

Forest Trees of Wisconsin

How to Know Them



Department of Natural Resources, Madison, WI
Division of Forestry

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of Natural Resources
Madison, Wisconsin
Division of Forestry*



*Dedicated to the memory of
F.G. Wilson*



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Table of Contents



Forward

Introduction

Conifers (soft woods)

Cedar, northern white (<i>arbor vitae</i>) <i>Thuja occidentalis</i>	1
Cedar, red (juniper)	<i>Juniperus virginiana</i> 2
Fir, balsam	<i>Abies balsamea</i> 3
Hemlock.....	<i>Tsuga canadensis</i> 4
Pine, jack.....	<i>Pinus banksiana</i> 5
Pine, red (norway pine).....	<i>Pinus resinosa</i> 6
Pine, white.....	<i>Pinus strobus</i> 7
Spruce, black.....	<i>Picea mariana</i> 8
Spruce, white.....	<i>Picea glauca</i> 9
Tamarack (<i>American larch</i>).....	<i>Larix laricina</i> 10

Deciduous Trees (hardwoods)

Ash, black.....	<i>Fraxinus nigra</i> 11
Ash, green	<i>Fraxinus pennsylvanica</i> 12
Ash, white	<i>Fraxinus americana</i> 13
Ash, mountain.....	<i>Sorbus americana</i> 14
Aspen, big-tooth.....	<i>Populus grandidentata</i> 15
Aspen, quaking.....	<i>Populus tremuloides</i> 16
Balm of Gilead (<i>balsam poplar</i>)	<i>Populus balsamifera</i> 17
Basswood (<i>linden</i>)	<i>Tilia americana</i> 18
Beech	<i>Fagus grandifolia</i> 19
Bluebeech (<i>hornbeam</i>)	<i>Carpinus caroliniana</i> 20
Birch, paper	<i>Betula papyrifera</i> 21
Birch, river.....	<i>Betula nigra</i> 22
Birch, yellow	<i>Betula lutea</i> 23
Box elder	<i>Acer negundo</i> 24
Butternut	<i>Juglans cinerea</i> 25
Cherry, black	<i>Prunus serotina</i> 26
Cherry, choke	<i>Prunus virginiana</i> 27
Cherry, pin	<i>Prunus pennsylvanica</i> 28
Cottonwood, eastern	<i>Populus deltoides</i> 29
Elm, American	<i>Ulmus americana</i> 30
Elm, rock	<i>Ulmus thomasi</i> 31
Elm, slippery (<i>red elm</i>).....	<i>Ulmus rubra</i> 32

Hackberry	<i>Celtis occidentalis</i>	33
Hickory, bitternut	<i>Carya cordiformis</i>	34
Hickory, shagbark	<i>Carya ovata</i>	35
Ironwood (hop hornbeam).....	<i>Ostrya virginiana</i>	36
Juneberry (service berry)	<i>Amelanchier canadensis</i>	37
Locust, black	<i>Robinia pseudoacacia</i>	38
Locust, honey	<i>Gleditsia triacanthos</i>	39
Maple, red (soft).....	<i>Acer rubrum</i>	40
Maple, silver (soft).....	<i>Acer saccharinum</i>	41
Maple, sugar (hard)	<i>Acer saccharum</i>	42
Oak, black	<i>Quercus velutina</i>	43
Oak, bur	<i>Quercus macrocarpa</i>	44
Oak, chinkapin	<i>Quercus muehlenbergii</i>	45
Oak, northern pin (hills oak or jack oak).....	<i>Quercus ellipsoidalis</i>	46
Oak, red	<i>Quercus rubra</i>	47
Oak, swamp white	<i>Quercus bicolor</i>	48
Oak, white	<i>Quercus alba</i>	49
Plum, wild	<i>Prunus americana</i>	50
Walnut, black	<i>Juglans nigra</i>	51
Willows	<i>Salix species</i>	52

Key to Wisconsin Trees

Sign Posts to Identifying Trees	53
How to Prevent Forest Fires	57
How Forest Fire Danger Is Measured	58
What Causes Forest Fires to Start?	59
Wildlife & Forests	60

Note: Illustrations are not drawn to scale.

Forward



"Forest Trees of Wisconsin" was first published in 1928. It was written by F. G. Wilson, one of the eleven original forest rangers hired by the state in 1911. Fred Wilson, along with several other foresters, was one of the original pioneers of forest management in Wisconsin. He was the first to use seedlings to replant forest stands and was instrumental in developing the state forest nurseries for this purpose. The wisdom of Fred's pioneering efforts culminated in his planting the one billionth tree from the state nurseries in 1979.

Seventy-seven years after the first publication of this book, the words written in the original Forward are still pertinent today:

"Trees are important to Wisconsin landscapes from the standpoint of beauty as single specimens or in-groups. In forest and farm woodlands, they are vital tools for the stabilization of the soil and in slowing water runoff. Forests are our largest public hunting and fishing grounds and produce wildlife and recreational benefits as well as timber crops.

In the near future the capitalized value of Wisconsin's forest will be about a billion dollars and the value of a single year's crop of finished forest products may exceed this amount in a single year. It is evident that we must continue to protect these forests from fire, insects and disease and all citizens should cooperate in this program."

Today, forestry in Wisconsin is vitally important to our economy as well as our overall well-being.

Wisconsin's forest industry is the 2nd largest employer in the state. We are the leading state in paper production and a leader in the production of high quality veneer and sawlogs. But, most importantly, Wisconsin's forests are managed in a way that guarantees the scenery, recreation, wildlife, water quality and aesthetic benefits its citizens demand.

"The man who has a piece of woodland where during the winter months he cuts firewood and fencing, and a few logs for the repair of building and implements, and during certain years when prices are high cuts some logs for the neighboring sawmill, but at the same time looks after the piece of woods, clears it of dead timber and other rubbish, thus keeping out fire and insects, and otherwise makes an effort to keep the land covered with forest - such a man practices forestry. His forest may be small or large, his ways of doing may be simple and imperfect, the trees may not be the best kind for the particular locality and soil, they may not be as thrifty as they should and could be; but nevertheless here is a man who does not merely destroy the woods nor contents himself with cutting down whatever he can sell, but one who cares for the woods as well as uses them, one who sows as well as harvests. He is a forester, and his work in the woods is forestry."

Filibert Roth - From the original printing, 1928

Introduction



Trees, like all living things grow and mature and die, while the forest, which is, a community of trees, may live indefinitely, because the trees reproduce before they die.

Vegetative Reproduction

Many trees reproduce vegetatively under certain conditions, for example, most of the broad leaf trees will sprout if cut when small, while some like basswood will sprout regardless of age. Others like the quaking aspen and black locust will send up shoots from the roots at considerable distance from the parent tree.

The only American conifer (cone-bearing tree) which sprouts is the redwood, but we have one conifer in Wisconsin which often reproduces vegetatively, but by a method other than sprouting. Lower limbs of black spruce often touch the ground and, where moss grows over the limb back of the tips, roots develop, and finally the tip of the branch becomes a new tree.

Man uses the ability of some trees to reproduce vegetatively. Cuttings from small branches of willow or eastern cottonwood bearing several buds can be set in the ground to grow, because they will develop roots. Other methods like budding and grafting are used to propagate horticultural varieties. We cannot grow Baldwin apple trees from seed, but must graft a twig from a Baldwin tree onto a seedling apple tree.

Reproduction by Seed

However, most of our forest trees grow from seed and the way the seeds are produced is the basis for classifying plants. For example, white pine seeds grow in pairs on the inner surface of the cone scales, while the hickory seed is enclosed in a nut. This really is the difference between the conifers or evergreens, and the broadleaf trees.

In this bulletin the word "fruit" is used in the botanical sense, meaning the seeds and seed bearing part, therefore, the acorn and its cup together constitute a fruit.

The Formation of Seed

Some seed is produced from "perfect" flowers, like the cherries where both stamens and pistils are found in the same tree. This is best illustrated with the corn plant, where the tassel or staminate flower produces the pollen which must fertilize the grains in the ear. You have all seen ears of corn where some of the kernels did not develop because they were not fertilized by pollen.

With some species like the ashes and the poplars, some trees have only staminate flowers and others only pistillate flowers, so that the female trees will not bear seed unless there are staminate trees in the vicinity. The Lombardy poplar which is a horticultural variety of the European poplar never bears

seed because the variety was developed as a mutation and there are no Lombardy poplars bearing staminate flowers. Therefore, it is always reproduced vegetatively; that is, by cutting or sprouts.

Distribution of Seed

Since some trees mature their seed in spring while others ripen later, seeds developed several methods of scattering or planting themselves. Seeds from the aspens are very light and so perishable that they must come in contact with moist mineral soil within a few hours. As they are covered with cottony down they are carried by the wind. These two characteristics have enabled the aspen to reforest many of the burned over areas. Pin cherry also comes in on areas after forest fires because birds eat the cherries and may drop the seed far from the parent tree.

Seeds of pine, maple and basswood have wings so that they are carried farther by wind, while the heavy nuts and acorns are often buried by squirrels and then forgotten. Seeds of trees which grow along the stream banks are carried by the water.

Jack pine is especially interesting because it protects its seeds from fire. While most of the cones will open the first autumn, a few will remain closed, sometimes for many years. Then following a forest fire, these cones will open from the heat and drop seeds on the denuded land. In this way jack pine predominates on lands which originally carried mostly Norway or white pine. If jack pine grows

in your vicinity look for some of these unopened cones and place one on a hot stove and watch the scales open.

How Trees Grow

The growth of new wood in any year forms a complete layer over the entire tree. That is why we can determine the age of a tree from the number of rings on the stump. Height growth occurs only in the new wood of any one year. If a nail is driven into the trunk of a ten foot tree at five feet from the ground, it will still be five feet from the ground when the tree is a hundred feet tall.

The form of trees depends on the growing space. A close spacing between trees, shades the tree stems by restricting sunlight and causes side branches to die and fall off, leaving tall straight clean stems which are valuable for timber. Shade trees which have room to spread out have a large crown with spreading limbs and a short stem. Notice the trees at the edge of a forest, they have branches on the side towards the open while the other side is free of branches.

Variations in Trees

Since form and size or color and character of bark vary with size and growing conditions, too much importance should not be placed on them in identifying trees. The leaves from the lower branches of a tree may have a very different outline than those from the tip of the tree, while leaves on the sprouts from a tree which was cut may be excessively large and of unusual shape. Notice the difference between

the twigs and needles of balsam trees when one has had full sunlight and the other grew in the shade.

An effort has been made to point out several distinguishing characteristics in describing each tree. After you have identified the trees, they can be recognized as you recognize your friends on the street even though you cannot describe them so that a stranger will recognize them.

Discover more at **dnr.wi.gov** (keyword "Education" – then select "Forests" under Educator Resources)

Also visit **LeafProgram.org** (find tree identification tools under "Curriculum & Resources")

Northern White Cedar

or Arbor Vitae

(*Thuja occidentalis*)



Form

Compact pyramidal; height 50 to 60 feet and 2 to 3 feet in diameter; trunk often buttressed, strongly tapered and frequently divided into 2 or more direct stems; branches short and nearly horizontal; sometimes forms almost impenetrable thickets, as dead branches are very stiff and persistent; in the open, develops a conical, symmetrical crown.

Bark

Thin, gray to reddish brown, separating in long, vertical, narrow shreddy strips.

Leaf

Scale-like; length $\frac{1}{8}$ or $\frac{1}{4}$ inches, arranged to make the small branches flat; pleasant, aromatic scent when crushed; pungent to the taste.

Fruit

Small, oblong cone that matures in one season; yellowish-brown; $\frac{1}{3}$ to $\frac{1}{2}$ inches in size, with 6 to

12 scales; borne singly or in large clusters on ends of branches. Seeds $\frac{1}{8}$ inch long, with 2 narrow wings almost circling the seed.

Range

Found throughout the state, except the southwest portion; grows usually in moist places where it is often found in dense pure stands; however, farther north it appears on well-drained slopes, usually in mixtures with hardwoods.

Wood

Light, soft, brittle, coarse grained, durable, fragrant and pale brown in color; especially important for making fence posts, building poles, rot-resistant lumber and shingles.

Notes

It is one of the preferred and important species for deer browse in the winter. There are numerous ornamental varieties.



Red Cedar or Juniper

(Juniperus virginiana)



Form

Straight trunk, sometimes having lobed appearance; crown is pyramidal, becoming rounded; height 25 to 30 feet when growing in good locations; seldom exceeds 1 foot in diameter; may be multi-stemmed or nearly prostrate on poor, rocky and dry sites.

Bark

Thin, reddish brown, peeling off in long, vertical shred-like strips.

Leaf

Two kinds, usually found on same tree; more common kind is dark green, minute and scale-like, clasping the stem in 4 ranks so that the stem appears square; second kind usually appears on young trees or vigorous shoots, are awl-shaped, quite sharp-pointed, spreading and whitened on underside.

Fruit

A dark blue berry-like cone; diameter $\frac{1}{4}$ inch, enclosing 1 to 4 seeds in the sweet flesh; matures in 1 season.

Range

Dry, gravelly soil, and rocky ledges in southern half of state; most abundant on limestone ridges in southwestern part of state where few other trees are found. One of the first trees to invade abandoned fields.

Wood

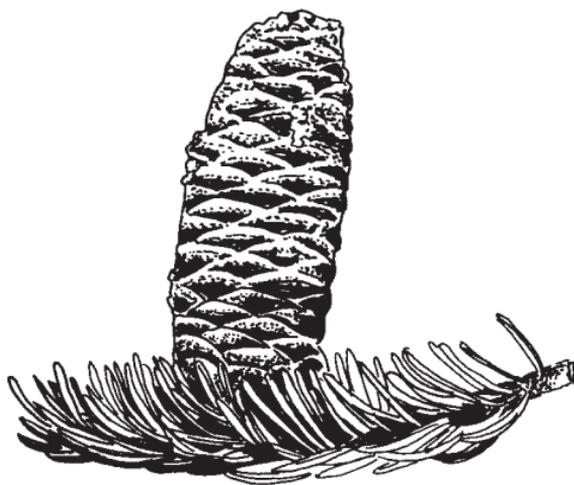
Red, fine-grained, soft, weak, fragrant and very durable; used for interior woodwork, chests, closets, lead pencils, posts and poles.

Notes

Is a favorable winter food for some birds. Red cedar spreads cedar apple rust; therefore it is not favorable to plant in or near orchards or anywhere in regions devoted to commercial apple production.

Balsam Fir

(*Abies balsamea*)



Form

Medium size, attaining heights of 40 to 60 feet and diameter of 1 to 2 feet; short-spreading branches form a handsome, symmetrical, spire-like crown.

Bark

Thin, smooth, grayish, prominently marked by blisters filled with resin or balsam pitch.

Leaf

Needle-like, stalkless and flat; length $\frac{1}{2}$ to 1 inch with rounded point, dark green and lustrous above and silvery white bands beneath; twisted; 2-ranked arrangement on twig; resinous and fragrant.

Fruit

Cones upright on branches, purple, oblong; length 2 to 4 inches; becomes mature in first year; seeds when ripe fall together with scales of cone, leaving hard central axis standing upright on branch like a spike.

Range

Found in forests of the northern half of Wisconsin; usually in association with **white spruce** from which it can easily be distinguished by its large upright cones and soft leaves; thrives in cool, moist, or shaded places.

Wood

Light brown, soft, not strong or durable; coarse grained; is used mainly for paper pulp; also an important Christmas tree. The oleoresin from the pitch blisters on the bark is "Canada Balsam," much used in optical instruments, microscopic slides, etc. as transparent cement for glass.

Notes

Two serious insect pests occur on balsam fir: the spruce budworm and balsam woody aphid.

Hemlock

(*Tsuga canadensis*)



Form

Height 60 to 100 feet and diameter of 2 to 4 feet; branches spreading and nearly horizontal; pyramid-shaped with drooping top shoot in young trees and with rounded top on large, mature trees.

Bark

$\frac{1}{2}$ to $\frac{3}{4}$ inches thick; varying from cinnamon-red to gray in color; with deep furrows separating the broad, flattened scales.

Leaf

Needles $\frac{1}{3}$ to $\frac{2}{3}$ inches in length; flat; rounded to notched at tip; yellowish-green with 2 whitish bands underneath; a 2-ranked arrangement; twigs roughened by woody, raised projections (sterigmata) where needles attach to twigs. Most buds are scaly and not resinous.

Fruit

Cones $\frac{1}{2}$ to $\frac{3}{4}$ inches in length; scales thin and almost as broad as long; matures in one season. Seeds are winged, slightly resinous and about $\frac{1}{16}$ inches long.

Range

Native to northeastern quarter of the state, isolated stands occur on cool north slopes in Columbia, Sauk and Vernon counties. It grows on the better and moister soils, often in mixtures with hardwoods.

Wood

Light reddish-brown; soft, coarse, brittle, splintering, and not durable; often manufactured into coarse general construction lumber.

Notes

Heavily browsed by deer; inner-bark once used for tanning leather; oil of hemlock distilled from young branches.

Jack Pine

(*Pinus banksiana*)



Form

Height 50 to 70 feet; diameter rarely exceeds 2 feet; open, conical shaped crown; often retaining dead branches on trunk all the way to the ground.

Bark

Dark brown, irregularly divided by furrows into small scales.

Leaf

Needle length about 1 inch; light to dark yellow-green; sharply-pointed; two in a bundle and slightly twisted.

Fruit

Cones – length about 1½ inches; 2 years to maturity; often strongly curved, brown when ripe, turning gray later; resinous; sometimes remaining on branches unopened and containing good seeds for many years; small-winged triangular seeds which may be carried far in strong winds. Many trees begin producing cones as early as 7 years old.

Range

Found commonly on the sandy soils of the northern half of the state, and extends downward along the Wisconsin River to Iowa and Grant counties.

Wood

Light, soft, not strong, close grained, clear pale brown with thick, nearly white sapwood. Primarily a pulpwood species but also used for laths, box material and increasingly for lumber.

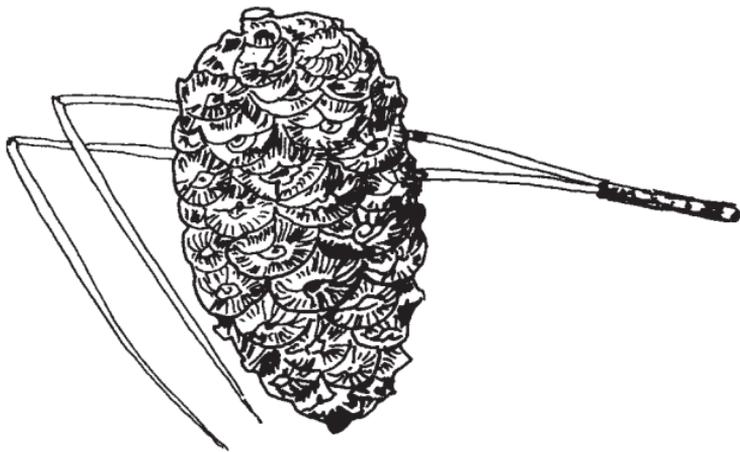
Notes

Due to the resinous nature of its cones, jack pine is usually one of the first tree species to occupy a site after fire.



Red or Norway Pine

(*Pinus resinosa*)



Form

Height is usually 80 to 90 feet; occasionally 120 feet tall; 2 to 3 feet in diameter; branches on mature trees form an open, rounded, picturesque crown.

Bark

Becomes divided into large, reddish brown plates as it matures, which gives trees its characteristic appearance and one of its common names, red pine.

Leaf

Needles in clusters of 2; dark green to yellow-green; 4 to 6 inches long; brittle (easily broken when doubled between the fingers); needle sheath persistent.

Fruit

Cone about 2 inches in length. The thin, slightly concave cone scales are without spines or prickles and are free from resin. Cones short stalked to nearly sessile. Like all pines, it requires 2 years for cones to mature; cones are purplish in

color when ripe; seeds small, length about $\frac{1}{8}$ inch, dark or mottled brown, winged and widely scattered by the wind.

Range

Found in pure stands in many parts of northern Wisconsin and isolated stands occur as far south as Dane County. It is usually found on sandier soils than **white pine**. Increasing in popularity for forest planting because of its general freedom from disease and insect attack.

Wood

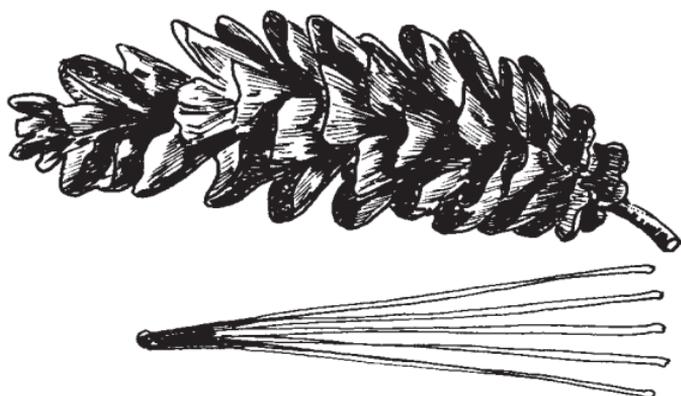
Pale red with thin, nearly white sapwood; moderately hard, close grained and used mainly for pulpwood. Increasingly being used for construction lumber, pilings and pressure-treated poles.

Notes

Often called Norway pine. Red pine is a fast growing species and needs full sunlight for best growth and development.

White Pine

(*Pinus strobus*)



Form

The straight stem, regular pyramidal form and soft gray-green foliage make it one of the most majestic trees in the state. The crown is composed of numerous whorls of horizontal or ascending branches that are plume-like and graceful in outline. At maturity, it reaches heights of 100 feet and diameters of 2 to 3 feet. White pine may still be found up to 150 feet in height and up to 4 feet in diameter.

Bark

Thin, smooth, resinous and greenish-gray on young trees, but thick and deeply fissured and grayish-brown on older trees.

Leaf

Needles 3 to 5 inches long; bluish-green; flexible; occur in bundles of 5, which distinguishes the trees from other native pines in Wisconsin; needle sheath deciduous.

Fruit

Cones are 4 to 6 inches long, cylindrical, with thin and usually very resinous scales, each containing two small winged seeds. Cones somewhat curved. Cones

mature in August or September of the second season.

Range

Occurs naturally throughout nearly the entire state. It grows on sandy soils and rock ridges, but prefers fertile, well-drained soils.

Wood

Light, soft, weak, light brown in color, often tinged with red; easily worked; manufactured into matches, lumber and laths; used for construction purposes (cabinet and window making, interior finish of buildings and wooden wares).

Notes

White Pine Blister Rust and White Pine Weevil continue to be a problem in the state. White pine is very susceptible to air pollution damage. It is intermediate in tolerance to shade and thus generally occurs as a temporary or intermediate (though long-lived) species in forest succession. White pine is a major dominant in Wisconsin's northern dry forests. It is the largest and longest-lived species of the region.

Black Spruce

(*Picea mariana*)



Form

Small tree seldom exceeding 60 feet in height and 1 foot in diameter in Wisconsin and is often a stunted tree, less than 30 feet high. The crown is dense, narrow, and conical in form, with dropping branches, extending nearly to the ground.

Bark

Thin and broken on surface into thin gray-brown scales.

Leaf

Needles, bluish-green, short, pointed, four-sided; length $\frac{1}{2}$ inch; arrangement of needles on branch not two-ranked.

Fruit

Cones oval shaped; length about 1 inch, matures in one season, light brown in color when ripe, after shedding seed in fall can persist on trees indefinitely. Seeds small, about $\frac{1}{8}$ inch long, dark brown and winged.

Range

Found in poorly drained swamps and occasionally on well-drained slopes in northern Wisconsin. Often associated with **tamarack**, **balsam fir** and **white spruce**.

Wood

Yellow-white, light, soft and medium strong; used mainly for paper pulp.

White Spruce

(*Picea glauca*)



Form

Reaches 60 to 80 feet in height; occasionally 100 feet with a diameter of 2 feet. The crown is a broad-based, open pyramid, the rigid branches curving upward. Except in dense forests, the crown extends well down the trunk.

Bark

Thin, separating into light, gray-brown scaly plates.

Leaf

Needles 4-sided and crowded along upper-half of branchlets; length $\frac{1}{2}$ to $\frac{3}{4}$ inches; dark bluish-green when mature; sharply pointed, having a slightly disagreeable odor when crushed.

Fruit

Slender cone, about 2 inches long; matures in one season; light brown when ripe; cones usually drop during winter after opening and shedding seeds. Seeds $\frac{1}{8}$ to $\frac{1}{6}$ inches long, pale brown, winged.

Range

Extensively found in forests of northern Wisconsin. Thrives on moist, well-drained soils and in swamps with **balsam** and **tamarack**; also found associated with mixed hardwoods.

Wood

Light, strong, soft, straight grained, yellow-white in color; used in the manufacture of various products, most important of which is paper. Largest trees are sawed into lumber and used for general construction: airplanes, furniture parts, canoe paddles and sounding boards for musical instruments; planted quite extensively for ornamental purposes, windbreaks, and shelterbelts; ranks high as a Christmas tree.

Notes

Spruce budworm is causing extensive damage to this species in the state.

Tamarack or Larch

(*Larix laricina*)



Form

Height 30 to 60 feet, diameter 1 to 1½ feet.

Bark

Rough and separates on the surface into thin, reddish-brown scales. Twigs are light brown and covered with numerous tiny spurs or short branches.

Leaf

Needles flat, soft and slender; length about 1 inch; borne in clusters or spur-like branches and distributed singly on terminal shoots; bright green in spring, soft and flexible, turning dull yellow in September or October just before falling; tamarack is the only conifer in Wisconsin that sheds all its leaves each fall.

Fruit

Young cones red or greenish; mature cones light brown; width ½ inch, length ¾ inch; nearly spherical; open in the fall of first year to liberate small, ⅛ inch, light brown,

winged seeds. Cones often remain on trees several years after shedding seed.

Range

Chiefly in swamps in northern part of state in region of coniferous forests; occasionally in drier localities where it reaches largest size. Found scattered in cold swamps throughout the southern portion of the state. Often found in association with **black spruce**, **balsam fir** and **northern white cedar**.

Wood

Light yellowish-brown, heavy, hard and very durable in contact with soil; used for posts, poles, ties, pulpwood and locally for lumber.

Notes

Large trees are rare as most old specimens were killed years ago by the larch sawfly. Crown has an open, pyramidal shape.

Black Ash

(*Fraxinus nigra*)



Form

Medium-sized tree; height 50 to 75 feet, diameter 1 to 2 feet. Forming an open crown of narrow, upright branches in the forest.

Bark

Grayish on older portions of tree, furrowed and somewhat separated into thin scales that are easily rubbed off. White lenticels appear on lower trunk and roots.

Leaf

Opposite on stem; compound, consisting of 7 to 11 leaflets; leaflets oblong in shape, tapering to a point, and not stalked, except the terminal leaflet; leaflets sharply toothed along edges; terminal bud is large and pointed.

Fruit

A samara, similar to that of all ashes, except that the thin wing nearly surrounds the flattened seed. The wing is broader than that of **white** or **green** ash, and the apex of the wing is distinctly notched.

Range

Fairly well distributed over entire state; most abundant in cold, moist locations and along low banks of streams. Usually found in association with **black spruce, balsam fir, white cedar** and **tamarack**.

Wood

Dark brown, sapwood of lighter color, coarse grained, heavy; not as strong or valuable as green or white ash; easily separated into thin layers furnishing excellent material for baskets, hoops, etc.; also used for cabinet making and fence posts.



Green Ash

(*Fraxinus pennsylvanica* var. *lanceolata*)



Form

Height 50 to 60 feet, diameter 2 feet or more; stout, upright, branches forming a rounded crown.

Bark

About ½ inch thick; dark brown or gray, tinged with red; furrowed with flat, scaly ridges.

Leaf

Length 10 to 12 inches; compound, and opposite on stem; each compound leaf has from seven to nine stalked leaflets; leaflets 3-5 inches long with apex pointed and slightly toothed on margin; differs from **white ash** in having leaf scars that are semi-circular to crescent shaped, extending to base of new bud.

Fruit

A samara, borne in clusters on tree; length 1½ to 2 ¼ inches, width ¼ to ½ inches, with winged portion extending well down past middle of flattened seed-bearing part; wing slightly notched at apex, seeds mature in fall of first year.

Range

Common throughout state, usually found along stream banks, floodplains, and wet upland sites. It may form pure stands or grow in association with **box elder** and **red maple**.

Wood

Heavy, hard, rather strong, brittle, coarse grained; light brown, with broad layer of lighter sapwood; commercially valuable and used for the same purposes as those of the **white ash**; also used extensively for ornamental plantings.

White Ash

(*Fraxinus americana*)



Form

Large tree; average height 70 to 90 feet, diameter 1 to 2 feet, though larger trees can be found. Stout, upright branches form a narrow crown in the forest, and with sufficient space, a round-topped or pyramidal head.

Bark

Grayish-brown, rather thick on mature trees; narrow ridges are separated with marked regularities by deep, diamond-shaped fissures.

Leaf

Length 8 to 10 inches; compound and opposite on stem, consisting of 5 to 9 (usually 7) plainly stalked, sharp pointed leaflets; leaflets 3 to 5 inches long, smooth to rounded tooth along margin; dark green and smooth above, pale green or whitish beneath; leaf scar crescent shaped, extending up sides of new bud.

Fruit

A samara, length 1 to 1¼ inches; borne in clusters; seed bearing portion of the fruit is rounded in cross section and wing does not extend along its side; seeds mature in autumn of first year.

Range

Found over entire state on a variety of sites, but is most frequently found on fertile, well-drained sites.

Wood

Light brown, close grained, heavy, tough and elastic; preferred to all native woods for making tool handles and athletic and sports equipment; also used for agricultural implements, furniture interior finishes, posts, ties, fuel and for ornamental purposes.



Mountain Ash

(*Sorbus americana*)



Form

Shrub or small tree; height sometimes 20 to 30 feet, diameter 4 to 12 inches; spreading, slender branches form narrow, rounded crown.

Bark

About $\frac{1}{8}$ inches thick; smooth, light gray, gradually breaking into small scales.

Leaf

Compound; alternately arranged on branch; length about 6 to 8 inches, composed of 13 to 17 leaflets; each leaflet 3 to 4 inches long and about 1 inch wide at the middle; leaflets have long points with toothed edges, bright green above, turning bright yellow in fall.

Fruit

A pome; bright orange, occurs in dense clusters; diameter about $\frac{1}{4}$ inch; has thin layer of sour flesh containing 1 to 2 seeds; matures in fall of first season.

Range

Found scattered in woods of northern Wisconsin; best development occurs along edges of lakes and swamps; does best in moist locations, but survives fairly well in drier areas and on thinner soils.

Wood

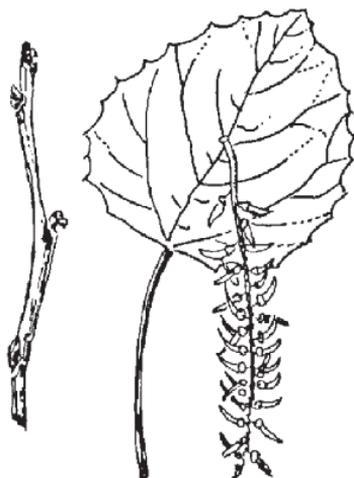
Light, soft and weak; pale brown, with light colored sapwood; slow growth gives it very close grain; has no commercial value, except for ornamental purposes.

Notes

Berries remain on tree during the winter and are relished by birds for food.

Bigtooth Aspen, Poplar, or Popple

(*Populus grandidentata*)



Form

Medium to large tree; height sometimes 60 to 80 feet, diameter 10 to 20 inches; slender rather than rigid branches form narrow rounded crown; stem is usually clear of dead branches.

Bark

Smooth, gray or yellowish-green; furrowed and dark brown at base of old trees.

Leaf

Alternate, coarse-toothed; length 3 to 4 inches; dark green upper surface; leaves appear 1 to 2 weeks later than that of quaking aspen, and at first are silvery white. Buds are light gray, downy, not so sharply pointed and larger than those of quaking aspen.

Fruit

Male and female catkins are found on separate trees. The fruit is a capsule, $\frac{1}{4}$ inch long, numerous capsules borne on catkins 4 to 6 inches long; capsules contain many

seeds surrounded by long white hairs that are wind disseminated; matures in May of the first year. Main mode of regeneration is by root suckering after cutting.

Range

Found over the entire state, but prefers sandy or rich soils that are moist.

Wood

The use of aspen has increased dramatically over the past decades which has changed its status from a "weed" tree to the most highly used species in Wisconsin. It is the primary raw material source for the pulp and paper, hardboard, wafer board and oriented strand board industries. Other industries use it in the production of lumber, matchsticks, lath and shavings. The residue generated at these industries is used in the production of densified wood fuels (pellets) or burned directly as green fuel.

Quaking Aspen

(*Populus tremuloides*)



Form

A short-lived, small to medium sized tree; may reach height of 60 to 70 feet and diameter of 12 to 20 inches, but usually somewhat smaller; slender branches form an open, round crown; stem of tree is usually free of dead branches.

Bark

Thin, white to gray-green, almost smooth with black areas around base of limbs; has bitter inner bark.

Leaf

Alternate; small, broadly oval, short-pointed at end and finely toothed along margin; green and shiny above, dull green below; usually ranges in size from 1 to 2 inches. Leaf stalks are flattened at right angles to leaves, causing leaves to quake or tremble in a very slight breeze.

Fruit

Male and female catkins are on separate trees; fruit is a capsule; $\frac{1}{4}$ inch long capsules borne on catkins 4 to 6 inches long; each capsule contains many seeds surrounded by long white hairs that are wind disseminated. Ripens in late spring (May or June) before full expansion of leaves. Regeneration is mainly by root suckering following cutting of tree.

Range

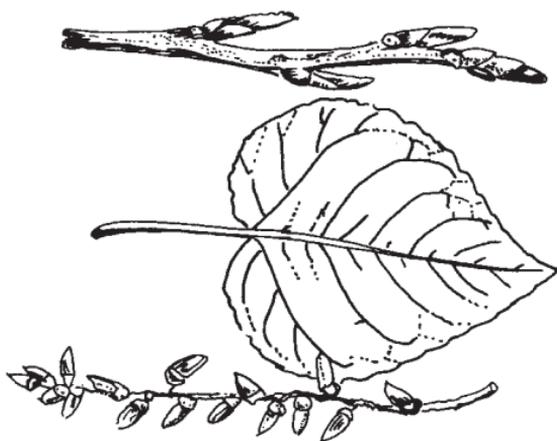
Found in all parts of Wisconsin; one of first species to appear after cutting or fire. Found commonly on cutover land; grows well on sandy, gravelly soils, but thrives better on good soil.

Wood

Light brown, surrounded by thick, nearly white sapwood; light, soft, not strong; used extensively in manufacturing of pulpwood for books, and magazine papers, and low grade lumber.

Balm of Gilead or Balsam Poplar

(*Populus balsamifera*)



Form

May attain height of 60 to 80 feet and diameter of 1½ to 3 feet or more; grows upright with narrow open, pyramidal crown of horizontal branches.

Bark

Thin, smooth, greenish-brown in color on young trees; thicker, furrowed and gray-black in color on old trees.

Leaf

Alternate, ovate, long pointed, edges finely toothed, dark green and shiny above; pale and often stained by resin blotches beneath. Buds are large, pointed and covered with a resinous pitch; give off strong, pungent aroma.

Fruit

Male and female flowers are on separate trees; the fruit is a capsule, borne in catkins 4 to 6 inches long; capsule contains many seeds covered with white hair; wind disseminated for long distances. Seeds mature

in May or early June. Regeneration usually by root suckering following cutting.

Range

Naturally distributed throughout northern part of state, along streams and edges of swamps or in other cool localities.

Wood

Soft, not very strong, close grained, heartwood light brown, sapwood white; used for pulp, boxes, packing cases and rough lumber.

Basswood or Linden

(*Tilia americana*)



Form

Height 60 to 80 feet, but often exceeding 100 feet with a diameter of 1 to 3 feet; trunk often continues straight into top of dense rounded crown. Stump sprouts readily and is often seen as a group of 4 to 5 stems originating from an old stump.

Bark

Gray with shallow furrows and vertical, scaly ridges.

Leaf

Alternate; length and width 4 to 6 inches; heart-shaped, margin coarsely toothed, sharp-pointed at tip; at maturity, thick, shiny green above and paler underneath.

Fruit

Round, hard, nut-like $\frac{1}{4}$ inch in diameter, containing 1 to 2 seeds; covered with short, thick, brownish-red wool, attached in clusters to a leafy bract which later acts as a wing to disseminate seeds on wind; fruit often hangs on tree long into winter. Flowers are fragrant, and from them choice-grade honey is made by bees.

Range

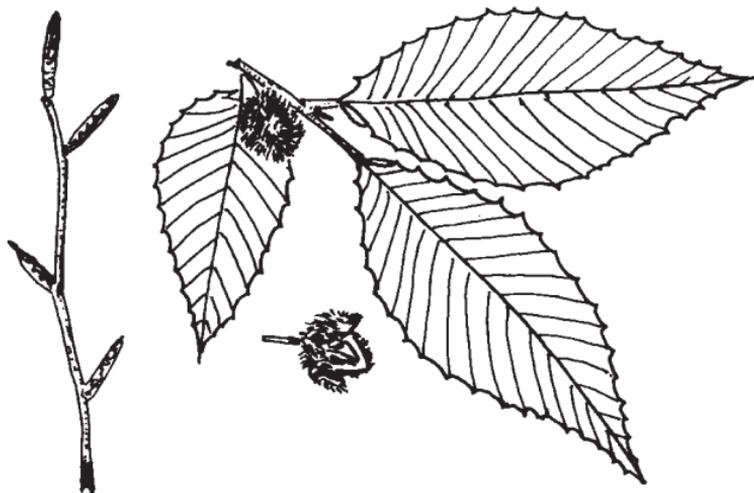
Common throughout the state on rich, well-drained loamy soils, in mixture with other hardwoods.

Wood

Light, soft, tough, not durable; light-brown with scarcely distinguishable sapwood; used in manufacture of paper pulp, wooden ware, furniture, trunks, crating, drawing boards and lumber.

Beech

(*Fagus grandifolia*)



Form

A tall and slender tree in the forest, with a narrow crown; in the open, with a short, thick trunk and broad, compact, rounded crown. Usually attains heights of 50 to 75 feet.

Bark

Most distinctive, it maintains a smooth, steelgray surface throughout its life.

Leaf

Simple, oval leaves 3 to 4 inches long, pointed at the apex and coarsely toothed, becoming leathery when mature. Persist on the tree in the winter.

Fruit

A stalked, prickly 4-valved bur, containing usually 2 triangular, shiny brown nuts with a sweet, edible kernel.

Range

Found in eastern Wisconsin on fertile, well-drained soils derived from limestone. In the vicinity of Racine, it reaches only a few miles inland from Lake Michigan, but farther north it extends as far west as the Wolf River in Langlade County.

Wood

Hard and strong, but not durable; is used for chairs, tool handles, lumber and fuelwood. Although beech is not a highly commercial species, it should be retained whenever possible for its wildlife value. It is desirable for landscape work because of its beauty and freedom from insect pests.

Bluebeech, American Hornbeam or Musclewood

(*Carpinus caroliniana*)



Form

Small tree or shrub; height rarely 30 feet, spreading, rounded, bushy crown; trunk often short and characteristically irregularly fluted; resembles muscles of a flexed arm.

Bark

Thin, smooth; light, gray-brown to slate-gray, sometimes marked with broad, dark-brown horizontal banks.

Leaf

Alternate; oval, long-pointed, double-toothed along margin; length 2 to 3 inches; veins prominent in herringbone pattern; pale, blue-green and smooth above, light yellow-green below.

Fruit

Nutlet about $\frac{1}{3}$ inch long, attached to a 3-lobed leaf-like bract; bracts are clustered together on a hanging stalk; bract may act as wing in aiding seed distribution by wind; fruit ripens in August.

Range

Found over the entire state, usually on rich moist soils and well-drained soils in the shade of other trees.

Wood

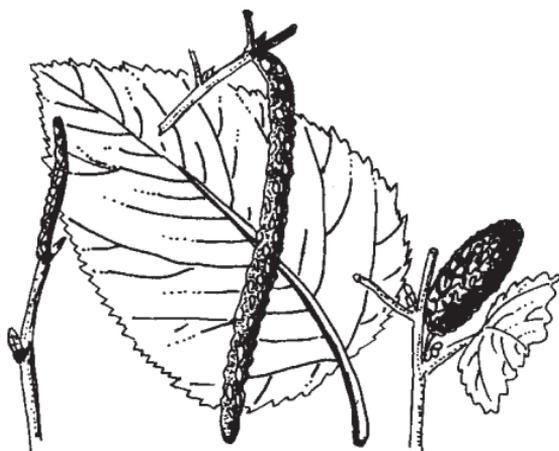
Tough, close-grained, heavy, very hard and strong; light brown, with thick white sapwood. The tree is of no commercial importance, but in the past the wood was used for levers, tool handles, wooded cogs, mallets, wedges and fuel.

Notes

Also known as Water Beech.

Paper, White or Canoe Birch

(*Betula papyrifera*)



Form

Height 65 to 70 feet, diameter 12 to 20 inches; rounded to pyramid-shaped crown.

Bark

Thin, smooth, reddish-brown on young trees turning creamy white with age; marked by many pores or "lenticels;" readily peeling in large pieces exposing orange inner bark; branch scars marked with inverted black V.

Leaf

Alternate, length 2 to 3 inches, width 1 to 2 inches; oval or heart-shaped, pointed, rounded at base, irregularly toothed; becomes thick and leathery in texture, dark green on upper side and yellowish-green on lower side.

Fruit

A catkin, about 1 inch long; contains many tiny, winged seeds, seeds about $\frac{1}{8}$ inch in length; seed matures in August and September,

disseminating throughout the fall and may even be seen scattered on the snow.

Range

Generally abundant throughout the state and occurs chiefly on the better sand and gravel soils in mixture with pine and aspen.

Wood

Hard, strong, tough, light in weight; brown tinged with red heartwood, nearly white sapwood; used for spools, toothpicks, toys, handles, paper pulp, flooring, firewood and interior finish.

Notes

Years ago, birch bark was extensively used by northern Native Americans for canoes and wigwams and for making baskets, cups, bags and other useful utensils.

River or Red Birch

(*Betula nigra*)



Form

In Wisconsin, normally 40 to 60 feet in height and 1 to 2 feet in diameter; often forking low to the ground and forming a broad, spreading crown.

Bark

Dark brown at base of old trunks and deeply furrowed; higher up on main stem and on larger branches, becomes lustrous reddish-brown; peels freely in papery layers; these persist on tree and give it a ragged appearance; twigs are reddish color.

Leaf

Simple, alternate and doubly toothed; length 2 to 4 inches; usually shallowly and irregularly lobed.

Fruit

A catkin, 1 to 1½ inches in length; contains numerous little winged seeds; seed ripens in late spring or early summer.

Range

Grows along rich bottomlands of streams and rivers in southwestern corner of state, especially in Mississippi and Wisconsin River Valleys.

Wood

Light brown heartwood with thick, pale sapwood, close-grained, hard, strong; however, since this tree is scattered in its distribution and mostly confined to banks of streams, it does not figure largely for commercial pulpwood or lumber, but is used to a great extent for fuel; used some in furniture manufacturing.

Yellow Birch

(*Betula lutea*)



Form

Height occasionally 85 feet, diameter 2 to 3 feet; developing a broad, round crown.

Bark

Yellow-gray or straw colored; peeling freely into thin, papery layers on younger trees, but developing ragged, broken plates on mature trees. Twigs light brown, lustrous, and slightly aromatic with oil of wintergreen.

Leaf

Alternate; oval to oblong, double-toothed margin; length 3 to 5 inches; dull dark green on upper surface and paler beneath.

Fruit

Catkin, about 1 inch in length, contains numerous minute winged seeds when mature. Ripens in fall of first year.

Range

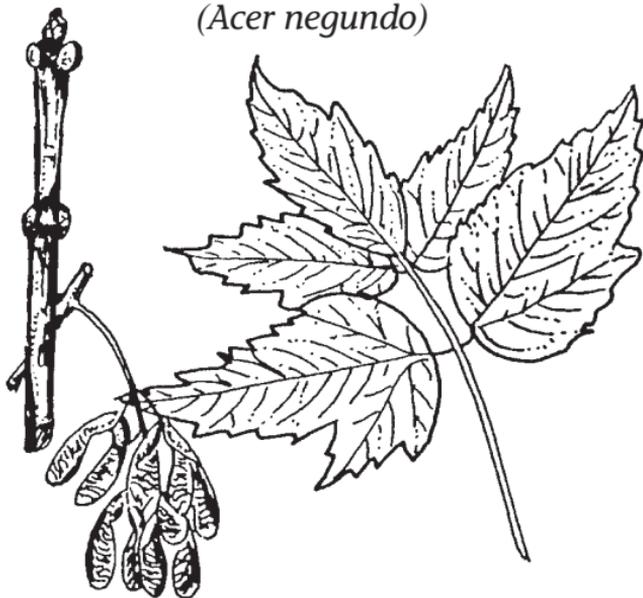
Common in the northern half of state on rich, moist uplands with scattered trees as far south as Sheboygan, Sauk and Grant counties.

Wood

Heavy, strong, hard, close-grained, light brown with pale sapwood; takes good polish; used for flooring, interior finish, veneers, wooden ware, furniture and small wooden novelties; an excellent firewood.

Box Elder

(*Acer negundo*)



Form

Height 30 to 50 feet on favorable soils, diameter may reach 18 inches; rather bushy on unfavorable soils; limbs and branches fragile; trunk often dividing near the ground, forming an unsymmetrical, open crown.

Bark

Smooth and green to purple on young branches; thin, grayish to light brown and deeply divided on old trees.

Leaf

Opposite; compound; 5 to 8 inches in length, usually with three leaflets (rarely 5); lustrous green in color; length of leaflets 2 to 4 inches, width 1 and 2 inches.

Fruit

A samara, 2 winged, hanging in clusters, similar to that of sugar maple, but smaller; ripens in late summer or early fall; often stays on trees all winter.

Range

Common throughout the state; grows naturally along streams and in cool ravines; fairly rapid-growing tree, prolific in reproduction.

Wood

Creamy white, soft, light and close-grained; decays rapidly in contact with heat and moisture; used occasionally for fuel; has no general commercial value.

Butternut or White Walnut

(*Juglans cinerea*)



Form

Reaches height of 60 to 80 feet and diameter of 3 feet; top develops into open, broad, crown; may be distinguished from black walnut by velvet collars just above scars left by last year's leaves.

Bark

Divided into broad, scaly intersecting ridges, forming a rough diamond-shaped pattern; light gray to light brown.

Leaf

Alternate compound leaves; length 15 to 30 inches, each with 11 to 17 sharply pointed, oblong, finely-toothed leaflets about 2 to 3 inches long; yellowish-green above and hairy underneath. The pith in the twigs is chambered and chocolate brown.

Fruit

Light brown nut enclosed in oblong, somewhat pointed, sticky, yellowish-green husk about 2 inches long; husk covered with short, rusty, sticky hairs. Nut has rough, grooved shell and oily, sweet edible kernel.

Range

A common occurrence in the southern part of the state and is known to extend northward into Langlade, Burnett and Ashland counties. It grows on the better sites.

Wood

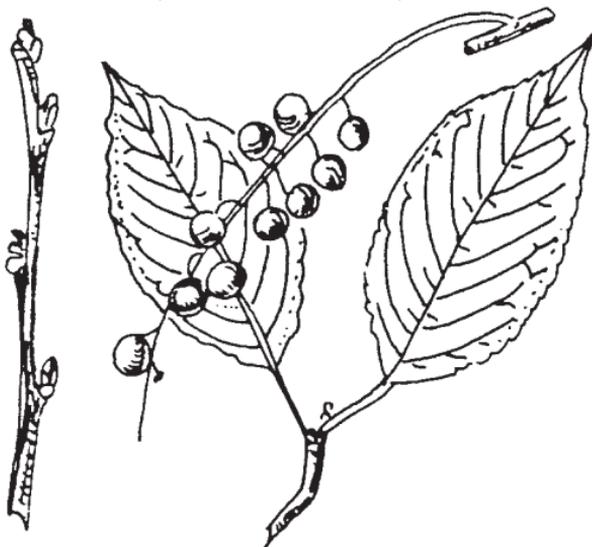
Light, soft, not strong; coarse grained, light brown; takes good polish; used for furniture and interior finish for houses.

Notes

Butternut canker has killed numerous trees throughout Wisconsin.

Black Cherry

(*Prunus serotina*)



Form

Height 50 to 70 feet, diameter 8 inches to 2 feet; with a narrow to broadly rounded crown.

Bark

Smooth, bright, reddish-brown, marked by conspicuous narrow, white horizontal lines on young trees; on older trunks, thick, dark brown to nearly black, rough and broken into thick irregular scales.

Leaf

Alternate; simple, oval, shiny above, paler below; edges broken by many fine incurved teeth. Petioles and small branches have bitter almond taste.

Fruit

A drupe, borne in long, hanging clusters; dull purplish-black, containing a single seed; is edible but somewhat bitter; ripens in late summer.

Range

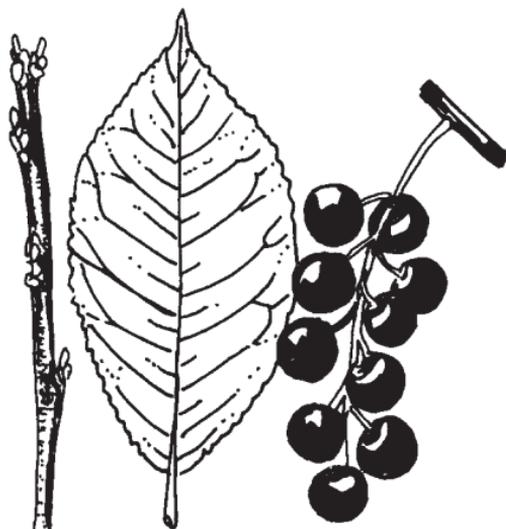
Distributed over entire state, but is most common in southern half on the better soils.

Wood

Reddish-brown with yellowish sapwood, moderately heavy, strong, fine-grained; does not warp or split in seasoning; has exceptional luster and color; used for furniture, interior furnishing, tools and implement handles.

Choke Cherry

(*Prunus virginiana*)



Form

A shrub or small tree; height usually not over 20 to 25 feet, diameter 4 to 8 inches; with an irregular, rounded crown.

Bark

Thin; on young trees is smooth, shiny, brownish and peels off easily in thin, film-like layers; becomes thicker dark grayish, with shallow fissures; inner bark has bitter cherry flavor and aroma.

Leaf

Alternate, broadly oval, abruptly and sharply pointed, fine-toothed, bright green above, paler underneath; length 3 to 4 inches, width 1 to 2 inches.

Fruit

A drupe, in dense clusters; reddish, turning nearly black when fully ripe; each berry containing a single seed, skin of fruit thick; flesh thin and dark; very astringent to the taste, but edible.

Range

Common throughout state along streams, open woods, cut-over and brushy areas.

Wood

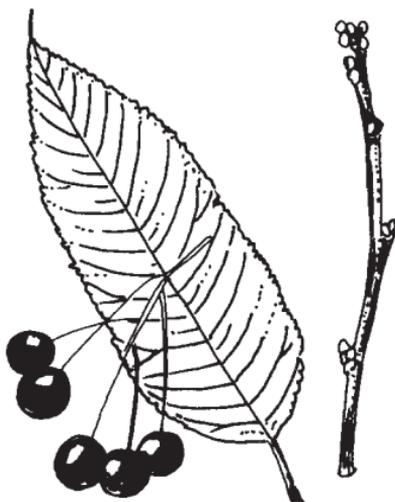
Heavy, hard, not very strong; of no commercial value in Wisconsin.

Notes

Popular tree for birds. Most widely distributed tree in North America, extending from the Arctic Circle to Mexico and from the Atlantic to the Rockies.

Pin Cherry

(*Prunus pennsylvanica*)



Form

Shrub or medium-sized tree; 20 to 30 feet in height; bearing rather ascending branches which form a narrow, rounded crown.

Bark

Thin, reddish-brown, breaking into papery layers; marked by large, irregular horizontal bands of orange lenticels.

Leaf

Alternate; length 3 to 4 inches; width about 1 inch; oblong; apex pointed; finely incurved teeth along edge; shiny green when fully grown.

Fruit

A drupe, about ¼ inch in diameter; thick, reddish skin; thin sour flesh surrounding oblong seed, fruit borne on long-stalked clusters; ripens in middle or late summer.

Range

Distributed over the entire state, but is most common in the northern half on areas of previous forest fires, cutovers, old fields and roadsides.

Wood

Light, soft, brownish with yellowish sapwood; has no special commercial value; tree is hardy; provides homes and feeding grounds for song birds.

Eastern Cottonwood

(*Populus deltoides*)



Form

Height may reach 70 to 90 feet, diameter 3 to 5 feet; grows rapidly; long, pyramidal, open crown.

Bark

Thin, smooth and light gray on young trees; dark gray and deeply furrowed into broad, rounded ridges on older trees.

Leaf

Alternate; broadly ovate or triangular, tapered tip, square at base; toothed or wavy on edges, 3 to 5 inches across each way; leafstalks flattened and 2 to 3 inches long; winter buds covered with chestnut-brown, resinous scales.

Fruit

Capsule borne on catkins 6 to 8 inches long; capsule contains many seeds that are enclosed in clusters of white cottony hairs; wind can carry them for long distances. Can be easily propagated from cuttings.

Range

Throughout Wisconsin, though rarer in the north; often forming extensive groves along waterways; will grow on dry locations but makes most rapid growth on moist sites.

Wood

Soft, light-weight with dark brown heartwood and thick, nearly white sapwood, warps easily when drying and rots readily; used for boxes, fencing, fuel, rough lumber for inside use, making high-grade magazine paper for printing half-tone illustrations; grown extensively for windbreaks owing to rapid growth and adaptability to soil.

American Elm

(*Ulmus americana*)



Form

Large tree; height 80 to 90 feet; diameter 2 to 4 feet; main stem often branches into several large branches forming a crown with pendulous branches; crown vase-shaped and broadly rounded.

Bark

Thick, divided into irregular, broad, flat ridges; ash-gray to grayish brown.

Leaf

Alternate; length 4 to 6 inches; rather thick, somewhat one-sided; doubly toothed on margin, generally rough above, smooth below, veins very pronounced and run in parallel lines from mid-rib to edge of leaf.

Fruit

A samara; winged, light green, oval and wafer-like in appearance; seed portion in center surrounded entirely by wings; outer end of each wing deeply notched; seeds hang in clusters; ripen in spring; widely scattered by wind.

Range

Fairly common throughout state; found on rich bottomlands and low, moist hills throughout the state in mixture with other hardwoods.

Wood

Light brown, heavy, hard, strong, rough and difficult to split; used for furniture and veneer for baskets and crates.

Notes

Very susceptible to Dutch elm disease; a few resistant hybrids have been developed.

Rock Elm

(*Ulmus thomasii*)



Form

Height 80 to 100 feet, diameter 2 to 4 feet; seldom forks like other elms, but retains a straight central trunk; forming a narrow, rounded crown with long, graceful branches.

Bark

About 1 inch thick, ash-gray; divided by deep, irregular fissures into broad, flat ridges; corky ridges or wings develop on the bark of the twigs.

Leaf

Alternate; double-toothed margin; resembles those of the **American elm**, but are more regular in shape, smaller, smoother on both sides, and more leathery.

Fruit

A samara, length $\frac{1}{2}$ inch, ovate, flattened; contains one seed; slightly notched at outer end; ripens in early summer.

Range

The rock elm reaches its best development in Wisconsin on the well-drained soils of Langlade and Shawano counties, but it is found southward and westward throughout the state on a variety of soils.

Wood

Close-grained, compact and strong; light reddish-brown with thick, light-colored sapwood; used for agriculture implements, sills, ties, hockey sticks and furniture.

Notes

Susceptible to Dutch elm disease.

Slippery Elm or Red Elm

(*Ulmus rubra*)



Form

Height 50 to 70 feet, diameter 16 to 24 inches; main branches frequently extend at right angles to trunk to form broad, open, flat-topped crown.

Bark

Frequently 1 inch thick, dark greenish-brown; broken by shallow fissures into flat ridges. Winter buds covered by brown, silky hairs.

Leaf

Alternate; 4 to 6 inches in length; ovate, sharp-pointed, base not symmetrical, double toothed on margin; thick, dark green and rough on both sides; turns to yellowish color before falling.

Fruit

A samara; seed surrounded by thin, broad, greenish wing; diameter about $\frac{1}{2}$ inch; ripens when leaves are about half grown.

Range

Distributed over the entire state, but is rare in the northern portion and is usually found on banks of streams and fertile hillsides.

Wood

Dark brown with light-colored sapwood; close-grained, rough, strong, heavy, hard, moderately durable; used for fence posts, ties and agricultural implements; inner bark of trunk and branches once used to some extent for medicinal purposes.

Notes

Susceptible to Dutch elm disease. Inner bark is fragrant, and when chewed becomes mucilaginous and slippery, whence the tree gets its name.

Hackberry

(*Celtis occidentalis*)



Form

Height 50 to 75 feet, diameter 1 to 2 feet; limbs often crooked and angular; tree-head made up of slender, pendant branches or short, bristly, stubby twigs when growing in the forest; in the open, crown is generally symmetrical.

Bark

Grayish-brown, much roughened with prominent, short, corky ridges.

Leaf

Alternate; length 2 to 4 inches; ovate and sharply toothed toward end of leaf; oblique at base; prominent veins; hairy on upper side.

Fruit

Berry-like drupe, $\frac{1}{4}$ to $\frac{1}{3}$ inches in diameter; thin, purplish skin; sweet yellowish flesh, sometimes called sugar berry; ripens in September; frequently hangs on tree most of winter.

Range

Found sparingly in southern and western part of the state, extending northward through the Wisconsin River Valley to Marathon County and up to St. Croix and Polk County, most abundant on rich alluvial soil, but will grow on various types of soil.

Wood

Heavy, rather soft, weak and coarse-grained; light yellow or greenish-brown with narrow white sapwood; used in manufacture of furniture, fuel and only occasionally for lumber.

Bitternut Hickory

(*Carya cordiformis*)



Form

Height 50 to 75 feet, diameter 1 to 2 inches; the crown is open and rounded at the top.

Bark

Granite-gray, faintly tinged with yellow; broken into thin, plate-like scales; not as rough as most hickories; bark does not strip off as that of **shagbark hickory**. Winter buds are compressed, scurfy and bright yellow, $\frac{1}{2}$ inch or more in length.

Leaf

Alternate; compound; length 6 to 10 inches; composed of 7 to 9 leaflets, 4 to 6 inches long and with toothed margins; each leaflet relatively much smaller and more slender than that of other hickories.

Fruit

Nut usually thin shelled, smooth, brittle; length about 1 inch with thin husk that usually splits only partly down side. Nut is broader than long; kernel is very bitter.

Range

Found on well-drained, fertile soils in the southern part of the state extending northward to Langlade, Rusk and Polk counties.

Wood

Hard, strong, heavy, and reddish-brown; used for hoops, fuel and farm implements. Wood is considered somewhat inferior to the **shagbark hickory**.

Shagbark Hickory

(*Carya ovata*)



Form

A large tree; height 60 to 100 feet, diameter 1 to 2 feet; open, rounded crown with conspicuous shaggy bark.

Bark

Rougher than that of other hickories; shaggy, light gray and separates into thick, vertical strips that are only slightly attached to tree. Terminal winter buds are large, hairy and egg-shaped.

Leaf

Alternate; compound; length 8 to 15 inches and composed of 5 (rarely 7) ovate leaflets; end leaflet larger than other leaflets; margin of leaflet covered with fine teeth and numerous hairs.

Fruit

A nut borne singly or in pairs, globular in shape, enclosed in husk that is thick and deeply grooved at seams and splits entirely into 4 parts. Nuts compressed or flattened and light-brown colored; shell is thin and kernel is sweet.

Range

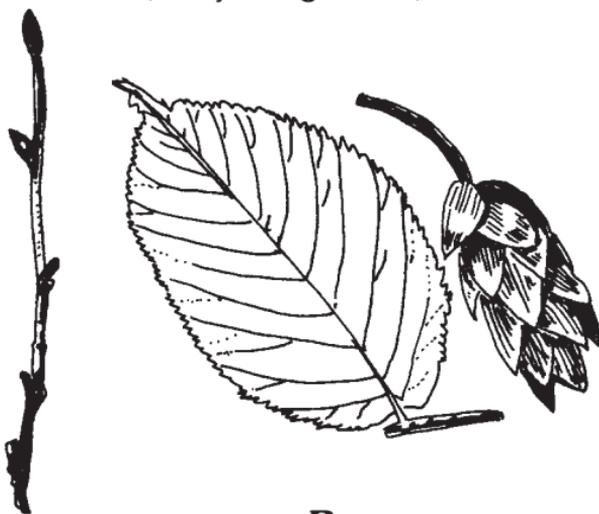
Found in the southern part of the state on moist, rich soils and well-drained hillsides.

Wood

Light brown heartwood with nearly white sapwood; heavy, hard, tough and very strong; used largely in manufacture of agricultural implements and tool handles; makes very good fuel and is best of all woods for smoking meats. Nut is important wildlife food source.

Ironwood or Hop Hornbeam

(*Ostrya virginiana*)



Form

Height 20 to 40 feet; diameter 5 to 12 inches; broad, rounded crown; branches long and slender, drooping at ends.

Bark

About $\frac{1}{4}$ inch thick; light gray-brown; finely divided into narrow, thin scales that are easily rubbed off.

Leaf

Alternate; generally oblong with narrow tips, doubly toothed along margins; length 2 to 4 inches; dark, dull, yellow-green above and light yellow-green below.

Fruit

In clusters of leafy bracts; each bract contains one flattened, ribbed, hard nutlet about $\frac{1}{3}$ inch long and $\frac{1}{8}$ inch wide; fruit ripens in July and August.

Range

Found throughout the state, usually on the better, well-drained soils or gravel ridges in mixtures with other hardwoods.

Wood

Very strong, hard, heavy, durable, light brown, with thick, pale sapwood; used for fence posts, handles of tools, mallets and other small articles and fuel.

Notes

The tree receives its common name from the quality of its wood and its hop-like fruit.

Juneberry or Serviceberry

(*Amelanchier canadensis*)



Form

A small tree; height seldom over 25 feet, diameter 4 to 8 inches; rather narrow, rounded crown.

Bark

Thin, usually gray; smooth on branches and upper part of stem, breaking into shallow fissures on short trunk.

Leaf

Alternate; 3 to 4 inches long, ovate, apex sharply pointed, fine-toothed; purplish-brown until nearly mature; light green covered with scattered, silky hairs when mature.

Fruit

A pome; sweet, edible, round, dark purple when ripe; diameter $\frac{1}{3}$ to $\frac{1}{2}$ inches; fruit ripens in July or August.

Range

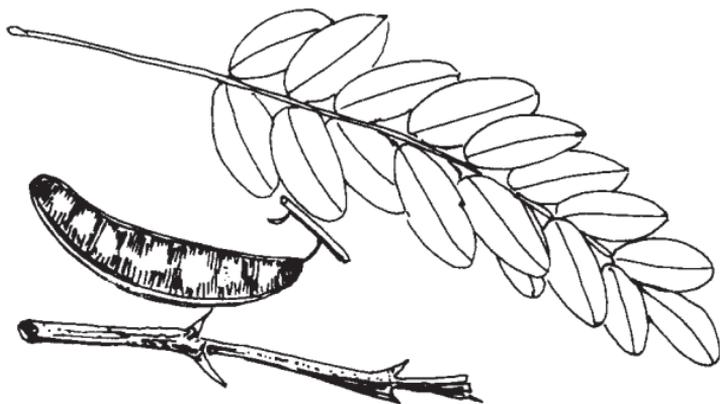
Common throughout state, but best development is along banks of streams, shores of lakes, or open upland woods.

Wood

Heavy, hard, strong, close-grained, dark brown; has no commercial importance; desirable as ornamental because of flowers and for habitat and food for wildlife.

Black Locust

(*Robinia pseudoacacia*)



Form

A medium sized tree, 30 to 50 feet high; sometimes larger. Open grown specimens usually branch low, forming a narrow, open crown. Twigs and branchlets carry strong, sharp spines which occur in pairs with a leaf-scar between them.

Bark

Brown with yellow or orange inner bark; heavily furrowed, forming an interlacing pattern of fibrous ridges, rope-like.

Leaf

Alternate, compound; consisting of from 7 to 19 oblong, thin leaflets.

Fruit

A legume; 3 to 5 inch long pod containing 4 to 8 small, hard seeds which ripen late in the fall and persist through the winter on the tree.

Range

Not native to the state, but has been planted extensively. In some places has escaped from cultivation, as it grows on a wide variety of soils.

Wood

Yellow in color, close grained, very heavy and hard; strong and very durable in contact with the soil. The wood is potentially valuable, but rarely obtains log size due to attacks of the locust borer. Use is therefore limited to fence posts and firewood.

Notes

Originally planted for soil erosion control purposes, for which it is well suited. Fragrant, white flowers in the spring make it very attractive. Is generally considered a weed because it spreads prolifically by suckering.

Honey Locust

(*Gleditsia triacanthos*)



Form

Height 30 to 50 feet, taller under very favorable conditions; may reach diameter of 16 inches; slender, spreading, somewhat pendulous branches form broad, open, rather flat top crown.

Bark

Dark gray or brown on old trees; dividing into strips; strong, sharp, shiny branched thorns appear on one-year old branches and remain for many years.

Leaf

2 types, both alternate; type 1 is compound with 18 to 28 leaflets; type 2 is doubly compound, consisting of 4 to 7 leaflets, each 6 to 8 inches long; each leaflet consisting of 16 to 24 secondary leaflets.

Fruit

A legume; length 10 to 18 inches, width $\frac{1}{2}$ to $1\frac{1}{2}$ inches; flat, dark brown or black when ripe, containing seeds and yellow-whitish pulp;

pod often becomes twisted as seeds ripen; seeds are hard and each is separated from the others by the pulp.

Range

Native only to southwestern Wisconsin, but has been planted in other sections. It attains its best development on rich, moist river bottoms, but will do well on fertile, well-drained soil.

Wood

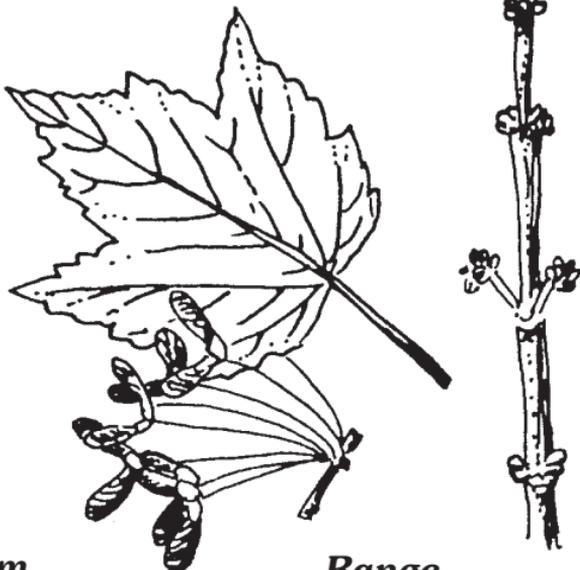
Reddish-brown heartwood, coarse-grained; hard, strong, not durable in contact with ground; used for fence posts, cross ties and fuel; has been planted to some extent for windbreaks and hedges.

Notes

A thornless variety of honey locust is widely planted as an ornamental.

Red Maple

(*Acer rubrum*)



Form

Height 40 to 65 feet, diameter 10 inches to 2 feet, sometimes larger; forms a narrow, rounded crown.

Bark

Smooth, light gray on young stems; dark gray and rough on old limbs and trunk; old bark divided by shallow fissures into flat, scaly ridges at surface, making tree look shaggy.

Leaf

Opposite; 2 to 5 inches long, 3 to 5 lobes, with double-toothed margins; upper surface light green when mature; lower surface whitish and partly covered with pale down. Winter buds are small, red and somewhat rounded.

Fruit

A samara, 2 winged; $\frac{1}{2}$ to 1 inches in length on long, drooping stems; red, reddish-brown or yellow; ripens in late spring and germinates immediately.

Range

Occurs over the entire state; prefers moist soils, though is common on drier sites in mixture with other trees.

Wood

Heavy, close-grained, rather weak, light-brown; used in furniture manufacturing, woodenware and fuel.

Notes

Shape and beautiful foliage colors make red maple an important ornamental tree.

Silver Maple

(*Acer saccharinum*)



Form

Height up to 100 feet, diameter 3 feet or more; trunk usually short, divided into a number of long ascending limbs which are again divided; their small branches droop, but turn upward at tips, forming large, spreading round crowns.

Bark

On young trees or branches, smooth and varies in color from reddish to a yellowish-gray; on old branches, dark gray and broken into long flakes or scales.

Leaf

Opposite; 3 to 5 lobes ending in long points separated by deep, angular openings; margins toothed; pale green on upper surface and silvery underneath; buds rounded and red or reddish-brown.

Fruit

A pair of winged samaras; wings 1 to 2 inches long; samaras on slender, flexible, thread-like stems about 1 inch long. Mature in spring, and germinate immediately.

Range

Common tree on river bottoms or other deep, moist soils in the southern $\frac{2}{3}$ of the state.

Wood

Light-brown, strong, fairly hard, even texture, rather brittle, easily worked; decays readily when exposed to weather or soil; occasionally used for flooring, furniture and fuel; often mixed with red maple for commercial purposes.

Notes

Popular as a shade tree, but branches are apt to be broken in storms.

Sugar Maple

(*Acer saccharum*)



Form

Height 80 to 100 feet or more, diameter 2 to 3 feet; symmetrical, heavy, round crown.

Bark

On young trees, light gray to brown and somewhat smooth; on older trees, gray to almost black with long, irregular plates or scales which often loosen on the sides. Twigs are smooth and reddish-brown with sharp-pointed winter buds.

Leaf

Opposite; 3 to 5 inches long, usually 5 lobed; lobes wavy toothed; dark green on upper surface, paler green below; in autumn, turning brilliant shades of yellow, orange and red.

Fruit

A pair of fused samaras, about 1 inch long; matures in fall.

Range

Found throughout the state on the better soils.

Wood

Light brown, hard, heavy, strong, close-grained; known commercially as hard or rock maple; used in the manufacture of flooring, furniture, maple syrup and fuel.

Black Oak

(*Quercus velutina*)



Form

Height 50 to 75 feet, diameter 1 to 3 feet; clear trunk for 20 feet or more on large trees; crown wide and irregularly shaped.

Bark

On young trees, smooth and dark brown; thick and black on older trees, with deep furrows and rough, broken ridges; inner bark bright yellow and bitter due to presence of tannic acid.

Leaf

Alternate; length 5 to 8 inches; width 3 to 5 inches; lobed half-way to mid-rib; ends are bristle-tipped; when mature, thick, dark green and shiny on upper surface, pale on lower; covered more or less with down; conspicuous rusty brown hairs in forks of veins.

Fruit

Light brown acorn that matures the second season; length $\frac{1}{2}$ inch to 1 inch; shape somewhat round; $\frac{1}{2}$ to $\frac{3}{4}$ of nut enclosed in thin, dark brown, scaly cup; kernel yellow and extremely bitter.

Range

Found on dry uplands, gravel slopes and ridges over southern half of the state.

Wood

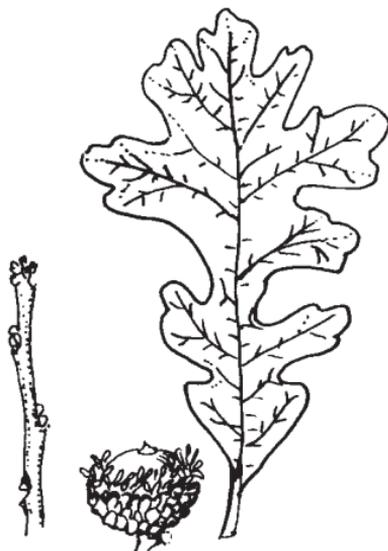
Hard, heavy, strong, coarse-grained, not tough, checks easily; bright reddish-brown heartwood with thin outer edge of paler sapwood; principally used for construction, interior finish, furniture, pulp, ties, fuel; tannin and yellow dye can be made from bark.

Notes

Susceptible to oak wilt.

Bur Oak

(*Quercus macrocarpa*)



Form

Height 80 feet or more under favorable conditions, diameter 3 to 4 feet; under unfavorable conditions, not over 25 feet in height; often grows in the open where the tree usually has broad top of heavy spreading branches and relatively short trunk.

Bark

Thick, deeply furrowed on surface into irregular, plate-like broken scales; dark gray to black in color. Bark on smaller branches develops corky wings, or ridges, giving it a gnarly appearance.

Leaf

Length 6 to 10 inches, width 3 to 6 inches; crowded at ends of twigs; resembles **white oak**, but has pair of deep indentations near base and wavy notches on broad middle and upper portions; dark green above, paler and hairy beneath.

Fruit

Acorn set deeply or almost enclosed in fringed, burr-like cap, ovoid in shape; diameter may reach 1 inch or more; however, varies widely in respect to size and degree to which nut is enclosed in the mossy fringed cup. Seed is bitter, and matures in 1 season.

Range

Distributed over the entire state; towards the north, trees are smaller; prefers moist, well-drained soils; the common oak of the "oak openings" in the southwestern part of the state.

Wood

Heavy, hard, strong, tough, durable, rich brown heartwood; uses similar to that of white oak.

Chinkapin Oak

(*Quercus muehlenbergii*)



Form

Reaches 80 to 100 feet in height and 3 to 4 feet in diameter.

Bark

Rarely $\frac{1}{2}$ inch thick and broken into thin, loose, pale gray scales.

Leaf

Usually crowded on the end of the slender branches, 4 to 7 inches long; margin with sharp, incurving or broad round teeth. Upper surface is light yellow-green, the underside pale and covered with fine short hairs.

Fruit

The acorns grow singly or in pairs, with short heavy stalks, the nut covered for half its length by the thin cup. Seed is sweet and edible.

Range

Distributed sparsely over southern Wisconsin, extending up to the Rock River above Janesville, up the Wisconsin to Sauk City and up the Mississippi to Lynxville. Reports show that it occurs as far east as southeastern Waukesha County. It grows on limestone ridges, and on fertile bottom lands and rocky stream banks. This tree was once fairly plentiful in several southwestern counties and should be favored where found.

Wood

The wood is similar to white oak and equal to it in quality, although it tends to contain more knots.

Northern Pin, Hills or Jack Oak

(*Quercus ellipsoidalis*)



Form

In Wisconsin, Northern pin oak seldom exceeds a height of 50 feet or a diameter of 2 feet. The trunk is short and bears many forked branches.

Bark

The bark resembles that of the scarlet oak, but the inner bark is pale yellow.

Leaf

The leaves are similar to scarlet oak, but not so shiny above, with five to seven lobes. Late in autumn, they turn yellow or pale brown, or more or less blotched with purple.

Fruit

The acorn requires 2 seasons to mature, and is enclosed for $\frac{1}{3}$ to $\frac{1}{2}$ of its length in the cap, which gradually tapers at the base.

Range

Northern pin oak is found throughout the state, usually on sandy soils of low fertility. It originally grew in mixture with pines, but fires have killed most of the pines, while the oak was able to reproduce from sprouts. As a result, there are many acres in Wisconsin capable of producing pine that are growing this oak.

Wood

The wood resembles red oak and is used for fuel, posts, railroad ties and some hardwood pulp.

Red Oak

(*Quercus rubra*)



Form

Height 70 to 90 feet; diameter ranges from 2 to 3 feet; in forest situations, tall and straight with clear trunk and narrow crown.

Bark

On young stems, smooth, dark gray to dark brown; on older trees, thick and gray to brown; broken by shallow fissures into regular, flat, smooth-surfaced, vertical plates.

Leaf

Alternate; length 5 to 9 inches; width 4 to 6 inches, broader toward the tip; divided into 7 to 9 lobes, each extending $\frac{1}{2}$ way to the mid-rib; each lobe somewhat coarsely toothed and bristle-tipped, dull green above, paler below. Buds thick and pointed.

Fruit

Large, bitter acorn, maturing the second year; length 1 to $1\frac{1}{2}$ inches; blunt-topped, flat at base, enclosed in a very shallow, dark brown cup that is velvety inside.

Range

Grows throughout Wisconsin on the better sites.

Wood

Light, reddish-brown heartwood; hard, strong and coarse; used for construction and finish of houses, furniture and fuel. Best logs are largely cut into veneer.

Swamp White Oak

(*Quercus bicolor*)



Form

Height may reach 65 to 80 feet and diameters of 2 to 3 feet; forming an open, sometimes irregular, round-topped crown.

Bark

Thick, deeply and irregularly divided by fissures into broad ridges; grayish-brown; bark on upper branches ragged and often peeling.

Leaf

Length 5 to 6 inches, width 2 to 4 inches; often crowded towards ends of twigs; broad at middle (pear-shaped) and wedge-shaped at base; wavy and indented along margin; dark green and shiny above, grayish and fuzzy beneath.

Fruit

An acorn; length about 1 inch; width $\frac{3}{4}$ inches, enclosed for about $\frac{1}{3}$ of its length in thick-walled cup. Usually in pairs on slender, dark brown stalks which are 2 to 4 inches long. Mature in 1 season.

Range

Sparsely distributed over the southern part of the state, extending into Wood and Buffalo counties; it grows on the borders of streams and swamps in moist, fertile soil.

Wood

Light brown, hard, strong, tough and durable; commercially, its uses and properties are similar to **white oak** and **bur oak**.

White Oak

(*Quercus alba*)

49



Form

Height 60 to 100 feet, diameter 2 to 3 feet and may become large. Tall and straight in forest; short in the open with wide spreading, broad, rounded crown; numerous heavy limbs spreading irregularly.

Bark

Pale gray, scaly, but not deeply fissured.

Leaf

Alternate; length 5 to 9 inches and about half as broad; crowded towards ends of twigs; deeply divided into 5 to 9 lobes; becoming light green above and much paler below; sometimes remain on tree most of the winter.

Fruit

A light brown acorn maturing the first year; length $\frac{3}{4}$ to 1 inch, about $\frac{1}{4}$ enclosed in cap; germinates in a few weeks after ripening and sends down a long, deep top root before winter.

Range

Common on the better soils in the southern half of the state.

Wood

Light brown; hard and durable; one of our most useful woods for heavy construction; used for railroad ties, interior finishes, furniture and fuel.

Wild Plum

(*Prunus americana*)



Form

Shrub or small tree; height usually 15 to 25 feet; maximum diameter 10 inches; trunk usually short and thorny; divides a short distance from the ground.

Bark

Thin, reddish-brown; broken into thin plates.

Leaf

Alternate; somewhat oval, long and narrow-pointed; double-toothed along edge; dark green above, paler below; length 2 to 5 inches, width about 2 inches.

Fruit

A drupe; $\frac{3}{4}$ inch in diameter; outer skin orange-red when ripe, with yellowish, sweet flesh; flesh clings to seed; fruit ripens in late summer, and contains a single stone.

Range

Found generally scattered over the state in thickets, particularly along banks of streams; grows best on rich soil or in moist locations, though will grow elsewhere. Its hardiness also fits it for rather severe locations.

Wood

Strong, hard, close-grained; dark brown with light-colored sapwood; tree has no special commercial value other than for its fruit and wildlife value.

Black Walnut

(*Juglans nigra*)



Form

Height often 100 feet, diameter 2 to 4 feet; when grown in the open, stem short, crown broad and spreading.

Bark

Thick and very dark brown; divided by rather deep fissures into round ridges. Blocky appearance.

Leaf

Alternate on stem; compound, 1 to 2 feet long, consisting of 7 to 11 pairs of yellow-green leaflets, smooth above, pale and hairy underneath; leaflets about 3 inches long, extremely tapered at ends and toothed along margin. The chambered pith is cream colored.

Fruit

A large, round nut borne singly or in pairs and enclosed in solid green husk, which is not sticky and does not spread open even after nut is ripe. The nut is black with very hard, thick, finely-ridged shell, enclosing a rich, oily

kernel which is edible and highly nutritious; matures in fall of first season.

Range

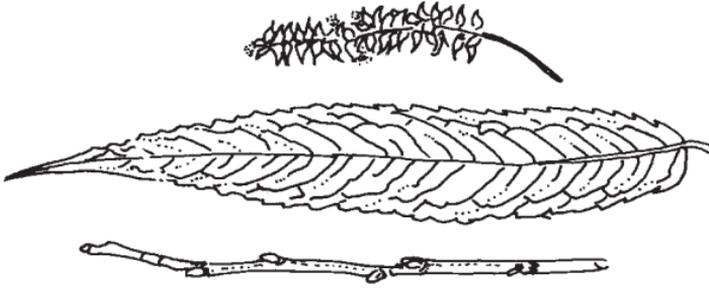
Grows on rich bottomlands and moist, fertile hillsides in southern part of state; is easily propagated from nuts and grows rapidly on good sites.

Wood

Most valuable forest tree in the state. Rich chocolate-brown heartwood is of superior quality and value; heavy, hard, strong, and comparatively free from warping and checking; takes a high polish and is very durable; highly prized for a great variety of uses such as furniture and gun-stocks; small trees consist mostly of sapwood, which is light-colored and not durable.

Willows

(*Salix spp.*)



Form

A large genus of trees and shrubs, some varieties not commonly distinguished from each other; become large when growing along streams and other moist places; scraggly, dwarfed shrubs when growing in drier, less favorable sites. The black willow is native, and the weeping and crack willows were originally foreign, or exotic. On favorable sites, some trees are often 35 to 50 feet high, with a diameter of 6 to 25 inches. The black willow may be 30 to 40 feet high, though it could also be a shrub; usually short trunk, stout, spreading branches, and a broad, rather irregular, open crown. The peach-leaf willow is somewhat greenish-yellow; twigs somewhat drooping.

Bark

Dark brown to gray on large trees; thick, rough, furrowed and flaky.

Leaf

White willow and crack willow leaves: whitish on lower surface; crack willow: large, saw-toothed leaves and twigs that crack or break from branches very easily; white willow: leaves smaller, finely toothed, and often permanently silky; black

willow: very narrow leaves, green on both sides; peach-leaf willow: long pointed, lance-shaped leaves, whitish underneath, borne on long, slender, somewhat twisted stems; weeping willow: leaves whitened or pale beneath.

Fruit

Flowers in dense, elongated clusters know as "catkins"; flowers usually appear with leaves in spring. Willows may be propagated with "cuttings" more easily than with seeds. Seeds are minute, maturing in late spring or early summer.

Range

Many varieties occur over a wide range in Wisconsin and the United States from moist conditions to dry upland prairies. Many European and ornamental varieties have been introduced.

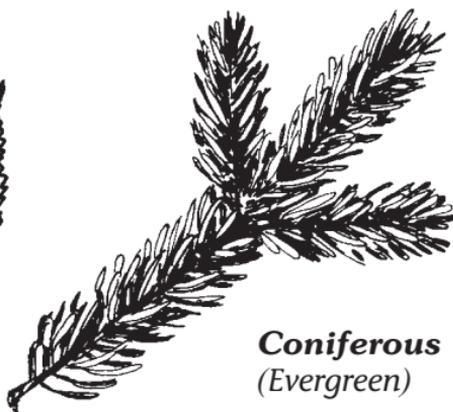
Wood

Light brown, soft, weak, flexible, coarse-grained; thin, whitish sapwood; used for fuel, erosion control, ornamental planting, windbreaks and charcoal.

Sign Posts to Follow in Using your “Tree Road Map”



Deciduous
(Hardwoods)



Coniferous
(Evergreen)



Alternate
Branching



Opposite
Branching



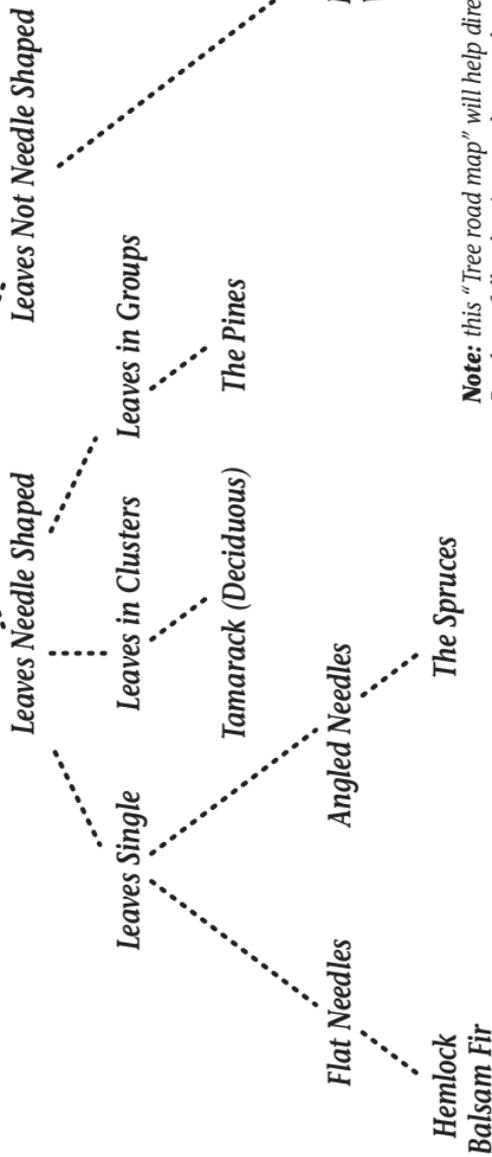
Pith of Twig
Chambered



Pith of Twig
Not Chambered

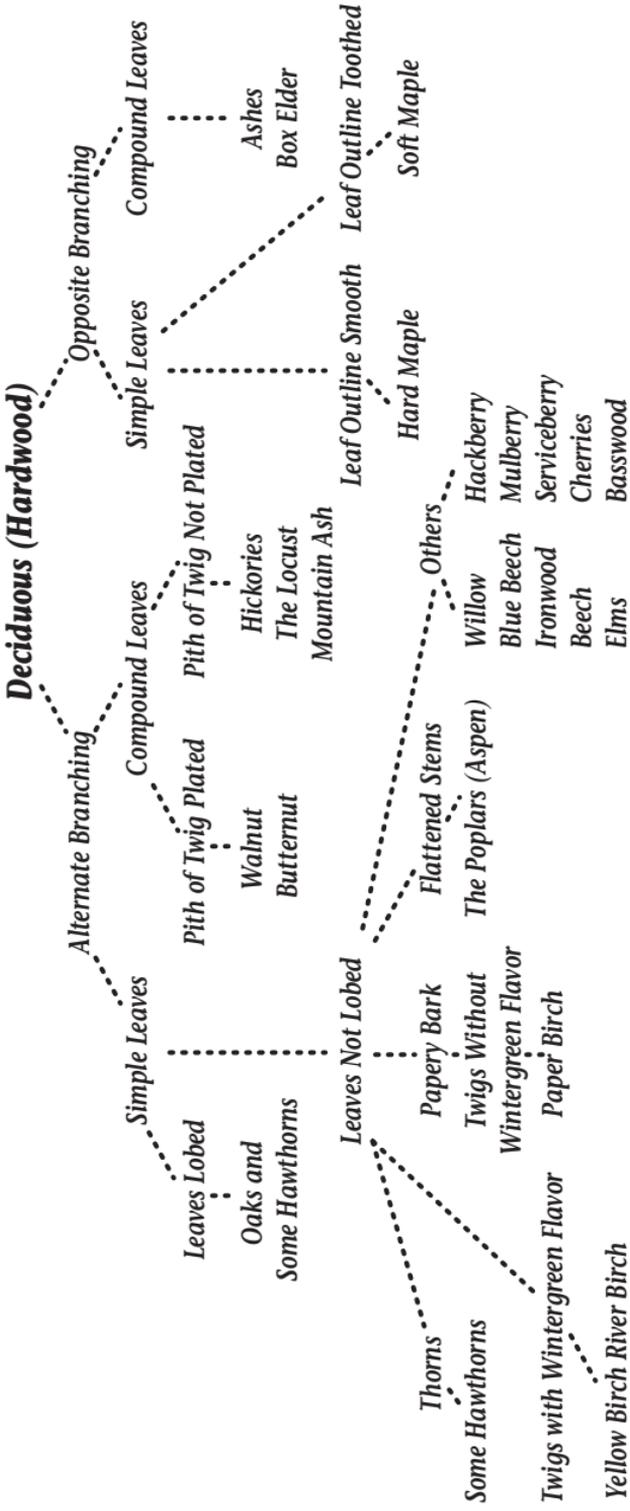
Your Tree

Coniferous (Evergreen)

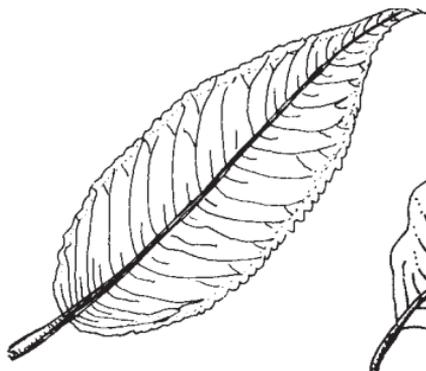


Note: this "Tree road map" will help direct you to identify your tree. Read carefully what it says about each species in the guide.

Your Tree



Sign Posts to Follow in Using Your “Tree Road Map”



*Simple leaf not lobbed
with toothed outline*



*Simple leaf lobed with
smooth outline*



*Compound leaf
with 13 leaflets*



Single needles



Needles in groups



Needles in clusters

How to Prevent Forest Fires



The forest fire hazard in Wisconsin is extremely high compared to other states. This is due to our geographic location, soil and timber types, topography, and general climate, all of which combine to create conditions under which fires start easily and spread rapidly. This is true particularly in the vast timber regions of the state.

Adequate fire protection is the basis of all conservation. If we are to preserve our forests – which means if we are to continue to enjoy hunting, fishing, camping, and the beauties of the out-of-doors as well as the economic advantages of forest product industries – we must all do our part in preventing forest fires.

Actually, fire prevention requires only a little good judgment. Campfires should be built on mineral soil with all leaves and duff cleared back for a 5-foot radius. All fires should be attended while they are burning. Before

leaving the fire, enough water should be poured on it to kill it completely. It is a good policy to feel the ashes with the hand to make sure they are dead. Never bury a campfire with duff or litter since this only holds the fire, allowing it to smolder in readiness to start up later. Never throw away burning cigarettes and cigar stubs, pipe ashes, or matches in the woods.

You Violate a Forest Law if You

- 1. Fail to extinguish your fire.**
- 2. Burn without a permit.**
- 3. Allow a fire to spread.**
- 4. Cut timber without permission of the owner.**
- 5. Remove forest products from the lands of another without written permission of the owner.**

The destruction, injury, or defacing of any sign, guide post, building or property of any kind belonging to the state is unlawful.



How Forest Fire Danger is Measured



Most people can tell reasonably well how dry it is by observing some natural signs that are present. That was once the way the fire fighters determined forest fire danger – but no more.

Now the fire managers use such factors as relative humidity, fuel moisture, precipitation, wind velocity, and condition of ground vegetation – dry, green, or in between these two. Temperature also has a relative effect. The ranger can tell from his calculation what he has to prepare for in the way of people and equipment to cope with the current fire situation.

Information on the current forest fire danger in forest and wildland areas is often given on radio and TV programs.

The sign found at many ranger stations throughout the state, displays the current local fire danger rating. The rating shown on the sign refers to the following burning condition list and will help you to understand what the situation is where you live.

Extreme

Explosive conditions. Fires start easily, burn fiercely and crown readily. Often very difficult or impossible to control during the day. Burning not recommended.

Very High

Very dangerous conditions. Fires start easily, spread very rapidly, crown and spot. Very difficult to control. Burning is not recommended.

High

Dangerous conditions. Fires start readily from a match or sparks, spread quickly, and spot readily. Difficult to control. Burning is not recommended.

Moderate

Fires start from a match or burning embers, spread quickly in dry grass or leaves. Burn with extreme caution.

Low

Fires will start from an open flame, spread slowly and in absence of wind tend to go out. The safest time to burn.

What Causes Forest Fires to Start?



Most fires are caused by people. There are so many people using Wisconsin forest and recreational areas today that it is very difficult to reach all of them with a fire prevention warning. The mass of outdoor enthusiasts keeps changing from day to day. This makes the fire prevention problem even more complex. No one really intends to destroy the beauty of our forests or damage our natural resources, but it is difficult for persons not acquainted with fire control work to realize the tremendous, destructive potential of wild, uncontrolled fire. You can help prevent forest fires by being extra careful when you are hunting, camping, hiking or otherwise enjoying the outdoors.

Useful Fire

Wisconsin's Forest Fire Control program is not intended to prohibit the proper and beneficial use of fire. Fire adequately controlled and managed can be an efficient and effective land management tool, as it is for heating, cooking, recreation, or industrial use. It should always be recognized that uncontrolled fire is a devastating natural force. In recognition of this and other factors such as air pollution and conditions of extreme danger, the best skill and judgment should be used to minimize risks and environmental damage. Alternative procedures should be used when practicable.



The abundance and diversity of Wisconsin's wildlife would be greatly reduced without the presence of the forest trees described within this publication. They provide shelter, nest and den sites, as well as, a source for food. However, not only does the presence or absence of forest affect wildlife, but the forest size, age and composition has a big impact.

Size

As the size of a forest increases, so does the variety of wildlife species present. Bird species such as the barred owl, yellow-bellied sapsucker or hermit thrush are found most frequently in forests 100 acres in size or larger.

Age

A young forest may be more favorable than an older forest to some species. A 1969-82 study of ruffed grouse in central Wisconsin found that the density of grouse more than doubled when the proportion of the aspen-oak forest under 25-years old increased from 13% to 55%.

Composition

The mix of tree species found in a forest will also influence wildlife. A forest without oak trees is likely to be without squirrels and not used much by wild turkeys. A lack of dead trees or snags will reduce woodpecker use. As you learn to recognize Wisconsin's trees, you will be opening the door to life-long study and appreciation of wildlife and forest relationships. You'll learn that if you care about wildlife that you need to care about the condition of our forest trees.

