

# A Home Craftsman's Guide to Using Native Hardwood\*



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NORTH DAKOTA  
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Many of our native species of wood have beautiful grain and color, and can be tooled effectively by the home craftsman.

The list of wood species in this publication is by no means complete. Some species are conspicuously absent, such as paper birch, trembling aspen and balsam poplar. Also absent are introduced species like Siberian elm and Russian olive, and small trees and shrubs.

If anyone has the experience of working with native wood not included in this publication, please notify the author. Information is needed on how each wood tools, how it planes, shapes, routes, drills, turns and sands - as well as on its gluing ability and how it finishes.

For the identification of trees, please refer to Extension Bulletin EB-38, **Common Trees and Shrubs of North Dakota**, available at your county agent's office.

\*Hardwood is wood from deciduous or broadleaved trees. Softwood, as the term is used in the lumber trade, refers to evergreens or those trees with needle or scalelike leaves.

ash and boxelder. American elm has been widely planted as a street and shade tree and in both field and farmstead windbreaks.

## Identification

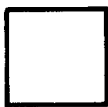
- Leaves 4-6 inches long; almost elliptical in shape; margins doubly serrate; surface often rough; simple and arranged alternately on the twig.
- Twigs Slender, brown, smooth.
- Buds About 1/4 inch long, pointed, chestnut brown.
- Fruit About 1/2 inch long, oval, notched at the apex, matures in spring about the time leaves appear.
- Bark Irregular flat topped ridges with deep fissures; a cross section of the bark shows alternating brown and white layers.

## The Wood

American elm is classed as soft elm along with slippery elm. The wood is heavy, hard and stiff. The steam bending qualities are good to excellent, which made it a very popular furniture wood (steam bent members used as rockers and arms of chairs). American elm is also used for baskets, boxes, crates, caskets, implements and slack (not water tight) barrels. The sapwood is very light tan and the heartwood is brownish with possible tinges of red. Lumber is difficult to keep well painted. It has a tendency to cup and check and has very little resistance to decay, which makes it unsuitable for outdoor use. The species glues well, especially with a resin type glue. Because of the large pores, a wood filler is needed to attain a smooth finish. It is considered fair for machining (shaping and turning), good for boring and mortising, and it resists splitting from nails and screws.

The summerwood pores are arranged in wavy bands that may resemble herringbone tweed.

44.3  
19  
8  
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## AMERICAN ELM

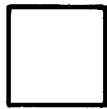
*Ulmus americana*

### General Description

American elm is probably the best known of all our native trees. It is easily recognized at a distance by its typical open grown vase shape. Native trees are found in areas that can be inundated in the spring but attain their best growth on well drained, bottomland soils. It is found in association with basswood, green



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# BASSWOOD

*Tilia americana* L.

## General Description

Basswood is a large tree and grows along the Red and Sheyenne Rivers as well as in the Devils Lake area. It prefers the rich, moist bottomland soils. Basswood is unable to endure drought. Because of this, and because of nursery problems with the germination of seed, it is not planted in windbreaks. It is a prolific sprouter, with sprouts often occurring in a circle around an old stump.

## Identification

- Leaves Simple, alternate, 5-6 inches long; coarsely serrate; unequal heart shaped base.
- Twigs Zigzag, greenish gray to brownish gray.
- Buds Lacking a terminal bud; lateral buds red to reddish brown; large, about 1/4 inch long.
- Fruit Nutlike drupe 1/3 inch containing one to two seeds; fruit cluster attached to a leafy bract 4-5 inches long.
- Bark Smooth greenish gray on young trees turning brown and ridged and somewhat scaly.

## The Wood

Basswood has a creamy-white or pale brown sapwood fading to a light yellowish brown heartwood.

The wood is soft, has an even texture, a straight grain, and is lightweight. The wood is odorless and tasteless. The wood is easy to work with tools and was the choice of old time pattern makers. It is the choice wood of many wood carvers.

Basswood glues well with a wide variety of glues. Its ability to stay well painted is fair and its ability to stand weathering is just fair. It takes nails and screws fairly well without splitting, bores well, but is poor for machine shaping.

Basswood lumber is used in sash and door frames, moldings, woodenware and boxes. Because basswood is resistant to warping, it is used in the manufacture of venetian blinds. Toy manufacturers and wood carvers use this wood extensively.

A native to North Dakota, boxelder occurs with other species along waterways and in other natural forest areas. This species was planted in shelterbelts but is very sensitive to herbicides, and this has greatly reduced its use for shelter purposes.

Silver maple was planted in shelterbelts and as a shade tree. It is not native to our state. Branch breakage from ice and snow is a common problem.

Both species can be tapped in the spring to collect sap which can be boiled down for maple syrup.

## Identification

### Boxelder, *Acer negundo* L.

- Leaves Compound; three leaflets on a long slender petiole. Each leaflet is about 3-4 inches long and 1 1/2 inches wide. Leaves are opposite on the stem.
- Twigs Stout, greenish to purplish, new growth covered with a light blue bloom.
- Buds Bluish white, 1/8 to 1/4 inch long.
- Fruit A v-shaped pair with convergent wings 1 1/2 to 2 inches long, maturing in fall.
- Bark Young bark is greenish turning brown to almost black on older growths; thin, shallow fissures.

### Silver Maple, *Acer saccharinum* L.

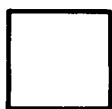
- Leaves Simple, opposite, five-lobed, green above silvery below.
- Twigs Dark red or reddish brown.
- Buds 1/8 inch to 1/4 inch blunt, dark red to brown.
- Fruit Widely divergent winged pair 1 1/2 to 2 inches long, maturing in late spring.
- Bark Light gray and smooth on young growth, breaking into long thin plates.

## The Wood

The sapwood is light colored, almost white. The heartwood is light brown and may have a colored cast running from gray to green or red to purple.

The better grades of some soft maple have been substituted for hard maple in the manufacture of furniture. Mostly used for boxes, pallets, crates, some woodenware and novelties. The machining properties are just fair to poor, though it bores well. Turning qualities are fairly good but it does not steam bend well and resistance to splitting from nails and screws is only fair. Soft maple glues satisfactorily with good quality glues (especially resin adhesives) under well-controlled conditions. It is rather difficult to keep well painted and it weathers poorly; it cups and checks. These maples are nonresistant to decay.

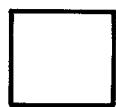
Some craftsmen rave about the beautiful colors in their products made from the heartwood of boxelder.



# BOXELDER AND SILVER MAPLE

## General Description

These species are soft maples with similar workability.



# BUR OAK

*Quercus macrocarpa*

## General Description

Bur oak is found on a great variety of soils. It is highly drought hardy because of its very deep tap root. In addition, it is very fire resistant because of its heavy bark. Young trees are relished by rabbits. They may cut trees back to the groundline for a number of years. In the meantime, the tap root plus other roots continue to grow and store food. A winter of deep snow will hide the young tree from the rabbits and the following year's growth will put the young, tender twigs out of the rabbits' reach.

Bur oak is also able to compete with grass and may actually invade grassland. Squirrels are responsible for planting oak seed because they hide and bury more acorns for food than they can eat or find.

Because of the development of the tap root, bur oak is difficult to raise in a nursery and not readily found in shelterbelts. (Some older windbreaks may contain bur oak because it was raised and planted in shelterbelts prior to the mid 1950s.)

## Identification

- Leaves Simple; alternate on the twig and large (6-11 inches long, 3-6 inches wide); five to nine rounded lobes. The leaf surface is dark green and lustrous above and pale green (almost a silver green) below.
- Twigs Stout; yellowish brown to gray; may have corky ridges on two-year-old and older twigs.
- Buds Small ( $\frac{1}{8}$  -  $\frac{1}{4}$  inch long); hairy; light brown in color.
- Fruit Acorn,  $\frac{3}{4}$  to 1 inch long; the cap may enclose  $\frac{1}{3}$  to  $\frac{1}{2}$  or more of the nut.
- Bark Thick, gray to very dark brown, deeply ridged.

## The Wood

Bur oak, one of the white oaks, is a valuable timber species. The sapwood is very light yellow or cream to white; the heartwood is usually a gray-brown. The heartwood is very rot resistant. The pores are plugged with a substance known as tylosis. The wood is very heavy. Uses include lumber for flooring, cabinets and fine furniture, and for such common uses as railroad ties, mine timbers and fence posts. The wood of all the white oaks is especially sought for tight cooperage.

Bur oak is difficult to keep well painted although it holds varnish well. It does not weather well because it cups and checks. For interior use, it should receive a filler prior to varnishing because the wood has large pores. Oak glues under well-controlled conditions but more easily with resin adhesives. Bur oak is one of our very best native woods for its machining proper-

ties. It planes, turns, bores, mortises and sands very well. It is the very best of all native American woods for steam bending.



# COTTONWOOD

*Populus deltoides*

## General Description

Native cottonwood is found along streams and rivers where moisture is available. Extensive stands occur along the Missouri River. Because of its rapid growth and the ease of raising it from cuttings in a nursery, it has been widely planted in shelterbelts. Cottonwood is a short-lived tree where adequate moisture is unavailable. On good sites it will attain an age in excess of 100 years.

## Identification

- Leaves 3 to 6 inches long and 4 to 5 inches wide; margins are coarsely serrate; the simple leaves have a flat petiole and are alternate on the twig.
- Twigs Stout, may be angular or ridged, light green with a star shaped pith.
- Buds  $\frac{1}{2}$  to  $\frac{3}{4}$  inch long, pointed and resinous.
- Fruit Catkins 8 to 12 inches long, each capsule about  $\frac{1}{3}$  inch long containing many small white cottony covered seeds.
- Bark Light green and smooth on young growth, eventually becoming gray and furrowed.

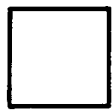
## The Wood

Cottonwood sapwood is light, almost white, gradually fading to a light brown heartwood.

Cottonwood is moderately low in both bending and compressive strength.

It does not plane or shape well and the results of turning it on a lathe are fair. Its ability to resist splitting by nails and screws is excellent, and it glues very easily with a wide variety of glues. Cottonwood is rated fair in its ability to hold paint. It does not weather well because of cupping and checking.

Cottonwood is used for pulpwood, lumber, fuel and veneer. Seasoned wood is odorless and is used for food containers.



# GREEN ASH

*Fraxinus pennsylvanica*

## General Description

Green ash is found along watercourses such as rivers and streams, around lakes and in western North Dakota in coulees. It prefers moist bottomland sites. Once established it can survive drought on the prairie, and it is therefore widely planted in field windbreaks, farmstead shelterbelts and as a street and shade tree. The range of green ash extends from the Atlantic Coast well into the Great Plains and from the Gulf of Mexico into southern Canada. It is one of the last trees to leaf out in the spring and one of the earliest to lose its leaves in the fall.

## Identification

- Leaves Compound with five to nine leaflets, each leaflet about 3-4 inches long, 1-1½ inches wide, edges finely serrated. The leaves are arranged opposite each other on the twig.
- Twigs Stout, grayish green to brown.
- Buds Rusty brown, rounded and short but broad at the base.
- Fruit A winged samara, 1-2 inches long, ¼ inch or less wide. Seed matures in the fall.
- Bark Finely fissured, light to dark gray.

## The Wood

The wood is light brown in color and has a very distinct figure on the flat grained surface. The wood is heavy, strong, hard and stiff. Uses include baseball bats, handles, oars, cabinets, furniture and veneer for paneling. Because of the large pores, the wood should be filled with a wood filler prior to finishing. It is difficult to keep well painted and does not weather well because of cupping and checking. The heartwood is not resistant to decay. Ash glues well under controlled conditions with resin adhesives. Green ash is one of our better woods for its woodworking and machining properties; it planes, turns, bores and sands well. It steam bends almost as well as American elm and resists splitting from nails and screws.



# HACKBERRY

*Celtis occidentalis*

## General Description

Hackberry is a rather small tree found in the eastern half of North Dakota. It is slow growing and attains its best growth on river bottomlands. It is associated with American elm, green ash and other bottomland species. It is an excellent yard or street tree because it resists drouth and grows on a variety of sites.

## Identification

- Leaves Simple, alternate, serrate, 2¼-4 inches long; dull green and rough above, paler below.
- Twigs Slender, reddish brown and zigzagged; the pith is chambered at the nodes.
- Buds Light brown, pointed, pubescent and closely oppressed against twig.
- Fruit Round about ⅓ inch in diameter on a stem ½-¾ inch long; dark red or purple; ripening in late fall and persistant through the winter.
- Bark Grey brown with corky warts or ridges.

## The Wood

The sapwood of hackberry is light or pale yellow and sometimes shows a greenish hew. The heartwood is darker. The wood is moderately heavy and moderately hard. It has a high shrinkage rate but retains its shape well during seasoning.

There is inadequate information available on the finishing and painting of hackberry, but the large pores dictate the use of a wood filler prior to finishing. The wood glues well with a wide variety of glues.

The wood is not resistant to decay, so if it comes into contact with the ground, it should be treated with a preservative.

Hackberry planes well, but its machine shaping qualities are poor. It is excellent for turning, boring and steam bending. Its resistance to split from nails and screws is fair to good.

Most of the commercial lumber of hackberry is used in furniture and some in veneer.