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NORTHWEST WILDLIFE PRESERVATION SOCIETY

Northern Flying Squirrel

Glaucomys sabrinus



Photo credit: US Fish and Wildlife

By Renee Picard

There are two species of flying squirrels that live in North America. The northern flying squirrel (with 25 sub-species) may be found in forests throughout most of Canada, except for the central prairies and the extreme North; also in the U.S. in Alaska and northern areas of the Rockies and Appalachians. The southern flying squirrel (with 10 sub-species) inhabits a broad range in the eastern and midwestern United States, but in Canada is only found in very small, scattered pockets of southeastern Ontario. The southern species is considered 'vulnerable' but the northern species is not at risk. It is the northern squirrel that you would be likely to encounter in the Pacific Northwest, so it is the focus of this article.

Characteristics

The scientific name for the northern flying squirrel is *Glaucomys sabrinus*. *Glauco*s means for silver or grey, *mys* means mouse, and *sabrinus* come from the Latin word for river-nymph. So you will notice them often in riparian areas, near streams and rivers. Their colours range from tan to cinnamon and they have greyish-white belly fur. They are about 30 cm (12 in.) long and weigh about 139 g (46 oz.) Flying squirrels have big black eyes and this characteristic helps their night vision for they are nocturnal animals.

You might be surprised to find that, despite their name, flying squirrels do not really fly—they glide down from branch to branch. The front and back legs are connected with a thin fold of furry skin or membrane called a *patagium*. This hangs down like a robe when the animals are sitting.

When they launch from a branch, the patagium catches the air and acts almost like a parachute or the wing of a glider. They steer by adjusting the tautness of this membrane and use the furry tail to stabilize their flight a bit like the tail of a kite. They can glide as far as 90 metres (300 feet) and can make turns in the air on the way down, though they cannot soar on updrafts. As they reach their destination branch they use their forelimbs to grab onto it.

Habitat

Old-growth forests make the best habitats for the squirrels because they are dense, allowing for easier 'flights' between trees. The thick, old-growth canopy allows flying squirrels to hide from predators flying overhead. The squirrels like coniferous better than deciduous trees because the bumpy bark on conifers makes it easier for them to climb. The squirrels are quite hardy and can survive in second-growth forests, but their population densities are higher in the old-growth forests, probably due to the higher availability of food and nesting sites.

Old-growth forests provide the best variety of tree types, ages, and structures, for nesting sites and materials. The squirrels need this variety because they may build their nests either on the inside or outside of trees. Snags, partially dead trees, *understory* (tree trunks and branches below the canopy layer, and decomposing logs are their main nesting sites.

Cavity nests in tree trunks are used during breeding season. The squirrels do not make their own cavities but rely on cavities already made by other species such as woodpeckers or hollowed out by bugs. They also construct outside nests (*drays*) with materials such as bark, twigs, leaves, lichen, moss, or make space for nests inside witches' brooms (broom-like bunches of thin branches often found on spruce trees).

In winter, they use ground nests to be close to their food stores. Ground nests also tend to be warmer with snow available for insulation. Both types of nests are normally south-facing, taking advantage of maximum sunlight. The squirrels have also been seen 'keeping warm' by cuddling together in witches' brooms. Flying squirrels sometimes share their nests with other squirrels and seem fairly transient, treating tree cavities like 'hotels' rather than permanent houses. They may even change trees up to 20 times in one year!

Life Cycle

Breeding territories are average around 3 hectares (7.5 acres) for females and around 12 hectares (30 acres) for males. Female ranges never overlap with those of other females. Territories are identified by scent and are chosen based on how much food there may be, and where or whom their mate is.

Flying squirrels breed during the spring and have their young between May and July. The litter size varies from one to four, with only one litter per year. Like many other rodents, flying squirrels are born hairless and blind. Their eyes open and they can see after about four weeks. At first, they crawl around, then walk but are not ready to glide until three months old. By four months they can run, climb, and glide.

Their average lifespan is about four years, and predation is usually the cause of mortality. However, their natural breeding cycle allows populations to be restored within three years.

Behaviour

Flying squirrels are nocturnal, which means they mostly come out at night and sleep during the day. Their big black eyes help them to see better at night, and their call is a squeaky 'pisp pisp pisp' noise.

Flying squirrels are omnivores, which means they will eat almost anything. Some of their favourite foods include maple sap, moths, junebugs, nuts, berries, seeds, bird eggs, buds, flowers, and lichens. They sometimes store food in the ground for winter.

They also eat truffles, a special type of fungus that lives underground. These fungi play an important role in the forest ecosystem by recycling nutrients from decomposing matter and supplying it to plant roots in the soil. At the same time, the fungi depend on the plants for their own survival. This symbiotic relationship allows the fungi to help keep the soil healthy, which in turn keeps all of the plants and trees functioning well.

As the squirrels dig up the truffles, transport them to storage sites, and eat them, they help the fungi reproduce by spreading spores around the forest. The fungi rely on animals such as the flying squirrels to spread their spores through feces and on their fur. The soil, the truffles, the plants, and the squirrels all rely on each other for survival.

This is an example of how different parts of the forest ecosystem are interdependent, and a good reason to keep forests intact; if even a small part of the system is removed, this change can affect the forest in complex and often unpredictable ways.

Threats

Flying squirrels are normally hunted by owls, hawks, and by carnivorous mammals such as martens, bobcats, and weasels. However, domestic housecats seem to be the biggest threat to the animals. Habitat loss due to forest clear-cutting is also a problem; clear cuts and only partially rejuvenated sites leave little in the way of nesting sites or food for them. Because they are omnivorous, their survival is not particularly limited by food, but they seem to require a broad variety of nesting sites throughout the year.

What We Can Do To Help

A key ecological role of flying squirrels is their ability to spread fungus spores. The fungi are crucial to the forest ecosystem because they decompose matter and allow nutrients to get to plant roots. Another ecological role is that they are prey to many other species—but housecats are not a natural predator, so keep your cats indoors at night if there are squirrels around!

One of the best ways to learn about flying squirrels is to observe them up close. Flying squirrels may come to bird feeders at night, but if you want to see them, using a flashlight might scare them away. Instead, put a red light by the bird feeder so as not to bother them. You can also try building nest boxes (see Canadian Wildlife Federation website in [Web Resources](#)). Using these websites might help you find out where flying squirrels have been seen recently, so check them out - seeing one may be as simple as taking a walk through the forest!

Certain subspecies of flying squirrels are listed as endangered in some areas, but the Northern Flying Squirrel is not technically at risk in Canada. Still, it is only one of hundreds of species that survive best in old-growth environments, so it is important to participate in conservation efforts to save such forests.

Since they use tree cavities made by other species, saving potential nest sites such as snags and trees with cavities is a conservation measure where partial clear cuts are threatened or exist, or on your own property. There are many things still to learn about the northern flying squirrel, so saving their habitat can help scientists, ecologists, wildlife managers, and the general public to understand more about them. Supporting non-profit organizations is one way to ensure that research efforts towards forest wildlife conservation can continue.

Other Interesting Facts

- In some places, flying squirrels are also called “fairy diddles”.
- After landing on a tree, the squirrels will usually scurry to the opposite side before going down the tree. This is probably a way of keeping out of sight of predators.
- The truffles that the squirrels eat are underground, and the squirrels are thought to rely on smell to find them, but it is possible they may remember where they are located through other indicators, such as decaying wood.

Bibliography

Book Resources

Banfield, A.W.F., *Mammals of Canada*. Toronto: University of Toronto Press, 1974.

Wooding, F., *Wild Mammals of Canada*. Toronto: McGraw-Hill Ryerson, 1982.

Web Resources

Alaska Department of Fish and Game

<http://www.adfg.state.ak.us/pubs/notebook/furbear/nfsquirrel.php>

Comprehensive and authoritative summary of information on characteristics, habitat, life cycle, management, etc.

Animal Diversity Web – University of Michigan

<http://animaldiversity.ummz.umich.edu/site/accounts/classification/Pteromyinae.html>

Links to information on all species of flying squirrel worldwide.

Canadian Museum of Nature

<http://www.nature.ca/notebooks/english/flysqwir.htm>

Very brief general description

Canadian Wildlife Federation 'Wild About Gardening'

http://www.wildaboutgardening.org/en/features/section2/flying_squirrel/flying_squirrel.htm

Overview includes link to 'building nesting boxes.'

Flying Squirrel Central

<http://www.isidore-of-seville.com/flyingsquirrel/2.html>

Over 150 links to flying squirrel information, photos, and other information resources, including how to keep them as pets. Also links to distribution maps.

Gerrow, Shawn 1994. Flying Squirrels – Elusive Forest Friends. *Conservation*. 17:4 Nova Scotia Department of Natural Resources <http://www.gov.ns.ca/natr/wildlife/conserva/17-04-1.htm>

Overview of Northern and Southern Flying Squirrels in Maritime Eastern Canada.

Grey-Bruce Northern Flying Squirrel Research Project <http://www.glaucmys.org/rangemaps.html>

Links to range maps for both species of flying squirrels in North America.

Ontario's Niagara Escarpment (ONE) Monitoring Program <http://www.escarpment.org/Monitoring/flyingsquirrels.htm>

A special research project, including one of the best photos of a squirrel in flight.

Weaselhead.org

<http://weaselhead.org/profile/index.php?s=567>

Good overview on interesting Alberta site written by and for naturelovers.

Includes photos of squirrels at rest.

Wikipedia: the Free Encyclopedia

http://en.wikipedia.org/wiki/Flying_squirrel

Contains a link for each key word in the description of the squirrels.