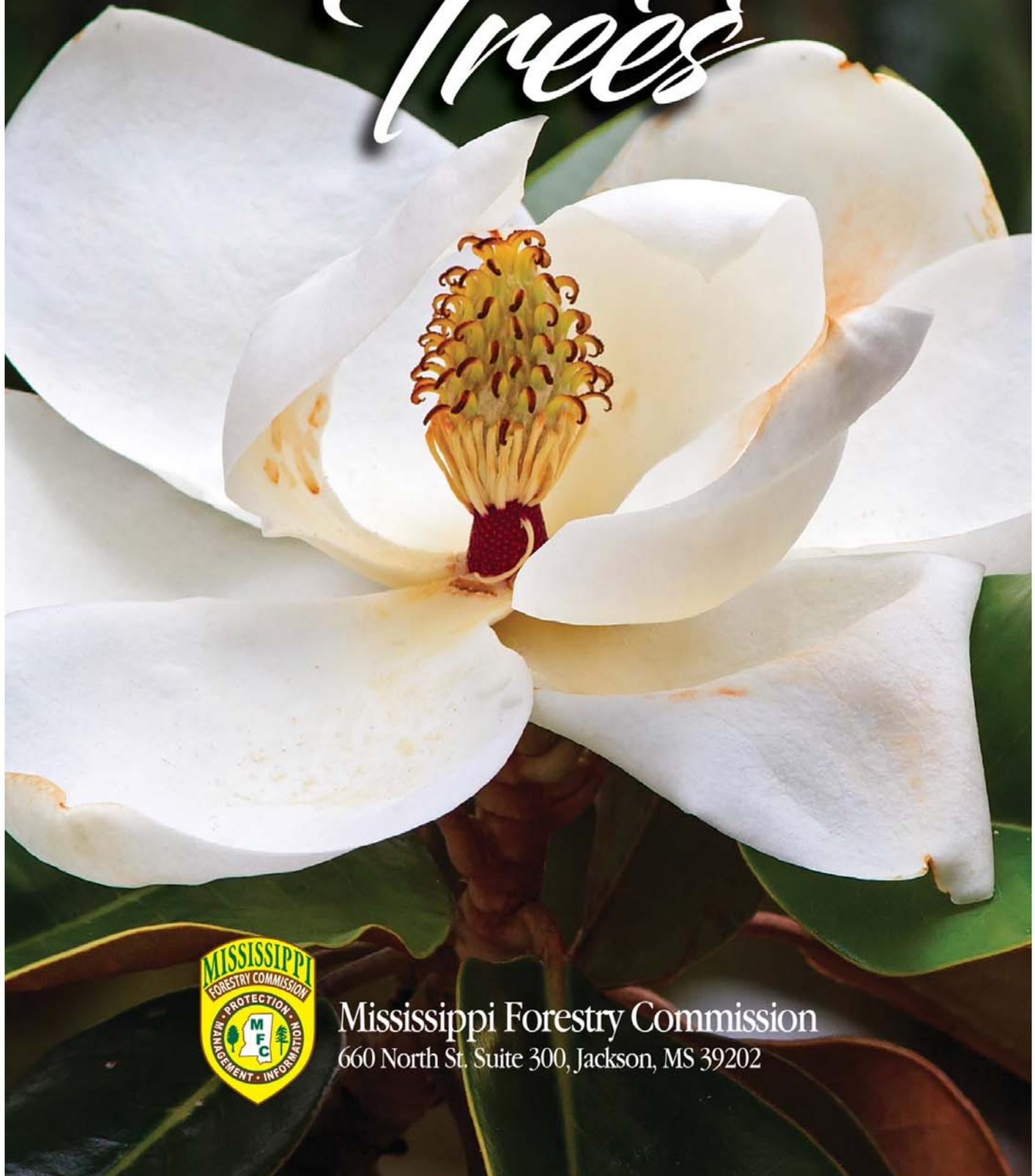


Mississippi Trees

2016



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660 North St. Suite 300, Jackson, MS 39202



Mississippi Forestry Commission
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Mississippi Trees

2nd Edition • 2016

Authors

John D. Hodges

Professor Emeritus
Mississippi State University
Department of Forestry

David L. Evans

Professor of Forestry
Mississippi State University
Department of Forestry

Linda W. Garnett

Compilation, Format

Extension Associate, Forestry
Mississippi State University
Extension Service

Contributing Technical Editor

Alexis Londo
Research Associate
Mississippi State University
Department of Forestry

Technical Review

Lisa McReynolds
Administrative Assistant
Mississippi State University
Extension Service



United States
Department of
Agriculture

National Institute
of Food and
Agriculture



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Introduction

This second edition of the Mississippi Trees book was written in conjunction with the Mississippi Forestry Commission and the Department of Forestry at Mississippi State University. Printing of the book was made possible by funds provided by the Renewable Resources Extension Act (RREA).

Forests and forestry provide many benefits to all Mississippians, including clean water, air, wildlife, and timber production. Forests cover approximately 70% of the state, and timber ranks second only to poultry in terms of agricultural income in Mississippi. The ability to identify these trees is paramount for those who work in the forest products industry. For those who enjoy the woods for recreation or aesthetic purposes, being able to identify the trees can make the experience even more enjoyable. It is our hope that this book will be beneficial to both professional and recreational users alike.

Tree Names

All known plants, including trees, have a scientific name and usually one or more common names. For example, the scientific name for cherrybark oak is *Quercus pagoda* Raf., but cherrybark oak, spanish oak, swamp red oak, are all common names for the same species. For that reason the scientific name is less confusing and far more descriptive. The term pagoda in the scientific name for cherrybark oak denotes the pagoda shape of the outline of the leaves.

The scientific name e.g., *Quercus pagoda* Raf., is composed of three parts. The first part is the genus, the second part is the specific epithet, and the third part is the authority or name, often given as an abbreviation, of the person who classified the species and gave it a scientific name.

Use of the Book

This book is not intended as a text book on dendrology or tree identification. Nor is it intended to be a complete account of the woody flora of Mississippi. Rather, it has been prepared for the citizens of Mississippi as an aid to identification of the common trees occurring in Mississippi, and to give useful and interesting information about each tree species that is not normally included in technical books on tree identification. For that reason, use of technical descriptive terms has been limited as much as possible, and method of description has been standardized to make it easier to use. For example, the description of leaves, bark, fruit, etc. is covered in the same way and in the same sequence for all species.

The organization of the second edition of Mississippi Trees has been expanded to some degree. Although the species "groups" are maintained, they are further divided into categories as follows: leaves needle or scale-like (conifers), and leaves broad and evergreen or deciduous. The broadleaves are then further categorized by "opposite or whorled" or "alternate" leaves, twigs and leaf scars. Under opposite or whorled are the groups ashes, maples, other trees, and shrubs and small trees. Under alternate leaves, twigs, and leaf scars are the groups elms, hickories, oaks, other trees, and shrubs and small trees. This setup still allows the user to go directly from the table of contents to one of the major groups such as oaks, hickories, or ashes. However, all categories and groups have been removed from the indices. The index by common name and the index by scientific name are both strictly alphabetical so that "Allegheny chinkapin" and alternate-leaf dogwood are the first two species in the common name index whereas *Acer barbatum* and *Acer negundo* are the first two species in the scientific name index. This will make it much easier for the user to quickly locate a specific species of interest. The glossary and leaf description pages remain the same.

NOTE: The information in the "Other Facts" section on each species was taken from a number of different sources, and has not been verified.

LEAVES NEEDLE OR SCALE-LIKE

CONIFERS

eastern redcedar

cedar tree, juniper, savin, evergreen,
cedar apple, Virginia red cedar

Juniperus virginiana L.

Family: Cupressaceae

Leaves:

Type: evergreen; 2 forms;

1) juvenile opposite in pairs, or ternate;

2) mature 4-ranked

Size: juvenile 0.25" long; mature 0.06" long

Color: juvenile light green; mature dark green with glandular dots (both turn brown end of 2nd winter)

Characteristics: juvenile awl-shaped, sharp pointed, spiny to touch; mature shalelike, usually appressed

Twigs:

Size: slender; terete or angled

Color: dark green; then reddish

Surface: covered by compact scale-like leaves

Buds:

Size: minute

Shape: (no data)

Color: (no data)

Surface: hidden by leaves

Cones:

Pollen Cones: dioecious; minute; 0.13" long; 10-12 yellow-brown pollen sacs

Ovulate Cones: dioecious; minute; globular; several purplish, fleshy scales, each with 1-2 basal ovules

Mature Cones:

Size: 0.25" dia.

Shape: ovoid

Characteristics: greenish blue with glaucous bloom (mature one season); fleshy, berrylike

Seed: wingless; ovoid; sharp-pointed; 0.17" long

Bark: thin; reddish brown; fibrous; long, narrow strips; fluted trunks; buttressed at base

Physical Attributes:

Form: single stem

Size: 50.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: found on wide variety of soils; best growth on light, calcareous loams; most abundant, however, on dry, shallow, rocky soils --- many times where nothing else will grow

Soil Texture: fine - coarse

Soil pH: 4.7 - 8.0

Range: eastern United States and southern Ontario; in Mississippi, throughout

Wildlife Value and Uses: twigs and foliage eaten extensively by hoofed browsers; ovulate cones an important part of the diet of numerous birds and mammals, both large and small; important nesting cover for chipping sparrows, robins, song sparrows, and mockingbirds; roosting cover for juncos, myrtle warblers, sparrows of various kinds, and other birds; especially valuable as dense winter protective cover; widely used in shelterbelts and wildlife plantings

Timber Value and Uses: close-grained, aromatic, and durable wood used for furniture, interior paneling, novelties, and fence posts; fruits and young branches contain aromatic oil used in medicines

Landscaping Info: often used as ornamentals for their evergreen foliage; generally propagated by cuttings; seedlings ordinarily used as stock for grafting ornamental juniper clones; especially well adapted to dry areas

Other Facts: symbolizes the tree of life for numerous Native American tribes; used as incense in rituals and burned in sweat lodges and in purification rites; used teas, ointments, and liniments made from the leaves, cones, and roots and combinations of them to treat arthritis and rheumatism, coughing; colds, fevers, tonsillitis, and pneumonia; also used as a sedative for hyperactivity, and to speed delivery during childbirth; wood utilized for lance shafts, bows, and other items; red cedar flutes were highly regarded by the Cheyenne; cedar boughs were used for bedding; Menomini wove mats of cedar bark used for roofing temporary structures, for partitions, floor mats and wrappings; wood used in the construction of lodges, totems, and war canoes by Native Americans of the northwest coast



Leaf



Bark



Fruit



Tree



Twig

The young leafy twigs were officially listed in the U.S. Pharmacopoeia from 1820 to 1894 as a diuretic (Kindscher 1992). The distilled oil has been officially listed as a reagent in the U.S. Pharmacopoeia since 1916

shortleaf pine

southern yellow, oldfield, shortstraw, or Arkansas soft pine, shortleaf yellow

Pinus echinata Mill.

Family: Pinaceae

Needles:

Type: 2-3 per fascicle; evergreen; persistent 3-4 seasons

Size: 2.5" - 5.0" long; fascicle sheaths 0.13" - 0.25" long

Color: dark yellow-green

Characteristics: slender; flexible; straight

Twigs:

Size: slender

Color: pale green (purplish bloom); becoming reddish brown

Surface: scaly on older branchlets

Buds:

Size: 0.25" - 0.50" long

Shape: (no data)

Color: reddish brown

Surface: smooth; several red-brown scales

Cones:

Pollen Cones: greenish yellow; 0.25" - 0.5" long; compact clusters at base of terminal bud
Ovulate Cones: pinkish; 2-3 per cluster; at the end of elongating twig

Mature Cones:

Size: 1.50" - 2.50" long

Shape: ovoid

Characteristics: dull gray; almost stalkless; scales transversely keeled; prickle short, slightly recurved, often deciduous

Seed: winged, 0.25" long, brown mottled with black; wing 0.5" long, straw-colored, broadest at middle

Bark: dark brown, somewhat scaly young; mature bark reddish brown, flat irregular plates, numerous small conspicuous resin pockets

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 60.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential when young

Habitat and Ecology:

Site: variety of soils and sites; most common on dry upland soils in pure or mixed stands

Soil Texture: fine - coarse

Soil pH: 4.0 - 6.0

Range: southeastern New York and New Jersey; west to Pennsylvania, southern Ohio, Kentucky, southwestern Illinois, and southern Missouri; south to eastern Oklahoma and eastern Texas; and east to northern Florida; northeast through the Atlantic Coast States to Delaware; in Mississippi, throughout with the exception of the Mississippi River Delta counties

Wildlife Value and Uses: seeds eaten by birds and small mammals (squirrels may cut the cones and eat the seeds before the cones open naturally); canopies provide protection from the wind and cold for many animals; stands scattered through hardwood forests are especially beneficial to wildlife; older shortleaf with red heart rot are primary nesting trees for red-cockaded woodpecker

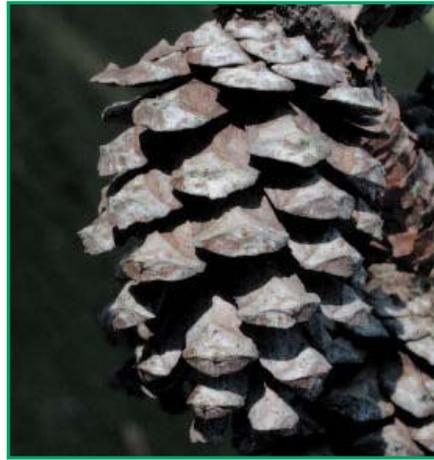
Timber Value and Uses: primarily used for lumber, plywood, other structural materials, and pulpwood; was commonly planted on eroded lands in Mississippi; not as much litter as loblolly pine, and therefore may be less desirable for some reclamation uses

Landscaping Info: sometimes planted as an evergreen ornamental and as a screen in urban areas

Other Facts: One of the biggest shortleaf pines grows in Mississippi. It measures 41.5" d.b.h. and 138' tall, and attests to the large size these trees may attain.



Needles



Mature Cone



Male



Bark



Female

Young Cones



Twig/fascicle

slash pine

Pinus elliottii Engelm.

Family: Pinaceae

Needles:

Type: 2-3 per fascicle; evergreen; persistent for 2 seasons

Size: 7.0" - 12.0" long; fascicle sheaths 0.5" - 0.75" long

Color: dark green

Characteristics: shiny; short; stiff; straight

Twigs:

Size: stout

Color: light orange-brown

Characteristics: rough; ridged by compact arrangement of needles and scales

Buds:

Size: 0.5" - 0.75" long

Shape: elliptic - ovate

Color: rusty brown

Surface: free at tips

Cones:

Pollen Cones: purplish brown; 0.5" - 2.0" long; dense clusters at base of terminal buds

Ovulate Cones: pinkish purple; at tip of elongating twigs; solitary or paired

Mature Cones:

Size: 3.0" - 7.0" long

Shape: ovoid to elongated, cylindrical

Characteristics: lustrous tan scales; scale prickle small recurved; not extremely sharp

Seed: 0.25" long; black ridged; triangular; wing 1.0" long, translucent, thin, encircles seed

Bark: dark reddish brown, furrowed, rough young; orange-brown, broad flat scaly plates mature

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 60.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: low ground; swamps, hammocks, along streams; often invasive on abandoned fields

Soil Texture: fine - medium

Soil pH: 4.0 - 6.4

Range: grows naturally from Georgetown County, SC, south to central Florida, and west to Tangipahoa Parish, LA; native range includes the lower Coastal Plain, part of the middle Coastal Plain, and the hills of south Georgia; established (by planting) as far north as Tennessee, in north central Georgia, and Alabama; planted and direct-seeded in Louisiana and eastern Texas where it now reproduces naturally; in Mississippi, reported by the NRCS Plants Database primarily in the coastal counties

Wildlife Value and Uses: seeds are an excellent food source for gray and fox squirrel and wild turkey; dense foliage provides protective cover for many wildlife species during inclement weather

Timber Value and Uses: major source of naval stores (turpentine, and rosin); used for a variety of other purpose including poles, railroad ties, and pilings; planted to stabilize the soil on eroding slopes and strip mine spoil banks, where its rapid early growth is an advantage over slower growing species

Landscaping Info: adaptable to a variety of site and topographic conditions, but grows best on pond margins and in drainages where soil moisture is ample but not excessive and the soil is well aerated; a number of cultivars and improved materials are available

Other Facts: The naval stores industry is one of the oldest in the United States, and has supplied a large portion of the resin and turpentine used throughout the world since colonial times. In many early forests, gum was the primary and sometimes the only product harvested.



Needles



Mature Cone



Male



Bark



Female

Young Cones



Seed



Twig

spruce pine

cedar pine, Walter pine, bottom white pine

Pinus glabra Walter

Family: Pinaceae

Needles:

Type: 2 per fascicle; evergreen; persistent 2 seasons

Size: 2.0" - 4.0" long; fascicle sheaths 0.25" long

Color: dark green

Characteristics: slender; somewhat flattened; twisted

Twigs:

Size: slender

Color: gray-green young; light brown mature

Characteristics: smooth on young branches; older branches smooth for several years

Buds:

Size: (no data)

Shape: (no data)

Color: (no data)

Characteristics: (no data)

Cones:

Pollen Cones: greenish yellow; <0.5" long; clustered at the base of terminal buds

Ovulate Cones: pinkish pale green; 1-3 on tips of fertile twigs

Mature Cones:

Size: 2.0" - 3.5" long

Shape: conical-elliptical

Characteristics: nearly stalkless; slightly keeled scales; small deciduous prickles

Seed: winged; nearly triangular; 0.13" long; thin, dark gray shell, mottled with black; wings 0.63" long, 0.25" wide, broadest below the middle

Bark: young trees smooth, thin, grayish brown; older trees dark gray brown to nearly black, furrowed, narrow scaly ridges

Physical Attributes:

Form: single stem

Size: 90.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: moist, sandy, loam soils of alluvial flood plains, stream banks or hammocks with mixed hardwoods in the lower Coastal Plain

Soil Texture: medium - coarse

Soil pH: 3.8 - 5.6

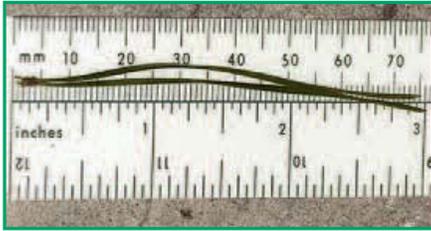
Range: South Carolina, Georgia, Florida, Alabama, Mississippi, and Louisiana; in Mississippi the southeastern third of the State

Wildlife Value and Uses: provides some habitat and food for wildlife as a member of mixed pine-hardwood communities

Timber Value and Uses: limited commercial importance; brittle and close-grained, has few resin canals, and is not durable; planted to some extent for use as a Christmas tree; can be used as it occurs naturally for pulping operations---use in large quantities for papermaking might require operational changes to meet strength requirements

Landscaping Info: speed of growth and thick, dark green needles are making them popular landscape trees; can be planted to make a thick evergreen border; more tolerant of moist soils than many other pines; works great as a specimen tree in the landscape; can be trimmed and used for Christmas trees

Other Facts: attains its largest size, and occupies areas of considerable extent in northwestern Florida



Needles



Mature Cone



Male



Bark



Female

Young Cones



Twig

longleaf pine

longstraw pine, southern yellow pine,
Georgia pine

Pinus palustris Miller

Family: Pinaceae

Needles:

Type: 3 per fascicle; evergreen; persistent for 2 seasons

Size: 10.0" - 18.0" long; fascicle sheath 0.5" - 1.0" long

Color: dark green

Characteristics: coarse; flexible; drooping; densely crowded

Twigs:

Size: very stout (0.5"> dia.)

Color: orange-brown

Characteristics: rough; scaly

Buds:

Size: large, conspicuous

Color: silvery gray base; silvery white fringed scales

Characteristics: outward curled scales at base; fuzzy/hairy podlike center

Cones:

Pollen Cones: dark purple-blue; 1.0" - 1.5" long; large clusters at base of terminal buds

Ovulate Cones: rose-purple; in pairs or clusters (3-4)

Mature Cones:

Size: 6.0" - 10.0" long

Shape: narrowly conical-cylindrical

Characteristics: raised scales; keeled on ends; small reflexed prickle that curves toward the base of the scale

Seed: winged; 0.5" long; thin pale shell, mottled with dark blotches; wing 0.5" long, striped, oblique at the ends; widest at middle

Bark: gray brown; scaly young; becomes broken into flat, scaly, thick reddish brown plates with age

Physical Attributes:

Form: single stem

Size: 120.0', mature

Growth Rate: 40.0' maximum @20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: occurs in a wide variety of upland and flatwood sites; common on sandy, infertile, well-drained soils, mostly below 660 feet elevation

Soil Texture: medium - coarse

Soil pH: 6.0 - 7.0

Range: Atlantic and Gulf Coastal Plains from southeastern Virginia to central Florida; west to eastern Texas; not found in the Mississippi River Valley; to 900' in Alabama; in Mississippi, reported in 16 counties by the NRCS Plants Database --- primarily in the southeastern quarter of the State

Wildlife Value and Uses: large seeds eaten by birds and small mammals; germinating seeds eaten by ants; roots of seedlings eaten by razorback hogs; excellent habitat for bobwhite quail, white-tailed deer, wild turkey, and fox squirrel; old-growth stands provide nesting habitat for the red-cockaded woodpecker

Timber Value and Uses: wood is often clear, straight, and with few defects; a significant portion of the annual cut is used in the manufacture of kraft paper and paperboard; resins are fractionally distilled and used in the production of many diversified products such as paints, varnishes, pharmaceuticals, lubricants, and cloth-printing inks

Landscaping Info: no cultivars are currently recommended; seeds and seedlings commercially available from woody plant seed companies; needles are used for mulch

Other Facts: seedlings stemless after one growing season (grass stage) which persists from 2 to many years; during this stage, the seedling develops an extensive root system, and the root collar increases in diameter; as root collar diameter approaches 1.0" diameter, height growth begins

reported that in colonial times some of the choicest stands of longleaf pine were set aside for exclusive use by the British navy because it was ideal for the construction of masts and spars on England's sailing ships



Loblolly pine

Arkansas pine, North Carolina pine, oldfield pine

Pinus taeda L.

Family: Pinaceae

Needles:

Type: needles; 3 per fascicle; evergreen; persistent for 3 seasons

Size: needles 6.0" - 9.0"; fascicle sheaths 0.25" - 0.5" long

Color: dark green; new growth lighter

Characteristics: stout; stiff; straight; lustrous new growth; dull older growth

Twigs:

Size: moderately stout

Color: greenish brown; then light brown

Surface: rough, flaky on young branches; smooth on older branches

Buds:

Size: 0.75" - 1.0" long

Shape: scales wedge-shaped

Color: reddish brown scales

Surface: scales free; commonly reflexed at tips

Cones:

Pollen Cones: yellow-green; 1.0" - 1.5" long; in large compact clusters at base of terminal buds

Ovulate Cones: pale green; in pairs of 3 to 4 per cluster; slightly stalked

Mature Cones:

Size: cone 3.0" - 6.0" long

Shape: ovoid-conical

Characteristics: reddish brown; sessile; flattened; wrinkled, armed on the back with a short, stout, sharp spine; scales thin, exposed portions of closed cone tawny

Seed: winged; 0.25" long; dark brown, black mottles; wings yellowish brown to gray-black, 0.75" long; widest above middle

Bark: dark gray to nearly black on young trees; older trees dark reddish brown, large flat rectangular plates

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: high

Anaerobic: low to medium

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential except for young seedlings

Habitat and Ecology:

Site: widely scattered on a variety of sites in the coastal plains and lower Piedmont Plateau in pure or mixed stands; aggressive on fallow fields or cutover sites

Soil Texture: fine - coarse

Soil pH: 4.5 - 7.0

Range: southern New Jersey; south to central Florida; west to southeastern Texas and southern Oklahoma; in Mississippi throughout with the exception of the Mississippi River Delta counties

Wildlife Value and Uses: primary game species that inhabit pine and pine-hardwood forests include white-tailed deer, gray and fox squirrel, bobwhite quail, wild turkey, mourning dove, and rabbit; some species utilize the habitat through all stages of stand development; others attracted for a short time during a particular stage of development; chief habitat for the pine warbler, brown-headed nuthatch, and Bachman's warbler; old-growth stands important to the existence of the red-cockaded woodpecker; important nesting site for ospreys and the bald eagle

Timber Value and Uses: most commercially important forest species in the southern United States; makes up over one-half of the standing pine volume; used for lumber, construction timbers, pulp, and plywood; considered inferior in quality to longleaf or shortleaf but used similarly

Landscaping Info: often used in urban forestry as shade trees, and for wind and noise barriers throughout the South; used extensively for soil stabilization; provides rapid growth and site occupancy

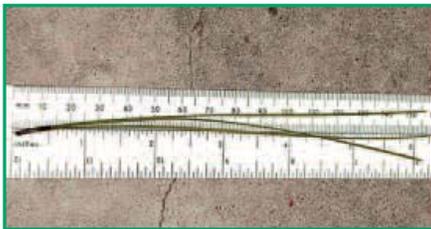
Other Facts: biomass for energy currently obtained from precommercial thinnings and logging residue; utilization of these sources will undoubtedly increase, and loblolly pine energy plantations may become a reality



Mature Cone



Bark



Needles



Male



Female

Young Cones



Twig/ fascicles

Virginia pine

scrub pine, Jersey pine, spruce pine

Pinus virginiana Mill.

Family: Pinaceae

Needles:

Type: 2 per fascicle; evergreen; persistent 3-4 seasons

Size: 1.5" - 3.0" long; fascicle sheaths 0.13" - 0.25" long

Color: yellowish green

Characteristics: stout; flexible; twisted

Twigs:

Size: slender

Color: light green, waxy bloom; then light gray-brown

Characteristics: smooth

Buds:

Size: 0.5" long

Shape: sharp pointed

Color: scales red-brown

Surface: resinous

Cones:

Pollen Cones: yellow-green, 0.25" - 0.50" long, numerous, in loose clusters

Ovulate Cones: clusters of 2-8, often occurring in 2-3 successive clusters in a current season

Mature Cones:

Size: 1.5" - 2.5" long

Shape: ovoid-conic

Characteristics: scales thin, armed with sharp, slender prickles, remaining on tree 3-4 yrs

Seed: winged; 0.25" long; oval, light brown, pebbly to the touch; wings 0.5" long, brown, broadest near middle

Bark: orange-brown, thin, young stems smooth; older stems slightly fissured and scaly

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential when young

Habitat and Ecology:

Site: heavy clays, sandy and impoverished soils of slopes and flats; often forming pure stands on old fields; also occurring with mixed hardwoods, and other pines

Soil Texture: fine - coarse

Soil pH: 4.5 - 7.5

Range: southern New York; west through central Pennsylvania to southern Ohio and Indiana; south to Kentucky, middle Tennessee, and Mississippi; east to Alabama, Georgia; north to South Carolina; in Mississippi, verified by the NRCS Plants Database in only 4 counties (Tishomingo, Prentiss, Scott, and Amite)

Wildlife Value and Uses: wood of older trees frequently softened by fungal decay, provides nesting habitat for woodpeckers; leaving old, decayed trees near the margins of clearcuts provides nesting sites

Timber Value and Uses: primarily pulpwood; older, larger trees on better sites suitable for lumber and paneling; of the southern conifers, most preferred as a Christmas tree; performs well when planted on strip-mined sites; satisfactory species for the reclamation of spoil banks in the Southeast

Landscaping Info: could be used as a privacy hedge for the same reasons that it is cultivated as a Christmas tree --- rapid growth, dense branching, and soil adaptability

Other Facts: commonly a small or medium-sized tree, but a record tree has been measured at 31.8" d.b.h. and 114' tall



Needles



Male



Female

Young Cones



Mature Cone



Bark



Twig

pondcypress

Taxodium ascendens Brongr.
(*T. distichum* var. *inbricarium* (Nutt.) Croom
Family: Taxodiaceae

Needles:

Type: spiral; deciduous along with supporting twigs; appressed along ascending twigs

Size: 0.13" - 0.25' long

Color: yellow-green

Characteristics: feathery; awl-shaped, or aricular, keeled

Twigs:

Size: slender

Color: light greenish tan; becoming reddish brown

Surface: fibrous; stringy

Buds:

Size: small

Shape: nearly globular

Color: green, then brown to reddish brown

Surface: covered with several overlapping pointed scales

Cones:

Pollen Cones: produced in elongated, drooping catkins, 3.0" - 5.0" long

Ovulate Cones: composed of several green, overlapping scales, fused at base; solitary or in clusters (2-3) near ends of previous year's twigs; 0.25" long

Mature Cones:

Size: 0.75" - 1.0" dia.

Shape: globular

Characteristics: green, then yellow-brown to reddish brown; scales peltate, leathery; maturing and opening in one year; usually disintegrating

Seed: similar to *T. distichum*

Bark: ashy gray to reddish brown; coarse fissures; scaly plates; fibrous strips

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: occupies the shallow ponds and poorly drained areas of the Coastal Plain and rarely grows in the river and stream swamps as does baldcypress; grows on more acid soils than bald cypress, and it seldom grows on sites that receive periodic subsidies of nutrients from floodwater; almost always are found on flat topography or in slight depressions

Soil Texture: fine - medium

Soil pH: 5.2 - 7.2

Range: southeastern Virginia to southern Florida; west to southeastern Louisiana; in Mississippi, reported by the NRCS Plants Database in only 5 counties --- Hancock, Harrison, Jackson, Lafayette, and Perry

Wildlife Value and Uses: pond cypress sites provide the only breeding opportunity for a number of tree frogs, toads, and salamanders; provides nesting sites and habitats for herons, egrets, and many other birds; watering places for the birds, mammals, and reptiles of the surrounding pinelands; serve as recharge areas for surface aquifers

Timber Value and Uses: commonly cut and sold with baldcypress timber without distinguishing between them

Landscaping Info: occasionally planted as an ornamental because of its interesting form and cinnamon red autumn coloration

Other Facts: Cypress is a descendent of a species that covered much of North America some 70 million years ago. Early Native American groups in Florida used cypress wood for fibers, houses, cooking tools, toys, drums, ox bows, and coffins; Choctaw Native Americans used strips of bark to make string and rope; Cache River Basin in southern Illinois contains bald cypress trees that are more than 1,000 years old and are possibly some of the oldest living things east of the Mississippi River. A southern bald cypress outside the city of Oaxaca in Mexico named El Arbol del Tule (*Taxodium mucronatum*), is world famous. It stands about 130 feet tall and 200 feet round, and is estimated to be between 1400 to 1600 years old, making this tree young during the Aztec empire.



Needles



Young



Mature

Bark



Mature



Young

Cones



Tree

baldcypress

southern-cypress, swamp-cypress, red-cypress, yellow-cypress, white-cypress, tidewater red-cypress

Taxodium distichum (L.) Rich.

Family: Taxodiaceae

Needles:

Type: spiral, 2-ranked in one plane, deciduous along with supporting twigs

Size: 0.5" - 0.75"

Color: yellow-green

Characteristics: feathery; linear; flat

Twigs:

Size: slender

Color: light green-tan, becoming reddish brown

Surface: somewhat rough; fibrous

Buds:

Size: small

Shape: globular

Color: reddish brown

Surface: several overlapping pointed scales

Cones:

Pollen Cones: monoecious; produced in elongated, drooping catkins, 3.0" - 5.0" long

Ovulate Cones: monoecious; composed of several green, overlapping scales, fused at base; solitary or in clusters (2-3) near ends of previous year's twigs; 0.25" long

Mature Cones:

Size: 0.75" - 1.0" dia.

Shape: nearly globular

Characteristics: yellow-brown; leathery; disintegrates at maturity; scales club-shaped

Seeds: 3-winged; irregularly 3-angled

Bark: ashy gray to reddish brown; coarsely fissured; scaly plates; peels into fibrous strips

Physical Attributes:

Form: single stem

Size: 130.0', mature

Growth Rate: 45.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: typically found in permanent swamps in pure stands or with water tupelo; on slightly higher sites found with bottomland hardwoods; best site is deep, moist, sandy loam --- but cannot compete with hardwoods on these "best" sites

Soil Texture: fine - coarse

Soil pH: 4.6 - 6.0

Range: Atlantic and Gulf Coastal Plains, lower Mississippi River Valley and bottom lands of adjacent drainages; in Mississippi, scattered throughout

Wildlife Value and Uses: seeds eaten by wild turkey, wood ducks, evening grosbeak, squirrels, waterfowl and wading birds; cypress domes provide unique watering places for a variety of birds and mammals and breeding sites for frogs, toads, salamanders and other reptiles; tops provide nesting sites for bald eagles, ospreys, herons and egrets; yellow-throated warblers forage in the Spanish moss often found hanging on the branches

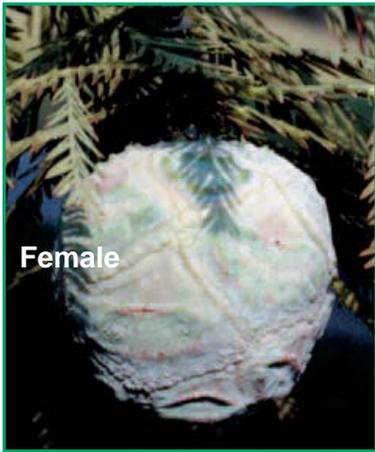
Timber Value and Uses: heartwood is second only to redwood in resistance to decay; has always been in demand for construction timbers, docks, exterior siding, and any similar use where its many unique qualities are an asset; potential for rehabilitating margins of surface-mined lakes; environmentally, riverine swamps of bald cypress reduce damage from floods and act as sediment and pollutant traps

Landscaping Info: stately and formal year-round appearance; strongly pyramidal; rapid growth and establishment; wet-site-loving and dry-site-adaptable; ultra-fine-textured foliage (resulting in dappled shade in youth); exfoliating strips of subtly ornamental cinnamon bark; rich cinnamon-brown autumn leaf color; leaf cleanup in autumn minimal or not needed; bark and wood is processed from natural stands in the southeastern U.S. as a slow-decaying, orange-brown mulch

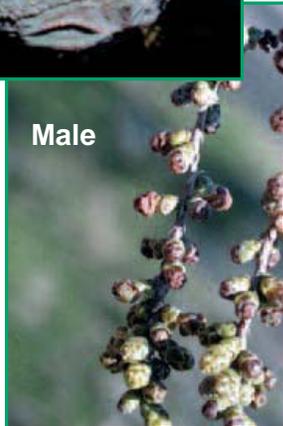
Other Facts: resin from cones used locally as an analgesic of skin lesions; knees are collected and used to create tourist appeal crafts; one of the most prized and valuable trees in the original forests of the South; many averaged over 500 yrs old, and often 6 to 8 feet dia.



Needles



Female



Male

Cones

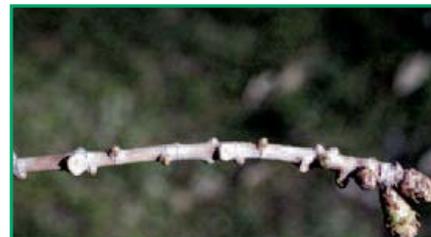


Mature



**Buttressed
Base**

Bark



Twig

eastern hemlock

Tsuga canadensis (L.) Carr.

Family: Pinaceae

Needles:

Type: 2-ranked, evergreen, persistent

Size: 0.33" - 0.66" long

Color: yellow green above; 2 narrow whitish bands of stomates below

Characteristics: shiny; linear, flattened; often minutely toothed; slightly notched

Twigs:

Size: slender

Color: yellow-brown; becoming reddish brown

Surface: pubescent; becoming smooth

Buds:

Size: minute

Shape: ovoid

Color: reddish brown

Surface: covered with several hairy scales

Cones:

Pollen Cones: greenish yellow; <0.25" long; in axils of needles of previous year's twigs

Ovulate Cones: light green; 0.25" - 0.5" long; solitary, terminal

Mature Cones: scales smooth, nearly circular on the end; short-stalked

Size: 0.5" - 0.75" long

Shape: oblong-ovoid

Color: dull light brown

Seed: winged; 0.06" long; resin cysts (2-3); wings pale brown, broad, terminal

Bark: cinnamon-brown; thin, scaly young; broad scaly ridges, deep fissures older; (purplish and reddish brown tissue in alternating layers visible when blazed)

Physical Attributes:

Form: single stem

Size: 105.0', mature

Growth Rate: 22.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: adapts to a variety of soil types; best on cool moist sites; in the South most abundant along mountain slopes and streams; most commonly with hickories, yellow poplar, basswood, and oaks

Soil Texture: medium - coarse

Soil pH: 4.2 - 5.7

Range: New Brunswick and Nova Scotia to southern Quebec and Ontario; west in the lake states to Minnesota with outliers in southern Michigan, western Ohio, and southern Indiana; southwest through eastern Kentucky and Tennessee, to northern Georgia and Alabama; in Mississippi; northeastern corner of the State

Wildlife Value and Uses: considered important as shelter and cover for white-tailed deer and other wildlife species, such as turkey, ruffed grouse, and others

Timber Value and Uses: wood used in the past for light framing, roofing, boxes and crates, and pulping; tends to be brittle; not presently important as a timber tree; commercial stands greatly reduced by prior harvesting and lack of restocking

Landscaping Info: can be used as a specimen, screen, or group planting; can be sheared over time into a formal evergreen hedge which is densely leafy to the ground, but must be repeatedly pruned to keep it in size; numerous cultivars including compact shrubs, dwarfs, form mutants (weeping, fastigate, prostrate, etc.), color mutants (variegated), and graceful trees; most serious damaging agents are drought, and the hemlock woolly adelgid (can kill trees of all ages but seedling stage most vulnerable)

Other Facts: early valued for its bark, an important source of tannin for the leather industry; stripping simplified by felling trees into lakes; logs later extracted from northern lakes and milled; cambium used by Native Americans as the base for breads and soups or mixed with dried fruit and animal fat for pemmican (concentrated food); tea made from leaves (high vitamin C content) by Native Americans and white settlers; may take 250 to 300 years to reach maturity and may live for 900 years or more



Needles



Mature Cone



Male



Bark



Female

Young Cones



Twig

LEAVES BROAD AND EVERGREEN OR DECIDUOUS

BROADLEAF SPECIES

LEAVES, TWIGS, LEAF SCARS

OPPOSITE or WHORLED

ASHES

MAPLES

OTHER TREES

SHRUBS AND SMALL TREES

white ash

Biltmore ash, cane ash

Fraxinus americana L.

Family: Oleaceae

Leaves:

Type: odd-pinnately compound, opposite, deciduous

Size: 8.0" - 13.0" long; leaflets (5-9), 3.0" - 5.0" long, 1.5" - 3.0" wide

Margin: toothed or entire

Apex: acute to acuminate

Base: rounded or wedge shaped

Shape: oblong-lanceolate

Color: dark green above; paler green below

Surface: glabrous above; slightly pubescent below

Venation: pinnate

Twigs:

Size: moderately stout to stout

Color: dark green to gray-brown

Surface: flattened at node; large pale lenticels; narrow concave leaf scars partly surrounding bud; numerous bundle scars

Buds:

Size: large; laterals much smaller

Shape: rounded or blunt

Color: dark brown to brownish black

Surface: 4-8 scales

Fruit and Flowers:

Samara: single, in clusters

Size: 1.0" - 2.0" long; 0.25" wide

Shape: oblong to spatulate

Color: pale brown

Flower: dioecious; apetalous; in dense panicles; staminate, green, purplish anthers, 0.25" long; pistillate, 2 spreading, dark purple stigmatic lobes

Bark: gray to gray-brown; interlacing ridges forming a diamond pattern; thick; rough

Physical Attributes:

Form: single stem

Size: 90.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, moist, well-drained soils in uplands and bottom lands near streams

Soil Texture: fine - coarse

Soil pH: 5.0 - 7.5

Range: Nova Scotia; south to northern Florida; west to eastern Texas; north to eastern Minnesota; in Mississippi, throughout except the Mississippi River Delta counties

Wildlife Value and Uses: seeds are eaten by wood duck, bob white, purple finch, pine grosbeak and fox squirrel; medium palatability as browse; rabbit, beaver, and porcupine occasionally eat the bark; often used as a cavity tree by nesting birds

Timber Value and Uses: high value as fuelwood, lumber, and nursery stock; wood is strong, tough, and highly shock resistant; used for handles, oars, baseball bats, antique car parts, cabinets, and railroad cars and ties

Landscaping Info: suitable for a yard or street tree; fall color is not showy, but the tree form is nice for landscaping; will tolerate a variety of soil textures; sensitive to air pollution, particularly ozone and sulfur dioxide

Other Facts: juice from leaves used for topical relief of mosquito bite swelling and itching; early use as snake bite prevention (leaves carried in a person's boots or pockets to provide protection - believed to be offensive to rattlesnakes)



Leaf



Bark



Flower



Fruit



Twig

Carolina ash

water ash, pop ash, swamp ash

Fraxinus caroliniana P. Mill.

Family: Oleaceae

Leaves:

Type: odd-pinnately compound, opposite, deciduous

Size: 7.0" - 12.0" long; leaflets (5-7), 3.0" - 6.0" long, 2.0" - 3.0" wide

Margin: coarsely-serrate, toothed

Apex: blunt or rounded

Base: wedge-shaped

Shape: oblong-ovate

Color: dark green above; paler green below

Surface: glabrous above; glabrous, or pubescent below on the ribs and veins

Venation: pinnate

Twigs:

Size: slender

Color: greenish gray and pubescent when young; brown or gray mature

Surface: scattered lenticels; flattened at nodes; leaf scars half-round

Buds:

Size: 0.13" long

Shape: ovate-acute

Color: chestnut brown

Surface: puberulous scales, outer layer thickened at base

Fruit and Flowers:

Samara: broad; flattened; sometimes 3-winged

Size: 3.0" long; 0.75" wide

Shape: elliptical to diamond shaped

Color: black (wing sometimes violet)

Flower: dioecious; in panicles; apetalous; 0.25" long; staminate with minute calyx; pistillate, small calyx, elongated style with forked tip

Bark: gray; thin; irregularly scaly ridges mature

Physical Attributes:

Form: single stem

Size: 39.0', mature

Growth Rate: 39.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep river swamps inundated several months of the year, usually as an understory species

Soil Texture: medium - coarse

Soil pH: 3.5 - 6.0

Range: Washington D.C.; south to Florida; west along the Gulf Coastal Plain to Texas; in Mississippi, reported by the NRCS Plants Database in Hinds, Winston, Wayne, Jackson, Pearl River, Lamar, and Forest Counties

Wildlife Value and Uses: (no data)

Timber Value and Uses: wood light, weak, soft, close-grained; of no commercial value

Landscaping Info: good ornamental; small; fairly rapid growth; will tolerate wet soils, but will grow on drier sites; unusual and interesting fruiting habit

Other Facts: flowers appear prior to leaves



Leaf



Bark



New



Flower



Mature

Fruit



Twig

green ash

red ash, swamp ash, water ash

Fraxinus pennsylvanica Marsh.

Family: Oleaceae

Leaves:

Type: pinnately compound, opposite, deciduous

Size: 10.0" - 12.0" long; leaflets (5-9), 2.0" - 4.0" long, 1.0" - 1.5" wide; leaflet stalks 0.13" - 0.5" long

Margin: entire or slightly toothed

Apex: narrow slender pointed

Base: unequally cuneate

Shape: ovate to elliptical

Color: dark green above; paler green below

Surface: lustrous above; pubescent along veins below

Venation: pinnate

Twigs:

Size: moderately stout; often flattened at node

Color: grayish green

Surface: glabrous; leaf scars half-round, and flat instead of notched, buds on top of scars

Buds:

Size: 0.13"

Shape: nearly globular

Color: rusty brown

Surface: 4 scales

Fruit and Flowers:

Samara: large clusters

Size: 1.0" - 2.0" long

Shape: paddle-shaped; wing encloses approximately 50% of seed

Color: brown

Flower: similar to white ash (dioecious, apetalous; staminate purplish red, 0.25" long in compound clusters; pistillate, 2 dark purple stigmatic lobes)

Bark: gray and tight; furrows forming diamond shaped pattern

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: most frequently along streams and alluvial floodplains where frequent inundation occurs in winter and spring; can also be found on dry and severe upland sites

Soil Texture: fine - coarse

Soil pH: 5.0 - 8.0

Range: central Montana and northeastern Wyoming; south to southeastern Texas; east to northwestern Florida; north to Nova Scotia; in Mississippi, throughout

Wildlife Value and Uses: seeds eaten by a number of game and nongame animals and birds; especially important for wildlife communities in the northern Great Plains; medium palatability as browse; protein potential is low; attracts birds, rabbit, deer, squirrel, and sharptail grouse

Timber Value and Uses: wood is coarse grained, heavy, hard, and strong; sapwood is white; used to make tool handles, furniture, and interior furnishings; widely used in revegetation of spoil banks created from strip mining; high value as fuelwood

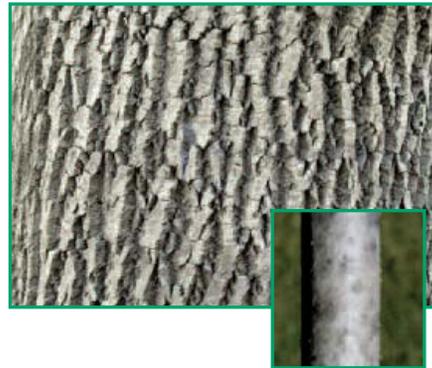
Landscaping Info: popular as a shade tree in residential areas because of its good form, adaptability to a wide range of sites, and relative freedom from insects and diseases

Other Facts: utilized by the Native Americans of the Great Plains to make bows, arrows, drums, tent poles, tepee pegs, and meat-drying racks; believed to have beneficial natural powers and was often used to carry and/or display ceremonial or symbolic objects; Cheyenne Contrary Warriors reportedly wore whistles made of green ash around their necks

Mississippi: Sharkey County is home to the Green Ash Research Natural Area. The vegetation of this area is dominated by Nuttall oak (Texas red oak), green ash, and American elm. There are old-growth green ash trees between 200 and 250 years old in the area.



Leaf



Bark



Flower



Fruit



Twig

pumpkin ash

red ash

Fraxinus profunda Bush

Family: Oleaceae

Leaves:

Type: odd-pinnately compound, opposite, deciduous

Size: 9.0" - 18.0" long; leaflets (7-9), 5.0" - 10.0" long, 1.5" - 5.0" wide

Margin: entire or slightly serrate

Apex: acuminate or abruptly long-pointed

Base: rounded, cuneate, often unsymmetric

Shape: lanceolate or elliptic

Color: dark yellow-green above; paler below

Surface: hairy young; glabrous mature; pubescent below; stout, yellow, minute hairs on midrib

Venation: pinnate

Twigs:

Size: stout

Color: gray

Surface: pubescent when young; leaf scars crescent-shaped, nearly surround the lateral buds; bundle scars U-shaped

Buds:

Size: terminal bud 0.31"

Shape: terminal bud broad-ovate, obtuse; laterals globose

Color: light reddish brown - brown

Surface: pale pubescence; 3 pairs of scales

Fruit and Flowers:

Samara: in long drooping many-fruited clusters; winged; single-seeded; flattened

Size: 2.0" - 3.0" long; wings up to 0.5" wide

Shape: oblong

Color: yellow-green new; brownish gray mature

Flower: dioecious; in elongated, branched pubescent panicles; staminate, purplish green; pistillate, white, inconspicuous

Bark: diamond pattern similar to white ash; gray; thick

Physical Attributes:

Form: single stem, often buttressed base

Size: 80.0' - 120.0', mature

Growth Rate: rapid; 65.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: medium to high

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: river bottoms subject to periodic and protracted flooding; margins of swamps and deep sloughs; very low, poorly drained flats of the major river floodplains; swamps of tidal estuaries; margins of coastal marshes; the deeper, more extensive depressions of the Coastal Plain

Soil Texture: fine - medium

Soil pH: 4.5 - 5.9

Range: range is discontinuous; from southern Maryland and southeastern Virginia to northern Florida, and west to Louisiana; also from southern Illinois and Indiana, south through southeastern Missouri and northeastern Arkansas; in Mississippi, reported by the NRCS Plants Database in Washington, Boliver, Sunflower, Leflore, Humphreys, Grenada, Panola, and Lowndes Counties, but likely found in other areas also

Wildlife Value and Uses: fruits eaten by wood ducks and many other birds; young twigs and leaves browsed by white-tailed deer

Timber Value and Uses: produces high quality factory lumber and dimension material; source of handle and implement stock; so scattered that it is usually only harvested as a component of other associate species

Landscaping Info: routinely commercially available; possibly a good selection for a low area when landscaping

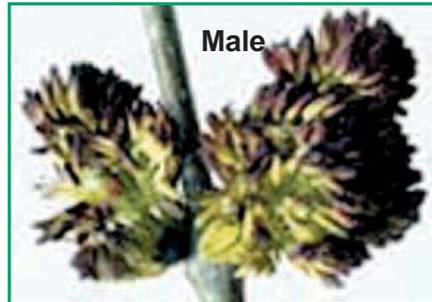
Other Facts: name comes from the "pumpkin" shape of the buttressed base when grown on swampy sites; profunda means deep, and refers to the sites where it is found



Bark



Leaf



Flower



Fruit



Twig

blue ash

water ash, pop ash, swamp ash

Fraxinus quadrangulata Michx.

Family: Oleaceae

Leaves:

Type: odd-pinnately compound, opposite, deciduous

Size: leaf 8.0" - 12.0" long; leaflets (7-11), 2.0" - 5.0" long, 1.0" - 2.0" wide

Margin: serrate

Apex: acuminate

Base: wedge-shaped to rounded

Shape: oblong-lanceolate

Color: yellowish green above; green below

Surface: glabrous above; hairy tufts on midrib and veins

Venation: pinnate

Twigs:

Size: stout

Color: red-brown when young, then gray

Surface: hairy when young; glabrous with scattered lenticels; unique conspicuous 4-angled internode; somewhat winged - gives the appearance of being square

Buds:

Size: 0.25" dia.

Shape: ovoid, acute

Color: reddish brown

Surface: 3 pairs of scales; slightly to densely pubescent

Fruit and Flowers:

Samara: wing rounded, encasing the flattened seed past its center

Size: 1.0" - 2.0" long

Shape: oblong

Color: golden tan (mature)

Flower: monoecious; perfect; naked; in loose panicles; stamens, 2, purplish; pistil, with short 2-lobed purplish style

Bark: gray; flat scaly plates of varying sizes

Physical Attributes:

Form: single stem

Size: 70.0' - 100.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required)

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, dry limestone bottom lands and hills; less commonly mountain slopes

Soil Texture: fine - coarse

Soil pH: 6.8 - 7.2

Range: most common in the Ohio and upper Mississippi River valleys, but can be found scattered from Ontario south through southern Michigan to Iowa, Ohio, Indiana, Kentucky, Kansas, Oklahoma, Missouri, and Arkansas; in Mississippi, reported by the NRCS Plants Database in Tishomingo, Lee, Lowndes, Oktibbeha, and Noxubee counties

Wildlife Value and Uses: attracts birds

Timber Value and Uses: of some value in the manufacture of flooring, but only in combination with other associate species since it is not widespread

Landscaping Info: yellow fall color; shade tree and street tree; not readily commercially available

Other Facts: sap from the inner bark used by early settlers to produce a blue dye for cloth; exposed to the open air the sap turns blue --- consequently the common name for the species, "blue ash"



Leaf



Fruit



Bark



Twig

Florida maple

southern sugar maple, hammock maple, sugar maple

Acer barbatum Michx.

Family: Aceraceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 3.5" long

Margin: lobed (3-5), entire

Apex: acuminate

Base: truncate to somewhat cordate

Shape: orbicular

Color: green above; paler below

Surface: lustrous above; slightly pubescent below

Venation: palmate

Twigs:

Size: slender

Color: reddish brown

Surface: shiny

Buds:

Size: 0.13" long

Shape: sharp pointed

Color: brown

Surface: pubescent

Fruit and Flowers:

Samara: double, winged

Size: 0.75" long

Shape: U-shaped

Color: red to reddish brown

Flower: dioecious or polygamous, in dense, many-flowered corymbs; the staminate and pistillate flowers on the same or on different trees; apetalous; single flowers on long, hairy, drooping stalks; yellow-green

Bark: pale gray; irregular thick curling ridges; becoming plated

Physical Attributes:

Form: single stem

Size: 60.0', mature

Growth Rate: 30.0' maximum@ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: fertile, moist but well-drained soils on stream terraces, in coves, and on adjacent bluffs and ridgetops; best on soils underlain by calcareous material such as limestone or marl

Soil Texture: medium - coarse

Soil pH: 5.5 - 6.5

Range: discontinuous in the Piedmont and Coastal Plain from southeastern Virginia southwest across North and South Carolina and Georgia, into the Florida Panhandle; continues west across Alabama, Mississippi, Louisiana, into eastern Texas; north to Arkansas into eastern Oklahoma; also found in isolated spots halfway down the Gulf Coast of the Florida peninsula and at one location in central Oklahoma; in Mississippi, scattered throughout

Wildlife Value and Uses: low palatability as browse

Timber Value and Uses: not managed as a commercial species; used with associated commercial species for pulpwood, sawtimber, and veneer stock; better trees may be used for furniture, flooring, paneling; limited source of maple syrup

Landscaping Info: frequently used in urban forestry as an ornamental or shade tree

Other Facts: distinction between (northern) sugar maple and Florida maple based on the latter's smaller leaves with short, acute lobes, smaller samaras, and a more whitish bark



Bark



Leaf



Flower



Fruit



Twig

boxelder

ashleaf maple

Acer negundo L.

Family: **Aceraceae**

Leaves:

Type: pinnately compound, opposite, deciduous

Size: 6.0" - 15.0" long; leaflets (3-7), 2.0" - 4.0" long, 1.5" - 2.5" wide

Margin: coarsely serrate

Apex: long-tapered, lanceolate

Base: rounded or wedge-shaped

Shape: ovate-lanceolate or oval

Color: light green above; paler below

Surface: remotely pubescent above; pubescent veins below

Venation: pinnate

Twigs:

Size: stout

Color: green-purplish green, darker with age

Surface: smooth, lustrous or with a conspicuous bloom

Buds:

Size: 0.13" long

Shape: ovoid

Color: bluish white

Surface: tomentose; leaf scars V-shaped, elevated; 3-5 bundle scars

Fruit and Flowers:

Samara: double

Size: 1.0" - 1.5" long

Shape: V-shaped, slightly convergent wings

Color: reddish brown

Flower: dioecious; on slender glabrous pedicels; apetalous; yellow-green; 0.25" long; staminate fasciated; pistillate in narrow drooping racemes

Bark: gray-brown; thin; shallow fissures; narrow rounded reticulate ridges

Physical Attributes:

Form: single stem

Size: 60.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: along streams, floodplains, edges of swamps and other moist sites; proliferates in open disturbed areas

Soil Texture: fine - coarse

Soil pH: 4.4 - 7.9

Range: Vermont south to Florida; west to eastern Texas; north to Michigan and southern Ontario; in Mississippi, common in the Mississippi River Delta, ubiquitous throughout most of the State

Wildlife Value and Uses: important habitat for many wildlife species in riparian communities; protects livestock from seasonal temperature extremes; seed food source for birds and squirrel; secondary browse source for white-tailed deer in the fall

***May be poisonous to livestock**

Timber Value and Uses: not a desired timber species because its wood is light, soft, close grained, and low in strength; used locally for boxes and rough construction, occasionally for cheap furniture and woodenware; once used for posts, fencing, and fuel but the soft, spongy wood generally makes poor firewood

Landscaping Info: positives: rapid growth, high tolerance of variations in soil, shade, and site conditions; minuses: limbs are brittle and break easily, trunk is susceptible to rot and infestation with boxelder bugs, short-lived, extended leaf and seed fall

Other Facts: sap used to produce syrup sometimes called "mountain molasses"; cambium used by Native Americans for food; also boiled down the sap for syrup and candy; tea made from the inner bark used to induce vomiting; branches used to make charcoal for ceremonial painting



Bark



Leaf



Flower



Fruit



Twig

red maple

scarlet maple, swamp maple, soft maple, Carolina red maple, water maple

Acer rubrum L.

Family: Aceraceae

Leaves:

Type: simple, opposite, deciduous

Size: 2.0" - 6.0" dia.

Margin: coarsely and irregularly serrate

Apex: long-tapering

Base: flat to somewhat heart-shaped

Shape: circular; palmately lobed (3-5); acute sinuses

Color: light green above; paler below;

Surface: glabrous above; glabrous - sometimes glaucous below

Venation: palmate

Twigs:

Size: slender

Color: red with pale lenticels

Surface: shiny

Buds:

Size: terminal 0.13" long; laterals smaller, flower buds similar to - collateral with leaf buds

Shape: obtuse

Color: green or reddish (fall and winter)

Surface: 4-6 pairs of overlapping scales; leaf scars V-shaped; 3 bundle scars

Fruit and Flowers:

Samara: double, in clusters, on long slender stalks

Size: 0.50 - 0.75" long

Shape: V-shaped

Color: red

Flower: polygamo-dioecious; in dense, stalked axillary clusters; 0.04" long; bell-shaped calyx; petals 5, red, as long as calyx; staminate, fascicled; pistillate, in drooping racemes

Bark: thin, smooth, gray young; long, narrow, scaly plates, shallow fissures with age

Physical Attributes:

Form: single stem

Size: 90.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: medium

Propagation: bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: most common on moist bottomlands or in swamps; also found on drier soils on higher ground; almost exclusively a swamp species in the extreme south

Soil Texture: fine - coarse

Soil pH: 5.4 - 7.1

Range: native to all regions of the United States east of the 95th meridian, with three exceptions: Prairie Peninsula proper of the Midwest, the coastal prairie of southern Louisiana and southeastern Texas, and the swamp prairie of the Florida Everglades; in Mississippi, throughout

Wildlife Value and Uses: buds and flowers eaten by various wildlife species; seeds stored by squirrels and chipmunks, and eaten by other small mammals and birds; rabbits find the stump sprouts especially palatable in fall and winter; browsed by white-tailed deer, moose, elk, and the snowshoe hare; cavity nesting for screech owl, pileated woodpecker, and common flicker; river floodplain communities well suited for cavity nesters such as the wood duck; early-produced pollen may be important to the biology of bees and other pollen-dependent insects

*browse is toxic to cattle and horses, particularly during the summer and late fall

Timber Value and Uses: of some commercial value for use in the manufacture of inexpensive furniture; veneer products; medium value as fuelwood

Landscaping Info: most prized as an ornamental; rapid growth; tolerant of almost all site conditions; showy flowers; spectacular fall coloration; routinely commercially available; numerous cultivars and varieties; flowers before leafout giving early spring color

Other Facts: bark used by Native Americans as an analgesic, wash for inflamed eyes and cataracts, and as a remedy for hives and muscular aches; tea brewed from the inner bark used for treating coughs and diarrhea; a bark extract used by pioneers to make cinnamon brown and black dyes; iron sulfate added to the tannin from bark to make ink; can be used to make maple syrup; first cultivated in 1656



Leaf



Fruit



Bark



Flower



Twig

Drummond's red maple

Acer rubrum L. var. drummondii (Hook. & Arn. ex Nutt.) Sarg.
Family: Aceraceae

Leaves:

Type: simple, opposite, deciduous
Size: 3.0" - 6.0" long; 3.0" - 6.0" wide
Margin: coarsely and irregularly serrate
Apex: long-tapering
Base: cordate or truncate
Shape: circular; palmately lobed (usually 5); acute sinuses
Color: light green above; white below
Surface: scattered hairs above; thick tomentum below (differentiation characteristic)
Venation: palmate

Twigs:

Size: slender
Color: matted pale hairs 1st year; then reddish brown
Surface: glabrous 2nd year

Buds:

Size: 0.13" long
Shape: terminal blunt; lateral flower buds globose
Color: green or reddish
Surface: ciliate on the margins

Fruit and Flowers:

Samara: double
Size: 1.25" - 2.5" long; 0.5" - 0.75" wide
Shape: convergent wings
Color: bright scarlet
Flower: polygamo-dioecious; in dense, stalked axillary clusters; 0.04" long; bell-shaped calyx; petals 5, red, as long as calyx; staminate, fascicled; pistillate, in drooping racemes

Bark: light to dark gray; smooth when young; developing long scaly plates with age

Physical Attributes:

Form: single stem
Size: 69.0' - 90.0' mature
Growth Rate: 35.0' maximum @ 20 yrs
Life Span: (<50 yrs)
Tolerances:
Shade: high
Drought: low
Fire: low
Anaerobic: medium to high

Propagation: bare root; container
Other: resprout/coppice potential

Habitat and Ecology:

Site: cypress-tupelo swamps; very wet sites; obligate wetland (OBL); almost always occurs (>99%) in wetlands in the southeastern U.S.
Soil Texture: fine - coarse
Soil pH: 4.0 - 7.4
Range: southeastern U.S.; in Mississippi, scattered throughout on wetland sites

Wildlife Value and Uses: good deer browse; seeds eaten by song and game birds; bark, browse and buds used by small mammals; an important squirrel food

Timber Value and Uses: considered a soft maple; moderate quality hardwood with good size; pulp for paper

Landscaping Info: not commercially available

Other Facts: Drummond's red maple (*A. rubrum var. drummondii* Sarg.) is typically found in deep swampy areas of the Mississippi Valley drainage basin. Its differentiating characteristics include:

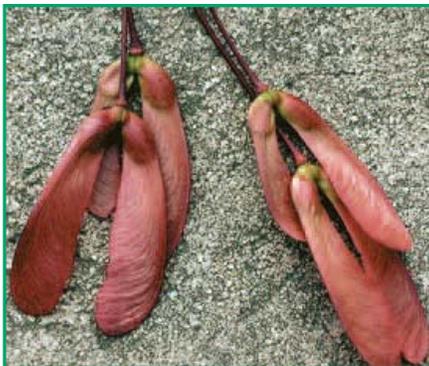
- * 5-lobed leaves
- * leaves broader than long
- * leaves wooly or hairy below
- * petioles very hairy



Leaf



Leaf



Fruit



Old Tree

Bark



Flower



Twig

silver maple

soft maple, river maple, silverleaf maple, swamp maple, water maple, white maple

Acer saccharinum L.

Family: Aceraceae

Leaves:

Type: simple, opposite, deciduous

Size: 6.0" - 8.0" dia.

Margin: coarsely serrate

Apex: long-tapered

Base: heart-shaped or flattened

Shape: circular; 5-lobed with secondary lobes; sinuses acute or rounded

Color: pale green above; silvery below

Surface: glabrous above; axillary pubescence below

Venation: palmate

Twigs:

Size: slender (pungent odor when bruised)

Color: reddish brown

Surface: lustrous; conspicuous lenticels; leaf scars V-shaped; 3 bundle scars

Buds:

Size: 0.20" long; laterals smaller; flower buds large, collateral with leaf buds

Shape: ovate, blunt; flower buds globose

Color: green or reddish

Surface: 2 - 4 overlapping scales

Fruit and Flowers:

Samara: double; divergent wings; wrinkled

Size: 1.0" - 2.0" long

Shape: V-shaped

Color: reddish brown

Flower: polygamo-dioecious; in dense sessile axillary clusters; apetalous; calyx urn or tube-shaped, pubescent; yellow-green; red anthers

Bark: young, smooth, silvery, thin; mature, long scaly plates detached at the ends

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 45.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: stream banks, river levees, floodplains; primarily restricted to rich, moist bottomland sites, capable of development on dry soils when planted as an ornamental

Soil Texture: fine - coarse

Soil pH: 4.0 - 7.5

Range: northeastern Canada; south to Florida; west to Oklahoma and Arkansas; north to South Dakota; in Mississippi, throughout

Wildlife Value and Uses: seeds eaten by small mammals (especially squirrel and chipmunk); evening grosbeaks, finches, wild turkey and other game birds; most important food in the diet of breeding wood ducks in southeastern Missouri; early buds an important food for squirrels when cached food is depleted; foliage browsed by white-tailed deer and rabbit

Timber Value and Uses: furniture, boxes, crates, food containers, paneling, and core stock; moderately hard, brittle, and close-grained wood; suitable for bottom land reforestation in the lower Mississippi River Valley

Landscaping Info: rapid growth, wide range of soil pH and texture; routinely available commercially; decline in ornamental use due to susceptibility to twig shedding, prolific sprouting, ice, snow, and wind damage, and a tendency to rot

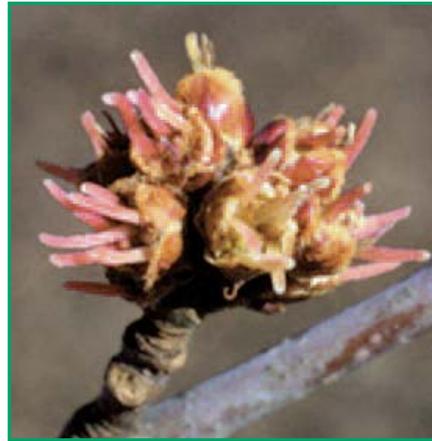
Other Facts: sap used to make maple syrup; bark of young stems very similar to green ash



Bark



Leaf



Flower



Fruit



Twig

sugar maple

hard maple, rock maple

Acer saccharum Marsh.

Family: Aceraceae

Leaves:

Type: simple, opposite, deciduous

Size: 3.0" - 5.0" dia.

Margin: entire, or irregularly toothed

Apex: long-tapered

Base: heart-shaped or flattened

Shape: circular; lobed (3 - 5)

Color: green above; paler below

Surface: glabrous above; glabrous below

Venation: palmate

Twigs:

Size: slender

Color: reddish brown

Surface: shiny; numerous pale lenticels; leaf scars V-shaped; 3 conspicuous bundle scars

Buds:

Size: terminal 0.25" long; laterals smaller

Shape: narrow conical

Color: reddish brown

Surface: 6 - 9 pairs of overlapping scales; lateral accessory flower buds lacking

Fruit and Flowers:

Samara: double; in clusters on slender stalks

Size: 1.0" long

Shape: winged (broad, parallel or slightly divergent, thin)

Color: reddish brown

Flower: polygamous; in dense, many-flowered corymbs; apetalous; calyx bell-shaped; single flowers yellowish green, on long, hairy, drooping filamentous stalks

Bark: variable among individual trees; light gray and smooth when young; darker, long longitudinal furrows and scaly ridges with age

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist rich, well drained soils of slopes and ridges; also on poorer soils, and common on limestone soils

Soil Texture: medium - coarse

Soil pH: 3.7 - 7.9

Range: Newfoundland west through Manitoba to the Dakotas and Iowa; south to Texas and Louisiana in the West, and through Virginia to Alabama in the East; in Mississippi, reported by the NRCS Plants Database in the northern counties of Benton, Tishomingo, Panola, Lafayette, and Pontotoc, and the southeastern counties of Jefferson and Simpson - likely present in other counties as well

Wildlife Value and Uses: commonly browsed by white-tailed deer, moose, and snowshoe hare; seeds, buds, twigs, and leaves eaten by red squirrel, gray squirrel, and flying squirrel; bark fed on by porcupine; nesting sites for numerous species of songbirds and cavity nesters such as the black-capped chickadee, common flicker, pileated woodpecker, and screech owl

Timber Value and Uses: wood is tough, durable, hard, heavy, and strong; commonly used to make furniture, paneling, flooring, and veneer; also used for gunstocks, tool handles, plywood dies, cutting blocks, woodenware, novelty products, sporting goods, bowling pins, and musical instruments; maple syrup production not as dominant as in the past but still an important industry in New England

Landscaping Info: beautiful landscaping tree, wide tolerance of soil pH, brilliant red, orange, and yellow fall color; negatives, subject to weather damage and sensitive to air pollution

Other Facts: along with beech and birch, sugar maple is used in the hardwood distillation industry as a source of wood alcohol, acetate of lime, and charcoal



Leaf



Fruit



Bark



Flower



Twig



southern catalpa

indianbean, caterpillar tree

Catalpa bignonioides Walter

Family: Bignoniaceae

Leaves:

Type: simple, opposite or whorled, deciduous

Size: 5.0" - 6.0" long; 4.0" - 5.0" wide

Margin: entire to somewhat undulate

Apex: pointed to nearly rounded

Base: heart-shaped

Shape: broadly ovate

Color: light green above; paler below

Surface: glabrous above; pubescent below, conspicuous midrib

Venation: pinnate

Twigs:

Size: stout

Color: greenish purple; then gray-brown

Surface: conspicuous pale lenticels; oval leaf scars

Buds:

Size: terminal bud absent; laterals 0.06" long

Shape: globose

Color: red-brown

Surface: 6 pointed, overlapping scales

Fruit and Flowers:

Capsule: beanlike, very stiff; numerous flattened seeds with 2 papery, fringed wings

Size: capsule, 6.0" - 20.0" long; 0.25" wide; seeds, 1.0" long

Shape: capsule, linear or elongate; seed with pointed wings

Color: capsule, dark brown to gray-brown; seed, gray

Flower: monoecious; perfect; on slender stalks; in terminal many-flowered panicles, 8.0" - 10.0" long; flower tubular, 2.0" long, 2.0" wide, wavy petal edges, purple spotted throat with 2 bands of yellow (stronger color than *C. speciosa*)

Bark: reddish brown to gray; thin, breaking into long, thin, irregular scales

Physical Attributes:

Form: single crown

Size: 66.0', mature

Growth Rate: 66.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required);bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: native to the riverbanks and swamp margins of the southern U.S.; moist soils especially in open areas, at stream margins, and along roadsides

Soil Texture: medium - coarse

Soil pH: 5.5 - 7.5

Range: indigenous to the banks of the rivers in central Alabama and Mississippi, southwestern Georgia, and western Florida; now naturalized through the south Atlantic states and in Kentucky and Tennessee; in Mississippi, scattered throughout

Wildlife Value and Uses: none found in species information search

Timber Value and Uses: no commercial value in the timber industry; medium quality as a post product and fuelwood product; primarily used today as an ornamental shade tree; widely planted in urban areas as a street and lawn tree; planted in windbreaks as a conservation measure; also often planted to attract catalpa worms (larva of the Sphinx moth), which are harvested and used as fish bait

Landscaping Info: biggest management problems used as an ornamental --- litter and smell --- heavy load of flowers in the spring, plentiful supply of leaves in the fall, many large seedpods in the winter; and finally disagreeable odor from green leaves when crushed

Other Facts: first cultivated in 1726; tea made from the seeds used for many medicinal purposes by Native Americans



Leaf



Bark



Flower



Fruit



Twig

northern catalpa

hardy catalpa, western catalpa

Catalpa speciosa Engem.

Family: Bignoniaceae

Leaves:

Type: simple, opposite or whorled, deciduous

Size: 10.0" - 12.0" long; 7.0" - 9.0" wide

Margin: entire

Apex: long pointed

Base: cordate

Shape: ovate to ovate-oblong

Color: dark yellow-green above; paler green below

Surface: glabrous above; soft pubescence below

Venation: pinnate

Twigs:

Size: stout

Color: green; then reddish or yellowish brown

Surface: smooth; numerous light-colored lenticels; sunken leaf scars which resemble suction cups, whorled arrangement of 3 scars per node

Buds:

Size: terminal absent; laterals 0.06" - 0.13"

Shape: ovate

Color: chestnut brown

Surface: overlapping scales

Fruit and Flowers:

Capsule: beanlike, very stiff; numerous flattened seeds with 2 papery, fringed wings

Size: 10.0" - 18.0" long

Shape: linear or elongate

Color: green; eventually dark blackish brown

Flower: monoecious; perfect; on slender stalks; in terminal few-flowered panicles, 5.0" - 6.0" long; flower tubular, 2.0" long, 2.5" wide, wavy petal edges, purple spotted throat with 2 bands of yellow

Bark: brown tinged with red; broken on the surface into thick scales

Physical Attributes:

Form: single stem

Size: 60.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, moist soils on flats and slopes

Soil Texture: medium - coarse

Soil pH: 5.5 - 7.0

Range: southern Indiana, southern Illinois, western Kentucky, and Tennessee to southeastern Missouri and eastern Arkansas; in Mississippi, reported by the NRCS Plants Database in only 4 counties (Lafayette, Montgomery, Washington, and Hinds), but is probably more widely present and is simply not differentiated from *Catalpa bignonioides*

Wildlife Value and Uses: very low wildlife value; attracts humming birds; the catalpa worm (Sphinx moth larva) is highly valued by fishermen as bait

Timber Value and Uses: planted in mined-land reclamation projects and shelterbelts; wood is lightweight, and the heartwood is resistant to deterioration when placed in the ground

Landscaping Info: primarily used today as a large ornamental shade tree; widely planted in urban areas as a street and lawn tree; abundant showy blossoms; biggest management problem with catalpa used as an ornamental is leaf litter

Other Facts: past uses: railroad track ties and fuelwood (plantations grown for these uses), packing materials, interior trim in houses, furniture, and telephone or powerline poles; medicinal products from leaves, bark, roots, and seeds made and used by pioneers and Native Americans; modern pharmaceutical research has shown catalpa trees are diuretic



Leaf



Bark



Flower



Fruit



Twig

common buttonbush

button willow, button ball

Cephalanthus occidentalis L.

Family: Rubiaceae

Leaves:

Type: simple, opposite or whorled, deciduous

Size: 4.0" - 7.0" long; 2.0" - 3.5" wide

Margin: entire

Apex: short to long-tapered

Base: rounded to wedge-shaped

Shape: ovate, elliptical or lance-shaped

Color: dark green above; pale green below

Surface: glabrous above; frequently hairy along principal veins below

Venation: pinnate

Twigs:

Size: slender to moderately stout

Color: dark reddish brown

Surface: glossy, or sometimes covered with a bloom during 1st winter

Buds:

Size: terminal bud absent; laterals embedded in the epidermal tissue of the twig

Shape: conical (paired or solitary)

Color: reddish brown

Surface: laterals indistinctly scaly

Fruit and Flowers:

Nutlets: spheroid clusters

Size: 0.75" dia.

Shape: spheroid

Color: dark reddish brown

Flower: monoecious; perfect; on slender stalks, 1.0" - 2.0" long, in dense globose heads, 1.0" - 1.5" dia.; flower, trumpet-shaped, white

Bark: gray-brown; young stems smooth; older stems brown to purplish brown; fissured with flattened scaly ridges

Physical Attributes:

Form: shrub to small tree

Size: 20.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: medium

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/ coppice potential

Habitat and Ecology:

Site: wetland shrub common in swamps, floodplains, marshes, bogs, ditches that are under water for part of the year, and alluvial plains with intermittent flooding; present in riparian and wetland communities

Soil Texture: fine - coarse

Soil pH: 5.3 - 8.5

Range: southeastern Canada; eastern U. S. from the coastal plains to the midwestern plains states; varieties in California, Mexico, Florida, and Cuba; in Mississippi, throughout

Wildlife Value and Uses: seeds consumed by waterfowl and shorebirds; foliage browsed by white-tailed deer in the northeastern United States; wood duck brooding nest protection; nectar attractant for butterflies, bees, and hummingbirds

Timber Value and Uses: no commercial value as a wood product; used for erosion control along shorelines; forms dense stands; swollen plant base stabilizes the plant

Landscaping Info: showy flowers and fruit; popular choice for use in native plant gardens, shrub borders, and along pond shores and water gardens; persistent fruits provide some winter interest

Other Facts: used by Native Americans medicinally; decoctions (minute amounts in a liquid) of the bark used as washes for sore eyes, antidiarrheal agents, anti-inflammation and rheumatism medications, skin astringents, headache and fever relievers, and venereal disease remedies; bark also chewed to relieve toothaches; roots used for muscle inflammation and as blood medicines

WARNING: Common buttonbush contains the poison CEPHALATHIN. Cephalathin will induce vomiting, paralysis, and convulsions if ingested.



Bark



Leaf



Flower



Fruit



Twig

white fringetree

Grancy grey beard, old-man's-beard

Chionanthus virginicus L.

Family: Oleaceae

Leaves:

Type: simple, opposite, deciduous

Size: 4.0" - 8.0" long; 1.0" - 4.0" wide

Margin: entire; sometimes wavy

Apex: acuminate

Base: wedge-shaped

Shape: ovate-oblong

Color: dark green above; paler below

Surface: glabrous above; pubescence on veins below

Venation: pinnate

Twigs:

Size: stout

Color: pale gray

Surface: pubescent; subnodal thickenings; scattered large lenticels; leaf scars elevated; bundle scars numerous, U-shaped; slightly 4-angled

Buds:

Size: terminal 0.33" long; laterals shorter

Shape: terminal ovoid, pointed; laterals often superposed

Color: brown

Surface: terminal 6-8 scales; scales keeled

Fruit and Flowers:

Drupe: occasionally with a whitish bloom

Size: drupe 1.0" long; seed 0.33" long

Shape: drupe oval; seed ovoid

Color: dark blue-black

Flower: dioecious or polygamous; perfect flowers occasionally present; in loose pendent, hairy, 3-flowered clusters, 4.0" - 6.0" long; flower, white, 0.75" - 1.0" long, fragrant

Bark: gray; thin; tight; thin, brown, appressed, superficial scales

Physical Attributes:

Form: single stem

Size: 35.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: rich, moist soil near streams; on rare occasions found at altitudes as high as 4,000'

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.5

Range: Pennsylvania; south to Florida; west to Arkansas, Oklahoma, and Texas; in Mississippi, primarily in the southeastern one-third of the State, along with Tishomingo, Lafayette, and Union Counties in the northeastern portion of the State as reported by the NRCS Plants Database - likely in other areas as well

Wildlife Value and Uses: drupes are food source for birds and other wildlife

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: easily grown in average, medium wet, well-drained soil in full sun to part shade; seldom needs pruning; intolerant of air pollution and prolonged dry conditions; spectacular in full bloom; yellow fall color; propagation difficult, so plant is expensive and/or hard to locate in commerce

Other Facts: diuretic and fever reductant tonic made from bark



Bark



Leaf



Flower



Fruit



Twig

roughleaf dogwood

Cornus drummondii C. A. Meyer

Family: Cornaceae

Leaves:

Type: simple, opposite, deciduous

Size: 2.5" - 5.0" long

Margin: entire

Apex: tapered or pointed

Base: wedge-shaped or rounded

Shape: ovate to elliptical

Color: dark green above, lighter below

Surface: rough, stiff hairs above; pubescent below

Venation: arcuate

Twigs:

Size: slender

Color: light green; then reddish brown to gray

Surface: current years growth very pubescent

Buds:

Size: terminal <0.25" long; laterals smaller

Shape: pointed

Color: brown

Surface: covered in rusty hair

Fruit and Flowers:

Drupe: berrylike; in flat-topped clusters

Size: 0.25" dia.

Shape: globose

Color: white

Flower: monoecious; perfect; in flat-topped, showy clusters, 2.0" - 4.0" wide; flowers, 4 petals, white; 0.25" dia.

Bark: young bark smooth and gray-brown; then flaky and broken; eventually blocky

Physical Attributes:

Form: single or multi-stem

Size: 48.0', mature

Growth Rate: 48.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: wide range of sites from moist stream banks to wooded bluffs, and limestone outcrops

Soil Texture: fine - medium

Soil pH: 5.9 - 7.5

Range: from Ontario in a fanwise fashion extending to Texas in the Southwest and Florida in the East; in Mississippi, counties along the Mississippi River, counties across the central part of the State, and Itawamba, Lee, Chickasaw and Clay counties in northeast Mississippi as reported to the NRCS Plants Database; probably in other areas of the State as well

Wildlife Value and Uses: provides excellent ground cover for wildlife; fruit is eaten by numerous species of birds, browsed by white-tailed deer

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: could be a desirable choice where a thick hedge or border is needed



Leaf



Bark



Fruit



Flower



Twig

flowering dogwood

Cornus florida L.

Family: **Cornaceae**

Leaves:

Type: simple, opposite, deciduous

Size: 3.0" - 6.0" long; 1.5" - 2.0" wide

Margin: entire, or slightly scalloped

Apex: pointed

Base: wedge-shaped

Shape: oval, acute or slender

Color: light green above; paler whitish green below

Surface: somewhat hairy above; pubescent below

Venation: arcuate

Twigs:

Size: slender

Color: red or yellow-green to purple first winter; then gray-brown to brown

Surface: pubescent first winter; then glabrous

Buds:

Size: 2 terminal leaf bud scales 0.25" long

Shape: terminal leaf bud acute; terminal flower buds globular (4 scales)

Color: reddish brown to yellow-brown

Surface: pubescent

Fruit and Flowers:

Drupe: clusters of 2 to several; persistent calyx and style; pit, 2-celled, somewhat grooved

Size: 0.5" long; 0.25" dia.

Shape: ovoid; pit ovate; seeds oblong

Color: bright red

Flower: monoecious; perfect, in dense heads, surrounded by 4 large, white, petal-like bracts, 1.5" - 2.0" long, resembling a flower; flower, 4 petals, yellowish green, 0.25" dia.

Bark: thick; dark brown to nearly black; small rectangular plates on young stems; square, scaly blocks on mature stems

Physical Attributes:

Form: single stem

Size: 40.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: moist, rich, deep soils near stream banks and on slopes; usually found as an understory species with other hardwoods

Soil Texture: medium

Soil pH: 5.0 - 7.0

Range: all of the eastern U.S.; west through Kansas, Oklahoma, and Texas; in Mississippi, throughout, with the exception of some Mississippi River Delta counties

Wildlife Value and Uses: extremely valuable for wildlife; seed, fruit, flowers, twigs, bark, and leaves utilized as food by various animals; most distinguishing quality is its high calcium and fat content; fruits have been recorded as eaten by at least 36 species of birds, including ruffed grouse, bob-white quail, and wild turkey; fruit also eaten by mammals such as chipmunk, fox, skunk, rabbit, deer, beaver, black bear, and squirrel; foliage and twigs browsed heavily by deer and rabbits; quality of browse may be improved by controlled burns in the spring (increases the protein and phosphoric acid content); provides shelter and habitat for many wildlife species

Timber Value and Uses: has been planted on abandoned strip mines and used for urban forestry projects

Landscaping Info: valuable ornamental species; commonly used in landscape and street plantings; used for shade around patios, as a shrub border or backdrop species, or as single specimens in the lawn; best suited for plantings receiving less than full-day sun.

Other Facts: root bark used by Native Americans as a fever reducer, skin astringent, antidiarrheal agent, and as a pain reliever for headaches, sores, muscle inflammations; also used to counteract the effects of many poisons and as a general tonic for unspecified ailments; bark used for headache and backache relief, as a throat aid for hoarseness, and as an infusion for childhood diseases like worms and measles



Leaf



Bark



Fruit



Flower



Twig

WARNING: The fruit of flowering dogwood is poisonous to humans.

stiff dogwood

swamp dogwood,

Cornus stricta Lam.

Family: Cornaceae

Leaves:

Type: simple, opposite, deciduous; slender petioles up to 1.0" long

Size: 2.0" - 4.0" long;

Margin: entire to repand

Apex: acuminate

Base: inequilateral to acute

Shape: ovate to ovate-lanceolate

Color: medium to dark green above; lighter green below

Surface: upper surface hairless; lower surface hairless to nearly hairless

Venation: pinnate; lateral veins curve away from petioles

Twigs:

Size: slender

Color: red young; red-brown to gray older; white pith

Surface: hairless

Buds:

Size: terminal bud often absent;

Shape: elliptical

Color: reddish-gray

Surface: 2

Fruit and Flowers:

Drupe:

Size: 0.17" - 0.25" diameter

Shape: seed (stone)globoid; fairly smooth

Color: pale blue to blue

Flower: cymes (or flat-headed panicles); sepals: 4, united, green; petals: 4, white, free from each other; stamens: 4; pistils: 1; style 1; ovary inferior

Bark: gray, bluish-gray; thick and smooth, frequently furrowed with shallow ridges exposing gray inner bark

Physical Attributes:

Form: single or multiple stem

Size: 16.0' mature

Growth Rate: 16.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification required), bare root, container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: stream and marsh banks, cypress swamps, floodplains, low wet woodlands

Soil Texture: fine - medium

Soil pH: 5.8 - 7.2

Range: throughout the southeastern United States; west into Texas, Oklahoma and Missouri, north into Illinois, Indiana, Kentucky, Virginia, Maryland, Delaware and New Jersey

Wildlife Value and Uses: fruits eaten by several species of birds, including quail, catbirds, mockingbirds, robins, and brown thrashers; nectar, pollen, and foliage attract a wide variety of insects (bees, wasps, flies, butterflies, caterpillars, moths, aphids, and beetles);drupes eaten by bear, raccoon, squirrel, deer, chipmunk, and mice; beaver also eat the branches and use them in the construction of their dams

Timber Value and Uses: has a high density and is highly prized for making loom shuttles, tool handles and other small items that require a very hard and strong wood; tough for woodworking, but some artisans favor dogwood for small projects such as walking canes, longbows, mountain dulcimers and fine inlays

Landscaping Info: used as a container, street, or yard tree, as a shrub along rivers, streams, and other wet areas, or to beautify retention ponds, drainage swales, and canal banks

Other Facts: first brought into the ornamental nursery trade as early as 1758



Leaf



Bark



Flower



Fruit



Twig

devilwood

devilwood, American olive, wild olive
Osmanthus americanus (L.) Benth. & Hook.
f. ex A. Gray
Family: Oleaceae

Leaves:

Type: simple, opposite, persistent
Size: 4.0" - 5.0" long; 1.0 - 2.5" wide
Margin: entire; somewhat curled
Apex: acute; variable
Base: wedge-shaped
Shape: oblong-lanceolate
Color: bright green above; paler below
Surface: leathery, shiny above;
Venation: pinnate

Twigs:

Size: slender; remotely angled
Color: brown; pith white, homogeneous
Surface: smooth; minute lenticels; leaf scars elevated; ring of small bundle scars

Buds:

Size: terminal bud 0.5" long; lateral buds smaller
Shape: lanceolate
Color: reddish-brown
Surface: 2

Fruit and Flowers:

Drupe: thin-skinned; seed ovoid, brown, striate
Size: 1.0" long; 0.5: wide
Shape: ovoid
Color: dark blue
Flower: cyme or racemes; 3-flowered subtended by triangular bracts; corolla creamy, white, tubular, 4-lobed; stamens 2 (rarely 4); pistil 1-celled; perfect and imperfect flowers on different plants

Bark: gray-brown; thin, tight; small exfoliating appressed cells; reddish inner bark

Physical Attributes:

Form: single or multiple stem
Size: 20.0' - 50.0' mature
Growth Rate: 20' maximum @ 20 yrs
Life Span: (>50 yrs)
Tolerances:
Shade: medium
Drought: medium
Fire: no data
Anaerobic: medium

Propagation: seed (no cold stratification required); tip cuttings (from half-ripe summer wood)
Other: no resprout/coppice potential

Habitat and Ecology:

Site: streams, swamps, and bluffs in the understory of forests in the Coastal Plain
Soil Texture: coarse - medium
Soil pH: 4.5 - 7.5
Range: Texas, east to Florida, then north to Virginia

Wildlife Value and Uses: attractive to bees, butterflies and/or birds; fruits eaten by birds and small mammals

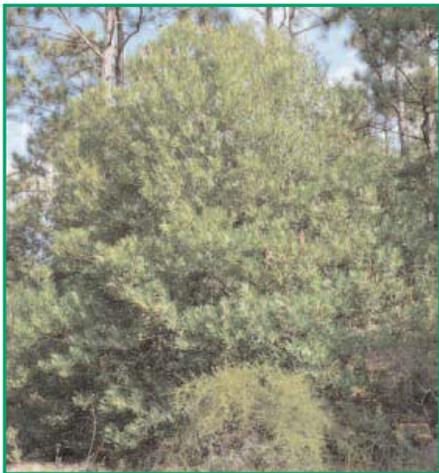
Timber Value and Uses: no commercial value

Landscaping Info: use as a specimen in the shade of tall pines or a big live oak, or in naturalistic settings and wildlife gardens; In a mass makes an excellent screen

Other Facts: more than 30 species in the *Osmanthus* genus; most native to the warm, temperate climates of Asia; *Osmanthus Americanus* only species native to the southern regions of the United States and northern Mexico; wood hard and difficult to work, hence the common name devilwood; *Osmanthus* from the Greek for "fragrant flower"



Leaf



Form



Fruit



Bark



Flower



Twig

red buckeye

Aesculus pavia L.

Family: Hippocastanaceae

Leaves:

Type: palmately compound, opposite, deciduous

Size: leaflets (5-7), 2.5" - 6.0" long, 1.5" - 2.5" wide

Margin: coarsely serrate

Apex: acuminate

Base: cuneate

Shape: lanceolate to obovate

Color: dark green above; dull green below

Surface: glabrous, sunken veins above; pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: reddish brown

Surface: raised lenticels; triangular to round leaf scars; V-shaped bundle scars (6-7)

Buds:

Size: terminal 0.25" - 0.5" long; laterals smaller

Shape: ovate and imbricate

Color: tan

Surface: smooth

Fruit and Flowers:

Capsule: 1-2 seeds

Size: 1.0" - 2.0" dia.

Shape: globular

Color: tan - light brown

Flower: monoecious; perfect; in large terminal panicles, 6.0" - 10.0" long, 4.0" - 6.0" wide; 4-5 flowers/panicle; single flowers, 1.0" - 1.5" long, petals, 4-5, small, deep red to reddish yellow

Bark: thin; gray-brown; smooth to superficially fissured

Physical Attributes:

Form: single stem

Size: 30.0', mature

Growth Rate: 12.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist sites of hardwood forests and along streambanks

Soil Texture: medium

Soil pH: 5.0 - 7.0

Range: West Virginia; south to Florida; west to Texas; north and east through Oklahoma, Missouri, Illinois, Kentucky, and Virginia; in Mississippi, scattered throughout

Wildlife Value and Uses: first red tubular flowers to bloom in spring, which makes it very important to returning hummingbirds and the season's first butterflies; lush foliage provides excellent cover for songbirds; nominal food value for small mammals

Timber Value and Uses: none

Landscaping Info: easy to grow; recommended to all impatient gardeners, because it starts blooming when it is just 3 feet tall; cultivars are available --- 'Atrosanguinea' has dark crimson flowers; 'Alba' has white flowers; 'Humilis' is low-growing, nearly prostrate, with smaller flowers; also, several hybrids between and among red buckeye, yellow buckeye (*A. flava*), common horsechestnut (*A. hippocastanum*), and Ohio buckeye (*A. glabra*) have been developed by horticulturists

Other Facts: reported that the Cherokees used to carry the buckeye nut around for good luck and to prevent rheumatism

WARNING: seeds are deadly poisonous if eaten!



Leaf



Bark



Flower



Fruit



Twig

American beautyberry

French mulberry, American mulberry,
wild goose's berries

Callicarpa americana L.

Family: Verbenaceae

Leaves:

Type: simple, opposite/subopposite, deciduous

Size: 4.0" - 8.0" long; 3.0" - 4.0" wide

Margin: serrate

Apex: acuminate

Base: rounded to widely cuneate

Shape: ovate

Color: green/yellow-green above; paler below

Surface: pubescent above; pubescent below

Venation: pinnate

Twigs:

Size: slender to moderate

Color: brown; gray scales

Surface: scurfy and scaly; oval leaf scar;
single bundle scar

Buds:

Size: small; superposed; naked

Shape: fusiform-oblong

Color: gray-brown

Surface: smooth

Fruit and Flowers:

Drupe: berry-like

Size: 0.25" dia.

Shape: nearly spherical

Color: pinkish red to lavender

Flower: tubular; pinkish to blue; conspicuous;
appearing from leaf axils in mid to late summer

Bark: brown; numerous raised lenticels

Physical Attributes:

Form: multiple stem

Size: 6.0', mature

Growth Rate: 6.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry, open woods, moist woods, thickets and hammocks; occurs as understory species in upland pine forests, upper slope pine-oak forests, and old-growth maritime forests; adapted to climates with hot, humid summers and moderate winters

Soil Texture: fine - coarse

Soil pH: 4.8 - 7.0

Range: occurs naturally on wooded slopes from Florida, north to Maryland, North Carolina, Tennessee, Missouri, Arkansas, Oklahoma, and northern Mexico; in Mississippi throughout

Wildlife Value and Uses: fruits important food source for many species of birds including bobwhite quail, mockingbirds, robins, towhees, and brown thrashers; fruit also eaten by armadillo, raccoon, wood rats, gray fox, opossum, and white-tailed deer; provides food well into the winter months when other food sources are unavailable

Timber Value and Uses: none

Landscaping Info: raised for their ornamental flowers as well as their colorful clusters of fruits; may be propagated by softwood cuttings, but they are primarily grown from seed; produces many volunteers that are very hearty and can be dug up and transplanted elsewhere in a more desirable location; flowers are produced on new growth, should be pruned after the fruits are gone; may be pruned to the ground level in the winter if desired

Other Facts: leaves and branches used by the Alabama, Choctaw, Creek, Koasati, Seminole and other Native American tribes for various medicinal purposes; decoction (extract obtained by boiling) from roots, leaves and branches used in sweat baths to treat both malarial fever and rheumatism; boiled plant parts used for treatment in a sweathouse; a decoction of the roots used to treat dizziness and stomachaches; liquid from boiled roots and berries drunk to treat colic; bark from the stems and roots used to treat itchy skin; tea from the root bark taken to treat urine retention or "urine stopped-up sickness"



Leaf



Bark



Flower



Fruit

NOTE: *Callicarpa americana* has been found to be a natural insect repellent. Three chemicals have been isolated that appear to be the active ingredients; callicarpenal, intermedeol, and spathulenol. It has found to be repellent to the mosquitoes which carry yellow fever and malaria, as well as the tick which carries Lyme disease. The discovery and use of callicarpenal has been patented by the United States Department of Agriculture Agriculture Research Service.



Twig

strawberry bush

arrow wood

Euonymus americanus L.

Family: Celastraceae

Leaves:

Type: simple, opposite, deciduous

Size: 1.0" - 3.5" long

Margin: finely serrate

Apex: sharply pointed

Base: pointed

Shape: broadly lanceolate

Color: bright green above; paler below

Surface: glabrous above; glabrous below

Venation: pinnate

Twigs:

Size: stout

Color: olive green

Surface: 4-sided

Buds:

Size: terminal bud 0.25" long

Shape: pointed

Color: reddish green to reddish orange

Surface: scales (3 - rarely 5); serrulate at first

Fruit and Flowers:

Capsule: pulpy-warty surface (somewhat resembles a soft, pink, sweetgum ball)

Size: 0.5" - 0.7"; seeds (4-5), 0.24" - 0.39" long, eventually turn black

Shape: globular; seeds oval/elongate

Color: pink to reddish; seeds red

Flower: monoecious; perfect; in 1.0" - 3.0" cymes; petals, 5, nearly triangular; single flower, greenish white/yellow-green; 0.4" 0.5" dia.

Bark: green; older stems darken and split

Physical Attributes:

Form: multiple stem

Size: 6.0', mature

Growth Rate: 6.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: deciduous woods, sandy thickets, swamps, woodlands, shady edges, ravines, and stream sides

Soil Texture: fine - coarse

Soil pH: 5.0 - 6.0

Range: occurs throughout much of the eastern United States; also known to occur in Ontario; in Mississippi, throughout

Wildlife Value and Uses: seeds eaten sparingly by wild turkey and some songbirds; leaves eaten by white-tailed deer and eastern cottontail rabbit - not abundant enough to be recognized as important in total diet; considered an important indicator of deer presence because it disappears in areas overstocked with deer

Timber Value and Uses: none

Landscaping Info: excellent ornamental; dark red autumn leaves; red capsules and scarlet arillate seeds produce the "burning effect," associated with some of its common names; best used in natural settings in the shade of larger shrubs and trees; bright green, square twigs provide winter interest

Other Facts: seed is a strong laxative; tea made from roots used to treat uterine prolapse, vomiting of blood, painful urination, and stomach aches; bark is diuretic, expectorant, and tonic--- used as a tea in the treatment of malaria, liver congestion, constipation; powdered bark used as a dandruff "cure"



Bark



Leaf



Flower



Fruit



Twig

burningbush

eastern wahoo, spindletree

Euonymus atropurpureus Jacq.

Family: Celastraceae

Leaves:

Type: simple, opposite, deciduous

Size: 2.0" - 5.0" long; 1.0" - 2.0" wide

Margin: finely or doubly serrate

Apex: long-tapered

Base: acute

Shape: ovate to elliptical

Color: bright green above; paler below

Surface: glabrous above; sparsely pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: purplish green

Surface: prominent pale lenticels; leaf scars half-round/half-oval; single bundle scar

Buds:

Size: terminal bud 0.25" long; laterals smaller

Shape: ovoid

Color: purplish

Surface: sharp-pointed scales (3-5)

Fruit and Flowers:

Capsule: deeply lobed (4 lobes); seeds surrounded by a thin fleshy, scarlet aril (fleshy appendage)

Size: 0.5" dia.

Shape: oblong-oval

Color: pinkish to purple

Flower: monoecious; perfect; in 7- to 15-flowered axillary cymes; single flower, 0.5" dia., petals, 4, dark purple, obovate, sometimes obscurely toothed at the margins

Bark: light gray; thin; smooth-scaly

Physical Attributes:

Form: multiple stem

Size: 12.0' - 25.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings;

Other: no resprout/coppice potential

Habitat and Ecology:

Site: woodlands and thickets on moist, rich soils

Soil Texture: medium

Soil pH: 5.0 - 8.0

Range: widespread in the eastern U.S.; designated on the Nature Serve website as "imperiled" in MS based on the following Natural Heritage county distribution records: Chickasaw (28017), Clay (28025), DeSoto (28033), Lee (28081), Monroe (28095), Noxubee (28103), Oktibbeha (28105), Tishomingo (28141)

Wildlife Value and Uses: leaves and twigs favorite browse for white-tailed deer; seeds eaten by birds

Timber Value and Uses: no commercial timber value

Landscaping Info: adaptable and easy to transplant; attractive fruit and good fall color when open grown; not commonly used in gardens because of its susceptibility to scale and unkempt growth habit

Other Facts: *Euonymus* has been in use among physicians for a long time. The bark is tonic, laxative, alterative, diuretic, and expectorant; the seeds are cathartic and emetic.



Leaf



Fruit



Bark



Flower



Twig

swamp-privet

Forestiera acuminata (Michx.) Poir.

Family: Oleaceae

Leaves:

Type: simple, opposite, deciduous

Size: 2.0" - 4.5" long; 1.0" - 2.0" wide

Margin: remotely serrate above middle

Apex: acuminate

Base: wedge-shaped

Shape: elliptical

Color: yellow-green above; paler below

Surface: glabrous above; slightly pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: light brown

Surface: warty; white lenticels; single U-shaped bundle scar; lenticels small, circular to half-round

Buds:

Size: terminal bud 0.06" long; laterals often superposed

Shape: terminal ovoid; laterals globose

Color: brown

Surface: exposed scales (2-4 pairs)

Fruit and Flowers:

Drupe: wrinkled, fleshy

Size: .050" long

Shape: ellipsoid

Color: brownish to purple

Flower: dioecious; unisexual; apetalous; staminate in stalked clusters, greenish yellow; pistillate, in panicles, 1.0" long

Bark: dark brown; remotely ridged; flaky; thin

Physical Attributes:

Form: single or multiple stem

Size: 33.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: occasional in river bottom floodplains or on moist soil near streams and margins of swamps

Soil Texture: fine - medium

Soil pH: 6.0 - 8.0

Range: Indiana; west through Illinois, Missouri to Kansas; south to Texas; east to Florida; north through Georgia, South Carolina, Tennessee, and Kentucky; in Mississippi, the Delta counties, and along the major river and stream bottoms throughout the State

Wildlife Value and Uses: The Texas Plant Information Database (TPID) overall wildlife index is 8.46 out of a possible 10.0; food and cover ratings are "Excellent" for upland game and non game birds, waterfowl, and small mammals; "Excellent" food, and "Good" cover for large mammals

Timber Value and Uses: none

Landscaping Info: used occasionally as an ornamental

Other Facts: named in honor of Charles Le Forestier, a seventeenth century French physician and botanist; *acuminata* refers to the acuminate leaves; roots and bark used in a decoction as a health beverage; wood used for turning (Bailey and Bailey 1976), although reports on its durability vary (Plants for a Future 2001)



Leaf



Leaf



Fruit



Bark



Flower



Twig

oakleaf hydrangea

mountain hydrangea, graybeard,

French hydrangea, peeg angea

Hydrangea quercifolia Bartr.

Family: Saxifragaceae (Hydrangeaceae)

Leaves:

Type: simple, opposite/subopposite, deciduous

Size: 4.0" - 12.0" long; 3-7 pointed lobes; almost as wide as long

Margin: ciliate; serrate

Apex: acuminate - acute

Base: round to inequilateral

Shape: ovate

Color: yellowish green above; whitish below

Surface: rough pubescent above; tomentose below

Venation: pinnate

Twigs:

Size: stout

Color: young stems coppery; older cinnamon brown and gray-brown

Surface: young pubescent; older exfoliating

Buds:

Size: terminal bud 1.0" - 1.25" long

Shape: globose-conical to oblong

Color: orange

Surface: tomentose; 4-5 exposed scales

Fruit and Flowers:

Capsule: dry

Size: small

Shape: globose

Color: green to brown

Flower: cone-shaped clusters 6.0" - 12.0" long; 3.0" - 5.0" wide; changing through the season from cream to rusty red

Bark: flaky, brown to gray-brown; exfoliating strips

Physical Attributes:

Form: multiple stem

Size: 6.0', mature

Growth Rate: 6.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: mixed hardwood forests, along streams and on forested hillsides, usually on calcareous soils,

Soil Texture: fine - coarse

Soil pH: 4.6 - 7.5

Range: native to the southeastern United States from Tennessee; south to the Florida Panhandle; west to the Mississippi River; in Mississippi, scattered throughout

Wildlife Value and Uses: limited value for wildlife food and cover

Timber Value and Uses: none

Landscaping Info: coarse textured foliage; best in partly shaded locations; large flower clusters last for months, color gradually changes from cream to pinkish to rusty red; flower clusters remain cohesive when dry--well suited for floral arrangements; color does not vary with soil pH; exfoliating tan, orange and cinnamon bark provide winter interest; fall leaf colors are red, purple, and bronze; Oakleaf hydrangea and peegee hydrangea (*H. paniculata*) are the only hydrangeas with cone-shaped flower clusters - all others have ball-shaped or flat-topped clusters

Other Facts: tea made from leaves used by the Cherokee as a purgative, to induce vomiting, and to regulate menstrual periods; bark chewed for high blood pressure and stomach problems; poultice used as an antiseptic to treat open wounds and sores



Summer



Bark



Fall

Leaf



Summer



Fall

Flower



Fruit



Twig

Japanese privet (Invasive)

Ligustrum japonicum Thumb.

Family: Oleaceae

Leaves:

Type: simple, opposite, evergreen

Size: 2.0" - 3.0" long;

Margin: entire

Apex: rounded to acute

Base: acute

Shape: elliptical

Color: dark green above; paler below

Surface: shiny, waxy above; 6-8 sunken veins below

Venation: pinnate

Twigs:

Size: slender

Color: light brown

Surface: white corky lenticels; shape somewhat square

Buds:

Size: terminal <0.039" ; laterals minute

Shape: elongate

Color: light brown

Surface: pubescent; terminal and laterals several scales

Fruit and Flowers:

Drupe:

Size: 0.25" dia.

Shape: globose - oblong

Color: dark blue (mature)

Flower: monoecious; perfect; in terminal panicles, 2.0" - 4.0" long; white; conspicuous; upright,

Bark: grayish brown; smooth; light horizontal, raised lenticels

Physical Attributes:

Form: multiple stem

Size: 10.0', mature

Growth Rate: 10.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: grows in a wide variety of habitats; soil disturbances of all sorts such as forest clearing, abandoned agricultural lands, and fence construction as with *Ligustrum sinense* except *L. japonicum* is not as adept at handling wet sites

Soil Texture: fine - coarse

Soil pH: 5.5 - 6.9

Range: Virginia, North Carolina, South Carolina, and Gulf Coast states; west to Texas; in Mississippi, reported by the NRCS Plants Database in only 5 counties - Washington, Hinds, Madison, Marion, and Forrest, but known to be found in many others

Wildlife Value and Uses: provides a source of food for birds when other berries or food sources are meager, unfortunately also allows dispersion of the plant helping it to naturalize over a wide area

Timber Value and Uses: none

Landscaping Info: many cultivars available and plants grafted onto *L. quihoui* for protection against nematodes are preferred when available

Other Facts: from the website Plants for a Future including a disclaimer as to validity of the following --- leaves and roasted seeds can be used as a coffee substitute; extracts of the plant show antibacterial, antiulcer and hypotensive activity; a commercial insect wax is produced on the branches --- used for candles and as a polish for earthenware pots, book edges etc.; controversy over whether wax is produced by the plant or the insects and in response to what mechanism

WARNING:

This shrub can be invasive and readily reseeds. If you do have plants, remove flowers and fruit to limit spread.

Poisonous Part: Fruit

Symptoms: Abdominal pain, nausea, vomiting, diarrhea, headache, weakness, cold and clammy skin.

Toxic Principle: Glycosides: ligustrin, syringin, and others.

Severity: HIGHLY TOXIC. MAY BE FATAL IF EATEN



Bark



Leaf



Flower



Fruit



Twig

Chinese privet (Invasive)

Ligustrum sinense Lour.

Family: Oleaceae

Leaves:

Type: simple, opposite, evergreen to semi-deciduous

Size: 2.0" long; 1.0" wide

Margin: entire

Apex: acute

Base: acute

Shape: elliptical

Color: dark green above; paler below

Surface: glabrous above; pubescent on midrib below --- occasionally on branch veins

Venation: pinnate

Twigs:

Size: slender

Color: orange-brown

Surface: densely pubescent (hairs @ right angle to twig surface); raised tan lenticels

Buds:

Size: small

Shape: ovoid

Color: (no data)

Surface: sessile; sometimes superposed; 2-3 pairs of exposed scales

Fruit and Flowers:

Drupe: fleshy

Size: 0.2" - 0.3"

Shape: ellipsoidal to nearly globose

Color: green (new); blue-black (mature)

Flower: monoecious; perfect, terminal and upper axillary clusters on short branch in panicles, 2.0" - 4.0" long; petals (4), white, 0.06 - 0.1" long

Bark: light mottled gray; thin, somewhat rough; raised, horizontal lenticels

Physical Attributes:

Form: multiple stems

Size: 10.0' - 15.0' (occasionally up to 35.0')

Growth Rate: 15.0' maximum @ 20 yrs

Life Span: (no data)

Tolerances:

Shade: high

Drought: high

Fire: low (resprout from root collar)

Anaerobic: high

Propagation: seed; (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: grows in a wide variety of habitats; soil disturbances of all sorts such as forest clearing, abandoned agricultural lands, and fence construction

Soil Texture: fine - coarse

Soil pH: 5.6 - 7.8

Range: Florida; north to southern New England; west to the eastern parts of Kansas, Oklahoma, and Texas

Wildlife Value and Uses: fruits eaten by a variety of birds, including cedar waxwings and northern bobwhite; may be particularly important to northern bobwhite in winter after other food sources are depleted; Chinese and European privets browsed by deer ---likely other privets also; in southeastern Texas fruits and foliage consumed by the cotton rat in the fall and the fruit in winter

Timber Value and Uses: none

Landscaping Info: native to China and introduced into the United States in 1852 for use as an ornamental shrub; still available and promoted by nurseries, but considered an invasive weed species; poses the threat of large-scale ecosystem modification due to its ability to successfully compete with and displace native vegetation; provides cover for northern bobwhite in northern Georgia; terminal twigs and foliage maintain a crude protein content of >10.5% year-round, but may be toxic to livestock

Other Facts: For over 1,000 years Chinese Privet has been used in traditional Chinese medicine. It has antibacterial, antiseptic, anti-tumor, cardio-tonic, diuretic and tonic properties. In traditional Chinese medicine the leaves are used to treat cold, congestion, fever, pain, abscesses, headache, swelling, vertigo, and broken bones. (electronic media data ---source and information not verified)

Poisonous Part: Fruit

Symptoms: Abdominal pain, nausea, vomiting, diarrhea, headache, weakness, cold and clammy skin.

Toxic Principle: Glycosides: ligustrin, syringin, and others.

Severity: HIGHLY TOXIC, MAY BE FATAL IF EATEN



Bark



Flower



Leaf



Fruit



Twig

American elder

elderberry, sweet elder, wild elder

Sambucus canadensis L.

Family: Caprifoliaceae

Leaves:

Type: pinnately compound, opposite, deciduous

Size: leaf 5.0" - 9.0" long; leaflets (5-7 pairs), 1.5" - 4.0" long

Margin: sharply serrate

Apex: acuminate

Base: often asymmetrical

Shape: elliptical

Color: green above; paler below

Surface: shiny above; slightly pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: light gray-green

Surface: glabrous; numerous lenticels; leaf scars broadly crescent-shaped and often transversely connected, forming ringed nodes; bundle scars 3, 5, or 7

Buds:

Size: terminal bud absent; laterals 0.13" long

Shape: pointed

Color: brown to red-brown

Surface: several scales

Fruit and Flowers:

Drupe: berrylike

Size: 0.25" dia.

Shape: globose

Color: purple-black

Flower: monoecious; perfect; in slightly convex (usually profuse) clusters, 6.0" - 12.0" wide; flower, white, 0.25" dia.

Bark: thin; light gray and smooth; raised protuberances from lenticels; with age somewhat fissured and rough

Physical Attributes:

Form: multiple stems

Size: 10.0' - 15.0', mature (occasionally 20.0')

Growth Rate: 15.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich soils along riverbanks and forest edges; also often on disturbed sites

Soil Texture: medium

Soil pH: 5.0 - 7.0

Range: in a number of varieties throughout the continental U.S. except the far northwestern states (Washington, Oregon, Idaho, and Utah); native to eastern North America, from Nova Scotia; south to Florida; west to Minnesota and Texas; in Mississippi, throughout

Wildlife Value and Uses: many birds and mammals consume the fruit (relished by no fewer than 50 kinds of birds); bear love to eat the elderberry fruits, while deer, elk, and moose browse on the stems and foliage; game birds, squirrel and other rodents, and several kinds of browsers also feed on the fruit or foliage of elderberry

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: showy in full bloom but limited in use as an ornamental due to unkempt, sprawling growth habit

Other Facts: edible fruits and flowers used by Native Americans for medicine, dyes for basketry, arrow shafts, flutes, whistles, clapper sticks, and folk medicine; active alkaloids in elderberry plants are hydrocyanic acid and sambucine; both will cause nausea so care should be observed with this plant; high in Vitamin C

food products from the fruit include elderberry wine, jam, syrup, and pies; entire flower cluster can be dipped in batter and fried; petals can be eaten raw or made into a fragrant and tasty tea; flowers add an aromatic flavor and lightness to pancakes or fritters.

dried fruits cooked by both Spaniards and Cahuillas into a rich sauce "sauco" that needed no sweetening

Note: only the blue or purple fruits of elderberry are edible



Bark



Flower

Leaf



Fruit



Twig

Warning: New growth of American elder contains a glucoside that can be fatal to livestock

mapleleaf viburnum

dockmackie, guelder-rose, maple-leaved arrowwood, possum-haw, squash-berry

Viburnum acerifolium L.

Family: Caprifoliaceae

Leaves:

Type: simple, opposite, deciduous

Size: 1.0" - 3.0" wide

Margin: coarsely serrate; deeply 3-lobed

Apex: acuminate

Base: cordate (heart-shaped)

Shape: suborbicular

Color: bright green to dark green above; paler below

Surface: glabrous above; minute black dots, stellate (hairy tufts) to smooth below

Venation: palmate

Twigs:

Size: slender

Color: velvety gray

Surface: pubescent

Buds:

Size: 0.75" - 1.25" long

Shape: ovoid

Color: 4 dark purple scales

Surface: pubescent

Fruit and Flowers:

Drupe: berry-like

Size: 0.33" - 0.5" dia.

Shape: egg-shaped

Color: black

Flower: monoecious; perfect; in upright, flat-topped clusters, 1.0"-3.0" wide; flowers, white, 0.16" - 0.24" dia.

Bark: gray-brown; smooth

Physical Attributes:

Form: multiple stem

Size: 6.0', mature

Growth Rate: 6.0' maximum @ 20 years

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, well-drained soils; upland forests, hillsides, and ravine slopes; tolerant of acid soils

Soil Texture: medium - coarse

Soil pH: 4.8 - 7.5

Range: from Wisconsin, Illinois, Arkansas and Texas, east to the Atlantic and north into Quebec; in Mississippi, reported by the NRCS Plants Database in only two counties (Webster and Kemper), but is probably more widespread

Wildlife Value and Uses: fruits eaten by deer, rabbit, mice, skunks, ruffed grouse, ring-necked pheasant, wild turkey, and numerous species of songbirds; foliage, twigs and bark browsed by moose, deer, rabbit, and beaver; nesting and escape cover for small mammals and birds

Timber Value and Uses: none

Landscaping Info: good summer and fall colors from flowers, foliage, and fruit; good for large heavily shaded locations in dryish soil where it can naturalize and form loose open colonies; generally available locally; best propagation method is transplant

Other Facts: all plant parts used medicinally by the Cherokee, Chippewa, Iroquois, and Menominee Native American tribes in the form of infusions, decoctions, tonics, and poultices, for everything from smallpox, to fever, stomach cramps, sore tongue, and colic --- including a poultice from the inner bark used by the Iroquois for pain caused by witchcraft; introduced into cultivation in 1736

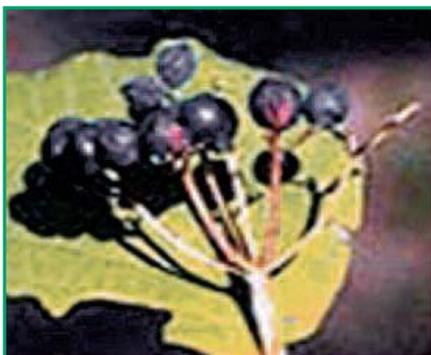


Bark



Flower

Leaf



Fruit



Twig

possumhaw viburnum

smooth witherod, wild raisin,

possum-haw

Viburnum nudum L.

Family: **Caprifoliaceae**

Leaves:

Type: simple, opposite, deciduous

Size: 6.0" long; 1.5" - 2.0" wide

Margin: entire to slightly wavy and revolute

Apex: acuminate

Base: cuneate

Shape: lanceolate

Color: green above; paler below

Surface: lustrous above; rusty-scurfy, raised veins below

Venation: palmate

Twigs:

Size: slender

Color: brown

Surface: rusty-scurfy when young; leaf scars encircle twig (U- to V-shaped)

Buds:

Size: flower buds terminal; laterals 0.5" long

Shape: terminal (long-narrow); laterals, "duckbill" bud

Color: rusty

Surface: terminal 2 scales, pubescent; laterals several scales

Fruit and Flowers:

Drupe: bitter

Size: 0.25" dia.

Shape: globose to elliptical

Color: pink - red - dark blue (mature)

Flower: monoecious; perfect; in terminal flat-topped clusters, 2.5"-5.0" wide; flower, white or cream colored, 0.25" dia.

Bark: brown to gray; smooth; slightly scaly/blocky on older stems

Physical Attributes:

Form: single or multiple stem

Size: 15.0' - 20.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: along streams, swamp margins, and low moist slopes in the uplands

Soil Texture: fine - coarse

Soil pH: 5.5 - 6.8

Range: Wisconsin; south to Illinois, Arkansas, and Texas; east to Florida; north to Maine; in Mississippi, scattered throughout

Wildlife Value and Uses: Texas Plant Information Database (TPID) overall wildlife rating of 7.95 of a possible 10.0; rated as "Excellent" food source for small and large mammals, non-game and upland game bird species, and waterfowl; "Excellent" cover source for non-game birds; "Good" cover resource for small and large mammals and upland game birds

Timber Value and Uses: no commercial timber value; "Excellent" erosion control rating by TPID

Landscaping Info: attractive foliage and showy flowers and fruit; transplanting is recommended establishment method; ease and cost of establishment is medium; self-incompatible and needs to grow close to a genetically distinct plant in the same species in order to produce fruit and fertile seed

Other Facts: tea made from the bark is antispasmodic, diuretic, tonic and a uterine sedative (Foster. S. & Duke. J. A. A Field Guide to Medicinal Plants. Eastern and Central N. America. Houghton Mifflin Co. 1990 ISBN 0395467225)



Leaf



Fruit



Bark



Flower



Twig

rusty blackhaw viburnum

Viburnum rufidulum Raf.

Family: Caprifoliaceae

Leaves:

Type: simple, opposite, deciduous

Size: 2.0" - 3.0" long; 1.0" - 1.5" wide

Margin: finely-remotely serrate

Apex: rounded or abruptly sharp-pointed

Base: rounded or wedge-shaped

Shape: oval

Color: dark green above; paler reddish below

Surface: glossy above; scattered pubescence below (scattered red hairs)

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown - gray

Surface: numerous small reddish colored lenticels; woolly rusty-red hairs; V-shaped or crescent-shaped leaf scars; 3 equidistant bundle scars

Buds:

Size: flower buds terminal, 0.5" long; lateral buds 0.5" long;

Shape: oblong; valvate scales

Color: reddish

Surface: terminal buds, 2 scales, woolly hairs; laterals, several scales

Fruit and Flowers:

Drupe: drooping clusters; red stalks

Size: 0.25" dia.

Shape: globose to elliptical

Color: bright blue

Flower: monoecious; perfect; in flat-topped, sessile clusters, 4.0" - 6.0" wide; flowers white to cream colored, with 5 spreading lobes

Bark: dark brown - nearly black; transversely and longitudinally divided into narrow fissures (resembles flowering dogwood)

Physical Attributes:

Form: single or multiple stem

Size: 20.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: well-drained soils in the understory of upland mixed hardwood forests, and frequently along roads, fence rows and at the edges of fields

Soil Texture: fine - coarse

Soil pH: 7.0 - 7.5 (optimum 7.0)

Range: Virginia; northwest to Ohio; west to Kansas; south to Texas; east to Florida; in Mississippi, scattered throughout

Wildlife Value and Uses: Texas Plant Information Database (TPID) wildlife value ratings: "Excellent" food resource for large and small mammals, upland game birds, non-game birds, and waterfowl -- "Good" cover resource for large and small mammals, upland game birds, and non-game birds --- "Fair" cover resource for waterfowl

Timber Value and Uses: no commercial value; excellent erosion control species

Landscaping Info: foliage turns a rich reddish purple in fall; flower clusters very showy; drupes lustrous purple or dark blue-black with a waxy bloom

Other Facts: bark is antispasmodic; historical use in the treatment of cramps and colic (Chevallier. A. The Encyclopedia of Medicinal Plants Dorling Kindersley. London 1996 ISBN 9-780751-303148)



Bark



Leaf



Flower



Fruit



Twig

LEAVES BROAD AND EVERGREEN OR DECIDUOUS

BROADLEAF SPECIES

LEAVES, TWIGS, LEAF SCARS ALTERNATE

ELMS

HICKORIES

OAKS

OTHER TREES

SHRUBS AND SMALL TREES

winged elm

cork elm, wahoo

Ulmus alata Michaux

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 3.5" long; 1.0" - 1.5" wide

Margin: coarsely doubly serrate

Apex: acute to acuminate

Base: unequally rounded or cordate

Shape: oblong-lanceolate

Color: dark green above; paler below

Surface: smooth above; pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: current season gray-brown to red-brown

Surface: generally glabrous; pubescent where vigorous growth present; 2 corky wings (often, but not always present)

Buds:

Size: terminal bud absent; laterals, 0.13" long

Shape: ovoid, acute

Color: dark brown scales

Surface: glabrous to slightly pubescent

Fruit and Flowers:

Samara: single flattened seed; narrow wing; seed cavity, wing, and margin hairy; apex notched

Size: 0.33" long

Shape: oval to oblong

Color: orange-red

Flower: monoecious; perfect; apetalous; long-stalked; in clusters of 3-5; bell-shaped calyx, yellowish red; orange-red anthers; pistil, green and woolly; flower 0.13" dia.

Bark: pale brown-gray; shallow fissures; flat superficially scaly ridges

Physical Attributes:

Form: single stem

Size: 65.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: usually on dry, gravelly soils at low elevations; with less frequency near streams, on alluvial flats, and swamps

Soil Texture: fine-medium

Soil pH: 5.0 - 7.0

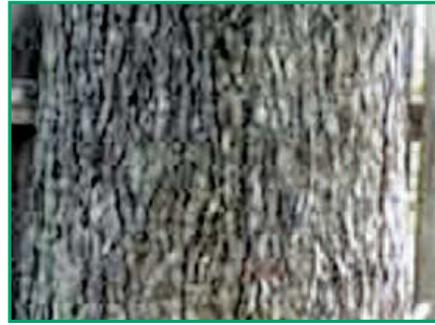
Range: southern Virginia; west to Kentucky, southern Indiana, Illinois, and central Missouri; south to central Oklahoma and southeastern Texas; east to central Florida; in Mississippi, throughout

Wildlife Value and Uses: mast eaten by birds and animals; twigs and leaves are important for white-tailed deer (most succulent, nutritious, and digestible during spring, and less useful as food the rest of the year because after abscission, the leaves lose most of their quality and digestibility)

Timber Value and Uses: lumber is mixed with other elms; used principally for furniture, hardwood dimension, flooring, boxes, and crates; excellent resistance to splitting has made it a choice wood for the manufacture of high quality hockey sticks; increased demand for elm in the manufacture of "bent" parts on chairs such as rockers and arms

Landscaping Info: favorite ornamental and street tree in many southern communities; relatively easy to maintain; pleasant shape; susceptible to elm necrosis

Other Facts: inner bark used locally as baling twine in the past



Bark



Leaf



Flower



Fruit



Twig

American elm

white elm, water elm, soft elm, Florida elm

Ulmus americana L.

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 6.0" long; 2.0" - 3.0" wide

Margin: coarsely doubly serrate

Apex: acute - acuminate

Base: rounded-inequilateral

Shape: oblong-ovate

Color: dark green above; paler below

Surface: smooth to scabrous above; pubescent (rarely glabrous) below

Venation: pinnate

Twigs:

Size: slender

Color: current season red-brown to dark brown

Surface: smooth to sparsely pubescent; leaf scars semi-circular, raised; 3 bundle scars

Buds:

Size: terminal bud absent; laterals 0.25" long

Shape: ovoid, acute

Color: scales light brown with dark edges

Surface: glabrous

Fruit and Flowers:

Samara: winged; hairy on wing margin; flattened seed

Size: 0.5" long

Shape: oval to obovate; deep terminal notch

Color: green, occasionally orange-red

Flower: monoecious; perfect; apetalous; long-stalked, in clusters of 3-4; flower, 0.13" long; calyx, bell-shaped, reddish green; anthers, bright red; pistil, pale green, compressed

Bark: light to medium gray; broad flat ridges formed by deep diamond-shaped or elliptical fissures; when blazed exhibits alternating layers of buff colored and reddish brown tissue

Physical Attributes:

Form: single stem

Size: 120.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: flood plains, moist fertile slopes, margins of wet areas (streams, ponds and lakes), and drier uplands in association with other hardwood species

Soil Texture: fine - coarse

Soil pH: 5.5 - 8.0

Range: Montana; south through Wyoming, Nebraska, Kansas, Oklahoma and Texas; all states east; in Mississippi, throughout

Wildlife Value and Uses: although not considered a "preferred" browse, deer, rabbit, and hares will occasionally browse the leaves and twigs; seeds are eaten by a number of small birds; flowerbud, flower, and fruit are eaten by mice, squirrel, opossum, ruffed grouse, northern bobwhite, and Hungarian partridge; provides thermal cover and nesting sites for a variety of primary and secondary cavity nesters

Timber Value and Uses: wood is moderately heavy, hard, has interlocked grain, and is difficult to split; used principally for furniture, hardwood dimension, flooring, and construction; a small quantity used for pulp and paper manufacture

Landscaping Info: prized for its use as a street tree; fast growing, hardy, stress tolerant, and appreciated for its characteristic vase-like crown; flowers before leafout in the spring thus giving some of the earliest spring color

Other Facts: Dutch Elm disease and elm necrosis have reduced *Ulmus americana* from a species that once comprised a significant percentage of American forestland to one that is struggling for survival



Leaf



Bark



Fruit



Flower



Twig

cedar elm

basket elm, red elm, southern rock elm, or olmo (Spanish)

Ulmus crassifolia Nutt.

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.0" - 2.0" long; 0.5" - 1.0" wide

Margin: coarsely and doubly serrate

Apex: rounded or acute

Base: unequally cuneate or oblique; occasionally rounded

Shape: narrowly ovate to elliptical

Color: dark green above; paler below

Surface: lustrous above; silky hairs below

Venation: pinnate

Twigs:

Size: slender

Color: current season light reddish brown

Surface: somewhat pubescent; minute lenticels; lustrous brown corky wings; leaf scars semi-circular and elevated

Buds:

Size: terminal bud absent; laterals, 0.13" long

Shape: broadly ovoid and sharp-pointed

Color: chestnut brown

Surface: overlapping scales, slightly hairy

Fruit and Flowers:

Samara: flattened seed; surrounded by broad, hairy wing; deep terminal notch

Size: 0.5" long

Shape: oblong

Color: green

Flower: monoecious; perfect; apetalous; short-stalked, in axillary clusters of 3-5; calyx, bell-shaped, green to reddish green; anthers, red to purplish red; pistil, greenish, pubescent, compressed

Bark: silver-gray to brown-gray, often with a purplish tint; not fissured; thin, flat, brittle scales, loose at the edges

Physical Attributes:

Form: single stem

Size: 90.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: flood plains, alluvial flats; stream margins in association with other hardwoods

Soil Texture: fine - coarse

Soil pH: 5.5 - 7.5

Range: extreme southwestern Tennessee, Arkansas, and eastern and southern Oklahoma; south to central and southern Texas into the adjacent northeastern Mexican states of Nuevo Leon and Tamaulipas; east to Louisiana and western Mississippi; isolated population in northern Florida; in Mississippi, reported by the NRCS Plants Database in Coahoma, Washington, Sharkey, Yazoo Holmes, Carroll, and Leflore Counties

Wildlife Value and Uses: seeds provide food for many bird species; buds and seeds make up 5 to 10 percent of the wild turkey's diet in Texas; squirrel also eat the buds

Timber Value and Uses: strong wood; exceptional shock resistance; specific gravity and shrinkage similar to rock elm; most suitable for the manufacture of furniture and fence posts; excellent for steam bending, therefore used to make containers such as boxes, baskets, crates, and barrels; also caskets, and dairy, poultry, and apiary supplies; usually classified and harvested with other elms having similar characteristics (rock elm, winged elm, and September elm)

Landscaping Info: often planted as an ornamental especially in Texas where it is "common"; positives are drought resistance, urban tolerance, and adaptability to a wide range of soil textures and fertilities; negatives include susceptibility to Dutch Elm Disease, elm necrosis, and fall allergy irritation for those affected

Other Facts: smallest leaves of any native elm and is one of two that flower in the fall; leaves can be used as indicators of the severity of air pollution by the sulfate content of leaf samples which is related to overall pollution levels



Bark



Leaf



Flower



Fruit



Twig

slippery elm

red elm

Ulmus rubra Muhl.

Family: **Ulmaceae**

Leaves:

Type: simple, alternate, deciduous

Size: 5.0" - 7.0" long; 2.0" - 3.0" wide

Margin: coarsely doubly serrate

Apex: acuminate

Base: broadly rounded, inequilateral

Shape: obovate, ovate, or broadly elliptical

Color: dark green above; paler below

Surface: scabrous above; pubescent below

Venation: pinnate

Twigs:

Size: moderately stout

Color: current season, gray

Surface: scabrous; raised lenticels; leaf scars, semicircular to oval, raised

Buds:

Size: terminal bud absent; lateral flower buds 0.25" long

Shape: flower subglobose; leaf ovoid

Color: flower scales rusty-red

Surface: overlapping flower scales (10-12) with wooly hairs

Fruit and Flowers:

Samara: flattened seed; broad wing with netted veins; margin smooth; apex, notched, rounded, or depressed

Size: wing 0.75" long

Shape: oval to orbicular

Color: green

Flower: monoecious; perfect; apetalous; short-stalked to nearly sessile; in 3-flower clusters; calyx bell-shaped, green, pubescent, with yellow filaments and reddish purple anthers; flower 0.13" dia.

Bark: dark red-brown to pale gray; flat, superficially scaly; interlacing ridges; shallow to moderate fissures; inner bark uniformly red-brown; fragrant; mucilaginous when blazed

Physical Attributes:

Form: single stem

Size: 85.0', mature

Growth Rate: 45.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: (no data)

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, rich soils of lower slopes and flood plains; may also grow on dry hillsides with limestone soils; abundant and associated with many other hardwood trees in its wide range

Soil Texture: fine - coarse

Soil pH: 5.5 - 7.0

Range: southern Maine and southern Quebec to eastern North Dakota; south to eastern Texas; west to Florida; in Mississippi, throughout

Wildlife Value and Uses: nesting for birds in the thick elm foliage; seeds and buds are food for songbirds, game birds, and squirrel; twigs browsed by deer and rabbit

Timber Value and Uses: not an important lumber tree; hard strong wood, but considered inferior to American elm even though often mixed and sold together as soft elm; used commercially for making furniture, paneling, and containers;

Landscaping Info: somewhat available through native plant nurseries within its range; susceptible to elm necrosis

Other Facts: common name comes from a slippery inner bark; used by numerous Native American tribes for everything from roofing and siding material to rope, bags, baskets, tea, and eye wash; inner bark valued by pioneers as a thirst quencher and appetite suppressant; found today in health food stores and is used to relieve sore throats, coughs and other bronchial ailments, as well as a laxative (Note: there is some evidence that trees are being killed in parts of its range through the stripping of bark for these purposes)



Bark



Leaf



Flower



Fruit



Twig

September elm

red elm

Ulmus serotina Sarg.

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 4.0" long; 1.0" - 2.0" wide

Margin: doubly serrate-crenate

Apex: acute to acuminate

Base: extremely unequal

Shape: obovate-oblong to oblong

Color: yellow-green above; paler below

Surface: lustrous, glabrous above; pale pubescence on principal veins and midrib below

Venation: pinnate

Twigs:

Size: slender

Color: current season, brown

Surface: lustrous; occasionally somewhat hairy; 2nd and 3rd seasons characterized by 2-3 corky wings

Buds:

Size: terminal bud absent; laterals, 0.25" long

Shape: ovoid, sharp-pointed

Color: dark brown

Surface: glabrous, overlapping scales

Fruit and Flowers:

Samara: flattened seed; narrow wing; deep terminal notch; silver-white hairs on seed hull and wings

Size: 0.5" long

Shape: elliptical to oblong

Color: light green

Flower: monoecious; perfect; apetalous; in few- to many-flowered racemes; on short jointed stalks in leaf axils; greenish white (orangish anthers); flower 0.13" long

Bark: light grayish brown or red-brown; shallow fissures and flat ridges

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: most frequently on moist clay or sandy loam soils, but also grows on dry, rocky soils of limestone origin

Soil Texture: fine - coarse

Soil pH: 5.5 - 8.0

Range: grows sporadically from southern Illinois across Kentucky and Tennessee to northern Georgia, northern Alabama, northern Mississippi, Arkansas, and eastern Oklahoma; most abundant in Arkansas and Tennessee; in Mississippi, only reported by the NRCS Plants Database in Rankin, Oktibbeha, and Monroe Counties - but likely occurs elsewhere in the State

Wildlife Value and Uses: seeds eaten by a variety of birds and small mammals, including squirrel; twigs and buds are sometimes browsed by deer, and a few game birds eat the buds

Timber Value and Uses: lumber is cut and sold with four other elm species and marketed as rock elm; lower portions of large trees may provide logs of veneer quality; wood is reddish brown, hard, close grained, and very strong; can be polished to a high luster; excellent bending qualities

Landscaping Info: planted in landscapes, but succumbs to Dutch elm disease and elm necrosis

Other Facts: species may be more widely distributed and abundant than reported as a result of misrecognition as one of a number of "rock elms" with similar characteristics; one of only two elms that flowers after leafout



Leaf



Bark



Flower



Fruit



Twig

water hickory

bitter pecan

Carya aquatica (Michx. f.) Nutt.

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 9.0" - 15.0" long; leaflets (9-17), 2.0" - 5.0" long, 0.5" - 1.5" wide; terminal leaflet often scyth-shaped

Margin: finely serrate

Apex: acuminate

Base: asymmetrical and oblique

Shape: ovate-lanceolate, long pointed

Color: dark green above; brown below

Surface: glabrous above; lustrous below, or tomentose along the midrib and veins

Venation: pinnate

Twigs:

Size: slender

Color: brown, reddish brown, or black

Surface: tomentose; then glabrous; heart-shaped leaf scars; numerous bundle scars

Buds:

Size: terminal bud 0.25" - 0.50" long

Shape: oblong;

Color: yellowish brown

Surface: valvate bud scales, pubescent

Fruit and Flowers:

Nut: husk 0.06" thick, yellow scales, narrow wing along sutures, split along entire length; nut, flattened; seed bitter

Size: 0.75" - 1.25" long

Shape: elliptical

Color: chocolate brown

Flower: monoecious; unisexual; staminate, 3-branched, yellow, catkins, 2.5" - 3.0" long; pistillate flower, solitary or in spikelike clusters of 2-10 flowers per cluster; flower < 0.25" long

Bark: light gray to brown; smooth young; scaly small plates mature

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: best growth on moist but well-drained loamy or silty soils in the Mississippi River Valley and along some coastal plain streams

Soil Texture: fine - coarse

Soil pH: 4.0 - 7.0

Range: Atlantic and Gulf Coastal Plains from southeastern Virginia to southern Florida; west into eastern Texas, and the Mississippi Valley; north to southern Illinois; in Mississippi, most common in the northern half of the State

Wildlife Value and Uses: increasingly recognized for its ability to cleanse drainage water and provide refuge for many threatened species of plants and animals; nuts used to a limited extent by squirrel, feral hogs, and other wildlife; least preferred species by mammals; substantial quantities consumed by water fowl and wood ducks

Timber Value and Uses: minor economic importance because of "shake" (dimensional instability); hard, brittle wood; fuelwood is primary use

Landscaping Info: consider when planting for the amelioration of drainage problems; resembles pecan but smaller; makes a good shade tree

Other Facts: differentiated from cultivated pecan (*C. illinoensis*) by the pubescent leaflets and flattened nut of *C. aquatica*

bitter pecan (*Carya x lecontei*) is currently regarded as a hybrid between *C. illinoensis* and *C. aquatica*



Leaf



Bark



Fruit



Twig

southern shagbark hickory

Carolina hickory

Carya carolinae-septentrionalis (Ashe) Engl. & Graebn.

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 4.0" - 8.0" ; leaflets (3-5), upper leaflets 3.0" - 4.0" long, 1.0" - .7" wide

Margin: coarsely serrate

Apex: acuminate

Base: acuminate (asymmetric-symmetric)

Shape: lanceolate

Color: dark green above; yellow-green below

Surface: glabrous, ciliate above; lustrous below

Venation: pinnate

Twigs:

Size: slender

Color: red-brown, becoming dull gray-brown

Surface: leaf-scars, truncate or slightly

obcordate; numerous small pale lenticels

Buds:

Size: 0.25"

Shape: cylindrical

Color: red-brown, turning black when dry

Surface: shiny, black scales (diagnostic aid)

Fruit and Flowers:

Nut: husk 0.13 - 0.38" thick; splitting freely nearly to base; yellowish brown

Size: 0.75" - 1.5" wide, short-oblong (wider than long), slightly depressed at apex

Shape: ovoid; compressed; prominently 4-angled; acute at ends

Color: pale brown to white

Flower: monoecious; unisexual; staminate, hairy, yellow catkins, 4.0" - 5.0" long; pistillate flowers, 2- to 5-flowered rusty red woolly spikes

Bark: light gray; separating into thick plates (0.25" - 0.75"), up to 1.0' long

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 15' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium to high

Drought: medium

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry limestone hills, river-bottoms, and low flat often inundated woods, frequently in clay soil;

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.0

Range: central North Carolina to northern Georgia; through western North Carolina to eastern Tennessee; in Cullman and Dallas Counties, Alabama, and eastern Mississippi

Wildlife Value and Uses: food for many wildlife species; preferred food of squirrel; 5 to 10 percent of the diet of the eastern chipmunk; black bear, gray and red fox, rabbit, and white-footed mice utilize small amounts of hickory nuts; not a preferred browse food of deer or cattle

Timber Value and Uses: contributes only a very small percentage of total biomass of a given forest stand; when harvested it is generally mixed with shagbark hickory (*C. ovata*)

Landscaping Info: best used in parks and estates; too slow-growing to be a good selection for yard landscaping

Other Facts: nuts historically a staple for many North American Indian tribes; mashed with water, then used as "hickory milk" to make breads and cakes; served like butter on vegetables; sugar and syrup can be made from the sap, as with sugar maple (*Acer saccharum*)



Bark



Leaf



Flower



Fruit



Twig

bitternut hickory

Carya cordiformis (Wangenh.) K. Koch

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 6.0" - 10.0" long; leaflets (7-11), 3.0" - 6.0" long

Margin: coarsely serrate

Apex: acuminate

Base: cuneate or subcordate

Shape: lanceolate to ovate-lanceolate

Color: bright green above; pale green below

Surface: glabrous above; pubescent or glabrous below

Venation: pinnate

Twigs:

Size: slender to moderately stout

Color: gray-brown to greenish brown

Surface: hairy through early summer, then glabrous; numerous oblong pale lenticels

Buds:

Size: 0.50"

Shape: oblong

Color: sulfur yellow to tan

Surface: scales valvate, 4-angled, pubescent near apex

Fruit and Flowers:

Nut: husk thin; yellowish surface hairs; wing narrow along sutures; split part way to base

Size: 1.0" - 1.25"

Shape: globose, slightly flattened

Color: nut reddish-brown

Flower: monoecious; unisexual; staminate catkins, green, 3-branched, 3.0" - 4.0" long; pistillate catkins solitary or paired, yellowish, wooly

Bark: light brown to gray; tight; shallow furrows; flattened interlacing ridges

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (> 50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist soils of valleys and slopes in the mountains and along streams, river bottoms and flood plains in the Piedmont and Coastal Plain

Soil Texture: fine - coarse

Soil pH: 4.0 - 7.4

Range: southeastern Maine to central Minnesota; south to Florida; west through Kansas and Nebraska to eastern Texas; in Mississippi, scattered throughout the northern two-thirds of the State

Wildlife Value and Uses: fruit generally considered unpalatable to wildlife; bark occasionally fed on by rabbit, beaver, and small rodents; nesting sites for a variety of cavity-nesting birds

Timber Value and Uses: tools, furniture, paneling, dowels, ladders, charcoal and fuelwood; valuable species for watershed protection and reclamation of disturbed sites because of deep lateral roots

Landscaping Info: desirable as an ornamental or shade tree; dense root system provides good soil stability; will handle a wide range of soil textures and pH values; routinely available commercially

Other Facts: oil extracted from the nuts used by early settlers for oil lamps and as a cure for rheumatism



Bark



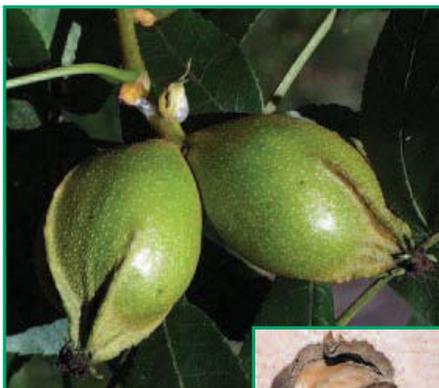
Leaf



Flower



Twig



Fruit



Bud

pignut hickory

sweet pignut, coast pignut hickory,
broom hickory, smoothbark hickory

Carya glabra (P.Mill.) Sweet

Family Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 8.0" - 12.0" long; leaflets (5-7), 4.0" - 6.0" long, 2.0" - 3.0" wide

Margin: finely serrate

Apex: acute - long tapered

Base: rounded

Shape: lanceolate

Color: yellow-green above; paler below

Surface: glabrous above; glabrous below, occasionally pubescent along midrib

Venation: pinnate

Twigs:

Size: stout

Color: reddish brown

Surface: glabrous; pale lenticels; leaf scars heart-shaped; many bundle scars

Buds:

Size: 0.50" long

Shape: ovoid to nearly globular

Color: reddish brown; inner scales tawny

Surface: glabrous; inner scales pubescent

Fruit and Flowers:

Nut: husk pear-shaped; neck at base, <0.13" thick; splitting only part way; seed small, sweet

Size: 0.75" - 1.25"

Shape: subglobose

Color: green, brown

Flower: monoecious; unisexual; staminate, 3-branched, yellow catkins, 2.0" - 2.5" long; pistillate flowers in few-flowered woolly spikes

Bark: gray; tight and nearly smooth when young; mature, shallow fissures in a close irregular diamond-shaped pattern

Physical Attributes:

Form: single stem

Size: 75.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: common on upland slopes and ridges; in the south occasionally found on bottomland sites

Soil Texture: medium - fine

Soil pH: 4.0 - 7.4

Range: Illinois; south to Missouri, Arkansas and Louisiana; east and south into central Florida; north to southern Pennsylvania, New York, to Vermont; in Mississippi, broadly scattered throughout the State

Wildlife Value and Uses: nuts may comprise 10 to 25 percent of squirrel diets in some locations, and 5 - 10% of the eastern chipmunk's diet; also eaten by black bear, gray fox, raccoon, red squirrel, pocket mouse, woodrat, and rabbit; eaten by many birds including the woodduck, ring-necked pheasant, northern bobwhite, wild turkey, common crow, bluejay, white-breasted nuthatch, red-bellied woodpecker, and yellow-bellied sapsucker; browse has low palatability value

Timber Value and Uses: sporting goods, agricultural implements, tool handles, shuttle blocks, mallets, and mauls; wood is heavy, hard, strong, tough, and elastic

Landscaping Info: under utilized as a landscape tree; drought tolerant; will grow on soils from acid to somewhat alkaline; provides texture variation when mixed with evergreen oaks; good fall color (yellow); windfirm, and resistant to ice damage

Other Facts: historical uses include broomhandles, skis, wagon wheels and, automobile parts

Note: Swamp hickory is considered by some as a separate species (*C. leioderms*). It has very tight, smooth bark and occurs on bottomland sites and terraces. Most authorities indicate it is a form of *C. glabra*.



Leaf



Fruit



Bark



Flower



Twig

pecan

sweet pecan, nogal morado (Spanish)

Carya illinoensis (Wangenh.) K. Koch

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 10.0" - 20.0" long; leaflets (9-17), 4.0" - 8.0" long, 1.0" - 2.0" wide

Margin: serrate or doubly serrate

Apex: acuminate

Base: unequally rounded or wedge-shaped

Shape: lanceolate

Color: dark yellowish green above; paler green below

Surface: glabrous above; pubescent early, then glabrous below

Venation: pinnate

Twigs:

Size: moderately stout

Color: reddish brown; orange-brown lenticels

Surface: pubescent

Buds:

Size: 0.5" long

Shape: acute

Color: yellowish brown

Surface: valvate scales

Fruit and Flowers:

Nut: husk thin-skinned; 4-winged from base to apex

Size: 1.5" - 2.5" long

Shape: ellipsoidal; smooth or slightly 4-ridged

Color: reddish brown

Flower: monoecious; unisexual; staminate, 3-branched, green catkins, 3.0" - 5.0" long; pistillate, in few- to several-flowered spikes, yellow, hairy, slightly 4-angled

Bark: light brown to gray-brown; narrow fissures; flattened, interlacing, scaly ridges

Physical Attributes:

Form: single stem

Size: 140.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: commonly on well-drained loam soils not subject to prolonged flooding; does appear on heavy textured soils, but is limited to alluvial soils of recent origin with best development on the ridges and well-drained flats

Soil Texture: fine - coarse

Soil pH: 5.0 - 7.3

Range: principally in the lower Mississippi Valley; southwestern Indiana to southeastern Iowa; south through western Tennessee to central Alabama; west to east and central Texas; north to southeastern Kansas; also grows locally in northeastern and central Mexico; in Mississippi, reported by the NRCS Plants Database in the counties of Desoto, Lafayette, Union, Wayne, Coahoma, Boliver, Washington, Holmes, Yazoo, Warren, Madison, Copiah, Wilkinson, and Amite; planted/naturalized throughout much of the southeastern U.S.

Wildlife Value and Uses: nuts eaten by a number of birds, fox and gray squirrel, opossum, raccoon, and peccaries

Timber Value and Uses: furniture, cabinetry, paneling, pallets, and veneer; commercial edible nut

Landscaping Info: excellent multipurpose tree for the home landscape; planted throughout the South as an ornamental and for its fruit; will grow over a wide range of soil textures and pH values; subject to breakage; high maintenance (spraying) due to numerous pest and disease problems

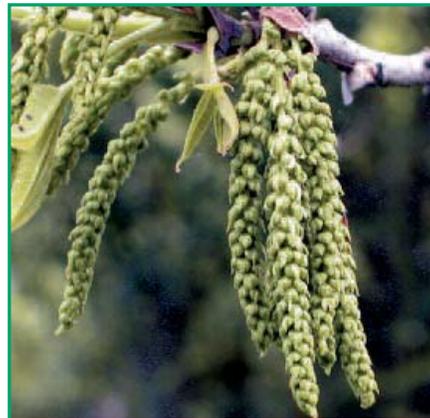
Other Facts: native pecans were present over wide areas when settlers arrived in America; native pecans used as sources of new varieties and as stock for selected clones



Bark



Leaf



Flower



Fruit



Twig

shellbark hickory

bigleaf shagbark, kingnut, big shell-bark, bottom shellbark, thick shellbark,
Carya laciniosa Schneid.

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 12.0" - 24.0" long; leaflets (5-9), usually 7, 5.0" - 9.0" long, 3.0" - 5.0" wide

Margin: finely serrate

Apex: acute to long-tapered

Base: wedge-shaped or unequally rounded

Shape: obovate

Color: dark green above; yellow-green below

Surface: lustrous above; velvet pubescence below

Venation: pinnate

Twigs:

Size: stout

Color: dark brown

Surface: pubescent, pale elongated lenticels; leaf scars triangular to half-round

Buds:

Size: 0.75" long

Shape: broadly ovoid

Color: tan

Surface: 3 - 4 dark brown overlapping, hairy scales

Fruit and Flowers:

Nut: husk; orange-brown, unwinged, dehiscent, 0.25" - 0.50" thick; nut ribbed (4-6); seed, sweet

Size: 1.0" - 2.5" long

Shape: globular to ellipsoidal

Color: light reddish brown to yellowish brown

Flower: monoecious; unisexual; staminate, 3-branched, hairy, yellow catkins, 5.0" - 8.0" long; pistillate flower, in 2- to 5-flowered spikes

Bark: light gray; fissured; separating into thick, broad plates; shaggy

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep, rich, moist, alluvial soils; on upland slopes and flats in the northern limit of its range

Soil Texture: medium only

Soil pH: 6.4 - 7.4

Range: widely distributed but nowhere common; Maine; south to northwestern Florida; west through the northern portions of the Gulf coastal states to Texas; north through northeastern Oklahoma and eastern Nebraska to southeastern Minnesota; in Mississippi, reported by the NRCS Plants Database in Desoto, Pontotoc, Tishomingo, Bolivar, Oktibbeha, Lowndes, Noxubee, and Jasper Counties; likely in other areas as well

Wildlife Value and Uses: nuts are eaten by ducks, quail, wild turkey, squirrel, chipmunks, deer, fox, raccoon, and white-footed mice

Timber Value and Uses: furniture, tool handles, sporting goods, veneer, fuelwood, and charcoal; a few plantations established for commercial nut production

Landscaping Info: routinely commercially available; resistant to snow and ice damage; susceptible to frost damage; largest and tastiest nuts of the North American hickories; sometimes crossed with pecan to produce Hicans; very good long-lived landscape tree

Other Facts: used by Cherokee Indians as an analgesic, gastrointestinal aid, and general disease remedy (D.E. Moerman 1986)

Note: often confused with shagbark hickory, but usually has 7 leaflets, bark plates are longer, and more common on bottomland sites in the south; largest nut of all the hickories - often the size of a walnut; tree in some places called "gollywhopper" because of nut size



Bark



Leaf



Flower



Fruit



Twig

nutmeg hickory

swamp hickory, bitter water hickory

Carya myristiciformis (Michx F.) Nuttall

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 7.0" - 14.0" long; leaflets (7-9), 4.0" - 5.0" long, 1.0" - 1.5" wide

Margin: coarsely serrate

Apex: acuminate

Base: cuneate or rounded (equal-unequal)

Shape: ovate-lanceolate to broadly obovate

Color: dark green above; silvery white below

Surface: glabrous above; slightly pubescent, lustrous below

Venation: pinnate

Twigs:

Size: slender

Color: brown to bronze

Surface: densely scaly

Buds:

Size: 0.16" - 0.24" long

Shape: ovoid

Color: bronze

Surface: densely scaly; scales valvate

Fruit and Flowers:

Nut: husk 4-ridged to the base; ridges broad and thick; 1.5" long; yellow-brown; scurfy pubescence; thin (0.03")

Size: 1.0" long; 0.75" wide

Shape: ellipsoidal or slightly obovoid

Color: dark reddish brown; variegated with gray at the ends

Flower: monoecious; unisexual; staminate, catkin, dark brown scurfy pubescence, yellow anthers, 3.0" - 4.0" long; pistillate, oblong, narrowed ends; slightly 4-angled, thick, brown, scurfy pubescence

Bark: dark brown tinged with red; irregularly broken into small thin appressed scales

Physical Attributes:

Form: single stem

Size: 95.0' mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: banks of rivers and swamps in rich moist soil, or rarely on higher ground

Soil Texture: fine - coarse

Soil pH: 4.5 - 6.5

Range: scattered in a few areas in eastern South Carolina, central Alabama and Mississippi, northern Louisiana, southern Arkansas, eastern Texas, and northern Mexico; abundant only near Selma, AL, and in southern Arkansas; in Mississippi, reported by the NRCS Plants Database in the counties of Oktibbeha, Noxubee, and Jasper - likely in other counties especially in the Blackland Prairie

Wildlife Value and Uses: nuts relished by squirrel - begin cutting them while they are still green; also eaten by other rodents and wildlife

Timber Value and Uses: too scattered and rare to be of significant economic value; not distinguished from other hickories when harvesting

Landscaping Info: attractive bark; handles a wide range of soil textures; available commercially; negative is slow growth; should be preserved in landscape when found and identified, as it is a rare tree

Other Facts: rarest species in the genus



Bark



Leaf



Twig



Fruit

red hickory

sweet pignut

Carya ovalis Sarg. (*C. glabra* var. *odorata*)

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 6.0" - 10.0" long; leaflets (5-7), 6.0" - 7.0" long, 1.0" - 2.0" wide

Margin: finely or obscurely serrate

Apex: acuminate, rarely rounded

Base: unequally rounded

Shape: lanceolate

Color: dark yellow-green above; paler below

Surface: glabrous above; axillary pubescence below (leaf axis often reddish purple at base)

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown

Surface: slightly pubescent to glabrous; numerous pale slitlike lenticels; leaf scars heart-shaped; several bundle scars

Buds:

Size: 0.50" long

Shape: ovoid, blunt or sharp-pointed

Color: reddish brown; inner scales pale

Surface: lustrous; inner scales woolly

Fruit and Flowers:

Nut: husk; ellipsoidal, 4-valved, slightly raised at suture lines, splits freely to base; seed sweet

Size: 1.0" long

Shape: oblong; 4-angled above the middle

Color: green, brown

Flower: monoecious; unisexual; staminate, in 3-branched, green, hairy catkins, 4 yellow stamens; pistillate, in 1- to 2-flowered spikes, yellowish hairy stigmas

Bark: gray; scaly; broken transversely into short loose plates with age; weakly shaggy, not as pronounced as *C. ovata*

Physical Attributes:

Form: single stem

Size: 75.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: upland mixed moist forests and well-drained bottoms; wide variety of soils and sites; best development on cool, moist slopes

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.4

Range: central Iowa; south to northeastern Arkansas and northern Mississippi, east to northern Alabama and northern Georgia; north up the east coast to central New York; in Mississippi, reported by the NRCS Plants Database in the counties of Tishomingo, Lafayette, Lee, Noxubee, Scott, Simpson, Wilkinson, Pike, Oktibbeha, and Jackson - likely in most other counties with the exception of the Mississippi River Delta

Wildlife Value and Uses: similar to

C. glabra, and *C. ovata*

Timber Value and Uses: quality not as high as other similar hickories, but utilized commercially for the same purposes

Landscaping Info: same as *C. glabra*

Other Facts: considered by some authorities to be a separate species as given here; considered by some as a variety of *C. glabra*; considered by some not to merit status even as a variety and include it in *C. glabra*



Bark



Leaf



Flower



Fruit



Twig

shagbark hickory

Carya ovata (Mill.) K. Koch

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 8.0" - 14.0" long; leaflets (5-7), mostly 5, 5.0" - 7.0" long, 2.0" - 3.0" wide

Margin: serrate; 3 pubescent teeth (tufts)

Apex: acuminate

Base: wedge-shaped

Shape: obovate

Color: dark yellow-green above; paler below

Surface: glabrous above; pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: orange-brown

Surface: glabrous; large orange lenticels; leaf scars heart-shaped; scattered bundle scars

Buds:

Size: 1.0" long

Shape: broadly oval, blunt

Color: dark brown

Surface: 6 - 8 overlapping, loose, flat scales

Fruit and Flowers:

Nut: husk 0.50" thick, dehiscent, depressed at apex, depressed or rounded at base, nearly black; nut, 4-ribbed, thin-shelled

Size: 1.0" - 1.5" dia.,

Shape: oblong

Color: light brown to whitish brown

Flower: monoecious; unisexual; staminate, yellow-green, hairy catkin, 4.0" - 5.0" long; pistillate flowers in 2 - 5-flowered, rusty red, woolly spikes

Bark: bluish to slate gray; smooth young; becoming shaggy with large vertical plates that curve away from trunk at both ends

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 15.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium to high

Drought: medium

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: best growth on moist, alluvial, river-valley soils; can be found on neighboring slopes and ridges; will form nearly pure, open, parklike groves in bottom lands

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.0

Range: most of the Eastern United States from southeastern Nebraska and southeastern Minnesota; north and east through southern Ontario and southern Quebec to southern Maine; south to Georgia; west to Alabama, Mississippi, Louisiana, and eastern Texas; disjunctly in the mountains of northeastern Mexico; in Mississippi, throughout the northern two-thirds of the State with the exception of the Mississippi River Delta

Wildlife Value and Uses: nuts eaten

by black bear, red fox, gray fox, white-footed mouse, eastern chipmunk, rabbit, wild turkey, ring-necked pheasant, common crow, bluejay, white-breasted nuthatch, red-bellied woodpecker, and yellow-bellied sapsucker

Timber Value and Uses: furniture, flooring, tool handles, ladder rungs, sporting goods, fuelwood, charcoal, meat-smoking

Landscaping Info: not generally planted as a landscape tree because of its slow growth rate; has been used in reclamation of disturbed sites; readily available commercially

Other Facts: no commercial species of wood is equal to it in combined strength, toughness, hardness, and stiffness; formerly used to make wheels and spokes for wagons, carriages, carts, and early automobiles

Note: In contrast, southern shagbark has:

- * smaller, less hairy leaves
- * smaller fruits with thinner husks and less pronounced ridges
- * slender twigs
- * cylindrical buds with shiny black scales



Leaf



Bark



Flower



Fruit



Twig

sand hickory

Carya pallida Engl. & Graebn.

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 7.0" - 15.0" long; leaflets (7-9), mostly 7, terminal 4.0" - 6.0" long, 1.0" - 2.0" wide,

Margin: finely serrate

Apex: acuminate and long-pointed

Base: cuneate or rounded, asymmetrical

Shape: lanceolate or oblanceolate

Color: light green above; paler green below

Surface: lustrous above; pubescent, silver flecks below

Venation: pinnate

Twigs:

Size: slender

Color: red-brown

Surface: glabrous or pubescent

Buds:

Size: terminal 0.25" long; laterals smaller

Shape: acute or obtuse

Color: reddish-brown

Surface: minutely pubescent with silvery scales

Fruit and Flowers:

Nut: husk; 0.13" - 0.17" thick, pubescent, covered with yellow scales, splitting tardily to the base by 2-3 sutures; seed small, sweet

Size: 1.0" - 1.5" long,

Shape: nut; rounded at the ends or obcordate, compressed, prominently ridged nearly to base

Color: white

Flower: monoecious, unisexual; staminate catkin, densely hairy with silver scales, 2.5" - 5.0" long; pistillate, solitary, oblong, covered with yellow scales

Bark: differs depending on site quality; on good soil, pale and slightly ridged; on dry ridges dark gray, rough, deeply furrowed

Physical Attributes:

Form: single stem

Size: 30.0' - 40.0' (occasionally 90.0' - 110.0')

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: characteristically dry sandy soils, but best on moist soils

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.4

Range: Cape May, New Jersey, upper coastal plain and Piedmont plateau; south to Florida; west through the Gulf States; reported in Tennessee; in Mississippi, scattered through the upper two-thirds of the State

Wildlife Value and Uses: similar to other hickories

Timber Value and Uses: not of any significant economic value except as fuelwood

Landscaping Info: difficult to transplant because of deep taproot; slow growth rate; grows best on moist soils in full sun

Other Facts: reason for the species name (*pallida*) is the silver flecks on the under side of the leaf; inner bark is astringent and detergent and has been used to clean cuts, and orally as a wash for sore mouths; based on several attributes could be characterized as a "miniature" mockernut hickory

On Federal or State lists:
endangered in Illinois, threatened in Arkansas and Indiana



Leaf



Fruit



Bark



Twig

mockernut hickory

white hickory, whiteheart hickory,
bullnut, hognut

Carya tomentosa Nutt

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 8.0" - 12.0" long; leaflets (7-9), 5.0" - 8.0" long

Margin: fine to coarsely serrate

Apex: acute to long-tapered

Base: unequally rounded or broadly wedge-shaped

Shape: ovate to elliptic or obovate

Color: dark yellow-green above; paler below

Surface: glabrous above; yellow-green to orange-brown, heavy pubescence below

Venation: pinnate

Twigs:

Size: stout

Color: reddish brown

Surface: hirsute, scaly; pale slitlike lenticels

Buds:

Size: 0.5" - 0.75" long

Shape: broadly ovoid

Color: tan after dropping outer scales

Surface: silky, after dropping outer scales

Fruit and Flowers:

Nut: husk reddish brown; deeply 4-channeled; 0.13" - 0.25" thick

Size: 1.0" - 1.5"

Shape: obovoid-ellipsoidal, 4-ribbed

Color: light reddish brown

Flower: monoecious; unisexual; staminate, yellow, 3-branched catkins, 4 bright red, hairy stamens; pistillate, 2- to 5-flowered spikes, dark red stigmas

Bark: blue-gray; rounded; interlacing ridges; shallow furrows; tight

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 18.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: in the north on dry upland slopes in association with other hickories, many oaks; in Alabama and Mississippi on sandy soils with shortleaf pine (*Pinus echinata*) and loblolly pine (*P. taeda*); species grows and develops best on deep, fertile soils

Soil Texture: medium - coarse

Soil pH: 4.1 - 7.4

Range: southern Maine through southern Michigan and northern Illinois to eastern Nebraska; south to eastern Texas; west to northern Florida; in Mississippi, throughout with the exception of the Mississippi River Delta

Wildlife Value and Uses: preferred mast for wildlife, especially squirrel; minor source of food for ducks, quail, and turkey; nuts fed on by black bear, fox, beaver, and white-footed mice; foliage, twigs and nuts browsed by white-tailed deer; provides cavity-nesting sites for a variety of birds

Timber Value and Uses: tool handles (80% of harvested mockernut); agricultural implements, dowels, gymnasium equipment, poles, furniture, lumber, pulpwood, charcoal, and fuelwood

Landscaping Info: excellent shade tree, edible sweet nut; tolerant of a wide range of soil and moisture conditions; deep taproot; primary drawback as a landscaping plant is slow growth rate

Other Facts: seedling establishment is difficult due to seed predation; eliminated by clearcutting (except for stump sprouting) when no advance regeneration is present; limbs are crooked, often almost "L" shaped



Leaf



Fruit



Bark



Flower



Twig

bitter pecan

Carya x lecontei L.

Family: Juglandaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 10.0" - 12.0" long (intermediate to *Carya illinoensis* and *Carya aquatica*)

Margin: serrate or doubly serrate

Apex: acuminate

Base: unequally rounded or wedge-shaped

Shape: lanceolate

Color: green above; paler below

Surface: glabrous above; glabrous below

Venation: pinnate

Twigs:

Size: moderately stout

Color: reddish brown; orange-brown lenticels

Surface: pubescent

Buds:

Size: <0.5" long

Shape: compressed

Color: yellowish brown

Surface: valvate scales

Fruit and Flowers:

Nut: flattened; bitter meat

Size: >1.5" long (longer than water hickory *Carya aquatica*; flatter than pecan *Carya illinoensis*)

Shape: oblong, no pronounced ridges as in *C. aquata*

Color: reddish brown

Flower: monoecious, green, inconspicuous, staminate and pistillate catkins

Bark: light brown to gray-brown; narrow fissures; flattened interlacing scaly ridges

Physical Attributes:

Form: single stem

Size: 80.0' - 100.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low to medium

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: almost always occurs (>99%) in wetlands in the southeastern U.S.

Soil Texture: fine - coarse

Soil pH: 4.8 - 7.5

Range: Mississippi River valley, where the ranges of *Carya illinoensis* and *Carya aquatica* overlap; NRCS Plants Database shows this hybrid in Mississippi, but does not have a county listing for the State; most likely to occur in greatest abundance in the Mississippi River floodplain, but can occur elsewhere

Wildlife Value and Uses: nuts eaten by woodduck, squirrel, raccoon, black bear

Timber Value and Uses: brashness of wood makes it less useful than pecan

Landscaping Info: (no data)

Other Facts: *Carya aquatica* in some literature is also referred to by the common name bitter pecan, as is *Carya texana*



Leaf



Bark



Fruit



Twig

white oak

eastern white oak, stave oak, forked-leaf white oak

Quercus alba L.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 5.0" - 9.0" long; 2.0" - 4.0" wide

Margin: deeply lobed (7-9); oblique, rounded sinuses nearly to midrib

Apex: rounded; usually 3-lobed

Base: cuneate

Shape: obovate/oblong

Color: bright green above; light green to whitish below

Surface: smooth above and below

Venation: pinnate

Twigs:

Size: slender

Color: red-brown to somewhat gray

Surface: initially pubescent; then glabrous

Buds:

Size: 0.12" - 0.19" long

Shape: ovoid, apex obtuse

Color: dark reddish brown

Surface: glabrous

Fruit and Flowers:

Nut: acorn, annual; cup bowl-shaped, thick warty scales, covers 25% of nut

Size: 0.5" - 1.0" long

Shape: oval

Color: shiny brown

Flower: monoecious; unisexual; staminate, loose, pendulous, yellow, catkins, 3.0" long; pistillate flowers, bright red, short-stalked, solitary

Bark: whitish or ashy gray; varies from scaly to irregularly platy or blocky; smooth patches on older trees not uncommon

Physical Attributes:

Form: single stem

Size: 60.0' -100.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification not required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: found on many soil types, best on coarse, deep, moist, well-drained soils, with medium fertility, and slightly acid soil

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.8

Range: Maine to Minnesota; south to Florida; west to Texas; in Mississippi, throughout the State, the primary exception being the Mississippi River Delta counties, and a band across the north-central part of the State associated with Blackland Prairie soils

Wildlife Value and Uses: acorns eaten by squirrel, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoon; browse palatability medium

Timber Value and Uses: the most important timber oak; commercially important throughout much of the South and East; strong and durable wood for furniture, veneer, paneling, and flooring, staves for barrels, lumber, and interior woodwork; also used for specialty items such as wine and whiskey barrels; fuelwood product value is high

Landscaping Info: excellent tree because of its broad round crown, dense foliage, and purplish red to violet-purple fall color; difficult to transplant; growth slow; existing trees very sensitive to disturbances in root zones caused by grading, soil compaction, or changes in drainage patterns - if severe can lead to mortality

Other Facts: used medicinally by Native Americans



Leaf



Bark



Twig



Fruit



Sprouts

Arkansas oak

Arkansas water oak, water oak

Quercus arkansana Sargent

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 5.0" long; 2.0" - 4.0" wide

Margin: entire

Apex: slightly 3-lobed

Base: wedge-shaped

Shape: broadly obovate

Color: yellow-green above; paler green below

Surface: glabrous above; axillary tufts of pubescence below

Twigs:

Size: slender

Color: grayish brown

Surface: gray pubescence until late in season; becoming darker and glabrous; lenticels, prominent yellowish brown; leaf scars, half-round

Buds:

Size: (no data)

Shape: ovoid to acute

Color: chestnut brown; scales light brown

Surface: slightly ciliate scale margins

Fruit and Flowers:

Nut: acorn, biennial; cup, shallow goblet - to almost saucer-shaped, covers 1/4-1/2 nut

Size: nut 0.63" long

Shape: acorn broadly ellipsoid to subglobose

Color: mature nut, brown to black with faint lighter stripes

Flower: monoecious; unisexual; staminate, hairy catkins, 2.0" - 2.5" long; pistillate, solitary or few-flowered on stout spikes

Bark: black with deep furrows; long, narrow ridges covered with thick, closely appressed scales; orange inner bark

Physical Attributes:

Form: single stem

Size: 40.0' - 95.0'

Growth Rate: (site/location specific)

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: low

Anaerobic: low

Propagation: seed

Other: (no data)

Habitat and Ecology:

Site: sporadically on well-drained, sandy soils in hardwood stands

Soil Texture: coarse - fine (if well-drained)

Soil pH: acid - alkaline (no specific data)

Range: southwest Georgia and northwest Florida; west to Louisiana and southwest Arkansas; in Mississippi, has only been found in Covington County where the largest known specimen is located

Wildlife Value and Uses: good choice for wildlife food because it produces acorns even in the driest years; may not be available

Timber Value and Uses: considered rare in Arkansas, endangered in Florida, and vulnerable in Alabama, Georgia and Louisiana

Landscaping Info: not available for landscaping purposes

Other Facts: thought to be an ancient species of formerly wider distribution in the Coastal Plain; first discovered in Arkansas, hence the common name and Latin species name given in 1911



Bark



Leaf



Twig



Fruit



Form

bluff oak

bastard white oak

Quercus austrina Small

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 4.0" long; 2.0" wide

Margin: entire, rounded lobes (3-9), shallow sinuses

Apex: rounded

Base: cuneate or attenuate

Shape: narrowly obovate

Color: dark green above; gray-green below

Surface: shiny, smooth above; slight axillary pubescence below

Venation: pinnate

Twigs:

Size: slender

Color: dark brown

Surface: corky white lenticels; numerous bundle scars

Buds:

Size: 0.13" - 0.25" long

Shape: ovoid

Color: chestnut brown

Surface: pubescent scales

Fruit and Flowers:

Nut: acorn, annual 1-2 acorns on a stout peduncle; cup, saucer-shaped, covers 33 - 50% of the nut, gray scales

Size: 0.5" - 1.0" long

Shape: round - oval

Color: brown

Flower: monoecious; unisexual; staminate flowers in drooping catkins; pistillate, spikes in leaf axis

Bark: pale gray; developing broad ridges at maturity

Physical Attributes:

Form: single stem

Size: 40.0' - 60.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (>100 yrs)

Tolerance:

Shade: medium

Drought: high

Fire: low

Anaerobic: low

Propagation: seed; bare root; container

Other: (no data)

Habitat and Ecology:

Site: well-drained, rich bottomland soils along streams and next to river bluffs

Soil Texture: fine - coarse

Soil pH: 4.6 - 6.8

Range: Mississippi; east to North Carolina; in Mississippi; primarily in counties along the eastern State boundary with Alabama, but also reported in Hinds and Adams Counties - may be present elsewhere, but unreported

Wildlife Value and Uses: hard mast for wildlife

Timber Value and Uses: white oak lumber; historical uses - pins in cotton gins, spools, baskets, wagon hubs

Landscaping Info: well suited for planting along streets and boulevards where there is plenty of space for crown development; medium textured leaves make this oak stand apart from other oaks, easy to prune due to its upright to horizontal branching habit; commercial availability may be limited

Other Facts: *Quercus* is Latin for "oak tree", *austrina* means "south"



Bark



Leaf



Form

swamp white oak

white oak

Quercus bicolor Wild.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 5.0" - 6.0" long; 2.0" - 4.0" wide

Margin: lobed (10-20); shallow sinuses

Apex: rounded

Base: cuneate to acute

Shape: narrowly elliptical to obovate

Color: dark green above; light green to whitish below

Surface: glossy above; velvety pubescence below

Venation: pinnate

Twigs:

Size: stout

Color: at first reddish orange; then dull purple; then light brown

Surface: exfoliating; then smooth

Buds:

Size: 0.08" - 0.12" long

Shape: globose

Color: brown

Surface: smooth

Fruit and Flowers:

Nut: acorn, annual; cup grayish green, densely pubescent scales, bristles on the cup rim, covers 25-50% of nut

Size: 0.5" - 1.0"

Shape: round to oval

Color: brown

Flower: monoecious; unisexual; staminate, hairy, yellow, catkins, 3.0" - 4.0" long; pistillate, several-flowered, hairy spikes, on elongated stalks

Bark: dark gray or brown; upper limbs peeling off in ragged, papery scales; stem deeply furrowed into flat scaly ridges

Physical Attributes:

Form: single stem

Size: 50.0' - 70.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: medium

Anaerobic: medium (seasonal)

Propagation: seed; (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, fertile soils along streams or in swamps and bottomland sites

Soil Texture: fine - coarse

Soil pH: 4.3 - 6.5 (severe chlorosis on alkaline soils)

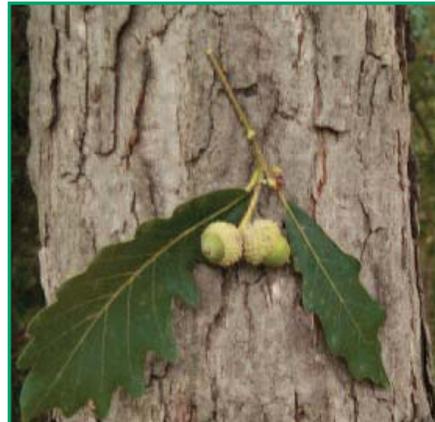
Range: Maine; west to Minnesota; south through Nebraska, Kansas, Oklahoma, and Arkansas; east to Kentucky and North Carolina; inland over the Appalachians to Georgia; in Mississippi, nowhere common -- most probable locale in northernmost counties

Wildlife Value and Uses: provides cover for birds and mammals; acorns important as food source for wildlife such as squirrel, mice, white-tailed deer, beaver, black bear, and a variety of birds, including ducks and turkey

Timber Value and Uses: wood is light brown, close-grained, heavy, and hard; knottier and less valuable than white oak (*Q. alba*), but usually is cut and sold as white oak; used for furniture, cabinets, veneers, interior finishing, and flooring, boxes, crates, fence posts, railroad ties, and beams and boards for general construction; provides tight cooperage and was once widely used in making barrels, baskets, and kegs.

Landscaping Info: planted on highway rights-of-way; frequently used as a shade tree for large lawns, golf courses, parks, and naturalized areas; attractive features are crown shape and bi-colored leaves (dark above, lighter beneath); fall color yellow, and occasionally red-purple; can grow well in areas that are dry, poorly drained and wet, or even occasionally flooded; tolerant of significant soil compaction

Other Facts: Native Americans and pioneers ate the acorns raw or cooked; also ground into a powder and used as a thickening in stews, or mixed with cereal grains for making bread; roasted acorns ground and used as a coffee substitute; tannin bitterness removed by leaching in running water



Leaf

Bark



Fruit

Twig

scarlet oak

black oak, red oak, Spanish oak

Quercus coccinea Muenchh.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 8.0" long; 2.0"- 4.0" wide

Margin: lobed (5-9), parted, C-shaped sinuses

Apex: acute

Base: truncate

Shape: elliptic to obovate

Color: light green above and below

Surface: glossy above; axillary tufts of dense short hairs below; raised secondary veins on both surfaces

Venation: pinnate, reticulate

Twigs:

Size: slender

Color: reddish brown

Surface: pubescent young; smooth with age; leaf scars half-round; bundle scars numerous

Buds:

Size: terminal buds 0.13" - 0.25" long; laterals similar but smaller

Shape: terminal buds ovoid

Color: reddish brown; bud scales brown-gray

Surface: scales pubescent, whitish hairs at tips

Fruit and Flowers:

Nut: acorn, biennial, apex of acorn often has distinct concentric markings; cup, glossy, dark reddish brown outer surface, light brown, smooth inner surface, covers 30-50% of nut

Size: 0.5" - 1.0" long & wide

Shape: bluntly oblong

Color: brown

Flower: monoecious; unisexual; staminate, slender, glabrous, catkins (initially bright red), 3.0" - 4.0" long; pistillate, in few-flowered, short-stalked spikes

Bark: dark brown-black; shallow fissures; irregular ridges; sometimes scaly

Physical Attributes:

Form: single stem

Size: 90.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: variety of habitats including poor soils in mixed forests, especially on upland ridges; probably a climax tree on dry soils

Soil Texture: medium-coarse

Soil pH: 4.5 - 6.9

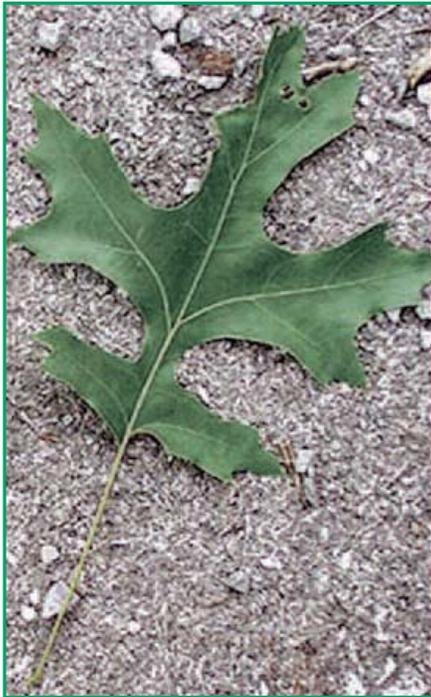
Range: Maine; west to Michigan; south to Missouri and Mississippi; east to South Carolina, and up the eastern coastline; in Mississippi, sporadic throughout the State with the exceptions of the Mississippi River Delta and the southernmost counties

Wildlife Value and Uses: acorns provide food for squirrel, chipmunks, mice, deer, wild turkey, bluejays and redheaded woodpeckers

Timber Value and Uses: construction lumber, flooring, beams, railroad ties, furniture, planking, etc; wood is light to reddish brown, heavy, hard, coarse-grained and strong, with darker colored sapwood.

Landscaping Info: does well as a street tree given plenty of soil space to develop; 30'- 40' centers to form an overhead canopy in residential neighborhoods; not appropriate for restricted downtown planting pits; difficult to transplant, only use nursery stock for this purpose; most striking characteristic as an ornamental is its brilliant fall color

Other Facts: prevailing oak beyond 2500 feet to the summits of the Blue Ridge mountains in the Carolinas; largest recorded scarlet oak located in Powell County, Kentucky



Leaf



Bark



Flower



Fruit



Twig

Durand oak

Durand white oak

Quercus durandii Buckley
(*Quercus sinuata* var. *breviloba* Walter)
Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous
Size: 5.0" - 7.0" long; 3.0" - 3.5" wide (lower branches) - 2.5" - 3.0" long; 0.5" - 1.5" wide (upper branches)
Margin: entire, 3-lobed
Apex: rounded
Base: acute to attenuate-rounded
Shape: oblong
Color: dark green above; grayish green - white below
Surface: dull to shiny above; pubescent or woolly below
Venation: pinnate

Twigs:

Size: slender
Color: light gray to chestnut brown
Surface: may have warty surface

Buds:

Size: 0.25" - 0.33" long
Shape: ovoid
Color: chestnut brown
Surface: ciliated margins

Fruit and Flowers:

Nut: acorn, annual; cup thin, shallow, saucer-shaped, pale tomentose inner surface, small appressed tomentose scales on the back
Size: 0.5" - 0.75" long
Shape: ovoid to obovoid
Color: light chestnut brown
Flower: monoecious; unisexual; staminate, hairy, yellow catkins, 3.0" - 4.0" long; pistillate, on a short woolly stalk

Bark: thin; gray to light brown; shallow to deep furrows; scaly

Physical Attributes:

Form: single stem
Size: 60.0' - 90.0', mature
Growth Rate: (no data @ 20 yrs)
Life Span: (>100 yrs)
Tolerances:
Shade: low
Drought: medium
Fire: low
Anaerobic: low

Propagation: seed; bare root
Other: resprout/coppice (no data)

Habitat and Ecology:

Site: Rich alluvial and limestone soils in woodlands and prairies.
Soil Texture: fine - coarse
Soil pH: 6.0 - 8.0
Range: restricted to the Deep South; found from Richmond County Georgia; west to southern Arkansas and eastern Texas; in Mississippi, reported by the NRCS Plants Database in Scott, Newton, Smith, Jasper, Oktibbeha, and Noxubee Counties

Wildlife Value and Uses: palatable wildlife hard mast source

Timber Value and Uses: white oak lumber; historical uses - pins in cotton gins, spools, baskets, wagon hubs.

Landscaping Info: beautiful landscaping tree with unusual bronze fall leaf color; rapid growth; takes transplanting well; considered to be an excellent tree as yet undiscovered by landscape architects

Other Facts: debate over the correct name for this species exists; some authors classify it as *Q. sinuata*, var. *sinuata*, and a smaller version in west Texas as *Q. sinuata*, var. *breviloba*; diagnostic - white oak bark and red oak leaves



Bark



Fruit



Leaf



Twig

southern red oak
Spanish oak, swamp red oak, water oak, turkey-foot oak

Quercus falcata Michaux

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 5.0" - 9.0" long; 4.0" - 5.0" wide

Margin: lobed (3-7, deeply divided); 1 to 3 bristle-tipped teeth per lobe

Apex: acuminate

Base: U-shaped

Shape: elliptical to ovate

Color: dark green above; rusty below

Surface: lustrous above; pubescent below; raised secondary veins on both surfaces

Venation: pinnate

Twigs:

Size: stout

Color: gray young; reddish brown with age

Surface: rust colored hairs when young; glabrous with age

Buds:

Size: terminal bud 0.25" long

Shape: ovoid

Color: reddish brown

Surface: scales hairy; leaf scars half-round; numerous bundle scars

Fruit and Flowers:

Nut: acorn; biennial; cup reddish brown, pubescent both surfaces, covers 30% of nut

Size: 0.5" long

Shape: subglobose

Color: brown; striated pubescent at tip

Flower: monoecious; unisexual; staminate, hairy yellow catkins, 3.0" - 4.0" long; pistillate, solitary or few-flowered spikes on short, stout, hairy stalks

Bark: dark brown to black; thick; deep fissures; ridged with rough plates near base

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification not required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry upland sites of sand or clay loam throughout the southeastern United States; rare in bottoms; common invader of pine sites

Soil Texture: medium - coarse

Soil pH: 4.2 - 6.0

Range: New Jersey; south to Florida; west to Texas; north to Oklahoma; in Mississippi, on uplands throughout the State

Wildlife Value and Uses: hard mast for many wildlife species; attracts: squirrel, raccoon, deer, turkey, woodpeckers, nuthatch, and grackles; ranked second in preference to the fox squirrel among 12 southeastern oak species; not a preferred browse for cattle.

Timber Value and Uses: used for construction lumber, furniture, interior finish, veneers, railroad ties, fuelwood, and chemical extracts.

Landscaping Info: often grown as a shade tree because of its drought tolerance; very susceptible to insects and disease when wounded, old, or growing on poor sites

Other Facts: young leaf sprouts shaped in a way that resembles a turkey's foot, accounting for one of its common names; also often called Spanish oak because of the association with early Spanish settlement



Bark



Leaf



Twig



Fruit



Form

sand live oak

Quercus germinata Small

Family: Fagaceae

Leaves:

Type: simple, alternate, persistent

Size: 1.38" - 2.38" long; 0.38" - 1.13" wide

Margin: entire, revolute

Apex: acute, sometimes obtuse

Base: cuneate

Shape: narrowly elliptic

Color: light to dark green above; whitish green below

Surface: shiny above, impressed secondary veins; dense glaucous bloom below (rubs off)

Venation: pinnate

Twigs:

Size: slender

Color: yellowish tan to light gray

Surface: pubescent; glabrate in 2nd year

Buds:

Size: 0.04" - 0.10" long

Shape: ovoid

Color: dark brown

Surface: scale margins may be pubescent

Fruit and Flowers:

Nut: acorn, annual; cup whitish or gray scales, smooth or pubescent, covers 33% of nut

Size: 0.62" - 1.0" long

Shape: ovoid or barrel-shaped

Color: dark brown

Flower: monoecious; unisexual; similar to other oaks

Bark: dark brown or black; scaly plates

Physical Attributes:

Form: single stem or shrub (sometimes rhizomatous)

Size: 3.0' - 50.0', mature, depending on form

Growth Rate: (no data @ 20 yrs)

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed; bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep, sandy soils in mixed pine or hardwood stands

Soil Texture: fine - coarse

Soil pH: adaptable (no specific data available)

Range: Louisiana to North Carolina on the coastal plain; in Mississippi, the counties of Pearl River, Stone, George, Hancock, Harrison, and Jackson

Wildlife Value and Uses: good mast for wildlife; acorn sweet; acorn crop production is good

Timber Value and Uses: some lumber when size is good; primarily landscape plantings

Landscaping Info: excellent evergreen hedge for dry sites, salt tolerant and suited for ocean front landscaping, recommended as a container plant, sculptured appearance as it gets older

Other Facts: Some authors prefer to classify sand live oak as a variety of *Q. virginiana*.



Leaf



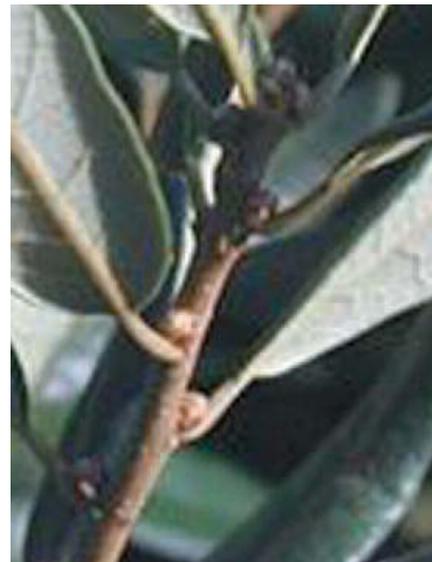
Fruit



Bark



Flower



Twig

laurel oak

Darlington oak

Quercus hemisphaerica Bartram ex Willdenow

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 4.0" long; 0.5" - 1.0" wide

Margin: entire with shallow lobes

Apex: acute or acuminate

Base: wedge-shaped

Shape: oblong-obovate

Color: green above; lighter green below

Surface: smooth above; usually smooth below, occasionally with minute axillary tufts

Venation: pinnate

Twigs:

Size: slender

Color: deep red - brown - dark brown

Surface: smooth

Buds:

Size: 0.10" - 0.20" long

Shape: ovoid, acute

Color: reddish to purplish brown

Surface: scales smooth or ciliated

Fruit and Flowers:

Nut: acorn, biennial; sessile; cup scales and inner surface pubescent, covers 30% of nut

Size: 0.5" long

Shape: ovoid to hemispherical

Color: dark brown to black

Flower: monoecious; unisexual; staminate, hairy, red-stemmed catkins, 2.0" - 3.0" long; pistillate, usually solitary, on short, stout, glabrous stalks

Bark: dark brown; deep furrows and flat ridges

Physical Attributes:

Form: single stem

Size: 50.0' - 60.0', mature, (occasionally 100.0')

Growth Rate: (no data @ 20 yrs)

Life Span: (<50 yrs)

Tolerances:

Shade: medium to low

Drought: medium

Fire: low

Anaerobic: medium (seedlings high)

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice (no data)

Habitat and Ecology:

Site: moderately dry, sandy soils

Soil Texture: medium - coarse

Soil pH: 3.6 - 5.6

Range: North Carolina; to central Florida; west to Louisiana; in Mississippi, reported by the NRCS Plants Database in the counties of Claiborne, Adams, Franklin, Amite, Lauderdale, Newton, Smith, Benton, Lawrence, Clarke, Wayne, Greene, George, Stone, Perry, Forrest, and Lamar; most often occurs as a single tree or a few trees

Wildlife Value and Uses: nesting and cover for wildlife; consistent and abundant acorn crops; important food source for white-tailed deer, raccoon, squirrel, wild turkey, ducks, quail, smaller birds, and rodents; ranked second in quantity and frequency of acorns consumed by wild turkey in Florida; deer browse on seedlings

Timber Value and Uses: pulpwood and firewood

Landscaping Info: urban shade tree; commonly used as an ornamental; easily maintained in most environments; moderately drought tolerant; low salt spray tolerance

Other Facts: two similar species currently recognized, *Quercus laurifolia* (diamond leaf oak), and *Q. hemisphaerica*, based on anatomical differences and vast differences in site preferences - *Q. laurifolia* is found on very wet sites often in combination with overcup and nuttall oaks, and sometimes in large clumps or stands



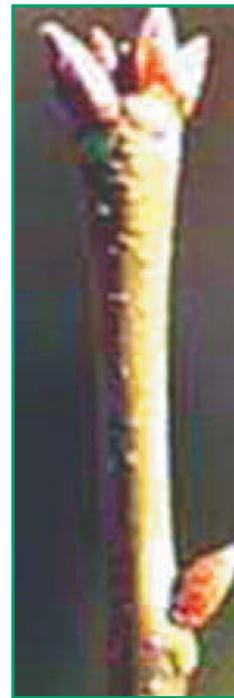
Leaf



Fruit



Bark



Twig

bluejack oak

sandjack oak, upland willow oak,
cinnamon oak, shin oak, turkey oak
Quercus incana Bartram
Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous
Size: 1.1" - 4.0" long; 0.5" - 1.4" wide
Margin: entire
Apex: acute, bristle tipped
Base: acute to rounded
Shape: narrowly ovate to elliptical
Color: bluish green above; bluish green below
Surface: leathery; shiny, sparsely pubescent along midrib, raised veins above; pubescent with axillary tufts below
Venation: pinnate

Twigs:

Size: slender
Color: reddish brown young; darker with age
Surface: pubescent; leaf scars half-round; bundle scars numerous

Buds:

Size: terminal bud 0.25" long
Shape: pointed
Color: reddish brown
Surface: hairy scales

Fruit and Flowers:

Nut: acorn, biennial; cup, bowl-shaped, pale reddish brown, pubescent, inner surface also pubescent, covers 50% of the nut
Size: 0.5" long
Shape: oval
Color: brown with faint stripes
Flower: monoecious; unisexual; staminate, in hairy/woolly catkins, 2.0" - 3.0" long, yellow; pistillate, on short, woolly stalks

Bark: thick; gray to black; wide furrows forming square rough plates

Physical Attributes:

Form: single stem
Size: 30.0' - 40.0', mature
Growth Rate: (no data)
Life Span: (< 50 yrs)
Tolerances:
Shade: low
Drought: high
Fire: high (may be fire dependent in its ability to be competitive)
Anaerobic: low

Propagation: seed; container
Other: resprout/coppice potential

Habitat and Ecology:

Site: restricted to well-drained, sandy, upland soils; flatwoods, and river terraces; increases in dominance downslope of ridge tops; typically occurs in longleaf pine (*Pinus palustris*) communities

Soil Texture: fine - coarse

Soil pH: 4.6 - 7.0

Range: Atlantic and Gulf Coastal Plains from southeastern Virginia, south to central Florida; west to Louisiana and eastern and central Texas; north to southeastern Oklahoma and southwestern Arkansas; in Mississippi, counties east of a line from Lowndes and Oktibbeha Counties in the north, due south/southwest to the coast - also reported in Tishomingo County in the extreme northeastern corner of the State

Wildlife Value and Uses: acorns are consumed by fox squirrel, white-tailed deer, wild turkey, and quail (major food source for black bear, white-tailed deer, northern bobwhite, and wild turkey in Florida); browsed by white-tailed deer only where succulent sprouts are available and deer numbers are high; birds benefit from sparse ground cover under the oaks

Timber Value and Uses: wood is close-grained, hard, and strong; the tree is usually too small to be of much value except for fuel or posts

Landscaping Info: very tolerant of drought and should make a great addition to urban landscapes; especially suited for planting in parking lot islands, along streets and in other areas with restricted soil space; tends to have a dominant leader and showy bark; virtually undiscovered by urban inhabitants; somewhat available commercially

Other Facts: *Incana* refers to the finely-hairy grayish green lower surface of the leaves.



Leaf



Bark



Twig



Fruit



Form

turkey oak

Catesby oak, Coastal Plain scrub oak, scrub oak, turkey-foot oak

Quercus laevis Walter

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 12.0" long; 1.0" - 8.0" wide

Margin: lobed (3-7), 1 to 3 bristle-tipped teeth per lobe; sinuses deep

Apex: acute to acuminate

Base: attenuate to acute

Shape: broadly obovate or triangular

Color: light green above; paler green below

Surface: smooth above; axillary tufts of reddish hair below; raised veins on both surfaces

Venation: pinnate

Twigs:

Size: stout

Color: red-brown, grayish cast

Surface: sparsely pubescent to nearly glabrous

Buds:

Size: 0.22" - 0.47"

Shape: conic or narrowly ovoid-ellipsoid

Color: light brown to red-brown

Surface: pubescent

Fruit and Flowers:

Nut: acorn, biennial; cup, goblet-shaped, scales pubescent with red margins, inner surface pubescent, covers 30% to 50% of nut

Size: 0.75" - 1.13" long

Shape: broadly elliptical

Color: light brown, faint stripes

Flower: monoecious; unisexual; staminate, slender, hairy, yellow, catkins, 4.0" - 5.0" long;

pistillate, on short, stout, hairy, stalks

Bark: gray to dark gray; deep furrows; irregular ridges; reddish inner bark

Physical Attributes:

Form: single stem

Size: 40.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry, sandy, well-drained soils on ridges in the southeastern coastal plain

Soil Texture: fine - medium

Soil pH: 4.0 - 5.8

Range: Louisiana; east to Florida; north to Virginia; in Mississippi, reported by the NRCS Plants Database in Clarke, Jasper, Wayne, Lamar, Forrest, Perry, Greene, Stone, George, Hancock, Harrison, and Jackson Counties

Wildlife Value and Uses: acorns major food source for mammals and birds, including black bear, white-tailed deer, fox squirrel, scrub jay, northern bobwhite, and wild turkey because of their palatability, digestibility, and seasonal abundance; cover and shelter for wildlife

Timber Value and Uses: no commercial value; high suitability as fuelwood

Landscaping Info: highly recommended for planting in areas that are too dry for most other desirable landscape tree species; deep taproot makes it extremely drought tolerant; leaves are glossy and turn vertically which gives it a unique appearance; fall color is excellent --- deep red and glossy; rapid growth rate

Other Facts: leaf shape similar to southern red oak (*Q. falcata*); distinguishing features:

- 1) southern red oak U-shaped leaf base and pubescence on entire lower surface,
- 2) turkey oak tapered leaf base and axillary tufts



Leaf



Fruit



Bark



Twig

swamp laurel oak

laurel oak, Darlington oak, diamond-leaf oak, laurel-leaf oak, water oak, obtuse oak

Quercus laurifolia Michaux

Family: Fagaceae

Leaves:

Type: simple, alternate, tardily deciduous

Size: 2.0" - 4.0" long; 0.5" - 1.0" wide

Margin: mostly entire

Apex: acute, or blunt (usually no bristle tip)

Base: cuneate

Shape: broadly elliptical or diamond shaped (shape varies even on the same tree)

Color: dark green above; pale green below

Surface: shiny above; smooth with yellow midrib on both surfaces

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown; grayish with age

Surface: smooth; leaf scars half-round; bundle scars numerous

Buds:

Size: 0.06" - 0.13" long

Shape: ovoid, pointed

Color: chestnut brown

Surface: shiny scales

Fruit and Flowers:

Nut: acorn; biennial; cup saucer-shaped with pubescence on scales and inner surface, covers 25% of nut

Size: 0.63" long

Shape: nut nearly round

Color: brown

Flower: monoecious; unisexual; staminate, hairy, red-stemmed, yellow, catkins, 2.0" - 3.0" long; pistillate commonly solitary, on glabrous, stout, short, stalks

Bark: gray-black and furrowed; often showing white ridges on smaller stems

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 28.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification not required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: floodplain forests, river and stream banks, swamp margins of the Coastal Plain; occasionally stream bottoms in the Piedmont

Soil Texture: medium - coarse

Soil pH: 4.2 - 6.0

Range: Texas; east to Florida; north to Virginia; in Mississippi, mostly from the central counties south to the Gulf Coast

Wildlife Value and Uses: consistent and abundant acorn crops are an important food source for many animals, including white-tailed deer, raccoon, squirrel, wild turkey, ducks, quail, smaller birds, and rodents; acorns of the black oak group do not germinate until spring, unlike those of the white oak group, and are an important winter food source; palatable for browse animals

Timber Value and Uses: hard, heavy, and strong wood, but does not produce good quality lumber; marketed for pulpwood and also used for firewood; also used for crossties and firewood

Landscaping Info: noted for its dense, oval canopy; used as an ornamental and shade tree in the South; good for reclamation, parking lot islands, and highway medians, prone to epicormic branching

Other Facts: A swamp laurel oak was planted at the White House in Washington, D.C. by President Lyndon B. Johnson



Leaf



Leaf



Fruit



Bark



Flower



Twig

overcup oak

Quercus lyrata Walter

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 6.5" long; 2.0" - 4.0" wide

Margin: deeply lobed, lobes rounded with 1- 3 teeth; sinuses >50% to midrib

Apex: broadly rounded to ovate

Base: cuneate to acute

Shape: narrowly oblong

Color: dark green above; grayish green below

Surface: matte to shiny above; pubescent below with whitish bloom that rubs off

Venation: pinnate

Twigs:

Size: slender

Color: grayish or reddish

Surface: villous (long silky hairs), becoming glabrate; leaf scars half-round; bundle scars numerous

Buds:

Size: 0.13" long

Shape: ovoid

Color: light brown scales

Surface: pubescent

Fruit and Flowers:

Nut: acorn, annual, slightly pubescent; cup spheroid, gray pubescent scales, covers most of nut

Size: 1.0" - 2.0" long

Shape: ovoid to oblong

Color: light brown

Flower: monoecious; unisexual; staminate, slender, hairy, yellow catkins, 3.0" - 4.0" long; pistillate, mostly solitary, sessile, woolly

Bark: gray; deep furrows; scaly ridges or plates

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: poorly drained clay soils of bottom lands, sloughs, and river floodplains, most common in the Coastal Plain

Soil Texture: medium - fine

Soil pH: 4.5 - 6.0

Range: Delaware and New Jersey; south to Florida; west to Texas; north through the Mississippi Valley and drainages to Iowa, Illinois and Indiana; in Mississippi, scattered throughout -on wet floodplains; most common in Delta counties

Wildlife Value and Uses: wildlife mast; planted for wildlife habitat improvement and for bottomland restoration; ducks, wild turkey, hogs, white-tailed deer, squirrel, and smaller rodents eat the acorns; toxicity none

Timber Value and Uses: wood brownish, hard, heavy, and strong; marketed as white oak primarily for lumber and cooperage; not consistently valued for quality products because of fire damage, defects from wood borers, and heartwood decay following fire injuries; characteristic of "checking" during drying and seasoning is also a quality problem; dominance at many cut-over sites due to low quality

Landscaping Info: qualities as an ornamental - can withstand significant flooding and poorly drained soils, tolerant to drought and cold; natural occurrence where periodical flooding is typical but grows best on sites with better drainage and soil texture

Other Facts: in flooded areas acorns remain dormant over winter and germinate in the spring after the surface waters recede



Bark



Leaf



Flower



Fruit



Twig

bur oak

mossycup oak

Quercus macrocarpa Michx.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.8" - 6.0" long; 2.0" - 5.0" wide

Margin: lobed (5-7); sinuses near base deep (almost to midrib)

Apex: rounded

Base: wedge-shaped

Shape: oblong-obovate

Color: dark green above; grayish green below

Surface: lustrous above; finely dense pubescence below

Venation: pinnate

Twigs:

Size: stout

Color: light brown; becoming dark brown

Surface: pubescent, corky wings or ridges; leaf scars and pith similar to other white oaks

Buds:

Size: 0.25" long

Shape: ovoid, obtuse

Color: reddish brown

Surface: pubescent

Fruit and Flowers:

Nut: acorn, annual; cup, deep, scales grayish pubescent, scales near cup rim form a fringe, cup encloses 50 - 90% of nut

Size: 1.0" - 2.0" long

Shape: ovoid

Color: light brown

Flower: monoecious; unisexual; staminate in slender, hairy, stalked, catkins, 4.0" - 6.0" long; pistillate, sessile or subsessile, solitary or in several-flowered spikes

Bark: light gray; thick (up to 2.0"); deep furrows; scaly ridges

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: low, rich, moist, soils of bottomlands; usually found on limestone or calcareous clay in uplands

Soil Texture: fine - coarse

Soil pH: 4.5 - 7.5 (optimum neutral)

Range: Saskatchewan; east to New Brunswick; southwest to Texas; north to Montana; in Mississippi, reported by the NRCS Plants Database in Lafayette, Pontotoc, Chickasaw, Clay, Oktibbeha, Lowndes, and Hinds Counties

Wildlife Value and Uses: acorns eaten by a variety of wildlife species; attracts squirrel, mice, cottontails, wood ducks, and deer; foliage browsed by deer

Timber Value and Uses: cut for lumber where merchantable size is attained; uses similar to white oak - construction, flooring, and cooperage.

Landscaping Info: attractive as a landscape tree because of its tolerance of such a wide range of soils and conditions; well suited for street, park and parking lot planting as long as enough soil space is available to accommodate growth (at least 10'); can be obtained through common local retail nursery or seed outlets, specialized commercial or wholesale outlets, or harvested from local wild stock

Other Facts: one bur oak designated as a National Historic Landmark in Kansas; used as medicine for heart problems and other medical conditions by many Native Americans; largest acorn of the oaks occurring in Mississippi



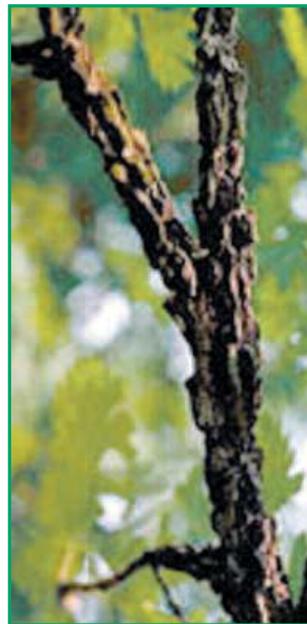
Leaf



Bark



Fruit



Twig

sand post oak

dwarf post oak, runner oak, scrubby post oak, post oak

Quercus margaretta Ashe

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 3.0" long; 0.75" - 1.5" wide

Margin: lobed (5); moderate to deep

Apex: broadly rounded

Base: cuneate to rounded

Shape: cruciform

Color: dark green above; light green below

Surface: shiny above; densely pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: green or reddish, becoming gray

Surface: glabrous; leaf scars half-round; bundle scars numerous

Buds:

Size: 0.08" - 0.12" long

Shape: ovoid

Color: reddish brown

Surface: sparsely pubescent to glabrate

Fruit and Flowers:

Nut: acorn, annual; cup, globe-shaped, gray pubescent, covers 75% of nut

Size: 0.63" - 1.0" long

Shape: ovoid, rounded apex

Color: light brown

Flower: monoecious; unisexual; staminate, hairy, yellow, catkin, 3.0" - 4.0" long; pistillate, flowers tiny, red, on short stalks

Bark: light gray; shallow fissures; scaly ridges

Physical Attributes:

Form: single or multiple stems; occasionally rhizomatous

Size: 32.0', mature (occasionally to 87.0')

Growth Rate: (no data @ 20 yrs)

Life Span: (no data)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed; bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: understory or open-grown species on deep sandy and gravelly soils in southern oak-pine forest types

Soil Texture: fine - coarse

Soil pH: adaptable; best in acid soil (<7.0)

Range: Texas, Oklahoma and Missouri; east to Florida; north to Virginia; in Mississippi, mostly on drier sites in southern half of the State

Wildlife Value and Uses: provides valuable resources to numerous wildlife species; good nesting and denning sites for cavity-nesting birds and various mammals; foliage often used in nest building by birds, rodents, and small mammals; shelter, nesting, and perching sites for many songbirds and birds of prey; acorns high-energy food source for white-tailed deer, wild turkey, three species of squirrel (gray, fox, and flying), and various rodents; **tannins in the acorns, leaves, and buds are toxic to some domestic livestock, such as goats, cattle, and sheep; can be fatal to these animals.**

Timber Value and Uses: not considered a good timber tree; most sand post oak is harvested for mining timbers, railroad ties, flooring, and siding; resistance to decay in contact with soil

Landscaping Info: well-rounded shape; under utilized in dry landscape situations; commercially available; excellent landscaping mulch from bark as tannins provide insect resistance

Other Facts: recognized by Sargent as *Q. stellata* var. *Margaretta*

sometimes difficult to distinguish from post oak; sand post oak has glabrous twigs, smaller and more rounded leaves, and is usually found in xeric, sandy soils with other scrub oaks and longleaf pine, whereas post oak would be the exception in this habitat



Leaf



Fruit



Bark



Twig

blackjack oak

barren oak, black oak, jack oak

Quercus marilandica Muenchhausen

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 6.0" - 7.0" long; 2.0" - 3.0" wide

Margin: entire

Apex: 3-lobed, entire, or dentate, bristle-tipped

Base: tapering

Shape: obovate or triangular

Color: dark yellow-green above; orange-brown below

Surface: glossy above; dense pubescence below; secondary veins raised on both surfaces; entire leaf leathery in texture

Venation: pinnate

Twigs:

Size: stout

Color: ashy gray; becoming gray-brown

Surface: slightly pubescent; becoming glabrous; leaf scars half-round; numerous bundle scars

Buds:

Size: terminal 0.50" long; laterals, smaller

Shape: narrowly conical

Color: reddish brown

Surface: buds angular; scales pubescent

Fruit and Flowers:

Nut: acorn, biennial; cup, top-shaped, scales and inner surface pubescent, covers 30-60% of nut

Size: 0.5" - 0.75" long

Shape: elliptical, ends in a stout point at tip

Color: brown, often faintly striped

Flower: monoecious; unisexual; staminate, interrupted, hairy catkins, 2.0" - 4.0" long; pistillate, solitary or in pairs, short-stalked

Bark: rough; nearly black; deep furrows; mature bark forms irregular or rectangular plates; inner bark is orange

Physical Attributes:

Form: single stem

Size: 15.0' - 45.0', mature (occasionally 95.0')

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: usually on dry, sandy, sterile soils; sometimes in pure park-like stands; common associates are eastern redcedar, and southern red, black, and post oaks

Soil Texture: medium - coarse

Soil pH: 4.6 - 5.6

Range: southern New York and New Jersey; west through Pennsylvania, Ohio, Michigan, Illinois and Iowa; south through Oklahoma to Texas; then east to Florida; in Mississippi, scattered throughout

Wildlife Value and Uses: provides cover and habitat; acorns are an important food source for mammals and birds; blackjack oak acorns ranked fourth in preference as a food source for the fox squirrel (out of 12 southeastern oak species); browse is unpalatable

Timber Value and Uses: not a preferred timber species; wood is hard, heavy, and strong; wide, light sapwood; used mainly for fence posts, railroad ties, and fuel

Landscaping Info: not commercially available

Other Facts: considered a pioneer species; one of the few species of red oaks that shares the white oak group characteristic of vessels blocked by tyloses; Choctaw people used it as a medicinal aid in childbirth



Leaf



Fruit



Bark



Twig

swamp chestnut oak

cow oak, basket oak

Quercus michauxii Nutt.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.75" - 11.0" long; 2.0" - 7.0" wide

Margin: wavy, rounded teeth (9-14 pairs)

Apex: broadly rounded with abruptly pointed tip

Base: acuminate

Shape: obovate

Color: dark green above; gray-green below

Surface: shiny above; densely pubescent below

Venation: pinnate

Twigs:

Size: stout.

Color: green (new); 1st year brown; then gray

Surface: glabrous

Buds:

Size: 0.25" dia.

Shape: ovoid, apex may be blunt or pointed

Color: reddish brown

Surface: glabrous or minutely puberulent

Fruit and Flowers:

Nut: acorn, annual; cup bowl-shaped, brown pubescent scales, encloses 30% to as much as 50% of nut

Size: 1.0" - 1.38" long

Shape: ovoid

Color: light to dark brown

Flower: monoecious; unisexual; staminate, slender, hairy, yellow, catkins, 2.0" - 3.0" long; pistillate, short-stalked, few-flowered spikes

Bark: light gray; rough; flaky ridges

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low to medium

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification not required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: occurs on a variety of moist soils and well-drained alluvial floodplains in the central and southern forest regions

Soil Texture: medium only

Soil pH: 4.5 - 6.5

Range: New Jersey; south to Florida; west to Texas; north to Indiana and Illinois; in Mississippi, throughout on well-drained bottom-land soils and occasionally on uplands

Wildlife Value and Uses: acorns eaten by white-tailed deer, wild hogs, wild turkey, black bear, squirrel, chipmunks, red fox, northern bobwhite, and waterfowl; also eaten by cows, chickens and humans, and in the latter case are considered sweet enough to be eaten raw; **tan-nins in the acorns can poison livestock at high concentrations and/or in large quantities**

Timber Value and Uses: heavy hardwood; machines well but is subject to checking and warping if not dried properly; used in many kinds of construction, for agricultural implements, wheels, veneer, boards, fence posts, tight cooperage, baskets and fuel

Landscaping Info: native; larval plant for Juvenal's duskywing butterfly; shallow root system

Other Facts: allelopathic (exudes plant growth inhibitors); retards the growth of understory vegetation



Leaf



Fruit



Bark



Flower



Twig

dwarf live oak

minimal oak

Quercus minima (Sargent) Small

Family: Fagaceae

Leaves:

Type: simple, alternate, tardily deciduous

Size: 1.5" - 4.75" long; 0.75" - 2.0" wide

Margin: flat or slightly wavy

Apex: acute to rounded

Base: cuneate

Shape: obovate or oblanceolate

Color: light to dark green above; light green below

Surface: glossy above; whitish bloom below

Venation: pinnate

Twigs:

Size: slender

Color: light gray

Surface: smooth in 2nd year

Buds:

Size: 0.02" - 0.04" long

Shape: globe-shaped

Color: dark brown to grayish brown

Surface: scales glabrous or slightly pubescent

Fruit and Flowers:

Nut: acorn, annual; cup, long, goblet-shaped, grayish scales, sometimes minute pubescence, encloses up to 50% of nut

Size: 0.63" - 1.0"

Shape: narrowly oval

Color: dark brown

Flower: similar to other oaks

Bark: brown to light gray and smooth

Physical Attributes:

Form: single stem; rhizomatous shrub

Size: 3.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: low

Anaerobic: medium

Propagation: seed (no data on cold stratification); bare root; container

Other: resprout/coppice potential; prolific sprouter; flowers and fruits as early as 3 years from seed

Habitat and Ecology:

Site: pine and scrub forests on deep, sandy soils

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.5

Range: Louisiana; east to Florida; north to North Carolina; in Mississippi, reported by the NRCS Plants Database only in Jackson and Stone Counties

Wildlife Value and Uses: provides food and shelter for wildlife in longleaf and slash pine areas where fire is used as a management tool to reduce competing vegetation

Timber Value and Uses: too small to be of any commercial value

Landscaping Info: difficult to locate

Other Facts: hybridizes with

Q. chapmanii along the eastern side of Florida and exhibits leaves somewhat intermediate between the two parents



Leaf

Habitat



Fruit

Twig

chestnut oak

rock chestnut oak, mountain chestnut oak, rock oak, tanbark oak

Quercus montana Willdenow

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.75" - 8.0" long, 2.37" - 4.0" wide

Margin: crenate, 10 - 14 rounded teeth

Apex: broadly acuminate

Base: subacute

Shape: obovate

Color: dark yellow-green above, light green below

Surface: shiny above; slightly pubescent along veins below

Venation: pinnate

Twigs:

Size: stout

Color: dark green to reddish brown

Surface: smooth

Buds:

Size: 0.5" long

Shape: ovoid, pointed apex scales

Color: light brown to reddish brown

Surface: scales slightly pubescent

Fruit and Flowers:

Nut: acorn, annual; cup has gray scales with red tips, inner surface pubescent, encloses 30 - 50% of nut

Size: 1.0" - 1.5" long

Shape: rounded or pointed at tip;

Color: chestnut brown

Flower: monoecious; unisexual; staminate, hairy, yellow catkins; 3.0" - 4.0" long; pistillate, in 2- or 3-flowered stalks

Bark: dark reddish brown to dark gray; deep V-shaped furrows and broad ridges in mature bark

Physical Attributes:

Form: single stem

Size: 80.0' - 145.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: shallow soils, dry sandy soils, and rocky upland forests

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.0

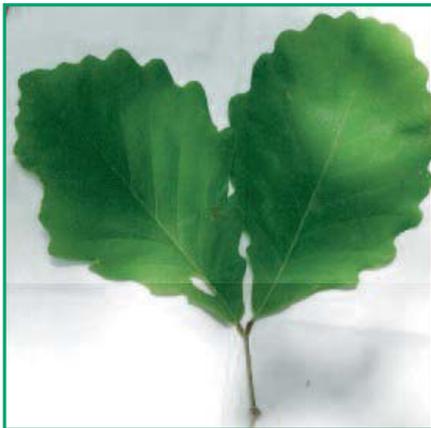
Range: southern Ontario; south to Louisiana; east to Georgia; north to Maine; in Mississippi, reported by the NRCS Plants Database in Tishomingo, Itawamba, Lafayette, and Calhoun Counties

Wildlife Value and Uses: high wildlife value; acorns and twigs provide food for turkey, rough grouse, songbirds, deer, and small mammals

Timber Value and Uses: lumber; fencing and railway ties - because of its durability even when in direct contact with the soil; wood is close-grained, heavy, hard, and strong; bark is tannin rich and was used for many years in the leather tanning process

Landscaping Info: fall color yellow-orange to rusty brown; may be hard to find as nursery stock; slow growth rate but does make a good ornamental shade tree

Other Facts: largest known chestnut oak grows in the Great Smoky Mountains National Park, TN



Leaf



Fruit



Bark



Twig

chinkapin oak

chestnut oak, yellow chestnut oak,
yellow oak, rock chestnut oak

Quercus muehlenbergii Engelman

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 6.0" long; 1.5" - 3.1" wide

Margin: regularly undulate

Apex: acuminate - acute

Base: truncate, cuneate

Shape: obovate, oblanceolate

Color: dark green above; light green below

Surface: shiny above; minute pubescence below

Venation: pinnate

Twigs:

Size: slender

Color: brown, turning gray in second year

Surface: smooth

Buds:

Size: 0.13" - 0.25" long

Shape: broadly ovate, blunt apex

Color: chestnut brown

Surface: sparsely pubescent

Fruit and Flowers:

Nut: acorn, annual; cup, thin, cup-shaped, small obtuse scales, thickened and rounded on the back toward the base of the cup, pubescent inner surface, hoary-tomentose outer surface, minute fringe border to the tip, covers 50% of nut

Size: 0.5" - 1.0" long

Shape: oblong to ovoid

Color: light brown

Flower: monoecious; unisexual; staminate, hairy, yellow catkins, 3.0" - 4.0" long; pistillate, in short, white, woolly spikes

Bark: light gray; thin; scaly

Physical Attributes:

Form: single stem

Size: 80.0' - 110.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: limestone and calcareous soils in mixed deciduous and pine forests

Soil Texture: medium

Soil pH: 6.5 - 8.0

Range: Vermont; west to Ontario and Minnesota; southwest to New Mexico and northeastern Mexico; east to Florida; north to Massachusetts; in Mississippi, scattered throughout; reported by the NRCS Plants Database in Desoto, Pontotoc, Webster, Clay, Noxubee, Kemper, Newton, Scott, Hinds, Wayne, and Wilkinson Counties

Wildlife Value and Uses: trees scattered but acorns are palatable mast as a portion of other available food resources; denning, nesting tree for wildlife

Timber Value and Uses: seldom grows in size or abundance to be commercially important, but the heavy wood makes excellent fuel

Landscaping Info: probable difficulty in finding nursery stock; suggested uses include street tree (where there are no sidewalks), shade, highway median, parking lot island >200 sq. ft., and lawns >6' wide

Other Facts: named after the botanist Henry Muehlenberg; largest known chinkapin oak is in Clark County, KY



Leaf



Fruit



Bark



Flower



Twig

myrtle oak

scrub oak

Quercus myrtifolia Willdenow

Family: Fagaceae

Leaves:

Type: simple, alternate, evergreen

Size: 0.63" - 2.0" long; 0.38" - 1.0" wide

Margin: entire, revolute

Apex: rounded, or with a bristle-tipped tooth

Base: rounded

Shape: narrow to broadly obovate

Color: dark green above; light green below

Surface: shiny, leathery above; axillary tomentum below, some with scurfy yellowish bloom

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown

Surface: weakly pubescent

Buds:

Size: 0.079" - 0.22" long

Shape: ovoid narrowing to a point

Color: reddish brown scales

Surface: pubescent tan tufts at apex

Fruit and Flowers:

Nut: acorn, biennial; cup goblet-shaped, pubescent, covers 25 - 35% of nut

Size: 0.25" - 0.5" long

Shape: nearly round

Color: dark brown

Flower: monoecious; unisexual; staminate, catkins with dense gray-white pubescence, 1.0" - 1.5" long; pistillate, solitary or in pairs, sessile (without stalks) or nearly sessile, in hairy bracts tinged with red

Bark: gray; smooth young; furrowed with age

Physical Attributes:

Form: single or multiple stems

Size: 8.0' - 36.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (no data)

Tolerances:

Shade: low

Drought: high

Fire: medium; resprouts rapidly after a fire

Anaerobic: low

Propagation: seed; bare root; container

Other: resprout/coppice potential; often forms impenetrable thickets

Habitat and Ecology:

Site: frequent along coastal dunes and sandy ridges of the lower Coastal Plain, and inland on upper sandy terraces of rivers; usually the most abundant species in scrub oak forests

Soil Texture: medium - coarse

Soil pH: adaptable (no specific data)

Range: South Carolina; south to Florida; west to Mississippi; in Mississippi, reported in Jackson and Harrison Counties only

Wildlife Value and Uses: acorns ready early in the season and provide an important source of food for many wildlife species; high carbohydrate, high fat nuts eaten by wild turkey, quail, squirrel, raccoon, black bear, deer, and numerous rodents; dense thickets provide excellent nesting and cover sites for birds

Timber Value and Uses: no commercial value

Landscaping Info: suitable for xeriscaping; from seed - direct sow as soon as possible after last frost, seed does not store well; makes a good privacy screen, or works well as a container plant for the deck, patio, or in the landscape

Other Facts: some folk legends attribute magical powers to the plants - believed to bestow love, passion, and fertility upon the users



Leaf



Bark



Fruit



Twig

water oak

possum oak, spotted oak, pin oak, red oak

Quercus nigra L.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous or tardily deciduous

Size: 2.0" - 4.0" long; 1.0" - 2.0" wide

Margin: entire; lobed (2-3) or; variously lobed (usually applicable only to sprouts and juvenile plants)

Apex: acute to broadly obtuse

Base: wedge-shaped

Shape: spatulate, to obovate or oblong

Color: dull green above; pale green below

Surface: glabrous above; pubescent tufts below

Venation: pinnate

Twigs:

Size: slender

Color: dark red-brown to brown

Surface: smooth, glabrous

Buds:

Size: 0.12" - 0.26" long

Shape: ovoid, pointed apex

Color: chestnut brown

Surface: pubescent scales

Fruit and Flowers:

Nut: acorn, biennial; cup shallow, pubescent both surfaces; covers up to 25% of nut

Size: 0.38" - 0.63"

Shape: nearly round

Color: nearly black; faint stripes

Flower: monoecious; unisexual; staminate, stalked, hairy, yellow, catkins, 2.0" - 3.0" long; pistillate, mostly solitary, on short, hairy stalks

Bark: light brown to black; furrows; relatively smooth when young; wide scaly ridges with age

Physical Attributes:

Form: single stem

Size: 90.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: wet lowland to moist upland soils; can occur on most upland sites, and on deep sand deposits in bottomlands

Soil Texture: fine - medium

Soil pH: 4.8 - 5.8

Range: New Jersey; south to Florida; west to Texas; north to Missouri; east to Virginia; in Mississippi, ubiquitous

Wildlife Value and Uses: cover, food, and habitat for wildlife; acorns eaten by squirrel, chipmunks, waterfowl, blue jays, wild turkey, and northern bobwhite; cached by blue jays and squirrels in the fall; home for cavity nesters; deer browse but palatability is low

Timber Value and Uses: rough construction lumber; moderate quality lumber on good sites but prone to excessive splitting; veneer used as plywood for fruit and vegetable containers; on poor sites prone to knots, mineral stains, and insect damage

Landscaping Info: rapid growth; dense foliage, fairly thick leaves and long leaf retention; fairly broad site adaptability; good shade tree choice in the South

Other Facts: one of the largest known specimens is located in Jones County, Mississippi



Leaf



Fruit



Bark



Twig

Oglethorpe oak

Quercus oglethorpensis Duncan

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 5.0" long; 0.5" - 2.0" wide

Margin: entire or slightly undulating at apex

Apex: rounded, obtuse or broadly acute

Base: cuneate to cordate

Shape: elliptical to obovate

Color: dark green above; yellow-green below

Surface: dull above; velvety pubescence below

Venation: pinnate

Twigs:

Size: slender

Color: purplish brown

Surface: sparsely pubescent, glabrate with age; conspicuous lenticels

Buds:

Size: 0.08" - 0.10" long

Shape: rounded

Color: reddish brown - dark gray scales

Surface: pubescent

Fruit and Flowers:

Nut: acorn, annual; cup short, gray scales, tan pubescence, covers 30% of nut

Size: 0.4" - 0.7" long

Shape: ovoid

Color: dark grayish brown, short fine hairs

Flower: monoecious; unisexual; staminate, slender, yellow, hairy catkins, 3.0" - 4.0" long; pistillate, on short, pubescent stalks

Bark: light gray or whitish; scaly ridges

Physical Attributes:

Form: single stem

Size: 55.0' - 75.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: none

Anaerobic: low

Propagation: seed; bare root; container

Other: must be transplanted when young;

Habitat and Ecology:

Site: moist soils and well-drained terraces along streams, and in loblolly pine-hardwood

Soil Texture: fine - coarse

Soil pH: adaptable (no specific data available)

Range: localized populations in South Carolina, Georgia, Mississippi and Louisiana; in Mississippi, reported only in Scott, Smith, Jasper, and Adams Counties

Wildlife Value and Uses: small, round acorns are a favorite of songbirds

Timber Value and Uses: does not have a lumber or horticultural market value; poorer value as a timber product than other oak species due to cankers which occur on many of the trees

Landscaping Info: deep, rusty red fall leaf color, white flaky bark, and fast rate of growth make this oak an interesting ornamental; could be difficult to obtain commercially because of its rarity

Other Facts: named in 1940 for Oglethorpe County, Georgia, where it is most abundant; indirectly honors James Edward Oglethorpe (1695-1785), English general and founder of the colony of Georgia

Species is considered critically imperiled in Louisiana, imperiled in Mississippi and Georgia, and vulnerable in South Carolina



Leaf



Bark



Twig

cherrybark oak

Quercus pagoda Rafinesque

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.5" - 12.0" long, 2.5" - 6.3" wide

Margin: lobed (5-11); 1-3 bristle tipped teeth; middle lobes usually at right angles to midrib

Apex: acute

Base: cuneate to rounded

Shape: ovate or obovate

Color: dark green above; grayish green below

Surface: shiny above; pale gray pubescence below; secondary veins raised on both surfaces

Venation: pinnate

Twigs:

Size: slender

Color: light brown

Surface: pubescent

Buds:

Size: 0.25" long

Shape: ovoid; 5-angled cross section

Color: light chestnut brown

Surface: pubescent scales, sometimes ciliate at the apex

Fruit and Flowers:

Nut: acorn, biennial; cup, chestnut brown, scales and inner surface pubescent, covers 30 - 50% of nut

Size: 0.63" long

Shape: rounded

Color: brown, faint stripes, fine pubescence

Flower: monoecious; unisexual; staminate, yellow, hairy, catkin, 3.0" - 5.0"; pistillate, solitary or few-flowered spikes, on short, stout, stalks

Bark: light gray; scaly ridges; shallow furrows

Physical Attributes:

Form: single stem

Size: 110.0' - 130.0', mature

Growth Rate: 60.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential in young trees

Habitat and Ecology:

Site: well-drained lowland soils in the bottomland hardwood types, rich upland sites, and loess hills along the Mississippi River

Soil Texture: medium

Soil pH: 4.5 - 6.0

Range: Maryland; south to Florida; west to eastern Texas; north to southern Illinois; in Mississippi; throughout the State, but most abundant, largest, and most valuable timber trees in the river swamps of the Yazoo basin

Wildlife Value and Uses: provides cover and nesting sites for birds and mammals; acorns important food source for wildlife including waterfowl, wild turkey, blue jay, red-headed and red-bellied woodpeckers, white-breasted nuthatch, common grackle, raccoon, white-tailed deer, and squirrel; acorns provide a substantial part (10 percent or more) of the overall wildlife diet in the southeastern United States; heaviest eaters are the gray squirrel, wild turkey, and blue jay; not a preferred browse for cattle

Timber Value and Uses: exceptional quality; strong and heavy wood used for furniture, flooring, interior finish, veneers, factory lumber, and railroad ties; highest timber value among southern red oaks (and other So. hardwoods); fast growing, relatively free of defects;

Landscaping Info: often planted as a shade tree; routinely commercially available

Other Facts: used in the restoration of bottomland hardwood forests on abandoned agricultural fields, and harvested pine plantations



Leaf



Bark



Fruit



Twig

pin oak

swamp oak, Spanish oak, swamp

Spanish oak, water oak

Quercus palustris Muenchh.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 6.25" long; 2.0" - 4.75" wide

Margin: lobed (5-7); 1 to 3 bristle-tipped teeth per lobe; deep sinuses nearly to midrib; basal lobes somewhat recurved

Apex: acute

Base: truncate

Shape: elliptical to oblong

Color: dark green above; light green below

Surface: glossy above; axillary tufts or tomentum next to raised veins below

Venation: pinnate

Twigs:

Size: slender

Color: chestnut brown

Surface: shiny

Buds:

Size: 0.12" - 0.20" long

Shape: ovoid, pointed apex

Color: chestnut brown

Surface: glabrous; few fine hairs at apex

Fruit and Flowers:

Nut: acorn, biennial; cup thin, saucer-shaped, glabrous or puberulent outer surface, glabrous inner surface, covers 25% of nut

Size: 0.63" long

Shape: rounded

Color: light brown, often striped

Flower: monoecious; unisexual; staminate, hairy, yellow catkins, 3.0"; pistillate, single to pairs or threes, on short, hairy stalks

Bark: gray-brown; smooth juvenile; developing broad scaly ridges with maturity; pink inner bark

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: poorly-drained soils; usually tolerates intermittent flooding during the dormant season but not during the growing season

Soil Texture: medium - fine

Soil pH: 4.5 - 6.5

Range: Vermont and Ontario; south to North Carolina; west to Oklahoma; north to Wisconsin; in Mississippi, reported by the NRCS Plants Database in the counties of Benton, Panola, Lafayette, Issaquena, and Hinds

Wildlife Value and Uses: acorns an important food for mallards and wood ducks during fall migration; one of the primary tree species in bottomland duck-hunting areas (greentree reservoirs) that are artificially flooded during the fall and winter to attract migrating waterfowl; also an important food for deer, squirrel, turkey, woodpeckers, and blue jays

Timber Value and Uses: does not self-prune, so the wood has many small knots which reduce its quality and utility; hard, heavy wood used locally for construction timbers, mine props, and fuel

Landscaping Info: extensively planted as an ornamental in North America; shallow root system that allows for easy transplanting; routinely commercially available

Other Facts: bark used medicinally by Native Americans



Leaf



Bark



Fruit



Twig

willow oak

pin oak, peach oak, swamp willow oak, black oak

Quercus phellos L.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 5.0" long; 0.5" - 1.0" wide

Margin: entire

Apex: acute; bristle-tipped

Base: acute

Shape: narrowly oblong or lanceolate

Color: light green above; paler green below

Surface: slightly shiny above; glabrous or pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown

Surface: glabrous

Buds:

Size: terminal bud, 0.13" long; laterals smaller

Shape: ovoid; apex acute

Color: chestnut brown

Surface: glabrous

Fruit and Flowers:

Nut: acorn, biennial; cup, shallow, saucer-shaped, scales and inner surface pubescent, covers up to 33% of nut

Size: 0.38" - 0.50" long

Shape: nearly oval

Color: brown; faint stripes

Flower: monoecious; unisexual; staminate, hairy, yellow, catkins, 2.0" - 3.0" long, on slender stalks; pistillate flowers, solitary or in pairs, on short stalks

Bark: dark gray; smooth; darker with age; deep furrows; rough ridges; pink inner bark

Physical Attributes:

Form: single stem

Size: 80.0' - 130.0', mature

Growth Rate: 60.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, alluvial soils along streams and rivers; commonly found in transitional communities between swamps and upland mesic forests

Soil Texture: fine - medium

Soil pH: 4.5 - 5.5

Range: New York; west to Missouri; south to Texas; east to Florida; north to Delaware; in Mississippi, throughout

Wildlife Value and Uses: important food source for waterfowl, wild turkey, blue jays, red-headed and red-bellied woodpeckers, flickers, grackles, white-tailed deer, fox, gray squirrel, and other small rodents; good browse for white-tailed deer

Timber Value and Uses: important source of lumber and pulp; good pulp characteristics and can be harvested when quite young; restoration of the wetter sites of bottomland hardwood forests and for rehabilitation of disturbed areas

Landscaping Info: widely used as a shade tree and ornamental; transplants easily; routinely commercially available

Other Facts: susceptible to acid rain --- show yellow or brown necrotic zones when exposed to simulated rain less than 3.2 pH



Bark



Leaf



Fruit



Twig

dwarf chinkapin oak

scrub chestnut oak

Quercus prinoides Willdenow

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 5.5" long; 0.75" - 2.5" wide

Margin: undulate or toothed (3-8 pairs), rounded teeth

Apex: rounded

Base: cuneate

Shape: obovate

Color: dark green above; light green below

Surface: shiny above; slightly pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: brownish; graying 2nd year

Surface: fine, sparse pubescence; glabrate 2nd year

Buds:

Size: 0.04" - 0.12" long

Shape: broadly rounded; blunt apex

Color: chestnut brown

Surface: scales have some pubescence

Fruit and Flowers:

Nut: acorn, annual; cup thin with short gray pubescent scales, covers up to 35% of the nut

Size: 0.75" long

Shape: oblong to oval

Color: light brown

Flower: monoecious, unisexual, similar to other oaks

Bark: thin; gray; scaly ridges and furrows

Physical Attributes:

Form: single stem

Size: 25.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (no data)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: may be found as rhizomatous shrub or a small tree

Habitat and Ecology:

Site: dry rocky soils such as sandstone or shale outcrops associated with oak-pine types

Soil Texture: fine - coarse

Soil pH: adaptable (no specific data)

Range: New Hampshire; south to Florida; west to Iowa and Oklahoma; in Mississippi, reported by the NRCS Plants Database in the counties of Tate, Tishomingo, Lee, Chickasaw, Pontotoc, and Forrest

Wildlife Value and Uses: acorns are sweet; favorites of deer and turkey

Timber Value and Uses: generally too small to be of any commercial value

Landscaping Info: excellent small landscaping tree; fall color reddish orange to burgundy; can be grown in large pots as a multi-trunked structure

Other Facts: century long debate among taxonomists about whether *Q. prinoides* is distinct from *Q. muhlenbergii*

roasted seeds can be used as a coffee substitute; dried seeds can be ground into a powder and used as a thickening for stews, sauces, etc.



Leaf



Bark



Fruit



Tree

runner oak

running oak

Quercus pumila Walter

Family: Fagaceae

Leaves:

Type: simple, alternate, evergreen

Size: 1.0" - 4.0" long; 0.38" - 2.25" wide

Margin: entire, revolute edges

Apex: acute to rounded with bristle

Base: acute to rounded

Shape: oblong to narrowly oblong

Color: green above; grayish brown below

Surface: impressed veins above; slightly concave, pubescent

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown to gray-brown

Surface: sparsely to uniformly pubescent

Buds:

Size: 0.10" - 0.18" long

Shape: ovoid

Color: brown to red-brown

Surface: glabrous or with ciliate scale margins

Fruit and Flowers:

Nut: acorn, annual; cup deep saucer-shaped, scales and inner surface pubescent, covers up to 66% of nut

Size: 0.63" long

Shape: broadly oval

Color: brown

Flower: monoecious; unisexual; similar to other oaks

Bark: gray to dark brown

Physical Attributes:

Form: single stem

Size: 3.0', mature

Growth Rate: 1.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry, sandy soils on the coastal plain

Soil Texture: medium - coarse

Soil pH: 4.6 - 6.0

Range: North Carolina; south to Florida; west to Mississippi; in Mississippi, reported by the NRCS Plants Database in George, and Jackson Counties

Wildlife Value and Uses: high palatability for browse animals; low palatability for domestic grazing stock; small acorns favorite of quail and turkey

Timber Value and Uses: no commercial value -- even as fuel wood

Landscaping Info: available as a container plant from nurseries

Other Facts: responds with sprouting and increased acorn production when fire is used as a management tool for longleaf pine



Leaf



Fruit



Bark



Twig

northern red oak

Quercus rubra L.

Family: Fagaceae

Leaves:

Type: simple, alternate, tardily deciduous

Size: 4.75" - 8.0" long; 2.38" - 4.75" wide

Margin: lobed (7-9); 1 to 3 bristle-tipped teeth per lobe; sinuses <50% distance to midrib

Apex: acute

Base: wedge-shaped

Shape: oblong

Color: dark green above; gray to light yellow-green below

Surface: dull to lustrous above; short axillary tufts of brown tomentum below

Venation: pinnate

Twigs:

Size: stout

Color: reddish brown

Surface: smooth; leaf scars half-round; bundle scars numerous

Buds:

Size: 0.25" long

Shape: ovoid, pointed, round in cross section

Color: chestnut brown

Surface: shiny, sometimes slightly hairy on tips

Fruit and Flowers:

Nut: acorn, biennial; cup shallow, saucer-shaped, edge slightly rolled inward, encloses the base only

Size: 0.6" - 1.25" long

Shape: oblong to ovoid

Color: brown with gray stripes

Flower: monoecious; unisexual; staminate, yellow pubescent catkins, 4.0" - 5.0" long; pistillate solitary or in pairs on short stalks

Bark: dark gray to black; shallow furrows; wide scaly ridges; upper trunk has flat, shiny plate-like ridges; inner bark pink

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 36.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: variety of moist soils with a loam texture

Soil Texture: fine - medium

Soil pH: 4.3 - 6.5

Range: Quebec and Nova Scotia; south to South Carolina and Georgia; west to Oklahoma, and north to Ontario; in Mississippi, reported by the NRCS Plants Database in the northern counties of Desoto, Tate, Lafayette, Benton, Tishomingo; the east central counties of Webster, Clay, Choctaw, Oktibbeha, and Winston; the south central counties of Leake, Rankin, Smith, Clarke and Lauderdale; and the western counties of Washington and Amite; likely in other areas also

Wildlife Value and Uses:

acorns consumed by a variety of wildlife; rabbit and deer browse on stems and foliage; attracts squirrel, deer, turkey, mice, voles, water fowl and many other birds; no known toxicity to livestock

Timber Value and Uses:

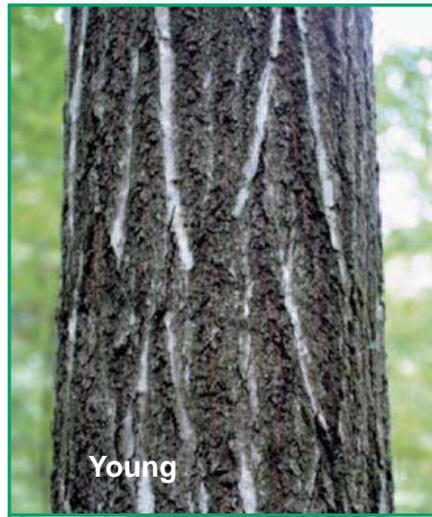
valuable hardwood species; used for flooring, furniture, cabinets, paneling, timbers, agricultural implements, handles, caskets, boats, pallets, slack cooperage, millwork, fuel and pulpwood

Landscaping Info: often used as an ornamental tree because of its symmetrical growth form, moderate growth rate and autumn coloration; handles transplantation well; in Europe widely cultivated as a landscape specimen

Other Facts: utilized as medicine for numerous ailments by Native Americans; largest known specimen is located in Monroe County, New York



Leaf



Young



Old

Bark



Fruit



Twig

Shumard oak

spotted oak, swamp oak

Quercus shumardii Buckley

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 8.0" long; 2.4" - 6.0" wide

Margin: lobed (5-9); 2 to 5 bristle-tipped teeth per lobe; deep sinuses, >50% to midrib

Apex: acute

Base: truncate

Shape: broadly elliptical

Color: dark green above; lighter green below

Surface: shiny above; slight luster or dull below, with axillary tufts of tomentum; veins raised on both surfaces

Venation: pinnate

Twigs:

Size: moderately stout

Color: gray

Surface: smooth

Buds:

Size: 0.16" - 0.31" long

Shape: ovoid to broadly ellipsoid; 5-angled in cross section

Color: gray to grayish brown

Surface: glabrous

Fruit and Flowers:

Nut: acorn, biennial; cup, saucer-shaped, thick, blunt scales, inner surface pubescent around scar, covers up to 33% of nut

Size: 0.50" - 1.3" long

Shape: ovoid to broadly oblong

Color: brown

Flower: monoecious; unisexual, staminate, glabrous yellow catkins, 6.0" - 7.0" long; pistillate, solitary or in pairs on pubescent stalks

Bark: dark gray furrows; lighter gray ridges; pink inner bark

Physical Attributes:

Form: single stem

Size: 110.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential in larger trees

Habitat and Ecology:

Site: well-drained soils along streams and rivers; on deep upland soils, especially the loessel hills

Soil Texture: medium - coarse

Soil pH: 5.8 - 7.6

Range: Pennsylvania; south to Florida; west to Texas; north to Nebraska; northeast to Michigan and Ontario; in Mississippi, primarily in the northern half of the State - common on better soils of the Blackland Prairie, and in the loessel hills

Wildlife Value and Uses: abundant acorn production; eaten by numerous species of songbirds, wild turkey, waterfowl, white-tailed deer, squirrel, and other mammals

Timber Value and Uses: excellent wood quality and color; close-grained, hard, strong, and heavy; generally marketed with other red oak lumber for flooring, furniture, interior trim and veneer, cabinetry, and lumber; valuable contributor to rehabilitation and reforestation of bottomland and upland sites, including minespoils

Landscaping Info: excellent shade or specimen tree - to be used in lawns, parks, along streets, and in buffer strips and median plantings; deep orange-red fall leaf color; strong, long-lived, relatively rapid growth; drawbacks ---highly susceptible to oak wilt

Other Facts: named after Benjamin F. Shumard, State Geologist of Texas in mid-1800s



Leaf



Bark



Fruit



Twig

swamp post oak

delta post oak, bottomland post oak,
Mississippi Valley oak, yellow oak

Quercus similis Ash

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 6.0" long; 2.0" - 2.50" wide

Margin: shallowly lobed (2-3), flat; lobes simple, oblong, or rounded

Apex: rounded

Base: rounded alternate

Shape: obovate

Color: dark green above; gray-green below

Surface: glossy, sparsely stellate above; sparsely glandular below

Venation: pinnate

Twigs:

Size: slender

Color: yellowish gray

Surface: tomentose

Buds:

Size: 0.08" - 0.12" long

Shape: ovoid

Color: brown

Surface: pubescent

Fruit and Flowers:

Nut: acorn, annual; cup, gray, rounded, cup-shaped, pubescent scales, covers up to 50% of nut

Size: 0.63" - 0.75" long

Shape: barrel-shaped

Color: light brown to chestnut

Flower: similar to other oaks

Bark: brown to gray; scaly ridges and shallow furrows

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed, bare root, container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, moist bottomlands, usually on the highest first bottom ridges and terraces

Soil Texture: fine - coarse

Soil pH: 4.8 - 7.0

Range: South Carolina; west to Texas; in Mississippi, reported by the NRCS Plants Database in Coahoma, Boliver, Washington, Sharkey, Sunflower, Leflore, Grenada, Holmes, Scott, and Smith Counties; likely also occurs in other areas

Wildlife Value and Uses: cover and habitat for birds and mammals; cavities used as nest and den sites, and leaves used for nest construction; acorns eaten by white-tailed deer, wild turkey, squirrel, and other rodents (tannin in leaves, buds, and acorns is toxic to sheep, cattle, and goats)

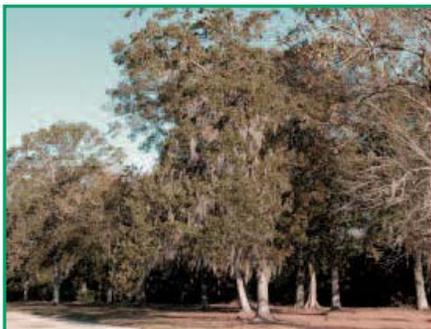
Timber Value and Uses: better quality wood than that of the typical variety of post oak; distinct yellow-tan cast which requires separate handling as veneer

Landscaping Info: slow growth may inhibit its use as a landscape species; not readily available commercially

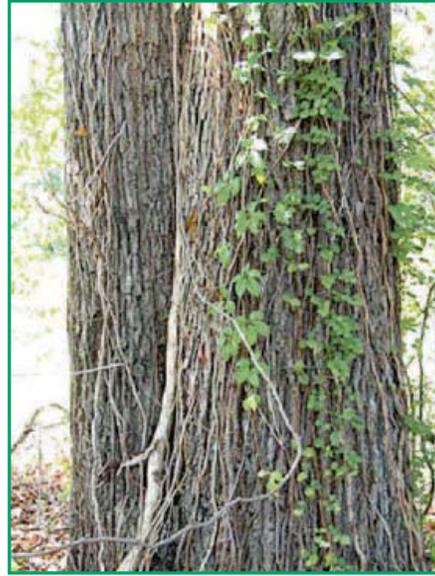
Other Facts: Many authors treat *Q. similis*, and *Q. margaretta* as varieties of *Q. stellata* Wangenh; swamp post oak as distinguished from the other post oaks is found in wet bottomlands rather than xeric sites.



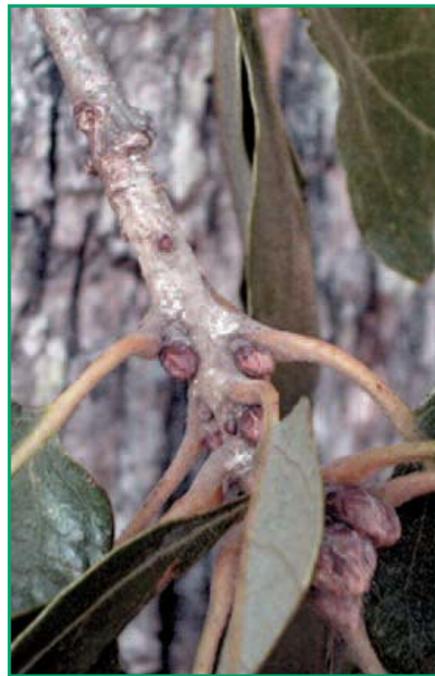
Leaf



Form



Bark



Twig

post oak

iron oak

Quercus stellata Wangenheim

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5"- 6.0" long; 0.75"- 4.0" wide

Margin: lobed (5-7) shallow to deep, middle lobes are opposite resembling a Maltese Cross

Apex: rounded

Base: attenuate-rounded

Shape: obovate

Color: dark green above; yellowish to gray-green below

Surface: leathery, rough textured above; pubescent below, hairs star-shaped

Venation: pinnate

Twigs:

Size: moderately stout

Color: yellowish or grayish

Surface: pubescent

Buds:

Size: 0.16" long

Shape: ovoid, pointed apex

Color: chestnut brown

Surface: pubescent scales

Fruit and Flowers:

Nut: acorn, annual; cup saucer or top-shaped, thin, gray pubescent scales, encloses 25 - 67% of nut

Size: 0.38 - 0.75" long

Shape: rounded

Color: light brown, faint stripes

Flower: monoecious; unisexual; staminate, yellow, pendent, spikes, 2.0" - 4.0" long; pistillate flowers, sessile or short-stalked

Bark: gray; shallow fissures; scaly ridges

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: poor, upland clay and sandy soils

Soil Texture: fine - coarse

Soil pH: 4.8 - 7.0

Range: Massachusetts; south to Florida; west to Texas; north to Iowa; east to Pennsylvania; in Mississippi, throughout the State with the exception of the Mississippi River Delta

Wildlife Value and Uses: provides cover and habitat for birds and mammals; cavities provide nest and den sites; leaves used for nest construction; acorns important food source for white-tailed deer, wild turkey, squirrel, and other rodents; tannin in leaves, buds, and acorns moderately toxic to sheep, cattle, and goats

Timber Value and Uses: not a preferred timber species; used for railroad ties, mine timbers, flooring, siding, lathing, planks, construction timbers, and fence posts

Landscaping Info: reclamation, highway median, shade tree; old trees growing on good sites have winter landscape interest, no fall interest as leaves rarely turn color prior to dropping

Other Facts: common name derived from its use as fence posts; used for medicinal purposes by Native Americans; Jackson County, Georgia and Surry County, Virginia are home to the largest known post oaks



Leaf



Fruit



Bark



Twig

Nuttall oak

Texas red oak, red oak, Red River oak, pin oak, striped oak

Quercus texana Buckley

(*Quercus nuttallii* Palmer)

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 8.0" long; 2.25" - 5.25" wide

Margin: lobed (5-11), 1 to 3 bristle-tipped teeth per lobe; lobes at midleaf usually opposite; deep sinuses, sometimes offset with lobes

Apex: acute (bristle at end)

Base: nearly truncate

Shape: ovate to obovate

Color: dark green above; pale green below

Surface: smooth above; axillary tufts of tomentum below

Venation: pinnate

Twigs:

Size: slender

Color: gray to chestnut brown

Surface: glabrous

Buds:

Size: 0.12" - 0.28" long

Shape: ovoid

Color: gray-brown

Surface: glabrous, or ciliated scales at bud apex

Fruit and Flowers:

Nut: acorn, biennial; cup goblet-shaped, thin, pubescent inner and outer surfaces, covers 30 - 50% of nut

Size: 0.63" - 1.0" long

Shape: broadly ovoid to broadly ellipsoid

Color: chestnut brown

Flower: monoecious; unisexual; staminate, hairy, slender, yellow catkins, 3.0" - 4.0" long; pistillate, on short, densely pubescent stalks

Bark: gray-brown to dark brown; flat ridges; shallow fissures

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential (mature stems)

Habitat and Ecology:

Site: wet clay soils along streams

Soil Texture: fine

Soil pH: 4.5 - 5.5

Range: lower Mississippi Valley from Alabama west to Texas and Oklahoma; northeast to Illinois and Kentucky; in Mississippi, reported by the NRCS Plants Database in Jefferson, Sharkey, Leflore, Holmes, Kemper, Clarke, Jasper, Jackson, and Scott Counties --- likely scattered throughout on bottom lands in the State

Wildlife Value and Uses: important mast producer for ducks in greentree reservoirs; acorns contain 13 percent crude fat and 46 percent carbohydrates, and acorn crop failure is rare; good food supply for squirrels during flooding because many acorns remain on the tree into January; acorns also favored by deer and eaten by turkey; medium palatability as browse

Timber Value and Uses: high value as a fuelwood product; also suitable as lumber, and veneer

Landscaping Info: rapid growth, very tolerant of poorly-drained wet sites; leaves and fruit a litter problem in some settings; commercially available

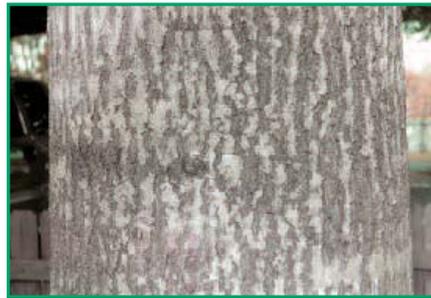
Other Facts: not distinguished as a species until 1927, when it was named for Thomas Nuttall (1786-1859), British-American botanist and ornithologist; foliage resembles pin oak - ranges overlap in Arkansas and Tennessee, but pin oak has smaller rounded acorns with a shallow cup



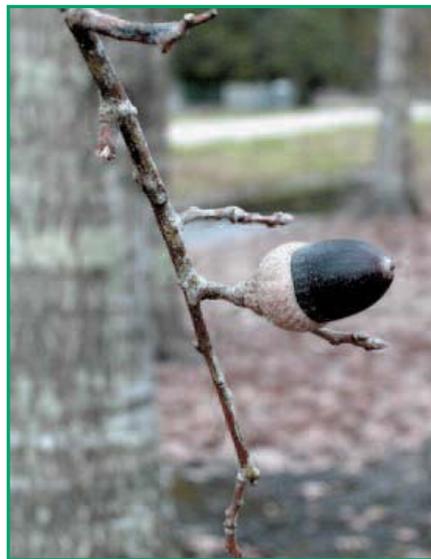
Leaf



Fruit



Bark



Twig

black oak

yellow oak, quercitron oak,
yellow-bark oak, smooth-bark oak
Quercus velutina Lamarck
Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous
Size: 5.0" - 7.0" long; 3.0" - 5.0" wide
Margin: lobed (5-9), 1-4 bristle-tipped teeth
Apex: acute - long-tapered
Base: flat or wedge-shaped
Shape: obovate or ovate
Color: dark green above; copper-green below
Surface: glossy above; scurfy pubescence and axillary tomentum below;
Venation: pinnate

Twigs:

Size: stout
Color: reddish brown; becoming dark brown
Surface: smooth to pubescent; leaf scars half-round; numerous bundle scars; pith star shaped

Buds:

Size: terminal 0.25" - 0.50" long
Shape: ovoid
Color: tan
Surface: pubescent; 5-angled in cross sections

Fruit and Flowers:

Nut: acorn; biennial; cup, top-shaped, thick, fringed edge, pubescent inner surface, covers up to 50% of nut
Size: 0.75" long
Shape: nut elliptical
Color: light reddish brown, concentric rings at apex
Flower: monoecious, unisexual; staminate, interrupted, hairy, catkins, 4.0" - 6.0" long; pistillate, in pairs or 3's on short, hairy stalks

Bark: dark brown to black; deep furrows; rough ridges; thick (1.0" - 1.5"); inner bark yellow to orange

Physical Attributes:

Form: single stem
Size: 90.0', mature
Growth Rate: 25.0' maximum @ 20 yrs
Life Span: (>50 yrs)
Tolerances:
Shade: medium
Drought: low
Fire: medium
Anaerobic: low

Propagation: seed (cold stratification required); bare root; container
Other: resprout/coppice potential only in young trees

Habitat and Ecology:

Site: dry uplands, best on lower slopes in rich, well-drained soils
Soil Texture: fine - coarse
Soil pH: 4.5 - 6.0
Range: Maine; west through Ontario to Minnesota; south to Texas and Florida; in Mississippi, throughout with the exception of the Mississippi River Delta counties

Wildlife Value and Uses: mast source for turkey, ruffed grouse, songbirds, deer, squirrel, and other small mammals *(acorns are said to be poisonous to some animals); high cavity value for wildlife

Timber Value and Uses: light brown wood with a nearly white sapwood; sold as "red oak"; used for furniture, flooring, interior finishing, barrels, and railroad ties; bark contains enough tannin to make commercial extraction worthwhile

Landscaping Info: shade tree for large areas; existing natives are often saved during construction; routinely available commercially; liabilities include difficulty in transplanting and establishing, and vulnerability to numerous diseases and insect pests (damage usually not significant)

Other Facts: yellow dye, suitable for coloring natural fibers produced by boiling the inner bark



Leaf



Leaf



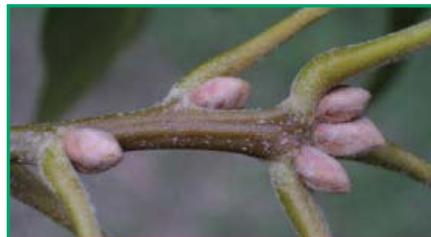
Fruit



Bark



Flower



Twig

live oak

Spanish oak

Quercus virginiana Miller

Family: Fagaceae

Leaves:

Type: simple, alternate, persistent

Size: 1.38" - 4.0" long; 0.75" - 2.0" wide

Margin: entire

Apex: rounded; may have bristle tip

Base: cuneate to rounded

Shape: oblong

Color: light to dark green above; grayish green below

Surface: shiny above; densely pubescent below

Venation: pinnate

Twigs:

Size: slender, rigid

Color: gray

Surface: juvenile pubescent; older smooth; leaf scars half-round; numerous bundle scars

Buds:

Size: < 0.13" long

Shape: ovate, nearly globular

Color: reddish brown

Surface: several light brown scales with pale margins

Fruit and Flowers:

Nut: acorn, annual; cup goblet-shaped, light gray scales with reddish tips, often pubescent, encloses 25 - 50% of nut

Size: 0.63" - 1.0" long

Shape: narrowly oblong

Color: dark brown to black

Flower: monoecious; unisexual; staminate, yellow, hairy catkins, 3.0" long; pistillate, in few-flowered spikes, 1.0" - 3.0" long

Bark: dark reddish brown to nearly black; furrowed; separating into small appressed scales

Physical Attributes:

Form: single stem

Size: 50.0' - 80.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: common in dry, sandy woods; occasionally occurs in moist deciduous forests, roadsides, and borders of salt marshes

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.5

Range: Virginia; south to Florida; west to Texas; in Mississippi, reported by the NRCS Plants Database in the counties of Washington, Hinds, Copiah, Adams, Amite, Wilkinson, Hancock, Harrison, and Jackson

Wildlife Value and Uses: acorns important food source for northern bobwhite, mallard, sapsuckers, wild turkey, black bear, squirrel, and white-tailed deer; provides cover for birds and mammals; rounded clumps of ball moss found in live oak used for nest construction

Timber Value and Uses: heavy, strong wood; of little use commercially although suitable for construction; excellent species for reforestation to prevent soil erosion; originally cleared for agriculture; potential for revegetating coal mine spoils.

Landscaping Info: used for shade and as an ornamental; fast growing if well watered and soil conditions are good; 4 feet in the first year; extremely hard to kill because it sprouts vigorously from the root collar; susceptible to freezing temperatures and acid rain

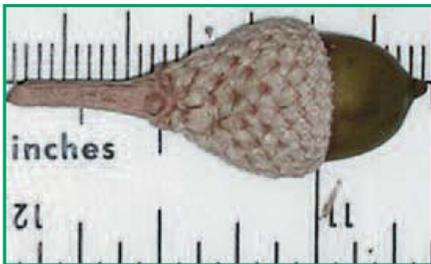
Other Facts: first publicly owned forestland at the end of the eighteenth century was for the purpose of preserving the supply of southern live oak for the Navy's shipbuilding needs; considered "one of the noblest trees in the world and virtually an emblem of the Old South"; protected today for public enjoyment



Leaf



Bark



Fruit



Form

tree of heaven (Invasive)

Chinese sumac, stinking shumac

Ailanthus altissima (Mill.) Swingle

Family: Simaroubaceae

Leaves:

Type: odd or even pinnately compound; alternate; 10-41 leaflets/leaf

Size: leaf 12" - 36" long; leaflets 2.0" - 7.0" long, 1.0" - 2.0" wide

Margin: entire

Apex: long-tapering - acute

Base: lobed

Shape: lanceolate

Color: dark green above; paler (whitish) below

Surface: light green veins above; circular glands under lobes on leaflet bases below

Venation: pinnate

Twigs:

Size: stout

Color: chestnut brown - reddish brown

Surface: smooth to velvety; light colored lenticels; heart-shaped leaf scars

Buds:

Size: terminal absent; laterals small, partially hidden by leaf base

Shape: ovoid

Color: reddish brown

Surface: finely pubescent

Fruit and Flowers:

Samara: large drooping clusters, single seed

Size: 1.0" long

Shape: single winged; twisted tips on female trees

Color: green; turning brown

Flower: dioecious; terminal clusters up to 20.0" long; flower, 5 petals, 5 sepals, male and female yellow-green, staminate flowers have disagreeable odor when crushed

Bark: light gray; rough; patches of tan fissures

Physical Attributes:

Form: single stem

Size: 50.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential; allelopathic

Habitat and Ecology:

Site: agricultural areas, natural forests, urban areas; establishes readily on disturbed sites, such as railroad embankments, highway medians, fencerows, and roadsides

Soil Texture: fine - coarse

Soil pH: 4.9 - 7.5

Range: reported by the NRCS Plants Database to be present in all but 6 of the contiguous U.S. states; in Mississippi, reported in 2 counties.

Wildlife Value and Uses: (no data)

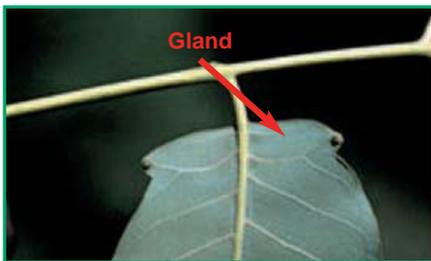
Timber Value and Uses: wood often used in China for lumber, fuelwood and other products; occasionally used for low-grade lumber, pulpwood and fuelwood in U.S.

Landscaping Info: use for any purpose is highly discouraged; first introduced to America by a gardener in Philadelphia, PA, in 1784, and by 1840 was commonly available from nurseries; also brought into California mainly by the Chinese who came to California during the goldrush in the mid-1800s

Other Facts: toxin produced in the bark and leaves of *A. altissima* is being studied as a possible source for a natural herbicide; used in traditional herbal medicine in China

produces toxins that prevent the establishment of other plant species (allelopathy)

single tree can produce around 325,000 to 350,000 seeds a year; wind and water dispersed; viable seed produced by 2 to 3 year-old plants



Leaf



Fruit



Bark



Flower



Twig

mimosa (Invasive)

silk tree

Albizia julibrissin Durazz.

Family: Fabaceae (Mimosaceae)

Leaves:

Type: bipinnately compound, odd pinnately compound, alternate, deciduous; 8-25 branchlets (30 - 60 leaflets/branchlet)

Size: 20.0" long; leaflets 0.38" - 0.5" long

Margin: ciliate; entire

Apex: rounded to obtuse

Base: inequilateral

Shape: leaflets falcate (sickle-shaped)

Color: green to yellow-green above; paler below

Surface: glabrous above; glabrous below

Venation: pinnate

Twigs:

Size: Slender

Color: green

Surface: slightly zig-zag branching; multiple raised light gray lenticels

Buds:

Size: minute; pseudoterminal buds

Shape: rounded

Color: brown

Surface: few-scaled

Fruit and Flowers:

Legume: glabrous

Size: 4.0" - 8.0" long; 1.5 " wide

Shape: oblong-pointed; flattened

Color: green; turning gray-brown

Flower: monoecious; flower pink with red tips; threadlike, 5.0" - 7.0" long, conspicuous

Bark: smooth; gray to brownish gray; faint vertical striations

Physical Attributes:

Form: single or multiple stem

Size: 25.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: urban areas and roadsides

Soil Texture: fine - coarse

Soil pH: 4.8 - 7.3

Range: exotic; naturalized throughout much of the south; in Mississippi throughout

Wildlife Value and Uses: attracts bees, birds, and butterflies

Timber Value and Uses: none

Landscaping Info: frequent choice of homeowners; fine texture, fragrant and showy flowers, and fast growth rate make it a popular plant; good summer color; attracts hummingbirds; reseeds; Charlotte and Tryon cultivars are disease resistant; negatives --- short-lived; subject to vascular wilt disease and webworm

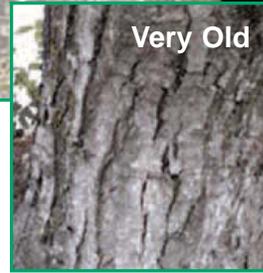
Other Facts: introduced to the U.S. from Asia in 1745; dried leaves used as a tea substitute; cooked flowers eaten as a vegetable; gummy extract from the plant used as a plaster for abscesses, boils etc and also as a retentive in fractures and sprains (Plants for a Future (PFAF) website)

WARNING:

Silk tree is listed by the Florida Exotic Pest Plant Council as a Category I species, defined as an invasive exotic plant that is disrupting native plant communities. In many parts of Florida and the southeast, silk tree has invaded road shoulders, abandoned fields and (in rare cases) natural habitats.



Leaf



Bark



Flower



Fruit



Twig

pawpaw

false banana, custard apple

Asimina triloba (L.) Dunal

Family: Annonaceae

Leaves:

Type: simple, alternate, deciduous; aromatic, smell reminiscent of bell pepper

Size: 10.0" - 12.0" long; 4.0" - 6.0" wide

Margin: entire

Apex: acute

Base: wedge-shaped

Shape: ovate-oblong

Color: light green above; paler below

Surface: sparsely pubescent above; glabrous below with age (dense reddish hairs young)

Venation: pinnate

Twigs:

Size: slender

Color: light brown

Surface: pubescent

Buds:

Size: naked, 0.5" long; laterals 0.13" long

Shape: leaf oblong; flower globose

Color: rusty

Surface: pubescent

Fruit and Flowers:

Berry: rounded or pointed at the extremities; thin skin; contains a yellow custard-like pulp said to taste like papaya

Size: 3.0" - 5.0" long

Shape: oblong to cylindrical

Color: green with dark gray spots (summer); dark brown to black (mature)

Flower: monoecious; perfect; solitary; purple; 2.0" dia.; 6 petals, 3 inner 1/2 length of outer

Bark: dark brown with gray blotches; smooth with raised warty areas; vertical gray superficial fissures

Physical Attributes:

Form: single or multiple stems

Size: 35.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep, rich, moist soils along streams and bottom lands; usually in the understory; forms dense thickets in some localities, particularly in the lower Mississippi River Valley

Soil Texture: medium - coarse

Soil pH: 5.2 - 7.2

Range: New Jersey; south to northern Florida; west to eastern Texas; north to southern Michigan; in Mississippi, scattered throughout

Wildlife Value and Uses: fruits eaten by opossum, raccoon, fox, and squirrel; larvae of the zebra swallowtail butterfly (*Eurytides marcellus*) feed exclusively on the leaves

Timber Value and Uses: none

Landscaping Info: gives a tropical flavor to temperate gardens and provides edible landscaping; can serve as a screen or can be grown in a container as a specimen tree; conical pyramid-like shape when grown in sun, and a more open structure if grown in shade; fruit best in sun, however, needs a shading structure to allow filtered sun first few years

Other Facts: cultivated by some Native American tribes for the fruit, and this cultivation is responsible for its widespread range today; used by many tribes for food - the Cherokee among them; mashed fruit used by the Iroquois to make small cakes that were dried and stored, then later soaked in water and cooked to make a sauce or relish that was served with corn bread; some stored dried fruits also taken for food on hunts; inner bark used to make cordage (string and strong ropes) by the Cherokee

largest edible tree fruit native to North America; high in amino acids; some varieties contain a whitish green pulp that is less flavorful than those with yellow pulp

twigs and leaves contain extracts that have insecticidal properties; leaves contain anti-carcinogens



Leaf



Bark



Flower



Fruit



Twig

black birch

sweet birch, cherry birch, mahogany

Betula lenta L.

Family: Betulaceae

Leaves:

Type: simple, alternate, deciduous; crushed leaves have wintergreen scent

Size: 2.5" - 5.0" long; 1.5" - 2.0" wide

Margin: doubly serrate (sharply, singly, or remotely)

Apex: acute - acuminate

Base: cordate - rounded

Shape: elliptical

Color: dark green above; pale green below

Surface: dull above; small tufts of white hair in the axils of the veins below

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown

Surface: glabrous to sparsely pubescent; lenticels conspicuous; 3 bundle scars; spur twigs on older growth; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.25" long

Shape: ovoid

Color: light chestnut brown

Surface: several loosely imbricate scales

Fruit and Flowers:

Nutlet: small; winged; in upright cone-like cluster (strobile); tardily deciduous

Size: strobile 1.0" - 1.5" long

Shape: nutlets obovoid

Color: brown

Flower: monoecious; unisexual; staminate catkins, 1.0" - 2.5" long, reddish brown; pistillate catkins, 0.75" - 1.5" long, light pink-tinged green, erect

Bark: mature light grayish brown to nearly black; furrowed; shallow scales with age

Physical Attributes:

Form: single stem

Size: 60.0', mature

Growth Rate: 15.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: most abundant on deep, rich, moist but well-drained soils; also occurring on rocky ledges and dry, rocky soils; best developed in Kentucky and Tennessee

Soil Texture: medium - coarse

Soil pH: 3.6 - 6.8

Range: eastern U.S.; Maine west to Ohio; south through Kentucky, Tennessee, and Mississippi; east to the Atlantic coast (excluding Florida); in Mississippi, extreme northeast corner of the State (rare)

Wildlife Value and Uses: buds, seeds and catkins used by grouse and a variety of birds and small mammals; browsed by deer and rabbit; attracts deer, porcupines, rabbit, and many species of birds

Timber Value and Uses: formerly the chief commercial source of wintergreen oil (methyl salicylate), which is distilled from its wood; uses similar to yellow birch, and commercially is usually not recognized separately (furniture, flooring, fuelwood, cabinets, boxes, woodenware, handles, and millwork, such as interior finish and flush doors); paper pulp made from sweet birch used with other pulps to produce boxboards, book and newsprint paper, paper toweling, and corrugated paper

Landscaping Info: available through field collection only

Other Facts: Native Americans used *Betula lenta* medicinally to treat dysentery, colds, diarrhea, fevers, soreness, and milky urine, and as a spring tonic

Note: twigs and leaves have the taste and odor of wintergreen when crushed



Bark



Leaf



Flower



Fruit



Twig

river birch

Betula nigra L.

Family: Betulaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 3.0" long; 1.0" - 2.0" wide

Margin: deeply doubly serrate

Apex: acute

Base: wedge-shaped

Shape: rhombic-ovate

Color: bright green above; paler green below

Surface: glabrous above; pubescent on veins below (mature), densely pubescent (young)

Venation: pinnate

Twigs:

Size: slender

Color: red-brown or orange-brown

Surface: zigzag branching; usually short stiff reddish brown hairs; horizontally elongated lenticels; leaf scars nearly oval; 3 bundle scars

Buds:

Size: terminal bud absent; laterals 0.25" long

Shape: ovoid, acute

Color: chestnut brown to reddish brown

Surface: scales lustrous

Fruit and Flowers:

Nutlet: winged; in upright conelike clusters (strobiles) of pubescent bracts

Size: nutlets 0.25" - 0.50" long; clusters 1.0" - 1.5" long;

Shape: clusters oblong

Color: brown

Flower: monoecious; imperfect; staminate catkins, reddish brown, 1.0" long; pistillate catkins, green, hairy, 0.33" long

Bark: reddish brown young; then pinkish white and papery; then gray to gray-brown and coarsely scaly

Physical Attributes:

Form: single or multiple stem

Size: 70.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: medium (low for seedlings)

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: most common along streams and in wet bottoms in association American elm, sycamore, red and silver maples, hackberry, boxelder, willows, poplars, and yellow poplar

Soil Texture: fine - medium

Soil pH: 3.0 - 6.0

Range: southern New England; west to Kansas and Minnesota; south to Texas and Florida; in Mississippi, throughout

Wildlife Value and Uses: seed eaten by many species of birds, including wild turkey and grouse; leaves are browsed by white-tailed deer

Timber Value and Uses: wood used to manufacture inexpensive furniture, woodenware, wooden shoes, basket materials, toys, staves, and fuel; used for strip mine reclamation and erosion control (Grelen 1990); used in forested riparian buffers to help reduce stream bank erosion, protect water quality, and enhance aquatic environments

Landscaping Info: attractive ornamental tree; desirable specimen for estates, golf courses, parks, and public grounds

Other Facts: sap can be fermented to make birch beer or vinegar; medicinally, leaves either chewed, or as an infusion used in the treatment of dysentery; infusion of the bark used to treat stomach problems and difficult urination (Moerman 1998)



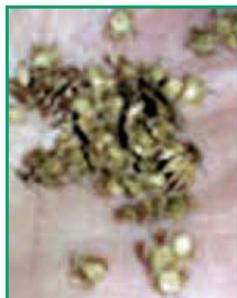
Leaf



Bark



Flower



Fruit



Twig

American hornbeam

blue beech, musclewood, ironwood

Carpinus caroliniana Walter

Family: Betulaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 4.0" long; 1.0" - 2.0" wide

Margin: sharply doubly serrate

Apex: long, tapered

Base: rounded, heart-shaped

Shape: ovate

Color: dull blue-green above; pale yellow-green below

Surface: glabrous above; axillary tufts of white hair at principal veins below

Venation: pinnate

Twigs:

Size: slender

Color: deep red to purple-red (first winter), then gray tinged with red

Surface: lustrous; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.13" long

Shape: ovoid, sharp-pointed

Color: reddish-brown and white

Surface: scales overlapping, angled, with silky edge to each scale

Fruit and Flowers:

Nutlet: wingless; subtended by a 3-lobed, leafy bract

Size: nut, 0.33" long; bract 1"-1.5" long

Shape: ovoid

Color: brown

Flower: monoecious; unisexual; staminate catkin, 1.0" long, scales red above middle, green below; pistillate catkin, 0.5" long, scales green, hairy

Bark: blue-gray to gray-brown; smooth, thin and tight; sometimes with broad dark brown horizontal bands

Physical Attributes:

Form: single or multiple stem

Size: 30.0', mature

Growth Rate: 18.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep, rich, moist loams along streams, in swamps and wet bottom lands

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.4

Range: central Maine; west to southwestern Quebec, southeastern Ontario, northern Michigan, and northern Minnesota; south to central Iowa and eastern Texas; east to central Florida; absent from the lowermost Gulf Coastal Plain and the Mississippi embayment south of Missouri; in Mississippi, throughout

Wildlife Value and Uses: of secondary importance to wildlife; seeds, buds, and catkins eaten in small quantities by ruffed grouse, ring-necked pheasant, and northern bobwhite; seeds eaten by ducks when acorn production is limited; seeds, bark, and wood are eaten by rabbit, beaver, fox squirrel, and eastern gray squirrel; twigs and foliage browsed by white-tailed deer

Timber Value and Uses: minor economic species; used locally for fence posts, mallet heads, and tool handles; not subject to cracking and splitting

Landscaping Info: planted in landscapes and naturalized areas; chief liabilities in cultivation are a relatively slow growth rate and difficulty in transplantation; grows best in shade, but can tolerate full sun

Other Facts: used by American pioneers for bowls and dishes; common name, beam, is an Old English word for tree; horn suggests an analogy of the hard, close-grained wood to the tough material of horns



Leaf



Young



Mature

Bark



Fruit



Flower



Twig

American chestnut

Castanea dentata (Marsh.) Borkh.

Family: Fagaceae

Leaves:

Type: alternate, simple, deciduous

Size: 7.0" - 8.0" long; 2.0" wide

Margin: coarsely serrate

Apex: long-tapered

Base: wedge-shaped

Shape: oblong-lanceolate

Color: yellow-green above; paler below

Surface: glabrous above; pale yellow midrib and primary veins

Venation: pinnate

Twigs:

Size: slender to moderately stout, angular

Color: reddish brown

Surface: glabrous; leaf scars alternate, half-round, elevated

Buds:

Size: 0.25" long; terminal bud present or absent

Shape: ovoid, acute

Color: dark chestnut brown scales

Surface: scales scarious on the margins

Fruit and Flowers:

Nut: smooth; slightly compressed; enclosed in a 2- to 4-valved, leathery, spiny involucre; nut sweet, edible

Size: nut, 0.5" - 1.0" wide; involucre 2.0" - 2.5" dia.

Shape: obovate

Color: light brown

Flower: monoecious; unisexual; apetalous; staminate, in upright catkins, 6.0" - 8.0" long, green below the middle - red above; pistillate, in clusters of 2-3 enclosed in a cluster of bracts (involucre) of green, hairy scales

Bark: dark brown; smooth when young; becoming ridged on mature stems

Physical Attributes:

Form: single stem

Size: 115.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, well-drained soils from lowlands to elevations of over 4,000 feet, in association with other hardwoods

Soil Texture: medium

Soil pH: 5.5 - 6.5

Range: Michigan; through Iowa, Missouri, and Louisiana (skirting Arkansas), and all states east within the U.S.; in Mississippi, reported by the NRCS Plants Database in 14 counties in the eastern half of the State north to south from Tishomingo to Forrest Counties respectively

Wildlife Value and Uses: (no data)

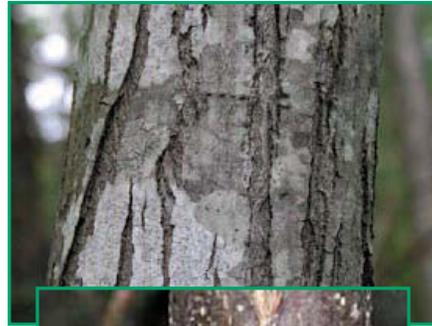
Timber Value and Uses: prior to 1930 by far the best lumber-producing chestnut in the world; formed up to 35% of the forests of the eastern United States; often occurring in almost pure stands; cut for mine props and tipple construction in the coal-mining sections of Pennsylvania, West Virginia and other states; furnished most of the telephone and telegraph poles used in the East; almost indispensable for dwellings, out-buildings, rail fences, posts, shingles, and incidental purposes; lumber marketed at good prices for framing, base for veneer, and many other purposes, even sound "wormy" wood; blight-killed trees are still being thus marketed in many places

Landscaping Info: available through field collection only

Other Facts: Native Americans used various parts of the plants of *Castanea dentata* medicinally as a cough syrup and to treat whopping cough, for heart trouble, and as a powder for chafed skin (D. E. Moerman 1986).

Chestnut Blight:

Around 1900 the fungus *Cryphonectria parasitica* was introduced --- most likely on nursery stock from Asia. The fungus enters a host through cracks or wounds in the bark and produces sunken cankers which expand and girdle the stem, killing everything above the canker. Spores can be transported by wind or on the feet of migrating birds and insects, and therefore, can spread rapidly--about 24 miles per year (Schlarbaum and others 1997). The native chestnuts had no resistance and by about 1940, most of the standing chestnut trees were dead (SAMAB 1996e).



Bark



Leaf



Flower



Fruit



Twig

Allegheny chinkapin

American chinquapin

Castanea pumila (L.) Mill.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 5.0" long; 1.5" - 2.0" wide

Margin: coarsely serrate with rigid teeth

Apex: acute

Base: unequal

Shape: oblong to elliptical

Color: yellow-green above; paler below

Surface: tomentose when young, then glabrous above; pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: orange-brown

Surface: pubescent initially; then glabrous

Buds:

Size: 0.13" long

Shape: ovoid to oval

Color: red

Surface: pubescent

Fruit and Flowers:

Nut: enclosed in 2- to 3-valved involucre covered with sharp branched spines

Size: nut, 0.75" long; involucre 1.0" - 1.5" dia.

Shape: nut ovoid

Color: nut dark chestnut brown

Flower: monoecious; unisexual; staminate, upright catkins, 4.0 - 6.0" long, yellow; pistillate flowers, basal, rounder, 1.2" dia.; bisexual catkins 3.0" - 4.0", silvery, tomentose

Bark: light brown to reddish brown; thick, furrowed; loose platelike scales

Physical Attributes:

Form: small tree, shrub

Size: 14.0' - 30.0', mature

Growth Rate: 14.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential (resprouts vigorously following top-kill by fire)

Habitat and Ecology:

Site: rich hillsides, dry sandy ridges, and swamp margins

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.5

Range: New Jersey and West Virginia; west to Missouri and Oklahoma; south to Texas and Florida; planted in Wisconsin and Michigan and is now a forest tree; in Mississippi, reported in 27 counties by the NRCS Plants Database, primarily in the south half of the state

Wildlife Value and Uses: nuts consumed by squirrel, chipmunks, opossum, white-tailed deer, blue jays, woodpeckers and other birds; foliage browsed by white-tailed deer

Timber Value and Uses: light, hard, close-grained, and strong wood; used for fence posts and fuel; no commercial timber harvest

Landscaping Info: sometimes used for landscaping as a small ornamental tree or shrub; flowers attractive but have an unpleasant odor

Other Facts: roots used as a decoction for stomachaches by the Koasati Indians; dried leaves used as washes to alleviate headaches, fevers, chills, cold sweats, and fever blisters by the Cherokee Indians; nuts are palatable to humans as well as wildlife

NOTE: threatened in Kentucky, endangered in New Jersey, and extirpated from most of Alabama by chestnut blight



Leaf



Bark



Flower



Fruit



Twig

sugarberry

Texas sugarberry, southern hackberry

Celtis laevigata Willd.

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.5" - 5.0" long; 1.0" - 2.5" wide

Margin: entire - irregularly serrate

Apex: tapered to long narrow point

Base: obliquely wedge-shaped or asymmetrically rounded

Shape: oblong-lanceolate

Color: light green above; paler below

Surface: smooth to occasionally rough above; smooth below

Venation: pinnate

Twigs:

Size: slender

Color: current season brown to red-brown

Surface: smooth; many pale lenticels; oval or crescent-shaped leaf scars; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.06" - 1.13" long

Shape: ovoid; sharp-pointed

Color: chestnut brown

Surface: overlapping scales

Fruit and Flowers:

Drupe: thick skin; thin flesh with wrinkled, bony pit; on stalks, 0.25" - 0.5" long

Size: 0.25" dia.

Shape: nearly spherical

Color: yellow-orange to reddish brown

Flower: monoecious; perfect and imperfect; apetalous; greenish; long-stalked; staminate in few-flowered clusters in axils of lower leaves; perfect and pistillate flowers in pairs or solitary in axils towards the tip of twig

Bark: light gray to brownish gray; corky warts, primarily on the lower bole

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: sandy loam or rocky soils along streams, in bottomlands, and in woodlands; most often found on clay soils of broad flats or shallow sloughs within the flood plains of major southern rivers

Soil Texture: fine - medium

Soil pH: 4.8 - 6.8

Range: southeastern Virginia to southern Florida; west to central Texas and northeastern Mexico; north to western Oklahoma, southern Kansas, Missouri, southern Illinois, southern Indiana, and western Kentucky; overlaps the southern part of the range of hackberry (*C. occidentalis*); in Mississippi, throughout

Wildlife Value and Uses: dry sweet fruit eaten by at least 10 species of birds, as well as other game and nongame animals

Timber Value and Uses: mixed with *C. occidentalis* supplies the lumber known as hackberry; small amounts used for dimension stock, veneer, and containers; main use is for furniture; wood can be given a light- to medium-brown finish that in other woods must be achieved by bleaching; value as a timber tree is increasing

Landscaping Info: often used for street planting in the lower South; used as an ornamental in residential areas; leachates (identified in the soil as ferulic acid, caffeic acid, and p-coumaric acid) from the leaves reduce germination and growth of a number of grasses under the trees; bark is thin and easily injured by fire; mechanical damage often leads to decay

Other Facts: Comanche would beat the fruits of sugarberry to a pulp, mix with animal fat, roll into balls, and roast in the fire for food; boiled leaves and branches were made into dark brown and red dye for wool



Bark



Leaf



Flower



Fruit



Twig

hackberry

beaverwood

Celtis occidentalis L.

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.5" - 4.0" long; 1.5" - 2.0" wide

Margin: sharply serrate

Apex: long-tapered

Base: asymmetrically heart-shaped

Shape: ovate to ovate-lanceolate

Color: light green above; paler below

Surface: smooth or with short, stiff hairs above; hairy along principal veins below

Venation: pinnate

Twigs:

Size: slender

Color: current season brown to red-brown

Surface: smooth; numerous pale lenticels;

oval or crescent-shaped leaf scars; zigzag branching

Buds:

Size: terminal bud absent; lateral 0.25" long

Shape: ovoid; sharp-pointed

Color: chestnut brown

Surface: overlapping scales

Fruit and Flowers:

Drupe: large, reticulate, bony pit; thick skin and thin layer of sweetish flesh; on stalks, 0.5" - 1.0" long

Size: 0.33" dia.

Shape: globular

Color: purple (mature)

Flower: monoecious; perfect and imperfect; apetalous; greenish; long-stalked; staminate in few-flowered clusters in axils of lower leaves; perfect and pistillate flowers in pairs or solitary in axils towards the tip of twig

Bark: light gray to brownish gray; corky warts, primarily on the lower bole

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 26.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: high

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: found on a variety of sites and soil types; best in moist soils near stream banks and on flood plains; will grow on dry, less fertile soils

Soil Texture: fine - coarse

Soil pH: 6.0 - 7.8

Range: Maine and Quebec; west to North Dakota, Wyoming and Colorado; south to Texas and Georgia; in Mississippi, only isolated occurrence

Wildlife Value and Uses: wild turkey, ring-necked pheasant, quail, grouse, lesser prairie chicken, cedar waxwing, robins, and other bird species along with small mammals consume common hackberry fruit, which persist throughout the winter; deer browse leaves in the absence of preferred browse species; provides good cover for mule deer, white-tailed deer, upland game birds, small non-game birds, and small mammals

Timber Value and Uses: used to produce inexpensive furniture; has increasing value as a timber tree; wood quality is comparable to that of elm and white ash; most commonly used as firewood; also, included in windbreak plantings to control wind erosion; deep root system makes hackberry useful for preventing soil erosion on disturbed sites

Landscaping Info: will accept a wide variety of soil, sun, and water conditions; wood is brittle and subject to ice breakage and any other mechanical damage (often results in decay); cultivars have been developed for plant shape, straighter trunks, drought resistance, salt tolerance, and adaptation to compacted soils

Other Facts: valued for medicinal, food, and ceremonial purposes by Native Americans; bark was decocted (boiled down) to serve as a gynecological aid that could induce labor, regulate menstrual cycles, and treat venereal diseases

Note: listed as threatened in New Hampshire



Leaf



Bark



Flower



Fruit



Twig

eastern redbud

Judastree

Cercis canadensis L.

Family: Fabaceae (Caesalpinaceae)

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 5.0" dia.

Margin: entire

Apex: abruptly acute

Base: heart-shaped to flattened

Shape: kidney-shaped

Color: bright green above; paler below

Surface: glabrous above; axillary tufts below, otherwise glabrous

Venation: palmate

Twigs:

Size: slender

Color: light brown with numerous small lenticels first winter; then gray-brown

Surface: glabrous

Buds:

Size: terminal bud absent; laterals 0.13" long often superposed

Shape: ovoid

Color: red

Surface: glabrous

Fruit and Flowers:

legume: short-stalked; compressed; in lateral clusters

Size: pod 2.0" - 3.5" long; seeds 0.25" long

Shape: pod linear-oblong; seed ovate

Color: pod dark brown; seeds brown

Flower: monoecious; perfect; irregular; in clusters of 4 to 8, on stalks 0.5" long; flower, 5 petals, purplish pink, 0.5" long

Bark: thin; brown; smooth (young); darker, furrowed, long narrow plates with age

Physical Attributes:

Form: single stem

Size: 16.0', mature

Growth Rate: 16.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: rich, moist soil near streams, fertile bottoms, slopes, open woods; frequently forms thickets

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.5

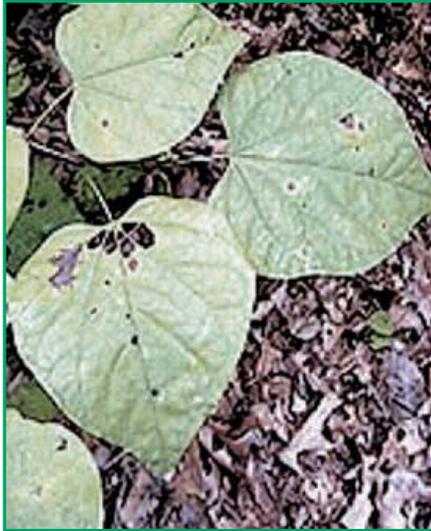
Range: New Jersey; west through Pennsylvania and New York to Minnesota; south to Florida; west to eastern Texas; in Mississippi throughout

Wildlife Value and Uses: seeds eaten by many birds, including bobwhite quail; browse for white-tailed deer and other mammals including livestock; blossoms attract honeybees

Timber Value and Uses: no commercial value as a timber species

Landscaping Info: widely cultivated as an ornamental for its showy flowers, and heart-shaped leaves; does well in soils of moderate to low fertility; very drought resistant; widely available from nurseries; best to select younger, smaller plants

Other Facts: used for various purposes by the Alabama, Cherokee, Delaware, Kiowa, and Oklahoma Native American tribes; blossoming branches were brought into the homes to "drive winter out"; tea from the bark used to treat whooping cough



Leaf



Bark



Fruit



Flower



Spring Bloom



Twig

buckwheat tree

black titi

Cliftonia monophylla Britt.

Family: **Cyrillaceae**

Leaves:

Type: simple, alternate, persistent, glandular

Size: 1.0" - 2.0" long; 0.5" - 0.75" wide

Margin: entire

Apex: rounded or minutely notched

Base: wedge-shaped

Shape: oblong to lance-shaped

Color: dark green above; whitish below

Surface: shiny, leathery above; glabrous, glandular dotted below; nearly sessile

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown; sometimes with a grayish bloom

Surface: occasionally obscurely 3-angled; shield-shaped leaf scars; single bundle scar

Buds:

Size: terminal bud 0.5" long; laterals smaller, appressed

Shape: ovoid

Color: reddish brown

Surface: 2 (rarely 3) outer scales

Fruit and Flowers:

Drupe: nutlike; winged; shiny; showy clusters (1.5" - 2.5" long)

Size: 0.25" long

Shape: elliptical

Color: yellow

Flower: monoecious; perfect; in erect terminal racemes; petals, 5-8, white - light pink; 0.25" dia.; glandular, fragrant

Bark: dark reddish brown; thin; weakly fissured; small, persistent, slightly elongated scales

Physical Attributes:

Form: small tree or shrub

Size: 30.0' - 40.0', mature (tree)

Growth Rate: (no data @ 20 yrs)

Life Span: (no data)

Tolerances:

Shade: low

Drought: low

Fire: (no data)

Anaerobic: medium

Propagation: (no data)

Other: (no data)

Habitat and Ecology:

Site: often forming impenetrable thickets along the margins of swamps and pocosins, and in rich river bottoms; in the Gulf states, found on exposed, sandy ridges

Soil Texture: medium - coarse

Soil pH: 4.5 - 5.5 (strongly acidic)

Range: mostly found on the outer Gulf Coastal Plain from Georgia to northern Florida, and to extreme southeast Louisiana; very common in the Florida Panhandle and southern Alabama; in Mississippi, seven (7) southernmost counties

Wildlife Value and Uses: (no data)

Timber Value and Uses: no commercial value in forest industry; wood - heavy, close-grained, moderately hard, brittle, not strong; valued as a fuel

Landscaping Info: foliage is beautiful and the fragrant flowers a fine asset; highly unusual but worthy landscape plant, especially in native situations; heat tolerant; resistant to disease; resistant to insects

Other Facts: favored honey plant - in the Florida Panhandle beekeepers often move their hives into the natural stands in March.



Bark



Leaf



Flower



Fruit



Twig

alternate-leaf dogwood

Cornus alternifolia L.

Family: Cornaceae

Leaves:

Type: simple, alternate (rarely subopposite or opposite), deciduous

Size: 3.0" - 5.0" long; 2.5" - 3.5" wide

Margin: entire

Apex: tapered

Base: wedge-shaped or rounded

Shape: oval to ovate

Color: yellow-green above; lighter below

Surface: glabrous above; pubescent below

Venation: arcuate

Twigs:

Size: slender; (acrid when broken)

Color: green to greenish brown

Surface: glabrous; numerous small lenticels; leaf scars half-moon-shaped; 3 bundle scars

Buds:

Size: terminal 0.33" long; laterals smaller

Shape: oval to acute

Color: green tips; turning red

Surface: 2 to 3 visible scales, green, brown or purplish (0.25" long); laterals often nearly covered by persistent petiole bases

Fruit and Flowers:

Drupe: in loose cymes; 1-2 seeded, lunate; many longitudinal, compound grooves

Size: 0.33" dia.; seeds 0.25" long

Shape: subglobose; pit obovoid

Color: blue-black to black; red stems

Flower: monoecious; perfect; on slender, jointed stalks, in flat-topped, many-flowered cymes; flowers, white, 4 oblong petals, 0.25" long

Bark: green, smooth in youth; older, light brown with shallow furrows and somewhat scaly

Physical Attributes:

Form: single or multiple stem

Size: 25.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, rich soils along the margins of forests, or near streams; mixed with other hardwoods as an understory tree

Soil Texture: medium

Soil pH: 5.8 - 7.5

Range: Nova Scotia; west to Minnesota; south to northern Alabama and Georgia; in Mississippi, reported by the NRCS Plants Database only in the counties of Wayne, Perry, Forrest, Pearl River, and Marion, but likely found in other areas as well

Wildlife Value and Uses: extremely valuable for wildlife --- many mammals and birds utilize the fruit and the foliage for food

Timber Value and Uses: no commercial value in the timber industry; wood once highly prized for making the shuttles of looms, for tool handles, and other small items that required a very hard and strong wood --- currently plastics are used for many of these purposes

Landscaping Info: popular with architects because of the horizontal branching habit; works well as small tree in the landscape; attractive winter habit, showy spring flowers

Other Facts: name comes from the word dagwood, from the use of the slender stems of very hard wood for making 'dags' (daggers, skewers)



Leaf



Bark



Flower



Fruit



Twig

American hazelnut

American filbert

Corylus americana Walter

Family: Betulaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.5" - 5.0" long; 4.5" - 4.7" wide

Margin: doubly serrate

Apex: acuminate

Base: heart-shaped or rounded

Shape: broadly oval

Color: dark green above; paler below

Surface: glabrous above; pubescent below

Venation: pinnate

Twigs:

Size: slender

Color: light brown

Surface: numerous, stiff, red-glandular hairs; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.16" long

Shape: blunt

Color: two-toned light grayish brown; scales near base darker brown

Surface: few scales

Fruit and Flowers:

Nut: edible; enclosed in two large downy, toothed bracts

Size: 0.5" dia.

Shape: globose

Color: brown

Flower: monoecious; staminate, catkins, light brown; pistillate, flowers, white, inconspicuous

Bark: light gray to brownish gray; smooth when young; mild criss-cross netted pattern with age

Physical Attributes:

Form: shrub

Size: 10.0' mature

Growth Rate: 10.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: moist, cool, upland sites

Soil Texture: fine - medium

Soil pH: 5.0 - 7.0

Range: most of the eastern half of the U.S. with the exception of Florida; Maine to North Dakota; south to Oklahoma, Arkansas and Louisiana; east to the Atlantic; in Mississippi, the northern counties

Wildlife Value and Uses: nuts have a higher nutritional value than acorns and beechnuts; eaten by squirrel, foxes, deer, northern bobwhite, ruffed grouse, turkey, woodpeckers, pheasants, and deer; leaves, twigs, and catkins browsed by rabbits, deer, and moose; male catkins are a winter food for turkey and ruffed grouse; dense, low growth habit provides cover and nesting sites for many wildlife species.

Timber Value and Uses: no value as a timber product

Landscaping Info: valued as an ornamental and for planting in naturalized settings; useful for borders because of its colonial tendency; red or purple fall color; available from various commercial growers - no cultivars apart from the wild type

Other Facts: extractives of American hazelnut and their physically modified derivatives and distillates are used to produce emollients, tinctures, essential oils, terpenes, and botanicals; "hazel" is from the Old English name for filbert



Leaf



Bark



Flower



Fruit



Twig

common persimmon
eastern persimmon, possumwood,
American ebony, white ebony,
bara-bara, boa-wood, butterwood
Diospyros virginiana L.
Family: Ebenaceae

Leaves:

Type: simple, alternate, deciduous
Size: 4.0" - 6.0" long; 2.0" - 3.0" broad
Margin: entire
Apex: acute or acuminate
Base: wedge-shaped or rounded
Shape: ovate-oblong
Color: dark green above; paler below
Surface: leathery, glabrous above; glabrous below
Venation: pinnate

Twigs:

Size: slender
Color: red-brown
Surface: conspicuous orange lenticels; half-moon-shaped, raised leaf scars; single prominent bundle scar; somewhat zigzag branching

Buds:

Size: terminal bud absent; laterals 0.13" long
Shape: laterals ovoid, acute
Color: dark brownish black
Surface: 2 lustrous outer scales

Fruit and Flowers:

Berry: pulpy; persistent woody calyx
Size: 1.5" dia.
Shape: subglobose
Color: orange to purplish brown
Flower: dioecious; unisexual; staminate, in 2- to several-flowered, hairy-stalked cymes; pistillate, solitary, in leaf axils; corolla greenish yellow or creamy white, 0.5" dia.

Bark: dark brown to nearly black; distinctive block-like plates; deeply furrowed

Physical Attributes:

Form: single stem
Size: 50.0', mature
Growth Rate: 25.0' maximum @20 yrs
Life Span: (>100 yrs)
Tolerances:
Shade: high
Drought: low
Fire: low
Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep, rich bottom lands or on higher sandy, well-drained soils; usually as an occasional tree in association with other broad leaved trees

Soil Texture: fine - medium

Soil pH: 5.0 - 7.0

Range: Southern Connecticut and Long Island; to southern Florida; west through central Pennsylvania and southeastern Iowa; south to eastern Texas; in Mississippi scattered throughout

Wildlife Value and Uses: leaves and twigs eaten in fall and winter by white-tailed deer; fruit eaten by squirrel, fox, skunk, deer, bear, coyote, raccoon, opossum, and various birds (quail, wild turkey, cedar waxwing, and catbird); flowers produce nectar significant for bees in honey production

Timber Value and Uses: usually considered undesirable by growers of closely managed timber stands; wood is hard, smooth, even textured, and shock resistant; ideal for textile shuttles and heads for driver golf clubs; heartwood is used for veneer, flooring, and specialty items, but most commercially used persimmon is reported to consist of sapwood

Landscaping Info: sometimes used as an ornamental for its hardiness, adaptability to a wide range of soils and climates, and immunity from disease and insects; moist, well-drained soils provide best conditions; will tolerate hot, dry, poor soils, including various city conditions; rarely sold commercially; leaves are glossy, leathery, and yellow or reddish purple in the fall

Other Facts: unripe fruit and inner bark used in the treatment of fever, diarrhea, and hemorrhage; fruits used in puddings, cookies, cakes, custard, and sherbet; dried, roasted, ground seeds used as a substitute for coffee



Bark



Leaf



Flower



Fruit



Twig

American beech

beech, Carolina beech, gray beech, red beech, ridge beech, stone beech, white beech, winter beech

Fagus grandifolia Ehrh.

Family: Fagaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.5" - 5.0" long; 1.0" - 2.5" wide

Margin: bluntly serrate

Apex: gradually tapering to a point

Base: wedge-shaped

Shape: oblong-ovate

Color: dark green above; yellow-green below

Surface: glabrous above; lustrous and glabrous below

Venation: pinnate

Twigs:

Size: slender

Color: pale green; then yellow-brown

Surface: downy; then smooth; leaf scars half-round; 3 bundle scars; stipule scars, minute, nearly surrounding the twig; zig-zag branching (usually)

Buds:

Size: 1.0" long

Shape: terminal buds sharp-pointed; lance-shaped; laterals similar

Color: tan to brown

Surface: lustrous

Fruit and Flowers:

Nut: 3-angled, inclosed in spiny bur

Size: < 1.0" long

Shape: unevenly triangular

Color: yellowish brown

Flower: monoecious; staminate, on slender hairy stalks, in rounded heads, 1.0" dia., green; pistillate, in 2- or 4-flowered spikes, pale yellow

Bark: bluish gray; thin; sometimes mottled; smooth; very little change with age or bole size

Physical Attributes:

Form: single stem

Size: 95.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: common on rich mesic hardwood slopes, bottom lands, and swamp margins

Soil Texture: medium - coarse

Soil pH: 4.1 - 7.2

Range: northern Florida; west to eastern Texas; north to Wisconsin and southeastern Canada; in Mississippi, throughout

Wildlife Value and Uses: mast eaten by a variety of birds and mammals, including mice, squirrel, chipmunk, black bear, deer, fox, ruffed grouse, ducks, and bluejays; poor rating for deer browse; provides cover for the Carolina chickadee (*Parus carolinensis*) and the black-capped chickadee (*Parus atricapillus*)

Timber Value and Uses: flooring, furniture, veneer, plywood, and railroad ties; especially favored as fuel wood for high density and good burning qualities; used with birch and maple in the hardwood distillation industry for production of charcoal, wood alcohol and acetate of lime; limited use in the "soda process" of pulp manufacture

Landscaping Info: beautiful native tree; attributes as an ornamental include horizontal limbs, persistent coppery bronze leaves in the fall and early winter, and whitish gray very smooth bark; greatest drawback as a landscape tree is slow growth

Other Facts: edible uses reported by the Plants For A Future (PFAF) Database include: roasted seed as a coffee substitute; dried inner bark as a ground powder for thickening in soups etc.; seed (raw or cooked) is sold locally in Canada and parts of America --- they are nutritious (22% protein), and sweet



Leaf



Bark



Flower



Fruit



Twig

waterlocust

Gleditsia aquatica Marsh.

Family: Fabaceae (Caesalpinaceae)

Leaves:

Type: pinnately or bipinnately compound, deciduous

Size: 6.0" - 8.0" long; leaflets (14-20), 0.75" - 1.0" long

Margin: entire

Apex: rounded; rarely emarginate

Base: unequally cuneate

Shape: leaflets ovate-oblong

Color: dull yellow-green above; dark green below

Surface: lustrous above; glabrous below

Venation: pinnate

Twigs:

Size: slender to moderate

Color: gray to red-brown

Surface: conspicuous thorns; zigzag branching

Buds:

Size: terminal bud absent; laterals sunken

Shape: laterals covered by leaf scar

Color: (see size)

Surface: same as leaf scar

Fruit and Flowers:

Legume: flat; 1-3 seeds

Size: 1.0" - 2.0" long; seeds 0.5" dia.

Shape: almost round/oval

Color: brown

Flower: monoecious; perfect; in slender racemes, 3.0" - 4.0" long; calyx-tube covered by orange-brown pubescence; petals, green, erect, rounded at apex; anthers, large, green

Bark: gray-brown; often mottled; smooth; small platelike scales on older trees

Physical Attributes:

Form: single stem

Size: 50.0' - 60.0' mature

Growth 50'- 60' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); container; cuttings;

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich lands of river valleys that are subject to inundation, often for a considerable part of the year

Soil Texture: fine - coarse

Soil pH: 6.5 - 7.0 (best)

Range: South Carolina; south to central Florida; west to eastern Texas, and north to southern Illinois and extreme southwestern Indiana; in Mississippi, reported by the NRCS Plants Database in Boliver, Washington, Sharkey, Leflore, Warren, Jefferson and Wilkinson Counties, but likely occurs in other areas of the State as well

Wildlife Value and Uses: seed, pods, and foliage provide food rated as "Good" by the Texas Plant Information Database (TPID) for large and small mammals and upland game birds, and "Fair" for waterfowl; rated "Fair" as cover for the same categories of wildlife

Timber Value and Uses: planted for stabilization of wet banks and marshes; heavy wood, very hard, strong; durable in contact with the soil; used primarily for making fence posts

Landscaping Info: easily found in nurseries, garden stores and other plant dealers and distributors

Other Facts: classified as an Obligate Wetland (OBL) species, meaning it occurs almost always (estimated probability 99%) under natural conditions in wetlands; endangered in Indiana and "of special concern" in Kentucky, but considered globally secure

Note: similar habit to honey locust (*G. triacanthos*), but distinguished from it by:

- * smaller leaves
- * fewer leaflets
- * more slender thorns
- * flattened, 1- to 3-seeded, non-pulpy pods



Leaf



Bark



Flower



Fruit



Twig

honeylocust

honey-shucks locust

Gleditsia triacanthos L.

Family: Fabaceae (Caesalpinaceae)

Leaves:

Type: pinnately and bipinnately compound; alternate; deciduous

Size: 6.0" - 8.0" long; pinnate leaves (15-30), subopposite or alternate leaflets, 1.0" - 2.0" long, 0.5" - 1.0" wide

Margin: entire to remotely serrate

Apex: acute or rounded

Base: broadly unequally wedge-shaped

Shape: leaflets ovate to elliptical

Color: dark green above; yellow-green below

Surface: lustrous above; glabrous below

Venation: pinnate

Twigs:

Size: moderately stout

Color: shiny brown; eventually gray-brown

Surface: thickened nodes; zigzag branching pattern; simple or 3-branched thorns; leaf scar U-shaped; 3 bundle scars

Buds:

Size: terminal bud absent; laterals minute

Shape: laterals sunken, covered by leaf scar (several at each node)

Color: (see size)

Surface: same as leaf scar

Fruit and Flowers:

Legume: flattened, thick-edged, twisted; seeds compressed 0.33" long

Size: 0.5' - 1.5' long; 0.5" wide

Shape: elongate

Color: brown; seeds dark brown

Flower: monoecious; perfect or imperfect; in axillary racemes, 2.0" - 3.0" long; staminate clustered, pubescent; many-flowered; pistillate solitary, few-flowered; petals white, 0.25" long

Bark: gray to black; smooth young; mature fissured, scaly plates; branched thorns on bole

Physical Attributes:

Form: single stem

Size: 75.0' mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich bottom lands, mountain slopes, stream banks, limestone prairie soils

Soil Texture: medium

Soil pH: 6.0 - 8.0

Range: Pennsylvania; west through Michigan, southern Minnesota and southeastern South Dakota; south through eastern Nebraska, Iowa, Kansas, Oklahoma and eastern Texas; east to northern Alabama; in Mississippi, scattered throughout

Wildlife Value and Uses: pods eaten by cattle, goats, deer, opossum, squirrel, rabbit, quail, crows, and starlings; soft bark of young trees eaten by white-tailed deer and rabbit in winter; young vegetative growth eaten by livestock and deer; planted around wildlife plots and in pastures and hayfields to provide high protein mast

Timber Value and Uses: too scarce to be of economic importance; used locally for pallets, crates, general construction, furniture, interior finish, turnery, firewood, railroad ties, and posts; wood is dense, hard, coarse-grained, strong, stiff, shock-resistant, and takes a high polish; durable in contact with soil

Landscaping Info: widely planted as a hardy and fast-growing ornamental; small leaflets and open crown, the trees cast a light shade that permits shade-tolerant turfgrass and partial-shade perennials to grow underneath; cultivars now developed for crown shape, branch angles, and leaf color, and most are both thornless and fruitless; planting currently discouraged in cities because of over-use and thus decreased biodiversity

Other Facts: ground, dried pulp from the legume used by Native Americans as a sweetener and thickener; roasted seeds used as a coffee substitute



Leaf



Bark



Flower



Fruit



Twig

loblolly-bay

Gordonia lasianthus (L.) Ellis

Family: Theaceae

Leaves:

Type: simple, alternate, persistent

Size: 4.0" - 6.0" long; 1.5" - 2.0" wide

Margin: finely-obscurely toothed above the middle

Apex: acute

Base: wedge-shaped

Shape: oblong to oblanceolate

Color: dark green above; paler below

Surface: leathery above; scattered woolly hairs below

Venation: pinnate

Twigs:

Size: moderately stout

Color: dark brown

Surface: wrinkled epidermal layers

Buds:

Size: 0.25" - 0.33" long

Shape: ovoid to globular

Color: reddish

Surface: terminal and lateral buds naked; silky hairs

Fruit and Flowers:

Capsule: woody, hairy, 5-sutured; seeds minute, winged

Size: 0.75" long; 0.5" dia.

Shape: ovoid

Color: green immature; brown mature

Flower: monoecious; perfect; solitary in leaf axils, on long reddish stalks; 5 petals, white, 1.5" long, 2.5" wide; stamens, yellow; fragrant; usually only one flower blooming at a time

Bark: dark gray to reddish brown; smooth to slightly fissured on young trees; thick, deeply fissured with narrow ridges on mature trees

Physical Attributes:

Form: single stem

Size: 65.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: low, wet soils of bays and swamp edges

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.0

Range: North Carolina; south to Florida; east to Mississippi; in Mississippi, reported by the NRCS Plants Database in 5 counties in the extreme southeastern portion of the State

Wildlife Value and Uses: stump sprouts heavily browsed by white-tailed deer

Timber Value and Uses: no commercial significance; could be used for pulp; could be used for firewood; has been used for riparian ecosystem restoration in central Florida

Landscaping Info: a handsome tree with showy, fragrant flowers, and dark green foliage; should be used more often as an ornamental

Other Facts: bark contains astringents suitable for leather tanning; wood has been used locally for cabinetry



Mature



Young

Bark



Leaf



Flower



Fruit



Twig

witchhazel

Hamamelis virginiana L.

Family: Hamamelidaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 6.0" long; 2.0" - 3.0" wide

Margin: often coarsely shallowly lobed above the middle

Apex: acute to rounded

Base: unequal

Shape: obovate

Color: dark green above; paler below

Surface: glabrous above; hair on midrib and principal veins

Venation: pinnate

Twigs:

Size: slender

Color: orangish brown to reddish brown

Surface: scurfy, becoming smooth; zigzag branching

Buds:

Size: terminal bud, naked, 0.25" - 0.5" long; laterals smaller

Shape: curved; stalked

Color: tawny

Surface: hairy

Fruit and Flowers:

Capsule: woody; 2-beaked; splitting along 2 sutures

Size: 0.5" long; seed 0.25" long

Shape: elliptical; seeds oblong, unwinged

Color: brown; seeds black

Flower: monoecious; perfect; usually in 3-flowered terminal clusters; petals, 4, straplike, yellow, 1.0" long

Bark: light brown; smooth to slightly scaly; thin; inner bark purplish

Physical Attributes:

Form: single or multiple stem

Size: 20.0', mature

Growth Rate: 15.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: stream banks; margins of lakes, ponds, and swamps; moist, upland forest soils as an understory tree

Soil Texture: fine - medium

Soil pH: 4.5 - 6.2

Range: New Brunswick, Canada; west through southern Ontario to Minnesota and northeastern Iowa; south to Georgia in the east, and Arkansas in the West; in Mississippi, throughout the State with the exception of the Mississippi River Delta and the mid-northern and northwestern counties

Wildlife Value and Uses: seeds and buds used by grouse; twigs browsed by deer and rabbit

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: used occasionally in naturalized areas for shrub borders in partial shade on moist sites; unique, fragrant flowers are most "showy" after leaf fall (October-December); disease and insect resistant

Other Facts: Hamamelis is from Greek words meaning "at the same time" and "apple", possibly because flowers and fruits are present simultaneously; virginiana refers to the Virginia colony; widely used by Native Americans as a medicinal plant; nutty seeds savored by Indians of the South; bark used to treat ulcers, twigs used in sweat lodges, leaves used in strong medicinal teas

first "commercial" marketing as an herbal product in 1848 by Theron T. Pond and an Oneida medicine man, first under the trade name "Golden Treasure" and later as "Pond's Extract"; one of few American medicinal plants still approved by the FDA as an ingredient in non-prescription drugs (over the counter astringent, external analgesic, skin protectant)

most famous/infamous use as a "witching stick" by "water diviners" to locate underground water with a forked branch from witch hazel --- the location of many early water wells may have been determined by this method



Leaf



Fruit



Bark



Flower



Twig

dahoon

myrtle leaf holly, dahoon holly

Ilex cassine L.

Family: Aquifoliaceae

Leaves:

Type: simple, alternate, deciduous

Size: 0.5" - 3.0" long; 0.5" - 1.0" wide

Margin: entire, or toothed above the middle

Apex: blunt or acute

Base: wedge-shaped

Shape: oblong-lanceolate

Color: dark green above; paler below

Surface: glabrous above; pubescent along midrib below

Venation: pinnate

Twigs:

Size: slender

Color: gray; brown after 3rd season

Surface: pubescent until after 3rd season, then glabrous; numerous inconspicuous lenticels;

Buds:

Size: minute, <0.13" long

Shape: pointed

Color: grayish brown

Surface: minutely hairy

Fruit and Flowers:

Drupe:

Size: 0.25" dia.

Shape: globose

Color: red/orange/yellow

Flower: dioecious; regular; on hairy pedicels, in axillary stalked clusters; staminate in clusters of 3-9; pistillate, solitary or clusters of 3-4 in leaf axils, 1.0" long

Bark: thin; gray; numerous lenticels

Physical Attributes:

Form: single stem

Size: 26.0', mature

Growth Rate: 26.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: high

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: non-alluvial swamps, cypress ponds, and streambanks of the lower Coastal Plain

Soil Texture: fine - coarse

Soil pH: 3.5 - 6.5

Range: North Carolina; south to Florida; west to Texas; in Mississippi, reported by the NRCS Plants Database in only the southernmost coastal counties

Wildlife Value and Uses: fruit eaten by small mammals and birds

Timber Value and Uses: no commercial value

Landscaping Info: becoming increasingly available as more nurseries respond to the ever increasing interest in gardening with native species; tolerates brackish water and low-light conditions; good for woodland plantings or in wet areas at the edge of lakes and streams

Other Facts: listed as a commercially exploited species by the Florida Department of Agriculture; protected --- wild populations should not be disturbed



Bark



Leaf



Flower



Fruit



Twig

deciduous holly

possumhaw, winterberry

Ilex decidua Walter

Family: Aquifoliaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 3.0" long; 0.5" - 1.0" wide

Margin: finely serrate - crenate

Apex: obtuse to tapered

Base: wedge-shaped

Shape: ovate-lanceolate

Color: light green above; paler below

Surface: glabrous above; hairy on midrib below

Venation: pinnate

Twigs:

Size: slender

Color: light gray

Surface: glabrous; crescent-shaped leaf scars; single bundle scar

Buds:

Size: terminal bud minute; laterals smaller

Shape: obtuse

Color: light gray

Surface: glabrous; 2-3 visible scales

Fruit and Flowers:

Drupe: berrylike; solitary or in clusters of 2 or 3; nutlets, ribbed only on the back

Size: 0.25" dia.

Shape: spheroidal

Color: red-orange

Flower: dioecious; cymose clusters on short stalks; staminate, clusters of 3-9; pistillate solitary or clusters of 2-3; petals 4-6; single flower 0.25" dia.; greenish-white

Bark: brown to gray, or variation of the two; thin, smooth

Physical Attributes:

Form: multiple stem

Size: 33.0', mature

Growth Rate: 33.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: high

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: lowlands, swamps, near streams, or in moist, rich, upland soils as an understory tree

Soil Texture: fine - coarse

Soil pH: 3.5 - 6.5

Range: western Florida; north to Virginia; west to southern Illinois and Missouri to Oklahoma; south to Texas; in Mississippi, throughout

Wildlife Value and Uses: holly fruits are consumed by small mammals, songbirds and game birds, including eastern bluebirds, wild turkey, and quail; also eaten by white-tailed deer; white-tailed deer and cattle browse both leaves and twigs; good choice in plantings for wildlife; individual plant fruit production is consistent from year to year; greater than 70 percent of individuals bear fruit (only female plants bear fruit)

Timber Value and Uses: no economic value in the timber industry

Landscaping Info: could be more widely used as an ornamental; only female trees bear fruit and when planning use as a landscape plant this fact should be kept in mind

Other Facts: national champion (1981), located in South Carolina, is 3.0' in circumference and 42.0' in height



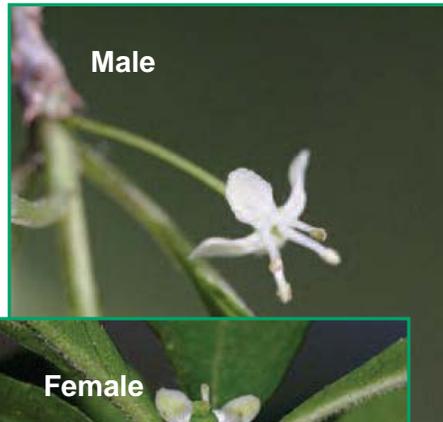
Leaf



Fruit



Bark



Flower



Twig

American holly

Ilex opaca Aiton

Family: Aquifoliaceae

Leaves:

Type: simple, alternate, persistent

Size: 2.0" - 4.0" long; 1.0" - 2.0" wide

Margin: wavy; sharp-pointed, stout, stiff spines

Apex: acute, sharp-pointed

Base: wedge-shaped or rounded

Shape: oblong-ovate

Color: dark green above; paler greenish yellow below

Surface: leathery, glabrous above; glabrous below

Venation: pinnate

Twigs:

Size: stout

Color: gray (rust colored hairs when young)

Surface: glabrous mature; leaf scar, crescent-shaped; single bundle scar

Buds:

Size: terminal 0.13" - 0.25" long; laterals smaller

Shape: terminal bud acute; laterals obtuse

Color: green, tinged with rusty red

Surface: 2-4 acuminate, ciliate scales, downy

Fruit and Flowers:

Drupe: berrylike; several prominently ribbed 1-seeded stones

Size: 0.25" dia.

Shape: spherical

Color: red

Flower: dioecious; cymose clusters on short stalks; staminate, clusters of 3-9; pistillate solitary or clusters of 2-3; petals 4-6; single flower 0.25" dia.; greenish-white

Bark: thin; gray; sometimes roughened or warty

Physical Attributes:

Form: single stem

Size: 60.0' mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, moist bottom lands; borders of wetlands; dry protected slopes; frequently on sandy soils near the coast

Soil Texture: fine - medium

Soil pH: 4.0 - 7.5

Range: Massachusetts to Florida; west to Texas and Missouri; in Mississippi, throughout except the north-central and Mississippi River Delta counties

Wildlife Value and Uses: fruits are consumed by white-tailed deer and 18 species of birds; dense foliage provides cover and nesting habitat for various songbirds

Timber Value and Uses: little demand; some high value architectural use; very white wood

Landscaping Info: attractive ornamental with evergreen foliage and bright colored fruit; requires vigilant pruning to maintain desirable shape; dead leaves decompose extremely slowly (if ever); allergies possible from leaf pricks; plants are dioecious (male and female plants), only female plants have fruit

Other Facts: one of the most sought after greens for Christmas decoration



Leaf



Bark



Female



Male

Flower



Fruit



Twig

yaupon

evergreen holly, indian blackdrink,
Christmas berry

Ilex vomitoria Ait.

Family: Aquifoliaceae

Leaves:

Type: simple, alternate, evergreen

Size: 0.5" - 1.5" long; 0.25" 0.5" wide

Margin: crenate

Apex: obtuse

Base: inequilateral

Shape: elliptic to elliptic-oblong

Color: dark green above; paler below

Surface: shiny above; opaque below

Venation: pinnate

Twigs:

Size: slender, stiff,

Color: initially purplish brown; turning light gray

Surface: velvety, becoming glabrous

Buds:

Size: minute

Shape: obtuse

Color: dark brown to nearly black (scales)

Surface: glabrous

Fruit and Flowers:

Drupe: berrylike; stone few-ribbed

Size: 0.25" dia.

Shape: spheroidal

Color: bright red

Flower: dioecious; on slender club-shaped glabrous pedicels, in short glabrous cymes; staminate, many-flowered, short-stemmed; pistillate, sessile, either solitary or in pairs; 4 petals, white

Bark: reddish brown, thin

Physical Attributes:

Form: multiple stem

Size: 25.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: coastal dunes and forests; occasionally in sand hills; can be found on the upper edges of brackish and salt marshes, sandy hammocks, coastal sand dunes, inner-dune depressions, sandhills, maritime forests, nontidal forested wetlands, well-drained forests and pine flatwoods

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.0

Range: Virginia south to Florida; west to Texas; north to Oklahoma; west through Arkansas and the Gulf coastal states; in Mississippi, reported by the NRCS Plants Database only in the southern half of the State

Wildlife Value and Uses: red fruit of yaupon attract wildlife; important food for many songbirds, gamebirds and waterfowl (bluebirds, catbirds, mockingbirds, robins, yellow-shafted flickers, red-naped sapsuckers, yellow-bellied sapsuckers, white-throated sparrows, cedar waxwings, Florida ducks, black ducks, mourning doves, ruffed grouse, bobwhite quail and wild turkey); fruit also eaten by armadillo, black bear, gray fox, western fox, raccoon and skunks; foliage and twigs browsed by white-tailed deer; evergreen foliage provides wildlife cover during the winter months.

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: one of the most durable and adaptable of the small-leaved evergreen hollies for use in southern landscapes; grows well throughout its range in sidewalk cutouts and other sites with limited exposed soil; protected by Florida statute

Other Facts: used by Native American tribes in the Southeastern United States for medicinal and multiple other purposes; leaves and shoots used to make a decoction called "black drink", utilized medicinally and ceremonially, and also served as a social drink; some evidence that the southeastern tribes traded Yaupon with nearby neighbors and that they transplanted and cared for the trees.

Yaupon is the only native plant in North America that contains caffeine.



Leaf



Bark



Flower



Fruit



Twig

(**Caution:** Poisonous plant-fruit can cause nausea, vomiting, and diarrhea)

black walnut

Juglans nigra L.

Family: Juglandaceae

Leaves:

Type: odd-pinnately compound, alternate, deciduous; terminal leaflet aborts early

Size: 1.0' - 2.0' long; leaflets (15-23), 3.0" - 4.0" long, 1.0" wide

Margin: finely toothed margins

Apex: acute

Base: unequally rounded

Shape: ovate-lanceolate

Color: bright yellow-green above; paler below

Surface: glabrous, lustrous above; pubescent below

Venation: pinnate

Twigs:

Size: stout;

Color: brown or orangish brown

Surface: raised orange lenticels; notched leaf scars; pith chambered

Buds:

Size: terminal 0.33" long; laterals smaller

Shape: ovoid

Color: terminal brown to orange-brown; laterals grayish brown

Surface: terminal, pale silky pubescence; laterals woolly gray hairs

Fruit and Flowers:

Nut: corrugated; enclosed in a thick, succulent husk; sweet, oily, edible nut

Size: 1.5" - 2.25" dia.

Shape: ovoid to globular

Color: nut blackish brown; husk yellow-green

Flower: monoecious; unisexual; staminate, in stout catkins, 3.0 - 5.0" long; pistillate, in 2- to 5-flowered spikes, 0.25" long, 2 yellow-green feathery stigmas, bright red plumose pistils

Bark: gray-brown to brown-black; fissured; deep furrows and broad rounded ridges

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 35.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: high

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, deep, fertile soils of bottom lands and gentle slopes; occurs as an "occasional" tree in association with other hardwoods

Soil Texture: medium

Soil pH: 5.5 - 8.0

Range: Massachusetts; through southern Ontario, to Central Nebraska; south to Texas and east to Georgia; in Mississippi, northern two thirds of the State --- not common in the Mississippi River Delta

Wildlife Value and Uses: nuts eaten by squirrel; low palatability as browse

Timber Value and Uses: most valuable and popular North American tree for fabrication of solid and veneered furniture; cut to near extinction in some areas; used by master craftsmen of fine furniture and cabinetry during the Queen Anne, William and Mary, and Colonial periods; used as gunstock material beginning during the Civil War, and both as gunstocks and airplane propellers in World Wars I and II

Landscaping Info: routinely available commercially; **note:** produces a toxin known as "juglone" which inhibits the growth of other plants around it as a means of reducing competition --- should be a consideration in placement of the species in landscaping

Other Facts: used by many Native American groups: Cherokee ate the fruit, chewed the bark for toothache, and made laxative tea from the bark; Chippewa and the Cherokee made brown and black dyes from the bark; Comanche treated ringworm with a paste from the leaves and fruit husks; used by the Appalachian, Cherokee, Comanche, Iroquois, and Rappahannock to treat athlete's foot, hemorrhoids, and as an insecticide

Caution: Bark is poisonous



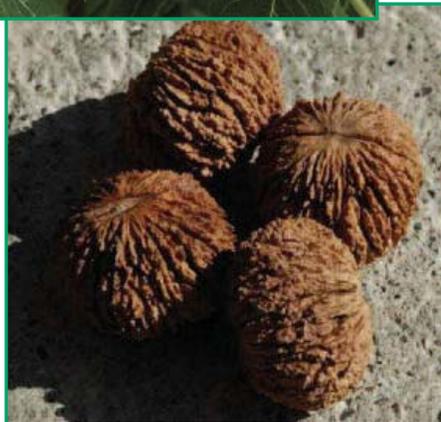
Leaf



Bark



Flower



Fruit



Chambered Pith



Twig

sweetgum

red gum, alligator-tree

Liquidambar styraciflua L.

Family: Hamamelidaceae

Leaves:

Type: simple, alternate, deciduous; 5-7 deeply palmate lobes; aromatic when bruised

Size: 6.0" - 7.0" dia.

Margin: finely serrate

Apex: long-tapered

Base: flattened or slightly heart-shaped

Shape: star-shaped

Color: bright green above; paler below

Surface: lustrous above; axillary tufts of hair below

Venation: palmate lobes

Twigs:

Size: slender to moderately stout

Color: yellowish to reddish brown

Surface: few scattered lenticels; corky out-growths - some winglike with age; leaf scars half-round; 3 circular bundle scars

Buds:

Size: terminal winter bud 0.25" long; laterals similar but smaller

Shape: acute

Color: orange-brown scales

Surface: scales overlapping - inner row red-tipped, accrescent, 1.0" at maturity

Fruit and Flowers:

Spiny ball: aggregate of many tiny capsules

Size: 1.0" - 1.5" dia.; 2 seeds/capsule, 0.25" long

Shape: ball globular; seeds terminally winged

Color: ball green, then brown; seeds black

Flower: monoecious; unisexual; in headlike clusters; staminate, greenish yellow, in terminal, hairy racemes, 2.0" - 3.0" long, flowers naked; pistillate heads pale green, globose, solitary, axillary, on long slender stalks

Bark: gray to gray-tan; furrowed; rounded, narrow, scaly ridges

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 45.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: adaptable, but most abundant on moist, rich, alluvial soils in association with many other species; will frequently form dense even-aged thickets on abandoned fields

Soil Texture: fine - coarse

Soil pH: 4.5 - 7.0

Range: Connecticut; west through southeastern New York, southern Ohio, and southern Missouri to eastern Oklahoma; south to central Florida; then west to eastern coastal Texas; in Mississippi, ubiquitous throughout

Wildlife Value and Uses: seeds eaten by goldfinches, purplefinches, mallard ducks, bobwhite quail, Carolina chickadees, yellow-bellied sapsuckers, white-throated sparrows, towhees, Carolina wrens, squirrel, and chipmunks; wood is utilized by beaver in dam construction

Timber Value and Uses: one of the most valuable commercial hardwoods in the Southeast with regard to the "volume" of timber produced; provides pulp, veneer and lumber; used in cabinetry, home interiors, boxes and utensils

Landscaping Info: rapid growth, site adaptability, excellent fall color; requires adequate space due to extensive root development and root sprouts from lateral roots; heavy crops of persistent fruit heads (gum balls)

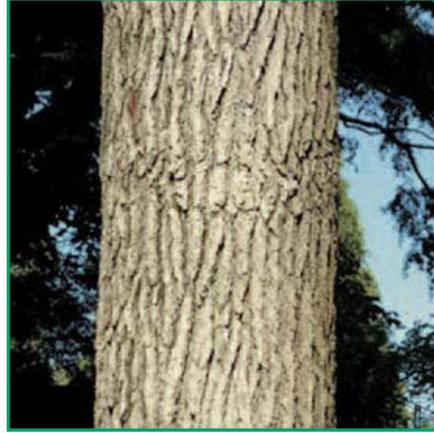
Other Facts: all parts of the sweetgum utilized by Native American tribes for multiple purposes; dried sap used as chewing gum and to treat distemper by placing rolled up pieces in a dog's nose; sap also used to make a "drawing plaster", and to reduce fever; roots bark, and leaves used to make teas; aromatic sap (styrax) currently used as an ingredient in both medicine and perfume



Leaf



Fruit



Bark



Flower



Twig

yellow-poplar

tulip magnolia, tulip tree, whitewood, canoe tree

Liriodendron tulipifera L.

Family: Magnoliaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 6.0" long and broad

Margin: usually 4-lobed; margin of the lobes entire

Apex: flattened or notched

Base: flattened or somewhat rounded

Shape: tuliplike

Color: dark green above; paler below

Surface: lustrous, smooth above; glabrous below

Venation: pinnate

Twigs:

Size: slender to moderately stout

Color: reddish brown; sometimes with a purplish bloom

Surface: glabrous; leaf scars nearly circular; stipule scars encircling the twig causes jointed appearance; numerous small lenticels

Buds:

Size: terminal bud 0.5" long; laterals smaller

Shape: long, flattened; 2 outer valvate scales, "duck bill" appearance

Color: mixed; green, purplish, brownish red

Surface: dark, covered by a glaucous bloom

Fruit and Flowers:

Aggregate: cone-like cluster of numerous, dry, terminally winged samaras

Size: samaras 1.50" long

Shape: narrow, upright

Color: light brown

Flower: monoecious; perfect; tulip-shaped, 1.5" - 2.0" dia., light green, bright orange scallop at base; 6 petals in 2 rows

Bark: young trees, smooth, light gray, with small white patches; older bark, gray, thick, deeply furrowed

Physical Attributes:

Form: single stem

Size: 120.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, well-drained sites; along streams, bottoms, lower upland slopes, and rich coves; often forming small pure thickets during juvenile period, but only as an occasional stem in old stands

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.5

Range: southern New England; west to Michigan, south to Florida, and west to Louisiana; in Mississippi, throughout

Wildlife Value and Uses: some wildlife value; fruits provide food for squirrel in the late fall and winter months, and white-tailed deer often browse on the twigs; flower nectar is an important food source for bees in the spring; host plant for tiger and spicebush swallowtail butterflies

Timber Value and Uses: one of the most important southern hardwoods; large volumes harvested for veneer, manufacture of furniture, and pulpwood; planted for reforestation purposes because of its rapid growth and the commercial importance of its wood

Landscaping Info: desirable street, shade, or ornamental tree; mature size makes it unsuited for many sites; pluses include rapid growth, pyramidal form, resistance to insect and disease damage, unusual leaves and attractive flowers, and yellow autumnal color; minuses --- prone to wind and ice damage in exposed situations.

Other Facts: wood produces bitter alkaloid chemical called tuliperene which is a heart stimulant; root of the tuliptree can be used as a lemon-like flavoring agent in spruce beer; historically, tea made from the bark used externally as a wash and a poultice on wounds and boils, and also brewed to produce an aromatic stimulant tonic for the treatment of rheumatism, chronic gastric and intestinal diseases, dysentery, coughs, and hysteria; root bark and seeds used to expel worms from the body; Native Americans and early pioneers frequently hollowed out a single log to make a long dugout canoe, giving it the common name "canoe tree" in some regions; purported that Daniel Boone made a 60 foot long canoe from a single tulip tree



Leaf



Fruit



Bark



Flower



Twig

Osage-orange

hedge-apple, bodark, bois-d'arc, bow-wood naranjo chino

Maclura pomifera (Raf.) Schneider

Family: Moraceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 6.0" long; 3.0" wide

Margin: entire

Apex: long, tapering

Base: rounded, flattened, or broadly obtuse

Shape: ovate

Color: dark green above; paler below

Surface: lustrous above; glabrous below

Venation: pinnate

Twigs:

Size: slender to moderately stout

Color: green to orange-brown

Surface: smooth; short, stout axillary thorns; triangular to kidney-shaped leaf scars

Buds:

Size: terminal bud absent; laterals sunken

Shape: laterals globose

Color: laterals light brown

Surface: 4-5 overlapping ovate scales

Fruit and Flowers:

Drupe: clusters; drupelets exude milky sap when bruised

Size: 3.0" - 5.0" dia.

Shape: cluster globose; drupelets oblong

Color: bright green or yellow-green

Flower: dioecious; unisexual; staminate, in long-stalked racemes 1.0" -1.5" long; pistillate, short-stalked heads 1.0" dia.; green

Bark: orange-brown; deep furrows; broad, rounded, fibrous ridges

Physical Attributes:

Form: single stem

Size: 35.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: natural range is moist bottom lands with high water retention

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.5

Range: native in northeastern Texas, southern Arkansas, and southern Oklahoma; planted as a hedge in all the 48 conterminous States and in southeastern Canada; in Mississippi, scattered throughout

Wildlife Value and Uses: valuable cover and nesting sites for quail, pheasant, and other birds and animals; bitter-tasting fruit is little eaten by wildlife; reports that fruit is poisonous to livestock have been proven wrong by feeding experiments in several states

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: used in landscape design; picturesque rather than beautiful; possessing strong form, texture, and character

Other Facts: produces no sawtimber, pulpwood, or utility poles, but it has been planted in greater numbers than almost any other tree species in North America; made agricultural settlement of the prairies possible (though not profitable); led directly to the invention of barbed wire; provided most of the posts for the wire that fenced the West; heartwood, bark, and roots contain many extractives of actual and potential value in food processing, pesticide manufacturing, and dyemaking

osage-orange heartwood is the most decay-resistant of all North American timbers and is immune to termites; used as bow wood by Native Americans; colorful orange-toned heartwood used in wood carving, especially for novelty items



Leaf



Bark



Flower



Fruit



Twig

cucumber magnolia
yellow-flower magnolia, mountain magnolia, yellow cucumbertree
Magnolia acuminata L.
Family: Magnoliaceae

Leaves:

Type: simple, alternate, deciduous
Size: 6.0" - 12.0" long; 3.0" - 6.0" wide
Margin: entire
Apex: acute
Base: wedge-shaped to rounded
Shape: elliptical, oval, or ovate
Color: yellow green above; paler below
Surface: glabrous above; somewhat pubescent below
Venation: pinnate

Twigs:

Size: moderately stout
Color: reddish brown
Surface: many small lenticels; leaf scars horseshoe-shaped; 5-9 bundle scars; stipule scars encircling the twig

Buds:

Size: 0.75" long
Shape: oblong-ovoid, acuminate
Color: silvery-white
Surface: silky hairs

Fruit and Flowers:

Aggregate of follicles: cylindrical; seeds, suspended from the ovary wall
Size: 2.0" - 3.0" long; seeds 0.5" long
Shape: oblong to ovoid (cucumber-shaped)
Color: dark red; seeds red
Flower: monoecious; perfect; bell-shaped; 2.0"-3.0" wide; on stout stalks (0.5" - 1.0" long); 6 petals, 2.0" - 4.0" long, greenish-yellow, tongue shaped

Bark: dark brown; narrow fissures; longitudinal scaly ridges

Physical Attributes:

Form: single stem
Size: 100.0', mature
Growth Rate: 40.0' maximum @ 20 yrs
Life Span: (>50 yrs)
Tolerances:
Shade: medium
Drought: low
Fire: low
Anaerobic: low

Propagation: seed (cold stratification required); bare root; container
Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, deep, rich, soils on low gentle slopes and stream banks
Soil Texture: medium - coarse
Soil pH: 5.2 - 7.0
Range: western New York and southern Ontario; southwest to Pennsylvania, Ohio, southern Indiana, Illinois, Missouri, and southeastern Oklahoma; south to Louisiana; east to northwest Florida and central Georgia; in Mississippi, scattered throughout the State in groups of 3-7 counties, absent from the Mississippi River Delta counties (NRCS Plants Database)

Wildlife Value and Uses: seeds are eaten by birds and rodents; grackles and blackbirds eat the young fruit; twigs, leaves, and buds; browsed by deer (although classed as nonpalatable by some investigators)

Timber Value and Uses: durable, straight-grained wood is similar to yellow poplar (*Liriodendron tulipifera*); often marketed together; used for pallets, crates, furniture, plywood, and special products (fixtures, venetian blinds, siding, interior trim, sashes, doors); usually sold as yellow-poplar - has not been sold as cucumbertree lumber since 1928

Landscaping Info: desirable for ornamental planting because of the showy flowers, fruits, and attractive foliage and bark; hardiest of the native tree-size magnolias; sprouts readily and often is used as grafting root stock for named varieties and ornamental species; use of cuttings is unsuccessful; no important disease agents; however, very sensitive to ground fires and frost

Other Facts: magnolia genus is one of the most ancient among flowering trees; only American species of subgenus *Yulania*



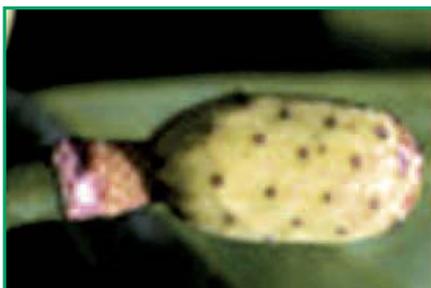
Bark



Leaf



Flower



Fruit



Twig

southern magnolia
evergreen magnolia, bull-bay,
big-laurel
Magnolia grandiflora L.
Family: Magnoliaceae

Leaves:

Type: simple; alternate, persistent
Size: 5.0" - 8.0" long; 2.0" - 3.0" wide
Margin: entire
Apex: bluntly pointed; rarely sharp pointed
Base: wedge-shaped
Shape: oval, ovate, oblong
Color: dark green above; rusty red below
Surface: shiny above; pubescent (woolly hairs) below
Venation: pinnate

Twigs:

Size: moderately stout
Color: rusty red
Surface: tomentose (woolly hairs); leaf scars shield-shaped; bundle scars in a marginal row; stipule scars encircle twig above leaf scar

Buds:

Size: terminal 1.0" - 1.5" long; laterals smaller
Shape: ovoid
Color: pale or rusty
Surface: pubescent (woolly)

Fruit and Flowers:

Aggregate of follicles: hairy; seed, suspended from open pods by slender elastic thread
Size: 3.0" - 4.0" long, 1.5" - 2.0" dia.; seed 0.5" long
Shape: ovoid to cylindrical; seed slightly flattened,
Color: orange-red; seed, red
Flower: monoecious; perfect; on stout, hairy stalks, 6.0" - 8.0" dia.; petals (6,9, or 12), white, 3.0" - 4.0" long; showy; very fragrant

Bark: light brown or gray-brown; smooth, then lightly furrowed; scaly flat plates

Physical Attributes:

Form: single stem
Size: 100.0', mature
Growth Rate: 40.0' maximum @ 20 yrs
Life Span: (>100 yrs)
Tolerances:
Shade: high
Drought: low
Fire: low
Anaerobic: low

Propagation: seed (cold stratification required); bare root; container (air-layering, stem cuttings, and grafts have all been used to propagate the species for ornamental plantings)
Other: resprout/coppice potential

Habitat and Ecology:

Site: rich bottom lands or gentle protected slopes
Soil Texture: fine - medium
Soil pH: 4.5 - 6.5
Range: eastern North Carolina; south to central Florida; then west through roughly the southern half of the Gulf coastal states into southeast Texas; most prevalent in Louisiana, Mississippi, and Texas; in Mississippi, throughout the southern half of the State, along with Marshall and Lafayette counties in the northcentral part of the State, and Washington country in the Mississippi River Delta

Wildlife Value and Uses: seeds are eaten by squirrel, opossum, quail, and turkey

Timber Value and Uses: cut in limited quantities for timber; furniture, paneling, veneer, cabinet work

Landscaping Info: one of the South's finest semi-evergreens; valuable and extensively planted ornamental; good in urban areas --- resistant to damage by sulfur dioxide

Other Facts: leaves, fruits, bark and wood yield a variety of extracts with potential applications as pharmaceuticals



Leaf



Bark



Leaf



Flower



Flower



Fruit



Twig

bigleaf magnolia

Magnolia macrophylla Michx.

Family: Magnoliaceae

Leaves:

Type: simple, alternate, deciduous

Size: 20.0" - 30.0" long; 9.0" - 10.0" wide

Margin: entire

Apex: acute or rounded

Base: narrowed and cordate

Shape: oblong or obovate

Color: bright green above; silvery gray below

Surface: glabrous above; pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: yellow-green first year

Surface: conspicuous, irregularly shaped leaf scars; numerous fibro-vascular bundle scars

Buds:

Size: terminal; 1.75" - 2.0" long; 0.5" - 0.75" thick; laterals 0.13" - 1.25" long

Shape: terminal bluntly pointed; laterals flattened

Color: terminal white; laterals brownish

Surface: terminal tomentose; laterals pubescent

Fruit and Flowers:

Aggregate of follicles: conelike; seeds compressed

Size: 2.5" - 3.0" long; seeds 0.66" long

Shape: ovoid - nearly globose

Color: rose colored

Flower: monoecious; perfect; on stout, tomentose pedicels, 1.0" - 1.5" long; 6 ovate concave petals, creamy white with rose-colored blotch at base, 10.0" - 12.0" dia.; fragrant

Bark: thin; gray; smooth; small platy patches with age

Physical Attributes:

Form: single stem

Size: 50.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed; softwood cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, mesic woods; usually in understory; in scattered isolated populations

Soil Texture: medium - coarse

Soil pH: 5.5 - 7.5

Range: central North Carolina and western Tennessee; southwest into eastern Alabama; west to eastern Louisiana, (probably most abundant in south central Mississippi); limited pockets in Georgia, South Carolina, and northwestern Florida; in Mississippi, reported by the NRCS Plants Database, primarily in the southern half of the State in coastal and river boundary counties; confined to Monroe, Webster, Winston and Kemper Counties in the northern half of the State

Wildlife Value and Uses: (no data)

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: must be 12-15 years old before first bloom; not suitable in most landscapes except as a specimen tree; flowers and fruit are attractive, but leaves may create a litter problem because of their size and their slow decomposition

Other Facts: an indicator of rich mesic sites; discovered in Charlotte, N.C. in 1795 by French naturalist Andre Michaux; champion tree in Tight Hollow, Ky (108' tall, 42' spread)



Bark



Leaf



Flower



Fruit



Twig

umbrella magnolia

umbrella tree, elkwood

Magnolia tripetala L.

Family: Magnoliaceae

Leaves:

Type: simple, alternate, deciduous; clustered terminally on the twig

Size: 18.0" - 30" long; 8.0" - 10.0" wide

Margin: entire

Apex: acute to bluntly pointed

Base: wedge-shaped

Shape: obovate-lanceolate

Color: green above; pale below

Surface: glabrous above; pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: reddish first year; brown-gray with age

Surface: lustrous

Buds:

Size: terminal bud 1.0" long

Shape: terminal bluntly pointed; laterals globose

Color: terminal bud purple; laterals brownish gray

Surface: glabrous with glaucous bloom

Fruit and Flowers:

Aggregate of follicles: conelike, glabrous

Size: 2.0" - 3.0" long; seeds 0.5" long

Shape: conical-cylindrical; seeds obovoid

Color: rose red

Flower: monoecious; perfect; on slender, glabrous pedicels; cup-shaped, white; 10.0" - 12.0" dia.; petals (6 or 9), 6"-10" long; filaments bright purple; disagreeable odor

Bark: gray; thin; smooth; shallowly furrowed with age

Physical Attributes:

Form: single stem

Size: 30.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, rich bottom lands or near streams along the Coastal Plain and Piedmont Plateau

Soil Texture: fine - medium

Soil pH: 5.0 - 7.5

Range: New York and Massachusetts, south to Florida; west through Mississippi, Arkansas, Oklahoma, and Missouri; northeast to Indiana; in Mississippi, reported by the NRCS Plants Database in the counties of Lafayette, Hinds, and Jackson, but known to occur in other counties

Wildlife Value and Uses: only medium palatability for both browse and graze animals;

Timber Value and Uses: no economic value as a timber product

Landscaping Info: not readily available commercially; flowers are malodorous --- a characteristic specifically associated with this species

Other Facts: endangered in Florida and Indiana; rare in Pennsylvania; first described in the Natural History of Carolina published in 1743 by English naturalist Mark Catesby; introduced into the landscape outside its natural range in 1752; national champion umbrella magnolia located in Bucks County, Pennsylvania



Leaf



Bark



Flower



Fruit



Twig

sweetbay magnolia

swamp-bay, white-bay, sweet magnolia

Magnolia virginiana L.

Family: Magnoliaceae

Leaves:

Type: simple, alternate, persistent

Size: 4.0" - 6.0" long; 1.0" - 3.0" wide

Margin: entire to somewhat wavy

Apex: bluntly pointed or rounded

Base: wedge-shaped

Shape: oblong to elliptical

Color: dull green above; silvery below

Surface: lustrous above; pubescent below, aromatic spicy odor

Venation: pinnate

Twigs:

Size: slender

Color: bright green first winter; reddish brown

Surface: hairy, then smooth after first winter; crescent-shaped leaf scars; stipule scars encircle twig; pith diaphragmed

Buds:

Size: terminal bud 0.75" long; laterals smaller

Shape: ovoid

Color: whitish

Surface: fine silky hairs (0.25" long)

Fruit and Flowers:

Aggregate of follicles: seed, suspended from open pods by slender elastic thread

Size: 2.0" long, 1.0" dia.; seeds 0.25" long,

Shape: ovoid to ellipsoidal; seeds oval, flattened

Color: red; seeds red

Flower: monoecious; perfect; on short, slender, smooth stalks; white; 2.0"-3.0" dia.; petals, 9 or 12, obovate; fragrant

Bark: thin; gray; smooth or irregularly furrowed; superficially scaly; aromatic when crushed

Physical Attributes:

Form: single stem

Size: 60.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: low, wet, sandy woodlands, river floodplains, and shrub swamps, occasionally in thickets

Soil Texture: fine - coarse

Soil pH: 5.0 - 6.9

Range: Atlantic and Gulf Coastal Plains from Long Island south through New Jersey and southeastern Pennsylvania to southern Florida; west to eastern Texas, and north into southern Arkansas and southwest Tennessee; also isolated portions of eastern Massachusetts from older ornamental plantings; most abundant in Alabama, Georgia, Florida, and South Carolina; in Mississippi, primarily in the southeastern half of the State and the southern coastal counties; also reported in Tippah, Tishomingo, Lee, Itawamba, Monroe, and Lafayette counties in the northeastern corner of the State

Wildlife Value and Uses: favorite food of deer and cattle; leaves and twigs browsed by deer year-round; contains as much as 10 percent crude protein; seeds are a favorite food of the gray squirrel; also eaten by white-footed mice, wild turkey, quail, and songbirds

Timber Value and Uses: little economic importance for timber product; when large enough it is harvested and utilized for the same purposes as other magnolias

Landscaping Info: used as a landscape accent for its open form and fragrant flowers; generally commercially available

Other Facts: in Florida, a form with narrow leaves and woolly twigs and fruit has been observed, and designated *M. virginiana* var. *australis* Sarg.



Leaf



Young



Old

Bark



Flower



Fruit



Twig

chinaberry (Invasive)

Melia azedarach L.

Family: Meliaceae

Leaves:

Type: bipinnately compound, leaflets (5-9); alternate, deciduous,
Size: leaf 10.0" - 22.0" long; leaflet 1.0" - 2.0" long
Margin: coarsely serrate to entire and lobed
Apex: acuminate
Base: cuneate
Shape: ovate
Color: bright green above; paler below
Surface: hairy then glabrous above; glabrous below
Venation: pinnate

Twigs:

Size: very stout
Color: olive brown to brown
Surface: numerous pale lenticels; 3-lobed large leaf scar

Buds:

Size: small
Shape: globular
Color: orangish cream color
Surface: fuzzy

Fruit and Flowers:

Drupe: stalked; thin flesh; single seeded
Size: 0.75" dia.
Shape: sub-globose
Color: green (immature); yellow (mature)
Flower: monoecious; perfect; in axillary panicles; petals (5), purple; conspicuous, 0.79" dia.

Bark: brown - reddish brown; slightly criss-crossing furrows

Physical Attributes:

Form: single stem
Size: 50.0', mature
Growth Rate: 50.0' maximum @ 20 yrs
Life Span: (>50 yrs)
Tolerances:
Shade: low
Drought: high
Fire: low
Anaerobic: low

Propagation: seed (no cold stratification required); cuttings; bare root; container
Other: no resprout/coppice potential

Habitat and Ecology:

Site: appears most often on disturbed soils; can invade floodplain and marsh communities
Soil Texture: fine - coarse
Soil pH: 4.0 - 8.0
Range: originally from the Himalayas; currently present in the southern U.S. from Virginia to California; in Mississippi throughout

Wildlife Value and Uses: (no data)

Timber Value and Uses: cultivated commercially for use in the manufacture of fiberboard (Little 1979); also used in cabinet work, for auto bodies, to build crates, musical instruments, matches, tool handles and fuel wood (Santos 1987); rated "medium low" ecological impact by Nature Serve

Landscaping Info: widely introduced as an ornamental shade tree because of its large compound leaves, its distinctive clusters of lilac-colored flowers and its round yellow fruits; it is now considered primarily as an invasive pest species

Other Facts: revered for its beauty in its native range and used for its insecticidal, anti-viral and possible anti-cancer properties; shiny, hard seeds used as beads and for rosaries; extracts have pharmacological properties ---used in China to kill parasitic roundworms

WARNING:

listed by the Florida Exotic Pest Plant Council as a Category I species (invading and disrupting natural communities); reported to be invasive and disruptive in 11 other states, including Hawaii and Texas; seeds dispersed by birds --- a single tree can cause thicket formation

CAUTION!

All parts of chinaberry tree are poisonous. Eating as few as 6 berries can result in death. Birds (including mockingbirds, robins, and catbirds) that eat too many seeds have been known to become paralyzed.



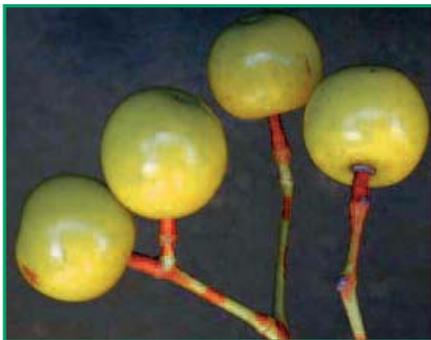
Leaf



Bark



Flower



Fruit



Twig

red mulberry

Morus rubra L.

Family: Moraceae

Leaves:

Type: simple, alternate, deciduous; 3 shapes - unlobed, mitten, lobed (3-5)

Size: 3.0" - 6.0" dia.

Margin: coarsely serrate

Apex: acute - abruptly tapered

Base: flattened or heart-shaped

Shape: oblong-ovate or semiorbicular

Color: dark blue-green above; paler below

Surface: glabrous above; pubescent below

Venation: palmate

Twigs:

Size: slender

Color: gray-brown

Surface: smooth; scattered gray lenticels; leaf scars concave, oval to half-round; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.25" long

Shape: ovoid

Color: olive-brown

Surface: scales shiny

Fruit and Flowers:

Drupe: in clusters of "drupelets", edible, sweet

Size: 1.0" - 1.25" long; seeds minute

Shape: elongate; seeds ovoid-acute

Color: drupes red at first then dark purple; seeds light brown

Flower: monoecious or dioecious; unisexual; apetalous; in lax, green, hairy spikes; staminate 2.0" - 3.0" long, deeply 4-lobed calyx; pistillate 1.0" long, 4 sepals encasing the ovary

Bark: light gray, smooth on young stems; becoming moderately fissured into thin, long, narrow scales

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 45.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: floodplains, river valleys, and moist hillsides prefers deep well-drained soil that is high in organic matter;

Soil Texture: fine - coarse

Soil pH: 5.0 - 7.0

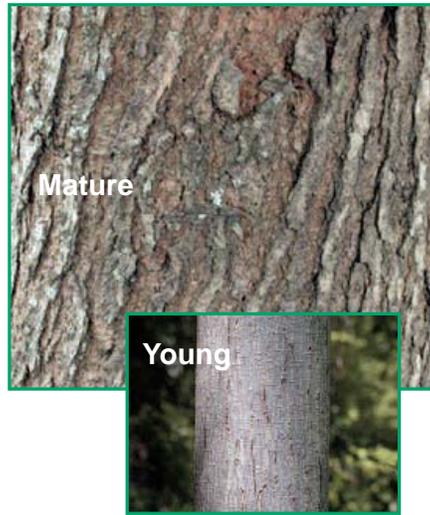
Range: Massachusetts and southern Vermont; west through the southern half of New York to extreme southern Ontario, southern Michigan, central Wisconsin and southeastern Minnesota; south to Iowa, southeastern Nebraska, central Kansas, western Oklahoma and central Texas; east to southern Florida; also found in Bermuda; in Mississippi, throughout

Wildlife Value and Uses: favored food of most birds and a number of small mammals including opossum, raccoon, fox squirrel, and gray squirrel; valued for fattening hogs and as poultry food in the past

Timber Value and Uses: wood is of little commercial importance; used locally for fenceposts because the heartwood is relatively durable; other uses include farm implements, cooperage, furniture, interior finish, and caskets

Landscaping Info: limited ornamental use; fruits have been, and can be used in jellies, jams, pies, and drinks

Other Facts: used by several Native American tribes to treat a variety of ailments; sap to treat ringworm (Foster and Duke 2000); tea from the leaves as a treatment for dysentery, weakness, and difficulty urinating (Hamel and Chiltoskey 1975); fruit a food source for the Comanche (Carlson and Jones 1940, Moerman 1998)



Bark



Leaf



Flower



Fruit



Twig

water tupelo

tupelogum, sourwood

Nyssa aquatica L.

Family: **Cornaceae (Nyssaceae)**

Leaves:

Type: simple, alternate, deciduous

Size: 5.0" - 10.0" long; 2.0" - 4.0" wide

Margin: entire; sometimes scalloped-toothed

Apex: acute or tapering

Base: wedge-shaped; occasionally rounded

Shape: oblong-obovate

Color: dark green above; paler below

Surface: lustrous above; somewhat pubescent below

Venation: pinnate

Twigs:

Size: moderately stout

Color: reddish brown

Surface: nearly glabrous; small scattered lenticels; leaf scars rounded to heart-shaped; 3 conspicuous bundle scars

Buds:

Size: terminal bud 0.13" long; laterals minute

Shape: globose

Color: yellowish

Surface: glabrous

Fruit and Flowers:

Drupe: thick skin; thin bitter flesh

Size: 1.0" long

Shape: oblong

Color: dark blue to purple mature

Flower: monoecious; perfect and imperfect; staminate in dense clusters on long, slender, hairy stalks; pistillate, solitary on short stalks; flowers, staminate and pistillate similar, petals 5, greenish white, thick, 0.25" long

Bark: grayish brown to brown; narrow longitudinal scaly ridges; moderately furrowed

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: deep swamps; often in standing water; less often found on deep, moist soils in association with sycamore, elm, red maple, and green ash

Soil Texture: fine - coarse

Soil pH: 4.3 - 5.7

Range: southern Virginia; south to central Florida; west to Texas; north through Arkansas, western Tennessee and Kentucky to southern Illinois; in Mississippi, bottom lands of major streams and rivers throughout the State

Wildlife Value and Uses: important wildlife species; fruit is consumed by wood ducks, several other kinds of birds, squirrel, raccoon, and deer; foliage, twigs, and stump sprouts browsed by deer; favored honey tree

Timber Value and Uses: good mature trees will produce commercial timber used for furniture; dried properly, the lumber is used for boxes, pallets, crates, and baskets; wood has fine, uniform texture and interlocked grain

Landscaping Info: generally commercially available; yellow to purple fall color; straight bole above butt swell; fragrant flowers; attracts many pollinators; must have a moist site

Other Facts: large intercellular air spaces in root wood and buttresses (termed "spongy"), is the basis for some local use as fishing floats and corks

Tupelo honey is a prized commodity in many localities.



Leaf



Bark



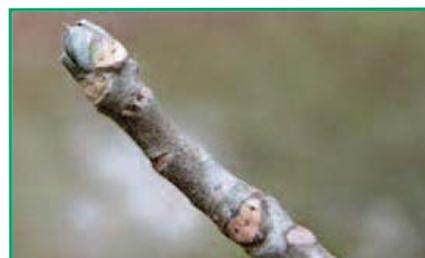
Bark



Fruit



Flower



Twig

blackgum

black tupelo, sour gum, pepperidge

Nyssa sylvatica Marsh.

Family: Cornaceae (Nyssaceae)

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 5.0" long; 1.0" - 3.0" wide

Margin: entire or occasionally scattered coarse teeth

Apex: acute

Base: wedge-shaped; occasionally rounded

Shape: obovate or oval

Color: dark green above; paler green below

Surface: lustrous above; silky hairs below

Venation: pinnate

Twigs:

Size: slender to moderately stout

Color: reddish brown to grayish brown

Surface: numerous pale lenticels; leaf scars half-round; 3 bundle scars

Buds:

Size: terminal 0.25" long; laterals 0.13" long

Shape: terminal acute; laterals sharp-pointed

Color: scales reddish brown

Surface: glabrous

Fruit and Flowers:

Drupe: indistinctly ribbed stone

Size: 0.25" - 0.5" long

Shape: ovoid

Color: dark blue to blue-black

Flower: dioecious; perfect and imperfect; axillary; staminate, many flowered heads at the ends of long pendulous hairy, stalks; pistillate flower in clusters of 3-5; both male and female (<0.25" long), green

Bark: gray to light brown; blocky; often with "alligator hide" appearance

Physical Attributes:

Form: single stem

Size: 95.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, rich soils near swamps, in mixed upland hardwood forests and on lower mountain slopes

Soil Texture: medium - coarse

Soil pH: 4.5 - 6.0

Range: Maine; west to New York, extreme southern Ontario, central Michigan, Illinois, central Missouri; south to central Florida; in Mississippi, throughout

Wildlife Value and Uses: fruit eaten by black bear, fox, wood duck, wild turkey, robins, woodpeckers, mockingbirds, brown thrashers, thrushes, flickers, and starlings; foliage, and young sprouts browsed by white-tailed deer; twigs browsed by beaver; cavity and nesting sites for a variety of birds and mammals; good honey tree

Timber Value and Uses: wood used for light, non-splitting woodwork such as in docks and wharves; also used in the manufacture of veneer, containers, crossties, and pallets

Landscaping Info: excellent ornamental plant; straight bole, dense foliage, bright red autumn color

Other Facts: a prized "bee tree"; wood possesses interlocked grain and cannot be split even with wedges or other devices; frayed twigs have been used as toothbrushes



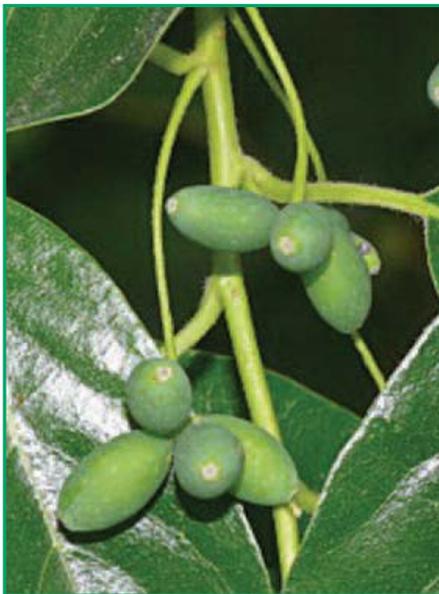
Leaf



Bark



Flower



Fruit



Twig

swamp tupelo

swamp blackgum, blackgum

Nyssa sylvatica var. *biflora* (Walter) Sarg.

Family: **Cornaceae (Nyssaceae)**

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 4.0" long; 1.0" - 2.5" wide

Margin: smooth or irregularly toothed

Apex: acute

Base: rounded or wedge-shaped

Shape: oblanceolate

Color: dark green above; paler below

Surface: lustrous above; glabrous below

Venation: pinnate

Twigs:

Size: slender

Color: grayish brown

Surface: half-round leaf scars; 3 bundle scars; numerous pale lenticels

Buds:

Size: terminal bud 0.25" long; laterals smaller, often conspicuously divergent

Shape: ovoid

Color: reddish brown

Surface: overlapping scales;

Fruit and Flowers:

Drupe: flesh thin; bitter; stone (pit) prominently ribbed

Size: 0.33" - 0.5" long

Shape: ovoid

Color: dark blue

Flower: dioecious; unisexual; greenish yellow; <0.25" long, inconspicuous; staminate on slender hairy stalks in many-flowered clusters; pistillate, in pairs on stouter stalks

Bark: gray to light brown; blocky (alligator skin appearance); "pronounced" buttress swell

Physical Attributes:

Form: single stem

Size: 115.0', mature

Growth Rate: 36.0' maximum @ 20 yrs

Life Span: (> 50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: wet sites in non-alluvial swamps (not river swamps)

Soil Texture: fine - medium

Soil pH: 4.5 - 5.7

Range: primarily limited to Coastal Plain swamps and estuaries from Maryland and southeastern Virginia; south to southern Florida; in Mississippi, mostly in the southern part of the State

Wildlife Value and Uses: seeds eaten by wildlife (bear, raccoon, woodduck, quail, turkey, songbirds); deer browse young trees and sprouts; provides cavity and nesting sites for a wide variety of birds and mammals

Timber Value and Uses: used mainly for lumber, veneer, paper pulp, and to some extent railroad ties; also used for flooring, rollers in glass factories, blocks, gunstocks, and pistol grips

Landscaping Info: excellent ornamental plant; straight bole, shapely crown and attractive autumn foliage

Other Facts: seeds are extracted from ripe fruits picked from the ground - either from standing trees or trees that have been felled



Bark



Leaf



Flower



Fruit



Twig

eastern hophornbeam

ironwood, American hophornbeam

Ostrya virginiana (Miller) K. Koch

Family: Betulaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 5.0" long; 1.5" - 2.5" wide

Margin: finely doubly serrate

Apex: acute to long-tapered

Base: rounded or heart-shaped

Shape: oblong-lanceolate

Color: dull yellow-green above; paler below

Surface: glabrous above, tough, thin; axillary hairy tufts below

Venation: pinnate

Twigs:

Size: slender

Color: yellow-brown to orange-brown

Surface: commonly hairy through first winter; slitlike, unequal length stipule scars; crescent-shaped to semielliptical leaf scars; 3 bundle scars; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.25" long

Shape: lateral buds ovoid, oblique

Color: green; scale margins brown

Surface: several overlapping scales

Fruit and Flowers:

Nut: enclosed in papery sac; in conelike clusters

Size: nut 0.25" long; clusters 1.5" - 2.0" long

Shape: conical sac

Color: brown

Flower: monoecious; unisexual; staminate catkins, 0.5" long, reddish brown; pistillate catkins, on hairy stalks, 0.25" long, light green, tinged with red above the middle

Bark: reddish brown tight, and smooth on young stems; mature, narrow, oblong platelike scales, unattached at both ends

Physical Attributes:

Form: single stem

Size: 45.0' Mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: slopes and ridges; occasionally in bottoms; usually an understory species in association with other hardwoods

Soil Texture: fine - coarse

Soil pH: 4.2 - 7.6

Range: Southeastern Canada and all of the eastern United States; west as far as the eastern Dakotas; south through eastern Texas; in Mississippi, throughout

Wildlife Value and Uses: browsed by white-tailed deer only incidentally --- usually browse more desirable species when available; important winter food for ruffed grouse, and the nuts are a secondary food in the fall; nuts also a preferred food for sharp-tailed grouse and wild turkey --- eaten to a lesser extent by northern bobwhite, red and gray squirrel, cottontails, ring-necked pheasant, purple finch, rosebreasted grosbeak, and downy woodpecker

Timber Value and Uses: considered a weed species throughout most of its range; usually discriminated against in stands managed for timber; high value as a fuelwood product; some use in rehabilitation of disturbed sites

Landscaping Info: routinely commercially available; biggest plus as an ornamental is adaptability to a wide range of soil textures, and shade tolerance

Other Facts: Lakota Native Americans used the blossoms for face painting, and the wood for bow making. The Iroquois used a decoction of the bark as a tuberculosis (consumption) remedy.



Leaf



Young



Bark



Female



Male

Flower



Nut

Fruit



Twig

sourwood

sorrel-tree or lily-of-the-valley tree

Oxydendrum arboreum DC.

Family: Ericaceae

Leaves:

Type: simple, alternate, deciduous

Size: 5.0" - 7.0" long; 1.0" - 3.0" wide

Margin: finely toothed

Apex: acute to long-tapered

Base: narrowly to broadly wedge-shaped

Shape: elliptical

Color: yellowish green above; paler below

Surface: lustrous above; smooth below

Venation: pinnate

Twigs:

Size: slender

Color: green/orange brown/red

Surface: dotted with conspicuous lenticels; single C-shaped bundle scar; zigzag branching

Buds:

Size: terminal bud absent; laterals 0.13" dia.

Shape: globular

Color: reddish brown

Surface: scaly

Fruit and Flowers:

Capsule: 5-celled; many seeded

Size: 0.5" long; seeds minute

Shape: pyramidal

Color: tan/light brown mature

Flower: monoecious; perfect, in long terminal or axillary racemes, 5.0" - 10.0" long; flowers bell-shaped, white, 5-lobed corolla and calyx, 0.33" - 0.5" long

Bark: silver gray to brown; lustrous; deeply furrowed on older trees; interlacing ridges that often divide giving a blocky appearance

Physical Attributes:

Form: single stem

Size: 35.0', mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required), bare root, container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist soils on hillsides, ridges, and gentle mountain slopes as an occasional tree in mixed stands

Soil Texture: medium - coarse

Soil pH: 4.0 - 6.5

Range: southwestern Pennsylvania; west through Ohio to southern Indiana; south to Kentucky, Tennessee, and the Gulf Coast; in Mississippi, primarily southern half and eastern border counties --- no reports in the Delta counties by the NRCS Plants Database

Wildlife Value and Uses: flowers are a preferred source of nectar for honeybees; the honey is widely marketed

Timber Value and Uses: of little value as a timber species

Landscaping Info: striking ornamental potential; generally underutilized by landscapers; brilliant red autumn foliage contrasts with the showy dangling fruit clusters; generally pest free; can be grown in sun or partial shade

Other Facts: leaves have a pleasant acidulous taste; reported to be tonic, diuretic, and useful in treating fevers



Leaf



Very Old

Bark



Flower



Twig



Fruit

**Fall
Color**



royal paulownia (Invasive)

princess tree, empress-tree

Paulownia tomentosa (Thunb.) Sieb. & Zucc.
ex Steud.

Family: Scrophulariaceae

Leaves:

Type: simple, opposite, deciduous

Size: 5.0" - 10.0" long

Margin: cordate to three-lobed

Apex: acuminate

Base: heart-shaped

Shape: heart-shaped

Color: yellow-green above; lighter below

Surface: glabrous

Venation: pinnate

Twigs:

Size: stout

Color: light brown

Surface: numerous lenticels, leaf scar nearly circular, circular arrangement of bundle scars ; hollow pith second year

Buds:

Size: terminal bud lacking; laterals small

Shape: elliptical, sharp-pointed

Color: tan to rust

Surface: pubescent

Fruit and Flowers:

Capsule: 2- to 3-valved; woody; 1000s of small seeds; sticky (immature); dry, persistent when mature; seeds tiny, flat, winged

Size: 1.25 " - 1.75" long; 1.0 - 2.0" dia.;

Shape: ovoid, pointed

Color: green; then brown,

Flower: monoecious; perfect; in terminal panicles, 8.0"-10.0" long; flower violet or blue, tubular, conspicuous

Bark: grayish brown; shallow fissures; thin

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 60.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: (no data)

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, deep, well-drained soils of steep slopes or open valleys, but will germinate and grow on almost any moist, bare soil

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.5

Range: New York, New Jersey; west to Illinois; south through Missouri and Oklahoma to Texas; east to the Atlantic; in Mississippi, scattered throughout

Wildlife Value and Uses: (no data)

Timber Value and Uses: potential for pulpwood; wood highly prized for manufacture of specialty items in Asia, brisk export business of logs to Japan; export market has led to establishment of commercial plantations in this country

Landscaping Info: introduced into this country as an ornamental, and it still retains some popularity for that purpose

Other Facts: Extraordinary growth rate is a major factor in the commercial interest in this species such as, an expectation of sawlogs in 15 yrs, and reports from Russia of height growth to 43.0' in 11 years.



Leaf



Bark



Flower



Fruit



Twig

planertree

water elm

Planera aquatica J. F. Gmel. (1791)

Family: Ulmaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.0" - 3.0" long; 0.5" - 1.0" wide

Margin: serrated

Apex: acuminate

Base: inequilateral

Shape: lanceolate to lanceolate-ovate

Color: dark green above; paler below

Surface: glabrous above; glabrous to slightly hairy below

Venation: pinnate

Twigs:

Size: slender

Color: brown to gray

Surface: hairy young; glabrous older

Buds:

Size: small; no terminal bud; lateral buds short, blunt tipped.

Shape: globular

Color: reddish brown,

Surface: small hairy scales

Fruit and Flowers:

Drupe: nutlike; warty; on short stalks at leaf base. Pubescent with minute and somewhat rigid hairs (hirtellous); seeds ovoid

Size: 0.5" long

Shape: irregular; compressed

Color: brown

Flower: monoecious or polygamous, axillary, in fascicles, very small, with curling, fuzzy stigmas; male flowers in small clusters on last year's twigs; female flowers in the axils of the leaves; sepals: 4-5, small, united below; petals: 0; stamens, 4-5; pistils, ovary superior, on a short stalk; **some flowers may have both stamens and pistils, then only 1 stamen present**

Bark: gray-brown with thin, loose, exfoliating scales; characteristic reddish-brown inner bark

Physical Attributes:

Form: single stem

Size: 50' mature

Growth Rate: 40' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: swamps, streams, lakes, alluvial flood plains, often forming large stands

Soil Texture: fine - medium

Soil pH: 5.0 - 8.5

Range: Texas, Oklahoma, Missouri, and Illinois; east to Kentucky and South Carolina, then south to Florida

Wildlife Value and Uses: source of food for Honey Bees and a number of bird species

Timber Value and Uses: little importance commercially, sometimes harvested for pulp; becomes a pest and is considered a weed needing control in some areas

Landscaping Info: easily found in nurseries, garden stores and other plant dealers and distributors

Other Facts: only species of its genus; fossil relatives have been found in Eurasia; dedicated to Johann Jakob Planer (1743-89), German botanist and professor of medicine



Leaf



Bark



Fruit



Flower



Twig

sycamore

planetree, buttonball tree, button tree

Platanus occidentalis L.

Family: Platanaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 7.0" dia.

Margin: wavy; short-long tapering teeth; 3-5 lobed; broad, shallow sinuses

Apex: long-tapered

Base: flat - heart-shaped

Shape: broadly ovate

Color: light green above; paler below

Surface: glabrous above; pubescent along veins below

Venation: palmately lobed

Twigs:

Size: slender

Color: orange-brown 1st year, then gray

Surface: large distinct bundle scars (5-9); leaf scars, horseshoe-shaped, surround bud; stipule scars surround twig; zigzag branching

Buds:

Size: terminal absent; laterals 0.25" - 0.38" long

Shape: conic, slightly curved, divergent

Color: brown

Surface: single resinous scale

Fruit and Flowers:

Ball: multiple of Achene

Size: 1.0" dia.;

Shape: globose; Achene elongated, obovoid, blunt apex; seed oval

Color: ball brown; seed yellow-brown

Flower: monoecious; unisexual; minute, in dense, stalked heads; staminate heads yellow-green, axillary, 3-6 long-pointed petals; pistillate heads rusty to dark red, on long terminal stalks, 3-6 large petals

Bark: red-brown; older trees light greenish gray to nearly white on upper bole; exfoliated outer layers; overall mottled appearance

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 65.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, rich soil; margins of streams and lakes; rich bottoms

Soil Texture: medium - coarse

Soil pH: 4.9 - 6.5

Range: Maine; west through New York to Ontario, Michigan, central Iowa, and eastern Nebraska; south to Texas; east to northern Florida; in Mississippi, throughout

Wildlife Value and Uses: the Texas Plant Information Database (TIPID) gives American sycamore an overall wildlife index value of only 3.3 out of a possible 10.0; rated as "Good" in only two categories: nongame bird cover, and small mammal cover; only "Fair" in all food categories

Timber Value and Uses: grown in short-rotation plantations primarily for pulp; also used for rough lumber; has been used for butcher's blocks, furniture, veneer, interior trim, boxes, crates, flooring, particleboard, and fiberboard; recommended for planting on all types of strip-mined land, and useful in rehabilitation of various sites with saturated soils

Landscaping Info: widely used as a street tree; rapid growth; tolerant of short-term inundation; fairly disease free; somewhat brittle limbs; subject to wind and ice damage

Other Facts: used by Native Americans for a variety of medicinal purposes (cold and cough remedies, and dietary, dermatological, respiratory, gynecological, and gastrointestinal aids)



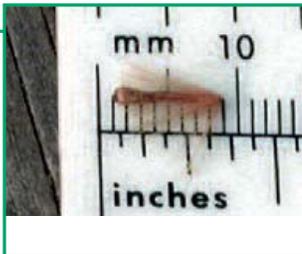
Leaf



Bark



Flower



Fruit



Twig

eastern cottonwood

southern cottonwood, Carolina poplar,
eastern poplar, necklace poplar

Populus deltoides Bartr. ex Marsh.

Family: Salicaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 5.0" long; 3.0" - 5.0" wide

Margin: coarsely crenate-serrate

Apex: acute

Base: heart-shaped

Shape: triangular

Color: light green above; paler green below

Surface: lustrous above; glabrous below

Venation: pinnate

Twigs:

Size: stout

Color: yellowish brown

Surface: prominent lenticels, conspicuously enlarged at nodes

Buds:

Size: 0.75" long (6-7 scales)

Shape: ovoid, acute

Color: lustrous yellow-green

Surface: resinous

Fruit and Flowers:

Capsule: on few-fruited, pendent stalks,
8.0" - 12.0" long

Size: 0.25" long

Shape: conical

Color: green

Flower: dioecious; unisexual; both sexes in
catkins, rusty reddish green, 2.0" - 4.0" long;
apetalous; no sepals; staminate, red anthers

Bark: yellow-green, smooth, and thin when
young; becoming thick and gray with broad
flattened ridges and deep furrows with age

Physical Attributes:

Form: single stem

Size: 190.0', mature

Growth Rate: 80.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification
required); bare root; container; cuttings,

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist alluvial soils; near streams and
lakes; floodplain forests where periodic
inundation occurs; also grows well on good
upland sites

Soil Texture: fine - coarse

Soil pH: 5.2 - 7.3

Range: western boundary not well defined
because eastern cottonwood intergrades with
var. occidentalis, plains cottonwood, and
altitude is the determining factor; southern
Quebec; westward into North Dakota and
southwestern Manitoba; south to central Texas;
east to northwestern Florida and Georgia; in
Mississippi, throughout

Wildlife Value and Uses: seedlings and
young trees browsed by rabbit, deer, and
cattle; sapling and pole-size trees cut by beaver
for food and for dam construction --- resulting
inundation can cause mortality

Timber Value and Uses: lightweight, rather
soft wood used primarily for core stock in
manufacturing furniture, and for pulpwood; one
of the few hardwood species that is planted and
grown specifically for these purposes; also used
in the manufacture of caskets and blinds

Landscaping Info: advantages are rapid
growth, tolerance of a variety of soil textures,
tolerance of wet sites, handsome leaf shape
and yellow fall color; unattractive characteristics
include brittle branches, extensive root system
that may cause plumbing and drainage
problems; seed from female trees can be
messy

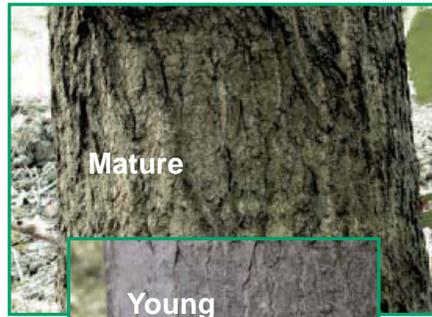
Other Facts: rootwood once used as friction
wood for fire building by Native Americans



Leaf



Fruit



Bark



Flower



Twig

swamp cottonwood

black cottonwood

Populus heterophylla L.

Family: Salicaceae

Leaves:

Type: simple, alternate, deciduous

Size: 4.0" - 8.0" long; 3.0" - 5.0" wide

Margin: irregularly serrate, glandular teeth

Apex: gradually narrowed, pointed, or rounded

Base: rounded or heart-shaped

Shape: ovate

Color: dark green above, pale green below

Surface: glabrous above; smooth below

Venation: pinnate

Twigs:

Size: slender or stout

Color: brownish gray

Surface: glabrous; leaf scars broadly triangular; 3 bundle scars; prominent lenticels

Buds:

Size: 0.63" long; laterals smaller

Shape: broadly ovoid

Color: bright reddish brown

Surface: slightly resinous; exposed scales (usually 3)

Fruit and Flowers:

Capsule: 2- or 3-valved

Size: 0.5" long; seeds minute

Shape: ovoid, acute; seeds obovoid

Color: brown; seeds dark red or brown, tufts of white hair

Flower: dioecious; unisexual; both sexes in catkins, greenish white - cream colored, 1.0" - 3.0" long; staminate, large dark red anthers; pistillate, greatly enlarged stigmas

Bark: reddish brown; deep fissures; narrow, flattened, superficially scaly ridges

Physical Attributes:

Form: single stem

Size: 100.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: lowland forests of the southern coastal plains; common constituent of swamps; usually mixed with other species

Soil Texture: fine - medium

Soil pH: 4.6 - 5.9

Range: southern Connecticut to northern Florida; through the Gulf states to western Louisiana; north in the Mississippi drainage basin to southern Illinois, Indiana, and Ohio; in Mississippi, reported by NRCS Plants Database in only 7 counties (Quitman, Leflore, Jefferson, Wilkinson, Covington, Perry, and Pearl River)

Wildlife Value and Uses: does not produce important wildlife food

Timber Value and Uses: no commercial value to forest industry; large trees often are crooked and short boled; important to flood or erosion control only in very small, localized areas; a closely related species, eastern cottonwood, is chosen for planting because it outperforms swamp cottonwood on all except the wettest sites; occasionally used for inexpensive lumber

Landscaping Info: rarely cultivated for ornament

Other Facts: An extract of the shoots can be used as a rooting hormone for all types of cuttings; extracted by soaking the chopped up shoots in cold water for a day



Bark



Flower



Leaf



Twig

Chickasaw plum

Prunus angustifolia Marsh.

Family: Rosaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" long; 1.0" wide

Margin: finely serrate

Apex: apiculate

Base: cuneate

Shape: lanceolate to oblong-lanceolate

Color: bright green above; paler below

Surface: lustrous above; dull below

Venation: pinnate

Twigs:

Size: slender

Color: red when young; dull with age

Surface: glossy

Buds:

Size: false terminal bud; 0.06" long

Shape: acuminate

Color: chestnut brown scales

Surface: glabrous

Fruit and Flowers:

Drupe: edible; large stone

Size: 0.5" - 0.75" dia.

Shape: globose or subglobose

Color: yellow or red

Flower: monoecious; perfect; in 4- to 5-flowered umbels; white; 5 petals; 0.33" - 0.5" dia.

Bark: dark reddish brown; slightly furrowed; scaly

Physical Attributes:

Form: single or multiple stem

Size: 12.0' - 25.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: sandy soil; usually common on disturbed sites such as roadsides, fence rows, and old fields

Soil Texture: medium - coarse

Soil pH: 5.0 - 7.5

Range: Oklahoma and Texas; north to New Jersey; south to Florida; west to Louisiana; in Mississippi, scattered throughout

Wildlife Value and Uses: fruit eaten by deer, bear, raccoon, squirrel and birds

Timber Value and Uses: none; has been utilized for erosion control due to its thicket forming habit

Landscaping Info: easily grown from seed or transplant; grown occasionally with a single leader and used as a street tree; usually seen with a multiple trunk planted as a specimen, or in a median strip, or planted on 15 to 25-foot-centers along the entrance road to a commercial property; tends to sprout from the base of the trunk, forming multistemmed thickets --- form most commonly seen in its native habitat on old fields and on other disturbed sites; makes a nice addition to the shrub border in the back yard; well suited for planting around the patio or deck although it does not form a neat crown and looks somewhat unkempt during the winter

Other Facts: fruits can be eaten raw or cooked; often prepared as jelly or preserves; sun dried by Native Americans for winter consumption; believed brought from the Southwest to the southeastern states by the Chickasaw Indians and cultivated for its fruit prior to the arrival of the colonists



Leaf



Bark



Flower



Fruit



Twig

Carolina laurelcherry

laurel cherry, cherry laurel

Prunus caroliniana (Ait.) Mill.

Family: Rosaceae

Leaves:

Type: simple, alternate, persistent

Size: 2.0" - 5.0" long; 0.75" - 1.5" wide

Margin: entire or remotely serrate - somewhat wavy

Apex: acute, short distinct point

Base: wedge-shaped

Shape: oblong-lanceolate

Color: dark green above; paler below

Surface: lustrous above; glabrous below

Venation: pinnate

Twigs:

Size: slender

Color: red to grayish brown

Surface: glabrous; scattered pale lenticels

Buds:

Size: 0.13" long

Shape: acuminate

Color: scales chestnut brown, narrow, pointed

Surface: glabrous

Fruit and Flowers:

Drupe: lustrous; dry

Size: 0.5" dia.

Shape: oblong; stone ovoid, acute, rounded base

Color: black to blue-black

Flower: monoecious; perfect; in racemes on short axillary stalks; petals, 5; white - orangish center; conspicuous

Bark: gray; thin; smooth; rough with age

Physical Attributes:

Form: single or multiple stem

Size: 30.0' - 40.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: rich, moist soils

Soil Texture: medium - coarse

Soil pH: 5.0 - 7.5

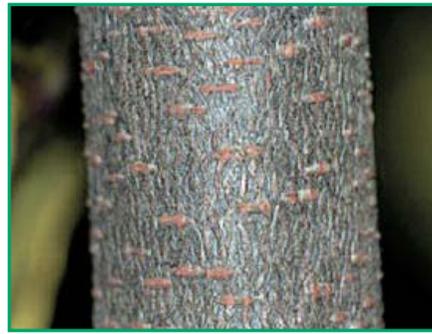
Range: Gulf and Atlantic coastal plains; North Carolina; south to Florida; west to Louisiana and Texas; in Mississippi, reported by the NRCS Plants Database primarily in the southern half of the State (13 counties)

Wildlife Value and Uses: fruit used by many species of wildlife; overall wildlife rating by the Texas Plant Information Database (TPID) of 8.2 on a scale of 1 to 10 where (10 = Highest); "Excellent" food and cover for upland game and non-game birds and small mammals; "Good" food and cover for large mammals; and "Fair" food and cover for water fowl

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: handsome and hardy ornamental; dwarfed cultivars used in low plantings; generally available commercially

Other Facts: **Caution** injured and wilted leaves contain hydrocyanic acid which can be fatal when ingested by humans and most mammals; young leaves are browsed by deer with no problems



Bark



Leaf



Flower



Mature



New

Fruit



Twig

black cherry

wild black cherry, rum cherry, and mountain black cherry

Prunus serotina Ehrh.

Family: Rosaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 6.0" long; 1.0" - 1.5" wide

Margin: finely serrate

Apex: abruptly sharp-pointed to long-tapered

Base: acute to wedge-shaped

Shape: variable; oval, oblong, lance-shaped

Color: dark green above; paler below

Surface: shiny, glabrous above; dense reddish hairs on the midrib below

Venation: pinnate

Twigs:

Size: slender

Color: new growth coated with a bloom; becoming reddish brown

Surface: glabrous; rigid; semicircular leaf scars; 3 bundle scars

Buds:

Size: 0.25" long

Shape: obtuse

Color: dark brown

Surface: several broad, overlapping scales

Fruit and Flowers:

Drupe: edible; juicy

Size: 0.33" long; 0.5" dia.

Shape: globular

Color: dark purple to black

Flower: monoecious; perfect; in many-flowered racemes, 4.0" - 6.0" long; petals, 5; white; conspicuous; outer floral envelope (calyx) 5-lobed, persistent

Bark: reddish brown, smooth; thin; conspicuous horizontal lenticels when young; becoming dark reddish black and fissured with thin scaly plates

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: wide array of sites; most commonly on deep, rich, moist, soils in mixed stands with oaks, ashes, hickories and yellow poplar; less commonly on sandy soils; with conifers in the Adirondacks

Soil Texture: medium - coarse

Soil pH: 5.0 - 7.5

Range: widespread in eastern North America, including Canada, Mexico, and Guatemala; in the U.S., Minnesota and North Dakota; southward to Florida; west to east Texas, with outlying populations in central Texas, west Texas, New Mexico, and Arizona; in Mississippi, throughout the State except generally absent in the Mississippi River Delta

Wildlife Value and Uses: fruits are important food for numerous species of passerine birds, game birds, and mammals, including the red fox, black bear, raccoon, opossum, squirrel, and rabbit

Timber Value and Uses: one of the most valued cabinet and furniture woods in North America; also used for paneling, interior trim, veneers, handles, crafts, toys, and scientific instruments; wood is a rich reddish brown color and is strong, hard, and close-grained

Landscaping Info: perfectly suited for the woodland seminatural garden; can be too messy in a more formal setting, dropping its abundant and juicy fruits in summer, then leaves in autumn, then producing many seedlings the following spring

Other Facts: fruit is often used in wine making, flavoring for liqueurs and brandies, jellies or preserves; extracts of the inner bark used to make wild cherry cough syrup

One of the common names "rum cherry" originated from a drink called cherry-bounce concocted from black cherry fruit and rum or brandy



Leaf



Bark



Fruit



Flower

WARNING

Cyanide compounds in the twigs and older, wilted leaves are toxic (and possibly lethal) to horses and cattle. In the spring of 2001 hundreds of thoroughbred horse foals were mysteriously miscarried or stillborn. The problem was traced to Eastern Tent Caterpillars that had fed on the many black cherry trees in the Lexington, Kentucky horse farm region. The caterpillars concentrated the toxic cyanide compounds present in black cherry foliage. Their feces contaminated the famous bluegrass pastures and was ingested by the grazing mares.



Twig

Carolina buckthorn

Rhamnus caroliniana Walter

Family: Rhamnaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.5" - 6.0" long; 1.0" - 2.0" wide

Margin: obscurely toothed; teeth rounded to sharp

Apex: tapered to acute

Base: rounded or tapered

Shape: oblong to broadly elliptical

Color: dark yellow-green above; paler below

Surface: shiny above; smooth to occasionally hairy below

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown young; gray mature

Surface: silky hairs or whitish bloom young; smooth and dotted with lenticels mature; leaf scars crescent to elliptical; 3 prominent bundle scars

Buds:

Size: terminal 0.25" long

Shape: elongated; laterals ovoid

Color: rusty brown

Surface: naked; densely hairy

Fruit and Flowers:

Drupe: leathery; often depressed at apex; bony pits, rounded on the back

Size: 0.33" diameter

Shape: nearly spherical

Color: green to yellow to red to black

Flower: monoecious; perfect; axillary; 5 greenish white petals, <0.25" dia; in few-flowered clusters

Bark: gray; thin; smooth or with shallow furrows; occasionally with dark blotches

Physical Attributes:

Form: single or multiple stem

Size: 40.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); cuttings

Other: no resprout/coppice potential

Habitat and Ecology:

Site: most abundant on calcareous soils along streams and in rich bottom lands; also found frequently in thickets, hillsides and ridges, or open land

Soil Texture: fine to coarse

Soil pH: 4.0 - 9.0

Range: Virginia; south to western Florida; west to eastern Kansas, Oklahoma, and Texas; in Mississippi, reported by the NRCS Plants Database in 26 counties, primarily in the southern half of the State --- a few counties in the northeast quarter of the State

Wildlife Value and Uses: attractive to bees, butterflies and birds; berries eaten by songbirds and other wildlife

Timber Value and Uses: no commercial value in the timber industry

Landscaping Info: grown for foliage; good Fall color; requires pruning or training to produce a small tree; adaptable to a wide range of soil textures and pH

Caution: all parts of plant are poisonous if ingested

Other Facts: leaf has foul smell when crushed



Leaf



Bark



Fruit



Flower



Twig

black locust

false acacia, yellow locust

Robinia pseudocacia L.

Family: Fabaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 8.0" - 14.0" long; 7-19 leaflets, 0.5" - 2.0" long; 0.5" - 1.0" wide

Margin: entire

Apex: abrupt tip or notched

Base: rounded or broadly wedge-shaped

Shape: elliptic or oval

Color: dull blue-green above; paler below

Surface: glabrous above; slightly pubescent midrib below

Venation: pinnate

Twigs:

Size: stout; paired thorns at nodes

Color: greenish brown

Surface: glabrous; somewhat angular; zigzag

Buds:

Size: terminal buds absent; laterals sunken under leaf scars

Shape: leaf scars kidney-shaped

Color: (see size)

Surface: naked

Fruit and Flowers:

Legume: flattened, slightly curved, on a thick, short stalk; seeds kidney-shaped, compressed, mottled brown, 4-8 per pod

Size: 2" - 4" long; 0.5" wide

Shape: oblong-linear

Color: brown

Flower: monoecious; perfect; irregular; in drooping racemes, 4.0" - 5.0" long; individual flowers white, 1.0" long; aromatic

Bark: gray, brown, to nearly black; heavy, rounded, scaly, reticulate ridges; deeply furrowed

Physical Attributes:

Form: single stem

Size: 60.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: adapted to a wide variety of soil types; grows best on deep, well-drained soils derived from limestone

Soil Texture: fine - coarse

Soil pH: 4.6 - 8.2

Range: native range follows the Appalachian Mountains from Pennsylvania to Alabama; a secondary population exists primarily in the Ozark Mountains; in Mississippi, north and central portions of the State

Wildlife Value and Uses: limited value in wildlife food plots, but provides excellent cover when planted in spoil areas

Timber Value and Uses: extensively utilized for fencing, mine timbers, and landscaping ties; used for decking and fences where preservatives are restricted; good erosion control plant on critical and highly disturbed areas due to its ease of establishment, rapid early growth and spread, and soil building abilities

Landscaping Info: has often been planted as an ornamental because of its showy aromatic flower; characteristics discouraging recommendation for its use in landscaping include: a shallow aggressive root system, potential for spread by root suckers, elimination of other plants through competition, susceptibility to insect, wind, and ice damage, and large, stout stipular spines (thorns) at each node

Other Facts: considered noxious and/or invasive in some states; because of use in Asia and eastern Europe, it is the most widely planted tree in the world



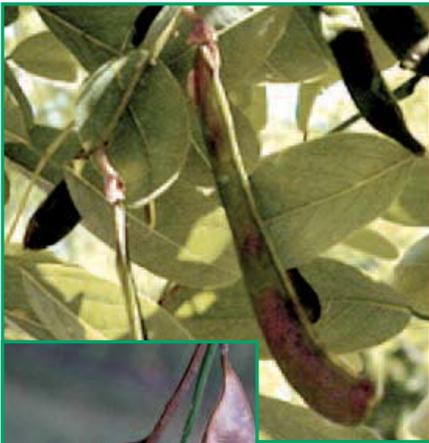
Leaf



Bark



Flower



Fruit



Twig

black willow

swamp willow, Goodding willow,
Dudley willow, sauz (Spanish).

Salix nigra Marsh.

Family: Salicaceae

Leaves:

Type: simple, alternate, deciduous

Size: 3.0" - 6.0" long; 0.25" - 0.75" wide

Margin: finely glandular-serrate

Apex: long-tapered

Base: rounded

Shape: lanceolate

Color: yellow green above; paler below

Surface: glabrous above; glabrous below

Venation: pinnate

Twigs:

Size: slender; brittle

Color: reddish brown

Surface: pubescent at first, becoming glabrous;

V-shaped leaf scars; 3 bundle scars; slitlike stipule scars

Buds:

Size: terminal bud absent; laterals 0.13" long

Shape: laterals appressed

Color: reddish brown

Surface: one cap-like scale

Fruit and Flowers:

Capsule: minute seeds with cottony tufts

Size: <0.25" long

Shape: ovate or conic; 2-valved

Color: green (young); olive to reddish brown (mature)

Flower: dioecious; each sex in terminal catkins, yellowish green, 3.0" - 4.0" long; staminate catkins erect; pistillate catkins drooping

Bark: light gray to nearly black; moderate fissures; forking ridges; long scaly plates

Physical Attributes:

Form: single or multiple stem

Size: 100.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: low

Anaerobic: high

Propagation: bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist alluvial banks of streams and lakes; wet bottom lands; permanent swamps

Soil Texture: fine - coarse

Soil pH: 4.8 - 8.0

Range: found throughout the eastern United States and adjacent parts of Canada and Mexico; southeastern Minnesota; southwest to central Texas; east through the Florida panhandle; in Mississippi, throughout

Wildlife Value and Uses: Texas Plant Information Database (TPID) overall food and cover index for wildlife is only 4.35 out of a possible 10.0; the only "Good" rating was for non-game bird food and cover; a "Fair" rating was given for large and small mammals food and cover; honeybee attractant

Note:

willow stands used extensively by some neotropical migrating birds

Timber Value and Uses: most important American willow; though not strong or durable, wood is subject to little or no twisting and checking while drying; wood is soft and flexible; used for weaving baskets, wicker furniture, paneling, and caskets; primary other use is bank stabilization/erosion control

Landscaping Info: recommended method of propagation is from cuttings; no dormancy period for seed, and germination period occurs within 12-24 hours after seed fall

Other Facts: bark contains salicylic acid present in aspirin; used by Native Americans as an infusion to alleviate fever and pain just as aspirin is used for that purpose today; once used extensively for artificial limbs, because it is lightweight, doesn't splinter easily, and holds its shape well



Leaf



Bark



Flower



Fruit



Twig

sassafras

Sassafras albidum (Nutt.) Nees

Family: Lauraceae

Leaves:

Type: simple, alternate, deciduous; aromatic when crushed

Size: 4.0" - 6.0" long; 2.0" - 4.0" wide

Margin: entire

Apex: acute

Base: wedge-shaped

Shape: three shapes on a single tree: (1) entire and elliptical, (2) mitten-shaped either side, (3) 3-lobed; leaves on mature trees are normally entire

Color: yellow green above; pale green below

Surface: glabrous above; pubescent below; when young, commonly hairy along the veins

Venation: pinnate

Twigs:

Size: slender

Color: greenish 1st yr; then reddish brown

Surface: glaucous bloom 1st yr; then smooth; leaf scars raised; traverse bundle scar often divided into 3 sections

Buds:

Size: terminal bud 0.25" dia.; laterals smaller

Shape: globular; 3-5 scales

Color: reddish brown

Surface: scales keeled

Fruit and Flowers:

Drupe: thin flesh; pit light brown

Size: 0.5" long

Shape: ovoid

Color: dark blue

Flower: dioecious; unisexual; in racemes from terminal buds; sepals and petals similar; yellow-green; 0.5" long

Bark: dark green young; gray to reddish brown on older stems; narrow ridges, moderate fissures; aromatic

Physical Attributes:

Form: single stem

Size: 75.0', mature

Growth Rate: 24.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; sprigs

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry, sandy soils, usually in association with other species; commonly along fence rows and in abandoned fields

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.2

Range: widely distributed throughout the eastern and southern U. S. from Maine to Iowa; south to Florida; west to Texas; in Mississippi, throughout

Wildlife Value and Uses: fruits readily eaten by wildlife and birds (quail, wild turkey, kingbirds, crested flycatchers, mockingbirds, sapsuckers, pileated woodpeckers, warblers and phoebes); fruit, bark and wood eaten by black bear, beaver, rabbit and squirrel; twigs and foliage browsed by white-tailed deer

Timber Value and Uses: cultivated since 1630 for its leaves, bark, and wood; heartwood is orange-brown, course-grained, soft but durable, and used for purposes requiring lightwood, such as boat construction; also used for poles, posts, and crossties; small quantities used for cooperage and cabinetry

Landscaping Info: valued for fragrant spring blooms, interesting horizontal branching pattern, and striking fall color; small trees; medium to fast growing; work well for landscape use as specimen trees and mass plantings; easy to culture and require little care; adapted to dry, sandy soils, but do best in moist, fertile soils in partial to full shade

Other Facts: could properly be dubbed the "everything tree"; used by Native American tribes for numerous purposes ranging from refreshment, to tapeworms, "overfatness", and an emetic purification after funeral rituals; a "spring tonic" from the roots and twigs brewed by Colonials and sold for 7-8 cents a pint; twigs, water and molasses brewed for beer by South country folk; crushed dried leaves used to thicken pottage in Louisiana ---today, "File", made from the ground roots or leaves, is an important spice used in Cajun foods, such as gumbo; oil of sassafras is used in the manufacture of flavoring extracts, scented soaps, perfumes, and certain pharmaceutical compounds



Leaf



Bark



Flower



Fruit



Twig

Carolina basswood

linn, American linden

Tilia americana L. var. *caroliniana* (Miller)

Castigl.

Family: Tiliaceae (Malvaceae)

Leaves:

Type: simple, alternate, deciduous

Size: 2.5" - 4.5" long; 2.5" - 5.0" wide

Margin: serrate or coarsely dentate

Apex: abruptly long pointed

Base: oblique and truncate or cordate

Shape: cordate; ovate

Color: dark yellow-green above; pale green below

Surface: lustrous above; rusty brown woolly pubescence below

Venation: pinnate

Twigs:

Size: slender

Color: reddish brown

Surface: glabrous to slightly pubescent

Buds:

Size: 0.25" long

Shape: ovoid, acute

Color: red

Surface: glabrous, rarely pubescent

Fruit and Flowers:

Nutlet: clustered on the end of peduncle attached to a bract

Size: 0.13" - 0.25' dia.

Shape: subglobose, ellipsoid or obovoid

Color: tan to gray and hairy

Flower: monoecious; perfect; in 8- to 15-flowered cymes hanging on a long stalk from a strap shaped green bract; flower, pale yellow, ciliate at apex, fragrant, 0.25" long

Bark: gray; furrowed; scaly ridges

Physical Attributes:

Form: single stem

Size: 80.0', mature

Growth Rate: 50.0' maximum @20 yrs

Life Span: (> 50 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist upland sites; level to gently sloping

Soil Texture: fine - medium

Soil pH: 6.5 - 7.0

Range: North Carolina south to Florida; west to Texas; north to Oklahoma, Missouri, and Kentucky; in Mississippi, reported by the NRCS Plants Database in Desoto, Lee, Grenada, Jefferson, Amite, Adams, and Forrest Counties

Wildlife Value and Uses: fair food and cover value for small and large mammals; high cavity value for cavity-nesting animals, including wood duck, pileated woodpecker, other birds, and small mammals

Timber Value and Uses: valued for its soft, light, easily worked wood, especially for turned items and hand carving; other uses include boxes, toys, woodenware, drawing boards, veneer, venetian blinds, excelsior, and pulp

Landscaping Info: used as an ornamental and a shade tree; yellow fall color; fruit persistent on tree; soil enriching species --- pulls calcium and magnesium from the soil profile and deposits it in leaf litter

Other Facts: sap used by Native Americans to make syrup; leaves eaten; cambium used to make soups and breads; leaf and bark extracts used as medicinals; freshly cut bark as an emergency wound bandage; still highly valued as a source of the "finest of the fine" honeys



Bark



Leaf



Flower



Fruit



Twig

white basswood

bastwood, beebtree

Tilia americana L. var. *heterophylla* (Vent.)
Loud.

Family: Tiliaceae (Malvaceae)

Leaves:

Type: Simple, alternate, deciduous; 2-ranked
Size: 3.0" - 5.5" long; 2.0" - 3.0" wide
Margin: finely glandular and dentately toothed
Apex: long-tapered
Base: obliquely heart shaped or flattened
Shape: ovate
Color: dark green above; lighter below
Surface: glabrous above; covered with thick, white to pale-brown wooly hairs below
Venation: pinnate

Twigs:

Size: slender
Color: reddish brown or yellowish brown
Surface: zigzag branching; leaf scars half-round to crescent shaped; scattered bundle scars; stipular scars prominent

Buds:

Size: terminal bud absent; laterals 0.25" long
Shape: inequilateral
Color: dark red to green
Surface: 2 outer scales, hairy at margin

Fruit and Flowers:

Nutlet: leathery - woody, with wooly hairs
Size: 0.33" long,
Shape: ellipsoidal
Color: rusty brown
Flower: monoecious, perfect; in 10- to 20-flowered pubescent corymbs; distinctive leafy bract, 4.0" - 6.0" long, subtends cluster; flower, 5 petals, yellow, 0.25" long

Bark: gray-green and smooth when young; dark gray to gray-brown and deeply furrowed into narrow scaly ridges on older trees

Physical Attributes:

Form: single stem
Size: 90.0', mature
Growth Rate: 50.0' maximum @20 yrs
Life Span: (>50 yrs)
Tolerances:
Shade: high
Drought: low
Fire: low
Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, well-drained, gentle slopes in mixed hardwood forests; rare on the coastal plains

Soil Texture: medium

Soil pH: 5.7 - 7.2

Range: southwestern Pennsylvania; west into southern Ohio, Indiana, and Illinois to Missouri; south to northern Arkansas; east to northeastern Mississippi, Alabama, northwestern Florida, and Georgia; and north to Maryland; most common in the mixed mesophytic forests of the Cumberland Plateau, where it is second only to sugar maple (*Acer saccharum*) in frequency; in Mississippi the NRCS Plants Database reports verification only in Tishomingo, Washington, and Forrest Counties

Wildlife Value and Uses: preferred browse for white-tailed deer; flowers visited by honeybees for nectar; easily decayed wood produces a disproportionate number of cavities; used by cavity-nesting animals including wood ducks, pileated woodpeckers, and other birds and small mammals

Timber Value and Uses: wood is soft and light; valued for hand carving, cooperage, boxes, veneer, excelsior, and pulp; fibrous inner bark ("bast") has been used as a source of fiber for rope, mats, fish nets, and woven baskets

Landscaping Info: desirable ornamental tree; fragrant, cream colored flowers in May and June; especially attractive to bees (honey from the flowers considered a delicacy by beekeepers and honey connoisseurs); may not be a good choice for those allergic to bee venom or who simply are not fans of the bee

Other Facts: Native Americans made thread and tangle-free rope from the inner bark, and stitched wounds with the thread. The Iroquois used the sapwood to carve elaborate masks.



Leaf



Bark



Flower



Fruit



Twig

**Chinese tallowtree (Invasive)
popcorn tree, chicken tree, and Florida
aspen**

Triadica sebifera L.

Family: Euphorbiaceae

Leaves:

Type: simple, alternate, deciduous; petioles 1.0" - 4.0" inches long, with 2 swollen glands on the upper side immediately below the leaf blade

Size: 1.4" - 3.3" long; 1.4" - 3.5" wide

Margin: entire

Apex: acuminate

Base: rounded to truncate

Shape: rhombic ovate

Color: dark green above; paler below

Surface: glabrous above; below

Venation: pinnate; yellow and conspicuous on both faces

Twigs:

Size: slim; 0.6" - 3.5" long; two prominent glands just below the leaf

Color: lime green to grey; brownish lenticels

Surface: waxy

Buds:

Size: no data

Shape: triangular; lateral buds below fruit clusters

Color: reddish brown

Surface: naked

Fruit and Flowers:

Capsule: 3-lobed; 3-valved

Size: 0.5" - 0.75" wide; seed 3/capsule, 0.3" long

Shape: round

Color: white; wax-coated

Flower: monoecious; drooping spikes, 2.0" - 8.0" long; many tiny yellow pistillate imperfect flowers; blooms April through June

Bark: reddish-brown with wide fissures and narrow ridges; often peels off vertically in narrow strips

Physical Attributes:

Form: single stem

Size: 24.0' - 35.0' mature; exceptions @ 60.0"

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: high

Fire: high

Anaerobic: high

Propagation: seed (no cold stratification required); cuttings, layering, top-grafting

Other: resprout/coppice potential

Habitat and Ecology:

Site: commonly found in bottomlands, old fields, coastal prairies, and riparian areas; can become established in shaded areas and is capable of spreading into undisturbed, as well as, disturbed areas

Soil Texture: fine - coarse

Soil pH: 3.9 - 8.5

Range: reported in significant quantities in 9 states; Alabama, Arkansas, Georgia, Florida, Louisiana, Mississippi, North Carolina, South Carolina, and Texas; major limiting factors checking range expansion --- freezing temperatures, extremely arid soils, and high salinity

Wildlife Value and Uses: CAUTION:

Leaves, fruit, and sap toxic to humans and many animals, including cattle.

sequential large-scale ecosystem modification by replacement of native vegetation, hence reduction of native species diversity, and consequently negative effects on wildlife (Bruce et al. 1995; Randall & Marinelli 1996)

Timber Value and Uses: wood is white and close-grained; used for furniture making and incense; replaces native communities with virtually monospecific stands; recently regarded as a promising biomass candidate in the Gulf coast region of the United States, because of its ability to re-sprout, its rapid growth rate, and its drought and salt tolerance (Scheld & Cowels 1981)

Landscaping Info: educating the public about the consequences of using tallowtree as an ornamental and removing it from nurseries is an important step to reduce seed sources; nurseries can assist by offering lists of native species that are good substitutes

Other Facts: long suspected of producing allelopathic compounds that inhibit germination of other species. However, recent work by Conway et al. (2002) indicates that, rather than specifically inhibiting the establishment of other species, Chinese tallow promotes its own growth and survival through changes in soil nutrient availability or release cycles



Bark



Leaf



Flower



Fruit



Twig

Hercules-club

toothache tree, prickly ash

Zanthoxylum clava-herculis L.

Family: Rutaceae

Leaves:

Arrangement: odd-pinnately compound, alternate, tardily deciduous-persistent

Size: 5.0" - 9.0" long; leaflets (7 - 9), 10" - 2.5" long

Margin: crenate

Apex: acute to long-tapered

Base: unequally rounded to wedge-shaped

Shape: ovate to scythe-shaped

Color: bright green above; paler below

Surface: lustrous above; somewhat pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: brown; becoming gray-brown to yellow-brown 2nd season

Surface: brownish pubescence 1st season; smooth by 2nd season; leaf scars broadly triangular to heart-shaped; bundle scars (3); armed with straight or curved chestnut brown spines, 0.5" long or greater

Buds:

Size: small

Shape: obtuse

Color: dark brown - black

Surface: smooth, indistinctly scaly

Fruit and Flowers:

Capsule: wrinkled or roughened

Size: 0.25" long; single seed

Shape: ovoid to nearly globular

Color: brown; seed black, shiny

Flower: dioecious; in terminal cymose clusters; petals 5, oval, light green; stamens 5, longer than petals

Bark: light gray, conical, corky ridges, 1.0" or greater dia.

Physical Attributes:

Form: single stem

Size: 40.0', mature

Growth Rate: 40.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required), bare root, container

Other: resprout/coppice potential

Habitat and Ecology:

Site: sandy soils near the coast, near streams in low fertile valleys, and riverbanks in association with other hardwoods

Soil Texture: fine - medium

Soil pH: 5.0 - 8.0

Range: Atlantic Coastal Plain; Virginia, west to Texas, and north to Arkansas; NRCS Plants Database also includes Oklahoma

Wildlife Value and Uses:

moderate palatability for browse animals; seeds eaten by granivorous birds; attracts butterflies; larval host and/or nectar source for the Giant Swallowtail butterfly (*Papilio cresphontes*)

Timber Value and Uses: no commercial value; rated high as fuelwood

Landscaping Info: not generally thought of as an ornamental, although it has aromatic, showy flowers

Other Facts: called "toothache tree" because chewing the bark or leaves produces numbness of the mouth and tongue, thus reducing the pain of a toothache --- the bark contains an analgesic



Leaf



Bark



Form



Flower



Fruit



Twig

hazel alder

common alder, tag alder

Alnus serrulata (Aiton) Willd.

Family: Betulaceae

Leaves:

Type: simple, alternate, deciduous; stipules persistent

Size: 2.0" - 4.0" long

Margin: doubly serrate

Apex: obtuse to rounded

Base: broadly to narrowly cuneate

Shape: obovate to elliptical

Color: dark green above, paler beneath

Surface: glabrous above; glabrous to finely hairy beneath

Venation: pinnate; sunken veins

Twigs:

Size: slender

Color: reddish-brown; 3-angled-pith

Surface: terminal bud absent; young twigs hairy

Buds:

Size: 0.12" - 0.24"

Shape: stalked, plump; ellipsoid to obovoid; apex mostly rounded; scales 2, equal, valvate, moderately to heavily resin-coated

Color: green to maroon

Surface: 2 to 3 red-purple scales (resemble a match head)

Fruit and Flowers:

Nutlet: cone-like, woody; scaled; each scale encloses a tiny, winged seed; ripens in fall; very persistent.

Size: 0.5" long; 0.5" - 0.75" diameter

Shape: ovate

Color: dark brown

Flower: monoecious, Staminate catkins 1.6 -2.4" long; Pistillate catkins 0.5" long; reddish-green flowers open March to April.

Bark: light gray to brownish gray, smooth; trunk fluted

Physical Attributes:

Form: multiple stem

Size: 30.0' mature

Growth Rate: 12.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: low

Fire: high

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: stream banks; bogs; swamp borders; wet meadows

Soil Texture: coarse - fine

Soil pH: 5.0 - 7.0

Range: north Florida to east Texas, north. to southwest Nova Scotia; locally - central Maine, Vermont, and Ohio; south Illinois, and southeast Missouri

Wildlife Value and Uses:

intermediate source of food for wildlife; critical cover component of woodcock habitat

Timber Value and Uses:

used predominantly for streambank stabilization and wetland restoration

Landscaping Info: not currently available from commercial and state nurseries

Other Facts:

Native Americans made tea from alder to cure toothaches and diarrhea. To aid in difficult child labor, they would add powdered bumblebees to the tea. Chippewa Indians were famous for making this mixture



Leaf



Bark



Flower



Fruit



Twig

downy serviceberry

Sarvis-berry, shadblow, shadbush,
juneberry, sugarplum, Indian cherry
Amelanchier aborea (Michx. f.) Fern.
Family: Rosaceae

Leaves:

Type: simple, alternate, deciduous; leaf base partially covers petiole making leaf appear to "sit" on top of petiole

Size: 2.0" - 4.0" long; 1.0" - 2.0" wide

Margin: finely serrate

Apex: short-pointed

Base: remotely heart-shaped to rounded

Shape: oval to oblong

Color: yellow-green above; paler below

Surface: nearly glabrous above and below; (new leaves covered with silvery, woolly hairs)

Venation: pinnate

Twigs:

Size: slender

Color: brown

Surface: new growth slightly hairy; older growth glabrous; crescent-shaped leaf scars; 3 bundle scars; numerous lenticels

Buds:

Size: terminal bud 0.75" long; laterals smaller

Shape: conical, acuminate;

Color: greenish to reddish brown

Surface: overlapping scales, smooth

Fruit and Flowers:

Pome: dry; tasteless; numerous small seeds

Size: 0.50" dia.

Shape: globular

Color: reddish purple

Flower: monoecious; perfect; in clusters of racemes on short stalks; white; bell-shaped; 5 obovate petals; 1.0" dia.

Bark: gray/grayish brown/brownish black; thin; smooth young; narrow ridges/furrows with age

Physical Attributes:

Form: single stem

Size: 50.0', mature

Growth Rate: 25.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: dry limestone soils; hillsides and ridges; sandy loams of streams and riverbanks; occasionally on wetter sites

Soil Texture: medium - coarse

Soil pH: 5.5 - 7.5

Range: found throughout the eastern half of the United States from Minnesota through eastern Iowa, Nebraska, Kansas Oklahoma and Texas; east to the Atlantic coast; north into Canada; in Mississippi, scattered throughout

Wildlife Value and Uses: fruit and foliage valuable wildlife food and cover for birds (over 40 species) and small and large mammals including squirrel, fox, deer, elk, and black bear

Timber Value and Uses: some use as pulpwood and tool handles

Landscaping Info: good ornamental; early spring flowers; showy fall color (orange, red, gold, and green blends); edible fruit; many cultivars available --- selected for variation in growth habit, flower size and color, and leaf color

Other Facts: prized by the Cree Native Americans for arrow wood; common name came from the plant's use as floral arrangements for religious "services"



Leaf



Bark



Flower



Fruit



Twig



devil's walking-stick

Aralia spinosa L.

Family: Araliaceae

Leaves:

Type: odd-bipinnately compound, alternate, deciduous

Size: 3.0' - 4.0' long; 2.0' - 3.0' wide; lateral leaflets 2.0" - 4.0" long, 1.5" wide; long-stalked terminal leaflet

Margin: finely toothed

Apex: long-tapered

Base: rounded to wedge-shaped

Shape: ovate

Color: dark green above; paler below

Surface: smooth above; smooth to sparsely hairy, occasionally stout prickles along the midrib below

Venation: pinnate

Twigs:

Size: very stout

Color: gray - brown

Surface: pale orange lenticels; irregularly scattered stout prickles; U-shaped leaf scars nearly encompassing the twig; 7-15 bundle scars

Buds:

Size: terminal 0.5" - 0.75" long; laterals smaller

Shape: conical

Color: orangish brown

Surface: outer overlapping scales

Fruit and Flowers:

Drupe: remotely 5-angled, 5-celled; berry-like

Size: 0.38" dia.

Shape: globular; seeds oblong-flattened

Color: black; pulp purplish, juicy

Flower: perfect or unisexual by abortion; in large, terminal, compound panicles, 3.0" - 4.0" long, on light yellowish stalks in umbels; white; 5 petals; 5 stamens alternating with the petals

Bark: brown; thin; inner bark bright yellow; broad, flat interlacing ridges; shallow fissures; stout prickles

Physical Attributes:

Form: single stem

Size: 30.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist soils of rich bottoms and gentle slopes; usually in the understory

Soil Texture: fine - medium

Soil pH: 5.5 - 7.2

Range: eastern and south central U.S.; in Mississippi, scattered throughout

Wildlife Value and Uses: rated by the Texas Plant Information Database (TPID) as a "Good" food and cover source for upland game birds, non-game birds, and small-large mammals; "Fair" food and cover source for waterfowl

Timber Value and Uses: none; good attributes for erosion control

Landscaping Info: rapid growth; thicket-forming; coppices freely; deep-rooted; drought tolerant; insect tolerant; disease tolerant

Other Facts: bark, roots, and berries widely used in the frontier apothecary, and contain compounds suitable for pharmaceutical preparations today; young growth in spring before full leafout, can be dipped in batter, fried, and eaten



Bark



Leaf



Flower



Fruit



Twig

eastern baccharis

groundsel tree, saltmyrtle, seamyrtle, silverling

Baccharis halimifolia L.

Family: Asteraceae

Leaves:

Arrangement: simple; alternate; semi-evergreen or tardily deciduous

Size: 1.5" - 2.5" long

Margin: coarsely toothed near apex; some leaves entire

Apex: acute

Base: cuneate

Shape: obovate

Color: green above; paler below

Surface: shiny above; sticky below

Venation: pinnate

Twigs:

Size: slender

Color: green

Surface: angled; often sticky

Buds:

Size: minute

Shape: nearly globose

Color: green

Surface: solitary; sessile; 4 exposed scales - all but outermost encased in hardened greenish resin

Fruit and Flowers:

Achene: single seeded; feathery

Size: < 0.5"

Shape: globular-oval (similar to dandelion)

Color: white

Flower: dioecious; in terminal, branched clusters (appear as feathery white tufts); 0.25" - 0.5" long; white; conspicuous

Bark: orangish brown young; gray with flat ridges and orangish shallow furrows mature

Physical Attributes:

Form: multiple stem

Size: 10.0, mature

Growth Rate: 10.0' maximum @ 20 yrs; 3.0' @ 2-3 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: medium

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: occurs naturally in the upper fringes of irregularly flooded tidal fresh and brackish marshes, back dunes, and inland open woods, vacant fields, and desert habitats

Soil Texture: fine - coarse

Soil pH: 5.5 - 7.8

Range: eastern and southern coastal states from Massachusetts to Florida and west to Texas, plus the northern adjacent states of Arkansas and Oklahoma; in Mississippi, reported throughout except the Mississippi River Delta and some of the northernmost counties

Wildlife Value and Uses: little or no value as a good food source for game animals; provides cover and nesting habitat for various species of birds; bees and small butterflies feed on nectar from the male flowers; songbirds attracted by the insects; marsh wrens and other small birds frequently nest in the openly branched, brittle stems

Timber Value and Uses: none

Landscaping Info: female plants are particularly attractive in flower; make a good landscape plant in exposed coastal conditions; highly resistant to salt spray and flooding; most commonly installed as 1 to 2 year-old containerized material

Other Facts: being investigated as soil bioengineering systems for tidal shoreline stabilization; conversely the ability to grow in dense clusters reaching over 3 feet in height within 2 to 3 years also makes it a potential invasive "pest" species

Warning: The leaves of this plant are poisonous to livestock; the toxic compound in groundsel-bush attacks the hepatic and circulatory system



Leaf



Bark



Female



Male

Flower



Fruit



Twig

hawthorn

white thorn, summer haw, and yellow haw

Crataegus L.

Family: Rosaceae

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 4.0" long; 1.0" - 2.0" across

Margin: serrate; lobed

Apex: obtuse

Base: rounded, truncate, or slightly cordate

Shape: oval-ovate or oval-deltate

Color: dark green above; paler below

Surface: glabrous above and below

Venation: pinnate

Twigs:

Size: slender

Color: gray

Surface: most with stiff thorns (1.0">); leaf scars have 3 bundle scars

Buds:

Size: true terminal bud

Shape: globular

Color: red

Surface: shiny

Fruit and Flowers:

pome: small; 2 to 5 bony nutlet-type seeds

Size: 0.25" dia.

Shape: ovoid

Color: yellow to red mature; occasionally black

Flower: monoecious; perfect, usually small white flowers, with 5 petals produced in clusters near the end of the twig

Bark: smooth gray young; darker, scaly older

Physical Attributes:

Form: single or multiple stem

Size: 26.0' mature

Growth Rate: 26.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required; bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: can grow in a variety of soil types from dry, sandy, or rocky to well-drained, moist soil. It is often seen growing in old fields, pastures, open wooded areas, and rights-of-way

Soil Texture: medium

Soil pH: 4.3 - 7.3

Range: approximately 800 species indigenous to North America; approximately 100 of those indigenous to the south; approximately 70 of the 100 attain the stature of small trees

Wildlife Value and Uses: source of food for numerous wildlife species, especially wild turkey and ruffed grouse; raccoons, squirrels, rabbit, small rodents, and deer also consume the fruits and seeds; not considered a high quality browse, white-tailed deer will occasionally eat the twigs and leaves as well; seeds are eaten by many species of songbirds, including cedar waxwings, northern flickers, mockingbirds, cardinals, and bluejays, who are instrumental in the dispersal of seeds and regeneration of more hawthorns; thickets provide excellent refuge for small mammals and birds

Timber Value and Uses: no commercial value

Landscaping Info: main ornamental feature white or pink flowers borne in spring, good fall color; many improved cultivars offered in garden centers including 'Crimson Cloud' with red flowers --- cultivar is nearly thornless and preferred over the species; negative features - susceptibility to pests and diseases --- aphids, leaf miners, lace bugs, spider mites, fire blight, leaf blight, powdery mildew

Other Facts: a well-known herb in traditional Chinese medicine and cultures throughout much of the world where there is a temperate climate supporting growth of the trees, especially Europe; primary Chinese use has been digestive health; primary western use has been heart disease; non-medicinal Chinese use of fruit in sugared confections, and juice in soft drinks, fruit drinks and a vinegar product



Bark



Leaf



Flower



Fruit



Twig

swamp cyrilla

titi, leatherwood, he-huckleberry

Cyrilla racemiflora L.

Family: **Cyrillaceae**

Leaves:

Type: simple, alternate, tardily deciduous

Size: 2.0" - 3.0" long; 1.0" - 2.0" wide

Margin: entire

Apex: rounded - minutely notched

Base: wedge-shaped

Shape: obovate - elliptical

Color: dark green above; paler below

Surface: shiny, glabrous, leathery above; glabrous below

Venation: pinnate

Twigs:

Size: slender

Color: brown

Surface: lustrous; often 3-sided; shield-shaped leaf scars; bundle scars curved (sometimes divided), top fringed

Buds:

Size: 0.25" long; laterals smaller

Shape: ovoid

Color: chestnut brown

Surface: several loosely overlapping scales

Fruit and Flowers:

Capsule: 2-celled, 2 seeds; dry; indehiscent

Size: capsule 0.13" long; seeds minute

Shape: ovoid - conical

Color: light brown

Flower: monoecious; perfect, in erect racemes near the end of last year's twigs, 4.0" - 6.0" long; petals 5, 0.25" long, white or pinkish, furnished with nectar glands

Bark: reddish brown; thin; lustrous; shreddy

Physical Attributes:

Form: multiple stem

Size: 7.0' - 12.0'; can reach 30.0'

Growth Rate: 7.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: low young; established plants medium

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: often in thickets along swamps and pocosins; rich river bottoms; also on exposed sandy ridges in the Gulf states

Soil Texture: medium - coarse

Soil pH: 5.0 - 7.0

Range: southern Virginia to northern Florida; west to eastern Texas; in Mississippi, scattered throughout

Wildlife Value and Uses: excellent deer browse and escape cover, relatively high nutrient value; provides environmental protection for a variety of birds, mammals, and aquatic wildlife; bee attractant - excellent honey from its flowers

Timber Value and Uses: none

Landscaping Info: excellent shrub for wet areas in the landscape; easy to propagate --- sends up suckers from its roots; tip cuttings can be started in spring; root cuttings any time; no pretreatment required for seeds; red fall color; leaves and seed persistent

Other Facts: spongy lower bark astringent and absorbent and is used as a styptic



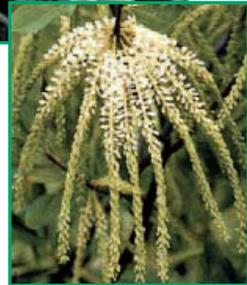
Leaf



Fruit



Bark



Flower



Twig

two-winged silverbell
snowdrop tree, American snowdrop
tree, squirrel bread
Halesia diptera Ellis
Family: **Styracaceae**

Leaves:

Type: simple, alternate, deciduous
Size: 3.0" - 4.0" long; 2.0" wide
Margin: remotely serrate
Apex: acute or acuminate
Base: obtuse/wedge-shaped
Shape: obovate
Color: light green above; pale below
Surface: glabrous above; hairy below
Venation: pinnate

Twigs:

Size: slender;
Color: reddish-brown
Surface: hairy young; scattered lenticels; leaf scars large, elevated; heart shaped; bundle scar crescent-shaped; pith white, chambered

Buds:

Size: small; superposed
Shape: ovoid/obtuse
Color: pale orangish tan
Surface: hairy reddish scales

Fruit and Flowers:

Nutlet: 2 broad longitudinal wings; stone ellipsoidal, rigid; seeds tapered at the ends
Size: 1.0" - 2.0" long; 1.0" wide at the medial point
Shape: oblong to ovoid
Color: green
Flower: perfect appearing in few-flowered racemes or clusters; white; 4 lobed corolla; stamens 8-16; pistil 2

Bark: brown or reddish brown; thin; longitudinal fissures and scaly ridges

Physical Attributes:

Form: single or multiple stem
Size: 20.0' - 30.0' mature
Growth Rate: 20.0' maximum @ 20 yrs
Life Span: (<50 yrs)
Tolerances:
Shade: medium
Drought: low
Fire: low
Anaerobic: medium

Propagation: cuttings
Other: no resprout/coppice potential

Habitat and Ecology:

Site: rich moist wooded soils; along swamp borders and stream banks
Soil Texture: fine - medium
Soil pH: 5.0 - 8.0
Range: Florida, north to South Carolina, and west to Texas and Arkansas

Wildlife Value and Uses: sour green fruit consumed by wildlife, including squirrels

Timber Value and Uses: no commercial value

Landscaping Info: near patios, woodland gardens, shrub borders; no serious insect or disease problems; low maintenance plant

Other Facts: Genus name honors Stephen Hales (1677-1761), British clergyman and plant physiologist . Specific epithet comes from Greek words di (two) and pteron (wing) in reference to the fruits.



Leaf



Bark



Flower



Fruit



Twig

Florida anise

purple anise, stink-bush, star-anise

Illicium floridanum Ellis

Family: Illiciaceae

Leaves:

Type: simple, alternate, evergreen; red petiole
fragrant when crushed

Size: 2.0" - 6.0" long; 1.0" - 2.0" wide

Margin: entire

Apex: acuminate

Base: cuneate

Shape: lanceolate to narrowly ovate

Color: dark green above; paler below

Surface: glabrous; leathery; aromatic

Venation: pinnate

Twigs:

Size: moderate to stout

Color: red to green

Surface: t

Buds:

Size: terminal buds large and clustered,
distinctly imbricate; lateral buds minute

Shape: acute

Color: red to green

Surface: green scales

Fruit and Flowers:

aggregate: inconspicuous; woody follicles

Size: aggregates 0.98" - 1.6" dia.; seeds
dispersed by dehiscence

Shape: star-shaped

Color: green; maturing brown

Flower: Monoecious; showy, usually red-
maroon, but a white cultivar "alba" exists, borne
singly on long stalks, 1.0"- 2.0" across, with
numerous long thin petals, appearing in spring,
somewhat pungent.

Bark: gray-brown; smooth

Physical Attributes:

Form: multiple stem

Size: 10'- 18' mature

Growth Rate: 10' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: medium

Propagation: seed (no cold stratification
required); cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, wooded ravines; seepage areas;
swamp margins

Soil Texture: fine - coarse

Soil pH: 5.0 - 7.0

Range: Louisiana east to Florida and north to
Georgia

Wildlife Value and Uses: none

Timber Value and Uses: no commercial
value

Landscaping Info: attractive foliage, basic
hedge, flowering shrub, borders and screen;
available from several native plant nurseries in
Florida that have permits to sell listed species

Other Facts: **toxic!** do not ingest; not a
substitute for the culinary spice and flavorings
obtained from *Illicium verum*; foliage and fruit
are poisonous to livestock



Bark



Leaf



Flower



Fruit



Twig

Virginia willow

Virginia sweetspire, Sweet-spine,
Tassel-white

Itea virginica L.

Family: Saxifragaceae

Leaves:

Type: simple, alternate, tardily deciduous

Size: 3.0" - 4.0" long; 1.0" - 1.5" wide

Margin: serrate or serrulate

Apex: acute to acuminate

Base: cuneate

Shape: elliptic to ovate

Color: green above; paler below; red to purple in the fall and many leaves persistent through the winter

Surface: glabrous above; glabrous or glabrate below

Venation: pinnate

Twigs:

Size: slender, arching

Color: green, turning reddish-brown to brown with age

Surface: pubescent young; glabrous older; 3 bundle scars, chambered pith

Buds:

Size: small

Shape: triangular

Color: green

Surface: pubescent

Fruit and Flowers:

Capsule: Small elongated, woody; occurring in rachemes, appearing in mid-summer and persisting into winter; seeds lustrous, dark brown, smooth, ellipsoid, 0.05" long

Size: 0.12" - 0.28" long

Shape: cylindrical

Color: green; turning brown

Flower: raceme; white, showy, fragrant, 3.0" - 6.0" long; flowers 0.3" - 0.5" long

Bark: brown to gray; smooth to scaly

Physical Attributes:

Form: single stem

Size: 20.0" mature

Growth Rate: 20.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: medium

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: swamps and along the edges of streams and lakes.

Soil Texture: fine - medium

Soil pH: 4.0 - 7.5

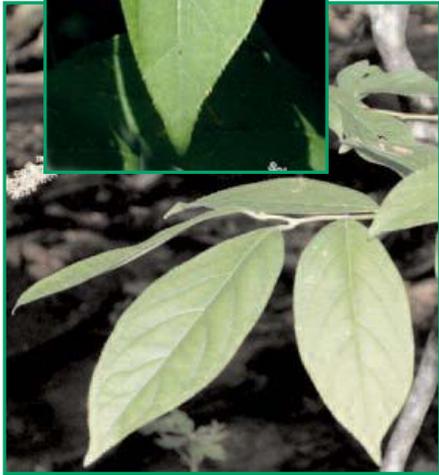
Range: Texas and Oklahoma, north and east through Missouri, Illinois, Indiana, Kentucky, Pennsylvania, New Jersey, Maryland and then south to Florida and west back to Texas

Wildlife Value and Uses: very favored browse by deer and cattle; erosion control; flowers attract butterflies; seeds eaten by birds

Timber Value and Uses: no commercial value

Landscaping Info: ornamental; wet areas of the landscape, along a stream or bordering a pond if you have one; good choice to overhang a bird bath or bird feeder - its open, spreading shape provides some shade and cover without totally blocking the birds' flight path; naturalizes by underground suckers to form thickets

Other Facts: *Itea* is the Greek for willow; *virginica* refers to the state of origin of the first described collection; only one species of *Itea* in North America, but 15 in Asia



Leaf



Bark



Flower



Fruit



Twig

mountain laurel

spoonwood, ivybush, calico bush

Kalmia latifolia L.

Family: Ericaceae

Leaves:

Type: simple, alternate, evergreen

Size: 2.0" - 5.0" long; 0.75" to 1.5" wide

Margin: entire

Apex: acute

Base: cuneate

Shape: elliptical

Color: green above; yellow-green below

Surface: waxy/shiny above;

Venation: pinnate; mid-vein raised above

Twigs:

Size: 0.079" - 0.12" dia.

Color: green or red young; brownish-red mature

Surface: glabrous

Buds:

Size: 2 types; flower buds up to 1" long, at the tips of twigs; leaf buds, minute

Shape: No data

Color: leaf buds green; flower buds pinkish/red

Surface: leaf: 2 outer scales; lateral buds hidden behind the petiole base - Flower: several glandular scales

Fruit and Flowers:

Capsule: brown; dehiscent; splitting into 5 valves when dry, open clusters; very small seeds; mature in fall

Size: 0.25" long

Shape: round

Color: brown

Flower: monoecious; clusters 3.0" - 6.0" across; white to rose colored: each flower 1.0" across with purple markings; petals form a distinct bowl around the pistal and stamens

Bark: dark brown to red; thin; on older stems shredding or splitting

Physical Attributes:

Form: multiple stem

Size: 6.0' mature

Growth Rate: 5.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: sand and peaty swamps and dry wooded areas (dry sandy slopes, deciduous woods, open rock woods, pine woods, shaded knoll, scrub land, wooded limestone hill, dry open-wooded rocky crest, gravelly hillside). It grows in deep sands, swamps, and rocky hillsides

Soil Texture: medium - coarse

Soil pH: 4.5 - 5.5

Range: native from Quebec and New Brunswick to Florida, west to Ohio and Tennessee

Wildlife Value and Uses: animals associated with mountain-laurel include white-tailed deer, eastern screech owl, black bear, ruffed grouse, and various song bird species; black bears are known to den in "ground nests" in mountain-laurel thickets

Timber Value and Uses: wood is heavy and strong but brittle, with a close, straight grain; suitable for wreaths, furniture, bowls and other household items; not commercially viable

Landscaping Info: sold commonly as an ornamental and the foliage is used in floral displays

Other Facts: state flower of Connecticut and Pennsylvania. It is the namesake of the city of Laurel, Mississippi (founded 1882)

Caution: entire plant is poisonous, consuming even small amounts of the leaves can be fatal! Andromedotoxin and arbutin are responsible for toxicity. Andromedotoxin is a resinoid, its structure is not fully known. Arbutin is a glucoside by hydroquinone (Poisonous Plants of Pennsylvania, Penn. Dept. Agriculture)



Bark



Leaf



Flower



Fruit



Twig

spicebush

benjaminbush

Lindera benzoin (L.) Blume var. *pubescens*
(Palmer & Steyermark) Rehd.

Family: Lauraceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 3.0" long; 0.5" - 1.5" wide

Margin: ciliate

Apex: rounded to acuminate

Base: cuneate

Shape: obovate

Color: dark green above; paler below

Surface: glabrous to densely pubescent above; glabrous except for a few hairs along midrib below

Venation: pinnate

Twigs:

Size: slender

Color: olive green to brown

Surface: glabrous; numerous light lenticels; leaf scars, crescent-shaped or half-round; bundle scars, 3

Buds:

Size: terminal absent; laterals minute

Shape: globose

Color: yellow-green to brown

Surface: glabrous; scales (2-3)

Fruit and Flowers:

Drupe:

Size: 0.5" dia.

Shape: oblong

Color: reddish

Flower: dioecious; yellow clusters on nodes of prior year's growth; male and female with 6 short yellow sepals; staminate with 9 fertile stamens; pistillate with 12-18 rudimentary, infertile stamens

Bark: brown to gray-brown; numerous vertical light-colored lenticels

Physical Attributes:

Form: multiple stem

Size: 5.0', mature

Growth Rate: 2.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: (no data)

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: stream banks, low woods, margins of wetlands; uplands, especially with exposed limestone

Soil Texture: fine - medium

Soil pH: 4.5 - 6.0

Range: most of the eastern U.S.; in Mississippi scattered throughout

Wildlife Value and Uses: fruits and leaves eaten and/or browsed by over 20 species of birds and mammals (deer, raccoon, opossum, rabbit)

Timber Value and Uses: no commercial timber value

Landscaping Info: good shrubs with deep green leaves; bright yellow fall color when grown in partial sun; fragrant; moist soil is best; becoming available through commercial nurseries

Other Facts: used for various medicinal purposes by the Cherokee, Creek, Iroquois, and Rappahannock Native American tribes (D. E. Moerman 1986); extracts used as anti-arthritis, diaphoretic, emetic and herbal steam; dried fruits used as a spice, and the leaves for tea

NOTE:

Variation within the species: *Lindera benzoin* var. *pubescens* (Palmer & Steyermark) Rehd. is the more southern form of the species, absent from the northernmost states of the species range, with twigs and lower leaf surfaces hairy (vs. glabrous in var. *benzoin*). Var. *benzoin* does not occur in the states directly bordering the Gulf of Mexico. Another species of *Lindera melissefolia* (pond berry) is listed as endangered in MS.



Bark



Leaf



Flower



Fruit



Twig

southern crabapple

blank

Malus angustifolia (Aiton) Michx.

Family: Rosaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.0" - 3.0" long; 0.5" - 2.0" wide

Margin: crenate-serrate

Apex: blunt to acute

Base: obtuse/wedge-shaped

Shape: elliptical or oblong

Color: dull green above; paler below

Surface: hairy when young

Venation: pinnate; a few red glands on the midrib

Twigs:

Size: slender to stout

Color: red-brown

Surface: hairy; spur shoots often bearing thorns; dotted with pale orange lenticels; leaf scars linear with 3 bundle scars; pith homogeneous

Buds:

Size: small

Shape: obtuse

Color: dark brown

Surface: 4 outer, hairy, overlapping scales;

Fruit and Flowers:

Pome: apple-like; sour

Size: 0.75" - 1.0" dia

Shape: nearly globular

Color: yellow-green

Flower: perfect; pink-white, fragrant and showy; 1.0" wide; 3-5-flowered clusters on slender stalks 1.0" long; 5 obovate petals narrowed at the base

Bark: gray or brown; furrowed into narrow scaly ridges

Physical Attributes:

Form: single or multiple stem

Size: 30' mature

Growth Rate: 30' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); mainly propagated by grafting using a whip graft, budding or from softwood cutting

Other: no coppice/resprout potential

Habitat and Ecology:

Site: valleys and lower slopes, stream banks, borders of woodlands, fence rows, and old fields in the southeast, often forming thickets

Soil Texture: fine - coarse

Soil pH: 5.0 - 6.0

Range: southern Virginia south to northern Florida, west to Louisiana, and north to Arkansas

Wildlife Value and Uses: fruits eaten by whitetail deer, bobwhites, grouse, pheasants, rabbits, squirrels, opossums, raccoons, skunks, foxes and many small birds

Timber Value and Uses: hard, heavy wood; makes excellent tool handle, levers, and small wooden ware articles

Landscaping Info: susceptible to fireblight, cedar apple rust, apple scab, canker, scale, borers and aphid; rarely available in nurseries

Other Facts: hard sour fruits are often used for making preserves, cider, jellies

Caution:

All members of this genus contain the toxin hydrogen cyanide in their seeds and possibly also in their leaves, but not in their fruits. Hydrogen cyanide is the substance that gives almonds their characteristic taste but it should only be consumed in very small quantities. Apple seeds do not normally contain very high quantities of hydrogen cyanide but, even so, should not be consumed in very large quantities. In small quantities, hydrogen cyanide has been shown to stimulate respiration and improve digestion, it is also claimed to be of benefit in the treatment of cancer. In excess, however, it can cause respiratory failure and even death.



Leaf



Bark



Flower



Fruit



Twig

wax myrtle

southern bayberry

Myrica cerifera L.

Family: Myricaceae

Leaves:

Type: simple, alternate, persistent, aromatic

Size: 2.0" - 4.0" long; 0.5" wide

Margin: coarsely serrate-toothed

Apex: acute; rarely rounded

Base: wedge-shaped

Shape: oblanceolate

Color: yellow-green above; paler below

Surface: dark glands above; bright orange glands below

Venation: pinnate

Twigs:

Size: slender

Color: reddish gray 1st season; dark brown 2nd season

Surface: tomentose 1st season; glabrous 2nd season; resinous glandular; small pale lenticels; 3 bundle scars; 3-angled leaf scars

Buds:

Size: terminal bud absent; laterals 0.13" long

Shape: oblong-acute

Color: orange tinged yellow-green

Surface: several overlapping scales

Fruit and Flowers:

Drupe:

Size: 0.06" - 0.13" dia.

Shape: globular

Color: blue

Flower: dioecious; unisexual; staminate, in oblong catkins, <1.0" long, with acute scales 0.25" - 0.75" long; pistillate in bracteate catkins, < 0.5" long; white

Bark: gray-green with whitish gray patches; thin; smooth

Physical Attributes:

Form: rhizomatous

Size: 10.0' - 12.0', mature

Growth Rate: 10.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: medium

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container

Other: no resprout/coppice potential

Habitat and Ecology:

Site: below 500 ft. under a variety of sites and conditions; restricted to climates with mild winters and long, hot, and humid summers; in the Gulf Coastal states wet sites, flatwoods, marshes

Soil Texture: fine - coarse

Soil pH: 5.5 - 7.0

Range: New Jersey; south along the coast into southern Florida; west through the Gulf states to Texas; atypical reported occurrences include Maine, Massachusetts, and New York; in Mississippi, scattered throughout the southern half of the State

Wildlife Value and Uses: provides consistent browse biomass in southeastern forests --- not however a "favored" deer species; fruits eaten by many birds including bobwhite quail and wild turkey; seeds important winter food source for Carolina wren and tree sparrows; no significant cover value for wildlife

Timber Value and Uses: no commercial timber value

Landscaping Info: popular ornamental because it grows quickly, responds well to pruning, and is heavily clothed in attractive evergreen foliage

Other Facts: first cultivated in 1699 for medicinal purposes; leaves, bark, and fruit yield pharmaceutical chemicals; Choctaw Native Americans used various concoctions from wax myrtle to treat fevers, tonsillitis, and other throat problems; the Seminole used it to make lye and as a tobacco substitute; and the Houma used the berries to make candles; fruit is the source of wax (by boiling) used in making bayberry candles



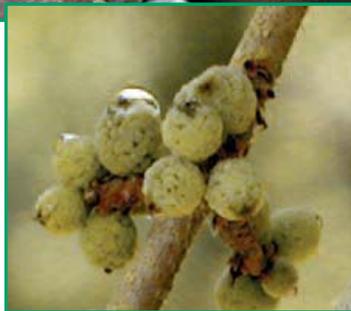
Bark



Leaf



Flower



Fruit



Twig

redbay

shore bay

Persea borbonia (L.) Sprengel

Family: Lauraceae

Leaves:

Type: simple, alternate, persistent, aromatic

Size: 3.0" - 4.0" long; 1.0 - 1.5" wide

Margin: entire

Apex: pointed or rounded

Base: rounded or broadly wedge-shaped

Shape: oblong-lanceolate

Color: bright green above; paler below

Surface: lustrous above; waxy bloom below

Venation: pinnate

Twigs:

Size: slender

Color: light brown

Surface: smooth; pale, rusty red pubescence; current season somewhat 3-angled; linear to elliptical leaf scars; single linear bundle scar; no stipule scars

Buds:

Size: terminal bud 0.25" long; laterals smaller

Shape: ovoid

Color: reddish brown

Surface: naked; densely hairy; solitary or superposed

Fruit and Flowers:

Drupe: lustrous; persistent calyx; peduncles yellow-orange; large ovoid pit surrounded by dry thin flesh

Size: 0.5" long

Shape: oblong

Color: bright blue to blue-black

Flower: monoecious; perfect; in few- to many-flowered panicles on short stalks, in axils; bell-shaped; yellow, 0.25" long

Bark: reddish brown; broad, flat, somewhat scaly ridges; deep irregular fissures

Physical Attributes:

Form: single stem

Size: 70.0', mature

Growth Rate: 50.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (no cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist, rich soils of stream banks or swamp edges; occasionally on drier sites in association with longleaf pine

Soil Texture: fine - medium

Soil pH: 5.0 - 6.7

Range: North Carolina; south to Florida; west to Texas; northeast to Arkansas; in Mississippi, southeastern and coastal counties

Wildlife Value and Uses: fruit and foliage eaten by black bear and white-tailed deer; can withstand up to 40% browse loss of current foliage; seeds provide winter food for bobwhite quail; fruit eaten by songbirds and wild turkey; can provide essential habitat for gray squirrel when left as stringers along streams in pure even-aged pine stands

Timber Value and Uses: no significant commercial value; used locally for cabinetwork, interior finishing, and boat building; wood is heavy, strong and hard; colored bright red with thin, light-colored sapwood; seedlings can be used in wetlands and phosphate mine reclamation

Landscaping Info: occasionally used as an ornamental because of its showy fruit and evergreen, aromatic leaves; very resistant to insects and fungal disease

Other Facts: leaves have been used as a substitute for those of the Bay Laurel for flavoring soups and meat dishes; widely employed medicinally by the Seminole Indians to treat a variety of complaints, but especially as an emetic and body cleanser; used little if at all in modern herbalism

NOTE:

Some authorities recognize swamp bay as a variety of red bay (*Persea borbonia* var. *pubescens*). Others recognize swamp bay as a separate species (*Persea palustris*). Red bay occurs on xeric or mesic sites or dunes, while swamp bay is found in low wet areas --- swamps, banks of marshes and wet pine flatwoods



Leaf



Bark



Flower



Fruit



Twig

wild azalea

wild honeysuckle, bush honeysuckle

Rhododendron canescens (Michx.) Sweet

Family: Ericaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.5" - 4.0" long; 0.8"- 1.2" wide

Margin: small glandular teeth

Apex: acute, glandular-apiculate

Base: cuneate

Shape: oblong, oblanceolate, or elliptic

Color: dark green above; paler below

Surface: puberulent with scattered glandular hairs above; canescent beneath

Venation: pinnate

Twigs:

Size: slender

Color: brown to mottled gray

Surface: densely pubescent with tiny stalked glands when young, becoming glabrous with age

Buds:

Size: very small; flower buds much larger (0.5")

Shape: leaf - no data; flower - oval to elliptical

Color: leaf - no data; flower - yellow-green, reddish tips

Surface: leaf - wooly; occur in clusters at ends of twigs

Fruit and Flowers:

Capsule:

Size: 0.8" long

Shape: ellipsoid-cylindric

Color: brown

Flower: whorled clusters, pedicels, 0.3" -1.2" long, finely glandular-hairy, several flowers, 1.0" - 2.0" long; calyx lobes ovate, deltoid or rounded; corolla long and tubular, flaring into 5 lobes, pink; stamens 5, 2.5-3 cm (1-1.2 in) long; flowers appear from March to April, before or with leaves

Bark: new stems green; old, brown

Physical Attributes:

Form: multiple stem

Size: 14.0' mature

Growth Rate: 13.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: medium

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: no resprout/coppice potential

Habitat and Ecology:

Site: streamsides in sandy, or moist upland acid soils

Soil Texture: fine - medium

Soil pH: 4.3 - 5.8

Range: Texas and Oklahoma, east to Arkansas and Kentucky to North Carolina; then south to Florida and west back to Texas; Pennsylvania, Delaware, and Maryland are also shown as states where *Rhododendron canescens* (Michx.) Sweet has been identified

Wildlife Value and Uses: nectar source for hummingbirds

Timber Value and Uses: no commercial value

Landscaping Info: can be propagated by soft root cuttings; can be used in a semishady woodland or natural garden, or as a specimen shrub anywhere; adds a splash of color among evergreen shrubs; provides early spring time fragrance; nice cut flower arrangements; ranked as favorite wild shrub by southeastern U.S. naturalists

Other Facts: *Rhododendron* means rose tree; *canescens* refers to the white hairs; discovered by Mark Catesby about 1730, *R. canescens* is often confused with *R. periclymenoides* (*R. nudiflorum*) but can be distinguished by the sticky glandular hairs on the tubes of the flowers and some other morphological characteristics; occasionally produces translucent galls caused by bacteria. These galls are edible and were often pickled by settlers



Leaf



Bark



Flower



Fruit



Twig

winged sumac

shining sumac, flameleaf sumac,
dwarf sumac

Rhus copallina L.

Family: Anacardiaceae

Leaves:

Type: odd-pinnately compound, alternate, deciduous

Size: 6.0" - 12.0" long; leaflets (9-21), 1.5" - 4.0" long, 0.75" - 1.3" wide

Margin: entire or remotely toothed above the middle

Apex: long-tapered

Base: wedge-shaped

Shape: leaflets oblong to lance-shaped

Color: dark green above; paler below

Surface: shiny above; somewhat hairy below; small green, leaflike wings along the rachis

Venation: pinnate

Twigs:

Size: stout

Color: gray-brown to reddish brown

Surface: hairy; numerous rusty-red, corky lenticels; U-shaped leaf scars; 5-11 bundle scars; commonly zigzag branching

Buds:

Size: terminal buds absent; laterals superposed occasionally, small

Shape: nearly spherical

Color: rusty brown

Surface: hairy

Fruit and Flowers:

Drupe: small; dry flesh; dense glandular hairs

Size: 0.25" long

Shape: nearly ovoid; pit kidney-shaped

Color: crimson

Flower: dioecious; in terminal pubescent panicles; petals, 5, greenish white/yellow, small, acute, reflexed above the middle; pistils abortive in polygamous flowers

Bark: thin; reddish brown; prominent horizontal lenticels - slough to papery scales with age

Physical Attributes:

Form: single or multiple stem

Size: 8.0', mature

Growth Rate: 8.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: high (due to resprout ability)

Anaerobic: medium

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: fallow fields; dry, sandy slopes and ridges; rarely in wet bottomlands; commonly thickets

Soil Texture: fine - coarse

Soil pH: 5.3 - 7.5

Range: throughout the eastern United States; in Mississippi, throughout except the Mississippi River Delta

Wildlife Value and Uses: primarily as a winter emergency food for wildlife; fruit eaten by ring-necked pheasant, bobwhite quail, wild turkey, and about 300 species of songbirds; also known to be important in the winter diets of ruffed grouse and the sharp-tailed grouse; bark eaten by fox squirrel and cottontail rabbit; fruit and stems eaten by white-tailed deer

Timber Value and Uses: none

Landscaping Info: good ornamental plantings and hedges because of the brilliant red fall foliage; best used on drastically disturbed sites where pioneer species are desirable; year old nursery grown seedlings are normally used for planting large areas; established, stands will spread from the root sprouts outward three or more feet a year; colonies appear to lose vigor in about 15 years

Other Facts: fail to compete with invading tree species and are seldom found growing under a closed canopy



Leaf



Leaf



Fruit



Bark



Flower



Twig

smooth sumac

scarlet sumac

Rhus glabra L.

Family: Anacardiaceae

Leaves:

Type: pinnately compound; alternate; deciduous

Size: 12.0 " - 24.0" long; leaflets (11-31), 2.0" - 4.0" long

Margin: sharply serrate

Apex: long tapered

Base: rounded

Shape: lanceolate to oblong-lanceolate

Color: dark green above; paler below

Surface: lustrous above; whitish waxy bloom below; rachis (axis) smooth light lavender

Venation: pinnate

Twigs:

Size: stout

Color: bluish waxy bloom

Surface: glabrous; somewhat flattened; leaf scar heart-shaped, nearly encircles bud; pith orange-brown; sap, milky and sticky

Buds:

Size: terminal bud absent; laterals small

Shape: rounded

Color: silvery to tan

Surface: pubescent

Fruit and Flowers:

Drupe: numerous; compact clusters 8"-12" long, covered with short sticky red hairs

Size: 0.25" dia.

Shape: spherical

Color: dark red to bright red

Flower: polygamous (functionally dioecious) in terminal pubescent panicles, 8.0" - 12.0" long; petals, 5, greenish yellow; staminate and perfect panicles more open; pistillate panicles compact

Bark: thin; brown; smooth; numerous horizontally elongated lenticels; somewhat scaly on older portion of trunk

Physical Attributes:

Form: single or multiple stem

Size: 12.0', mature

Growth Rate: 12.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: low

Drought: medium

Fire: high

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: open woodlands, prairies, on dry rocky hillsides, and in canyons.

Soil Texture: medium - coarse

Soil pH: 5.3 - 7.5

Range: present in all of the contiguous 48 states of the United States, into southern Canada and northern Mexico; in Mississippi, scattered throughout

Wildlife Value and Uses: fruits are important winter sustenance for gamebirds and songbirds

Timber Value and Uses: none

Landscaping Info: sympodial branching, summer flowers, fall foliage colors, and ripened fruits on bare twigs in winter make it a landscape plant of continuous interest; weediness can become a drawback if not properly managed

Other Facts: widely used species among Native American tribes, including root and leaf tea to treat diarrhea, dysentery, and mouth and throat ulcers; leaves smoked for asthma; blossoms used by the Chippewa in a mouthwash for teething children; fruits eaten by Comanche children, and the leaves were added to tobacco for smoking by adults; fruits used to make red dyes, and the inner bark used to make yellow dyes.



Leaf



Bark



Flower



Fruit



Twig

staghorn sumac

Rhus hirta (L.) Sudworth

Rhus typhina L.

Family: Anacardiaceae

Leaves:

Type: pinnately compound, alternate, deciduous

Size: 12.0" - 24.0" long; leaflets 2.0" - 5.0" long, 1.0" wide

Margin: singly, sharply serrate

Apex: long-tapered

Base: slightly cordate

Shape: oblong - lance-shaped

Color: dull green above; paler below

Surface: smooth above; hairy along the midrib below; rachis stout & densely hairy

Venation: pinnate

Twigs:

Size: stout

Color: brown

Surface: covered with dense greenish brown to black hairs; dotted with conspicuous orange-brown lenticels; (exudes sticky, milky fluid when bruised); leaf scar u-shaped with multiple bundle scars

Buds:

Size: terminal bud absent; laterals small

Shape: laterals conical

Color: orange-brown

Surface: covered with matted wooly hairs

Fruit and Flowers:

Drupe: thin, dry flesh; hard kidney-shaped pit

Size: 0.13" dia.

Shape: globular to hemispherical

Color: dense coat of crimson hairs

Flower: dioecious; in dense terminal panicle clusters; petals, 5, greenish yellow; staminate strap-shaped, reflexed above the middle; pistillate, erect

Bark: dark brown; thin; horizontally elongated lenticels; larger trunks superficially scaly

Physical Attributes:

Form: single or multiple stem

Size: 30.0', mature

Growth Rate: 30.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: high

Anaerobic: low

Propagation: seed (no cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: old fields; abandoned pasture; rocky slopes; occasionally moist sites

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.2

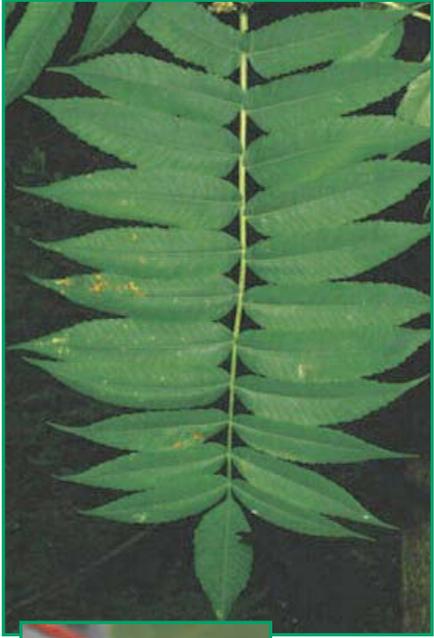
Range: found throughout the eastern half of the United States; in Mississippi, probably the northeastern corner --- the NRCS Plants Database shows distribution in Mississippi but without specific site verifications

Wildlife Value and Uses: (same as *Rhus copallina*) primarily as a winter emergency food for wildlife; fruit eaten by ring-necked pheasant, bobwhite quail, wild turkey, and about 300 species of songbirds; also known to be important in the winter diets of ruffed grouse and the sharp-tailed grouse; bark eaten by fox squirrel and cottontail rabbit; fruit and stems eaten by white-tailed deer

Timber Value and Uses: none

Landscaping Info: similar to other sumacs; brilliant seasonal colors from foliage and fruit; good adaptability; pruning for control

Other Facts: wood is highly colored and has a limited use in the manufacture of novelties



Leaf



Bark



Flower



Fruit



Twig

American snowbell

mock orange, storax

Styrax americanus Lam.

Family: **Styracaceae**

Leaves:

Type: simple, alternate, deciduous

Size: 1.0" - 2.5" long; 0.79" - 2.2" wide

Margin: entire, serrate, or shallowly toothed

Apex: abruptly acuminate

Base: cuneate

Shape: elliptic or broadly elliptic to obovate or nearly ovate

Color: dull green above; paler below

Surface: glabrous above; densely hairy below

Venation: pinnate; impressed

Twigs:

Size: slender

Color: green to gray or brown

Surface: stellate-pubescent on young stems; glabrous with age; leaf scar with 1 bundle scar

Buds:

Size: small; naked

Shape: blunt

Color: no data

Surface: scruffy

Fruit and Flowers:

Drupe: one seed; matures Sept./Oct.

Size: 0.25" dia.

Shape: subglobose

Color: gray; stellate-pubescent

Flower: racemes; white, 1.0" - 4.0" long; 1-4 flowers per inflorescence; 5 petals

Bark: dark gray to brown; smooth

Physical Attributes:

Form: single or multiple stem

Size: 8.0' - 15.0' mature

Growth Rate: 10.0' maximum @ 20 yrs

Life Span: (<50 yrs)

Tolerances:

Shade: medium

Drought: low

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); cuttings

Other: no resprout/coppice potential

Habitat and Ecology:

Site: rich, poorly-drained acidic soils along swamp margins, stream beds and lake edges, oxbow lakes, and in floodplains. (Johnson and Hoagland 1999)

Soil Texture: coarse to medium

Soil pH: 4.5 - 8.5

Range: Oklahoma, Texas and Arkansas, east to Georgia and Florida, north to Virginia, west to Illinois and Missouri. Rare in Oklahoma; found only in the Coastal Plain physiographic province of McCurtain County

Wildlife Value and Uses: Nectar-bees, Nectar-butterflies, Nectar-insects, Fruit-birds

Timber Value and Uses: None

Landscaping Info: showy, accent shrub, blooms ornamental; commercially available; does not compete well with other shrubs or trees

Other Facts: resin of 'Styrax acts to kill wound pathogens and deter herbivores; few Lepidoptera caterpillars eat it compared to other plants; Styrax incense used in the Middle East and adjacent regions as an air freshener; resin from southern Arabian species was burned during frankincense (Boswellia resin) harvesting; it was said to drive away snakes



Leaf



Leaf



Fruit



Fruit



Bark



Flower



Twig

bigleaf snowbell

Styrax grandifolius Ait.

Family: **Styracaceae**

Leaves:

Type: simple, alternate, deciduous

Size: 2.0" - 5.0" long; 1.0" - 3.0" wide

Margin: remotely-distantly serrate or entire

Apex: acute - acuminate

Base: rounded - wedge-shaped

Shape: obovate

Color: pale green above; white below

Surface: glabrous above; stellate hairy along the veins below

Venation: pinnate

Twigs:

Size: slender

Color: brown

Surface: pubescent, becoming glabrous; crescent-shaped leaf scars; single central bundle scar

Buds:

Size: terminal bud absent; axillary bud (1-3/node), 0.13" long

Shape: elliptical

Color: white; eventually rusty

Surface: axillary superposed, scurfy, naked

Fruit and Flowers:

Drupe: dry; persistent style remnant at apex; enclosed below by persistent calyx

Size: 0.33" long

Shape: obovoid - globose

Color: brown

Flower: monoecious; perfect; in 6.0" long axillary racemes of 5 to 20 flowers; white; bell-shaped; 0.75"- 1.0" long

Bark: chestnut brown to black; smooth; thin

Physical Attributes:

Form: single or multiple stem

Size: 6.0' - 40.0', mature

Growth Rate: (no data @ 20 yrs)

Life Span (no data)

Tolerances:

Shade: high

Drought: medium

Fire: low

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: (no data)

Habitat and Ecology:

Site: Moist or wet soils of valleys and uplands; in understory of hardwood forests

Soil Texture: medium

Soil pH: 4.5 - 6.5

Range: Virginia; west through Ohio, Indiana, and Illinois; south through Arkansas to Texas; east to Florida; north up the Atlantic coast; in Mississippi, scattered throughout

Wildlife Value and Uses: bee attractant

Timber Value and Uses: none

Landscaping Info: occasional use as an ornamental; potential as a landscape tree in parks and other natural areas

Other Facts: *S. americanus* (American snowbell) is very similar to *S. grandifolius* (bigleaf snowbell), but *S. grandifolius* has larger leaves, longer racemes, and more and larger flowers than *S. americanus*; American snowbell is typically found on wet sites



Leaf



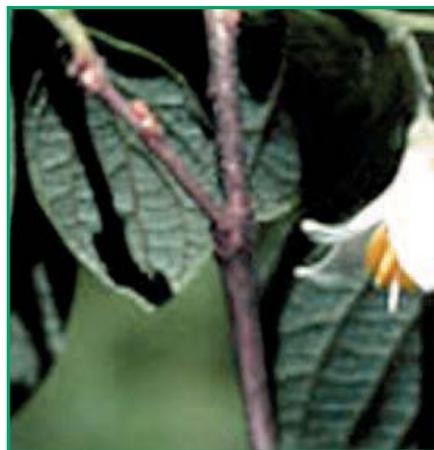
Bark



Flower



Fruit



Twig

sweetleaf

horsesugar, yellow wood, common sweetleaf

Symplocos tinctoria L'Her.

Family: Symplocaceae

Leaves:

Type: simple, alternate, tardily deciduous

Size: 5.0" - 6.0" long; 1.0" - 2.0" wide

Margin: wavy-toothed

Apex: acuminate or acute

Base: tapered

Shape: oblong

Color: dark green above; pale below

Surface: glabrous, leathery above; pubescent below

Venation: pinnate

Twigs:

Size: stout

Color: gray-brown

Surface: pubescent; lenticels scattered, small, elevated; leaf scar half-round; single large horizontal bundle scar

Buds:

Size: terminal bud 1.0" long; laterals small, embedded

Shape: terminal ovoid acute

Color: brown

Surface: terminal 4-scaled, ciliate on margins

Fruit and Flowers:

Drupe: dry

Size: 0.5" long; seed small

Shape: drupe cylindrical; seed ovoid

Color: green young; brown mature

Flower: monoecious; perfect; at first surrounded by 3 oblong, overlapping bracts; flowers on stout, short, silky stalks; petals 5, white, 0.5" long; orange anthers

Bark: gray to brown; thin; smooth to slightly furrowed; corky/warty outgrowths

Physical Attributes:

Form: single or multiple stem

Size: 15.0' - 30.0', mature

Growth Rate: 8.0' maximum@ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: medium

Drought: high

Fire: high

Anaerobic: medium (seasonal)

Propagation: seed (cold stratification required); cuttings

Other: (no data)

Habitat and Ecology:

Site: understory on moist, rich forest soils and along stream banks and swamp margins

Soil Texture: medium - coarse

Soil pH: 4.5 - 7.5

Range: along the eastern U.S. coastal states from Delaware; south to Florida; west to eastern Texas and Arkansas; in Mississippi, approximately one-half the State east of a line running from the northeast corner to the southwest corner

Wildlife Value and Uses: seeds eaten by birds; nectar insect attractant; larval host - King's hairstreak butterfly; browsed by deer and domestic animals; very important browse plant in longleaf pine regions; over 50% utilization indicates overstocked range

Timber Value and Uses: no commercial value

Landscaping Info: not commonly found in nurseries; most collected from the wild and propagation success may be minimal

Other Facts: colonists made a bright yellow dye by boiling the leaves and inner bark



Bark



Leaf



Flower



Fruit



Twig

poison sumac

swamp sumac, poison elder, poison ash, and thunderwood

Toxicodendron vernix (L.) Kuntze

also as (*Rhus vernix* L.)

Family: Anacardiaceae

Leaves:

Type: odd-pinnately compound, alternate, deciduous

Size: 7.0" - 15.0" long; leaflets (7-13), 3.0" - 4.0" long

Margin: entire

Apex: pointed or rounded

Base: unequally wedge-shaped

Shape: oblong to obovate

Color: dark green above; paler below

Surface: lustrous above; smooth below

Venation: pinnate

Twigs:

Size: stout

Color: light brown to orangish brown

Surface: smooth; many minute raised lenticels; crescent-shaped leaf scars; many bundle scars

Buds:

Size: 0.25" long; laterals smaller, similar

Shape: conical

Color: purplish

Surface: smooth; 2 outer scales

Fruit and Flowers:

Drupe: dry, smooth

Size: 0.25" dia.

Shape: nearly spherical

Color: creamy white

Flower: polygamous; in long, narrow axillary pubescent panicles near the ends of the branches, on slender pubescent pedicels (stalks); petals, 5, yellowish green; 0.25" long

Bark: gray - grayish brown; thin; smooth; longitudinal striations; horizontal lenticels

Physical Attributes:

Form: single or multiple stem

Size: 25.0' - 30.0', mature

Growth Rate: (no data)

Life Span: (no data)

Tolerances:

Shade: high

Drought: low

Fire: low

Anaerobic: high

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: most abundant on permanently wet sites (swamps, bogs); occasionally with other bottomland species

Soil Texture: fine - coarse

Soil pH: 5.6 - 6.5

Range: all of the eastern United States; in Mississippi, primarily in the southeastern quarter of the State, and other permanently wet/moist sites

Wildlife Value and Uses: fruit is not toxic to birds or animals and is consumed by many kinds of wildlife, such as bobwhite, pheasant, grouse, and rabbit, especially in winter, when other food is scarce; moderate food value for large mammals; low food value for small mammals and terrestrial birds; no value as wildlife cover

Timber Value and Uses: none

Landscaping Info: **POISONOUS** All parts, in all seasons if plant sap contacted; symptoms include severe skin redness, itching, swelling, and blisters following direct or indirect contact; toxic principle is Urushiol

Other Facts: used occasionally in the treatment of fevers, ague, ulcerated bladder, asthma and wasting diseases, and as a wash to treat foul ulcers, though it is an extremely poisonous plant

"Toxico dendron" means "poison tree" and refers to poison sumac's extremely dangerous and rash-producing properties

Black varnish can be made from the sap, as in a related Japanese species



Bark



Leaf



Flower



Fruit



Twig

tree sparkleberry

farkleberry, huckleberry, gooseberry

Vaccinium arboreum Marsh.

Family: Ericaceae

Leaves:

Type: simple, alternate, deciduous or tardily deciduous

Size: 1.0" - 3.0" long; 1.0" wide

Margin: entire or with minute glandular teeth

Apex: acute or rounded

Base: wedge-shaped

Shape: oblong, oval

Color: dark green above; paler below

Surface: lustrous above; hairs along midrib and principal veins below

Venation: pinnate

Twigs:

Size: slender

Color: brown

Surface: crooked; many branched; single bundle scar; leaf scar half-round

Buds:

Size: terminal buds absent; laterals very small

Shape: nearly globular

Color: reddish brown to reddish purple

Surface: several overlapping scales

Fruit and Flowers:

Berry: many-seeded

Size: berry 0.25" dia.; seeds minute

Shape: berry globular; seeds kidney-shaped

Color: berry lustrous-black

Flower: monoecious; perfect; in short axillary racemes, 2.0" - 3.0" wide, with small leaf-like bracts; flower, white, bell-shaped, 0.25" long

Bark: reddish brown; narrow shreddy ridges; thin

Physical Attributes:

Form: single or multiple stem

Size: 28.0', mature

Growth Rate: 28.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: medium

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist soils near streams and lakes, along hillsides, and in high mountain valleys as an understory species; can maintain itself on soils of limestone origin

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.0

Range: Kansas; east to Virginia; south to Florida; west to Texas; in Mississippi, throughout

Wildlife Value and Uses: flowers are a bee attractant; foliage and fruit provides browse for white-tailed deer, and food for many species of hares and rabbit; fruits are consumed by black bear, chipmunks, and numerous species of birds, including the American robin, ruffed grouse, and tanagers; shrubby thickets of tree sparkleberry form favored activity centers for transplanted ruffed grouse in northern Georgia; denser growth favored for nesting by other bird species

Timber Value and Uses: no commercial significance

Landscaping Info: attractive glossy summer foliage and reddish purple color in the fall; growth form gives a less desirable winter appearance

Other Facts: the only "sparkleberry" having fruit inedible by humans; bark formerly used for tanning leather; root extracts were traditionally used to treat diarrhea



Bark

Leaf



Flower



Fruit



Twig

Elliott's huckleberry

Vaccinium elliotii Chapman

Cyanococcus elliotii (Chapman) Small

Family: Ericaceae

Leaves:

Type: simple, alternate, deciduous;

Size: 1.5" long; 1.0" wide

Margin: minutely toothed; gland-tipped hairs on the leaf margins.

Apex: acute

Base: rounded

Shape: elliptical

Color: bright green above; paler below

Surface: shiny above; shiny below

Venation: pinnate

Twigs:

Size: slender

Color: woody stems green 2 - 3 years

Surface: young twig variations; (glabrous, powdery-pubescent), (short shaggy-pubescent, sometimes with a few stipulate-glandular hairs intermixed)

Buds:

Size: terminal bud absent; lateral buds small

Shape: lateral buds globose

Color: pinkish green

Surface: glabrous

Fruit and Flowers:

Berry:

Size: 0.5" dia.

Shape: globular - spherical

Color: blue - purplish black

Flower: monoecious; perfect; bell/tubular-shaped; white to pinkish white; 0.25" long; prior to leaf-out

Bark: thin; narrow shreddy ridges; reddish brown

Physical Attributes:

Form: multiple stem

Size: 10.0', mature

Growth Rate: 8.0' maximum @ 20 yrs

Life Span: (>50 yrs)

Tolerances:

Shade: high

Drought: low

Fire: high

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container; cuttings

Other: resprout/coppice potential

Habitat and Ecology:

Site: wide range of habitats, from wetlands to dry uplands.

Soil Texture: medium - coarse

Soil pH: 4.5 - 5.6

Range: Coastal Plain; southeastern Virginia; south through Florida; west to Arkansas and eastern Texas; in Mississippi, throughout

Wildlife Value and Uses: one of the earliest blooming native shrubs; provides nectar for hummingbirds and bees when flowers are still scarce; in the Southeast, berries are a preferred summer food of wild turkey, ruffed grouse, quail, black bear, red fox, cottontail, fox squirrel, white-footed mice, skunk and chipmunks; also eaten by songbirds --- scarlet tanager, eastern bluebird, scrub jay, rufous-sided towhee, gray catbird, northern mockingbird, brown thrasher, northern cardinal, the American robin, and several other thrushes

Timber Value and Uses: none

Landscaping Info: beautiful scarlet to maroon fall color; often evergreen in the coastal plain, retaining the fall colors throughout the winter; southern blueberries require no chemical spraying, no supplemental watering, no winter protection, and no fertilizing

Other Facts: highbush blueberries are the source of the commercial rabbiteye blueberries grown in the American southeast; berries eaten by Native Americans, other plant parts utilized for medicinal preparations



Bark



Leaf



Flower



Fruit



Twig

deerberry

highbush huckleberry, squaw
huckleberry, southern gooseberry

Vaccinium stamineum L.

Family: Ericaceae

Leaves:

Type: simple, alternate, deciduous

Size: 1.0" - 3.0" long; 0.5" - 1.0" wide

Margin: entire

Apex: round to cuspidate

Base: round to obtuse

Shape: elliptical to ovate

Color: dark green above; paler bluish white below

Surface: waxy above; occasionally hairy below

Venation: pinnate

Twigs:

Size: slender

Color: new growth green and red; older brown

Surface: rough; leaf scars small, half-round to circular; one tiny "dot-like" bundle scar; zigzag branching

Buds:

Size: small; 0.02" - 0.06" long

Shape: pointed

Color: light yellow to reddish orange

Surface: 4-6 overlapping bud scales

Fruit and Flowers:

Berry: numerous seeds

Size: 0.25 " dia.

Shape: globular

Color: blue to purplish black

Flower: monoecious; perfect; on specialized flowering branches subtended by leafy bracts; bell-shaped; 5-lobed; single flower, greenish white to purple, yellowish exerted stamens; 0.25" long

Bark: reddish brown; rough; shreddy

Physical Attributes:

Form: multiple stem

Size: 16.4', mature

Growth Rate: 16.0' maximum @ 20 yrs

Life Span: (>100 yrs)

Tolerances:

Shade: high

Drought: high

Fire: medium

Anaerobic: low

Propagation: seed (cold stratification required); bare root; container

Other: resprout/coppice potential

Habitat and Ecology:

Site: moist soils in mixed upland and flatwoods habitats

Soil Texture: medium - coarse

Soil pH: 4.0 - 7.0

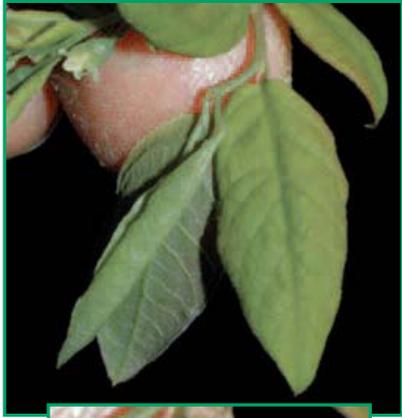
Range: central Florida; west to east Texas; north to Missouri, Indiana, Massachusetts and Vermont, and southern Ontario; in Mississippi, scattered throughout ---no verified reports shown in the Mississippi River Delta counties by the NRCS Plants Database

Wildlife Value and Uses: berries eaten by ruffed grouse, bobwhite quail, wild turkey, fox, raccoon, black bear, chipmunks, squirrel, and numerous songbirds; berries and vegetation significant food resource for white-tailed deer, and the source of the common name

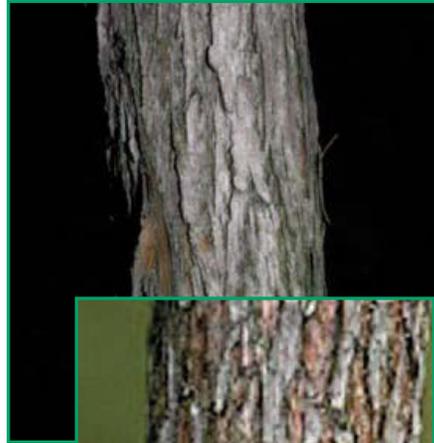
Timber Value and Uses: none

Landscaping Info: makes an attractive specimen shrub; informal mixed hedge; background shrub in a mixed border; can be trained to a single leader, or allowed to grow with multiple trunks

Other Facts: more than 400 species of blueberries (genus *Vaccinium*) occurring in the northern hemisphere



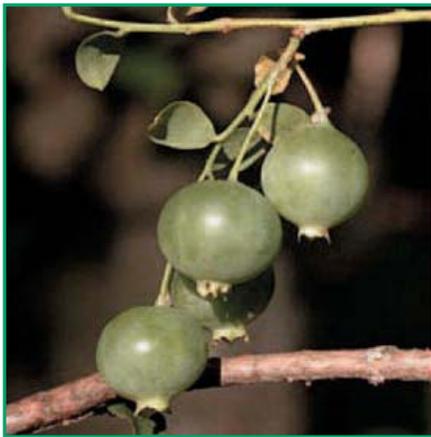
Leaf



Bark



Flower



Fruit



Twig

GLOSSARY

- Acorn.** A single nut, circular in cross section with a scaly cup attached at the base.
- Acuminate.** The leaf tip is narrowed abruptly into a tapering point.
- Acute.** Either the leaf tip or the leaf blade ends in an angle less than 90° and the tip is not prolonged into a point.
- Allelopathy.** Organic chemicals released by one plant that have a detrimental effect on the germination, growth, or metabolism of a different plant.
- Annual.** Acorns that mature in one growing season.
- Apetalous.** Having no petals.
- Apex.** Tip, terminal end, or the narrowed and pointed end.
- Apical.** Relating to the tip or apex.
- Appressed.** Lying close and flat against.
- Arcuate.** Curved, as in an arc.
- Ascocarps.** Sexual fruiting bodies of ascomycete fungi.
- Attenuate.** Leaf blade tapering to a long slender point.
- Awn.** A small pointed process or slender bristle.
- Axillary.** Situated in or growing from the angle formed by the junction of a vein and the midrib of a leaf.
- Biennial.** Acorns that mature in two growing seasons.
- Bipinnate.** Doubly or twice pinnate
- Bristle-tipped.** The leaf tip and lobes are prolonged into a long slender bristle.
- Calyx.** The outer perianth of a flower, usually green.
- Catkin.** An inverted, scaly bracted inflorescence with sessile flower.
- Ciliate.** Margin fringed with short hairs.
- Crenate.** A rounded type of marginal tooth.
- Cordate.** Heart-shaped with the base rounded and notched where the blade is attached to the petiole.
- Corolla.** The inner perianth of a flower, usually colored.
- Cuneate.** The leaf base is shaped like a wedge with straight sides tapering down to a point on the petiole.
- Cup.** Basal covering of an acorn.
- Cyme.** Flower cluster.
- Cymose.** Cyme like.
- Deciduous.** Not persistent, applied to leaves that live less than a year.
- Decurrent.** Leaf blade extends down the petiole.
- Deltoid.** Shaped like an equilateral triangle.
- Dentate.** The leaf margin has wide-angled teeth pointing outward.
- Distal.** Far from the point of attachment.
- Elliptical.** Leaf shaped like an ellipse with both the tip and base sloped uniformly.
- Emarginate.** Notched
- Entire.** Leaf margin is a smooth, even line with no indentations.
- Fascicled.** In clusters or bundle.
- Glabrous.** Smooth, not pubescent or hairy.
- Glandular.** Bearing glands.
- Glaucous.** Surface is covered with a whitish bloom that rubs off.
- Inflorescence.** The flowering portion of a plant.
- Lanceolate.** Leaf shape is several times longer than wide and broadest below the middle, shaped like a spear point.
- Lateral.** Relating to the side.
- Leaflet.** On a compound leaf, one of the “leaf-like” structures.

Lenticel. Lens-shaped corky growths on young bark.

Linear. Long and narrow with parallel margins.

Lobe. The division of a leaf blade.

Lunate. Crescent shaped.

Margin. The edge of a leaf.

Midrib. The central vein or associated area of the leaf.

Mucronate. Lobe tip ends abruptly in a short, small point.

Nut. A hard fruit, (e.g., acorn or hickory nut).

Mucilaginous. Slimy.

Oblanceolate. Leaf shape is somewhat lanceolate but is widest above the middle and tapering toward the petiole.

Oblong. Longer than broad with rounded ends and sides nearly parallel.

Obovate. Leaf shape is broadly egg-shaped and widest above the middle.

Obtuse. The leaf tip tapers abruptly to a blunt or rounded point forming an angle greater than 90°.

Odd Pinnate. Compound with an odd number of leaflets.

Orbicular. Circular.

Ovate. Egg-shaped in outline; broad end at the base with the tip acute or rounded.

Palmate. Radiately lobed or divided.

Panicle. A compound inflorescence with stalked flowers; bushy branched.

Peduncle. Stalk supporting one or more acorns.

Pedicel. The support of a single flower in a cluster.

Petiole. Slender stem-like structure that supports the leaf blade.

Pinnate. Compound with leaflets on each side of a common axis.

Pistils. The seed-bearing organ of the flower.

Pistillate. Provided with Pistils, or a flower lacking stamens.

Pith. Center of a stem.

Pubescent. Covered with fine soft short hairs.

Raceme. An elongated inflorescence with short-stalked flowers.

Reticulate. Marked with a network pattern.

Revolute. Edge of leaf is slightly rolled or turned under.

Rhizomatous. Thickened subterranean stem producing shoots above and roots below.

Rounded. The leaf tip or leaf base makes a full arc in outline, U-shaped base.

Rugose. Wrinkled.

Samaras. An indehiscent, winged fruit.

Serrate. Sharp teeth, pointed forward like a saw.

Sessile. Without a stalk or petiole.

Sinuate. The margin bends in a strong wavy line without producing a sinus.

Sinus. The space between two lobes of a leaf.

Spatulate. Leaf shape is broad and rounded above the middle but with the sides wedge-shaped and tapering toward the petiole.

Stamen. Pollen bearing organ of the flower.

Staminate. Flower, bearing stamen but without pistils

Stellate. Resembling a star in shape or cross section.

Stipule. Appendage at base of petiole of the leaf.

Tomentose. Slightly pubescent with matted (woolly) hair. Tomentum. Densely pubescent.

Tooth. An edge or lobe of a leaf blade divided into toothlike projections, usually ending in a slender bristle.

Truncate. Leaf base almost forms a straight line at right angles to the midrib.

Vein. A rib-like thickened tissue in the leaf blade. Woolly. Covered with long matted hairs.

Xerophytic. Structurally adapted for survival with a limited supply of water.

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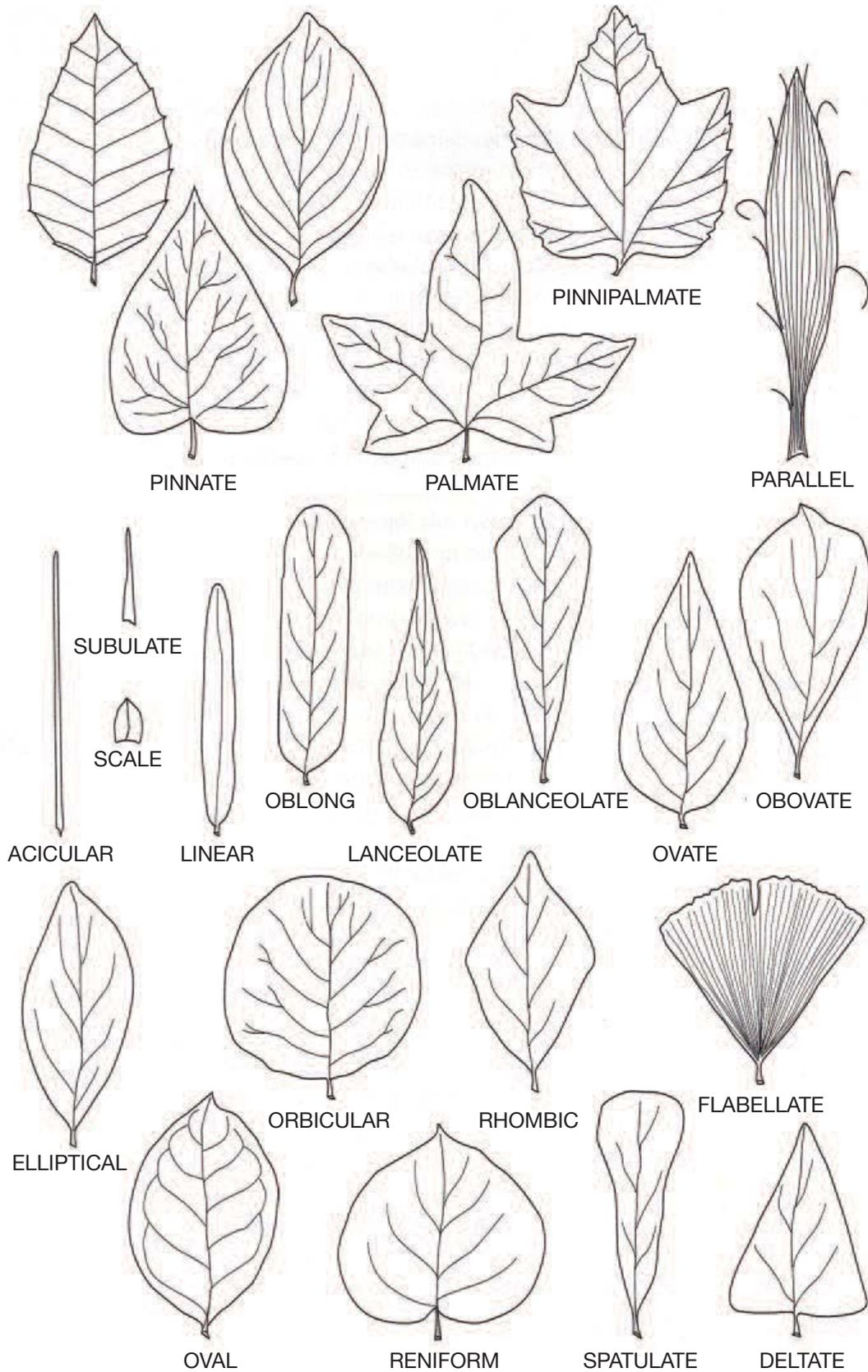
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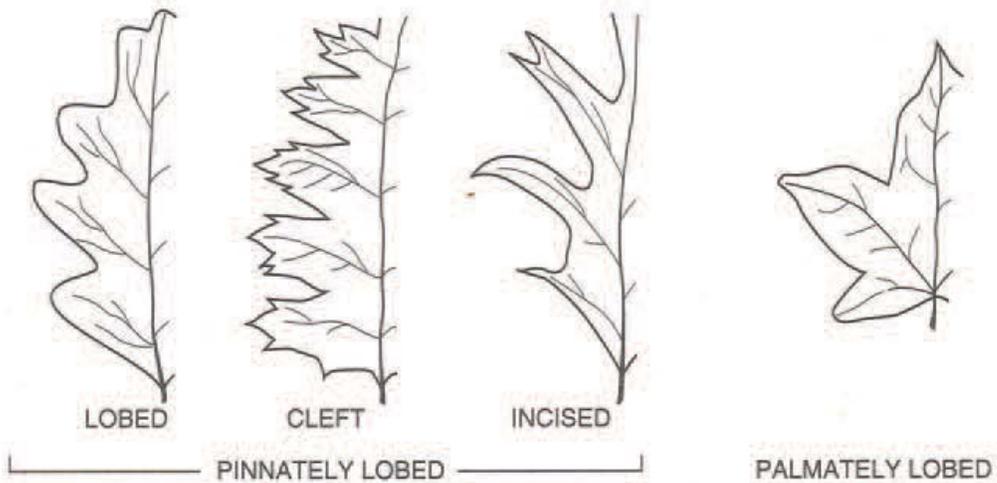
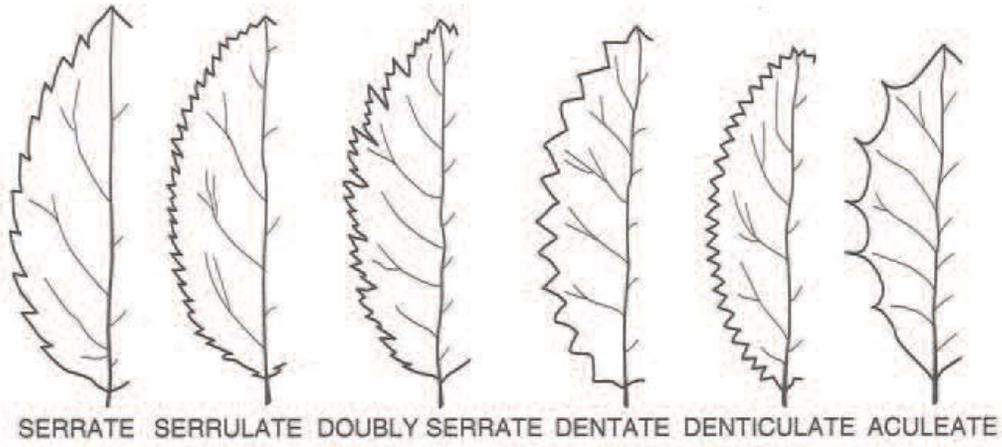
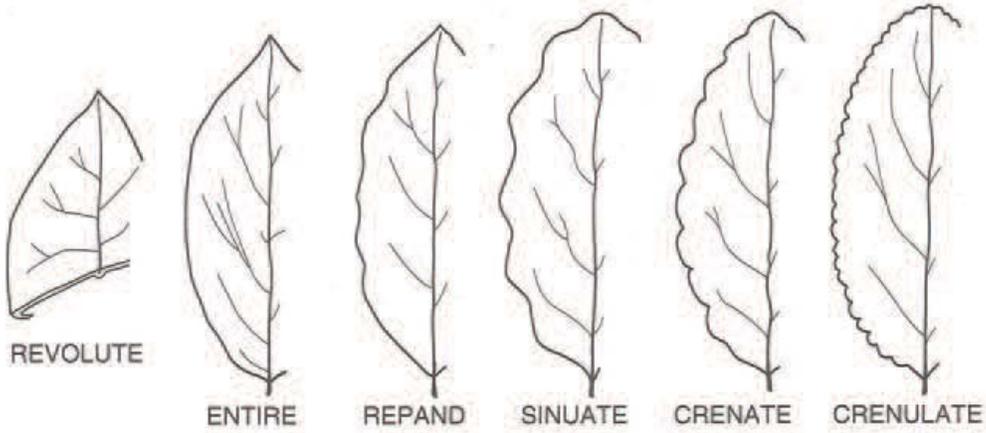
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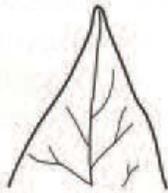
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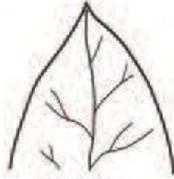
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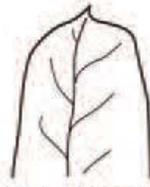
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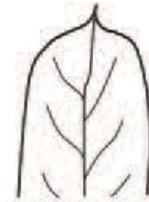
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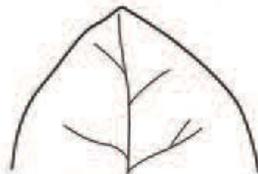
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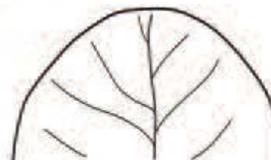
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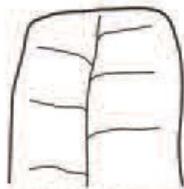
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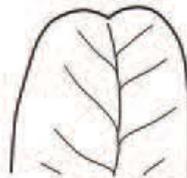
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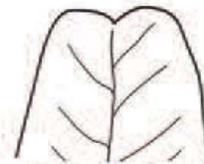
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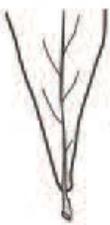
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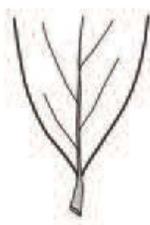
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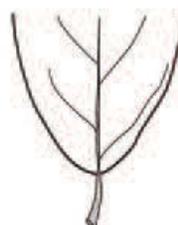
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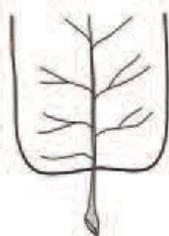
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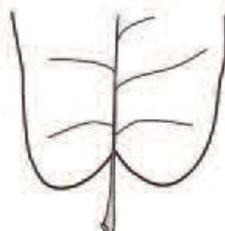
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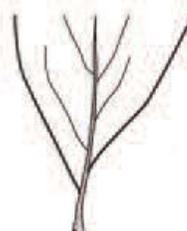
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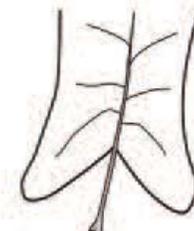
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CORDATE



INEQUILATERAL



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