

FROM THE WOODS

Ten Important Hardwoods



PENNSTATE



College of Agricultural Sciences • Cooperative Extension

AN EDUCATIONAL SERIES ABOUT FORESTRY FOR YOUTH

People often want to learn how to identify trees. There are many practical reasons for “knowing” trees, and mastering this skill builds appreciation for natural diversity. Pennsylvania has over 100 native tree species, but there are seldom more than 10 to 15 different species in any one location. This publication presents information about 10 important Pennsylvania hardwood tree species—their identification, characteristics, and wood.

PENNSYLVANIA HARDWOODS

Pennsylvania’s forests grow some of the most valuable hardwoods in the world. Hardwood trees lose their leaves each autumn. The wood of these trees is generally hard and dense, but there are exceptions. About 90 percent of all the trees in Pennsylvania’s forests are hardwoods. The remaining 10 percent are softwoods. We commonly refer to softwoods as “evergreens,” “conifers,” or

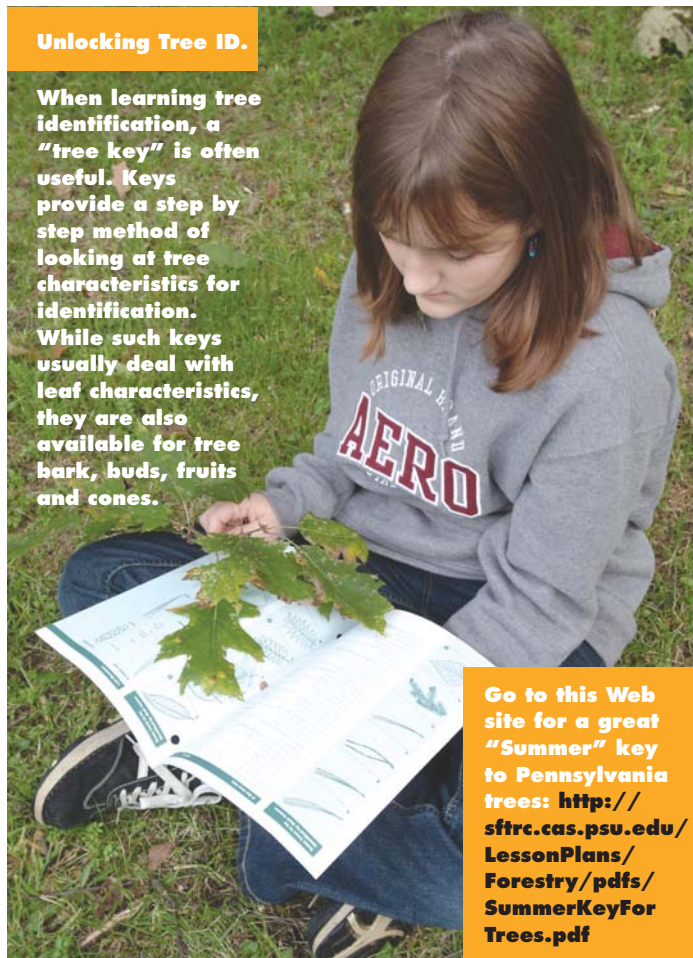
even just “pine trees” (though they are not all pines!).

THE “TOP 10”

There are several ways to select the 10 most important Pennsylvania hardwood trees. Not surprisingly, each approach generates a slightly different list. The 10 most *commonly known* species would be different from a list of the 10 most *common* species. This publication features the state’s 10 most commercially important hardwood trees, which means that these trees are valuable in terms of the money paid for their wood. Several other trees could also appear on this list; however, the ones in this publication are also very abundant throughout the state. The top 10 trees are red maple, black cherry, Northern red oak, white oak, yellow poplar, sugar maple, chestnut oak, white ash, American beech, and hickory.

TREE IDENTIFICATION

People look at many different



Unlocking Tree ID.

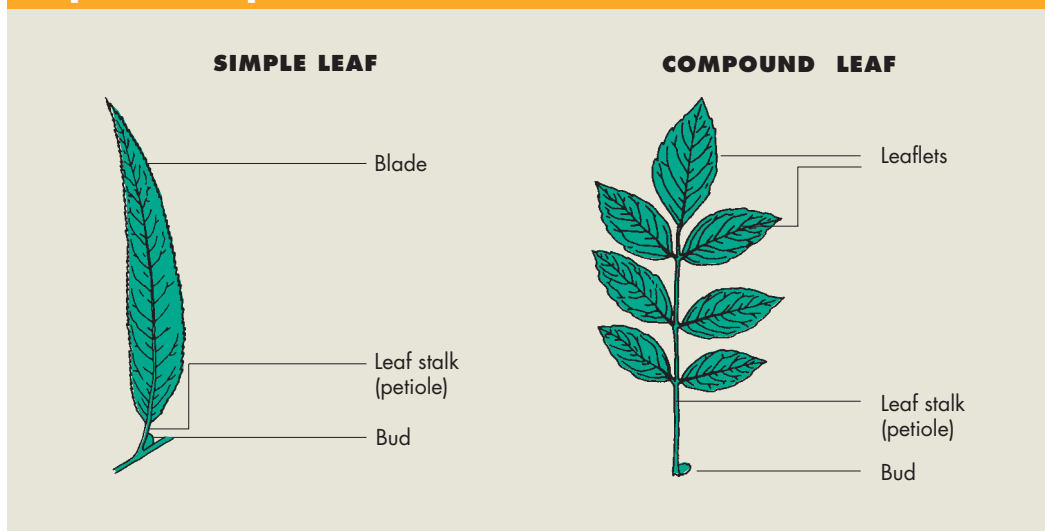
When learning tree identification, a “tree key” is often useful. Keys provide a step by step method of looking at tree characteristics for identification. While such keys usually deal with leaf characteristics, they are also available for tree bark, buds, fruits and cones.

Go to this Web site for a great “Summer” key to Pennsylvania trees: <http://sftrc.cas.psu.edu/LessonPlans/Forestry/pdfs/SummerKeyForTrees.pdf>

things to identify trees. They examine leaves, flowers, bark, twigs, fruits, seeds, tree shape, wood characteristics, wood anatomy, chemicals, genetics,

odors, and even flavors. Botanical classification and grouping of trees use flowers. However, looking at tree leaves is perhaps the easiest way to start learning identification. The biggest drawback is that hardwood trees don’t have leaves year-round! Some basic information about hardwood leaves can help you get started.

Simple vs. Compound Leaves



COMPOUND OR SIMPLE

Every hardwood tree species in Pennsylvania has either *simple* or *compound* leaves. Simple leaves are by far the most common. A simple leaf has two main parts. The first part is the *blade*. The blade is the broad, flat, and green tissue typically

called “the leaf.” The second part is the leaf *stalk*, which connects the blade to the tree’s branch. At the base of a simple leaf stalk, on the tree’s branch, is a bud. This bud will grow into a new branch with leaves or flowers the following year. When a simple leaf falls from the tree in autumn, the blade and stalk drop to the ground together, while the bud stays behind on the branch.

Compound leaves have a few more parts than simple leaves. A compound leaf has more than one blade, each one called a *leaflet*. Each leaflet has a small stalk that joins it to the leaf stalk, which joins to the tree’s branch. On the branch, there is a bud at the base of the main leaf stalk. At first glance, a compound leaf looks like a group of simple leaves, but it is actually just a single leaf. When a compound leaf drops in autumn, the main leaf stalk separates from the branch and the leaflets fall together with it. The bud re-

mains on the branch. The bud’s position is the best way to tell a simple leaf from a compound leaf. Each simple leaf has a bud at the base of the leaf stalk that supports a single blade. Each compound leaf has a bud located at the base of the leaf stalk that supports a group of leaflets. There is no bud at the base of a leaflet on a compound leaf.

Diverse bark patterns

Red maple is known for its many varied bark patterns at different ages and stages of growth. As many as 40 different bark patterns have been identified on red maples! These pictures show just two of its more common patterns.



Each hardwood tree species’ leaves are distinctly unique. While leaf shape is often noticed first, leaf edges (smooth, toothed, jagged, or lobbed), and leaf texture (waxy, soft, rough, or hairy) are important identifying characteristics.

the photos of each species and its wood, can help you learn these 10 trees, they are no substitute for actually observing living trees and real wood. Each tree’s scientific name is included to eliminate any confusion with the common names used. Take your time and enjoy learning about these 10 important hardwoods.

About 90 percent of all the trees in Pennsylvania’s forests are hardwoods.

OPPOSITE OR ALTERNATE

Regardless of whether a hardwood species has simple or compound leaves, its leaves join to the branch of the tree in one of two *arrangements*. Species with leaves located on alternating sides of a branch have *alternate* leaves. Species whose leaves join to the branch opposing each other in pairs have *opposite* leaves. A species will have only one leaf arrangement. The vast majority of Pennsylvania hardwoods have alternate leaves.

The distinctions between simple and compound leaves and their opposite or alternate arrangements may be confusing at first, but a little practice with actual trees should clarify these important concepts. The diagrams and photos in this publication should also help.

SPECIES SPECIFICS

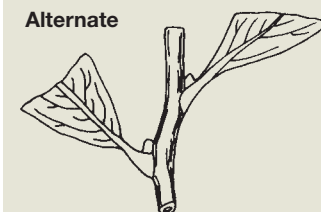
While the species-specific information below, along with

Leaf arrangement

Opposite



Alternate



Red maple (*Acer rubrum*)

Red maple, also called “soft maple” or “swamp maple,” is the most common tree species in Pennsylvania in terms of both the actual number of trees and the volume of wood available. This species grows over a wide range of conditions. It has simple, opposite leaves, with three and sometimes five pointed lobes. Lobes are the divisions or “large bumps” in the shape of a leaf. The *sinuses* or indentations between the lobes form sharp “V’s” on red maple leaves. The leaves average 2 to 5 inches in length and the same in width. Its stalks are usually red and the autumn foliage is brilliant red. The tree’s fruit is a double-winged seed released in the spring. It is commonly called a “helicopter” because of its spinning motion when falling. The bark is light gray with varied smooth and flaky patterns. Red maple’s light-colored wood has many uses, including furniture, paneling, moldings, doors, turnings, and musical instruments. The wood is about 25 percent less hard than its close relative, sugar maple.



Black cherry (*Prunus serotina*)

Black cherry, sometimes called “wild cherry,” is also a very common Pennsylvania tree species. Its wood is by far the most economically valuable in the state. Black cherry leaves are simple, alternate in arrangement, and shaped like pointed spearheads. They are 2 to 6 inches in length and 1 to 2 inches wide, with very small, blunt teeth along the leaf edges. A hairy, orange-colored middle vein on the under surface of the leaf is a useful identifying feature. In autumn, leaves turn yellow or red. The fruit is a small, dark purple cherry (birds and other wildlife species relish it). When young, the tree has thin, reddish-brown bark with raised horizontal markings. Mature cherry bark is blackish gray and very scaly. The foliage and twigs have a distinctive sour odor and bitter taste. Black cherry wood has a beautiful reddish-brown color and grain patterns. It is often made into veneer. Uses for black cherry wood and veneer include high-quality furniture, cabinets, paneling, moldings, flooring, musical instruments, carvings, and turnings.



Northern red oak (*Quercus rubra*)

Northern red oak, commonly called “red oak” and “gray oak,” is an abundant Pennsylvania species and the second most economically valuable. This species has leathery, simple leaves that are alternate in arrangement. The leaves are 4 to 8 inches long and about 3 to 6 inches wide. They have many (7 to 11) pointed lobes tipped with small, hair-like bristles. The autumn leaves are dark red to brown. Mature trees have dark-colored bark with light-colored vertical furrows with dark, flat-topped ridges. The fruit, a barrel-shaped acorn, is valuable for wildlife. Northern red oak wood has a red-brown color, coarse texture, and straight grain. Its wood and veneer uses include high-quality furniture, cabinets, paneling, moldings, construction, coffins, and floors.



White oak (*Quercus alba*)

White oak, called “stave oak” because of its use for barrel making, is also commercially important. Its leaves are simple, alternate, 4 to 9 inches in length, and 2 to 4 inches in width. They have five to nine rounded lobes without bristles. The bark is light, silvery gray and often forms into loose, narrow flaps. White oak also produces acorns important for wildlife food. The wood is lighter in color than Northern red oak, ranging from light brown to light grayish brown. Uses for white oak are similar to Northern red oak, except it is also excellent for outside applications, barrels, and ships. Its wood is resistant to decay and impervious to liquids.



Yellow poplar (*Liriodendron tulipifera*)

Often called “tulip poplar” or “tulip tree,” this species is distinct in many ways. Its uniquely shaped leaves have a broad, squared-off base and a narrower V-notched tip. Each leaf has four symmetrically paired pointed lobes. The leaves are 3 to 6 inches in length and equally as wide. Their autumn color is yellow. The flower of yellow poplar is large and beautiful, but forms high in the tree and is difficult to see. The flower is yellowish-orange, resembles a tulip, and produces a cluster of winged seeds. Yellow poplar grows very tall and straight. Its bark is light gray with white in the furrows. The wood, which has a light greenish-yellow color, is useful for a variety of construction purposes. Uses for the wood include furniture, veneer, cabinets, doors, paneling, plywood, turnings, and carvings.



Sugar maple (*Acer saccharum*)

The name sugar maple refers to the maple products made from its *sap*. (To a lesser degree, red maple also provides sweet maple sap.) “Hard maple” and “rock maple” are other common names for this tree. Sugar maple leaves have five pointed lobes with U-shaped sinuses in between the lobes. They are simple leaves with opposite arrangement. They range from 3 to 6 inches in length and width. The undersurface veins often have fine hairs. In autumn, foliage turns red, orange, or yellow. Sugar maple has light-gray bark, very tightly held on younger trees, and long, narrow bark flaps on older trees. The fruit is a double-winged seed similar to that of red maple. However, it drops in the fall. There are many uses for the light-colored sugar maple wood. Unique wood patterns, such as “bird’s eyes, tiger stripes, and flames,” are often present in the wood’s figure. Prized as a strong, shock-resistant wood, maple makes solid furniture, moldings, veneer, paneling, tabletops, cabinets, woodenware, rifle stocks, handrails, doors, bowling alleys, and floors.



Chestnut oak (*Quercus prinus*)

Sometimes called “rock oak” or “tanbark oak,” chestnut oak grows widely on Pennsylvania’s dry, rocky ridges. Chestnut oak is a member of the white oak group. It has leaves shaped somewhat like a football, 4 to 8 inches long and 2 to 4 inches wide. The leaves have five to eight large, rounded teeth on each side. They are often hairy underneath. Chestnut oak bark is dark gray and deeply furrowed, making it look distinctly different from the Northern red and white oak. Its autumn leaves are yellow. The fruit is a long, egg-shaped acorn that is important to wildlife. Chestnut oak wood, often marketed as white oak, is similar in appearance and properties to white oak. The tree’s bark is rich in tannins and was once used to tan leather. The current uses for the wood are similar to those of white oak.



White ash (*Fraxinus americana*)

White ash has compound leaves oppositely arranged. Each leaf generally has seven leaflets, though the number of leaflets may vary between five and nine. While white ash’s compound leaves can run from 7 to 12 inches long, each leaflet is only about 3 to 5 inches in length and 1 to 2 inches in width. The summer leaves are dark green above and whitish underneath (hence its name), while the autumn leaves are often yellow or purple. The dark-gray bark of white ash has “diamond furrows” that are pointed on the ends. The fruit of white ash is a winged seed. White ash wood is straight grained, light in color and in weight, yet very strong and shock resistant. Hence, baseball bats, hockey sticks, boat oars, and tool handles are all manufactured from white ash. White ash wood also makes fine furniture, paneling, flooring, doors, moldings, turnings, and cabinets.



American beech (*Fagus grandifolia*)

American beech, usually just called "beech," is widely known for its thin, smooth, light-gray bark. Its simple, alternate leaves have a pointed football shape with saw-toothed edges. The leaves are 2 to 6 inches long and 1 to 3 inches wide. They are mostly grouped on short branches at the ends of large branches. Noteworthy are the side veins on the leaves (those that run out from the main central vein). They are straight, parallel to each other, and slightly sunken. The leaves are dark bluish green on top and light green underneath. They turn yellow and later bronze in autumn. The fruit of American beech is a small three-sided "beechnut," often paired in a spinney husk. American beech wood is light, reddish brown in color. It is considered heavy, hard and strong. While it is hard to work, it is suited for furniture, flooring, paneling, brush handles, ties, and food containers (because it has no odor or taste). The smooth bark often invites carving, which defaces the beauty of the tree.



Hickory (*Carya* spp.)

Pennsylvania has five different native hickory species. They include bitternut, pignut, shellbark, shagbark, and mockernut hickory. While there are many differences among these five species, they share many characteristics. They all have large, compound, alternate leaves, with five to nine leaflets, depending on the species. The leaflets are finely saw-toothed on their edges and pointed on the end. The top leaflet is often, but not always, larger than the other leaflets. Hickory bark varies by species. The most widely known bark is on shagbark hickory, with its numerous curly bark flaps. All hickories produce a hard-shelled nut that is important as wildlife food. The nuts have tough, smooth, green covers called *husks*. Hickories are closely related to pecan and walnut trees. The wood of Pennsylvania's five hickory species is similar. It is brown to reddish brown in color. It is difficult to work with hand tools, yet it has some special uses. It makes fine flooring, tool handles, ladders, dowels, and sporting goods. It is useful in furniture and cabinet making as well.



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