

West Virginia
Wildlife
Series

*A Guide to Mammals of West
Virginia*
*Eastern Grey Squirrel (*Sciurus
carolinensis*)*



Volume 20

Characteristics:

The Eastern Grey Squirrel is a medium sized tree squirrel with no sexual dimorphism in size or coloration. The dorsal surface ranges from grizzled dark to pale grey and may have cinnamon tones. The ears are pale grey to white and its tail is white to pale grey. Underparts are grey to buff. Melanism is common in the northern portions of the range and albinism is rare in all areas. There are a total of 22 teeth in the adults. The total length of these squirrels ranges from 15 to 20 inches, tail length ranges from 6 to 10 inches, and ear length ranges from 1 to 1 $\frac{1}{2}$ inches.

Range:

The eastern grey squirrel ranges over the eastern United States to just west of the Mississippi River and north to Canada. Introductions have occurred in the western states and some of Canada that was not previously inhabited, as well as in Italy, Scotland, England and Ireland. Their home range is from 1 to 3 acres.

Habitat:

The eastern grey squirrel prefers habitats of mature continuous woodlands of greater than 40 hectares with diverse understory vegetation. Densities are highest in forests with trees that produce foods that last through winter storage such as oaks (*Quercus*) and walnuts (*Juglans*).

Diet:

The eastern grey squirrel feeds mostly on nuts, flowers and buds of more than 24 species of oaks, 10 species of hickory, pecan, walnut and beech tree species. Maple, mulberry, hackberry, elm, buckeye and horse chestnut fruits, seeds, bulbs or flowers are also eaten along with wild cherry, dogwood, hawthorn, black gum, hazelnut, hop hornbeam and ginkgo tree fruits, seeds, bulbs and/or

flowers. The seeds and catkins of gymnosperms such as cedar, hemlock, pine, and spruce are another food source along with a variety of herbaceous plants and fungi. Crops, such as corn and wheat, are eaten, especially in the winter. Insects are eaten in the summer and are probably especially important for juveniles. Cannibalism has been reported, and squirrels may also eat bones, bird eggs and nestlings, and frogs. They bury food in winter caches using a method called scatter hoarding and locate these caches using both memory and smell.

Omnivores:

Some animals eat both plants and animals. They are **omnivores**. Omnivores include mammals like [grizzly bear](#), [striped skunk](#) and [raccoon](#) and birds like the crow, the [blue jay](#) and the woodpecker. Because they will eat plants and animals, omnivores survive well in many environments. Some omnivores, like the [raccoon](#), the [opossum](#) and the seagull have no problem adapting to living near humans. They often will dig through garbage cans, dumpsters and gardens to find food.



What did you have to eat today? If you are like most humans, you probably had meat and plants! Humans are omnivores too! Our teeth are designed to eat both meat and plants. Our front teeth

help us rip into meat and bite into fruits and vegetables, and our molars help us grind up meat and chew fruits and vegetables. Many omnivorous animals also have teeth that help them eat both plants and animals.

Diseases common to Eastern Grey Squirrels:

Grey Squirrels can carry rabies, tularemia, and West Nile Virus. Grey squirrels might carry diseases that could affect humans, but, as a practical matter, instances where squirrels have transmitted disease to humans are rare.

You may see a tree squirrel engaging in unusual behavior, such as repeatedly falling over or circling a small area. Such behavior can result from an injury, poisoning, or inflammation of the brain (encephalitis) caused by a parasite. If a person is bitten or scratched by a Grey squirrel, immediately scrub the wound with soap and water. Flush the wound liberally with tap water. Grey squirrels can carry tularemia.

Communication:

Eastern grey squirrels communicate among themselves with a variety of vocalizations and postures, such as tail flicking. They also have a keen sense of smell and can determine much about their neighbors in this way, including levels of stress and reproductive condition.

Some of the things they can determine are levels of stress and reproductive condition.

They emit warning calls to warn neighboring squirrels of the presence of predators.

Chirping barks are frequently heard from territorial males, especially during the autumn and early spring breeding seasons. Alarm calls consist of short clucking barks that humans can usually imitate well by sucking one cheek repeatedly against the molars on one side of their mouths. The intensity of a squirrel's alarm is gauged by the frequency of the barks; a fast chattering denotes immediate danger, becoming less frequent as the source of alarm recedes.

Life Cycle:

Males compete among themselves for the ability to mate with female eastern grey squirrels. Females may mate with more than one male as well.

Males start following females 5 days before estrus and may come from as far away as 500 meters. Estrus in the female is indicated by an enlarged pink vulva, a condition which usually lasts less than 8 hours. The vagina is closed in prepubescent and anestrus females. Copulation lasts less than thirty seconds. After ejaculation, a gelatinous white vaginal plug forms, preventing further sperm entry.

Breeding occurs in December-February and May-June and is slightly delayed in more northern latitudes. Gestation lasts 44 days. Most females begin their reproductive life at 1.25 years but can bear young as early as 5.5 months. Females may bear young twice a year for more than 8 years. Males usually are sexually mature by 11 months but maturity can be delayed by as much as two years if the young males are housed with a dominant adult male. This cycle of testicular recrudescence and regression occurs twice a year.

Young are altricial. Weaning begins in the seventh week and is completed by the tenth. At this point, the juvenile pelage is lost.

Adult size and mass are reached at 9 months. Two litters are born each year in late winter and midsummer with generally 2-4 young per litter (up to 8 young are possible).

Newborns are naked with the exception of their vibrissae. Vibrissae are small hairs around the nose and mouth that are used for touch, much like the whiskers of a cat. The newborns weigh from $\frac{1}{2}$ oz to $\frac{3}{4}$ oz. Young are altricial. They are cared for in the nest by their mother until they reach independence. Weaning begins in the seventh week and is completed by the tenth. At this point, the juvenile hair is lost. Adult size and mass are reached at 9 months old. The maximum longevity is 12.5 years in the wild but a captive female lived to be over 20 years of age.



Behavior:

During the spring, summer and autumn, squirrels have their peak activity times about 2 hours after sunrise and 2-5 hours before sunset. This allows them to avoid the heat of the day. During the

winter, they are unimodally diurnal with a peak just 2-4 hours before sunset. Generally, females are more active in the summer months and males are more active in the winter months. A dominance hierarchy forms in males during breeding times; females mate with several males. Related individuals may defend a territory (Taylor 1969). Squirrels occupy two types of homes, including a permanent tree den as well as a nest of leaves and twigs on a tree crotch 30-45 feet above the ground. Females nest alone when pregnant, and lactating females are especially aggressive and avoided by others.

Like many members of the family [Sciuridae](#), the eastern gray squirrel is a [scatter-hoarder](#); it hoards food in numerous small caches for later recovery. Some caches are quite temporary, especially those made near the site of a sudden abundance of food which can be retrieved within hours or days for re-burial in a more secure site. Others are more permanent and are not retrieved until months later. It has been estimated that each squirrel makes several thousand caches each season. The squirrels have very accurate [spatial memory](#) for the locations of these caches, and use distant and nearby landmarks to retrieve them. [Olfaction](#) is used once the squirrel is within a few [centimeters](#) of the cache.



Gray squirrels build a type of [nest](#), known as a drey, in the forks of trees. The drey consists mainly of dry leaves and twigs. They may also build a nest in the [attic](#) or in the exterior walls of a house, often to the consternation of the homeowner. They will raid [bird feeders](#) for [millet](#) and [sunflower seeds](#) but they are reported to dislike the slight [capsaicin](#) content of [safflower](#) seeds. So-called anti-squirrel birdseed preparations are available; the seeds are coated with [chili pepper](#). Apparently, birds can not taste capsaicin. Mixing hot pepper flakes into regular birdseed works well as a squirrel deterrent. Gray squirrels are notorious for digging [bulbs](#) from gardens. Their reputation for these habits has led some to call them "tree rats" or "fuzzy-tailed rats". Eastern gray squirrels have a high tolerance for humans and inhabit residential neighborhoods and urban parks. Wild squirrels may even be enticed to accept food from people.

Identifying Grey Squirrel Scat:

Squirrel droppings or scat are rarely seen because they are very small, a little larger than grains of rice are pale brown in color and they decompose very rapidly. Grey Squirrel scat is very distinctive, for they are twice the diameter of the chipmunk and red-squirrel scat and are more oval. They are about $\frac{1}{2}$ inch long and $\frac{1}{4}$ inch diameter. They are not normally found in the wild, but you can find them around places where the animals regularly feed, such as bird feeders.

Grey Squirrel scat is pellet-shaped, dark brown to black, .25 inch in diameter. Pellets often exhibit a thin "tail" of rough plant fibers on one end, indicating more fibrous browse. Roughly 1 dozen pellets per scat deposit, depending on the size of the squirrel.

Eastern Grey Squirrel Tracks:



In urban areas, squirrels travel via rooftops and power lines, lawns, and concrete, leaving no visible trail. Tracks are also seldom visible on the soft forest floor. However in soft snow, the track pattern of a scampering squirrel can be seen as it leads from tree to tree. If you find tracks starting from an open area in the snow, a flying squirrel may have landed and scampered off. The Eastern Grey Squirrel leaves a typical squirrel track when it runs or bounds. The hind prints fall slightly in front of the fore prints. A clear fore print shows four toes with sharp claws, four fused palm pads and two heel pads. The hind print shows five toes and four palm pads; if the full heel-length registers, it also shows two small heel pads. Tracks of the front feet are rounded and tracks of the hind feet are elongated. The track pattern is much like that of a rabbit, but much smaller. The hind feet print ahead of the forefeet, leaving a pattern like two side-by-side exclamation points, indicating the hopping gait common to all tree squirrels.

Number of toes: 4 front - 5 rear

Front Foot: 1.9 in L x 1.7 in W

Rear Foot: 3.3 in L x 1.9 in W

Straddle: 4 - 6 in

Trail Width: 4 $\frac{1}{2}$ in

Slow Stride: 5.2 - 10 in

Running Stride: 18 - 36 in

Definitions:

Straddle - The distance between the insides of opposing feet.

Pitch - The distance a foot angles in or out in relation to the animals' line of travel.

Trail Width - The distance between the outermost prints in any one pattern.

Stride - The distance from the foremost toe of one print to the foremost toe of the next print.

Track Size - The length and width of a track. (Sometimes used to determine species.)

This series of Wildlife guides has been compiled and edited by Bill Church.

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