

RECOMMENDED CONSERVATION ACTIONS

Native tree squirrels are a natural part of our ecosystem. Because of the increasing pressures they face from habitat loss, habitat fragmentation and invasive species, they need help. Recommended conservation actions include:

- Keep habitat natural and healthy
- Retain and protect remaining oak trees.
- Promote development of large oak trees
- Plant native trees and shrubs that provide a variety of natural foods at different times of the year
- Provide large trees and dead and dying trees (snags, in safe areas) to provide nest sites and food storage site.
- When pruning trees and/or shrubs, leave pruned material on the ground for squirrels to gnaw on during the winter
- Do not feed squirrels
- Keep and feed pet dogs and cats indoors

PUBLIC HEALTH CONCERNS

Tree squirrels can carry disease and host parasites (internal or external) that carry pathogens that in turn can potentially be harmful to humans (zoonoses). However, there is minimal documentation of disease transmission from tree squirrels to humans. Although uncommon, diseases isolated from trees squirrel across North America include encephalitis, Rocky Mountain spotted fever, leptospirosis, plague, ringworm, and tularemia. Tree squirrels may be susceptible to rabies as well, but to date none have tested positive for the virus in Oregon.

Squirrel Bites

Squirrel bites are the most common type of wildlife related bite reported to ODFW, and almost every reported bite can be traced back to feeding of the offending squirrel. If a person is bitten or scratched by a tree squirrel, immediately scrub the wound with soap and water. Flush liberally with water. Contact your physician and local health department immediately for further advice. If possible, contain the squirrel that has bitten a person, by placing a large bucket over the animal and secure it with a heavy object so the animal can be tested by a health official.

If your pet is bitten by a tree squirrel, follow the same cleansing procedures as described above and contact your veterinarian to determine if other treatment is advised.

Diseased Squirrels

- **Lumps:** Squirrels are sometimes seen with tumor-like lumps. These are caused by naturally occurring tree squirrel bot fly larvae, the hatched eggs deposited under the skin by adult bot fly that then protrude from the skin. Squirrels typically recover from bot fly larvae and these fly larvae do not impair the quality of the meat for eating.
- **Hair loss:** The most common ailments that afflict squirrels are caused by ecto-parasites, such as ticks, fleas and mites. These are naturally occurring, but may occasionally result in patches of hair loss. While some squirrels succumb to the elements or other parasites during this time, others do not appear to be ill-affected and are able to completely recover. Hair loss and other diseases that spread easily among squirrels are exacerbated when people feed squirrels.
- **Stumbling/Bumbling:** Sometimes squirrels are observed acting strangely such as repeated falling over or unstable or circling walking. Such behavior typically results from a head or spinal injury, most often from a fall. Other potential causes are poisoning (rodent poison) or inflammation of the brain caused by a parasite or other illness. Do not attempt to approach or capture the squirrel.

Information on the Web

ODFW Living With Wildlife Series, Conservation Section
Audubon Society of Portland, Living With Urban Squirrels
Metro Living with Wildlife in Your Garden
Oregon State University, Living With Nuisance Wildlife Brochure
OSU Extension, Western Gray Squirrel Brochure, Tree Squirrels

Wildlife Control Operators are permitted by ODFW. Find a complete list in the Wildlife section of ODFW's website, License, Permits and Applications, or call your local ODFW office. www.dfw.state.or.us



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