

Niches for Everyone

Living things find amazing ways
to live together.

GO OUTSIDE, find a tree. Lie down beside it or climb up to perch on a sturdy branch. Relax, stay quiet, and look around. You might be surprised at what you see. A tree is more than roots, trunk, branches, and leaves. In many ways, a tree is like an apartment building—home for many creatures.

Birds and squirrels build nests on branches or inside holes. You might spot a treefrog hidden among leaves. Ants and spiders scurry over the bark, and beetles burrow into the wood. Mushrooms sprout from crevices.

As the sun goes down, a whole new crew of critters emerges. A raccoon or an opossum might climb out of a tree-hole den to find fruit and insects to eat. Bats skim over the tree-

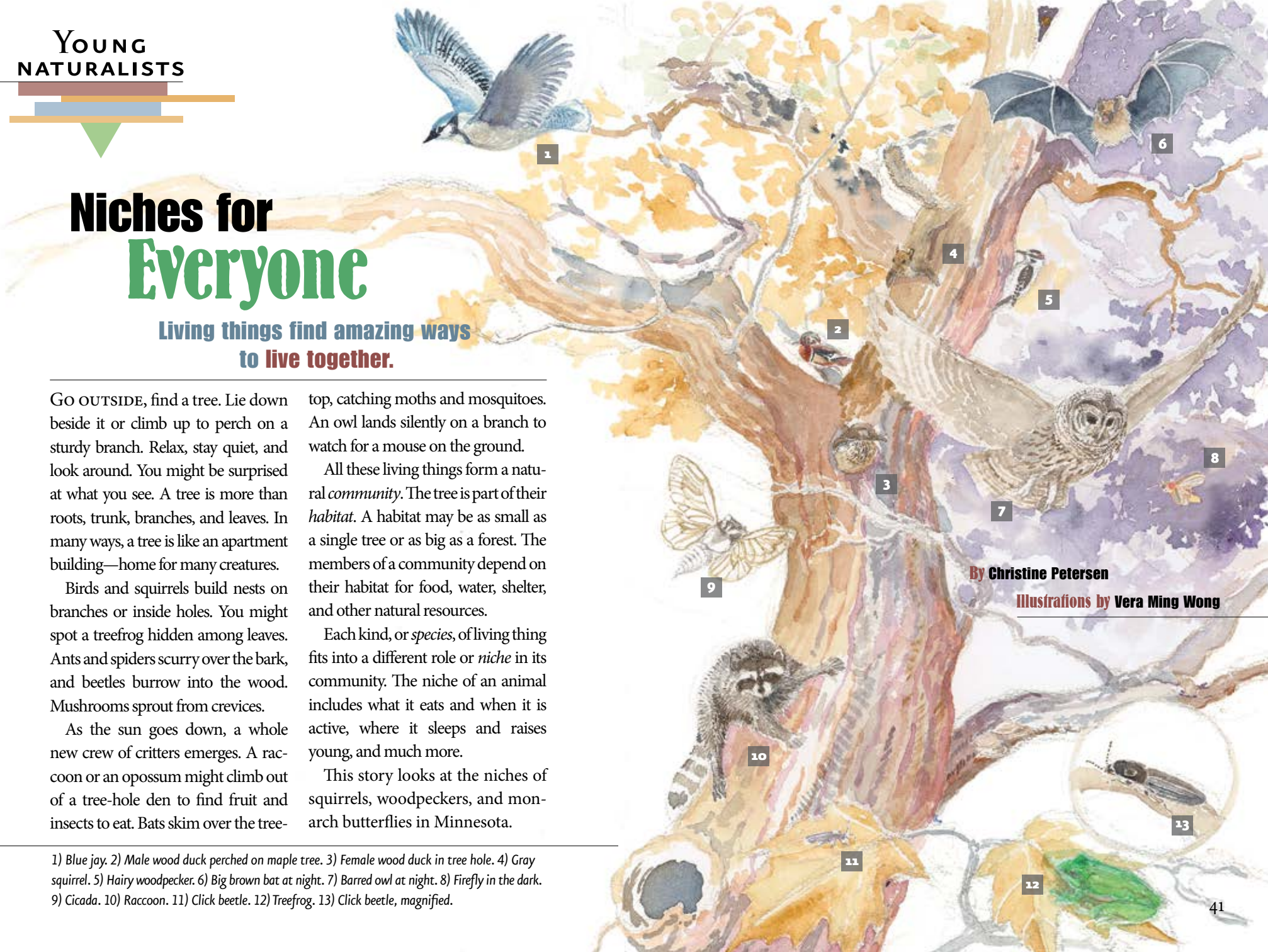
top, catching moths and mosquitoes. An owl lands silently on a branch to watch for a mouse on the ground.

All these living things form a natural *community*. The tree is part of their *habitat*. A habitat may be as small as a single tree or as big as a forest. The members of a community depend on their habitat for food, water, shelter, and other natural resources.

Each kind, or *species*, of living thing fits into a different role or *niche* in its community. The niche of an animal includes what it eats and when it is active, where it sleeps and raises young, and much more.

This story looks at the niches of squirrels, woodpeckers, and monarch butterflies in Minnesota.

- 1) Blue jay. 2) Male wood duck perched on maple tree. 3) Female wood duck in tree hole. 4) Gray squirrel. 5) Hairy woodpecker. 6) Big brown bat at night. 7) Barred owl at night. 8) Firefly in the dark. 9) Cicada. 10) Raccoon. 11) Click beetle. 12) Treefrog. 13) Click beetle, magnified.





Who Lives Where?

Humans are different from most other animals because we can live in almost any habitat. We bottle water to carry with us and buy food grown around the world. But we have niches too. You might live in a house, while your friend has an apartment. Some people are *omnivores*, eating all kinds of food from plants and animals. Some are *vegetarians*, eating no meat at all. Some people have more energy in the morning, and others get going later in the day and stay active into the night. How does your niche compare with that of friends and family? Knowing your niche can be a fascinating way to understand your role in the world.

Compete or Share. Many kinds of living things can share a habitat if each

has a different niche. But even then, every habitat has a limited amount of shelter, food, water, and other resources. Species that try to share exactly the same niche will *compete*.

Imagine a cool autumn morning. You wake suddenly as high-pitched whistles, chirps, and chatter fill the air outside your windows. Two furry animals skitter down a nearby tree trunk and zigzag across the ground. A red squirrel is chasing a gray squirrel nearly twice its size.

The squirrels are competing for this piece of habitat, or territory. The red squirrel is fiercely *territorial*. This little rodent defends its territory against other squirrels, birds, and people.

Protecting a territory is one way to divide up resources. Changing niches

is another way. To stop competing, the gray squirrel might move to another habitat. Or animals can find a new niche in the same territory by using different resources. One of the competing species might find a new kind of place to make its nest. Or

a rival might find other kinds of foods to eat. The rivals might be active at different times of day or year.

Even small changes can relieve the stress of competition and make it easier for similar species to live together. Then everyone has a unique niche.

1) Fox squirrel chomping on walnut. 2) Black walnut leaves and fruit. 3) Northern flying squirrel at night. 4) Bitternut hickory branches and leaves at night. 5) Red oak leaf with acorns.

Squirrel Niches

Five species of tree squirrels live in Minnesota. Trees are part of their niche. Squirrels scamper and leap through the treetops, using branches like highways to stay away from hungry predators. Several kinds of squirrels may share a habitat in the city or the country. How do they avoid competing?

By choosing different tree species, squirrels can avoid competition. Gray squirrels like big, old trees. Fox squirrels are common in oak woods in the southern third of Minnesota. Red squirrels can turn up anywhere, but they are most common in northern evergreen forests. Northern flying squirrels live there too. Southern flying squirrels live in southern Minnesota forests.

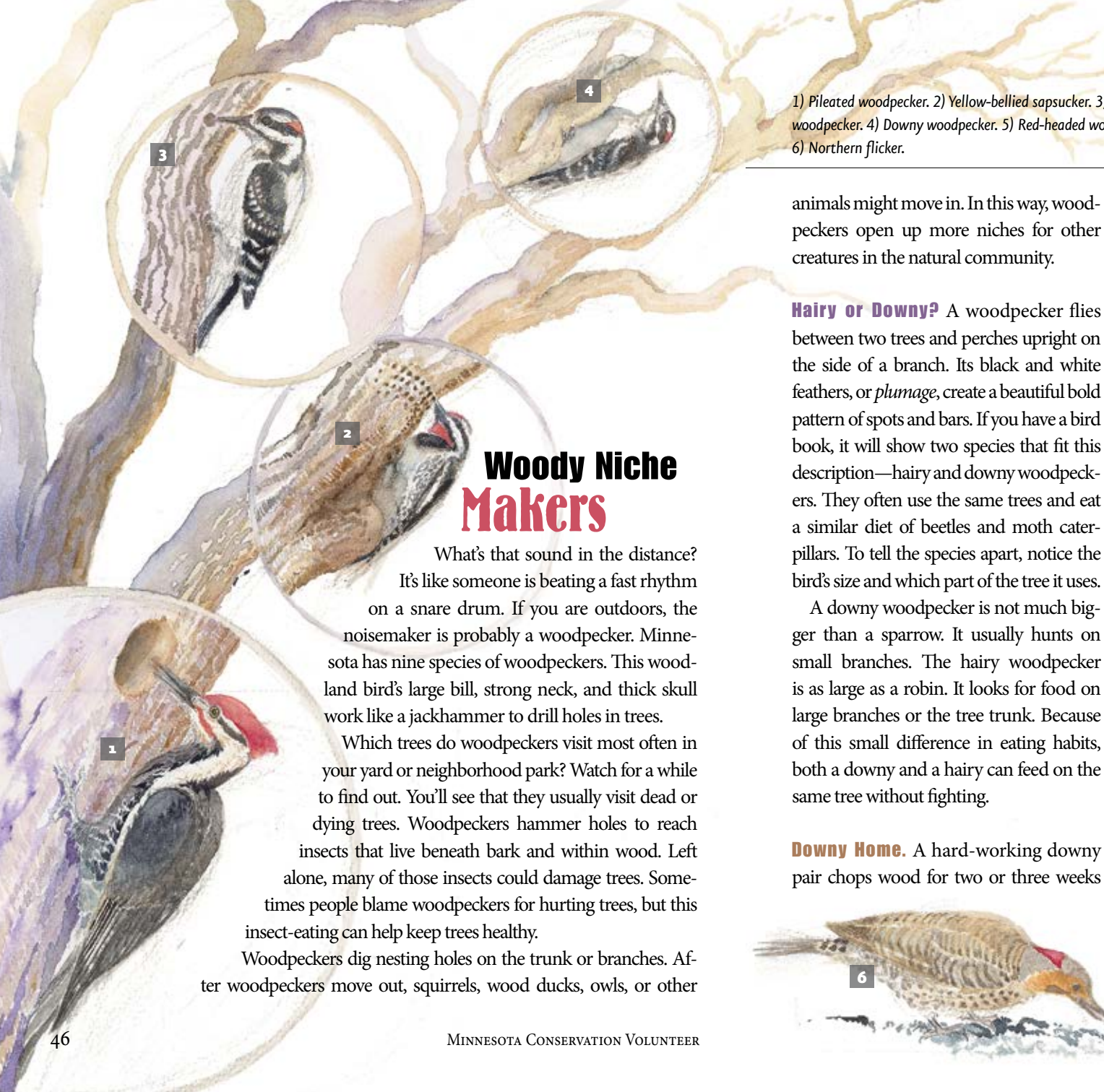
Squirrels find tree holes in which to make their nests. If a squirrel can't find a cozy hole, it builds a warm nest by putting leafy twigs on branches and piling on more leaves, twigs, and grass.

Favorite Foods. Squirrels like to eat nuts and seeds from oak, maple, hickory, and black walnut trees. Red squirrels prefer seeds from pine, spruce, and other evergreen trees. They stockpile seed cones to eat later. Fox squirrels eat acorns and black walnuts, which they might stash in a tree hole or under fallen leaves. Gray squirrels have a taste for acorns. These meaty nuts begin to drop from oak trees in late sum-

mer. A single gray squirrel will bury hundreds of acorns in the ground before the snow falls. It digs them up again in winter, when other foods are hard to find. Every year, squirrels forget some of their stored food. Buried seeds and acorns sprout into tiny new trees. This helps the natural forest community.

Fox and gray squirrels climb trees to gobble sweet fruit. Red and flying squirrels eat mushrooms. Squirrels also hunt insects and take bird eggs or chicks from a nest. Each species eats a slightly different mix of foods. That way, nothing is used up.

Time Sharing. Different squirrel species have different schedules, or "time niches." This way, they are less likely to go after the same resources at once. Look for gray and red squirrels in early morning and late evening. Fox squirrels get a later start and are busy in the middle of the day while other squirrels rest. You'll have to stay up late to spot a flying squirrel. They wake up at dark and spend the night gliding between trees in search of food.



1) Pileated woodpecker. 2) Yellow-bellied sapsucker. 3) Hairy woodpecker. 4) Downy woodpecker. 5) Red-headed woodpecker. 6) Northern flicker.

Woody Niche Makers

What's that sound in the distance? It's like someone is beating a fast rhythm on a snare drum. If you are outdoors, the noisemaker is probably a woodpecker. Minnesota has nine species of woodpeckers. This woodland bird's large bill, strong neck, and thick skull work like a jackhammer to drill holes in trees.

Which trees do woodpeckers visit most often in your yard or neighborhood park? Watch for a while to find out. You'll see that they usually visit dead or dying trees. Woodpeckers hammer holes to reach insects that live beneath bark and within wood. Left alone, many of those insects could damage trees. Sometimes people blame woodpeckers for hurting trees, but this insect-eating can help keep trees healthy.

Woodpeckers dig nesting holes on the trunk or branches. After woodpeckers move out, squirrels, wood ducks, owls, or other

animals might move in. In this way, woodpeckers open up more niches for other creatures in the natural community.

Hairy or Downy? A woodpecker flies between two trees and perches upright on the side of a branch. Its black and white feathers, or *plumage*, create a beautiful bold pattern of spots and bars. If you have a bird book, it will show two species that fit this description—hairy and downy woodpeckers. They often use the same trees and eat a similar diet of beetles and moth caterpillars. To tell the species apart, notice the bird's size and which part of the tree it uses.

A downy woodpecker is not much bigger than a sparrow. It usually hunts on small branches. The hairy woodpecker is as large as a robin. It looks for food on large branches or the tree trunk. Because of this small difference in eating habits, both a downy and a hairy can feed on the same tree without fighting.

Downy Home. A hard-working downy pair chops wood for two or three weeks



to make a deep nest hole hidden under a branch or a broken tree stub. To keep squirrels and other predators from finding their eggs or nestlings, they carry away all the chips and sawdust.

More Woody Niches. Pileated woodpeckers, Minnesota's largest, build nests high in tall trees. These crow-size birds visit standing or fallen trees to find nests of carpenter ants.

Northern flickers find insects by probing into the ground with their long bills. They eat more ants than any other birds do. To find ants in winter, they fly south.

Like flickers, yellow-bellied sapsuckers go south for winter. In early spring they return. They wind around trees as they drill holes to drink sap.

Red-bellied woodpeckers rarely land on the ground. They scoot along tree trunks and branches, peering under loose bark for spiders and other insects.

Red-headed woodpeckers are most common in the southern half of Minnesota. They stockpile acorns in tree cavities to eat in winter.

American three-toed and black-backed woodpeckers live in the north woods. Few people get a chance to see these rare birds.



1) Common milkweed plant with flower. 2) Great spangled fritillary. 3) Female common whitetail dragonfly. 4) Monarch butterfly.

Milkweed Patch

Milkweed plants grow naturally in open places such as prairies, fields, shorelines, and roadside ditches. In midsummer, clusters of tiny flowers bloom pale pink, orange, or white with a deliciously sweet scent. Butterflies, beetles, and other insects come to sip the nectar. Dragonflies stop to rest on the leaves. Spiders and praying mantises hunt in milkweed patches.

Why is this plant called milkweed? Cut a leaf of a common, whorled, or swamp milkweed. A thick, white liquid seeps out. (Butterflyweed has none.) An insect biting into a milkweed plant might find its jaws stuck together, and it might become ill from the powerful chemicals in this “milk.” This *defense* stops most plant-eating insects and other animals from munching milkweed. But monarch butterflies have found a niche with milkweed.

Monarch Rules. On a warm, breezy afternoon, a female monarch flies over a milkweed patch. She lands atop a flower cluster. Taste buds on her feet tell her she’s on a milkweed plant. Then she uncurls her strawlike *proboscis*, pokes it into a flower, and sips nectar. The sweet juice fills her belly. Before flying away to drink nectar of other kinds of flowers, she lays an egg. She puts a little glue on the egg so it sticks to the bottom of a milkweed leaf.

Each female lays several hundred eggs,

usually placing only one on each plant. When the young hatch, each monarch caterpillar will have a milkweed plant to eat. The young will not need to compete with each other for food, and that’s good because the hungry caterpillars chomp on milkweed leaves all day long.

Monarch caterpillars can eat only milkweed. After many generations, monarchs have *adapted* to milkweed chemicals and do not get sick from them.

When a caterpillar grows too big for its skin, the old skin splits and peels off, uncovering new skin. This happens five times. The last time it splits the skin, spins a silk pad on the plant, and attaches itself to the pad. When it finishes shedding its skin, the caterpillar has changed into a *pupa*, also called a chrysalis. During the next two weeks, the chrysalis changes into a butterfly. The monarch has milkweed chemicals in its body, so birds and other animals that try to eat it get a nasty surprise.

Like many birds but unlike most other butterflies, the monarch flies south for winter—all the way to mountains in Mexico, where it finds another niche. 🌱

TEACHERS RESOURCES:

Teachers guide:

www.mndnr.gov/young_naturalists

More on beetles and other insects:

www.bugguide.net