

SUPER SQUIRRELS!

Flying squirrels have special tools and tricks for living almost entirely in the treetops—and in the air.

by *Christine Petersen*

Nearly 300 years ago, a British explorer visited colonial America. He was a naturalist named Mark Catesby, and as he traveled he kept a journal and sketched unfamiliar plants and animals he found along the way. One night, he watched several small objects fall from a tree. It was probably hard to see them in the dark woods. At first, Catesby thought they were just falling

leaves, but that didn't make sense because they appeared to follow one another in one direction.

It didn't take Catesby long to solve the puzzle. What he had seen were tiny squirrels, "leaping from one Tree to another." Catesby watched with fascination as the creatures soared through the night like furry trapeze artists. He called them flying squirrels.

A flying squirrel glides through the air from one tree to another. The squirrels are most active at night.

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The northern flying squirrel, one of Minnesota's two types, has a pale gray belly.

ID That Squirrel

More than 40 flying squirrel species have been identified around the world. Two of these—southern and northern flying squirrels—live in Minnesota's woodlands, forests, and tree-filled city neighborhoods. Flying squirrels avoid competing with other tree squirrels by being *nocturnal*. They hide out by day and are active at night, so they are very hard to spot.

The two species of flying squirrels look much alike. The head is small and rounded, with large, dark eyes and a pink nose surrounded by long whiskers. Cup-shaped ears come to a sharp point at the top. The flying squirrel's tail is long and fluffy but completely flat. In both species,

the upper body is covered with brownish-gray fur that is as soft as velvet.

Which one is it? Do you wonder which flying squirrel lives in your neighborhood? The answer depends on where you are in Minnesota and the kinds of trees that grow there.

Northern flying squirrels often live in colder climates, from Alaska and Canada to the northern United States, but also in areas as far south as the Appalachian Mountains. Minnesota's northeastern Arrowhead region offers suitable habitat, with a mix of coniferous and deciduous trees.

Coniferous trees, or conifers, have nee-



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The smaller southern flying squirrel, the state's other species, often has a white belly.

dle-shaped leaves, and most of them keep their green needles all year. *Deciduous* trees have leaves that fall off seasonally and later regrow. Spruce, fir, and hemlock are important conifers for northern flying squirrels in Minnesota. These squirrels also use deciduous trees such as beech, maple, and birch.

Southern flying squirrels can be found throughout the eastern United States, and south into Mexico and Central America. In Minnesota, they are most common in the eastern counties—wherever there are plenty of deciduous hardwood trees like oak, beech, maple, and hickory.

There is a small part of Minnesota in

which both species may share the same patches of woodland. This region stretches from about Mille Lacs Lake to Wild River State Park. There, you must see a flying squirrel to identify its species.

Two traits can be used to tell the species apart: size and the color of fur on the animal's belly. Southern flying squirrels often have white belly fur, while the northern species is pale gray beneath. Of the two, northern flying squirrels are larger—about 12 inches long, including the tail. That's half the size of a gray squirrel. The southern species is about as big as a chipmunk, measuring just 9 or 10 inches.



A flying squirrel uses its rudder-like tail, padded feet, and long claws to land on a tree.

Living Kites

Back in the 1720s, when Mark Catesby caught a flying squirrel, he was surprised to see that it didn't have wings like a bat. Instead, it has a *membrane*, or flap of skin, between its legs. Biologists call this membrane a *patagium*. The squirrel has two membranes—one on each side of its body. Together they are called *patagia*.

The patagia usually rest loosely against the squirrel's body like a furry cape. That changes as soon as the squirrel jumps. It stretches its legs wide and the patagia

unfold. Slender bones on the squirrel's feet extend to hold the membranes open. The squirrel becomes a living kite, gliding gracefully through the night toward a distant tree.

What goes up must come down. Gravity is a natural force that pulls downward on everything. So even with the aid of its gliding membranes, a flying squirrel begins to descend as soon as it jumps. But the animal has remarkable control for

the few seconds it's in the air. Kicking a leg backward or slightly tilting its body causes a change in flight direction. The squirrel can angle its glide to avoid tree trunks and branches in its path. It can swerve to escape a swooping owl or a pouncing house cat.

Landing requires skill. The squirrel raises its tail as it approaches the target tree. Like a furry rudder, the tail drags through the air and slows the glide. The animal's padded feet soften its abrupt

landing against a tree trunk. Long, curved claws grip the bark to prevent a fall. Skittering around the tree and upward, the squirrel is ready to leap again.

Most of the time, flying squirrels move between trees that are just dozens of feet apart. But when conditions are right, they can cover truly astounding distances. The known record is held by a northern flying squirrel, which jumped down a mountainside. It soared down the slope and landed more than 290 feet away.

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Adapted for Gliding and Nocturnal Life

northern flying squirrel

(*Glaucomys sabrinus*)
(10 to 15 inches)

Large ear opening for better hearing

Back teeth flat for grinding seeds

Large eye sockets for best night sight

Front teeth strong and sharp for chewing through nut shells

Nesting

Nest in tree crotch is called a drey

Tree hole nest

Back leg with strong back claws for climbing trees

Long flat tail

styliform cartilage is flexible. It spreads and holds patagium open and helps with steering

patagium—a flap of skin that catches the air like a wing and enables gliding

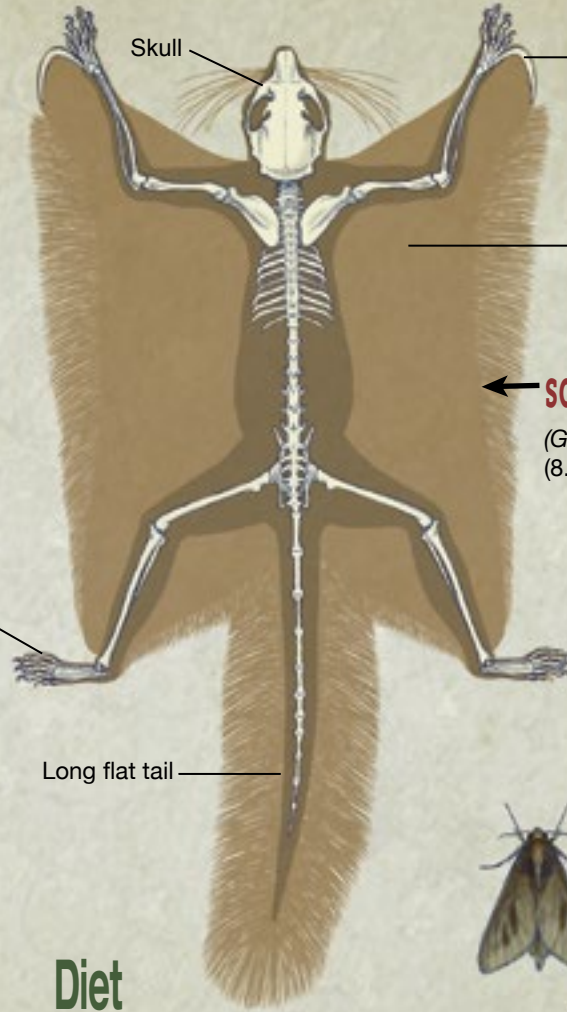
southern flying squirrel

(*Glaucomys volans*)
(8.3–10.2 inches)

Diet

Both species eat nuts, seeds, berries, fruits, fungi, lichen, tree buds, moths, beetles, insect larvae, spiders, bird eggs, small mice, shrews, and carrion (the flesh of dead animals). Both species also eat seeds at bird feeders.

ILLUSTRATION BY TAINA LITWAK



Northern flying squirrels peek from their nest in an aspen tree in northern Minnesota. They huddle for warmth in winter.

Home Sweet Home

Northern flying squirrels often build nests high in conifer tree branches. From the outside, a squirrel *drey* looks like a messy ball of twigs and leaves. Don't be fooled. The drey is cleverly designed to keep its owner safe, dry, and cozy. The squirrel uses moss as insulation, stuffing it into the cracks to block water and wind. It collects conifer needles, feathers, and fur to make a soft bed inside the drey.

Northern flying squirrel mothers build large dreys, more than a foot wide, to hold their growing babies. The southern species prefers to live inside trees. These squirrels may occupy an empty woodpecker hole or use a hollow space inside a decaying tree. Southern flying squirrels will even nest inside buildings or take over bird boxes.

This little squirrel's ideal home has an entrance roughly two inches across—you could just slip a ping-pong ball through it. Few predators are small enough to squeeze through such a narrow space.

Each flying squirrel builds several nests around its territory. These offer places to rest while feeding or to escape enemies. The squirrel may even keep a special nest to use as a bathroom. And when an old

family nest gets messy, mother squirrel can easily carry her babies to a fresh home.

On the menu. Northern flying squirrels emerge soon after dark in search of food. The Arrowhead region gets a lot of snow. Mushrooms and lichens grow well in this damp climate. Plant foods are also on the menu—from nuts and seeds to sap, fruit, and buds. Insects make a good snack, too.

The patagia make walking awkward and slow. But northern flying squirrels take the risk. The evidence can be found in winter. They leave long skidmarks in the snow where they land and run off to dig their favorite mushrooms.

In southern woodlands, flying squirrels eat a mix of plant and animal foods mostly found in trees. They hunt June bugs and moths, pick berries and seeds, or take birds' eggs and baby mice. Beginning in late summer, each southern flying squirrel gathers hundreds of acorns and other nuts, then tucks the food away in tree holes or cracks. Throughout the long, harsh winter, it keeps coming back to this food cache.

Flying squirrels help the forest stay



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healthy. While carrying mushrooms to the nest, flying squirrels spread the spores from which more mushrooms grow. Where they nibble on tree buds, the plant begins to sprout again. Uneaten nuts in a squirrel's cache can become new trees. And flying squirrels eat many insects that would otherwise damage the forest.

What about winter? As winter approaches, northern flying squirrels move from dreys into tree holes. Southern flying squirrels seek fresh nests, too. Each winter nest may contain eight or more individuals together. The squirrels in a winter nest

are usually family members, but a stranger is sometimes allowed to join.

Even here in snowy Minnesota, flying squirrels don't hibernate. They remain active even when temperatures fall below zero. Bad weather is a signal to cuddle up and rest. The squirrels may go into *torpor*. In torpor, an animal's heartbeat and breathing slow down. Its body saves energy.

Sharing the nest also means the animals can share body heat, which is another way to save energy. One scientist found the temperature inside a flying squirrel nest was about 36 degrees higher than outside.



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Baby flying squirrels are born blind and helpless but are ready to fly and leave their nest in two months.

Family Life

Flying squirrels emerge from the winter nest in early spring and begin to look for mates. The mother squirrel gives birth about five weeks after mating. Flying squirrels usually have two to four babies, which are blind and helpless at birth. The newborns are pink and furless, except for a brush of whiskers around the nose. They weigh up to 6 grams—about as much as six paperclips.

Summer is short in the Arrowhead region. Northern flying squirrels usually only have time to raise one litter of babies.

The warm season lasts longer in southern Minnesota. There, some flying squirrels are born in spring and others in summer.

Newborn squirrels already have pata-gia, evidence of the unusual lives they will lead. Within a week they begin to sprout a coat of soft fur. But flying squirrels grow up slowly. Their eyes don't open for about a month. The little animals can only sleep or climb around inside the small nest as they become stronger.

Mother squirrel leaves the nest at night and returns to nurse her babies. Like all

mammals, she produces milk that provides all the nutrition her young need to grow. Female squirrels are also ferociously territorial and may stamp their feet angrily at another squirrel or chase it away.

When the babies are about 40 days old, their mother brings solid food into the nest. The little ones have finally grown teeth. They get a first taste of soft food, which might include fruit, soft insects, and

mushrooms. By the age of two months, young flying squirrels are as big as their mother. They are ready to leave the nest.

As the family explores the neighborhood, they cluck quietly or call out in high-pitched voices to stay in touch. Next time you're outside at night, listen for these bird-like sounds and watch for shadows leaping among the trees. These secretive super-squirrels might live in a tree near you. 📍

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