

Minnesota's Mighty Oaks

Oak trees are good for wild places, wildlife, and people.
Get to know our **acorn makers** better.

By Tom Carpenter

HAVE YOU EVER HELD an acorn in your hand?

These little brown nuts grow on oak trees. They have a hard, smooth shell with a fuzzy or knobby cap on top. When they drop to the ground in late summer and early fall, acorns become important food for animals from squirrels to birds to deer and bears.

While most acorns end up as food for wildlife, a very small number of them do something remarkable: grow into oak trees. A lucky few acorns drop—or are buried and never retrieved by squirrels—in a spot where conditions are just

right for growing. There, a new oak tree sprouts and gets its start as a sapling that may one day grow into a tree.

Because oak trees can have very long lives, often more than 100 years, an acorn that falls and sprouts today may be providing food for wildlife—and shade and beauty for people—for many decades to come!

Minnesota's oak trees are with us all seasons of the year. They stand tall and strong against the elements. They make our wild places more beautiful. They offer both habitat and food for wildlife. Let's get to know Minnesota's oaks better.

Different kinds of oak trees grow all around Minnesota.

CLOCKWISE FROM TOP LEFT: BILL MARCHEL, DOMINIQUE BRAUD, RICHARD HAMILTON SMITH





DOMINIQUE BRAUD

Red, White, and Bur

The most common species of oak in Minnesota are the white oak, the bur oak, and the northern red oak. You can learn to tell these three species apart by looking closely at their leaves, bark, and acorns as well as through a few other clues.



WHITE OAK (*Quercus alba*)

- Leaves are broadest at the middle and have 5 to 9 narrow, round-tipped lobes that look sort of like fingers
- Bark is light gray, scaly looking, and not especially rough
- Acorns are up to 1 inch long, with a cap that covers about a quarter of the nut
- White oaks grow well on slopes, ridge tops, and other well-drained land



BUR OAK (*Quercus macrocarpa*)

- Leaves are *much* broader at the tip than the base, and the lobes are fat
- Bark is gray, and looks and feels rough
- Acorns are ¼ to 1 inch long and have a scaly cap with a hairy fringe that covers more than half the nut
- Bur oaks are sometimes known as “the prairie oak,” and they grow in every county of Minnesota



NORTHERN RED OAK (*Quercus rubra*)

- Leaves have short, pointed lobes (7 to 11 of them)
- Bark is light gray-brown to gray, with wide ridges and gaps
- Acorns are ¾ to 2 inches long and brown with gray stripes, with a flat cap that just covers the very top
- Red oaks grow more rapidly than most oaks

OUR OTHER OAKS.

 These species of oak are also native to Minnesota.

SWAMP WHITE OAK (*Quercus bicolor*)

- Leaves are pear-shaped with rounded lobes that are more uniform than those of the bur oak
- The gray bark has broad, flat ridges
- Acorns are about 1 inch long and usually come in pairs on stalks
- Native to the river bottoms of southeastern Minnesota; likes moist soil conditions

- Acorns are ½ to 1 inch long, round, and striped red-brown under a scaly cap with hairs on the inside of the cap
- Grows on dry ridges in southeastern Minnesota



NORTHERN PIN OAK (*Quercus ellipsoidalis*)

- Leaves with deep lobes have pointed tips
- The gray bark is not as rough as that of other oaks
- Acorns are ½ to 1 inch long, round, and reddish brown, about half-enclosed in a cup
- Grows on dry ridges from southeastern to north-central Minnesota



BLACK OAK (*Quercus velutina*)

- Leaves have pointed, bristle-tipped lobes
- The rough bark is almost black

PHOTOS COURTESY OF WELBY SMITH



From Flowers to Nuts

Oak trees flower in spring. The flowers dangle off oak branches in long clusters called *catkins*, and each one is the start of an acorn. The flowers that dangle on catkins are male catkins that produce pollen. There are also female flowers that produce the acorn.

White oaks and bur oaks produce acorns every year. Some years there may be a bumper crop of acorns on a particular tree. Some years there may be very few acorns, perhaps when a deep frost in spring freezes

the catkins that start the acorns.

Once they hit the ground, acorns from the white oak family sprout fast, in fall, to get a head start on growing next spring.

The northern red oak normally produces acorns every year, but the acorns take two years to mature. Acorns dropped from a red oak sprout the following spring. That means they are around longer for hungry wildlife to find and eat.

Most oak trees don't start producing acorns until they are 20 to 30 years old.

COURTESY OF WELBY SMITH

Acorn Eaters

Acorns are packed with nutrition, which is why so many kinds of wildlife eat them. Acorns provide more protein and fat than most other wild foods.

Wildlife will eat the sweeter-tasting

acorns of the white oaks first. Red oak acorns have more tannin, a substance that tastes bitter, but the nuts are still nutritious, and animals will eat them.

Here are many of Minnesota's acorn eaters:



Gray squirrels, red squirrels, and fox squirrels love acorns, and they will bury and hide them for later. They don't find them all, though—and that's one way oak trees get planted in new places!

White-tailed deer paw the forest floor to find acorns. When acorns are available, deer choose them over most other foods.

Black bears eat large amounts of acorns. When the crop is good, bears come from far and wide to find acorns.

Wild turkeys walk along and scratch the forest floor looking for food such as acorns. Turkeys swallow acorns whole, then the big birds' gizzards grind up the nuts.

BILL MARGHEL



Wood ducks and mallards grab floating acorns from the water, swallowing them whole. Ducks will waddle on land to find acorns to eat.

Eastern cottontail rabbits munch acorns where oak trees join in with the brushy bunny habitat.

Chipmunks eat acorns and will also stuff their cheeks with acorns to stash for later in a winter food *cache*, or hiding place.

Other animals that eat acorns include mice, voles, woodchucks, raccoons, opossums, red and gray foxes, ruffed grouse, blue jays, and some types of woodpeckers and songbirds.



This great horned owl found a perfect perch in an oak tree.

Oaks for Habitat

Oaks are much more than just acorn makers. They also provide *habitat*—places to live and feed—for all sorts of creatures.

Warblers, tanagers, waxwings, flycatchers, bluebirds, and other songbirds all hunt insects from the branches of oak trees. Wild turkeys like to roost in oaks at night, and many birds build nests in their branches.

Insects such as flies, ants, and beetles lay their eggs in the rough or *fur-rowed* bark of oak trees. Those eggs, and the larvae that hatch from them, serve as food for birds such as chickadees, nuthatches, and woodpeckers that peck at the bark.

Oak trees host more than 500 species of

caterpillars, more than any other tree!

Oak trees are strong and tough. When a branch breaks off from wind, snow, ice, or lightning and a hole develops, the tree lives on. These holes can serve as nesting cavities for birds, dens for squirrels and raccoons, and roosts for bats.

Oaks leaf out later than other trees in springtime. The dappled sunlight below the slow-developing leaves makes a wonderful place for spring wildflowers to bloom before shade takes over. Flowers such as rue anemone, wood violets, and bloodwort can be found blooming around oaks. Morel mushrooms and ramps, a kind of wild onion, thrive in oak woodlands.

ALAN OLANDER



Oaks for People

People have many uses for oak trees. Whether you are out hiking, birdwatching, hunting, or foraging for wild foods, just being outside among and under oak trees is special.

For the ears, oak leaves rustle and rattle in the wind. For the nose, decaying oak leaves offer a sweet and woody scent. For the eyes, delicate leaves burst out emerald in spring, turn leathery and dark green in

summer, and dry up to yellows, reds, and browns in fall. For the soul, oaks' dappled shade makes a most pleasant place to sit and think.

The value of oak trees goes beyond scenery and recreation. Oak wood is both strong and beautiful and is used to make floors, cabinets, furniture, and more.

Oak wood burns hot and long. It makes great firewood in campfires and fireplaces.

GARY ALAN NELSON



Meet the Savanna

You can enjoy oaks in forests, parks, yards, boulevards, and many other places in Minnesota. One of the coolest places that oaks occur is in a savanna.

A savanna is a mixed plant community of trees and grassland. The savanna is neither forest nor prairie. It is its own wonderful thing.

But oaks are the tree of Minnesota's savanna. Prairie grasses and wildflowers grow below them. A savanna offers plenty of sun for both the oaks and the native prairie plants to grow.

Before Minnesota was settled by Europeans, savanna covered 10 percent of Minnesota. Today, just a tiny fraction of

that original prairie remains.

Some savannas were turned into crop fields. Others were overgrazed by cattle and other livestock. And sometimes, fires weren't allowed to burn.

Fire is good for the savanna. But oaks' thick bark protects them from the flames, and the deep roots of prairie grasses and wildflowers easily survive. The savanna renews itself. But when fire is prevented, the savanna becomes a forest.

Groups and agencies including the Minnesota Department of Natural Resources are working to restore savannas and bring back some of these special places.

GARY ALAN NELSON



Oak wilt is a tree disease that causes leaves to wilt before the tree dies.

Oak Challenges

Oaks may be strong, but some things can hurt them, too. Climate change and disease can both harm oak trees.

Seasons that are warmer and wetter will affect oaks. More water might sound good for trees, but much of that water just washes away because storms are heavier. Less snow in a warm winter means that less snowmelt trickles down to a tree's roots when they need it most in spring.

Long periods of dry weather, called *drought*, can also harm oaks. Drought can weaken trees and make it harder for them to fight outbreaks of insects and disease.

But the climate news isn't all bad for oaks. A longer growing season might be good for young oak trees, giving them

Behold the Oak

Get outside and sit below a big old oak tree in any season.

Just think. That tree started as a springtime flower that became an acorn. That acorn grew, dropped to the ground, didn't get eaten by an animal, perhaps got carried somewhere by a bird or

DEBORAH ROSE, DNR

more time to establish roots in their first few years. And other oak species from farther south may be able to establish themselves in Minnesota.

Disease can hit oak trees hard. Oak wilt is a fungus that kills any oak tree it infects. Oak wilt is spread by beetles that carry the fungus from tree to tree. Oak wilt can also travel from tree to tree through roots. DNR foresters say people can limit the spread of oak wilt by avoiding pruning oak trees from April through October and by not moving firewood around the state.

An insect called the two-lined chestnut borer can attack oak trees that are stressed, perhaps from drought. Outbreaks from this insect can wipe out many trees.

squirrel, then sprouted on a sunny patch of ground. From that tiny seedling and then a whippy sapling, this strong and beautiful tree grew.

Listen to the leaves rustle. Smell the land. Watch the wildlife. Be alive and strong like an oak. 🌱

TEACHERS RESOURCES. Find a Teachers Guide and other resources for this and other Young Naturalists stories at mndnr.gov/young_naturalists.