Know Your TREES

MISSISSIPPI STATE
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INDEX

Know Your Trees helps you identify some of Mississippi's important trees. Some trees are common, while others are unique. Deciding which trees to omit was sometimes more difficult than deciding which ones to include. Some locally important or abundant species may not be included. But you should find all areas of the state represented by the species included.

FOREST RESOURCES

Mississippi is blessed with lots of forestry resources. About 65 percent of the state's land area is commercial forest, about 19.6 million acres. Only in the Delta area is forestry not the predominant land use. The hardwood timber type still is the most common in Mississippi, but pine volume and acreage are steadily increasing in most areas.

Small, private, nonindustrial landowners own about 78 percent of Mississippi's forestland. Thus, the future of Mississippi forestry does not lie with the forest industry or government agencies. Rather, it depends on private landowners, such as farmers, professional people, business owners, factory workers, and other citizens.

Our state's economy depends heavily on forestry and forest products, with one of every nine manufacturing jobs provided by the forest industry. At the first processing point, timber harvest ranks first in product value among crops. This production value can be compared to the farm production value of such commodities as soybeans, cotton, corn, and others. Timber harvest is second only to poultry production. With value-added processing of timber and wages paid, forestry contributes $17.4 billion to the state economy.

Mississippi's forestland is more productive than other parts of the South and the nation. Land is valuable for other purposes, so there is much competition for it in Mississippi. As a result, land values have remained high.

Mississippi can improve on an already bountiful resource. Forestry's importance as an economic and natural resource base is ever increasing. Public awareness and support of forest management practices are necessary in developing a strong forest economy. Forestry lets Mississippians strengthen their economy without sacrificing natural resource conservation. Thus, public awareness of our forests and the trees within them should always be a primary part of youth and adult education programs. By knowing and understanding more about our forests, we can make wise decisions about their management and use.

TREE NAMES

Most tree species have several different common names used in different places or by different people. For instance, willow oak is often called pin oak, even though pin oak is a completely different species and is not common in Mississippi. Another example is the common term "old field pine." People who use this term may be referring to loblolly pine or shortleaf pine, both of which naturally occur in abandoned fields. The term "white oak" may refer to a single species, *Quercus alba*, or to a group of several different species of oak. "Ironwood" may refer to American hornbeam, eastern hophornbeam, or some other tree species that has very hard wood. Thus, much confusion can occur by using different common names.

For scientists, botanists, foresters, and others all over the world to know exactly what plant is being described or studied, scientific names (Latin names) are used. The scientific name is two words—the generic name (name of genus) and the scientific epithet (name of species). For instance, the scientific name of white oak is *Quercus alba*. *Quercus* is the generic name for all oaks. The word *alba* means "white" in Latin and describes the exact oak to which we are referring. If we wanted to refer scientifically to all oaks, we would write *Quercus spp. Spp.* is the abbreviation for species (plural). Scientific names eliminate confusion about a particular species because no two species will have the same scientific name.

In this publication, a tree's major common name is printed in bold type. A tree's scientific name is printed in italics. The common and scientific names presented are in accordance with the United States Department of Agriculture National Plant Data Center (http://plants.usda.gov/).

LEAVES

Leaves are arguably the best way to identify trees. This publication emphasizes the use of leaf characteristics in tree identification. The leaf description of each species is more detailed than the descriptions of other characteristics, such as bark or twigs.

Since leaves are the major means of tree identification, you need to know some leaf terminology. Leaf arrangement, shape, size, color, growth characteristics, and retention can all be used as identifying characteristics. The point where a leaf is attached to the twig is called the node. At the base of the leaf on the twig is a bud at the node. The stem-like part of the leaf that connects to the twig at the node is called the petiole.

For broadleaf trees, for instance, terms describe leaf arrangement on twigs. Leaf arrangement is an essential feature to identifying trees. If there is only one leaf at each node,

the leaf arrangement is called alternate. With alternate arrangement, leaves usually appear to be staggered along the alternate sides of the twig. If there are two leaves at each node, the leaves are called opposite. These two leaves appear to be arranged directly across from each other on the twig.

Leaves that have a single blade are called simple leaves. Leaves that have more than one blade are called compound leaves. Each blade is called a leaflet. You can distinguish between a leaf and leaflet by following the petiole back toward the twig until you find a bud. These lateral buds do not appear at the base of a leaflet, only at the base of a leaf.

A leaf's edge is called the margin. Some trees' leaves have entire (smooth) margins. Other trees have toothed margins. You also find some trees with lobed leaves. These lobes are part of a single leaf blade, but they stand out by themselves because of the pattern of the leaf margin.

The final characteristic regarding a leaf is its retention. Trees that shed leaves before winter are called deciduous. Trees that keep their leaves through the winter are called evergreen or semi-evergreen.

TWIGS

Twigs are useful and necessary in studying leaves. To determine leaf arrangement, for instance, a twig section is necessary. Many other twig features are helpful in identification, such as color and size of buds, leaf scars, color, smell, taste, and presence or absence of thorns, spines, wings, or hair.

BARK

The bark of most trees is distinctive, but bark characteristics are very difficult to describe. Much variation often occurs in the bark of two trees of the same species. Also, the bark characteristics often change dramatically with age. The quality of the site where the tree grows may also affect the bark appearance.

There are usually more differences in bark between two species than within the same species. So, bark can be very useful in tree identification, especially in winter, when leaves may not be present. As you become more familiar with a particular species, you can learn to recognize it by its bark alone.

SIZE AND SHAPE

Size and shape refer to a particular species' growth pattern or habits. Obviously no two trees grow the same way, so size and shape must be described in very general terms. Knowing the size limits of a species can help you eliminate many species from consideration when you try to identify a tree. Also, many species have nearly unmistakable growth habits. For example, once you become familiar with the limbs and growth patterns of post oak *(Quercus stellata)*, you can almost always recognize it from a distance with or without leaves.

FLOWERS

This publication does not go into great detail in describing flowers and flower parts for identification purposes. Flower descriptions are made in very general terms that a novice can recognize. Flower size, color, arrangement, and time of appearance are the main features described.

FRUIT

Fruit can be useful in tree identification. All species produce some kind of fruit, but not all trees do. In some species, male and female flowers appear on separate trees. Since the fruit develops only from the female flower, the male trees do not bear fruit. Other species have male and female flowers on the same tree, and some species have both sexes within the same flower.

The fruits are available only at certain times in the year. You cannot always depend on using them for identification.

Fruits of the broadleaf trees are described in general terms rather than in the technical, structural classification botanists use. Color, shape, size, and general appearance are usually mentioned in the short descriptions of fruit.

VALUE IN THE FOREST

All trees have some significance in their natural state. Values of trees in the forest may include such things as wildlife food and shelter, the ability to survive under adverse conditions and on poor sites, the ability to protect soil and water, and natural beauty.

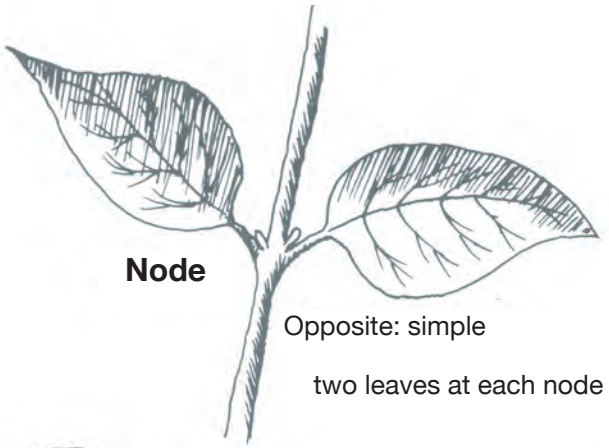
Sometimes species present a negative value to foresters and land managers, such as blackjack oak or American hornbeam. These are not valuable for timber, and they suppress reproduction of more valuable trees.

WOOD QUALITY

This feature is not meant to help in tree identification. Obviously, to determine such things as hardness, strength, color, and weight of the wood, you would have to cut the tree down. These characteristics are cited so you will know more about a tree once you identify it. Also, wood quality is important because it determines how a tree will be used once it is harvested.

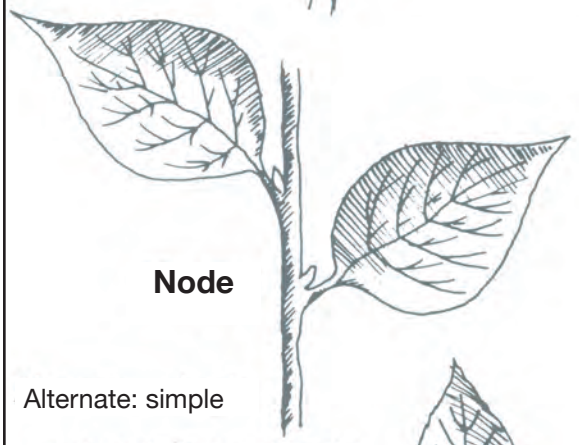
LEAF ARRANGEMENT

Node: point where leaf is attached to twig



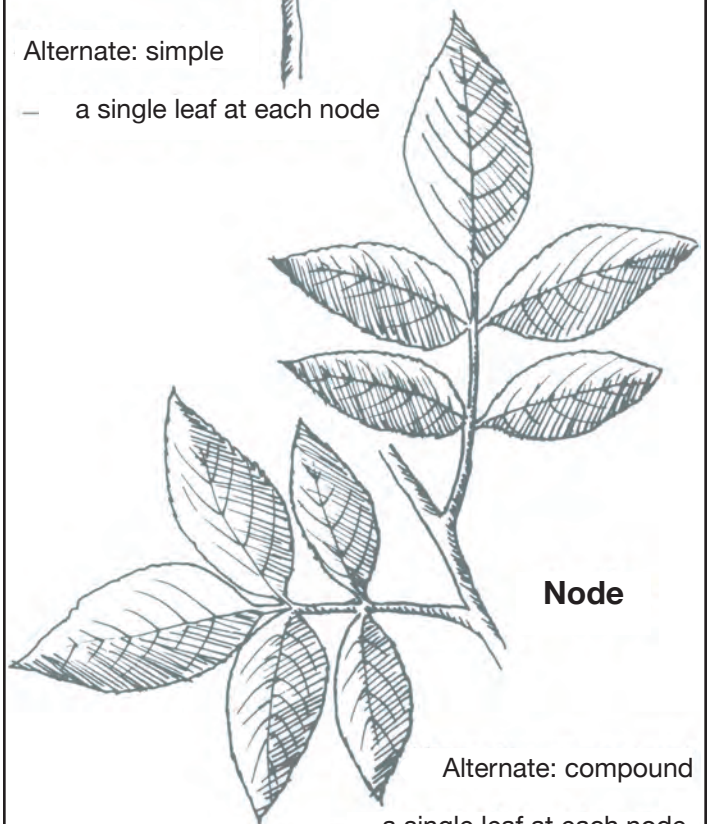
Opposite: simple

two leaves at each node



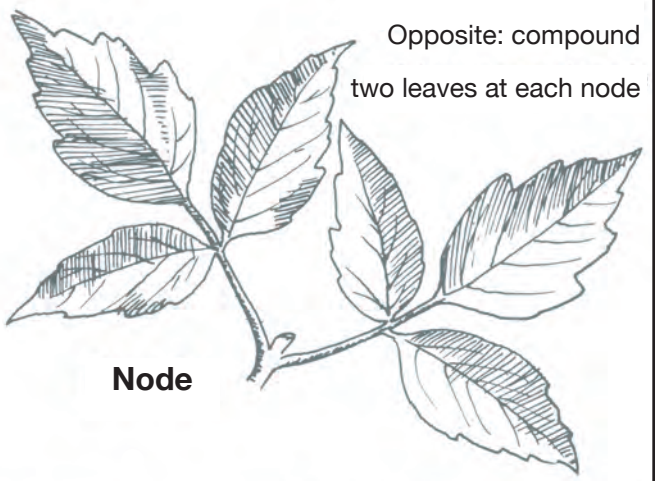
Alternate: simple

– a single leaf at each node



Alternate: compound

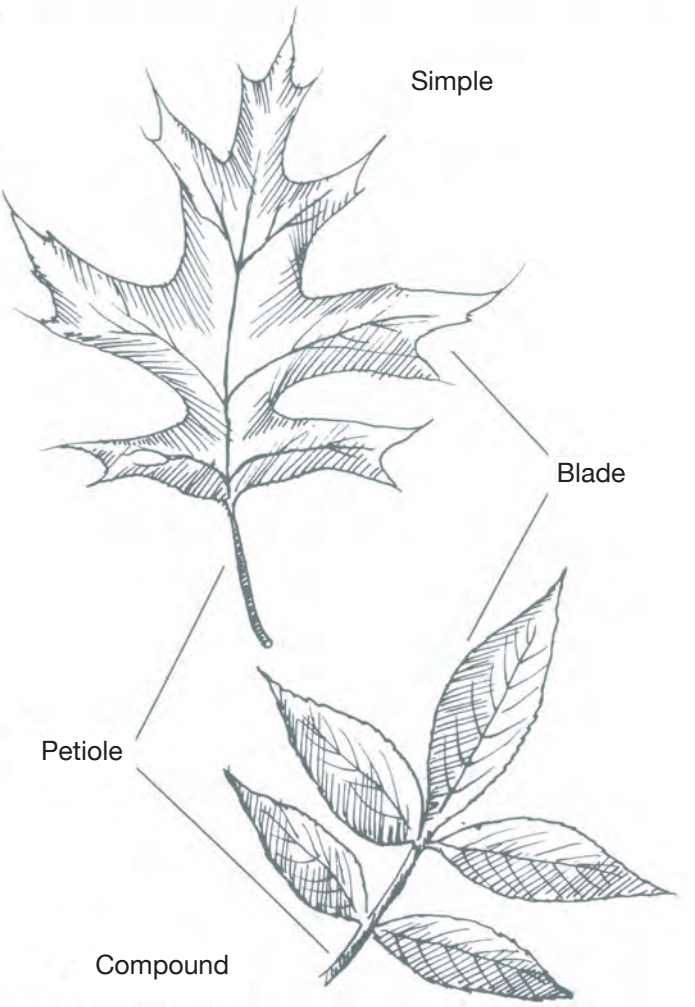
– a single leaf at each node



Opposite: compound

two leaves at each node

The leaves of hardwoods or broadleaves have two parts—the **blade** and the **petiole** (leaf stalk).



Leaves have two parts: blade and leaf stalk, or “petiole.”

Margin Entire

Margin Toothed

Margin Lobed

Remember these terms. They will help you understand the descriptions of the leaves of the broadleaf trees in this publication.

- evergreen vs. deciduous
- simple vs. compound
- alternate vs. opposite
- margins: entire
  toothed
  lobed

USES OF WOOD

Use of wood is another item that is not important in identification but may be the most important contact you have with the various species of Mississippi trees. The words you are now reading may very well be printed on the fibers of loblolly pine, the chair or desk in which you are sitting may contain white oak or sweet gum, and the pencil in your pocket may very well be made of eastern red cedar. Hundreds of thousands of products are made from various kinds of wood and wood derivatives: charcoal, chewing gum, paper, paint, firewood, furniture, mop handles, maple syrup, buildings, baseball bats, turpentine, toilet tissue, plastics, and lumber are all made from wood.

OCCURRENCE

All species of trees do not occur in all areas of the country or state. In fact, one species of tree may be plentiful in a small stream bottom near your home but may not be found on the ridgetop a few feet away. This is important to know when you try to identify trees in your area. A few species common in north Mississippi are very scarce in south Mississippi and vice versa. Some species are common on moist sites but absent on dry sites. Some species are primarily upland species, while others are common to the bottomlands. Other species are found all over the state, but the growth and development of individual trees of species may vary, depending on location.

TREE TYPES: CONIFERS AND BROADLEAVES

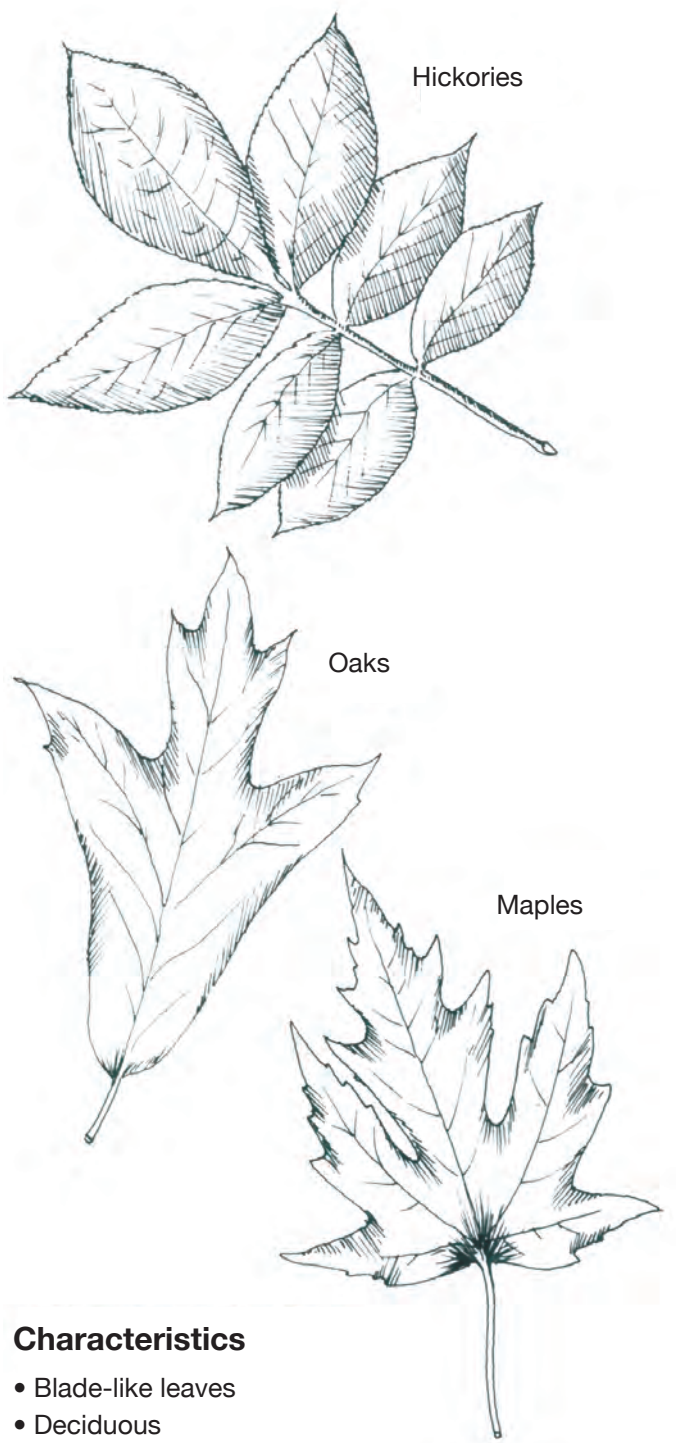
As you begin to identify some of Mississippi's important trees, you will see there are two distinct kinds: conifers and broadleaves. Conifers have needle-like or scale-like leaves. They include the southern pines, redcedar, and baldcypress.

The fruits of the conifers are called cones. The pinecone is the most commonly recognized, but baldcypress and redcedar also produce cones. The wood of most conifers or evergreens is softer than that of broadleaves. Thus, in the lumber industry conifers are called softwoods. Conifers are the most common evergreen trees in Mississippi. The only native conifer that drops its needles in the fall is the baldcypress. It is called a deciduous conifer.

Broadleaf trees have broader leaves. These include ashes, maples, hickories, oaks, elms, and gums. They have flowers that produce fruit. Most, but not all, broadleaves produce wood that is hard. Thus, broadleaf trees are collectively known as hardwoods.

BROADLEAVES

Examples

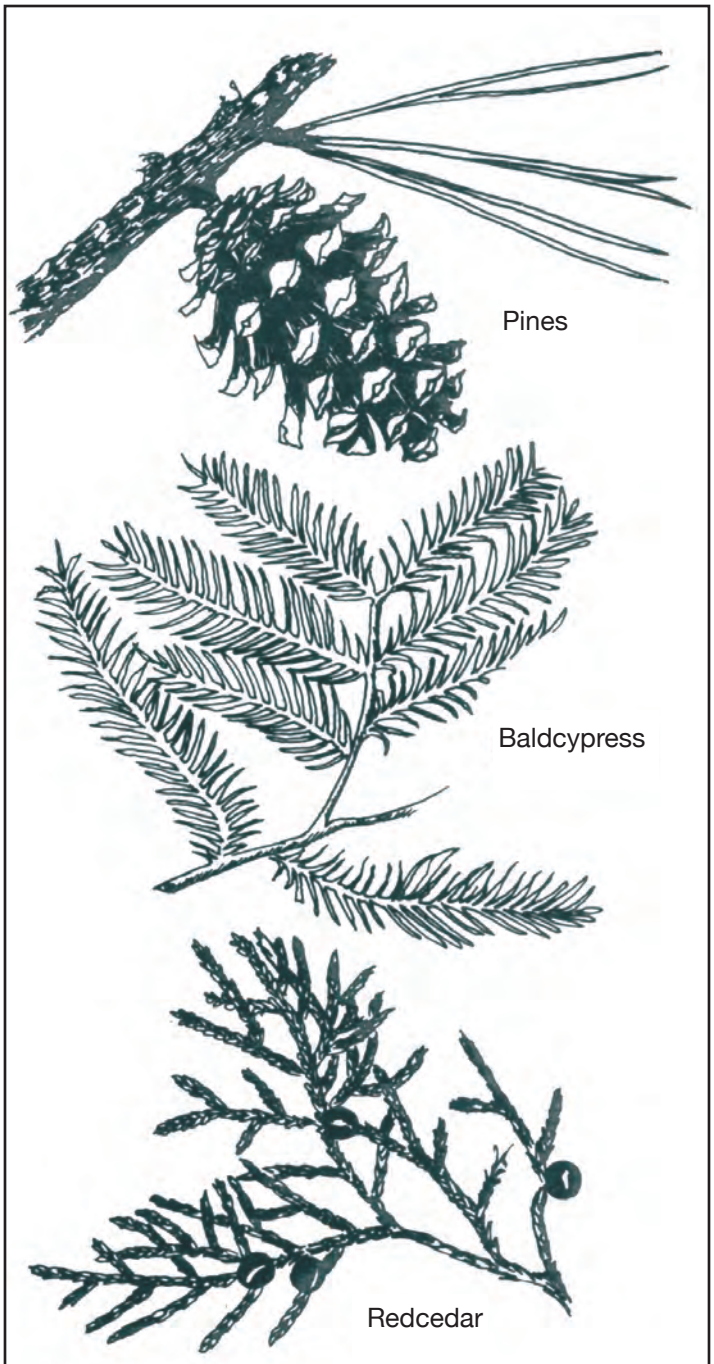


Characteristics

- Blade-like leaves
- Deciduous
  - except: Southern Magnolia
    American Holly
    Live Oak
- Called "hardwood" in lumber industry
- Many different types of fruit

CONIFERS

Examples



Characteristics

- Needle-like leaves
- Evergreen
  except: Baldcypress
- Called “softwood” in lumber industry
- Cone-bearing

LONGLEAF PINE

Pinus palustris

Other common names are hard pine, heart pine, longstraw pine, Georgia pine, and southern yellow pine. Longleaf pine is appropriately named because of the long needles that hang in three dense clusters at the end of the branches and droop down in a manner characteristic of the species. The needles are 10 to 15 inches long and are fairly flexible and slender. The needles fall off at the end of the second year.

Twigs are rather thick, stout, scaly, and orange-brown. The buds are long, rather large, and covered in silvery-white scales characteristic of the longleaf. The bark is a light orange-brown and separates into large, flat scales. The bark is usually one-sixteenth to one-half of an inch thick at the trunk of the tree.

Longleaf often grows 80 to 120 feet high and 2 to 2½ feet in diameter. It has a slightly tapering, clear trunk with very few branches for two-thirds of the length of the tree. The tree trunks are very straight and sometimes referred to as “straight as shotgun barrels.” The limbs are gnarled and twisted, making for a fairly irregular crown. The crown is usually quite open, and the crown canopy does not provide a dense shade. It is sometimes said that you can get a sunburn standing in the shade of a longleaf pine.

Both male and female flowers are dark rose-purple. Male flowers appear in dense clusters. The female flowers appear in pairs or clusters just before the point on the stem when a new growth appears. Flowers appear in early spring before the new needles.

The mature cones are 6 to 12 inches long. Because of their length, cones are sometimes slightly bent or curved.

Mature cones contain about 50 to 60 seeds. The seeds are about one-half inch long and larger than the seeds from any other pine. A wing, 1¾ inch long, on one end of the seed, helps spread the seed. This wing allows the seed to be wind-scattered. The seeds often sprout soon after falling to the ground.

A major value of longleaf pine as a species is that it grows and reproduces readily in heavy fire areas. Actually, long leaf probably owes its existence to fire in many areas along the coastal plain. It is very resistant to fire because the dense needles protect the terminal bud. Quail, turkeys, and fox squirrels readily eat the seed. Wild hogs feed on the bark of the roots and some of the tender taproots of the young seedlings and saplings.

The wood is heavier than that of other pines. For a yellow pine, the wood is very hard. It is strong, tough, coarse-grained, and durable. The heartwood is light red to orange; the sapwood is usually thin and very light, almost white. Longleaf pine wood is used for poles, bridges, fences, flooring, interior finishes, construction, lumber, sawtimber, and pulpwood. It is used extensively for naval stores, including items such as turpentine, tar, and resin.

Longleaf pine usually occurs in sandy soils that are low in organic matter and usually strongly acidic. It grows both on sandy ridges and on wetter sites in south Mississippi. It does not grow naturally in Mississippi. It is associated with scrub oaks on the drier sites and with slash pine and good hardwoods on some of the moister sites.

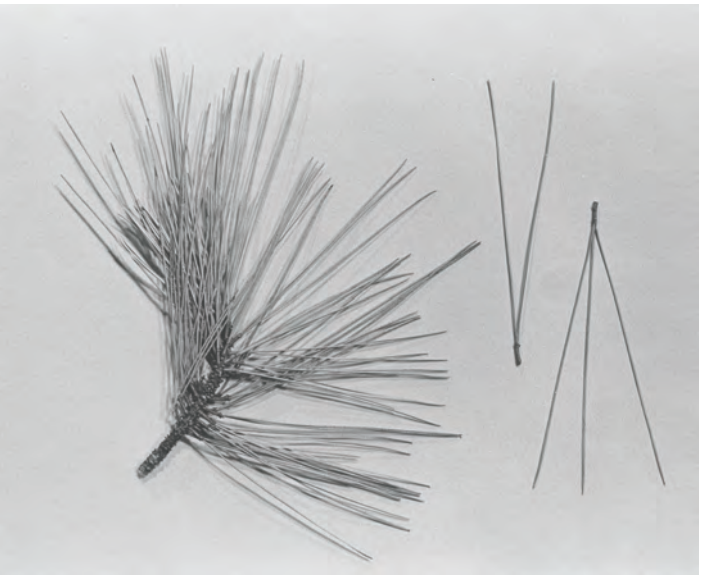
Longleaf is one of the most important trees in Mississippi's history. It provided most of the timber for the larger timber companies that developed Mississippi's forest industry around the turn of the 20th century. The large longleaf pines that were present then are now gone, but longleaf still provides much of the pulpwood in south Mississippi. With its resistance to fire, longleaf pine will continue to be an important timber resource for our state.

SLASH PINE

Pinus elliotii

Other common names are swamp pine, pitch pine, spruce pine, and meadow pine. The needles are rather stout, dark green, and 8 to 12 inches long. They are densely crowded on the branches in clusters of two and three, often on the same branch on the same tree. The needles tend to lie somewhat flatly to the branches instead of fanning out like longleaf needles.

Twigs are rather stout and orange at first, eventually becoming a darker color. The bark is about ¾ to 1½ inch thick



and grayish-brown to reddish-brown. It is rough and separates on the surface into large, thin scales.

Slash pine grows 80 to 100 feet high and 2 to 3 feet in diameter. It has fairly heavy branches, which branch horizontally from the main stem. The crown is usually rounded and much denser than the longleaf's. The trunk is fairly straight.

The flowers appear in January or February before the new leaves appear. The male, pollen-producing cones are purplish. The female flowers are pink. Slash pine cones are 3 to 6 inches long. They are leathery brown and have a glossy appearance as if they have been varnished. The seeds are triangular, about ¾ to 1¼ inch long. The wings on the seeds are ¾ to 1¼ inch long and about one-fourth inch wide. Seeds average 80 to 90 per cone. Three-fourths of the seeds fall around October.

Slash pine is a good species for areas that may not otherwise be productive. Slash pine is also valuable as a planted species and is used to occupy areas that were formerly occupied by longleaf stands. It is favored over longleaf in these reforested areas because of its faster growth in its early years of development, as well as for its ease of nursery production and planting. It also has some value to wildlife; quail, turkeys, and squirrels feed on the seeds.

The wood is heavy, quite hard, and very coarse-grained. The durable heartwood has a rich, orange color; the sapwood is very light. Slash pine wood is used extensively for pulpwood, some sawtimber, poles, piling, crossties, boxes, and crates. It is probably second to longleaf for use in naval stores production.

Slash pine occurs naturally in the wetter sites in south Mississippi. It grows on poorly drained flats along the coastal plain, around hummocks and swamps, and in other places

where the water table is within a few feet of the surface of the ground. It also grows on adjoining drier sites.

Stands of slash pine less than 10 feet in height are quite susceptible to fire. Slash pine is very intolerant of shade and must have at least a co-dominant position to produce successfully. Its growth rate is medium to good.

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LOBLOLLY PINE

Pinus taeda

Other common names are old field pine, yellow pine, bull pine, and shortleaf pine. The needles are 6 to 9 inches long and occur in clusters of three (occasionally two). The needles are a yellowish-green to gray-green and may be slightly twisted. The needles are slender and rather stiff and usually fall in their third season.

Twigs are stout, reddish-brown, and scaly. The buds are covered with reddish-brown scales. The bark on old trees is ¾ to 1½ inch thick. It is reddish-brown and divided into irregular furrows and oblong, scaly plates.

Loblolly grows to 80 to 100 feet tall with diameters of 2 feet and occasionally up to 4 or 5 feet. It has a fairly straight trunk, and the branches are relatively thick. Upper branches grow to form a rather compact, rounded crown.

The loblolly's flowers appear from March to April. The male flowers are crowded in short clusters and are yellow. The female flower grows laterally from the twig just below the end of the new shoot. The yellow female flowers may be solitary or clustered. A mature cone is 3 to 6 inches long and reddish-brown. The seeds are about one-fourth inch long and may have black blotches. An individual seed is about a half-inch long with a thin wing about three-fourths of an inch long. The seeds are usually spread in October. Two seeds are on each scale of the cone.

Loblolly has proven very valuable in soil and water conservation. It has been planted extensively on abandoned, eroded, gullied land in north Mississippi to stabilize the soil and prevent excessive runoff and flooding. Wild turkeys, squirrels, quail, and some songbirds eat loblolly seeds.

Loblolly wood is light brown, coarse-grained, and not very durable. It is not considered very high quality, but it is an excellent producer of wood fiber for the pulp and paper industry. The wood is used for lumber, railroad ties, piling, poles, plywood, and paper.

Loblolly occurs on a great variety of sites. It does well on all but the highest and wettest sites. It grows best on areas that hold moisture during the growing season. It is very adaptable. Although occurring throughout Mississippi, it is most common in the northern two-thirds of the state. It often grows in pure stands but also in mixtures with shortleaf pines and hardwoods such as sweetgum, oaks, and hickories.

Loblolly pine is the most commonly planted species in Mississippi and the southeastern United States. Nearly one billion loblolly pine seedlings are planted each year. It is often called old field pine because it seeds into open fields readily. It does not tolerate shade. After it reaches pulpwood size, it is not very susceptible to fire, so prescribed burnings are often used as a forest management tool in loblolly stands.

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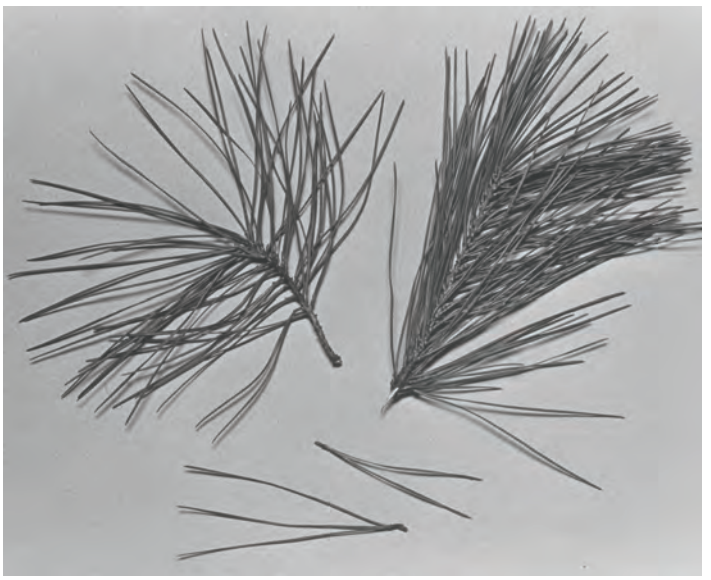

SHORTLEAF PINE

Pinus echinata

Other common names are southern pine, shortleaf yellow pine, spruce pine, Arkansas soft pine, southern yellow

pine, and old field pine. The needles, as the name implies, are short, about 2½ to 5 inches long. The slender, dark bluish-green needles appear usually in clusters of two, but clusters of two or three may appear on the same tree. They begin to fall at the end of their second year and continue to drop until their fifth year.

Twigs are a light or pale green at first and may be covered with a purplish, shiny, powdery coating. They later become a reddish-brown tinged with purple. Twig bark begins to become scaly about the third year. The bark is dark, almost black on the young trees, and reddish-brown on older trees. The bark separates into irregular, flat, scaly plates, with many small resin pockets between the layers.

The shortleaf pine may reach 80 to 100 feet in height and up to 2 to 4 feet in diameter. It has a long, straight trunk. Young shortleaf trees are usually rather scrubby looking. The branches of shortleaf form a rather loose, pyramid-shaped crown.

Shortleaf flowers appear from March to April. The male flowers are a pale purple and appear in short, dense clusters. The pale, rose-colored female flowers appear two to three to a cluster on relatively stout stems. The fruit of the shortleaf is a 1½ to 2½ inch long cone. The shortleaf cone is the smallest of the four important southern pines. The cones may remain on the tree for several years after the seeds have been shed. The cones appear solitary on short stalks. Each cone scale has two triangular-shaped seeds about one-fourth of an inch long with a half-inch long wing. The seeds are shed in October and November. Each cone yields about 25 to 35 seeds. A variety of birds eat the seeds.

The wood is hard, strong, fairly coarse-grained, and quite resinous. The heartwood is orange to yellowish-brown. The sapwood is nearly white and varies in thickness. Shortleaf wood resembles longleaf wood but is lighter. It is one of the more desirable of the yellow pines for commercial use. The quality of shortleaf timber is quite variable, though. The wood is used for building materials, pulpwood, sawtimber, excelsior, bridge timbers, door and window frames, and sometimes furniture. It is also valued for poles, pilings, and structural lumber.

Shortleaf commonly appears in the dry, hilly parts of Mississippi but grows naturally in many parts of the state. It invades old fields, heavily cut-over areas, and burned areas. It is found growing naturally in some of the good, old-growth, upland hardwood stands of north Mississippi. Shortleaf is very rare in bottomland sites.

Shortleaf is more disease- and fire-resistant than other pines. An unusual feature of young shortleaf, up to 8 to 10 years of age, is its ability to sprout after the main stem has been cut. Shortleaf is usually considered a slow grower, but this is partially caused by the low-quality sites it inhabits.

SPRUCE PINE

Pinus glabra

Other common names are cedar pine, Walter pine, bottom white pine, and lowland spruce pine. The slender, dark green, twisted needles are 1½ to 3 inches long and are in clusters of two. The needles drop at the end of their second season and in the spring of their third year.

Spruce pine bark is very distinctive. On young trees the bark is smooth and pale gray. On older stems it is about one-half to three-fourths of an inch thick and slightly and irregularly divided into flat ridges by shallow rows. The bark on older trees looks more like that of oak than pine.

Spruce pine is a medium-sized tree, reaching up to 80 to 90 feet in height and 1½ to 2½ feet in diameter. It may have a fairly straight trunk that will be free of branches for about half its total height.

The male flowers are yellow and appear in short, crowded clusters. The female flowers appear on raised stalks. The cones are oblong and are about 1 to 2½ inches long. They are shiny brown and appear either singly or in clusters of two or three. Cones often remain on the tree for several years and usually turn gray from weathering. In certain areas of its range, spruce pine may be the only pine in the forest. Therefore, the seeds may provide some food for certain species of birds when such foods are critically needed.

The wood is soft, light, not very strong, rather brittle, and close-grained. The heartwood is light brown; the sapwood is light. Spruce pine wood is used for lumber and pulpwood. It is used occasionally for fuel and infrequently for poles.

Spruce pine usually occurs in extreme bottoms and moist or swampy areas in southern Mississippi. An occa-

sional tree can be found scattered throughout areas where there are other pines and hardwoods. Spruce pine is rarely found in abundance.

Spruce pine has a fairly good growth rate. By pine standards, it is quite tolerant of shade, the most tolerant of all southern pines. Insects and disease don't usually threaten spruce pine.

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EASTERN REDCEDAR

Juniperus virginiana

Other common names are redcedar, red juniper, cedar, juniper bush, and savin. This tree actually has two kinds of leaves. The first is the scale-like leaf, the one most commonly seen. These are the leaves produced on all cedars after a certain age. Awl-shaped leaves appear on young trees and on the more vigorous new growth of some older trees. The scale-like leaves are smaller, about one-sixteenth of an inch long, and appear opposite each other in four rows along the stem, clasping the stem very closely and causing the small stem to appear to be square. The awl-shaped, larger leaves are about one-half to three-fourths of an inch long. They are also opposite each other but do not overlap.

Twigs are very slender and usually appear to have four sides. They are green until the leaves fall; then they are round and reddish-brown. Eastern redcedar's bark is reddish-brown, thin, and somewhat grooved on old and mature trees. The bark peels off in long, fibrous strips. Some older trees have a rather shaggy appearance. Redcedar can appear as a tall tree or a shrub and any possible size in between. The tree commonly reaches 40 to 50 feet in height and has a trunk diameter of 1 to 2 feet. It commonly appears in old fields and along fencerows as a small shrub with a pyramidal-shaped crown and limbs beginning near the ground.

The flowers appear at the end of very small twigs. There are male redcedar trees and female redcedar trees. The unfolding of the small cones causes the male trees to take on a golden color in February and March. The bluish-colored female cones are about one-sixteenth of an inch long and appear solitary on the end of the stems. The fruit is a pale or bluish-green cone, but it looks like a berry and is often called a berry or "cedar ball." It is about one-fourth to one-third of an inch long and becomes quite slick and smooth in the autumn, with a rather firm skin and thin, sweet flesh. There may be one or two seeds per cone. The seeds are about one-sixteenth to one-eighth of an inch long and wingless.

Redcedar improves the wildlife habitat of many poor sites where it is the only tree existing. The cones are a favorite winter food source for birds. Redcedar also provides valuable roosting areas for many species of birds, such as the mourning dove.

The wood is moderately heavy, hard, high in shock resistance, fine-textured, and even-grained. It has a distinctive taste and odor. It works easily with tools, shrinks very little in drying, and is very resistant to decay. The heartwood is red and hard. The white sapwood is light and soft. The heartwood contains certain oils that have moth-repellent qualities. Redcedar wood is used for pencils, cedar chests, linen closets, wardrobes, cabinets, interior finish, fence posts, furniture, rustic work, pails, tubs, and miscellaneous carvings and ornaments.

Adapted to a wide variety of soils, redcedar occurs on abandoned fields and rocky areas and prefers mildly alkaline limestone soils. Its best development is on some of the upper slopes and fairly rough terrain. It is very widely scattered and is not found anywhere in plentiful quantities of commercial size.

The soft, light sapwood is highly prized by wood carvers and whittlers. The moth-repellent qualities are well known to everyone. Cedar is fairly tolerant of shade, but its growth rate is poor. It is very susceptible to fire, and it is the host species for the cedar apple rust fungus.

BALDCYPRESS

Taxodium distichum

Other common names are swamp-cypress, red-cypress, yellow-cypress, and white-cypress. Baldcypress is the only southern conifer that loses its leaves in autumn. Actually, the small twigs, which support the leaves, fall with the leaves attached. The small, needle-like leaves are one-half to three-

fourths of an inch long and are arranged in a feather-like fashion along either side of the twigs.

Twigs are a light green at first, then become a light reddish-brown and eventually a dark brown. The bark is quite fibrous and ranges from a light gray to a brownish-red. On older trees it develops into flat ridges with shallow furrows.

Baldcypress becomes quite a large tree, up to 100 to 150 feet high and 3 to 6 feet or more in diameter. The tree is easy to identify by its swollen trunk. The trunk flares out at the base into a deeply lobed, buttress-like structure, and the wide spreading roots send up some woody-like growths called cypress knees.

The male flowers appear in slender, purple, hanging clusters, 4 to 5 inches long. The female flowers are scattered near the ends of the branches of the preceding year and appear solitary or in pairs. The fruits are round cones, which do not look like cones as we normally think of them. They occur singly or in clusters of two or three and are about 1 inch in diameter. The seeds with the wings are nearly one-fourth of an inch long and one-eighth of an inch wide. Gray squirrels and wood ducks make moderate use of the seeds.

Baldcypress is highly prized for its durability and working qualities. The wood is light and soft but not strong. It has rather dark, yellowish-brown heartwood and light sapwood. The heartwood is very durable, decay-resistant, and naturally resistant to termites. Baldcypress has a long life span that allows it to reach a very large size. Huge old baldcypress "snags" are somewhat of a symbol of the swamps of the Deep South. When hollow, these snags are valuable nesting sites for wood ducks, squirrels, and other small mammals.

Baldcypress wood is highly prized for outside trim. It has a natural beauty but also is in an especially select group of woods that hold paint longer and offer maximum resistance to the elements. The wood is used for various types of construction, for fences, and where durability and decay-resistance are desired.

Baldcypress was once one of the most plentiful trees along drainages in Mississippi and the Southeast. It occurs normally along drainages and swamps that are flooded several months out of the year. However, it does not require standing water as many people believe. It grows quite well in well-drained soil but is normally found in wet areas because it is highly susceptible to fire and has a slow growth rate.

Baldcypress has a generally poor growth rate, but growth is average when the trees are young and there is not much competition. Be careful if you buy cypress lumber to use in building items where you need durability. The sapwood and second growth cypress lumber does not have the durability of the old growth and the heartwood-type lumber.

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BLACK WILLOW

Salix nigra

Other common names are Gooding willow and swamp willow. The leaves are 3 to 6 inches long and one-half to three-fourths of an inch wide. The tips of the leaves are narrowly tapered, and the outer edges are firmly saw-toothed. The leaves are smooth on both the upper and lower surfaces and are alternate, simple, and deciduous.

The twigs are slightly hairy when they first appear but soon become smooth and reddish-brown to orange. They are rather slender and droopy and are easily broken at the joints. The bark is dark brown to black on older trees with

deep furrows and shaggy scales. The bark is 1 to 1¼ inch thick.

On the very best sites in the Mississippi Valley, the tree reaches up to 140 feet in height and 4 feet in diameter. Usually, though, the tree is only about 30 to 40 feet high, often with several stems growing in a cluster. It can hardly be called a tree in many cases as we see it growing along small streams and the banks of lakes. The trunks of the trees are often twisted, curved, or leaning. The taller and larger willow trees on good sites have a fairly long trunk that is often free of branches for at least half of the total height of the tree.

The male and female flowers are on separate trees and bloom in February and March. The flowers appear before the leaves. Both male and female flowers are yellow. The fruit is a reddish-brown capsule about one-eighth of an inch long. It contains a large number of small seeds that have a long, silky down or tufts of hair. These seeds can be seen blowing in the wind and drifting down to float on the surface of lakes and streams. Willow is sometimes planted for stream bank and levee stabilization.

The wood is moderately light, moderately soft, and very weak. It doesn't hold nails well, but it is shock resistant and does not easily split while nailing. It handles well with tools, glues easily, and takes and holds stains and finishes well. It shrinks quite a bit during drying and is not durable. The heartwood is a pale reddish-brown; the sapwood is nearly white and is also fine-grained. One distinctive use of willow wood is for making artificial limbs. It is also used for excelsior, boxes, crates, cheap furniture, woodenware, and novelties. It is used commonly with cottonwood lumber, and the two are often mixed. It is also used for paper pulp and is mixed with cottonwood to make a fine quality paper. Native Americans used willow extracts as a pain reliever. The bark contains salicylic acid, which is the active ingredient in aspirin.

Black willow usually occurs on wet sites along streams, shores of lakes, and flat and swampy areas. It grows on most soils, but it has a shallow, wide-spreading root system and needs an abundant and continuous supply of water during the growing season. The best sites for black willow are in the Mississippi Valley. It is a pioneer species occurring on new soil produced as the river deposits loads of silt on sandbars.

About 70 species of willows are native to North America, but only black willow is important for lumber. The growth rate of willow is excellent. It is very susceptible to drought and fire. It reproduces itself profusely on bare, wet, mineral soils. It also sprouts vigorously but cannot compete very well with ground cover. It does not tolerate shade. Black willows and cottonwood are the most shade intolerant of all American sawtimber species.

EASTERN COTTONWOOD

Populus deltoides

Other common names are eastern poplar cottonwood, southern cottonwood, Carolina poplar, and necklace poplar. The leaves are alternate, simple, and deciduous. They are heart-shaped or triangular, light green and smooth on the upper surface, and somewhat paler on the lower surface. They are about 3 to 5 inches long and the same width. Leaf margins are coarsely toothed. The petioles are long, flat, and smooth.

Twigs are stout and yellow tinged with green or brown. The ash-gray bark is roughened by long, deep furrows that are parallel and run the length of the tree. The furrows are often interconnected. On young trunks, the bark is a smooth greenish-yellow.

Cottonwood is one of the tallest trees of the Eastern forests, reaching heights close to 200 feet and diameters of up to 4 to 6 feet. The tree trunk tapers but continues to hold its shape well up into the crown of the tree. On young trees, the crown is usually pyramid-shaped but becomes more rounded on older trees. In an open situation, the crown is quite rounded and usually as broad as it is long. In a forest situation, the tree will have a clear trunk for half to two-thirds of the total height and a small crown.

Male and female flowers appear before the leaves on separate trees. The male flowers are reddish, rope-like clusters, 3 to 4 inches long that appear in the spring. The female flowers occur in drooping clusters, 2½ to 3¼ inches long. The female flower develops into drooping clusters of bead-like capsules. These capsules split open to shed the seeds, which are attached to white, cotton-like fuzz. This fuzz helps the wind scatter the seeds.

Cottonwood sprouts and foliage are preferred browse for white-tailed deer. Deer like cottonwood so much that sometimes they can become a hindrance to the young seedlings in cottonwood plantations. Rabbits also eat the bark from young seedlings. Cottonwood is very common and grows naturally along streams. It gives some erosion control along streams and drainages.

The wood is light, soft, weak, and fine-grained. It warps fairly easily. The heartwood is a dark brown or gray; the sapwood is white and quite thick. Cottonwood shrinks a lot during drying. Careful seasoning is required to avoid warping. Cottonwood does not split easily but is difficult to work with tools without producing chipped or fuzzy grain. It holds paint well. Cottonwood has an especially long fiber that makes it tough and strong for its weight. The wood's main use is for beverage cases and other containers and crates. The lightness of its color allows clear, readable printing even down to very small letters, and even though it is lightweight, it has strength and durability. This all adds up to high value for shipping purposes. It is also used for interior parts of furniture, some lumber, and veneer core stock in furniture manufacturing. It is one of the few hardwood species planted and grown specifically for pulpwood. High grade magazine and book paper is made from cottonwood.

Cottonwood is widely distributed but usually occurs on fairly recently deposited soil along major streams. It also occurs on recently abandoned fields, rights-of-way, and burned-over areas. Upland sites include coves, stream beds, ditch banks, and wet pasture. Cottonwood does not develop well if it is more than 15 to 50 feet above the average level of the streams in the area.

Cottonwood is the fastest growing commercial forest tree in North America. Diameters of 5 inches and heights of 30 feet have been attained in two growing seasons on good sites in the Mississippi Delta. Cottonwood does not like shade. It is very susceptible to decay and death after fires and on unfavorable sites. It is susceptible to drought, and if weakened in any way, it is susceptible to insect attack.

Cottonwood trees are highly valued as ornamentals because of their fast growth. But you must be careful to select the male tree because sometimes the white cottony seeds of the female tree drift and blow against screens and onto houses. Also, be careful as to where you plant cottonwood. It has a fairly shallow but strong root system. The roots have been known to buckle sidewalks and to clog storm sewers.

You can reproduce cottonwood from cuttings. A small stick cut from a live cottonwood tree, if placed in the ground at a depth of 12 inches with 4 inches above the ground, takes root and develops as a new tree.

MOCKERNUT HICKORY

Carya tomentosa

Other common names are white hickory, whiteheart hickory, bullnut, hognut, and mockernut. The leaves are alternate, compound, deciduous, and 8 to 16 inches long with five to seven leaflets. Each leaflet is 5 to 8 inches long and 3 to 5 inches wide. The leaflets are usually broadest above the middle, are sharp pointed at the tip, and have toothed margins. The leaflets are also quite woolly, especially on the undersides. The lower pairs of leaflets gradually get smaller and are quite smaller than the upper pair. The leaf stalk is also woolly, with pale, orange-brown, fine hairs.

Twigs are usually very stout, hairy, and reddish-brown at first. Then they turn to gray the second season. The buds are about ½ to 1 inch long, yellowish, and hairy or woolly. Mockernut has the largest terminal buds of any of the hickories, usually one-half inch or more long. The bark is dark or light gray and about one-half to three-fourths of an inch thick. It is not shaggy but is roughened by irregular furrows that separate into broad, flat ridges.

Mockernut is a medium-sized tree that reaches 50 to 80 feet in height and 1 to 2 feet in diameter. It has a broad, rounded crown and stout branches. The branches extend about halfway down the trunk. In the open it has a broad, open crown and usually is rather ragged. Growing in a forest, the crown is narrow and oblong.

Flowers appear when the leaves are about half developed. Male and female flowers both appear on the same tree. The male flowers appear in slender, flexible, drooping clusters. The clusters are 4 to 5 inches long and appear in groups of three on the same stalk. The female flowers are borne in groups of two to five on one erect stalk. The male

flowers are yellowish-green and red; female flowers are a dark red. The fruit appears either solitary or paired. It is 1½ to 2 inches in diameter with a thick husk. The husk splits nearly to the base of the fruit, yielding a nut with four ridges and a thick, hard shell. The meat of the nut has a slightly sweet flavor. The fruit is a dark reddish-brown; the nut is a pale reddish-brown. Mockernut is a preferred hard mast food for squirrels. Squirrels usually cut the nuts while the nuts are still green. Hickories usually produce more fruit when they are older than 40 years.

The wood is strong, hard, heavy, tough, and elastic. No wood in the world compares to hickory for strength, toughness, and elasticity. Despite these properties, it is still susceptible to decay when used in contact with the ground. If kept dry, it lasts indefinitely. The heartwood is dark brown; the sapwood is nearly white and usually quite thick.

Mockernut hickory wood is used for agricultural implements, tool handles, ladder rungs, furniture, skis, and other sporting equipment. Hickory is highly valued for snow skis and is exported to Europe for that purpose. The tool handle industry led all other industries in use of hickory in years past.

Mockernut is fairly abundant in mixed hardwood forests on drier upland slopes. It is one of the most commonly occurring hickories in Mississippi, except in the Delta region. It is more common in the pine-oak-hickory areas of north Mississippi and fairly uncommon in the longleaf pine region. A national champion mockernut hickory lives in Humphreys County.

Squirrels, by scattering the nuts, are probably the biggest factor in natural reproduction of the mockernut and other hickories. Mockernut is a fairly slow-growing tree. It is moderately intolerant to shade and very susceptible to fire.

SHAGBARK HICKORY

Carya ovata

Other common names are Carolina hickory, scalybark, shell bark, upland hickory, and shagbark. The leaves are alternate, deciduous, and compound. A dark yellow-green, they are smooth on the upper surface. They are paler on the lower surface and may be smooth or slightly hairy on the underside. The leaves are 8 to 14 inches long and have five or seven leaflets. The leaflets are 5 to 7 inches long and 2 to 3 inches wide. The margins of the leaflets are finely toothed.

Twigs are fairly stout and usually covered with fine, soft hair. As twigs mature, they become dark reddish-brown and finally gray. The terminal bud on the twigs is one-half to three-fourths of an inch long, with three to four dark brown, loose-fitting scales. The bark is shaggy on

old trees. It is light gray, ¾ to 1 inch thick, and separates into rough strips or plates that are loose at both ends.

Shagbark usually reaches a moderately large size of 60 to 90 feet tall with a diameter of 2 to 3 feet. It sometimes reaches 120 feet or more. In the open, the trunk forks into stout, upward-sloping limbs, and the crown is fairly irregular and open. In the forest, the tree is often free of limbs for more than half its height and has a narrow crown.

The flowers appear when the leaves are about half developed. Male and female flowers appear on the same tree. Male flowers appear in slender, light green clusters up to 4 inches long. The female flowers have a rusty, woolly appearance and are in clusters of two to three. The fruit is 1 to 1½ inch in diameter.

The husk separates along four channels to yield a light-colored nut that has a thin shell and a sweet kernel. Shagbark is usually rather dependable in producing large crops of nuts every year, and it is not unusual to pick up 2 to 3 bushels of nuts from under a single large tree. Some large shagbarks have been reported to yield 15 to 18 bushels.

Squirrels eat shagbark nuts from the time the fruits approach maturity and into the next spring, when they are picked up on the forest floor. Humans also eat the nuts, which are the most common of the hickory nuts.

The wood is strong, heavy, hard, tough, and elastic. It has close, straight grains. The sapwood is light, and the heartwood is a darker brown. Young trees, which we usually find in the second growth stands, usually contain more sapwood than heartwood. Shagbark is one of the most valuable hickories and is used for tool handles, wagons, wheels, fuel, and for smoking meat. The furniture industry has accepted it widely.

Shagbark prefers a deep, moist soil along streams and on moist hillsides. Shagbark occurs throughout most of the

eastern hardwood forests on many kinds of sites along with many other species. It may appear in bottomlands along with white oak and sycamore and in the upland areas with beech and red oak. It is moderately tolerant of shade and usually can renew itself in the hardwood forest. Although slow growing in comparison to other kinds of trees, it is probably one of the faster growing of the hickories. It is fairly susceptible to fire, but shagbark reproduces from sprouts after fires.

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PIGNUT HICKORY

Carya glabra

Other common names are oval pignut hickory, red hickory, redheart hickory, small-fruited hickory, pignut, and sweet pignut. The leaves are alternate, compound, deciduous, 8 to 12 inches long, and usually have five to seven leaflets. The leaflets are 4 to 6 inches long, 2 to 3 inches wide, and have finely toothed margins. They are a yellow-green and smooth on the upper surface, paler and smooth on the lower surface, and occasionally hairy along the midribs. The petiole is smooth and free of hair.

Twigs are rather slender and usually smooth. They are yellowish-green and later become brown as the tree matures. The bark is a dark gray with shallow, diamond-shaped furrows. The ridges are sometimes scaly at the surface and narrow. The bark is one-half to three-fourths of an inch thick.

Pignut reaches a modest size of 60 to 80 feet in height and 1 to 2 feet in diameter but occasionally will grow larger. The tree usually has a slender, slightly tapering trunk. The trunk is often free of limbs for half its height. In the forest, the crown is oblong and rather narrow with short, spreading branches. Grown in the open, it has a larger, rounded crown.

The flowers appear when the leaves are about half developed. Male and female flowers are on the same tree. The yellowish-green male flowers appear in clusters of three on a common stalk that is about 3 to 5 inches long. The female flowers appear on the new growth in clusters of two to five. The pignut's fruit varies in size and shape but is usually pear-shaped or rounded, 1 to 2 inches long, and reddish-brown. The enclosed nut is oblong or oval, fairly small, and has a thick, bony shell. The nut meat is usually sweet but sometimes bitter. Optimum fruit production occurs when a tree is more than 75 years old. As with all the other hickories, the nuts are a food source.

The wood is heavy, hard, very strong, tough, elastic, and close-grained. The heartwood is dark; the sapwood is light. The wood is used for fuel, tool handles, wagons, and agricultural implements. It is mixed with other hickories for other common hickory uses.

Pignut occurs on dry ridges and hillsides on well-drained, upland soils, but it is also commonly found on some moist sites. It is associated with many species of oaks and with pines. Pignut is most common in the hill section of Mississippi. It is considered a climax species throughout its range. It is fairly tolerant of shade, slow growing, and sprouts from stumps. It is highly susceptible to fire and is attacked by a variety of insects.

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PECAN

Carya illinoensis

Other common names for this species are sweet pecan and pecan hickory. The leaves are alternate, compound, and deciduous. Pecan differs from the other hickories by its

larger leaves. The leaves are 10 to 20 inches long with 9 to 17 leaflets. The leaflets are 4 to 8 inches long and 1 to 2 inches wide. They have sharp, pointed tips and toothed margins. The bases of the leaflets have unequal sides. The leaves are usually a yellowish-green on the upper surface and are usually smooth but may be a little hairy. On the undersides, they are paler and may be either smooth or finely hairy.

The twigs are tinged with red at first and coated with loosely matted hairs. Later they become smooth and slightly hairy and are marked with small orange spots called lenticels (pores). The terminal buds on the twigs are about one-half inch long, sharply pointed, and covered with clusters of bright yellow hairs. The bark is moderately thick and a light brown or grayish brown. It is about 1 to 1½ inch thick and divided by narrow furrows into irregular, flattened, scaly, interlacing ridges. These ridges are broken on the surface into thick scales.

The pecan is a fairly large tree, often 100 to 180 feet tall and up to 6 to 7 feet in diameter. In the forest, the stout, spreading branches form a narrow, symmetrical crown with an inverse pyramid shape. You see pecan growing most often in an open area with a very short trunk and spreading branches forming a rounded crown.

Flowers of both sexes are in separate clusters on the same tree. The light yellow-green male flowers appear in slender clusters 3 to 5 inches long. The yellowish female flowers may have a few or many flowers in an oblong cluster. The fruit occur in clusters of 3 to 11. They are 1 to 2½ inches long and ½ to 1 inch broad. The husk is fairly thin-skinned. The husk separates along four lines to expose the reddish-brown, thin-shelled nut we know as the pecan. The nut is usually 1 to 1½ inch long. It is smooth with a possibly dark, mottled, and reddish-brown to black coloring. The nut meat is very sweet. Squirrels, turkeys, and other wildlife really like it. It is more valuable than the other hickories because the thin shell is easier to break open.

The wood is heavy, brittle, and fairly coarse grained but not as strong as the hickories. The heartwood is light brown tinged with red; the sapwood is light. The wood is used mainly in the furniture industry, which is by far the largest market for pecan. Pecan lumber is also used for flooring in public buildings, dance floors, gymnasiums, roller skating rinks, industrial plants, and warehouses. A lot of pecan was once used in the automobile industry in making flooring and bracing on assembly lines. It is also used in railroad car decking, entertainment cabinets, folding camp cots, chairs, shipping containers, and various veneers.

Pecan does not occur naturally in the upland areas of Mississippi. It is largely restricted to the riverfronts on loamy soils, especially in the Mississippi River system. You find it most where it has been planted for nut production in orchards.

Pecan trees cut for wood are not the same trees that yield nuts. Only wild pecan trees are cut for their wood. The trees planted in orchards are usually selected hybrid trees. These come from nurseries. Thus, timber harvesting poses no threat to valuable nut-bearing trees and does not endanger our future supply of pecans.

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BLACK WALNUT

Juglans nigra

Other common names are eastern black walnut, American walnut, and gun wood. The leaves are alternate, compound, and deciduous. They are 12 to 24 inches long and have 15 to 23 leaflets. Each leaflet is 3 to 4 inches long and about 1 inch wide. The leaflets are finely toothed, smooth above, and hairy on the undersurface. Sometimes the terminal leaflet is absent.

The twigs are stout, somewhat hairy, orange-brown to light brown, and have a one-third inch long terminal bud. Mature bark is dark brown to grayish black, 2 to 3 inches thick, and divided by deep furrows into broad, rounded ridges that may be thick and scaly at the surface. The bark is light brown and scaly on young stems.

Black walnut trees can grow up to 125 feet tall with diameters of 4 to 5 feet, but they are more commonly 75 to 100 feet tall with diameters up to 2 to 3 feet. The trunk in the forest is straight and continuous into the crown. It gradually breaks up into stout limbs that form a narrow or broad, round-topped crown. Most black walnut trees we see now are old and located around old homes and churches. In an open area, the tree usually has a very short trunk, thick limbs, and a very broad, rounded crown.

Both male and female flowers are on the same tree and appear when the leaves are about half developed. The male flowers appear in 3- to 5-inch clusters. The male flowers are in long, drooping, rope-like clusters, and the inconspicuous female flowers appear at the tip of the current year's branchlets. The fruit is one or pairs. The nut is enclosed in a solid, green husk that does not split open, even after the nut is ripe. The nut itself is black with a very hard, thick, finely ridged shell that encloses a rich, oily kernel that is tasty and highly nutritious.

Fox squirrels and gray squirrels both like black walnuts. Squirrels are probably more valuable to the tree than the tree is to them. The tree's occurrence is very scattered and is probably not a mainstay to squirrels' diets, but the squirrels do bury some nuts and do not recover all of them. So, these animals are probably important in establishing new trees.

The beautiful, chocolate-brown heartwood of the black walnut is one of the most valuable in the world. The wood is very durable, easy to work with hand or machine tools, and easy to polish and glue. The wood can be handsomely finished and has outstanding grain and pattern. It is heavy, hard, strong, and somewhat coarse-grained. It is highly prized for gunstocks, furniture, interior finishing, cabinet work, veneers, and caskets. During World War II it was used for airplane propellers.

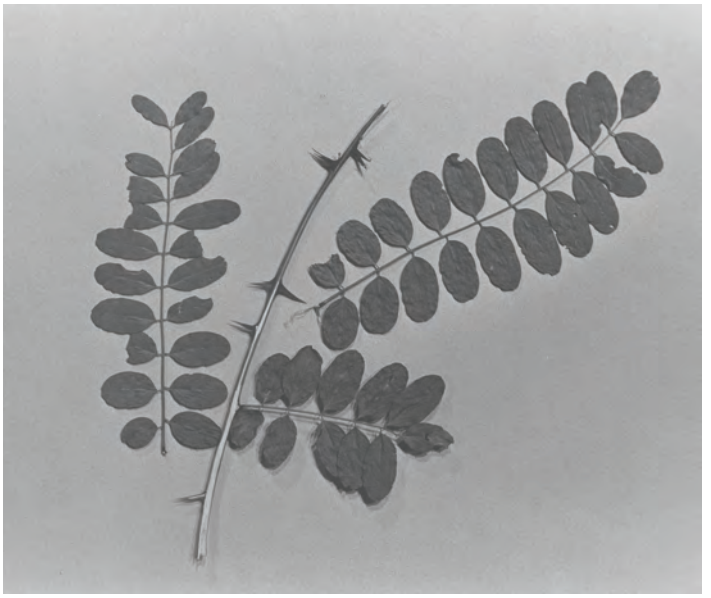
Black walnut is very sensitive to soils and requires a deep, well-drained, nearly neutral soil with a generous supply of moisture and nutrients. Trees occur in scattered fashion throughout most forested areas. Mississippi's black walnuts have been reduced to a few isolated individual trees. You usually find them in fertile bottomlands and on gentle slopes along with other hardwoods.

Planting black walnut plantations or orchards has become increasingly popular in recent years because of the value of both the wood and the nuts. The species has a medium to good growth rate. Because of the wood's value, black walnut has become subject to cases of theft in some areas of the midwest and central United States, where black walnut usually reaches its maximum size. Some individual trees reportedly have brought astronomical prices of $10,000 to $30,000. Such reports have drastically increased the interest in black walnut in the past few years. The black walnut's scattered distribution is probably a lifesaver for the species.

BLACK LOCUST

Robinia psuedoacacia

Other common names are yellow locust, post locust, green locust, false acacia, white locust, and locust. The leaves are alternate, deciduous, and compound. They are 8



to 11 inches long and have 7 to 19 leaflets. A leaflet is 1½ to 2 inches long, ½ to 1 inch wide, and has an abrupt point or notch at the tip. Leaflets are dark bluish-green and smooth on the upper surface and paler below.

The twigs may be slender or stout. They are somewhat brittle, grow in a zigzag pattern, and often have a pair of stipules at the base of the leaves. The bark is reddish-brown to dark brown, slightly cracked, and furrowed on young trees. The bark becomes deeply furrowed on old trees.

The black locust may grow 70 to 80 feet tall and have a diameter of 3 to 4 feet, but it is most commonly a smaller tree. Black locust has fairly heavy limbs and often has branches close to the ground. The crown is usually narrow, oblong, and open. In the forest, the trunk of the tree may be free of branches for three-fourths of its length.

The flowers appear when the leaves are nearly full-grown. The flowers are perfect (the male and female parts are within the same flowers). The whitish flowers are about 1 inch long, quite fragrant, and hang in drooping clusters on 4 to 5 inch long stems. The fruit is a dark brown, thin pod that is 2 to 4 inches long and one-half inch wide. Four to eight seeds are on each pod. The pod resembles a long, thin butterbean. Bobwhite quail, other game birds, and squirrels eat the seeds. Deer browse the foliage during the seedling stage. The wide-spreading root system sends up sprouts that aid in naturally restocking open and abused land. Rabbits sometimes feed on the bark of young sprouts, but cattle reportedly have died from eating young shoots.

The wood is very hard, heavy, strong, and durable. The heartwood is brown or greenish-yellow; the sapwood is pale yellow. The wood resists shock, holds nails well, and resists decay very well. It is generally difficult to work with hand

tools because of its high silica content. Locust wood is used for fence posts, poles, ties, mine timbers, and stakes. It is also used for boxes, crates, woodenware, and novelties. Sound, straight pieces are prized for use in pole-type barns.

Black locust occurs in small groups or singly in forest stands usually only as a dominant tree. On burned-over or cleared land, it often occurs as a pioneer species and often develops pure stands or locust thickets. The best growth of black locust in Mississippi is in the loess bluffs.

Black locust does not tolerate shade and is not found as an understory in dense woods. It has a medium to good growth rate, especially up to post size. It is a member of the legume family, enabling it to develop nitrogen-fixing nodules at its roots and, therefore, enriching the soil. It is planted for windbreaks, erosion control, and fencepost production.

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HONEYLOCUST

Gleditsia triacanthos

Other common names are common honeylocust, thorn tree, honey-shucks, sweet locust, thorny locust, and three-thorned acacia. The leaves are alternate and deciduous and may be either compound or doubly compound, often on the same branch. The leaves are often confused with black locust. A major difference is that a honey locust's leaflets are much smaller than those of the black locust. The numerous honeylocust leaflets are smooth and dark green on the upper surface and yellowish green on the lower surface. In the case of the doubly compound leaf, the leaflets are called "pinnae."

Twigs are rather stout, zigzag-shaped, smooth, and shiny. The area where the petiole joins the twig is usually enlarged. The twigs become greenish-red to brown and are armed with large thorns that are sometimes branched. On old trunks, the bark is grayish-brown to nearly black. It is sometimes smooth but usually roughened by a few furrows and thick, firm, broad ridges. Even the bark on tree trunks is sometimes covered with many of the large three-branched thorns. The bark is often divided into narrow, flat plates and appears cracked and scaly on older trees.

The tree will reach a height of 75 to 80 feet and up to 2 to 3 feet in diameter. But you usually find it as a smaller tree. When it grows in the open, the trunk is usually short with a rounded crown. In a forest, the trunk is tall, rather free of limbs, and has a broad, rounded crown with the lateral branches somewhat drooping.

The small, greenish or whitish flowers appear in narrow clusters 2 to 2½ inches long. The flowers appear in the late spring. The fruit is a legume and is a twisted, flat, reddish-brown pod that does not split open. It contains yellowish seed pulp and several seeds. The pod is 6 to 18 inches long.

Rabbits, squirrels, bobwhite quail, and white-tailed deer eat the fruit. The young plants are a preferred food of rabbits. Cattle and deer eat the seedpods, and bees sometimes feed on the flowers. The seeds are high in protein and phosphorus.

The wood is hard, heavy, strong, stiff, and very shock resistant. It is hard to work with tools and has a tendency to split. The wood is fairly durable under wet conditions. The narrow sapwood is creamy white, contrasting with the bright, reddish-brown heartwood. The sapwood is not as durable as the heartwood. Honeylocust wood has about the same weight as red oak. Honeylocust wood is used for some interior furniture parts, interior trim, pallets, containers, and skids. Additional uses for the wood would probably be worth investigating, but this is hampered by the wood's limited supply.

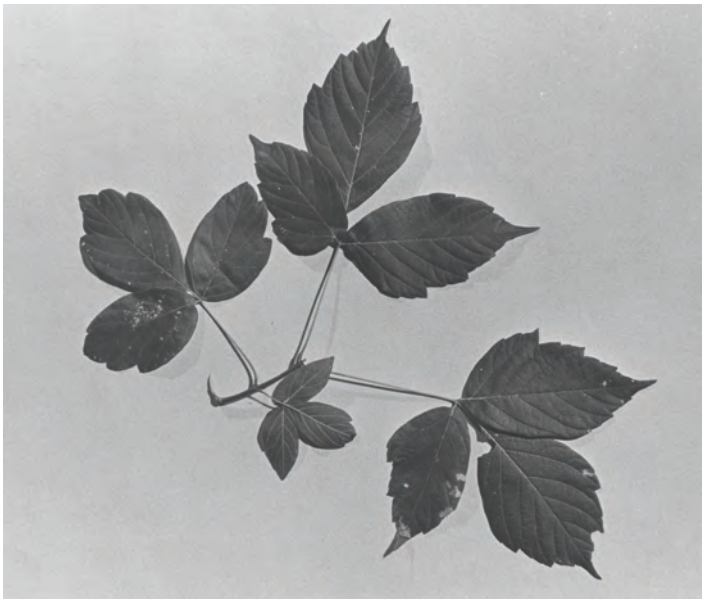
Honeylocust occurs on a wide variety of sites—from rich bottoms to mountain slopes to prairie soils. In Mississippi, you usually find commercial-sized honeylocust only in the Mississippi Valley area and adjacent bluffs.

Honeylocust is not especially susceptible to any insects or disease but is easily damaged by fire. It is relatively intolerant of shade. Honeylocust has been in cultivation for many years and is often planted as an ornamental, especially a thornless type, which has been developed by grafting.

BOXELDER

Acer negundo

Other common names are ash-leaf maple, box elder maple, threeleaf maple, and negundo maple. The leaves are compound, opposite, and deciduous. Each leaf has three to



five leaflets that are somewhat oval-shaped. Above the middle, each leaflet is coarsely toothed and sometimes three-lobed. Each leaflet is about 2 to 4 inches long and 2 to 3 inches wide. The leaf veins are quite prominent. The leaves are light green on the upper surface and paler on the lower surface.

Twigs are one good means of identification. The current year's twigs are very pale, bright green, and usually smooth and glossy. After their first year, the twigs become darker and eventually become brown. The bark is one-fourth to one-half inch thick and pale gray or light brown. The bark is deeply divided into broad, rounded ridges that separate on the surface into short, thick scales.

Boxelder is a rather small tree that may eventually grow 50 to 70 feet tall and have a diameter of 2 to 3 feet. But it is usually much smaller and usually does not reach commercial size.

The yellowish-green flowers appear with or before the leaves on the growth of the previous season. The male and female flowers are small and inconspicuous and appear on separate plants. The male flowers appear in long clusters about 1 to 2 inches long. The female flowers appear in narrow, drooping clusters. A seed has a double wing. These V-shaped, winged seeds are found in long, drooping clusters that remain on the tree through the winter. The clusters may be 6 to 8 inches long. The seeds are 1½ to 2 inches long. Without the wing, the seed or nutlet is about one-half inch long. The seeds are valuable as squirrel and wild turkey food.

Boxelder wood is light, soft, creamy yellow to a yellowish-gray, and not durable. The sapwood is soft; the heartwood is rather hard. Boxelder wood is rarely used in any quantity but occasionally is used for cheap furniture, woodenware, and cooperage.

Boxelder commonly occurs in the Delta bottomland soils and along streams and moist sites in other areas of the state. It is moderately tolerant of shade, and reproduction is very good on bare soil in small openings. It has an excellent growth rate, but it matures at an early age and small size. It is sometimes used for windbreaks but is usually considered a weed tree in a forest situation.

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WHITE ASH

Fraxinus americana

Other common names are ash, biltmore ash, cane ash, and smallseed white ash. The leaves are opposite, deciduous, and compound with five to nine (usually seven) leaflets. The leaflets are 3 to 5 inches long and 1½ to 3 inches wide. The leaflet margins may be smooth or slightly toothed. They are dark green and smooth on the upper surface and paler and slightly hairy on the lower surface.

The twigs, like the leaves, are opposite. Twigs are at first a dark green or brown tinged with red and covered with pale, loose hairs. They later become orange-colored or ashy gray to light brown during the first winter. The bark is an ashy gray to brown. It is deeply divided by narrow furrows into ridges that have a network-like pattern. The ridges often interlace, forming a somewhat diamond-shaped pattern.

Ash often grows 70 to 80 feet tall with a diameter of 1 to 2 feet. It develops a clear, straight trunk and narrow crown in the forest. Grown in the open, it branches closer to the ground and produces a broad shade tree. The usual height is 70 to 80 feet, but it may grow to 120 feet and have a diameter of 5 to 6 feet.

The male and female flowers occur on separate trees before the leaves. They are reddish and very small and inconspicuous. The purplish-red male flowers appear in dense clusters; the female flowers appear in more open clusters.

The fruit is a winged seed that grows in clusters. The clusters may be 6 to 8 inches long, and an individual seed and its wing are about 1 to 2 inches long. The wing extends slightly along the side of the seed. You find the loose, drooping seed clusters on the trees from April until frost. Various birds feed on the seeds, and deer browse the foliage of young plants.

White ash wood is hard, very strong, tough, elastic, and straight grained. It is a little lighter in weight than oak and has a pale brown heartwood and nearly white sapwood. White ash usually produces a greater amount of toughly textured stock than the other ashes. Ash wood is best known for its use in baseball bats, but it is also used for tool handles, furniture, interior trim, paneling, doors, and cabinets. It is also used for certain marine supplies, such as boats and oars. The ash has been recognized as the best wood for long tool handles, such as shovels, rakes, hoes, and pitchforks.

White ash commonly occurs on rich, moist but well-drained bottomland soils. It is our most widely distributed ash on upland sites. You usually find it on lower slopes and in ravines and coves in the uplands.

White ash is very susceptible to fire and grazing. Generally it doesn't like shade, but the seedlings are moderately tolerant of shade. It is a prolific reproducer by sprouts as well as by seed and has a medium growth rate. White ash is the most common of all the ashes and the most useful.

GREEN ASH

Fraxinus pennsylvanica

Other common names are red ash, Darlington ash, swamp ash, water ash, and cane ash. The leaves are opposite, compound, and deciduous. They have seven to nine leaflets, and the leaflet margins above the middle are toothed. Each leaflet is 3 to 4 inches long, 1 to 1½ inch wide, and gradually narrows into a long, slender point.

Twigs may have small, pale hairs that stay for a year or two. Ultimately, twigs become ashy gray or light brown tinged with red. The bark looks a lot like white ash. It is one-half to two-thirds of an inch thick and a brownish-gray possibly tinged with red. It is slightly furrowed, and the surface of the ridges separates into thin scales. The ridges also have a somewhat interlacing or net-like pattern as in white ash.

Green ash commonly grows 50 to 60 feet high and up to 1 to 1½ feet in diameter. The tree has stout, upright branches that form a compact, irregular-shaped crown in a

forest. Grown in the open, it has a good shade tree form. Green ash is usually a smaller tree than white ash.

The flowers appear before or with the leaves. The male and female flowers appear on separate trees. The male flowers are in dense, purplish-red dusters; female flowers are in greenish-red, open clusters. The flowers are inconspicuous and occur in March and April. The fruit is a winged seed 1 to 2 inches long.

The winged seeds hang in clusters as in white ash. An individual green ash seed makes up more than half the total length of the wing. The wing extends down past the middle of the seed. Birds feed on the seeds, and deer browse the foliage of young plants.

The wood is heavy, hard, and strong. The wood has light brown heartwood and light-colored sapwood. Its qualities are much like those of white ash. The major difference is that green ash does not usually produce as much strongly textured stock per tree as white ash. On wet sites, green ash commonly develops a swollen trunk, useful only for trim and interior furniture parts. The rest of the stem on these trees is still good quality.

Green ash has the same wood uses as white ash. It occurs principally on bottomland. It is widely distributed on new sediments and bottoms and is common on flats and shallow sloughs. You find it occasionally in wet coves and branch heads in the uplands, but generally it is not considered an upland species. Green ash is widely distributed in the bottoms because of its ability to develop under the most adverse conditions.

Green ash seedlings are moderately shade tolerant, but the tree itself does not like shade. It has a medium growth rate and is very susceptible to fire. Hot fires often kill even

the largest trees. It is moderately susceptible to drought, and grazing is often a serious problem. It is quick to establish in abandoned fields, providing needed cover in agricultural areas.

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RIVER BIRCH

Betula nigra

Other common names are red birch, black birch, and water birch. The leaves are alternate, simple, deciduous, 1½ to 3 inches long, and 1 to 2 inches wide. They are light yellow as they unfold and become deep green and shiny on the upper surface. They are paler and yellowish-green on the lower surface. The margins of the leaves are deeply double-toothed.

Twigs are slender, hairy, and greenish at first. They later become smooth and reddish-brown. The bark on young trees and branches is thin and a light reddish-brown or gray. As the trees grow older, the bark becomes very conspicuous, making it easy to identify the species. The bark separates freely into large, thin, papery scales, and as it peels from the trunk, various shades and colors ranging from white to pink to orange to dark brown may be evident. The bark at the base of very old trees may be an inch thick and deeply furrowed.

River birch may reach heights of 70 to 80 feet and diameters of 2 to 3 feet. But usually it is a smaller tree, and the trunk often divides 15 to 20 feet above the ground into two or three limbs with an irregular-shaped crown.

The flowers appear before the leaves. Both male and female flowers appear on the same tree. The male flowers form in the fall and remain through the winter in clusters of three. They increase from three-fourths of an inch long in the winter to 2 to 3 inches long the following spring. The female flowers develop in the spring from buds below the male flowers. The fruit is cone-like and grows erect on the twigs. It is 1 to 1½ inch long and consists of a three-lobed finely hairy scale with small, hairy, winged nuts. The nutlets are hairy at the tip and broader than the lateral wings. The fruit ripens in May or June.

The wood is light, medium hard, strong, and close grained. River birch has a light brown heartwood and pale sapwood. The species is not valuable commercially. The wood is sometimes used for cheap furniture, fruit and vegetable baskets, and woodenware. River birch usually occurs on new riverfronts and along the banks of minor streams. You usually find it on moist sites along the fringe of the forest.

River birch does not like shade and is very susceptible to fire and drought. It has a relatively short life span but has a good growth rate and is valuable as an ornamental. It is the only birch common to Mississippi and has some value for stabilizing soil along stream banks. A more significant value may be the river birch's natural beauty.

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EASTERN HOPHORNBEAM

Ostrya virginiana

Other common names are American hophornbeam, hophornbeam, ironwood, deerwood, leverwood, and hardlock. The leaves are alternate, simple, deciduous, 3 to 5 inches long, and 1½ to 2½ inches wide. The margin is sharply toothed. Leaves are dull yellow-green on the upper surface and paler below, with small tufts of hair in the joints of the veins.

Twigs are slender, hairy, and green at first and later become smooth and a lustrous dark brown. The bark is quite conspicuous and should aid in identifying the species. It is

grayish-brown, thin, and broken into narrow, oblong, plate-like scales that are loose at the ends and give a shredded appearance to the trunk.

The eastern hophornbeam is usually a small tree, about 20 to 40 feet high with a short trunk 8 to 15 inches in diameter. But it can reach 70 feet in height and a diameter of 2 feet. It usually has a broad, round-topped crown with widely spreading, drooping branches.

The flowers are red or reddish-brown and appear with the leaves from March to May. Both sexes appear on the same tree. The male flowers are formed the previous season in groups of three at the end of the twigs. They reach about 2 inches in length in the spring. The female flowers are small, solitary, and slender and grow erect on the twig. The fruit has a cone-like body 1½ to 2½ inches long and ⅔ to 1 inch wide. It is a dense cluster of nutlets enclosed in papery sacks that together form the hop-like fruit for which the tree is named. The fruits dry and fall apart after maturing, and wind scatters the seeds. Bobwhite quail, wild turkeys, and other birds eat the seeds. Squirrels, deer, and rabbits also feed on the fruits, buds, and flowers.

The wood is very heavy, very hard, strong, tough, and close-grained. The heartwood may be light brown, reddish-brown, or nearly white. The sapwood is thick and pale white. It is sometimes called ironwood because the wood is so hard. It is used for tool handles, posts, mallets, and sometimes for fuel.

Eastern hophornbeam usually occurs as a small understory tree that grows best in rich, moist woods along with other hardwoods. You sometimes find it in bottoms but usually under the crowned, larger trees on hardwood slopes.

It tolerates shade and grows slowly. Natural regeneration is mainly by seed. It is sometimes planted as an ornamental. Foresters today know the species as a harmful weed tree and not for its commercial value. It hampers the natural reproduction of more valuable hardwood seedlings after a timber harvest.

AMERICAN HORNBEAM

Carpinus caroliniana

Other common names are blue beech, musclewood, ironwood, and hornbeam. The leaves are alternate, simple, and deciduous. The margins are double-toothed, and the bases are rounded or wedge-shaped. They are 2 to 4 inches long and 1 to 1¾ inch wide. The upper surface is deep green and the underside paler. There may be tufts of white hair where the principal veins join the midrib on the underside of the leaf. The petiole is slender and hairy and about one-third of an inch long.

Twigs are at first silky, hairy, and green but become smooth and reddish to orange. The twigs are alternate, slender, and zigzagged in shape. The bark is thin, bluish-gray, and often has blotches of various colors of gray to brown or black.

American hornbeam is usually 10 to 30 feet tall with a diameter of 8 to 12 inches, but it may reach a height of 40 feet and a diameter of 2 feet. The crown is round-topped and wide-spreading, with long, slender, drooping branches. The short trunk is often twisted with knots, flutes, and bulges that give it the appearance of having muscles. For this reason it is sometimes called “musclewood.”

Flowers of both sexes have some red and green coloring and appear on the same tree in separate clusters. The male flower is approximately 1 inch long, with red scales at the base. The female flower is one-half inch long. The fruit is a long cluster of three-lobed, leaf-like bodies, each bearing a rough, light brown nutlet at the base. These clusters are 3 to 6 inches long. The nut itself is about one-third of an inch long. This tree may fruit from August to October. Gray squirrels feed on the fruit in bottomland hardwood forests. In some areas, wild turkeys and several other species of birds eat the fruit.

The wood is heavy, hard, and strong. It has light brown heartwood, thick sapwood, and conspicuous rays. The wood has very little commercial value but is sometimes used for handles because of its strength and hardness. It is also used for fuel.

American hornbeam usually occurs as a small, crooked, understory tree in rich woods and swamps. It is widely distributed along small streams and is usually absent from the Delta bottomlands. Because it is very tolerant of shade,

American hornbeam is a very prominent understory species. It grows slowly and is also a prolific reproducer, usually from seed. It is generally considered to be a damaging weed tree because it hampers reproduction of more valuable hardwood trees after a harvest.

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AMERICAN BEECH

Fagus grandifolia

Other common names are beech, gray beech, and beechnut. The leaves are simple, alternate, and deciduous. They are a pale yellowish-green, oblong, coarsely toothed, 3 to 6 inches long, and 1 to 3 inches wide. The teeth in the leaf margins are located only at the ends of the leaf veins. The veins are very evenly spaced and parallel to each other. This distinctive pattern is very conspicuous and aids in identifying the species.

Twigs are slender, dark yellow or gray at first, and somewhat hairy. They later become gray and smooth or zigzagged in shape. Slender, sharply pointed brown buds on the twigs look like tiny cigars. The bark is smooth, gray, and thin. This is the bark in which people most often choose to carve their initials.

American beech often reaches 60 to 80 feet high and 2 to 3 feet in diameter. But it may reach a height of 120 to 150 feet and a diameter of 4½ feet. In the open, the trunk is short and thick and breaks up quickly into numerous, spreading limbs and slender, drooping branches that form a broad, round-topped crown. In the forest, the trunk is often tall and slender, free of branches, with a narrower crown. The beech form usually is not as good as most other trees.

Both the male and female flowers are on the same tree. The flowers usually open when the leaves are about one-third developed. The male flowers occur in drooping clusters, with many flowers to a cluster. The female flowers occur in clusters of two on short, woolly stalks. Both the male and female flowers are very small and inconspicuous.

The fruit is called a beechnut. It is a prickly, thick-walled burr about three-fourths of an inch long produced from September to November. This burr contains two small, brown, triangular-shaped nuts. Many kinds of birds and mammals, including squirrels, bears, wild turkeys, deer, and occasionally quail, eat beechnuts. Large beech trees also provide good dens for squirrels.

The wood is hard, dense, and light. It is strong and tough but not durable. The heartwood is light red. The wood is heavier than most hardwoods, and you can easily recognize it by the conspicuous rays and tiny pores.

It is difficult to work with tools and is difficult to dry. The wood is used widely for handles for brushes. It is also used for flooring in gymnasiums, factories, and other commercial structures. The furniture industry uses it because of its excellent finishing characteristics and generally light color. It is also used for woodenware, novelties, toys, barrels, and clothespins. It is especially good for containers, since it does not have any taste or color. An unusual market for beech is for its chips in brewing and aging certain types of beer.

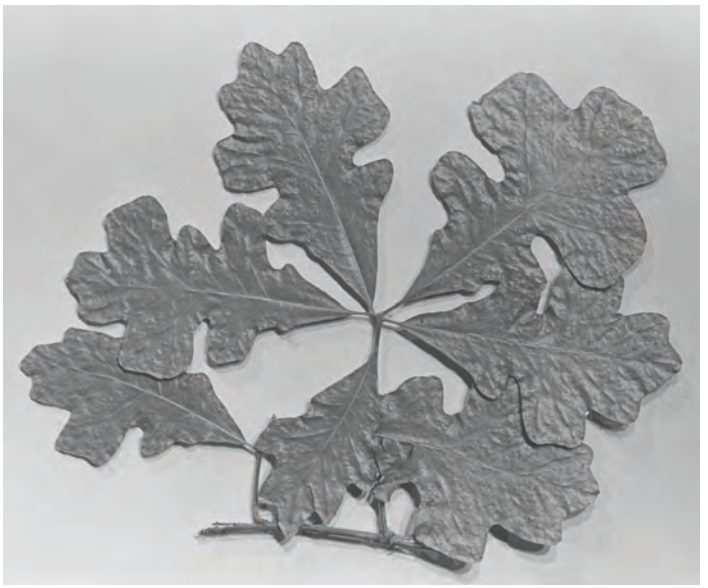
American beech occurs most commonly on rich, moist bottomlands, but you can also find it on rich upland soils in coves and along streams. American beech is the only member of its genus in the United States. It is very slow growing but is very tolerant of shade. Never found in great abundance, it is usually found as a scattered, solitary tree or in very small groups. The tree makes a good ornamental, but it is difficult to grow grass beneath its heavy foliage.

POST OAK

Quercus stellata

Other common names are iron oak, box white oak, white oak, cross oak, branch oak, rough oak, and box oak. The leaves are alternate, simple, deciduous, 4 to 5 inches long, and 3 to 4 inches wide. They often look like a thick cross. The upper leaf surfaces are dark green and hairy; the undersides are lighter and woolly.

At the end of the first growing season, twigs are covered with short, soft hairs. Twigs later become gray or dark brown to nearly black or bright brown tinged with orange. The buds are usually one-tenth of an inch long or less and are covered with chestnut-brown, softly hairy scales. The bark is ½ to 1



inch thick and light gray to dark gray or sometimes black. At first it is blocky or scaly. On older trees the bark becomes irregularly furrowed with plate-like scales.

The post oak is usually a medium-sized tree, 40 to 50 feet in height and 1 to 2 feet in diameter. But some specimens may reach 100 feet in height and 2 to 3 feet in diameter. The form of post oak is usually not very good. Sometimes in the forest, it has a long, clean trunk with a narrow crown. It is found frequently, however, growing in the open, where it usually has a short trunk and a large, broad, rounded crown with large, twisted branches. The stout, spreading branches usually do not have very dense foliage, and the crown is very open and irregular.

The male and female flowers are on the same tree. The flowers appear from March to May with the leaves. The fruit is an acorn that grows solitary, in pairs, or in clusters. The acorn is one-half to three-fourths of an inch long. The acorn cup is about half the length of the acorn. Acorns appear from September to November. Many kinds of birds and mammals eat post oak acorns, which are considered one of the most important food sources for wild turkeys in the eastern states.

Post oak wood is very heavy, hard, close-grained, and durable in contact with the soil. The heartwood may be a light or dark brown; the sapwood is a lighter color. Most of the high-grade post oak has now been cut. Most trees that are left are generally considered third rate. It is probably the poorest of the white oaks. Post oak is a good species for crossties and low-quality timbers. It was used extensively for fence posts in the past and thus earned its name. It is used for fuel, cooperage, and furniture.

Post oak is not a bottomland species but occurs occasionally on some of the older terrace sites and bottomlands. It occurs on the highest, driest sites in the upland and is sparse on good, upland, hardwood sites. The two national champion post oaks are in Lowndes and Lafayette counties. It is very drought-resistant and becomes a dominant species on dry sites. It has a very poor growth rate and is moderately intolerant of shade. It reproduces itself readily by seed or sprouts.

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WHITE OAK

Quercus alba

Other common names are forked-leaf white oak, stave oak, and ridge white oak. The leaves are alternate, simple, deciduous, 5 to 9 inches long, and 2 to 4 inches wide. The leaves are deeply lobed, with seven to nine lobes shaped like fingers that stick out from the leaf edges. The leaves are bright green on the upper surface and paler below. The leaf's midrib is yellow. The petiole is stout and up to 1 inch long.

Twigs are slender, reddish brown to gray, and usually smooth. The terminal buds are less than one-fourth inch long. The bark is light gray or nearly white. It is thick and divided into flat ridges or long, irregular, thin scales.

White oak reaches 80 to 150 feet in height and 3 to 5 feet in diameter. It has a tall, clear, straight trunk and a narrow crown in the forest. In the open, it has a shorter trunk and a broad, spreading crown.

The flowers appear when the leaves are about one-third developed. Both male and female flowers appear on the same tree from April to May. The yellowish male flowers are in small, hairy, drooping clusters 2½ to 3 inches long. The reddish female flowers are small and solitary and appear in the axils of the leaves of the current season on short stalks.

The fruit is a light chestnut brown acorn about three-fourths inch long. It matures in one season. The acorn cup encloses about one-fourth of the acorn. White oak acorns appear from September to October and are valuable to many species of birds and animals. Deer, turkeys, and squirrels are the major users of the acorns. The trees tend to have either very good or very poor acorn crops. Indians used to eat the acorns after boiling them.

White oak wood produces the best grade of oak timber. The wood is hard, heavy, strong, and durable. It has pale brown heartwood and lighter colored sapwood. Vessels in the wood are clogged with bubble-like outgrowths from adjacent cells. These "tyloses" prevent water from soaking through the wood. The wood is used for watertight barrels in wine and whiskey production, furniture, construction, millwork, crossties, fence posts, agricultural implements, large timbers, and other purposes where high-quality wood is needed.

White oak occurs widely on well-drained soils in bottomlands. It is most common on the better-drained creek bottoms in northern Mississippi. But it is not primarily a bottomland species. It is widely distributed in the uplands, mostly on middle and upper slopes in the more hilly areas.

White oak does not like shade and has a medium growth rate. It reproduces itself fairly adequately by seed and sprouts, but the seed supply is often lacking for reproduction possibly because many animals highly value it.

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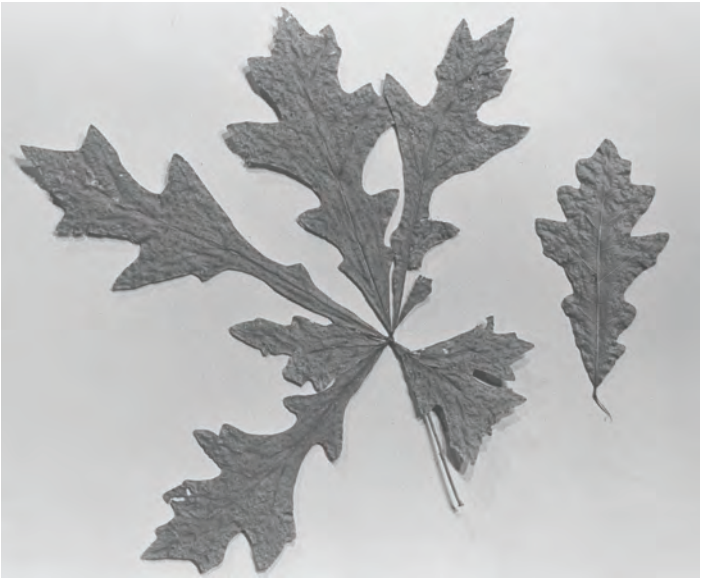


OVERCUP OAK

Quercus lyrata

Other common names are swamp post oak, swamp white oak, water white oak, and white oak. The leaves are alternate, simple, and deciduous, narrow at the base, and divided into spreading lobes at the top. They are 5 to 10 inches long and 1 to 4 inches wide. They may have from five to nine irregularly shaped lobes. The surfaces are dark green and smooth; the undersides are paler.

Twigs are slender and green, possibly tinged with red. They are slightly hairy at first and later become gray or light brown. The bark resembles that of white oak. It is light gray and broken into thick plates that separate on the surface into irregular, thin scales.

Overcup oak may reach a height of 90 to 100 feet with a diameter of 2 to 3 feet, but it is usually smaller. The tree form and quality vary greatly. It often has a short, crooked trunk that forks about 20 feet above the ground.

The male and female flowers appear on the same tree. The male flowers are light yellow and are borne in 4- to 6-inch slender clusters. The small, woolly, inconspicuous female flowers appear solitary on very short stalks or no stalks. The fruit is an acorn that is ½ to 1 inch long, somewhat flattened, and usually broader at the base. The acorn is almost completely covered by the scaly acorn cup, which gives the tree the overcup name. A variety of birds and animals feed on these acorns.

The wood is heavy, hard, tough, and strong. The wood has a dark brown heartwood and lighter colored sapwood. Next to post oak, overcup is the poorest of the white oak group. This is mainly because of its poor form and defects. At its best, overcup is as good as white oak. Good-quality overcup wood is mixed with other white oak wood and used for the same purposes as white oak wood.

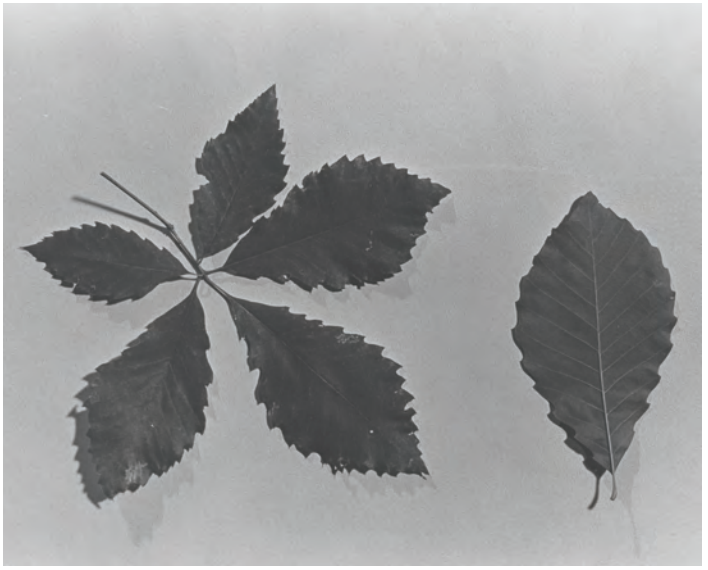
Overcup occurs widely on poorly drained, heavy soils in large bottoms. It is somewhat scattered on the better sites. It commonly occurs in sloughs, margins of swamps, and backwater areas. It is primarily a bottomland species and seldom occurs naturally in the uplands. It is occasionally found in the flatwoods and on poorly drained soils that are subject to periodic flooding.

Overcup oak is moderately intolerant of shade. The growth rate is medium except in the very swampy areas, where it is poor. It is a prolific reproducer, but periodic flooding common in the overcup's habitat often kills the seedlings.

SWAMP CHESTNUT OAK

Quercus michauxii

Other common names are basket oak, cow oak, and swamp white oak. The leaves are alternate, simple, deciduous, 5 to 8 inches long, and 3 to 4 inches wide. The margin has a wavy pattern of teeth. The leaves have dark, shiny



green surfaces and are pale to silvery and fuzzy on the underside.

Twigs are bright reddish or orange-brown the first winter, finally becoming an ashy gray. They are moderately stout. The terminal buds are about one-fourth of an inch long and are covered with thin, red scales. The bark is ½ to 1 inch thick. Closely resembling white oak, the bark is separated into thin scales.

The tree often reaches a height of 100 feet and 3 to 5 feet in diameter. In the forest, the trunk sometimes does not have branches until 30 to 50 feet above the ground. The tree then branches at narrow angles, forming a compact, round-topped crown. In the open, the tree has a shade tree form with a shorter trunk and perfectly rounded crown.

Male and female flowers appear on the same tree. The yellowish male flowers occur in 3- to 4-inch clusters. The female flowers occur in smaller clusters with fewer flowers. The fruit is a bright brown acorn 1 to 1½ inch long and ¾ to 1¼ inch thick. About one-third of its length is enclosed in a thick acorn cup. The acorns are valuable to a wide variety of wildlife, including deer, turkeys, and squirrels. Cattle are said to feed on the acorns, resulting in the common name of cow oak.

The wood is heavy, hard, strong, tough, close-grained, and durable. The wood has light brown heartwood and thin, dark-colored sapwood. The wood is similar to white oak and is used for much the same purposes. In the past, basket makers used the wood, resulting in another common name of basket oak.

Swamp chestnut oak commonly occurs in large creek bottoms on well-drained, loamy ridges. You occasionally find it on wet, silty, clay flats. It is not considered an upland species but is sometimes found in coves and openings into true bottoms. It is moderately intolerant of shade and has a medium to good growth rate. It easily reproduces itself, but reproduction is sometimes limited because wildlife eat the acorns, and acorns are susceptible to weevil damage.

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LIVE OAK

Quercus virginiana

Other common names are Virginia live oak and Spanish oak. The leaves are simple, alternate, and somewhat evergreen in that they do not drop until spring after new leaves have appeared. Other oaks shed their leaves in autumn. The leaves of the live oak have smooth margins. They are a shiny, dark green on the surface and pale and hairy on the underside. They are thicker and stiffer than most oak leaves and are about 2 to 5 inches long and ½ to 2½ inches wide.

First-year twigs are ashy gray or light brown and somewhat hairy but finally become darker and smooth. The terminal buds are less than one-fourth of an inch long and light brown. The bark is ½- to 1-inch thick and dark brown, possibly tinged with red. It is slightly furrowed, separating on the surface into small, dense scales.

Live oak is usually about 50 to 60 feet in height and up to 3 to 4 feet in diameter. The tree usually separates a few feet above the ground into several large, spreading limbs, forming a low crown that sometimes spreads up to 130 feet across. Even in a forest, live oak seldom has good form. It is almost always crooked or bent.

Male and female flowers appear on the same tree. The yellowish male flowers are in hairy clusters. The reddish female flowers occur in slender clusters 1 to 3 inches long.

The fruit is an acorn usually in clusters of three to five. Acorns rarely appear solitary or in pairs. The acorn is dark, shiny brown and about one-third to three-fourths of an inch long with half its length enclosed in the acorn cup. Live oak usually fruits between September and December and is a consistent acorn producer. The acorns have a good flavor and wildlife, especially wild turkeys, like the acorns. In some areas they are the most heavily used acorns by wild turkeys.

The wood is very hard, very heavy, strong, tough, and close-grained. The wood has light brown or yellow heartwood and thin, nearly white sapwood. The poor form of the tree limits its use as a timber tree, but the wood is very useful wherever a tough, strong wood is required. Live oak was one of the first species to be preserved in the U. S. because of its value in shipbuilding. The wood was widely used in the early history of our country for heavy timbers in sailing vessels.

In Mississippi, live oak occurs principally in the lower southeastern corner of the state on the sandy coastal plain. It is found as an ornamental as far north as central Mississippi. Live oaks are very resistant to salt water spray and to strong winds. This is one reason it is a valuable tree on the Gulf Coast. It has a very long life, even for an oak. You often see it draped with Spanish moss. It easily re-sprouts from the roots when larger trees are cut or girdled. Its capacity to re-sprout makes it very difficult to kill. The bark has been used in the past for tanning leather, and the tree is valued as an ornamental.

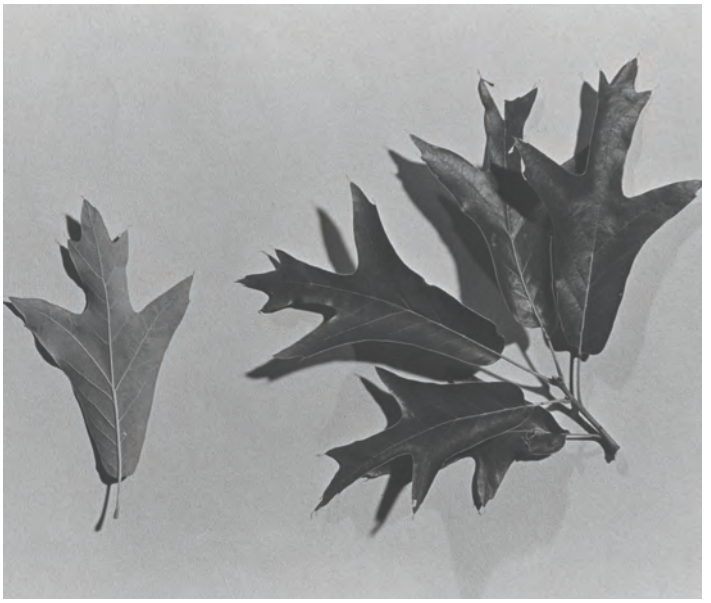
SOUTHERN RED OAK

Quercus falcata

Other common names are red oak, Spanish oak, and turkey oak. The leaves are simple, alternate, deciduous, 3 to 9 inches long, and 4 to 5 inches wide. The leaves usually have three to five and sometimes seven bristle-tipped lobes. They are a lustrous, dark green on the surface and rusty colored and hairy on the lower surface. The base of the leaves is almost always shaped like an upside-down bell. The leaf stalks are flat and slender and up to 1 to 2 inches long.

Twigs are at first hairy and orange, becoming a dark red or reddish-brown by autumn, and then later becoming a reddish-brown or ashy-gray. The bark is about ¾ to 1 inch thick and dark brown to dark gray. Shallow furrows divide it into broad ridges covered with thin, closely oppressed scales.

Southern red oak grows up to 100 feet high but is usually found 60 to 80 feet in height with diameters of 2 to 3 feet. In the open, it usually has large, spreading branches that form a broad, round-topped crown. It makes an excellent shade tree. In the forest, the trunk is usually clear but not very long, and the crown is fairly narrow.



The male and female flowers occur on the same tree. The male flowers are borne in 3- to 5-inch clusters. The female flowers are found on shorter clusters. The fruit is an acorn about one-half inch long. It is found solitary or in pairs and one-third of its length is enclosed in a shallow, thin acorn cup. Many kinds of birds and mammals eat the acorns.

The wood is hard, strong, and coarse-grained. It has light red heartwood and thick, lighter-colored sapwood. The wood is used commonly for boxes, barrels, crates, cheap furniture, and fuel. It is also used for crossties and large timbers. Some of the best trees on good sites produce good factory lumber and sometimes veneer logs. The bark, rich in tannin, has been used in the past for tanning leather and as an astringent in certain medicines.

Southern red oak usually occurs on dry, sandy clay soil in the uplands. It is very common on dry ridgetops and upper slopes. Its best development occurs on some deep, rich, well-drained slopes in the uplands. It is not primarily a bottomland species, but sometimes you find it on the oldest terraces. It has a medium growth rate on some of the reasonably good sites. Reproduction is easy with adequate light. It also sprouts prolifically.

CHERRYBARK OAK

Quercus pagoda

Other common names are swamp red oak, bottomland red oak, Elliott oak, swamp Spanish oak, and red oak. The leaves are alternate, simple, deciduous, 6 to 8 inches long, and 4 to 6 inches wide. They have from seven to 11 bristle-

tipped lobes. The surface of the leaves is glossy green; the underside is paler and hairy.

Twigs are hairy or woolly the first winter and later become dark reddish-brown. The bark somewhat resembles the bark on older cherry trees, hence the name cherry bark oak. The bark is about 1 inch thick and is roughened by small, closely oppressed, plate-like scales. It is a dark grayish-black and is broken into long, shallow furrows. These furrows crack and flake and are scaly like the bark on the trunks of old cherry trees.

Cherrybark oak may reach heights of 120 to 130 feet and diameters of 3 to 5 feet. It is the largest of the red oak group. In the forest, it has a tall, clear trunk and a short, narrow crown. In the open, it has a wide-spreading crown.

Cherrybark oak flowers are very similar to those of the southern red oak. The fruit is an acorn about a half-inch long and three-eighths inch across. The acorn cup is saucer-shaped and encloses about one-fourth of the acorn. The acorns are valuable to many birds and animals.

The wood is heavy, hard, and strong. The wood has a light reddish-brown heartwood and thin sapwood. Cherry bark is considered the best of the red oak group, and the wood is high in value. It is used for veneer, factory lumber, furniture, and other secondary uses such as cooperage and crossties. The bark is also rich in tannin.

Cherrybark oak occurs on rich bottomlands, on good loamy sites, and in well-drained creek bottoms. Occasionally you find it on the silt clay flats and low ridges, but it does not do as well on these sites. It is also widely found in the uplands on the better sites that are rich, moist, and well drained. It does not do well on the medium upland sites and does not occur at all on the poor, dry sites. The growth rate is good to excellent on good sites. It does not like shade, but it reproduces easily with adequate light. It also sprouts fairly efficiently and shows some promise for planting.

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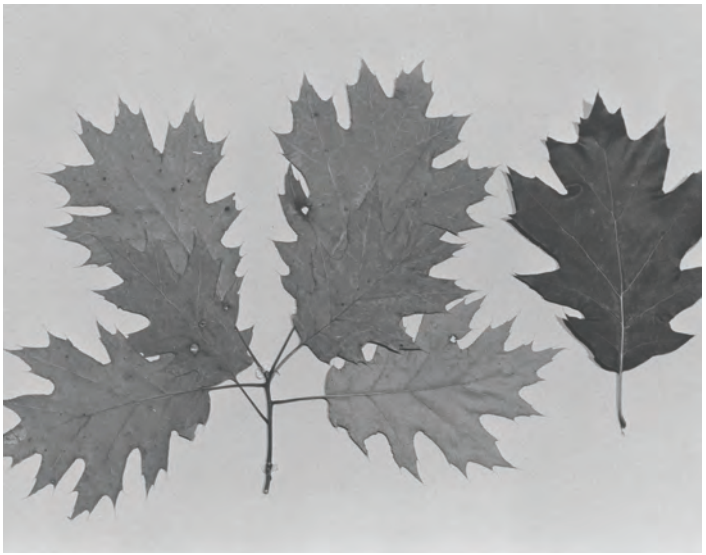

NORTHERN RED OAK

Quercus rubra

Other common names are red oak, eastern red oak, gray oak, striped oak, common red oak, and mountain red oak. The leaves are alternate, simple, deciduous, 5 to 9 inches long, and 4 to 5 inches wide with seven to 11 bristle-tipped lobes. A leaf's upper surface is green and smooth; the lower surface is pale. The leaves turn a rich red in the fall. The petiole is about 1½ inch long, stout, and reddish.

Twigs are green to reddish-brown, smooth, shiny, and fairly stout. The brown terminal buds may be smooth or slightly hairy and about one-fourth of an inch long. The bark is smooth on young trees, changing to gray-brown or black with age. On old trees, furrows separate the bark into flat ridges.

Northern red oak is usually a medium-sized tree, 60 to 70 feet high and 2 to 3 feet in diameter. It usually has a short, massive trunk. Occasionally you may find it as a taller tree reaching more than 100 feet in height. In dense forest stands, the trunk grows into a narrow, round-topped crown. In the open, the trunk is short and massive and soon divides into stout limbs, forming a broad crown.

Male and female flowers appear on the same tree. The male flowers occur in hairy clusters 4 to 5 inches long. The female flowers occur solitary or paired on short stalks. The fruit is a chestnut brown acorn, solitary or in pairs, and maturing the second year. It is ¾ to 1¼ inch long. The shallow, saucer-shaped cup encloses about one-fourth of the nut.

The acorns are somewhat bitter and are apparently not eaten by wildlife as much as those of some of the other oaks.

The wood is hard, heavy, strong, and close-grained. Northern red oak has pale reddish heartwood and paler sapwood. The wood is used for furniture, interior finishing, crossties, posts, timbers, and general construction.

Northern red oak occurs on well-drained sites in the north end of the Delta area. In the uplands, it is found on the best moist, deep soils of middle to lower slopes, bluffs, and coves. It is rarely found on drier sites and is usually found only in the northern part of the state. It does not like shade and has a medium to good growth rate. Reproduction is fairly easy with adequate light.

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BLACK OAK

Quercus velutina

Other common names are smooth-bark oak, yellow oak, quercitron oak, yellow bark oak, yellow butt oak, and red oak. The leaves are alternate, simple, deciduous, 5 to 7 inches long, and 3 to 5 inches wide with five to seven bristle-tipped lobes. The leaf surface is a lustrous green. The underside is copper-green with tufts of hair where the leaf veins join the midrib. The petioles are stout and quite long, about 3 to 5 inches.

Twigs are stout, pale, usually smooth, and become a dull reddish-brown to nearly black. The bark is dark brown and smooth on younger trees, becoming thicker and black and dividing into broad, deeply furrowed scales on older trees. The bright yellow inner bark is a source of quercitron, a yellow dye. This is one way to identify this tree.

The black oak often reaches 70 to 80 feet in height and occasionally up to 150 feet, with a trunk diameter of up to 3 to 4 feet. The tree has fairly good form in the forest. Branches spread into a fairly rounded crown in the open.

Both male and female flowers occur on the same tree. Male flowers are in 4- to 5-inch clusters on the growth of the preceding season. The female flowers are usually in groups of two or three, occasionally solitary, on short, hairy stalks. The fruit is an acorn about one-half to three-fourths of an inch long, with about half its length enclosed in the acorn cup. As with all red oaks, the acorn matures during its second season. A variety of birds and mammals use the acorns.

The wood is hard, heavy, strong, and coarse-grained, with light reddish-brown heartwood and lighter sapwood. Black oak is used to make cheap furniture, barrels, boxes, crates, crossties, and timbers. The bark is rich in tannin, and the inner bark produces a yellow dye called quercitron.

Black oak is sparse and widely scattered on the oldest alluvial soils and the drier sites in bottomlands, mostly in northern Mississippi. It is more common in the uplands on the better pine sites in the northern part of the state. You usually find it on various upland sites in mixed stands.

Black oak does not like shade. Reproduction is only fair in openings. It has a greater than average susceptibility to diseases and insects on poor sites. Growth rate is medium to good on the best sites, but it is often a very poor tree.

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SHUMARD OAK

Quercus shumardii

Other common names are schneck oak, shumard red oak, southern red oak, spotted oak, swamp red oak, striped

red oak, and red oak. The leaves are alternate, simple, deciduous, 6 to 8 inches long, and 4 to 5 inches wide with seven to nine multiple-bristle-tipped lobes. They have a dark green, smooth surface and are paler underneath with tufts of hair where the veins join the midribs. The petioles are smooth and about 2 inches long.

Twigs are moderately stout, smooth, and grayish-brown. The terminal buds are about one-fourth inch long and grayish-brown. The bark is thick with light gray, scaly ridges separated by deep, darker-colored furrows.

Shumard oak becomes a rather large tree, up to 90 to 125 feet in height and 4 to 5 feet in diameter. In the forest, the trunk is straight and clear of limbs up to one-half or more of the total height. In the open, it has a short trunk and a broad crown.

The male and female flowers appear on the same tree. The male flowers occur in 6- to 7-inch clusters; the female flowers are either solitary or paired on slightly hairy stalks. The fruit is an acorn ¾ to 1 inch long and three-fourths of an inch in diameter. The acorn cups vary from saucer to cup shape and enclose about one-fourth of the nut. The acorns may be found either solitary or in pairs and are used by a wide variety of wildlife.

The wood is heavy, hard, and strong. Shumard has some of the best qualities of all red oaks and is used for high-quality veneer, furniture, factory lumber, cooperage, and crossties.

Shumard oak occurs in deep rich bottoms and along streams and is usually restricted to the better ridges in the older alluvial areas. You rarely find it on newer soils. It is widely distributed but never in great abundance in the bottomlands. In the uplands, it is located on the best ridge sites and on lower slopes.

Shumard oak has a good to excellent growth rate. It doesn't like shade, but it reproduces easily in full sunlight. It competes well against ground cover. Seedlings persist well against ground cover, and the tree sprouts well. It also shows some promise for planting. A former national champion shumard oak is located on Noxubee Wildlife Refuge in Noxubee County, Mississippi.

BLACKJACK OAK

Quercus marilandica

Other common names are blackjack, barren oak, black oak, and jack oak. The leaves are alternate, simple, deciduous, 6 to 7 inches long, and 2 to 5 inches wide. They usually have three large, rounded lobes. These lobes are not as obvious as the lobes on some of the other red oaks, but the bristle tips are still visible. The leaves are dark yellow-green

on the surface and orange and hairy on the lower surface, with an obviously thick midrib. The petiole is stout and about one-half inch long.

Twigs are at first coated with thick, pale, woolly hairs. They later become dark brown and rather rough. Ultimately they will be brown or ashy gray. The bark is about 1 to 1½ inch thick, very rough and hard, usually dark brown or black, and separates into square-shaped plates.

Blackjack oak is usually a small tree, rarely ever taller than 40 feet. The branches remain on the tree even after they die. The many dead branches droop down, giving the tree a very rough and scraggly appearance. The trunk diameter is rarely more than 12 inches. The crown may be narrower and compact in the forest, but the form is still very poor.

The reddish male and female flowers appear on the same tree along with the leaves in the spring. The male flowers arc in 2- to 4-inch clusters. The female flowers are on short, rusty stalks. The fruit is a pale, chestnut-brown acorn that matures during its second year. It is three-fourths of an inch long and enclosed about one-third to two-thirds of its length in a thick acorn cup. The cup has reddish-brown, loosely overlapping scales. Squirrels, deer, and other wildlife feed on blackjack acorns.

Blackjack is usually considered a weed tree that hampers production of better timber. It is usually chemically deadened in timber stand improvement operations. The wood is heavy, hard, and strong. The blackjack oak has dark, rich brown heartwood and thick, lighter-colored sapwood. Its wood is used mostly for posts, fuel, and charcoal.

Blackjack oak commonly occurs on high, dry sites. It usually grows in abundance on these areas, where few other trees can grow at all. It is a very good indicator species. If

blackjack is predominant, you can be sure the soil is probably dry, sandy, and infertile. Because of its habitat, it usually has a very slow growth rate. It is one of a group of oaks called the scrub oaks, which foresters try to eliminate to allow pine reproduction to develop.

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WATER OAK

Quercus nigra

Other common names are striped oak, pin oak, orange oak, spotted oak, possum oak, and duck oak. The leaves are alternate, simple, and usually deciduous, but sometimes they do not fall until late winter. They are 2 to 4 inches long and 1 to 2 inches wide. The variable-shaped leaves may be narrow and without lobes or may have a slightly lobed appearance at the large ends. They are a dull blue-green on the surface and paler below, sometimes with rusty tufts of hair at the base of the leaf vein.

Twigs are slender, smooth, and reddish-gray, becoming grayish-brown their second year. The buds are less than one-fourth of an inch long and reddish-brown. The bark is smooth and brown on younger trees, becoming dark gray with rough, scaly ridges as the tree matures.

Water oak usually reaches a height of 80 feet but occasionally may be 125 feet or more on good sites, with a trunk diameter of 2 to 3½ feet. On good sites in the forest, the tree has a tall, slender, straight trunk. The tree always has numerous small branches and twigs, which make a very dense crown. When grown in the open, it has a shorter trunk and a rounded crown.

The reddish male and female flowers appear on the same tree in the spring or shortly before the leaves. The male flowers occur in hairy-stemmed clusters 2 to 3 inches in length, and the female flowers on a short stalk. The fruit is an acorn, occurring either solitary or in pairs. The acorn is one-third to two-thirds of an inch long, and a third to half of its length is enclosed in a shallow acorn cup. The acorns usually drop by December. Deer, squirrels, quail, turkeys, and other wildlife eat the acorns. Water oak is usually considered a very dependable acorn producer.

The wood quality is heavy, hard, strong, and close-grained. It has light brown heartwood and thick, lighter-colored sapwood. The water oak is considered a good second-rate tree. Its wood is used for factory lumber, crossties, timbers, and fuel.

Water oak occurs widely on loamy ridges and the bottoms and on silt clay flats and terraces. In the uplands, it occurs on just about all sites except the very wettest. The best development in the uplands is on the lower slopes. It has very poor development on high, dry sites. A national champion water oak is in Smith County.

Water oak doesn't like shade, but it reproduces well with adequate light. It has a good to excellent growth rate on good sites. It has a relatively short life span, is susceptible to fire at all stages of its life, and insect and disease damage is common. It is now extensively planted as an ornamental tree because it grows fast and provides good shade.

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WILLOW OAK

Quercus phellos

Other common names are pin oak, water oak, peach oak, swamp willow oak, black oak, red oak, and swamp oak. The leaves are alternate, simple, deciduous, 2 to 5 inches

long, and about ½ to 1 inch wide. The leaf margins are entire (no lobes or teeth). The leaf shape is somewhat like a willow leaf's (long and narrow). The leaves are light green, smooth on the surface, and paler below. The petioles are slender and about one-fourth of an inch long.

Twigs are reddish-brown and slightly hairy at first. Twigs later become gray and smooth. The buds are brown and one-tenth of an inch long. The bark is much like a water oak's. It is generally smooth at first. Shallow furrows break bark on older trees into irregular plates.

Willow oak is a fairly large tree, commonly reaching 80 to 100 feet in height and 3 to 4 feet in diameter. In the forest it has a tall, clear trunk with small branches that spread to form a narrow or cone-shaped, round-topped crown. In the open, it forms a round, symmetrical crown similar to water oak.

Male and female flowers appear on the same tree. The yellowish male flowers appear in slender stemmed clusters 2 to 3 inches long. The reddish female flowers appear on slender, smooth stalks. The flowers usually appear just before the leaves. The fruit is a yellowish-brown acorn, alone or in pairs, approximately one-half inch long and one-half inch in diameter. About one-fourth of the nut is enclosed in the acorn cup and is covered with fine, pale hairs. The acorn matures during its second season. Wildlife values willow oak acorns as much as those of water oak, although willow oak probably does not produce as many.

The wood is heavy and strong but is not as hard as some of the other oaks. Willow oak is rather close-grained. The heartwood is light brown tinged with red. The sapwood is thin and lighter. Willow oak wood is used for factory lumber, crossties, and timbers.

Willow oak occurs widely on ridges and high flats of major bottoms. It is less common in the small stream bottoms. You sometimes find it in nearly pure stands in areas with hardpan where drainage is poor. Willow oak is rare in the uplands except in "pin oak flats," where there is a hardpan.

Intolerant of shade, willow oak responds well when not competing with larger trees. It is quite susceptible to fire. The growth rate is generally good to excellent but varies greatly with the site. The growth rate on hardpan areas is usually poor to medium. It is an important species because of its good growth rate and its wide distribution in the bottomlands.

LAUREL OAK

Quercus laurifolia

Other common names are water oak, spotted oak, Darlington oak, laurel-leaved oak, swamp laurel oak, diamond-leaf oak, and obtusa oak. The leaves are alternate, simple,

and partially evergreen since they remain on the tree until spring. They are 2 to 4 inches long and ½ to 1 inch wide. The margins of the leaves are usually entire and seldom have lobes or teeth. The leaf surface is a lustrous green; the underside is lighter with an obviously yellow midrib. The petioles are stout, yellow, and about one-fourth of an inch long.

Twigs are slender, dark red, and shiny at first and later become reddish-brown or dark gray. The terminal buds are about one-tenth of an inch long and are covered with lustrous, red-brown scales. The bark is dark brown, possibly tinged with red, and slightly scaly on young trees. On older trees, the bark is thicker, nearly black, and is divided by deep furrows into broad, flat ridges.

Laurel oak is usually a small to medium sized tree but occasionally reaches 50 to 70 feet in height and 2 to 3 feet in diameter on good sites. The crown is dense and evenly rounded with slender branches.

The male and female flowers occur on the same tree. The male flowers are in hairy clusters 2 to 3 inches long. The reddish female flowers appear on stout, smooth stalks. The fruit is an acorn, generally occurring solitary, about one-half inch long, and enclosed one-fourth of its length in a saucer-shaped cup. The acorn matures in 2 years. A variety of wildlife use the acorns.

The laurel oak is not very highly regarded as a timber tree and is usually removed in modern forestry practices. The wood is heavy, very strong and hard, and coarse-grained. It has dark, reddish-brown heartwood and thick, lighter-colored sapwood. Because of its low value, laurel oak wood is rarely used for factory lumber, crossties, or timber. It is used locally in the southern part of the state for pulpwood. Probably its major use is firewood.

Laurel oak occurs mostly on bottomland sites on wet flats, on margins of swamps, and occasionally on low ridges. It grows primarily near the coast and is not found in north Mississippi.

The laurel oak's growth rate is good to excellent, usually maturing in about 50 years. It does not tolerate shade. With plentiful light, reproduction occurs satisfactorily, mainly by seed, because the tree does not sprout well. It is quite susceptible to fire and insects.

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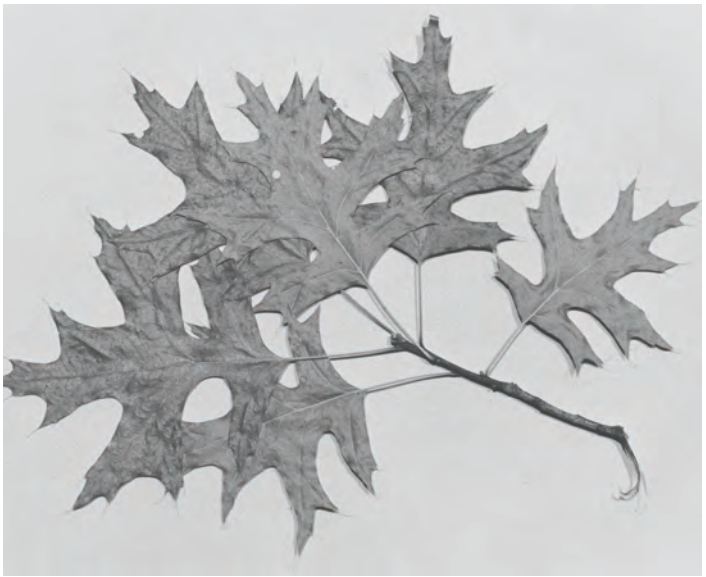

SCARLET OAK

Quercus coccinea

Other common names are black oak, red oak, Spanish oak, and spotted oak. The leaves are alternate, simple, deciduous, 3 to 7 inches long, and 2 to 5 inches wide. The leaf base is flatter than those of most other oak leaves. The leaf may have five to nine, but usually seven, bristle-tipped lobes. The upper leaf surface is a lustrous bright green; the underside is pale green, with tufts of hair where the veins connect the midrib. The petioles are slender and 1 to 2 inches long.

At first the twigs are slender, smooth and shiny, and light reddish-brown or grayish-brown. Eventually, the twigs become dark brown and covered with pale lenticels (pores). The bark is smooth on young stems and branches, becoming darker and rough on the older trunks. It is ½ to 1 inch thick, divided by shallow furrows and irregular ridges, and covered by small, brown scales.

The scarlet oak usually grows up to 70 to 80 feet tall and has comparatively small branches that spread to form a rather narrow, open, and irregular crown. A very few trees reach a height of 150 feet with diameters of 4 feet.

Both male and female flowers appear on the same tree, usually when the leaves are about half grown. The male flowers appear in hanging clusters 3 to 4 inches long on the growth of the preceding season or from the terminal bud. Female flowers appear in groups of two to three or alone on short stalks in the axils of the leaves of the current season. The fruit is a pale, reddish-brown acorn, solitary or in pairs. It matures in the second season. It is ½ to 1 inch long, and about a third to half of its length is enclosed in the thin, reddish-brown acorn cup. The acorns are generally of the same value to wildlife as most other red oaks.

The wood is strong, heavy, and coarse. It has very prominent, conspicuous rays in a cross section. It has about the same uses as any of the other red oaks. Scarlet oak wood is used for general construction, interior finishes, furniture, crossties, and timber.

Scarlet oak occurs in scattered fashion on dry, light, sandy upland soils, mostly in northern Mississippi. As its name implies, the scarlet oak produces beautiful scarlet foliage in the fall. Because of this, it is quite desirable as an ornamental.

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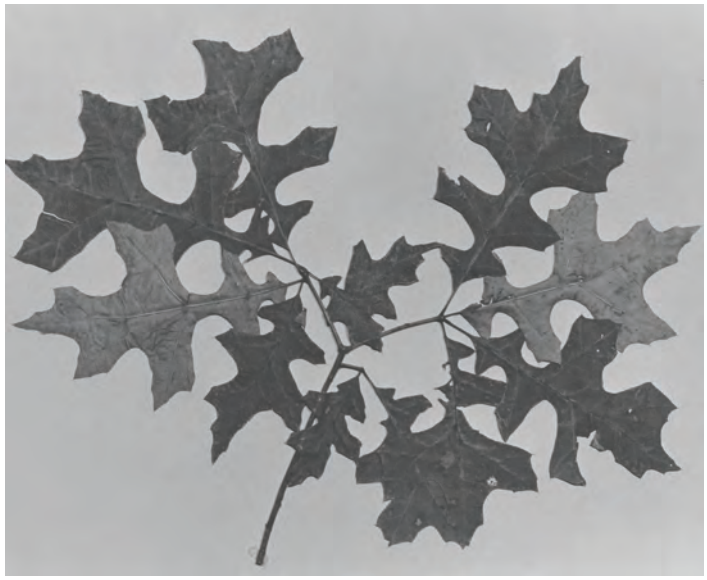


NUTTAL OAK

Quercus texana

Other common names are Texas red oak, Red River oak, southern pin oak, striped oak, pin oak, swamp black oak, and tight bark oak. The leaves are 5 to 9 inches long, with five to nine lobes. The upper pair of lobes is usually the largest. The bottom pair is separated by deep sinuses. The leaves are a dull, dark green on the upper surface and paler and nearly hairless on the lower surface.

Twigs are smooth and olive green to reddish-brown on younger stems and become gray with age. The buds are about one-fourth of an inch long with gray-brown scales. The bark is dark brown, slightly furrowed, and broken into flat ridges with tight scales.

The nuttal oak is normally a medium-sized tree, growing 60 to 80 feet high. It can grow up to 100 feet in height with a 3-foot diameter. Older trees commonly have a swollen trunk at the base.

The male and female flowers appear on the same tree, usually from March to May. The fruit is an acorn that may appear alone or paired, ¾ to 1 ⅓ inch long and ½ to 1 inch wide. About a fourth to half of the acorn is enclosed in the acorn cup.

Nuttal oak is one of the best species in the red oak group for producing mast. Acorn crops rarely fail, and many acorns remain on the trees until late winter. Squirrels have a ready supply of acorns from nuttal oak during winter floods. Deer and turkeys also like the acorns. It is one of the best trees that grow on its particular type of site.

The wood is heavy, hard and strong, and good quality. But it is hard to dry and tends to crack and split when seasoned. Nuttal oak wood is very acceptable for factory lumber, but since it splits easily, it is not used for ties and timbers and very seldom is used for veneer.

Nuttal oak has a very limited range and occurs only in Mississippi, Louisiana, Arkansas, and a small part of Alabama. It is strictly limited to bottoms of major streams that enter into the Gulf and the larger tributaries of these streams. It is found on flats, low ridges, shallow sloughs, and margins of swamps. It is not found in the uplands.

Nuttal oak has a good to excellent growth rate. It does not like shade. It is a prolific reproducer, but flooding in the growing season often kills the young seedlings. Even large and mature trees are sometimes killed by severe drought or lowered water table.

BLUEJACK OAK

Quercus cinerea

Other common names are cinnamon oak, sand jack, shin oak, turkey oak, and upland willow oak. The leaves are alternate, simple, deciduous, 2½ to 4½ inches long, and ¾ to 1¼ inch wide. They are similar in shape to willow oak leaves, but they are bluish-green on the surface, and the underside is woolly or hairy. They are somewhat thickened and tend to curl under slightly at the edges. They have a stout, yellow-colored midrib. The petiole is one-fourth to one-half inch long.

Twigs at first appear very hairy and woolly. Later they become smooth and gray to dark brown and finally darker.

The buds are about one-fourth inch long. The bark is ¾ to 1½ inch thick. It is divided into thick, square plates about 1 to 2 inches long, covered by dark brown to nearly black scales.

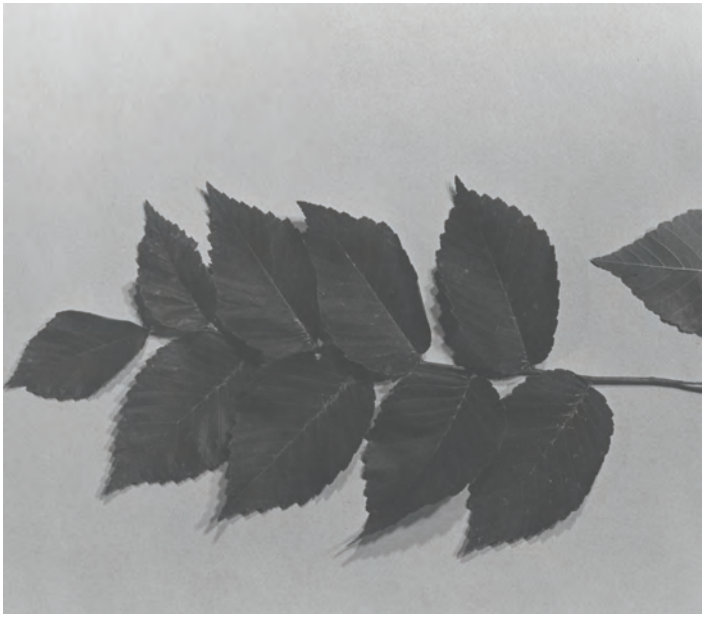
Bluejack oak has very poor form. It is a small tree, usually around 15 to 20 feet high and with a trunk of less than 12 inches in diameter. It has stout branches that form a narrow, irregular crown. On the very best sites, it may grow 60 to 75 feet high, with a trunk diameter of 18 to 20 inches.

Male and female flowers are on the same tree. The male flowers appear in woolly clusters 2 to 3 inches long. They are reddish and become yellow as they open. The reddish female flowers appear on short, woolly stalks. The fruit is an acorn that ripens its second year, occasionally appearing on branches that are 3 to 4 years old. It is about one-half inch long, light brown to dark brown, and covered with small, grayish hairs. The acorn cup encloses about one-third of the acorn. Bluejack oak is a high acorn producer, considering its small size, and is fairly consistent in acorn production from year to year. A variety of wildlife use the acorns.

Since bluejack oak is a very low-quality tree, it is usually removed in timber operations. But it is one of the few oaks that grow well on very poor sites in the lower coastal plain. It does grow well as an understory tree in longleaf pine stands and gives little competition to the pine.

The wood is hard, strong, and close-grained. It has a light reddish-brown heartwood and dark sapwood. Bluejack oak wood has little or no commercial value except possibly for firewood and fence posts.

Bluejack oak occurs on the dry, sandy ridges and pine barrens and some dunes on Mississippi's lower coastal plain. It occurs also on rich, moist soil of pine flats. It has a slow growth rate and is somewhat tolerant of shade.



AMERICAN ELM

Ulmus americana

Other common names are elm, white elm, gray elm, water elm, red elm, and soft elm. The leaves are simple, alternate, deciduous, 4 to 6 inches long, and 2 to 3 inches wide. The leaf margins are double-toothed. The upper surface is dark green and appears smooth but feels slightly rough. The lower surface is somewhat hairy and lighter colored. The leaf veins are evenly spaced and parallel to each other. The petioles are about one-fourth of an inch long. The base of the leaf is larger and more rounded on one side of the midrib than on the other side.

Twigs are slender, greenish, and slightly hairy at first. They later become smooth and reddish-brown. The bark on larger trees is rough, ashy gray, and broken into irregular, thick scales by deep, somewhat diamond-shaped furrows.

American elm is the largest of all the elms. It grows up to 100 to 120 feet tall, with a 6- to 11-foot trunk diameter. In the forest, it may have a tall, clear trunk, but it is more common to find it divided about 30 to 40 feet above the ground into numerous upright limbs that gradually spread to the typical vase-shaped form with a graceful, rounded crown.

The flowers are perfect, both sexes appearing within the same flower. The red and green flowers appear before the leaves, in long clusters with three to four flowers per cluster. The fruit is a small seed encased in a greenish-red, flattened, papery, wing-like covering, found in oblong clusters on long stems. The seeds fall from the tree about the time the leaves appear. Squirrels feed on the buds in late winter and early spring and feed on the seeds in late spring.

The wood is heavy, hard, strong, and has an interlocked grain, making it difficult to split. It has light brown heartwood and thick, pale sapwood. It is not durable in contact with the soil. American elm wood has a low to medium value. It is used for furniture, factory lumber, barrels, crates, chairs, boxes, and planking.

American elm occurs primarily on moist, rich soils along streams. It occurs widely throughout bottoms except in the deep swamps. It is not very common on the uplands except on the moister, deep, rich soils.

Diseases are destroying large numbers of elms. It was one of the best shade trees in America, but many large and beautiful trees are now succumbing to disease and have to be removed.

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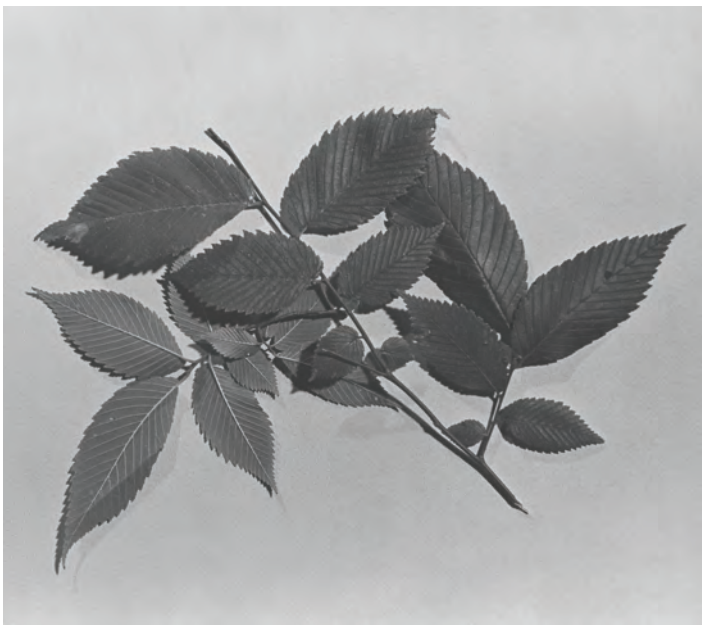


SLIPPERY ELM

Ulmus rubra

Other common names are red elm, gray elm, and soft elm. The leaves are alternate, simple, deciduous, 5 to 7 inches long, and 2 to 3 inches wide. The base of the leaf has unequal sides. The leaves resemble those of the American elm but are slightly larger and are very rough on the upper surface.

Twigs are stout and somewhat roughened, ultimately becoming dark grayish-brown. The bark is ashy gray to dark brown, thick, and rough, with shallow furrows. The inner bark secretes a thick, sticky sap.

Slippery elm is usually 50 to 60 feet high, with a diameter of 1 to 2½ feet, but occasionally it may reach 80 feet high and a diameter of 2 to 3 feet. The form is similar to that of

American elm. The trunk is usually shorter and breaks up into numerous large, spreading limbs that form an open, flat-topped crown.

The flowers are perfect as in American elm, appearing before the leaves on short-stalked clusters of three. Each flower bud produces several clusters. On the various parts of the flowers, you find green, yellow, red, and reddish-purple. The fruit is a small seed encased in a flat, papery, winged covering about three-fourths of an inch long. The greenish seed cavity is on short stalks and is covered with thick, rusty-brown fuzz. The one-seeded fruit is hairy only over the area where the seed is. The wing around the edge of the seed is not hairy. Squirrels feed on the buds and seeds in spring.

The wood is hard, heavy, and strong. Coarse-grained with a dark, reddish-brown heartwood and paler sapwood, the wood of slippery elm is considered the best of the elms. It is more durable in contact with the soil than American elm. Slippery elm wood is used for fence posts, railroad ties, barrels, implements, chairs, and crates. The inner bark is used in making certain drugs.

Slippery elm occurs along streams, on low, fertile slopes, and even thrives on outcrops of limestone. Slippery elm is most common in north Mississippi.

Slippery elm gets its name from the slick, sticky substance that comes from the inner bark. Native Americans and early settlers used this substance to ease their thirst and hunger. It is fairly tolerant of shade, has a medium growth rate, and reproduces well in openings.

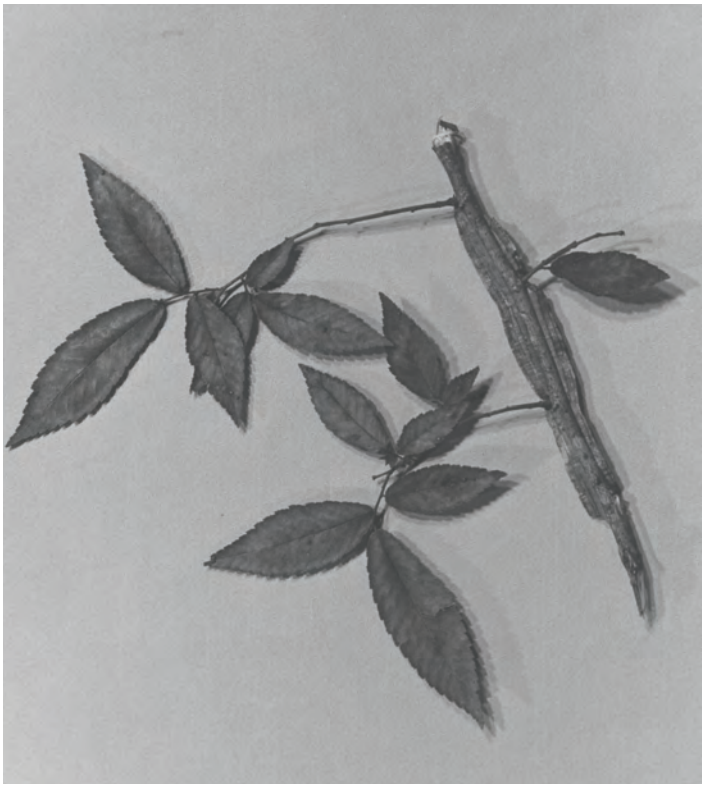
WINGED ELM

Ulmus alata

Other common names are hard elm, rock elm, cork elm, witch elm, southern elm, and wahoo. The leaves are alternate, simple, deciduous, 1½ to 3 inches long, and 1 to 1½ inch wide. They are smaller than the leaves of the American and slippery elm. The base of the leaves has uneven sides, as in the leaves of the other elms. They are dark green and smooth on the upper surface and paler with light, soft hairs on the under surface.

Winged elm gets its name from the corky ridges or wings often present on the twigs. The twigs are at first smooth and light green tinged with red. They later become reddish-brown to grayish-brown. The wings usually begin to appear on the twigs after the first season. The bark is light brown, possibly tinged with red, and divided into irregular-sized flat ridges and furrows.

Winged elm is usually a medium-sized tree, growing 40 to 50 feet high and 1 to 2 feet in diameter. On better sites it



may reach 80 to 100 feet in height and 2 to 3 feet in diameter. It usually has a fairly short trunk, and the branches form a narrow, oblong, round-topped crown.

The flowers appear before the leaves on long, drooping stalks. The tiny petal-less flowers are in clusters of three to five. The fruit is small, orange-red to reddish-brown, and consists of a single flat seed surrounded by a narrow wing. It is about one-third of an inch long, notched at one end, and covered with white hair. Squirrels probably feed on the buds in late winter and the seeds in late spring.

The wood is heavy and hard but not strong. It is close-grained with light brown heartwood and thick, lighter-colored sapwood. The wood is used for baskets, chairs, crates, and non-watertight barrels. It is mixed with the other elms for some use as factory lumber and occasionally for crossties. The inner bark is very fibrous and has been used some for making baling twine.

The winged elm is a common tree and occurs throughout most of Mississippi except in the extreme coastal areas and some Delta counties. It occurs widely on flats and ridges in the bottoms and is common on all but the wettest sites in the uplands. It is also commonly seen as an ornamental and street tree. A national champion winged elm is in Carroll County.

Winged elm apparently is not as susceptible to disease as the other elms. It tolerates shade and reproduces well in openings by seed and sprouts. It has a moderate growth rate.

SUGARBERRY

Celtis laevigata

Other common names are hackberry, sugar hackberry, Texas sugarberry, and southern hackberry. The leaves are simple, alternate, deciduous, 2½ to 5 inches long, and 1 to 2½ inches wide. The leaf base is unequally rounded and tapers down to a long, narrow point. The leaf margins are entire. The leaves are usually light green and smooth on the upper surface and paler and smooth on the lower surface.

Twigs are slender, somewhat shiny, light green to reddish-brown, and covered with scattered lenticels (pores). Sugarberry bark is easy to recognize. It is thin and smooth except for numerous wart-like ridges. The bark is pale greenish-gray to grayish-brown. Corky ridges appear on the trunks of older trees.

Sugarberry is usually not more than 50 feet in height and 2 feet in diameter, but it can reach 90 to 100 feet and larger diameters. The limbs spread to form a broad crown in the open. In the forest, it develops a generally straight trunk that may not have branches for about 20 to 40 feet.

Sugarberry may have three kinds of flowers. It may have male flowers, female flowers, or perfect flowers (both male and female parts). The flowers are small and inconspicuous, creamy green, and appear in the spring. The fruit is an orange, red, or yellow berry about one-fourth inch in diameter. It ripens around September. Each berry is alone on a one-fourth- to half-inch stalk. A thin layer of flesh covers the hard, wrinkled seed that resembles a tiny golf ball. Many songbirds, some upland game birds, and small mammals eat the fruit. It is a good fall and winter food for wild turkeys, and deer occasionally browse leaves and twigs.

The wood is coarse-grained and fairly weak. It has pale yellow heartwood and creamy white sapwood. The wood is very easy to work, glues well, and has good machining qualities. The wood is used for interior furniture parts, boxes, crates, barrels, and fuel.

Sugarberry occurs throughout Mississippi in moist soil along river bottoms and good upland sites. It is widely distributed in urban areas because it is popular for planting as an ornamental. It has a fairly good growth rate but does not like shade. Although it reproduces itself well by seed and sprout, it is easily damaged by fire, and a light burn kills reproduction. A heavy or hot fire kills or seriously damages even large trees.

Sugarberry is often called hackberry, but the two are different species. Hackberry is a northern tree and seldom occurs in Mississippi. Hackberry leaf margins are toothed, a major difference between the two species.

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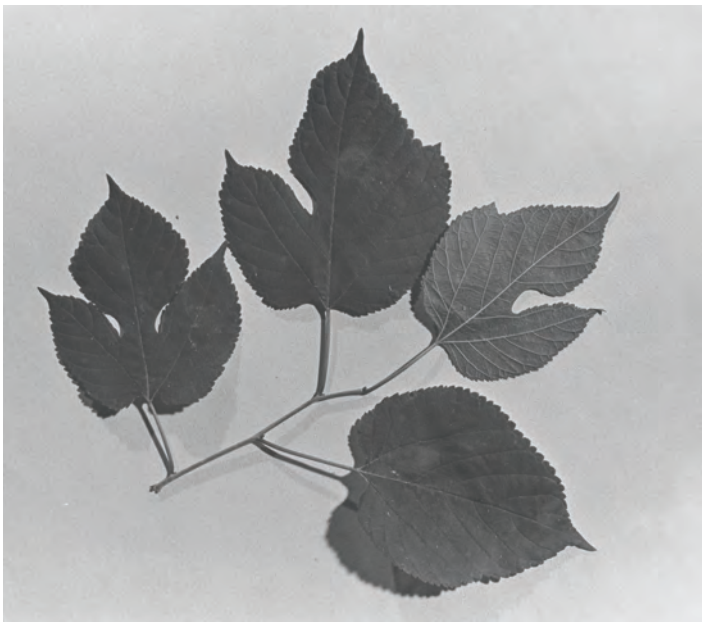

RED MULBERRY

Morus rubra

Other common names are mulberry and black mulberry. The leaves are alternate, simple, deciduous, 3 to 6 inches long, and about the same in width. The leaves of one tree may have three different shapes: an unlobed leaf that is heart-shaped, a mitten-shaped leaf with the thumb of the mitten on either the left or right side, or a three-lobed leaf with two smaller lobes on the right and left sides and a large central lobe. All these shapes commonly appear on the same tree and possibly on the same branch. The margins of all leaves are coarsely toothed.

Twigs are smooth and yellowish to a bluish-gray. The twig's inner bark turns orange if the outer bark is scraped away. There is no terminal bud. The lateral buds are chestnut brown and about one-fourth of an inch long. The bark is dark brown with a reddish tinge and scaly, with the tips of the scales curling up and peeling off. The bark peels off in long, narrow flakes.

Red mulberry is usually about 30 to 60 feet tall, with a trunk diameter up to 1 to 1½ feet. But it may reach a height of 70 feet and a diameter of 3 to 4 feet. It usually has a short trunk and a dense, spreading crown.

Male and female flowers may grow on the same tree or different trees. The flowers appear with the leaves in long, drooping clusters. The female flower clusters are shorter than the male clusters. The fruit is a berry-like cluster that resembles a small blackberry. It is green at first and becomes dark red as it matures. The fruit is quite tasty and can be eaten directly or made into jellies, jams, and pies. Many songbirds feed on the fruit, although it is available only for a short time in the spring. Quail, squirrels, wild turkeys, and small mammals also eat the fruit. Deer browse the foliage during the spring and summer.

The wood quality is soft, light, not very strong, coarse-grained, and fairly durable in contact with soil. The pale orange heartwood turns brown when exposed to light. The thick sapwood is a lighter color. Because of its good durability in contact with soil, mulberry wood is used for fence posts when available. It is also used for barrels, boats, and some farm tools. It has been used in the manufacture of caskets. In recent years, larger mulberry logs have been sold for unusually high prices and shipped to foreign markets for specialty uses.

Red mulberry occurs on widely scattered sites in the bottoms except in swamps, sloughs, and the higher ridges. It is most common on the heavy and moist but well drained soil. In the uplands it is scattered widely on the best moist soils but is not as common as in the bottoms. It is not found in any location in great abundance. Red mulberry is very tolerant of shade and has a poor to fair growth rate. It seeds and sprouts readily.

OSAGE ORANGE

Maclura pomifera

Other common names are bodock, bodark, bois-d'arc, bow wood, and hedge apple. The leaves are alternate, simple, deciduous, 3 to 6 inches long, and 2 to 3 inches wide. They have a rounded base and a tapered tip. The leaf margins are entire. The upper leaf surface is shiny dark green,

becoming a bright yellow in the fall. A white milky juice flows from the leaf stalk if it is broken.

Twigs are rather stout, bright green at first, and later become a light grayish-brown. They are often armed with straight, stout spines. The bark is approximately three-fourths inch thick and varies from a dark gray to a dark orange. The bark is deeply furrowed on older trees, with prominent ridges that scale off into thin strips.

Osage orange usually reaches 20 to 40 feet in height with a diameter of about 12 inches, but it may grow up to 50 to 60 feet and have a diameter of 3 feet or more. The trunk is usually short and stout, with thick, crooked, spreading branches forming a round, open, irregular crown.

Male and female flowers appear on separate trees. The male flower is a long-stalked cluster, 1 to 1½ inch long. The female flowers appear in a short-stalked, dense cluster about 1 inch in diameter. The fruit is a pale green, orange-like ball 3 to 5 inches in diameter. It is actually a dense growth of many smaller fruits. The fruit secretes a milky white, sticky juice if punctured. This fruit is often called hedge apple, horse apple, or mock orange. Bobwhite quail reportedly feed on the seed after the fruit drops from the tree and decays.

The wood is very heavy, very hard, and very strong. It is coarse-grained, durable in contact with the soil, and has bright orange heartwood and thin, pale sapwood. Osage orange wood is used for fence posts, railroad ties, and as a source of yellow dye. The native Americans made their finest bows from this wood, and many bows today are made from Osage orange. A major limitation in using the wood is the tree's crookedness.

Osage orange often occurs along fencerows and pastures, along old country roads, and around old house places. It is more common in north Mississippi and is very common in the black prairie area, tolerating the alkaline soils and other fertile soils. It has a slow growth rate, is somewhat tolerant of shade, and reproduces erratically but sprouts well. Osage orange is widely scattered because it was used so much in the past as an ornamental tree.

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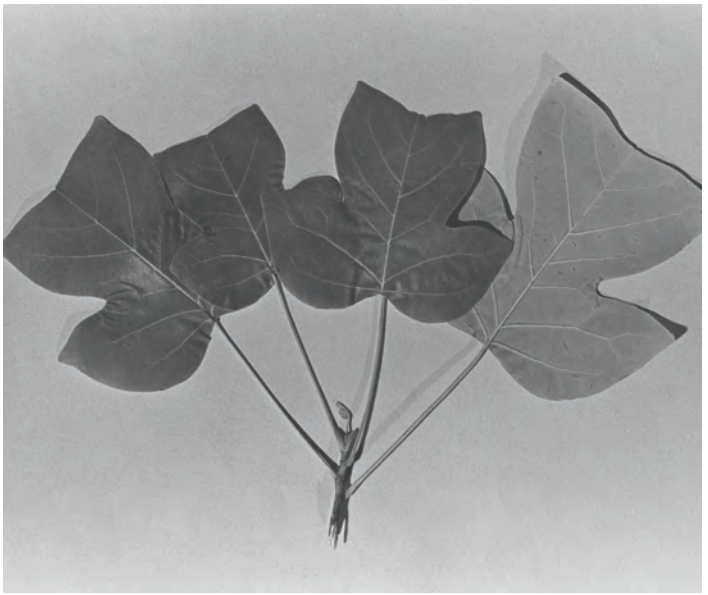

YELLOW-POPLAR

Liriodendron tulipifera

Other common names are tulip tree, poplar, tulip poplar, white poplar, whitewood, and canoe tree. The leaves are alternate, simple, deciduous, 4 to 8 inches long, and about the same width. Yellow-poplar is easy to identify by the unusual shape of the leaves. They are usually four-lobed, the two lower lobes being the widest. The leaf margin has no teeth. The leaves are green and smooth on the upper surface and paler and smooth on the lower surface. They turn brilliant yellow in the fall. The petioles are slender and 4 to 6 inches long.

Twigs are smooth and pale green at first, becoming reddish-brown and finally dark gray. The bark is light gray and very firm, with scattered lighter-colored patches. The bark has shallow furrows that separate narrow, flat ridges. On very old trees, the bark may be more deeply furrowed.

Yellow-poplar is probably one of the largest hardwoods. It often grows 200 feet tall with a diameter of 4 to 6 feet or more. In the forest the first branch may be as high as 60 to 70 feet above the ground. A tall, clear, straight trunk is characteristic of the species.

The flowers are tulip-like, hence the name tulip tree. They are about 1½ to 2 inches in diameter, with yellowish-green petals marked with a reddish-orange band near the base of the flower. These beautiful flowers are solitary and appear after the leaves have developed at the end of the twigs. They are perfect, having both male and female parts. The fruit is a light brown, oblong, conch-shaped cluster of winged seeds. It breaks up as it matures in September and October, allowing the seeds to be scattered by the wind. Yellow-poplar sprouts are excellent for deer browsing. Squirrels use the seeds in early fall and midwinter.

The wood is relatively soft and lightweight. It is not very strong but works easily and is easy to kiln dry. It resists warping and can be glued and painted easily. The heartwood can be red, green, blue, black, purple, or almost any color. The sapwood is thin and nearly white. The furniture industry is the largest user of yellow-poplar. It is also used in general construction, wooden boxes, veneer, doors, moldings, siding, interior trim, exterior trim, piano parts, cabinets, kitchenware, toys, novelties, and a wide variety of other purposes.

In the bottomlands, yellow-poplar occurs on the best, well-drained terraces. It is mainly found along minor streams. It is not primarily a bottomland species. In the uplands it occurs widely except on the drier ridges. It has its best development and is most plentiful in coves and on lower slopes in the uplands. You may also see it on moist sites in the piney woods and along drainages in the coastal plains.

Yellow-poplar has a good to excellent growth rate. It is very intolerant of shade. It sprouts well and is a prolific reproducer on bare soils in clear openings with adequate sunlight. It is very susceptible to fire, grazing by livestock, and flooding.

SWEETBAY

Magnolia virginiana

Other common names are sweetbay magnolia, swamp bay, laurel magnolia, swamp magnolia, bay, and white bay. The leaves are alternate, simple, and semi-evergreen (they remain green up through the winter and do not fall until the spring). They are oblong, 4 to 6 inches long, and 1 to 3 inches wide. The leaf margins are entire. They are a bright, lustrous green above and silky white below. The leaves give a very sweet aroma when crushed.

Twigs are bright green and hairy at first but become reddish-brown and smooth after the first winter. The bark is dark gray, thin and smooth, with patches of darker and lighter coloring. The bark may become slightly furrowed on older trees.

Sweetbay is commonly a slender tree, 20 to 30 feet in height, with a diameter of not more than 12 to 15 inches. But

on the best sites it may reach a height of 60 feet and a diameter of 1 to 2 feet. The branches are small and erect, gradually spreading to form a small, open, irregular crown.

The flowers are white and measure 2 to 3 inches across. They are very fragrant and have 9 to 12 petals. They appear from April to June and are perfect, having both male and female parts. The fruit is a dark red, cone-like cluster of small capsules that contain seeds. The fruit is yellowish-green with red, oval, flat seeds about one-fourth of an inch long. The seeds hang from the pod by slender threads. Squirrels, other small mammals, songbirds, turkeys, and quail eat the seeds. Deer browse the leaves and twigs year-round.

The wood is soft and fine-textured. The heartwood is light brown tinged with red, and the sapwood is creamy white. The sweetbay's small average size and inaccessible locations have limited its use. Sweetbay wood is used, though, for some package veneer, box lumber, pulpwood, woodenware, and broom handles. It is sometimes used as a substitute for yellow-poplar sapwood in making factory lumber.

Sweetbay occurs in swampy areas subject to periodic and frequent flooding. It occurs on poorly drained sites in the uplands on borders of swamps and pine barrens, shallow swamps, and deep coves. Reproduction is erractic but occasionally good when it has good openings and plenty of light. It is moderately tolerant to shade and has a poor to medium growth rate. It is not particulary susceptible to any diseases or insects. Cattle graze it heavily, but because it is hard to get to, this is usually not a problem.

SOUTHERN MAGNOLIA

Magnolia grandiflora

Other common names are bull-bay, evergreen magnolia, magnolia, and laurel-leaved magnolia. The leaves are alternate, simple, evergreen, 5 to 8 inches long, and 2 to 3 inches wide. You can easily recognize Southern magnolia by its thick, leathery, shiny leaves that remain on the tree for 2 years before falling. The surface is a lustrous green; the underside is a rusty orange-red with woolly hairs. The leaf margins are entire and tend to curl under slightly. Southern magnolia is Mississippi's state tree.

Twigs are stout and woolly and vary from green to olive. The bark is gray to light brown and one-half to three-fourths inch thick. It is relatively smooth on young trees, with a few cracks or furrows, but becomes more furrowed on older trees.

Southern magnolia may be found up to 90 feet in height and 2 to 3 feet in diameter. In the forest, the tree usually has a fairly clear, straight trunk and a much cleaner form than in the open. In the open and grown as an ornamental, it develops a broad, cone-shaped crown with lots of branches close to the ground.

The flowers are large, showy, white with purple centers, and cup-shaped and have a spicy fragrance. They are perfect, have as many as 12 petals, and may be 8 inches in diameter. This beautiful bloom is Mississippi's state flower. It blooms from April to late summer. The fruit is a cone-shaped cluster resembling a pinecone, 3 to 4 inches long, and 1½ to 2½ inches in diameter. It is purplish at first and turns rusty brown. This fruit contains a number of bright red seeds that are about one-half inch long. Squirrels like the seeds, as do

various other rodents, songbirds, quail, turkeys, and other small mammals.

The wood is moderately hard, fine-textured, and straight-grained. It has a light to dark brown heartwood and a pale to creamy white sapwood. The wood is very easy to work and well suited to many purposes. It is used for factory lumber, furniture, veneer, doors, cabinet work, fixtures, paneling, baskets, and crates. It is planted extensively as an ornamental.

As a forest tree, Southern magnolia mainly occurs within 100 to 200 miles of the coast, usually in minor or secondary stream bottoms, and on the margins of swampy areas. In the uplands, it is mainly on the middle and lower slopes on deep, rich soils and heads of branches.

Southern magnolia tolerates shade, has a medium growth rate, and has no particular problems with insects or diseases. Reproduction is quite erratic, and it appears only as a solitary tree mixed with other hardwoods and pine. It does not sprout well. It is most common and usually recognized as an ornamental. Huge specimens are usually found growing on the front lawns of antebellum homes.

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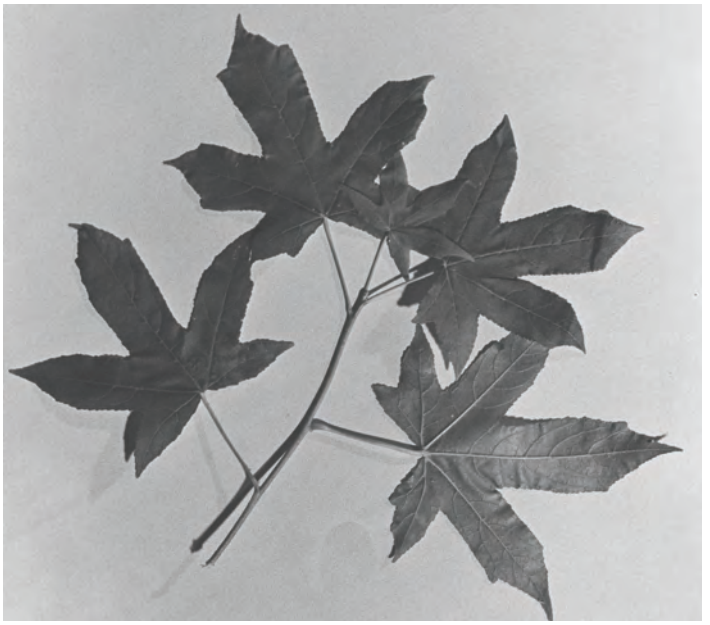

SWEETGUM

Liquidambar styraciflua

Other common names are gum, red gum, and alligator-tree. The leaves are alternate, simple, deciduous, and 5 to 7 inches in length and width. You can easily recognize sweetgum because the leaves are star-shaped with usually five points or lobes. The margins are toothed. They are a lustrous green above and paler below with a few tufts of hair between the veins. The leaves turn beautiful colors in the fall.

Twigs are rusty-red and shiny, often with wide corky wings, and sometimes without wings altogether. The bark is light gray and furrowed, with narrow, broken ridges. Older trees are deeply furrowed; younger trees have shallow furrows.

Sweetgums were once some of the largest trees in Mississippi. In rich bottomlands, these trees grew up to 150 feet or more tall and 3½ to 4 feet in diameter. Specimens of 100 feet or more are still very common, with diameters of 3 feet. In the forest, the trunk is tall, clean, and straight and tapers into a narrowly oblong crown. In the open, the crown is spreading and more rounded.

The male and female flowers appear on the same tree. Both are very small, greenish, and inconspicuous. The fruit is as unmistakable as the leaves. It is a 1- to 1½-inch round cluster of smaller capsules, often called a sweetgum ball. The light brown seeds are contained within the individual smaller capsules. When the fruit ripens, these capsules open, and the wind and birds help scatter the seed.

Squirrels eat the sweetgum seed as well as the buds in the spring. Quail, doves, wood ducks, and occasionally wild turkeys eat seeds that drop to the ground. Sweetgum has the unusual ability to survive after apparently being girdled by beavers.

The wood is medium hard and medium in weight. It has a uniform texture and beautiful, dark, reddish-brown streaked heartwood with thin, nearly white sapwood. The wood responds well to machining and also stains very well. It is used for cabinet wood, furniture, furniture frames, veneer, boxes, crates, and extensively for pulpwood. Veneer made from the heartwood is sold under a variety of different trade names and competes well with more expensive hardwoods.

In the bottomlands, sweetgum occurs on almost all but the wettest sites. You see it a lot in the uplands, but it develops best on the lower slopes and coves. You usually do not find it in the highest, driest sites. It occurs often in sweetgum thickets and is one of the first woody species to become established in abandoned fields.

Sweetgum does not like shade and has a medium to good growth rate. It sprouts from both roots and stumps and reproduces very easily by seed, but only where there is full sunlight.

SASSAFRAS

Sassafras albidum

Other common names are common sassafras and saxifrax. The leaves are alternate, simple, deciduous, 4 to 6 inches long, and 2 to 4 inches wide. The leaves, like the mul-

berry, grow in three different shapes. They may be unlobed with an entire margin; they may be mitten-shaped with either a right- or left-hand lobe; or they may have three lobes with the center lobe being the largest and a smaller lobe on the left and right. They are yellowish-green on the surface and pale green underneath, with hairs along the veins. The petioles arc about 1 inch long. The leaves have a distinctive smell when bruised or crushed.

Twigs are yellowish-green and slightly hairy at first but turn smooth and orange-red later. Twigs may be mottled with dark green or grayish-brown patches. They also have a spicy odor when crushed or bruised. The bark is thick and dark brown and has deep furrows and flat-topped ridges crossed by horizontal cracks. The bark of younger trees is grayish-brown and slightly furrowed.

The male and female flowers appear on separate trees. The flowers are greenish-yellow and appear with the leaves in drooping clusters, with only a few flowers per cluster. The fruit is a blue berry about one-half inch long on the end of a thick, red stalk 1 to 2 inches long. Songbirds, turkeys, quail, squirrels, and other small mammals eat the fruit. White-tailed deer browse the twigs in the winter and the foliage in the spring and summer. Young sprouts are especially desirable as a browsing plant after a fire or some other disturbance.

The wood is fairly soft, relatively light for a hardwood, coarse-grained, and has a dull, orange-brown heartwood and pale yellow sapwood. It is durable in contact with the soil and remains watertight, even when under water for periods of time. Sassafras wood is used for small boat construction, boat oars, and fence posts. Because of the wood's attractiveness, it is gaining popularity for use in specialty products and sometimes brings very high prices. It was used to make dugout canoes many years ago along the Mississippi River. Oil of sassafras is made from the bark, twigs, and roots. Sassafras is probably most widely known because of sassafras tea made from the roots.

Sassafras occurs on widely scattered and well-drained sites in bottomlands. In the uplands, it occurs on most all sites but generally does best in the coves and lower slopes. It is very common as a small tree or shrub along fencerows and old pastures.

Sassafras does not like shade. The growth rate varies from poor to excellent, according to the site. Reproduction is sparse and erratic, but it does sprout efficiently. It sometimes takes over small openings on ridge tops and old fields where it is generally a small shrub or weed tree.

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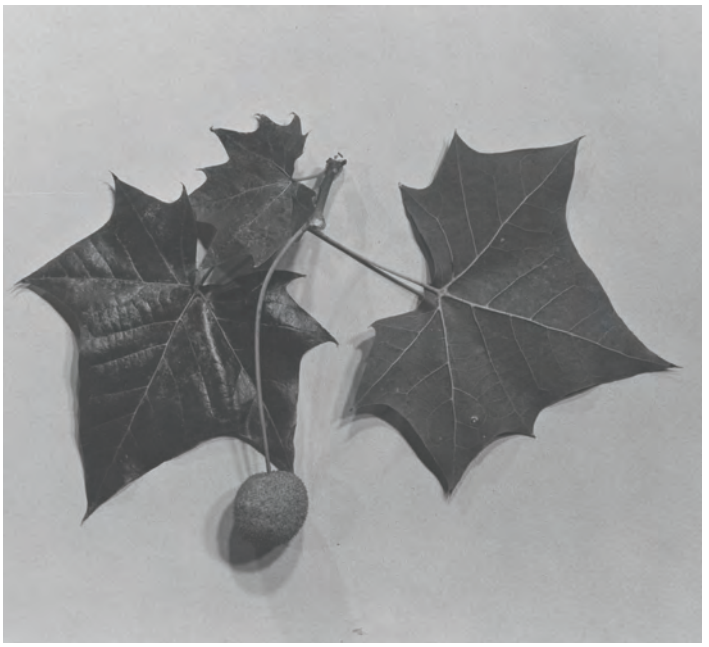


AMERICAN SYCAMORE

Platanus occidentalis

Other common names are American plane tree, buttonball tree, button tree, plane tree, buttonwood, and sycamore. The leaves are alternate, simple, deciduous, and usually 4 to 7 inches long and wide. The leaves may be larger on young, vigorous trees or sprouts. The leaves usually have three to five lobes, but the lobes may not be very distinct. The leaf margins have widely-spaced teeth of irregular sizes and lengths. The upper leaf surface is light green and smooth. The lower surface is a lighter green, with hairs along the veins. The petiole is 3 to 5 inches long.

Twigs are rather stout and zigzagged. At first green and slightly hairy or woolly, they later turn brownish to gray. The bark is at first a creamy white or pale green and smooth. The bark then becomes brown and scaly, then flakes off to reveal new, whitish bark underneath. This continuous flaking off of older bark and revealing of new, white bark gives an irregular, patchy coloration to the whole tree. Near the base of older trees, the bark becomes thick and furrowed and is usually a dark grayish-brown. The distinctive exfoliating bark is one of sycamore's most recognizable characteristics.

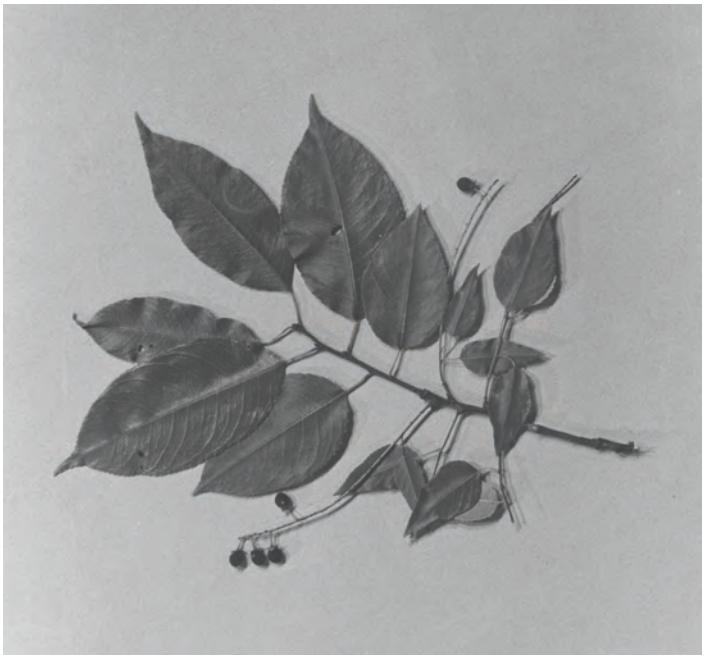
Although it is not quite the tallest hardwood tree, American sycamore is probably the most massive. It can reach heights of 100 to 170 feet and diameters of 3 to 12 feet. In an open area, the large crown may be as much as 100 feet across.

Both male and female flowers are on the same tree, appearing when the leaves have just begun to develop. The male flowers are dark red and appear at the base of the leaves. The female flowers appear at the end of the twig on long stalks and are greenish and sometimes tinged with red. The fruit is a round ball about 1 inch in diameter that hangs from a 3- to 5-inch long stem throughout the winter. The fruit is actually a dense cluster of small seeds. This ball breaks up early in the spring to let the wind scatter the small seed.

The wood has an interlocked, close grain and is moderate in hardness, stiffness, and strength. Sycamore wood is a pinkish or flesh color. The heartwood is darker than the sapwood. Sycamore wood is used in furniture and furniture parts, especially in sides of drawers because it is claimed to have special self-lubricating properties that let the drawers slide easily. It is used in cabinetry because it blends well with maple and birch veneers. It is also used in novelties, butcher's blocks, and pulpwood.

American sycamore occurs widely on the fronts of major streams, the banks of minor streams, on many open areas, and on light, moist soils in the bottoms. In the uplands, it appears in coves and around heads of streams. In north Mississippi, it is also quite common to find large solitary trees in old pastures, in waste areas, and along the borders of lakes, streams, and ditch banks.

Sycamore does not like shade, but it is a prolific reproducer on bare mineral soil with full light. It is also an excellent sprouter. Actually, after a timber harvest, sycamore stumps have too many sprouts. It is a good prospective tree for planting because it has an excellent growth rate on a variety of sites. In the forest, its interlacing root system is valuable in preventing erosion along stream banks and levees.



BLACK CHERRY

Prunus serotina

Other common names are wild cherry, wild black cherry, rum cherry, and mountain black cherry. The leaves are alternate, simple, deciduous, 2 to 6 inches long, and 1 to 1½ inch wide. Leaf margins are finely toothed. Leaf surfaces are smooth and dark green; undersides are a paler green with a rusty-red, slightly hairy midrib.

Twigs are slender, reddish-brown, smooth and shiny, and sometimes covered with a film-like coating that easily rubs off. The terminal buds are less than one-fourth inch long and chestnut brown. The twigs have a bitter almond-like taste. The bark is thin and smooth at first and then becomes dark and scaly as the tree gets older. On older trees the bark of the lower trunk is covered with small, scaly plates, with the edges slightly upraised. The bark of upper trunk and branches is lighter and smoother.

Black cherry develops into a medium-sized tree 50 to 60 feet in height and no more than 2 to 3 feet in diameter. It has a long, straight, clean trunk, with a small crown when growing in the forest. In the open, the trunk is usually short, and the crown is irregularly oblong. Some black cherries have been known to reach a height of more than 100 feet and diameters of 5 feet.

The flowers are white, perfect, one-fourth to one-third inch wide, with many flowers in large, drooping clusters, appearing when the leaves are nearly grown. The clusters are 3 to 6 inches long. The fruit develops in clusters from the female flower. It is a dark red or black, shiny berry, one-fourth to one-third inch in

diameter. The fruits of black cherry are edible and are used for making jelly and wine. In the forest, wild turkeys eat black cherry fruits almost year-round. Squirrels eat them in late summer, and occasionally ducks and quail eat them. Deer occasionally browse the foliage. The fruits probably provide food for a wide variety of songbirds and other small mammals.

The wood is hard, strong, not heavy, and compares very well to black walnut. It is close-grained and polishes very smoothly. But it is not as easily worked with hand tools as black walnut. The heartwood varies from light to dark red. The sapwood is narrow and white. It is one of the few dark woods that are not durable in contact with the soil or in other moist situations. Black cherry is one of North America's most valuable woods for furniture, cabinets, interior trim, paneling, and woodenware. Because of its stability after being seasoned, it is used for engraver blocks and patterns.

In the bottomlands, black cherry occurs scattered throughout on the older, alluvial soils but is not abundant in any location. In the uplands, it is also scattered but is possibly a little more abundant. It does best on the moist, well-drained soils of lower slopes and sometimes middle slopes. You find it on some drier sites, but development is poor. Black cherry is absent from the Delta flood plain.

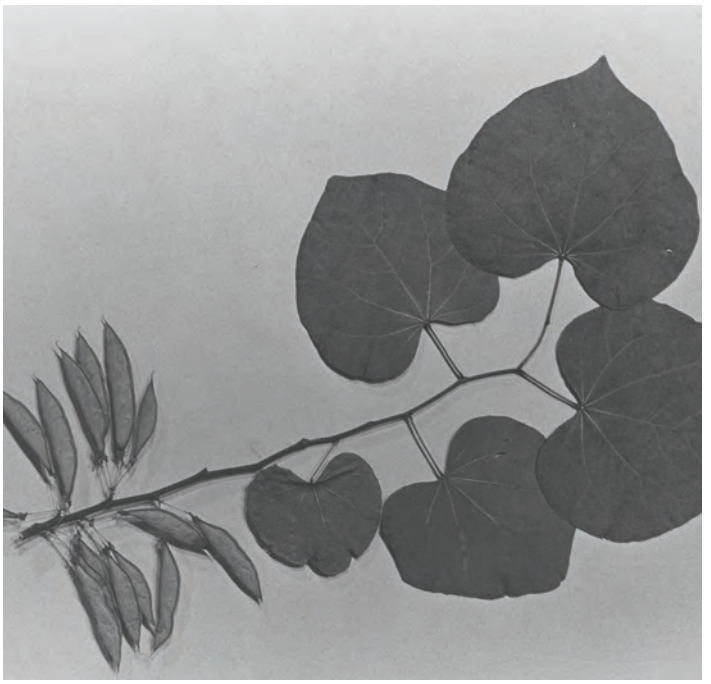
Black cherry is moderately tolerant of shade. Reproduction is persistent but very sparse and occurs only on moist, exposed, mineral soils. It has a slow to medium growth rate. It is very susceptible to fire, but if the trees are killed, they sprout again easily from the base. The leaves and twigs contain cyanic acid, and wilted foliage is supposedly poisonous to livestock. However, deer eat the foliage without harm.

EASTERN REDBUD

Cercis canadensis

Other common names are redbud and Judas tree. The leaves are alternate, simple, deciduous, and 3 to 5 inches long and wide. The leaf margin is entire. The leaves are heart- shaped, bright green on the surface, and smooth underneath except for a few scattered tufts of hair. The petiole is slender, 2 to 5 inches long, and slightly swollen at the point where it joins the leaf blade.

Twigs are slender and slightly angled or zigzag. The twigs are first a light brown, becoming grayish-brown as the tree matures. The terminal buds are absent. The bark is thin, smooth, and brown, becoming darker and slightly furrowed, forming long, narrow plates that break up into thin scales on older trees.



Redbud is usually a shrub or small tree. It occasionally reaches a height of 50 feet and a trunk diameter of 10 inches. The trunk usually branches within 10 to 15 feet above the ground, forming a wide, flat crown. As an ornamental, the crown is probably more uniform in shape.

Redbud is probably best known for its beautiful flowers. The flowers are light pink to bright purplish-red. Each flower has both male and female parts. They appear before the leaves in clusters of four to eight. Each flower is about one-half inch long, on a stalk about one-half inch long. The fruit is a thin, bean-like pod 2½ to 3½ inches long. This pod often remains on the tree throughout the winter. The pod contains small, flattened, brown seeds about one-fourth inch long.

The redbud's greatest value is probably the flowers that add to the beauty of the countryside in spring. It is one of the earliest blooming trees. Occasionally squirrels eat the seeds and buds, and deer may browse it. The wood has no commercial value. The trees rarely reach commercial size.

Redbud frequently occurs along the margins of woods and edges of fields, near streams, and in fertile bottoms. In the spring you can easily spot them along roads and highways. You do not find it on the Delta flood plain, and it is very sparse on high, dry upland sites.

Redbud is widely planted as an ornamental because of the showy flowers. It is fairly tolerant of shade. Transplanted seedlings appear to grow well if transplanted properly. According to tradition, this is the type of tree from which Judas Iscariot hanged himself, hence the name Judas tree.

RED MAPLE

Acer rubrum

Other common names are soft maple, swamp maple, water maple, scarlet maple, and white maple. The leaves are opposite, simple, deciduous, and 2 to 6 inches long and wide. The leaf has three to five lobes. The leaf margins have coarse, irregular teeth. The leaves are light green above and paler and smooth on the underside. The petioles are red or reddish-green and remain reddish through the year. Red maple is known for its leaves that turn brilliant shades of red in the fall.

Twigs are rather slender, bright to dark red, and shiny. The terminal bud is red and blunt and about one-fifth inch long. On branches and young trees, the bark is smooth and gray. On older trees the bark becomes a dark gray about one-fourth to one-half inch thick and has flaky, long, narrow ridges that tend to peel off.

Red maple is usually a medium-sized tree about 40 to 50 feet in height and 1 to 2 feet in diameter. It has been known to reach heights of more than 100 feet and 5 feet in diameter under ideal conditions. In the forest, the trunk usually does not have branches for about 30 feet up and produces a narrow, short, rounded crown. In the open, tree branches appear near the ground, and the tree has a dense, oblong crown.

Red maple may have three types of flowers—male, female, or perfect. The flowers are red or yellowish-red and appear before the leaves in dense clusters on the growth of the preceding season. The female flower quickly develops into a double-winged, red seed, in clusters on slender, drooping stalks. The wings are about ½ to 1 inch long. The seeds usually sprout soon after falling to the ground. Squirrels eat the buds and seeds in the spring and summer. Deer browse twigs, sprouts, and seedlings.

The wood is relatively soft and not strong. It is close-grained, with light brown heartwood and wide, lighter-colored sapwood. In the lumber industry, it is considered one of the soft maples and is worked easily with tools. It is stable after seasoning and can be glued easily. It also has no odor or taste. A principle defect found in the lumber is very small wormholes. The wood is used for factory lumber, furniture, wall paneling, woodenware, and pulpwood. The wormhole defect sometimes becomes an asset in paneling that is to be used in rustic surroundings.

Red maple occurs on widely scattered sites in the bottoms except on the highest ridges and deep swamps. It is most common in low areas and heavy soils. In the uplands, it appears in coves, lower slopes, and in the heads of branches and small streams. It tolerates shade and has a medium to good growth rate. It is widely planted as an ornamental because of its good growth, highly colored flowers and fruit, and autumn foliage.

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SILVER MAPLE

Acer saccharinum

Other common names are soft maple, river maple, white maple, swamp maple, and silverleaf maple. The leaves are opposite, simple, deciduous, and 6 to 7 inches long and

wide. They usually have five lobes and uneven, coarsely toothed margins. They are pale green on the upper surface and silvery-white on the lower surface. Silver maple gets its name from the silvery white color of the underside of the leaves. On a windy day, the silvery sides of the leaves flash into view. The petioles are red and about 4 inches long.

Twigs are somewhat slender and brittle. Lustrous green at first, twigs later become reddish-brown and covered with numerous lenticels (pores). Unlike red maple, the silver maple twigs have an undesirable odor when bruised. The bark on the branches and trunks of smaller trees is smooth and gray. On older trunks, the bark becomes somewhat furrowed with long, loose, scaly plates that are loose at the ends.

Silver maple often reaches 50 to 80 feet in height but may get more than 120 feet high with a diameter of 3 to 4 feet. The trunk is usually short and divides 10 to 20 feet above the ground into stout branches that continue to branch, ultimately forming a broad, rounded crown.

Flowers appear before the leaves in dense clusters on the growth of the preceding season. The male and female clusters of flowers appear on the same tree or different trees. As in red maple, a tree may also have perfect flowers with both male and female parts. The fruit is a double-winged seed 1 to 2 inches long, on slender, hanging stalks. Squirrels eat the buds and seeds in spring and summer, and deer browse on twigs, sprouts, and seedlings.

Silver maple is considered one of the soft maples. The wood is close-grained and brittle but easily worked. The heartwood is a pale brown; the sapwood is white. The wood is used for factory lumber, cheap furniture, flooring, and many of the same purposes as red maple.

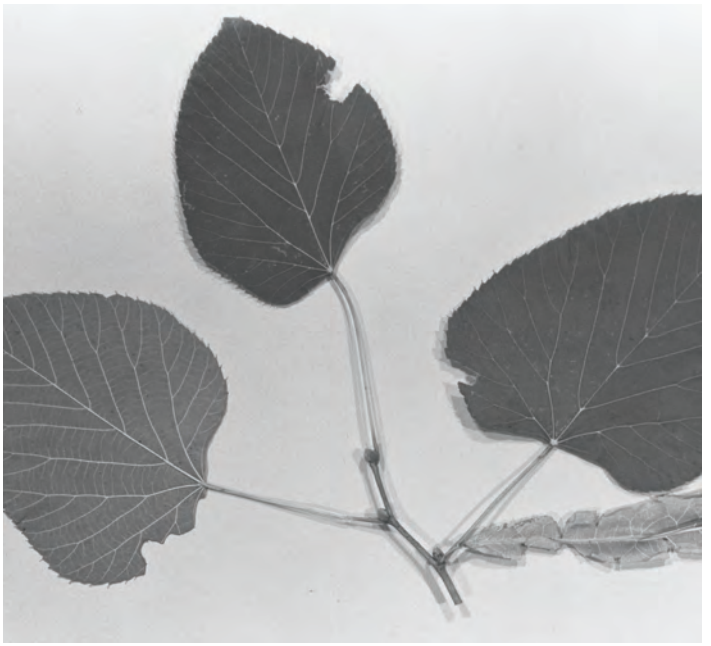
Silver maple occurs along rivers and streams in the northern part of the Mississippi River Delta and along other major streams almost to the coast. In the uplands, it appears occasionally in coves and creek bottoms and the edges of stream and branch heads in northern Mississippi. It occurs on the lower slopes in the loess bluffs.

Silver maple does not like shade. Reproduction is very good by seed on bare mineral soils in openings on new ground. Its major value now appears to be as an ornamental planted as a shade tree. It has an excellent growth rate and attractive foliage. However, consider the brittleness of the branches before planting silver maple near a house.

AMERICAN BASSWOOD

Tilia Americana

Other common names are linden, limetree, whitewood, bee tree, American linden, and Carolina basswood. The



leaves are alternate, simple, deciduous, 3 to 5 inches long, and 2½ to 3 inches wide. The leaf margin is coarsely toothed. Leaves are somewhat heart-shaped, but the base of the leaf has unequal sides. They are dark green and smooth on the upper surface and have woolly hairs on the lower surface.

The twigs are slender, somewhat shiny, free of hair, and light gray or brown. They become dark gray or brown and somewhat wrinkled or roughened with time. The bark is about 1 inch thick, deeply furrowed, has a stringy texture, and is rather scaly at the surface.

The tree grows 100 feet high or more, reaching diameters of 3 to 4 feet. In closed forest stands, a tree often has a straight, clear trunk and no branches for half its height. In the open, it forms a beautiful, broad, round-topped crown.

The flowers appear after the leaves and contain both male and female parts. They are quite fragrant, yellowish-white, and hang in drooping clusters. The clusters are attached to a narrow, leafy-like structure called bracts. The fruit is on stalks attached to the leafy bracts. About the size of a pea, the fruit is brown and nut-like. Each fruit contains two seeds and is covered with thick, reddish-brown fuzz. Squirrels eat basswood fruits in the summer. Birds and other small mammals probably eat the fruits, too.

The wood is light, soft, and not very strong. It is low in shock resistance, fine-textured, and even-grained. It has a light brown to nearly white heartwood you can scarcely distinguish from thick sapwood. Easy to work with, it holds paint well and glues easily. It is fairly stable after seasoning.

Wood carvers prize basswood because of its even grain and workability. It is used for factory lumber that is remanu-

factured into crates and boxes. Some goes into furniture, especially as interior parts that are overlaid with higher-grade woods. It is also used for pulpwood.

Basswood occurs widely but never in abundance throughout Mississippi. It is rare in bottomlands, occurring only on the old, rich sites and terraces and in some creek bottoms. Its best development is in the uplands on the middle or lower slopes in ravines and coves. A national champion Carolina basswood is in Marshall County.

Basswood is moderately tolerant of shade and has a medium growth rate. Its value suffers because of its scarcity. Reproduction is poor, and much of the reproduction is from stump and root sprouts following cutting or fire. There are several kinds of basswoods, and it is very hard to distinguish among them. Their wood is very similar, as are the trees themselves. Being able to recognize the different basswoods is relatively unimportant.

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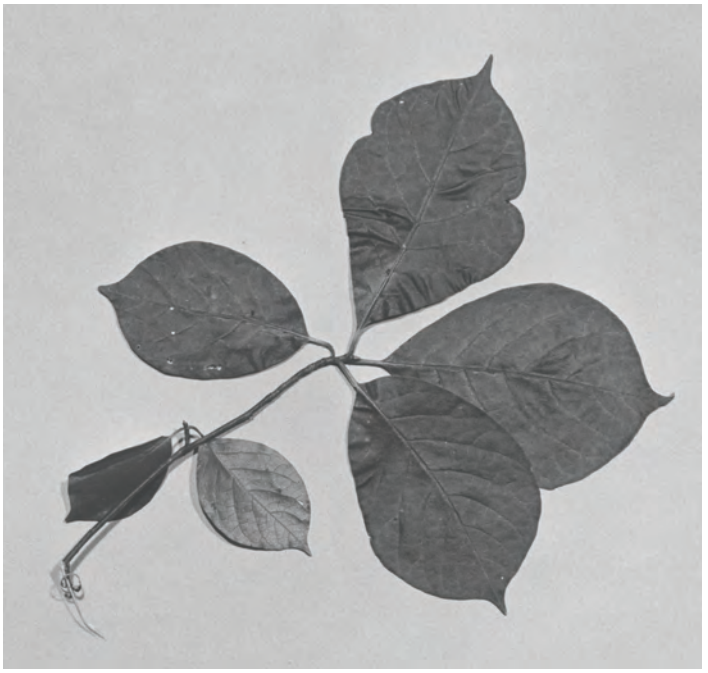

BLACKGUM

Nyssa sylvatica

Other common names are black tupelo, sour gum, tupelo, tupelo gum, and pepperidge. The leaves are alternate, deciduous, simple, 2 to 5 inches long, and 1 to 3 inches wide. The leaf margin is entire. The leaf's upper surface is dark green; the underside is pale and hairy. Leaves turn a brilliant red in the fall. The petiole is reddish and about 1 inch long.

Twigs are orange, red, or reddish-brown, becoming darker with age. Deep furrows divide the bark of mature trees into square or rectangular blocks. This blocky pattern looks somewhat like alligator hide.

Blackgum is usually a medium-sized tree, 40 to 70 feet in height with a trunk diameter of 1 to 3 feet. It may reach a height of 100 feet and a trunk diameter of 4 or more feet. In the forest, the trunk is fairly straight and does not branch until far into the crown. The shape of the crown usually varies from tree to tree. It may be short or long, and cone-shaped, flat-topped, or rounded. The branch angle is usually perpendicular to the main stem.

The tiny, inconspicuous male and female flowers occur on separate trees. The small male flowers occur in dense stalks with many flowers per stalk. Female flowers occur in more open clusters with few flowers per cluster. The fruit is round, dark blue, berry-like, half-inch in diameter, and clustered on stalks about 1½ inch long. The fruit is fleshy and has a bitter taste. The hard stone in the fruit is slightly ribbed. Many types of birds, including quail, turkeys, and ducks eat the fruit. Deer, foxes, beavers, black bears, raccoons, squirrels, and other small mammals also feed on the fruit. White-tailed deer relish young sprouts.

The wood is hard, moderately heavy, and moderately durable. It is somewhat weak and not used where you need strength. It is hard to dry without shrinking and warping. But blackgum wood's usefulness is on the increase. High grades are used in TV and entertainment centers and other furniture. Otherwise, the value is somewhat low. It is used for making crates, interior parts of furniture, and for railroad ties when treated. It is a good pulpwood species, used to make high-grade book and magazine papers.

Blackgum occurs throughout bottoms but only on the higher sites that are relatively well drained. It occurs generally in smaller stream and creek bottoms. In the uplands, it is widely scattered. The best development is in lower slopes and coves. It may occur on ridges and dry sites, but the form on these sites is very poor, and it does not develop into a significant tree. It is moderately intolerant of shade and has a poor to medium growth rate. Even though the seeds are widely scattered by birds, reproduction is rather sparse.

Sections of hollow blackgum were used as beehives in the old days. Early settlers sawed hollow trunks into sections and sealed them with flat boards to create the hives.

WATER TUPELO

Nyssa aquatica

Other common names are tupelo, tupelo gum, swamp gum, olive tree, bay poplar, cotton gum, sour gum, and sourwood. The leaves are alternate, simple, deciduous, oblong

in shape, 5 to 12 inches long, and 2 to 4 inches wide. The margin is usually smooth and occasionally has one or two scalloped teeth. A leaf is a dark, lustrous green on the upper surface, and pale and somewhat hairy on the lower surface. The petiole is stout, grooved, hairy, swollen at the base, and about 2 inches long.

Twigs are dark red and at first covered with light, tiny hairs, but they soon become smooth. The bark has long, deep furrows, forming ridges roughened on the surface by small scales. The bark is brown or grayish-brown, fairly thin, and about one-fourth inch thick.

Water tupelo may reach 80 to 100 feet in height with a trunk diameter of 3 to 4 feet. The base of the trunk may reach very large diameters because it is distinctly swollen in most cases. The swollen base is much like the base of bald cypress tree. It usually has a long, clear trunk with small, spreading branches forming an oblong or pyramid-shaped crown.

The flowers are small, yellowish, and inconspicuous, appearing before and sometimes with the leaves. The male and female flowers usually appear on separate trees. The male flowers appear in dense clusters on long, slender, hairy stalks. The female flowers are solitary on short stalks. The fruit is berry-like, dark purple, about 1 inch long, oblong, and marked by conspicuous light dots. It has a tough skin with a bitter flesh. It is on a slender stalk, 3 to 4 inches long, and matures in September and October. The seed is a hard stone, with sharp ridges or wings along its length. Wood ducks, many other birds, and squirrels, deer, and other mammals eat the fruit. Deer also feed on the foliage and young sprouts.

The wood is light, soft, not very strong, close-grained, and difficult to split. It has a light brown or nearly white heartwood and thick sapwood. Individual trees are often very clear and free of defects. The wood takes stain easily, so it can be used as an imitation for walnut and mahogany. The wood is used for furniture, woodenware, veneer, fruit and vegetable crates, broom handles, pulpwood, and, when treated, for railroad ties. Wood from the swollen base of the tree is highly desired by wood carvers, particularly those who carve items such as duck decoys. Wood from this swollen base is very light and easy to work. It is also often used for fishing corks and fishnet floats.

Water tupelo occurs in the swamps of the flood plains and of rivers and streams. Otherwise, it occurs only near live streams and coastal areas and along oxbow lakes. In the uplands, it occurs only at the heads of streams, branches or swamps and openings into bottomlands. You find it often with bald cypress. Water tupelo does not like shade and has a medium growth rate. Reproduction varies from sparse to heavy, depending on the amount of sunlight and moisture available. Logging costs are very high for tupelo because of the almost year-round swampy condition of its habitat.

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COMMON PERSIMMON

Diospyros virginiana

Other common names are persimmon, eastern persimmon, date plum, possumwood, American ebony, boa-wood, and butterwood. The leaves are alternate, simple, decidu-

ous, oblong, 4 to 6 inches long, and 2 to 3 inches wide. The leaf margin is entire. The upper surface of the leaf is dark green and leathery; the lower surface is pale. The petiole is stout and about 1 inch long.

Twigs are slender and slightly zigzag. At first grayish to reddish-brown, twigs later become darker. They are bitter to the taste. There is no terminal bud, and the lateral buds are small. The bark pattern is easy to recognize. It is dark and deeply divided into thick, square plates or blocks. The bark looks like alligator hide, as does the bark of older black gums. But persimmon bark is much darker – from gray brown to nearly black.

Persimmon varies a lot in growth, depending on the site. On a good site, it can grow 60 to 100 feet high and have diameters of 1 to 1½ feet. In the forest on good sites, the tree trunk can be very tall, slender, and free of limbs for two-thirds of its total height. On poorer sites, the trunk is short, with spreading branches and an irregular crown, and it may be nothing more than a shrub or weed tree.

Flowers are small, green, and inconspicuous. The male and female flowers appear on separate trees when the leaves are more than half grown. Male flowers appear two to three flowers to a cluster; female flowers appear solitary. The fruit is a round, juicy, orange-red berry. It is soft and sweet at maturity, but when green, it is very sour. If you bite into a green persimmon, it will cause your mouth to pucker. The fruit rots very quickly after dropping to the ground. It contains four to eight flattened seeds. The fruit matures from September to November and may remain on the tree until midwinter. Many species of wildlife eat the fruit, but especially opossum, raccoon, fox, and deer. Small mammals, game birds such as turkeys and quail, and songbirds also feed on the fruit and seed.

The wood is hard, heavy, and strong. It has brown to black heartwood and pale yellow sapwood often streaked with black. Easily polished, persimmon wood was used mainly for golf club heads and for shuttles used in textile mills. Only a small quantity of persimmon lumber is produced. Some is used in small wood products such as handles for certain tools.

Persimmon occurs on widely scattered sites on wet flats and along the margins of sloughs and swamps. It develops best on the newer alluvial areas in large bottoms. In the uplands, it grows best in coves and on lower slopes. It is found as a weed tree in old fields and on high, dry sites. It is one of the species that develops early in abandoned fields.

Persimmon likes shade. Reproduction is very sparse but occurs even in the understory. It sprouts well from the stump and is one of the most fire resistant of the hardwoods. The growth rate is poor. Persimmon is frequently planted as an ornamental or fruit tree, and sometimes humans eat the fruit. Native Americans used to crush and dry the fruit and use it to make certain other foods.

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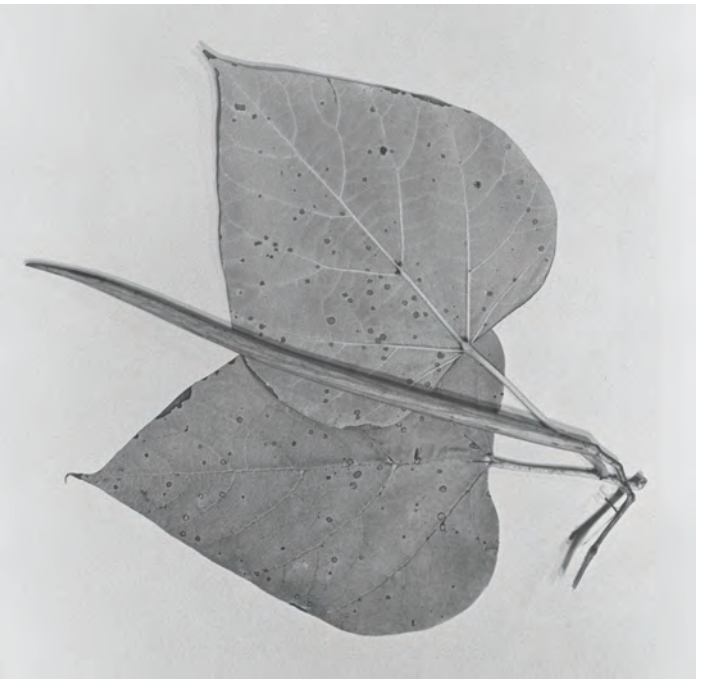

SOUTHERN CATALPA

Catalpa bignonioides

Other common names are common catalpa, Indian bean, catalpa, caterpillar tree, and cigar tree. The leaves are opposite, simple, deciduous, heart-shaped, 5 to 8 inches long, and 4 to 6 inches wide. The margins are entire. The upper surface is light green and smooth; the underside is pale and slightly hairy. The leaf's midrib is thick and very conspicuous. The petioles are also thick and about 5 or 6 inches long.

Twigs are usually thick and brittle. They are greenish-purple at first, later becoming grayish-brown. Terminal buds are absent. The bark is thin, reddish-brown to gray, and about one-fourth to one-third inch thick. On older trees the bark breaks into long, thin, irregular-shaped scales.

The Southern catalpa commonly reaches 25 to 35 feet in height but may reach a height of 60 feet or more and a diameter up to 3 feet. The tree trunk is usually short, crooked, and poorly formed. The long, heavy branches form a broad, wide, irregular crown.

The large, white flowers are occasionally marked with yellow and purple spots. They contain both male and female parts and appear in May or June in clusters 8 to 10 inches long. They are among the most attractive blossoms of any

of our flowering trees. Each flower is about 2 inches in diameter. The fruit is a woody, bean-like pod 6 to 20 inches long and one-half inch in diameter. It stays on the tree until spring, finally splitting into two sides that free the numerous seeds. The seeds are flattened, oblong, have pointed wings, and are dispersed by the wind.

The wood varies from a light to dark brown, is very coarse-grained, and has a distinctive, faint odor like kerosene. Its major attribute is its durability in contact with the soil. The major use for catalpa wood is fence posts. It is used sometimes for small construction projects on the farm where a durable wood is needed.

The natural occurrence of Southern catalpa is rather unusual. The tree has been planted so extensively that its natural distribution is really unknown. It is found scattered all over the countryside. Usually it grows best on more fertile sites and may be found growing naturally along streams and riverbanks. A national champion Southern catalpa is in Yalobusha County.

You won't find many catalpa trees of saw-log size. Forest-grown trees seem to have a slower growth rate. With planted trees, the growth rate is good to excellent. It tolerates shade. Reproduction is poor from seed, but it sprouts readily. Catalpa fence posts have actually sprouted after the fence was built. It is very susceptible to fire. It has become a desirable ornamental because of the showy flowers and large leaves. "Catawba worms" from the catalpa sphinx moth are highly prized for fish bait.

FLOWERING DOGWOOD

Cornus florida

Other common names are dogwood, boxwood, flowering cornel, and arrow-wood. The leaves are opposite, simple, deciduous, 3 to 6 inches long, and 1½ to 2 inches wide. They are oval or oblong, with pointed tips. The leaf margins are entire. The larger veins in the leaf curve forward toward the leaf tip, making dogwood leaves fairly easy to recognize. Leaves are light green on the surface and paler and somewhat hairy on the underside. The leaf's upper surface turns a deep scarlet in the fall.

Twigs are green or red, smooth and glossy, and often covered with a delicate, powdery coating. The bark is dark reddish-brown, dividing into small, square blocks as the tree matures. These small, flat, scaly blocks give an appearance of alligator leather. You can easily tell dogwood bark from persimmon and black gum because the blocky pattern is much smaller on dogwood and the color is different.

Dogwood is a small tree, occasionally reaching 40 feet in height and a diameter of 1 to 1½ feet. It usually appears as a low, bushy tree of 15 to 30 feet in height with diameters of 6 to 10 inches. The trunk is short and does not taper much until the first branches. The branches spread to form a broad, low, flat-topped crown.

The flowers are small and greenish, first appearing when the leaves are about half grown. The flowers are perfect, with both male and female parts. The parts that are thought to be flower petals are four large, white, petal-like bracts notched at the tip. The true flower, however, is small and inconspicuous and in clusters in the center of these four white bracts. The fruit is bright red and berry-like when mature. It is oval and in tight clusters. The fruits are green until they ripen around October. Dogwood berries are a favorite fall and winter food for deer, wild turkeys, squirrels, and many songbirds. Deer sometimes browse dogwood sprouts.

The wood is heavy, hard, strong, and close-grained. The wood has light reddish-brown heartwood and wide, pale sapwood. The wood's use is limited to specialty items such as shuttle blocks and tool handles. It is used occasionally for engraving work.

Dogwood occurs rarely in bottoms of major rivers and streams. It occurs in bottoms of minor streams and in better-drained areas. In the uplands, it is common on the better, moist soils that are well drained. It usually occurs as an understory species in mixed woods.

Dogwood likes shade. Reproduction is quite good in shade, and it gives off several sprouts. It has a poor growth

rate but is highly prized as an ornamental in the spring when its beautiful white blossoms appear. It also has beautiful, dark scarlet foliage in the fall.

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AMERICAN HOLLY

Ilex opaca

Other common names are holly and white holly. The leaves are alternate, evergreen, simple, 2 to 4 inches long, and 1 to 2 inches wide. They are leathery, quite stiff, and have sharp, pointed spines along the margins. They are a dull yellow-green above and paler and more yellow below. The holly leaf is one of the most easily recognized of all leaves.

Twigs are stout, green to light brown, and slightly hairy at first. The twigs later become smooth. The bark is rather smooth, thin, and light gray. It has no distinct furrows or ridges. It becomes rougher on older trees and occasionally may have some scattered, wart-like growths.

American holly normally reaches heights of 20 to 50 feet but occasionally reaches 100 feet. The diameter is usually ½ to 1½ foot but can reach as much as 3 feet. The tree usually has numerous lateral branches. In spite of this, the trunk of the tree grows up through the crown continuously and usually without forking. The crown is usually cone-shaped with slender, horizontal or slightly drooping branches.

Male and female flowers appear on separate plants. They appear in the spring and are quite small and hard to see. The male flowers appear in clusters of three to nine. The female flowers may be in clusters of one to three. The petals are greenish-white and about one-sixth inch long. The fruit is dull red or yellowish, round, and berry-like. The fruit is on the female tree. About one-fourth inch in diameter, it ripens in late fall and remains on the branches during the winter. The berry contains one light brown nut that is ribbed on four sides. Many species of birds, doves, turkeys, quail, small mammals, and white-tailed deer eat the fruits.

The wood is hard but not very strong. Holly and ebony are the two extremes in natural wood color. Holly wood is considered the nearest to snow white when compared to a piece of jet black, ebony wood. Easily dyed, holly wood is sometimes dyed black and used as a substitute for ebony for piano keys, violin pegs, and such. (More expensive musical instruments contain genuine ebony.) The wood is also used in its natural color for fancy inlaid work in cabinets, for interior finishes, and for cabinet making. In any use, it must be kept dry, because it is not durable in contact with moisture.

American holly occurs mostly in minor stream bottoms and occasionally on high ridges and larger bottoms. In the uplands, it is scattered widely as an understory tree in the piney woods and on all but the driest or wettest sites.

Holly likes shade and has a poor growth rate. Reproduction is sparse but fairly dependable. The foliage and fruit is widely used for holiday decorations. Trees of saw-timber size are very scarce. Although it is attempted often, transplanting holly trees usually doesn't work. Birds scatter the seeds, but low fertility keeps the occurrence low. Holly resists saltwater spray and is sometimes used in coastal areas as an ornamental.

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