

## Community Science Activities: Project Squirrel

Project Squirrel is calling community scientists of all ages to count the number of squirrels in their neighborhoods and report their findings. The goal is to understand tree squirrel ecology. Some neighborhoods may have gray (and “black or white” squirrels, which are almost always gray squirrels!), fox, and red squirrels while a nearby town only has one species. In many places, it seems one species or another is becoming more common. Learn how to identify these three tree squirrels then report your observations about their presence or absence and some of the ecological conditions of your neighborhood.

Anyone can participate in Project Squirrel. No matter where you live, city or suburb, from the Midwest to the East Coast, Canada to Mexico, The U.K. to Italy, if tree squirrels live in your neighborhood, you are encouraged to become a squirrel monitor.

**Materials:** a notebook to record your observations and a window that looks out onto your yard.

**How to record data:** Visit [SciStarter.org](http://SciStarter.org) and make an account with an adult. Search for *Project Squirrel* and press the *Participate* button to record your findings. You can even upload a photo you captured of a squirrel.

### Background Information: Tree Squirrels

Information and activity from *Nearby Nature, Four Winds Nature Institute community-based natural science curriculum*

Tree Squirrels are a familiar sight in backyards, parks and forests. Whether they are leaping from tree to tree, bounding across the grass, burying a nut or chittering at someone, they are definitely entertaining to watch! Squirrels play an important role in our forest ecosystem. They gather seeds, plant trees and are prey for larger animals. In western North Carolina we have 3 species of squirrels, the eastern gray squirrel (the most common), the red squirrel and the southern flying squirrel.

With three types of squirrels living in the same habitat, competition for resources (food, water, shelter) can arise. Over time these squirrels have developed their own niche in the forest community. This means that they eat, live, and behave in slightly different ways from each other to avoid competition and conflict. The first example of this is being active at different times and living at different elevations where they are less likely to all live in the same area. The eastern gray squirrel and red squirrel are both diurnal, meaning they are active during the day. The southern flying squirrel is nocturnal, meaning active at night. Many towns and cities are situated in valleys, where mainly eastern gray squirrels are found. As you go higher in elevation you will find gray squirrels and southern flying squirrels. High in the mountains you will find southern flying squirrels and red squirrels.



**Eastern Gray Squirrel**

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Wikipedia: Eastern Grey Squirrel.jpg



**Red Squirrel**

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Wikipedia: American squirrel eating nut, 13 Jun 2013.JPG



**Southern Flying Squirrel**

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Wikipedia: Southern Flying Squirrel-27527-1.jpg

Squirrels are primarily herbivores (eating mainly plants), living on nuts, seeds, buds, fruit and mushrooms. Squirrels are opportunistic feeders and will occasionally eat insects, eggs and even baby birds if they have the chance. Differences in food preference is another way that squirrels avoid competition.

#### Eastern Gray Squirrels

- Eat mostly nuts (acorns, beech nuts and hickory nuts)

#### Red Squirrels

- Eat mostly seeds from spruce and pine cones

#### Southern Flying Squirrels

- Eat hard to find truffles (a kind of underground mushroom) along with nuts and seeds but avoid competition by eating at night.

Squirrels are active all winter and must “squirrel away” food for lean times. Each uses a slightly different technique.

Scatter Hoarders: burying nuts individually and scattering them all around their territory. This method reduces the chances of another animal finding the whole hoard, but it makes more work for the squirrels. Scatter Hoarders have about an eighty-five percent success rate in retrieving their buried nuts.

Larder Hoarders: creating large caches of seeds or cones inside hollow trees or logs, in middens, or in underground burrows. In winter, they tunnel through the snow to reach these stockpiles. They also hang cones, mushrooms, and fruit in shrubs for drying and an easy winter meal.

#### Eastern Gray Squirrels

- *Scatter Hoarder*

#### Red Squirrels

- *Larder Hoarders*

#### Southern Flying Squirrels

- *Larder Hoarders*

Shelter is another way squirrels make their own niche in the forest. Eastern gray squirrels often build large leaf and stick nests, high in the branches of trees. These nests, called *dreys*, may be used in the warmer months, while using a tree cavity in rainy and cold weather. Red squirrels are nest builders, weaving strips of bark and leaves into nests in conifer trees, or they dig burrows underground. Flying squirrels may put a roof on an old bird’s nest or build a small leaf nest of their own. In winter, they may share tree hollows, as many as twenty in a single den.

Locally in western North Carolina you may also see white squirrels. White squirrels are just a color variation of the eastern gray squirrels. If you are lucky enough to have white squirrels living near you, try to record how often you see them verses a gray squirrel. Do you see them interact? Do you think the white squirrels have an advantage over the gray squirrels? Are they treated differently? Parents, this could be a great research project.

## **Activity: WHERE'D I PUT THAT ACORN?**

**Objective:** To model squirrel nut-burying behavior and consider its effect on the ecosystem.

Give each child ten “nuts” (e.g. dry pasta pieces, acorns, pennies, popcorn, dried beans) to hide around the yard. Review strategies for seed storage used by the different squirrels. What are the advantages of larder hoarding versus scatter hoarding? Acting like squirrels, children should now try to hide their “nuts” without others seeing the hiding places. Explain that children will have a chance to retrieve their hidden “nuts” in a while.

Move on to a different activity or take a lunch or snack break to allow some time to pass before children can collect their “nuts”. After the break, give the children 5 minutes to try to find their pieces. Ask each child to report the number of “nuts” they retrieved.

How many did they recover? Count up and tally.

How does this compare to gray squirrels in real life? (85 percent success for individual squirrels.)

Did anyone steal seeds from another child? Do squirrels sometimes steal food? (Yes.)

What happens to the seeds that are forgotten? (They may grow into new trees.)

How are squirrels important to the forests of tomorrow? (They plant seeds of trees.)

**Optional alternative:** use a timer to see how long it takes the children to hide their food, and then again to see how long it takes them to collect it. For older children that need more of a challenge, have them hide their “nuts” then map a map of the yard and where they hid them. Make them wait several hours then try to remember where they hid their “acorns”. They can refer to the map to jog their memory.

**Materials:** small items like acorns, popcorn, pennies, or dried beans to hide outside, 10 per child in bags; paper, pencil, clipboard; optional: timer.