Ubiquitous*

CONIFERS

One is probably in your neighborhood.

By Mary Hoff

I HAVE NEEDLES but no thread. I have cones but no ice cream. I have bark but no bite. What am I?

If you guessed a pine tree, you're right! If you guessed a spruce tree or a fir tree or a cedar tree or a tamarack tree, you're right too. All of these are *conifers*—trees with thin leaves called *needles* and fat seed containers called *cones.*

Conifers are the tough characters of the tree world. Some can survive super cold, snowy, and windy weather. Some can grow where there's barely any soil. Some can grow in soggy soil. Because they are so hardy, you can find them all around Minnesota. In fact, chances are good a conifer grows near you right now.

Sometimes things that are *ubiquitous** are kind of—well, boring. But conifers are anything but boring. Once you get to know them, you will be amazed at what interesting creatures they are. Minnesota has 10 native conifer trees.

*This great word ***ubiquitous*** applies to right-handed people, Labrador retrievers, salt and pepper shakers, cell phones, and mosquitoes as well as conifers. If you don't know what it means, look it up. Then use it! People will love hearing you say "*you*-bick-*weh*-*tess*."

BLACK SPRUCE BY WELBY SMITH

RED SQUIRREL AND NUTHATCH BY MICHAEL FURTMAN; RUFFED GROUSE BY BILL MARCHEL

Conifer Characteristics

Trees come in two kinds: trees that are conifers, and trees that are not. Conifers can be big and tall, or squat and small. Whatever their shape, they have several characteristics in common:

Leaves called needles. Most conifer leaves are narrow. They have a wax coating that helps keep water inside the plant in winter and other dry times.

Cones. Conifer seeds grow in cones. Most Minnesota conifers have male and female cones on the same tree. The male cones produce pollen. The female cones make eggs. The pollen and eggs combine to make seeds, which can grow into new trees.

Special tubes. The tubes that carry water from a conifer's roots to its top are called *tracheids.* Conifer tracheids are small, so they are not likely to form big flow-blocking bubbles when air is released by water freezing inside them.

RED SQUIRREL

RUFFED GROUSE

RED-BREASTED NUTHATCH

Neighbors

Blueberries and other plants grow in the soil beneath conifer boughs. Fungi grow in conifers' roots, and lichens live on their trunks.

Wherever they grow, conifers attract animals. Insects eat their needles and burrow under their bark. Nuthatches and squirrels pluck seeds from their cones. Red squirrels squirrel away cones in autumn and eat the seeds later, when fresh food is scarce. Beneath conifer boughs, deer, hares, and grouse find shelter from wind, rain, and snow.

Guide to Pines

Red Pine *(Pinus resinosa)*

The red pine is Minnesota's state tree. It probably got its other name, Norway pine, because it reminded early settlers of a tree species that grew in Scandinavia. Its needles come two to a cluster. Its bark is reddish, and if you pick at it, it flakes off into bits that look like pieces of a jigsaw puzzle. Most common in northeastern Minnesota, red pines like to grow in sandy soil.

Fun Fact: A red pine in the prime of its life can produce more than 700 cones in a single year.

RED PINES BY WELBY SMITH

RED PINE POLLEN CONE BY WELBY SMITH

Jack Pine *(Pinus banksiana)*

The jack pine is a rugged-looking conifer. Like the red pine, it bundles its needles in clusters of two. It often has stubby, comma-shaped cones clustered in its branches.

In the spring, male jack pine cones release huge amounts of yellow pollen. The pollen can be so thick that it looks like a cloud above the trees. It collects on the edges of lakes and ponds, making yellow lines along shores.

Porcupines gnaw on jack pine bark. People use jack pine wood to make paper, telephone poles, railroad ties, and other items.

Fun Fact: Most jack pine cones need heat to open and spread their seeds. After a pine forest burns, jack pines are often among the first trees to sprout.

JACK PINE BY WELBY SMITH

JACK PINE CONES BY WELBY SMITH

Eastern White Pine *(Pinus strobus)*

The white pine carries its soft needles in clusters of five. Its bark is gray and furrowed. White pines grow slowly at first and then speed up. A seedling might take five years to grow to be 12 inches tall. When older, this pine might grow more than 4 feet in one year! White pines regularly live for 200 years but occasionally survive to be more than 400 years old.

White pines were among the biggest of the big trees that brought logging companies to northern Minnesota in the 1800s. Loggers cut millions of huge white pines for wood to build houses, shops, hotels, and other buildings.

EASTERN WHITE PINE CONES BY WELBY SMITH

Fun Fact: It takes more than a year for the pollen that falls on a female white pine cone to fertilize the eggs inside.

EASTERN WHITE PINES BY WELBY SMITH

BLACK SPRUCE SEED CONES BY WELBY SMITH

Fun Fact: Minnesota has 1.4 billion black spruce trees—that's more than 250 for each Minnesotan! Only quaking aspen and balsam fir are more common than black spruce here.

BLACK SPRUCE BY WELBY SMITH

Black Spruce *(Picea mariana)*

The black spruce thrives in soggy soil. It grows on peat and along the edges of wetlands. Its needles are short and sharp. Its broad, needle-covered branches make good winter shelter for squirrels, hares, spruce grouse, and other animals.

Along with sprouting from seeds, black spruce trees have another way to make new black spruce trees. Branches that droop down to the ground can sprout roots and a new stem. This way of reproducing is called *layering*.

Black spruce wood makes good paper. Long, tough fibers from black spruce roots are used to sew together birchbark canoes.

White Spruce *(Picea glauca)*

This tree gets its name from a waxy whitish coat that covers its poky needles. A spruce's conical shape and flexible boughs help it survive winter. When it snows, the snow slides off rather than clinging to and breaking the tree's branches.

Young white spruce trees often grow from seeds that sprout on rotted wood on the forest floor. Like black spruce, white spruce also can reproduce by layering.

Squirrels, chickadees, and other birds eat white spruce seeds. Deer find shelter among spruce trees. Loggers harvest spruce trees to make paper and lumber for building.

WHITE SPRUCE BY WELBY SMITH

Fun Fact: The biggest known white spruce in the United States grows in Koochiching County in northern Minnesota. It measures about 130 feet tall and 125 inches in circumference.

WHITE SPRUCE SEED CONE BY WELBY SMITH

WHITE SPRUCE POLLEN CONE BY WELBY SMITH

WHITE SPRUCE CONE BY WELBY SMITH

Guide to Firs and Cedars

Balsam Fir *(Abies balsamea)*

This small to medium-sized conifer has smooth bark with small blisters. Its soft, flat needles are arranged so branches are fairly flat. The cones are purple when young. They stand upright rather than hang down from the branches. Deer, snowshoe hares, and grouse use balsam fir for shelter in winter. People use balsam for Christmas trees, wreaths, and pulp for making paper.

Fun Fact: Balsam firs are famous for the pleasant-scented (but sticky) resin that collects in little blisters under their smooth, gray bark. When I see a balsam fir, I can't resist popping a blister with my thumbnail so I can smell the fragrant goo.

BALSAM FIR BY RICHARD HAMILTON SMITH

BALSAM FIR CONES BY WELBY SMITH

White Cedar *(Thuja occidentalis)*

This tree has gray bark with ridges. Its needles are shaped like layers of overlapping scales. Its tiny cones are brownish yellow.

White cedar is also known as *arborvitae*, or "tree of life" in French. A French king gave it that name after he learned that tea made from its needles could help cure scurvy, a disease caused by eating too little food with vitamin C.

Some white cedar trees that grow in the Boundary Waters Canoe Area Wilderness are more than 600 years old.

Because white cedar wood resists rotting, people like to use it to build decks and other things that will be exposed to weather.

WHITE CEDAR CONES BY WELBY SMITH

WHITE CEDAR BY WELBY SMITH

Fun Fact: Manido Giizhigance (also known as the Witch Tree), a famous tree clinging to a rock at the edge of Lake Superior near Grand Portage, might be more than 700 years old.

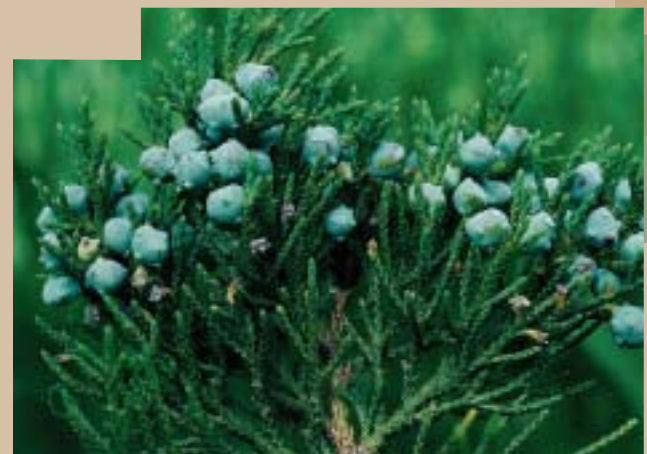
Eastern Red Cedar *(Juniperus virginiana)*

This conifer grows on dry, rocky soils and along the edges of big rocks. It has peely red bark. Its leaves are shaped like strings of soft, flat scales. Its cones look like blueberries. Cedar waxwings, ruffed grouse, rabbits, and coyotes eat the cones.

Unlike most other Minnesota conifers, eastern red cedar trees are *dioecious*—male and female cones grow on separate trees.

EASTERN RED CEDAR BY WELBY SMITH

EASTERN RED CEDAR CONES BY WELBY SMITH



Fun Fact: Although eastern red cedar cones and leaves can be poisonous, various parts of the plant have been used to treat colds, infections, arthritis, and rheumatism.

Guide to Larch and Hemlock

Tamarack *(Larix laricina)*

Another name for the tamarack is larch. In northern and central Minnesota, this fast-growing tree with flaky gray bark sprouts in sunny spots in bogs and other habitats with damp soil.

The only *deciduous* Minnesota conifer, tamarack does not keep its needles over winter. In autumn its soft but bristly-looking clusters of needles turn yellow and fall off. A new set of needles grows in spring.

Fun Fact: Porcupines like to gnaw the inner bark from tamarack trees, sometimes killing the tree in the process.

TAMARACK BY WELBY SMITH

TAMARACK CONE BY WELBY SMITH

EASTERN HEMLOCK NEEDLES BY WELBY SMITH

EASTERN HEMLOCK CONE BY WELBY SMITH

Eastern Hemlock *(Tsuga canadensis)*

Hemlock is only found in a few places in Minnesota. It grows very slowly but can survive in very shady places. Its feathery branches carry short, flat needles, usually in clusters of two. Its olive-sized cones turn from green to brown as they mature.

Fun Fact: In the 19th century, American manufacturers commonly used a chemical called tannin from hemlock bark to turn animal hides into leather to be used for shoes and clothing.

A Note to Teachers

Find links to teachers guides, information on the new book *Trees and Shrubs of Minnesota,* and a primer on Minnesota's forests and trees at www.mndnr.gov/young_naturalists.

Name the Tree: Below are six examples of conifer tree bark. Write the name of each tree below the photo from the following list: red pine, balsam fir, tamarack, eastern red cedar, white pine, and white cedar. Find answers on page 5.

1. _____

2. _____

3. _____

TREE BARK PHOTOGRAPHS BY WELBY SMITH

4. _____

5. _____

6. _____