



Species Spotlight

Flying Squirrels

Glaucomys spp.

I think we can all agree that “gliding chipmunk” doesn’t have quite the same ring to it, so right off the bat let’s forgive the slight exaggerator who named this shy, soaring, nocturnal rodent a bit grandiosely. At least they weren’t as far off as the person who named the African scaly-tail flying squirrel which is neither scaly, nor flying, nor a squirrel (Discuss), but I digress. There are actually two species of flying squirrel in the Northeast. In keeping with the seemingly not-quite-right naming conventions, the “southern” flying squirrel can be found as far north as Canada, and some “northern” flying squirrels happily call Tennessee their home, though to be fair the overall range of each species is accurate. Both fall into the rough size range of an eastern chipmunk, with northerns a bit bigger (up to 4.4 ounces) and redder than southern (up to 2.5 ounces and grayish), but are otherwise similar in appearance.

Feather-free Flight. After a Fashion

Though technically not flying, the ability to glide several hundred feet through the forest at 20 to 30 mph like a silent gray ghost is still pretty impressive. They achieve this by fearlessly leaping into the dark void spread-eagle style and unfurling their patagium - a loose flap of skin that spans the length of their body from wrists to ankles. Using their legs and flat tail they can even steer surprisingly well. Depending on the complexity and length of the glide, they can perform loops or reverse direction.

Flying squirrels approach the landing tree belly-first, then all four thickly-padded, shock-absorbing feet make contact at once. Gliding from tree to tree is a great way to avoid land-based predators, but they are still favored meals of raptors - especially owls. This is why after they land on a tree, they quickly scurry to the other side just in case a Great Horned or Barred was fast on their tail. Sometimes they must venture to the ground to forage for food. If they linger there too long, they’re susceptible to weasels, fisher, fox, coyote, bobcat, and domestic cats.

Human are impressed enough with this gliding mammal’s abilities that they have been the subject of study and emulation. The “winguits” used by base-jumpers to glide about before pulling the parachute cord were inspired by flying squirrels. Another study is using models of flying squirrels in wind tunnels to see if improvements can be made to control flight or reduce drag on small drones.

They Only Come Out at Night

For as abundant as they are in the Northeast, you’d think they’d be as common a sight around our bird-feeders as their terrestrial cousins. The

key difference is that they are nocturnal by nature. Their large eyes have out-sized pupils making them almost entirely black

in appearance, and aptly gather available moon and starlight. Together with extra-long whiskers (the longest of any squirrel species) it is possible for them to glide through the dark forest without crashing into trees or branches. Like many prey species, the eyes are set far to the sides of their heads, providing for a wide field of vision so as to give warning of approaching danger. If detected in time, they’ll tuck their patagium in and free fall for a bit to avoid the talons of an owl.

Tweeters and Truffles

Unlike their tree-nut favoring cousins, flying squirrels have a surprisingly diverse palette. They certainly enjoy tree nuts, and both species will also gladly gorge on flower blossoms and buds. After that the two species prefer to order from different menus. Southern flying squirrels are known to be one of the most carnivorous of all squirrel species, and readily supplement their diets with insects, bird eggs, or even the newly hatched birds themselves. Fresh carrion is always an option as well.

While both species enjoy fungi, it is the northern flying squirrels that specialize in this food source, and as such even play a role in promoting healthy forests. At least one study found that 90 percent of northern flying squirrel’s diet consists of the underground fruiting bodies of mycorrhizae known as truffles. Mycorrhizae (literally: fungus root) are fungi that have an essential symbiotic relationship with trees. In fact, trees grown in controlled conditions without mycorrhizae yielded stunted and unhealthy plants. They colonize on fine tree rootlets and fan out in a dense web, absorbing soil nutrients and water (sharing them with the tree host), stimulating root growth, and shielding roots from disease. In return, the trees give the fungi sugars and other carbohydrates they produce through photosynthesis. Nitrogen-fixing bacteria in the fungi can also provide that essential element to both parties.

Flying squirrels come into play when they snack on these fungi. Bounding through a forest that has a treasure-trove of maturing truffles must be as mouth-watering



Flying squirrels are expert gliders.





Ed Sharron photo

Richard Schneider photo

Northland College photo

Left to right: There are 43 species of flying squirrels in the world, amongst the largest is the red-and-white giant flying squirrel of China. | When flying squirrels land on snowy ground, they'll often leave what trackers call a "sitzmark" pattern. | Designers of the wingsuit took inspiration from flying squirrel morphology. | When exposed to ultraviolet light, the fur of flying squirrels glows a bright pink and blue.

as walking by a bakery that just finished baking the morning bread and donuts. Truffle aromas intensify as spores mature, ensuring animals are increasingly likely to find them as more become ready. When northern flying squirrels dig up and devour the tasty truffles, the fungal spores pass through their digestive system unharmed. Hours later they are deposited in a different part of the forest where they will germinate and form new fungal colonies together with other trees. For a flying squirrel, this can be a significant distance, especially if it was unlucky enough to itself be eaten by an owl. Truffle spores recovered from owl droppings show they can also survive their system.

Ultrasonic Night, Ultraviolet Night

Flying squirrels appear to be privy to a world totally inaccessible to us. Scientists have known for decades that they can produce vocalizations in the ultrasonic frequency, but it is still only the subject of theory as to why they do so. It is well known that bats utilize ultrasound for navigation and prey detection. Though never practically demonstrated, it has been theorized flying squirrels may also use ultrasound for navigation, albeit at a much coarser level than bats. Social interaction and pup rearing are other likely uses of the ultrasonic emissions.

Operating in a nocturnal environment, acoustic communication can be of more importance than visual cues. But what if their prime predator is also attracted by these communications? Good thing those ultrasonic chips are above the hearing range of owls. They can even warn other nearby squirrels of an owl's presence without the owl having any idea its cover has been blown.

Another fascinating trait of flying squirrels was only observed for the first time in 2019, and accidentally at that. Northland College professor Jon Martin was returning from a frog-fluorescence study one evening in Wisconsin, and absent-mindedly pointed his ultraviolet flashlight at a flying squirrel he chanced upon at a bird feeder. Imagine his surprise when the squirrel glowed back at him in a neon bubblegum pink. Since then, science has been trying

to figure out what, if any, benefits this may have for the squirrels. It's entirely possible this fluorescence is a mere side effect of a compound in the squirrels' fur and has no adaptive value at all, but where is the fun in that theory?

In their preferred habitat of deciduous and mixed forests, the low light conditions of dawn and dusk are awash in UV light. Snow-covered landscapes also reflect a significant amount of UV. One hypothesis is the UV reflection acts to camouflage them from, wait for it, those pesky owls again, 'hoo' (apologies) can detect UV light. By better blending in against fluorescing plants, lichens, or a background of snow, they may become a harder target for owls. Unique among squirrel species, the lens covering a flying squirrel's eye lets UV radiation pass through to the retina, suggesting it could play some yet-to-be understood role in communication and/or mating.

Urban Sprawl Leads to Attic-tion

Over their long history that spans at least 25 million years, flying squirrels preferred to nest in old-growth forests where snags (standing dead trees) and large trees with hollow cavities were plentiful. It's only in the last few centuries (i.e. 0.000012% of their history for you math nerds) they've been forced to find alternative abodes to raise their pups since most of those forests have been felled across North America. One of those places happens to be the attics of suburbia. They can enter your home through a crack as narrow as their skull can squeeze through: 0.9 inches wide and 0.7 inches tall, usually near the roof line. If you have one flying squirrel in your attic, bad news: you likely have more - maybe a lot more. As social animals, it is not uncommon to have anywhere from 6 to 30 squirrels denning together consisting of multiple families. Only filling those holes is enough to prevent squirrels or other unwanted guests from gaining entrance.

For more information

- [Watch](#) how flying squirrels glide from tree to tree.
- Once you seal up your house, learn how to [build a flying squirrel nest box](#) to provide them with a home of their own.



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MORRISTOWN NHP • ROOSEVELT-VANDERBILT NHS • SAINT-GAUDENS NHP • SAUGUS IRON WORKS NHS • SARATOGA NHP • WEIR FARM NHS

