

The Arboretum

RHODES COLLEGE

The purpose of an arboretum is to establish and maintain a wide diversity of trees for educational and recreational uses. The Rhodes Arboretum includes more than 1500 individual trees representing over 100 species. Every year we add to this number species that are adapted to our climatic zone to enrich the tree diversity on campus.

This pamphlet with its campus guide allows the visitor to locate 50 representative specimens in the Arboretum. These specimens are labeled with tags, on the trunk or on a nearby stake, bearing their common and scientific names. Additional trees around the campus are labeled as well. The pamphlet provides a short tour through which a visitor can become acquainted with some of the characteristics of the identified species.

The Rhodes Arboretum originated in the early 1950's under the supervision of Dr. Arlo Smith, longtime Professor of Biology. The Arboretum was last certified in 1995, and since then efforts have been made to keep the campus rich in tree diversity in the face of inclement weather and campus growth. Currently 90 species have been tagged for a Level 3 Arboretum. A number of Rhodes faculty, staff and students have been involved in this latest effort to conserve and increase trees species on campus. In particular, Physical Plant has been instrumental in achieving this designation. A list of those who participated in this project can be found at the back of the pamphlet. Currently the responsibility for overseeing the Arboretum resides with Dr. Rosanna Cappellato of the Rhodes Biology Department.

1. *Metasequoia glyptostroboides*, Dawn Redwood

Dawn redwood is a conical tree of upswept branches and can grow 45 m in height and 2 m in diameter. It has a fluted trunk of orange-brown, peeling bark. The deciduous leaves are opposite, linear, flattened, and 2.5 cm long. The cones are round, dark brown and long-stalked, containing many small seeds. The dawn redwood was not known to science until 1941 when it was discovered as a fossil. In that same year a Chinese explorer, who had seen 4 of these trees, described this species to Chinese botanists, who sent out to examine it in 1944. In September 1946, the Arnold Arboretum of Harvard University sponsored a massive expedition, in which they discovered thousands of trees in a 250 square mile area of Central China. From this expedition, they collected and distributed seeds to arboreta throughout the world. The trees at Rhodes were acquired from the original disbursement and planted as seedlings in 1954. Because dawn redwood is unaffected by disease and grows faster than most other tree species, it has already become a popular landscape tree.



2. *Quercus lyrata*, Overcup Oak

Overcup oak is a southern tree confined to swamps, rivers, and floodplains. It is occasionally used as a shade tree. Capable of growing 1 m a year, this species is one of the fastest growing oaks and can reach 18-22 m in height. The leaves are 10-15 cm long, 2.5-10 cm wide, oblong, wedge shaped at the base, and divided into 5-7 lobes. They are shiny green above, leathery, coated with pale hairs beneath. The common name comes from the acorns which are 1 at least 2/3 of their length enclosed by a non fringed cup. The spherical, 2.5 cm long acorns occur singly or in pairs. Common only in the lower Mississippi River Valley, overcup oak is rare throughout most of its range, which extends from the coastal plain of Delaware to northwestern Florida, west to Texas, and up the Mississippi River to southern Illinois.



3. *Platanus occidentalis*, Sycamore

The Sycamor, also known as American planetree, is easily distinguished from other trees by its mottled, greenish-white, gray and brown exfoliating bark. On deep soils, a sycamore can reach 30 to 40 m in height and 1.5 to 2 m in diameter. The leaves are palmately nerved, broadly ovate, 10 to 23 cm long. When full grown they are bright yellow green above and paler beneath. The petiole bases are unusual, because they completely enclose the bud. The fruit are 2.5 cm in diameter, persistent during the winter. Often found in riparian and wetland areas, the range of the sycamore extends from Iowa to Maine in the north, Nebraska in the west, and south to Texas and Florida. This species has been successfully grown in urban areas where air pollution, poor drainage, compacted soil, and/or drought are common.



4. *Quercus palustris*, Pin Oak

Pin oak is a medium-sized tree, 15-25 m in height with a trunk diameter up to 1 m. Young trees have strong, pyramidal crowns with drooping lower branches radiating out from a central leader. When older, pin oaks develop a more rounded crown. The bark is gray brown in color and rather smooth. Pin oak leaves are deeply 5-9 lobed, 5-26 cm long and 5-12 cm broad. They are thin, firm, and lustrous dark green, with a tuft of pale orange-brown on the lower surface where each lobe vein joins the central vein. The acorns, borne in a shallow, thin cap, are hemispherical, 10-16 mm long and 9-15 mm broad. Due in part to its shallow, fibrous root system, which allows it to be transplanted easily, and its fast growth rate, this tree is one of the most common oaks found in a landscape throughout the eastern United States. Pin oak is planted far outside of its relatively small natural range, which extends from Massachusetts to Southern Iowa, south to northern Arkansas and Virginia.



5. *Cercis canadensis*, Eastern Redbud



Eastern redbud is a large shrub or small tree that reaches only 6-9 m in height and 64-89 cm in diameter. The bark of this species is a dark brown-gray with fissured plates that become raised and criss-crossed with age. The bark of the eastern redbud exfoliates in thin strips. The leaves of this species are 7-12 cm long and wide, alternate, and heart-shaped with an entire margin and prominent palmate venation. The leaves are medium to dark green and are often a brilliant chartreuse color in the fall. The flowers of the redbud are a light to dark magenta, about 1.5 cm long, and are seen in clusters from March to May. They are pollinated by long-tongued bees, such as the carpenter bee. Native Americans ate the flowers of the redbud, raw or boiled, and in some parts of southern Appalachia, the twigs were used to season wild game. The redbud occurs naturally from New Jersey and southern Pennsylvania northwest to southern Michigan, southwest into southeastern Nebraska, south to central Texas, and east to central Florida.

6. *Nyssa sylvatica*, Black Tupelo or Black Gum

The black gum, or black tupelo, grows on a variety of soils, however it is most common in swamps, floodplains, and moist uplands. When young, this species has a pyramidal outline with densely set branches, some of which are angled downward. In maturity the many spreading horizontal branches form an irregularly rounded crown. The height of the black gum generally exceeds the canopy spread and this tree frequently grows to 25 m in height, with a 1 m trunk in diameter. The bark is light in color, thick and deeply furrowed. The leaves are alternate, 7.5-15 cm long, 3-7.5 cm wide, leathery, and slightly downy underneath. The inconspicuous, green flowers appear in May and June, and are borne on long stalks. By September or October blue-black, 1.5 cm long, plum-like fruits, with single stones are developed. The black gum is often planted as an ornamental tree for its spectacular fall colors of red, orange, and yellow. The black gum ranges from Maine to Michigan, south to central Florida and eastern Texas.



7. *Acer palmatum*, Japanese Maple



The Japanese maple is a small tree with a broad, rounded crown of layered branches. Initially, this maple grows moderately fast, but with time its growth rate slows. Usually this species reaches 6-10 m in height and 20-35 cm in diameter. The leaves are opposite, 5-12.5 cm long, and have 5-9 narrow, pointed, toothed lobes. Depending on the cultivar, fall color can be bronze, purple, or red. The fruit is 1-2 cm long samara with the wings being 0.5-1 cm wide. Japanese maples tend to produce abundant crops of fruit each year, which mature to a purple or red color in September or October. It can be grown from Massachusetts to central Missouri, south to eastern Texas and central Florida. This fine-textured maple, native to Japan and China, is widely cultivated in the United States. It is considered to be the most flexible of the maples regarding landscape uses; it can be used effectively as a single specimen, in groupings, or as a bonsai tree.

8. *Quercus phellos*, Willow Oak

Willow oak is a popular shade and street tree with fine-textured foliage and a dense crown of slender branches ending in pin-like twigs. This oak has a rounded crown, most often attaining a height of 20-25 m and a diameter of 1 m. On favorable sites, however, it may reach a height of over 30 m and have a trunk diameter as large as 1.5 m. The bark is rough and light reddish brown in color. Willow oak's light green, shiny leaves are lance-shaped, with tiny bristle-tips. The leaves are 6-13 cm long, 0.5-2.5 cm wide. Like all members of the red oak group, the acorns mature in the fall of the second season. They are nearly round, light yellow-brown, and about 2.5 cm long. The scaly cup is thin and saucer shaped. Willow oak gets its name from its foliage, which resembles the leaves of the Willow family. The natural range of the willow oak extends from Maryland to northwestern Florida, west in the Gulf States to eastern Texas. It follows the Mississippi Valley into extreme southern Illinois. The specimen indicated on the map is one of the Rollow Oaks planted by J.R. Rollow when Rhodes was moved to its present location from Clarksdale, Tennessee in 1925.



**9. *Quercus falcata* var. *pagodifolia*,
Cherrybark Oak**

Cherrybark oak is a variety of southern red oak. One of the largest of all oaks, it typically grows to 40 m in height and 2 m in diameter. The bark of this species, which resembles that of the black cherry, is separated by fissures and ridges covered with dark scales. The leaves of cherrybark oak are oblong and deeply divided into 5-11 narrow pointed lobes. They unfold red and measure 12-25 cm in length and 7.5-12.5 cm in width. This oak produces large crops of acorns every 3-4 years. The acorns are stemless, 1.5-2 cm long with a saucer shaped cup. This oak is primarily a tree of the lower Mississippi River Valley from southeastern Texas to the southern tip of Illinois, south to the coast of Alabama, but is occasionally found in southern Georgia and the eastern Carolinas. It can be distinguished from southern red oak by its larger size, more vigorous growth, scaly bark, more uniform leaves, and tendency to grow on wetter sites. Usually found in a dominant or co-dominant role, cherrybark oak is common in the Memphis area.



10. *Quercus nigra*, Water Oak

The water oak is a vigorous member of the red oak group. It is used extensively in the landscape where it grows quickly and reaches 30 m in height and 1.5 m in diameter. With maturity, the bark becomes blackish and furrowed into scaly ridges. When grown in the open, water oak forms a rounded crown of slender twigs that can extend 30 m in width. The leaves, resembling paddles, are 5-10 cm long, 2.5-5 cm wide, wedge-shaped, slightly three lobed, dull blue-green above, and pale with tufts of hair along vein angles beneath. The leaves on vigorous trees occasionally remain green and persist into early spring. The acorn is 1.5 cm in length, almost round, and partially enclosed with a shallow, saucer-shaped cap. The natural range of water oak is from southeastern Virginia to eastern Oklahoma, south to Texas and central Florida.

**11. *Acer platanoides*,
Norway Maple**

The Norway maple is a medium to large-sized tree with a broad, rounded crown of stout branches. The bark of this tree is grey-brown and shallowly furrowed. Usually this species reaches 20-30 m in height and 1.5 m in diameter. The leaves are opposite, palmate, 7-14 cm long and 10-18 cm wide, and each has 5-7 sharply pointed lobes. The leaves of the Norway maple are longer than they are wide, which is opposite of those of the sugar maple. Fall color arrives late, in early November, and is a brilliant yellow. The fruit is 3-5 cm long double samara with the wings joined at 180 degrees. A milky white sap oozing from a broken petiole is a distinguishing feature for the Norway maple. The Norway maple is an invasive, shade tree that grows in the northeastern United States from Maine to Wisconsin, south to Tennessee and Virginia, and also in the Pacific Northwest



12. *Acer rubrum*, Red Maple

Red maple is a large tree frequently growing 20-25 m in height and 1 m in diameter. It has a narrow or rounded crown of mostly vertically ascending branches. Bark on this species is gray and fissured into long scaly ridges. The leaves of this maple are 6-10 cm long and wide. They have 3 shallow, short-pointed lobes, are irregularly saw-toothed, and dull green with a long reddish petiole. Fall color is often a brilliant red. Red maple flowers are small but conspicuous. They are deep red and borne in early spring before the leaves are out. The female flowers mature into stalk-less clusters of 2.5 cm long, seeded, winged samaras. Red maple, also called swamp maple, occurs naturally on low ground in swamps, but will thrive on any moist and fertile soil. It is used extensively as a landscape and shade tree in the central and eastern United States. The red maple has an expansive natural range, which extends from Newfoundland to southeastern Manitoba, south to eastern Texas and southern Florida.



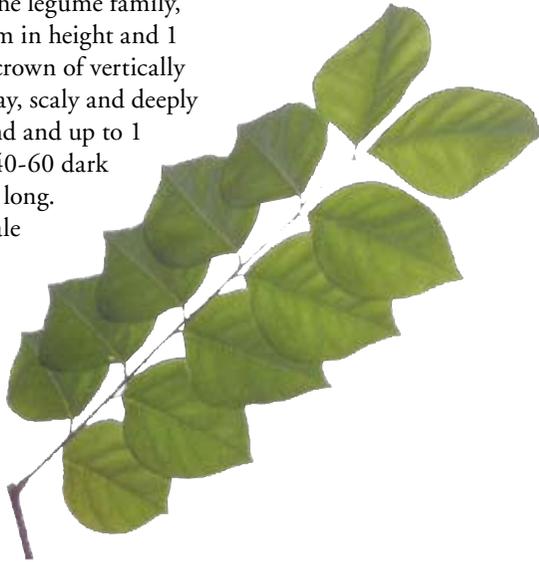
13. *Gymnocladus dioicus*, Kentucky Coffee Tree

The Kentucky coffeetree, a member of the legume family, is usually a medium sized tree up to 30 m in height and 1 m in diameter. It has a narrow, upright crown of vertically ascending branches. The bark is dark gray, scaly and deeply fissured. The leaves are doubly compound and up to 1 m long and 0.75 m wide. Each leaf has 40-60 dark bluish-green leaflets, which are 5-7.5 cm long.

Fall color is often yellow. Male and female flowers are borne on separate trees. The female coffeetree produces flat, leathery pods up to 25 cm in length. The pods persist into early spring and contain 4 or more, reddish brown seeds that are 2.5 cm in diameter.

The seeds were brewed by early settlers for coffee, hence the common name.

This tree's scientific name, *Gymnocladus*, means "naked branch," which refers to its stout branches that, for six months or more, show no sign of life. The buds are inconspicuously hidden and the leaves unfold late in the spring and abscise early in the fall. Never common, the Kentucky coffeetree ranges from Ohio to Iowa, south the central Oklahoma and northern Kentucky.



14. *Cornus florida*, Flowering Dogwood

The flowering dogwood is a species native to eastern North America. It is a small deciduous tree growing to 10 m high, often wider than it is tall when mature, with a trunk diameter of up to 30 cm. The leaves are opposite, simple, oval with acute tips, 6-13 cm long and 4-6 cm broad, with an apparently entire margin (actually very finely toothed, under a lens); they turn a rich red-brown in fall. The flowers are individually small and inconspicuous, with four greenish-yellow petals 4 mm long. Around 20 flowers are produced in a dense inflorescence, or flower-head, 1-2 cm in diameter. The flower-head is surrounded by four conspicuous large white, pink or red "petals" (actually bracts). Flowering dogwood is grown widely throughout mid-temperate North America. In the eastern part of the continent, it is cultivated as far north as Toronto and south to central Florida.



15. *Fagus grandifolia*, American Beech

American beech is the only species of this genus growing in North America, and typically reaches 18-24 m in height. The bark of this species is smooth and light gray, and the leaves are alternate, simple, and pinnately veined with each vein ending in a sharp tooth. They are a shiny green above and slightly paler below. The fruit of the American beech are contained in a woody, spined husk containing triangular, pale brown nuts. This species is commonly used as a food source for birds and mammals, but can be used for flooring and furniture. The American beech is a shade-tolerant species that can be found in Eastern North America and into Eastern Canada.



16. *Ginkgo biloba*, Ginkgo

The ginkgo can reach over 30 m in height and 2 m in diameter, but this is quite unusual. The bark is thick, ash-gray and shallowly fissured. The pale light green, fan-shaped leaves have no midrib, but many branching veins. These leaves are 2.5-7 cm long, 5-9 cm wide, and often 2-lobed. Male and female reproductive structures occur on separate trees. Male ginkgos are preferred commercially since the fruit produced on the female ginkgos have a strong offensive odor of rancid butter. These plum-like fruits are orange, 2.5 cm in diameter, and consist of a fleshy outer layer covering an oval nut with a smooth whitish shell; they mature in October. The ginkgo was introduced into the United States from England in 1784 and has become a common street and lawn tree because of its resistance to air pollution and insects and its ability to grow in poor, hard-packed soils. The ginkgo is described as a living fossil. It is the only survivor of an ancient family, which was common throughout the temperate regions of both hemispheres. The ginkgo is believed to have been saved from extinction by Buddhist priests in China and Japan, who cultivated the tree for its fruit and regarded it as being sacred.





**17. *Quercus alba*,
White Oak**

The white oak is a large tree common throughout much of the eastern United States. When grown in the open, white oak typically has a wide-spreading crown and grows to 30 m in height and 1.5 m in diameter. However, in forests it grows much taller (to 45 m) and has a single leader and narrow crown. The bark is pale gray with shallow fissures and scaly ridges; on old trees it may be over two inches thick. The leaves are alternate, from 12.5-23 cm long, narrowed toward the stem, and have 7-9 rounded lobes. The acorns, typical of all members of the white oak group, mature in one season. The shiny, brown nut is about 2.5 cm long, with ¼ of its length covered in a shallow, warty, finely hairy cup. The acorns are both abundant and fertile. White oak is prized for its high-grade wood, which was used for shipbuilding in colonial times. The white oak grows slowly and can live for several hundred years. This majestic species can be found in the wild from Maine to Minnesota, south to eastern Texas and southern Georgia.

**18. *Ilex x attenuata*,
Foster's Hybrids Holly**

Foster's hybrids holly is a broadleaf evergreen tree that grows to 6-9 m in height and is upright to pyramidal in form. The bark of Foster's holly is smooth, gray and mottled. The leaves of this species are alternate, simple, a dark and shiny green above, and lighter below. The flowers of Foster's holly are white, 4-petaled with yellow-green centers, and appear in late spring. The fruit of this species is a bright red, round drupe that are numerous, attractive, and persist into winter. Foster's hybrids holly can be found throughout the southern United States.



19. *Quercus stellata*, Post Oak

The post oak is usually a medium-sized tree 15-20 m tall and 0.5 m in diameter. However, in favorable locations in the lower Mississippi Valley it may exceed 30 m in height and 1 m in diameter, while near the northern and western edges of its range it is often no more than a shrub. The bark of this species is fissured into gray, scaly ridges. The distinctively cross-shaped leaves (7.5-15 cm long and 5-10 cm wide) make this oak easy to identify. The leaves are dark green and rough on the upper surface, and covered with soft hairs beneath. The acorns are small, elliptical, 2.5 cm long and are halfway enclosed by a deep, warty cup. They hang from the stem singly or in pairs. Post oaks are often seldom used in landscape situations but are common inhabitants throughout most of its range, which extends from New Jersey west to northern Missouri, south to northern Florida and central Texas.



20. *Betula nigra*, River Birch

The river birch is a common ornamental grown throughout the eastern half of this country. It usually grows to 25 m in height and 1 m in diameter. The bark is pinkish-brown or silvery-gray separating into shiny, papery scales. It becomes thick and shaggy. The shiny dark green leaves of the river birch are 3.75-7.5 cm long, 2.5-5 cm wide, coarsely double sawtoothed, and have 7-9 vein pairs. The fruit, which matures by early summer, forms in a 2.5-4 cm long, brownish, upright cone with hairy scales containing 2-winged nutlets. As its name suggests, the river birch is a water-loving tree usually found on the wet soil of stream banks, lakes, and flood plains. In landscape conditions it typically divides a few feet above the ground into 2 or more leaning trunks, which form an irregular, spreading crown. In nature, however, it forms a narrow crown with a single leader. River birch is found from southern New York to southern Minnesota, south to eastern Texas and northern Florida.



21. *Juglans nigra*, Black Walnut

Black walnut, also called eastern black walnut and American walnut, can reach 30-37 m in height and 70-102 cm in diameter on good sites and has a small rounded crown when grown in the open. The bark of this species is dark and scaly, but becomes darker with rounded intersecting ridges with age. Leaves of the black walnut are alternate, pinnately compound with 10 to 24 leaflets, and are finely serrate. They are ovate-lanceolate, 30-60 cm long, and light green. The fruit of this species is fleshy and contained within hard nut surrounded by a round, brown and irregularly furrowed husk. The black walnut is now a scarce and coveted hardwood that provides food for wildlife as well as humans. This species is found scattered as individuals or small groups throughout the eastern and central United States.



22. *Quercus falcata* var. *falcata*, Southern Red Oak

Although the southern red oak can occasionally be found on well-drained lowlands, it is typically an upland tree. In forest conditions, where it will have a long and clear stem, it can reach a height of 40 m. More commonly, it is a large tree of 30 m in height and 1.5 m in diameter. The bark is dark brown or gray and broken into ridges by shallow fissures; it may be 2.5 cm thick. The leaves of the southern red oak are generally of 2 types, both found on the same tree. Both types have a tapering wedge-shaped base, however those found on the outer areas of the crown are finger-shaped with slender, pointed or toothed-tipped lobes and the terminal lobe curved. The leaves found in shaded conditions are bell-shaped, not as deeply cut, and have broader lobes that are distinctly toothed-tipped. The leaves are 12-23 cm long and 10-12 cm wide. The acorns are 1.5 cm long and held by a short-stalked or stemless saucer-shaped cup. Southern red oak is most common in the Gulf States, but can be found in the wild from southern New Jersey to eastern Oklahoma, south to eastern Texas and northern Florida.



23. *Carya cordiformis*, Bitternut Hickory

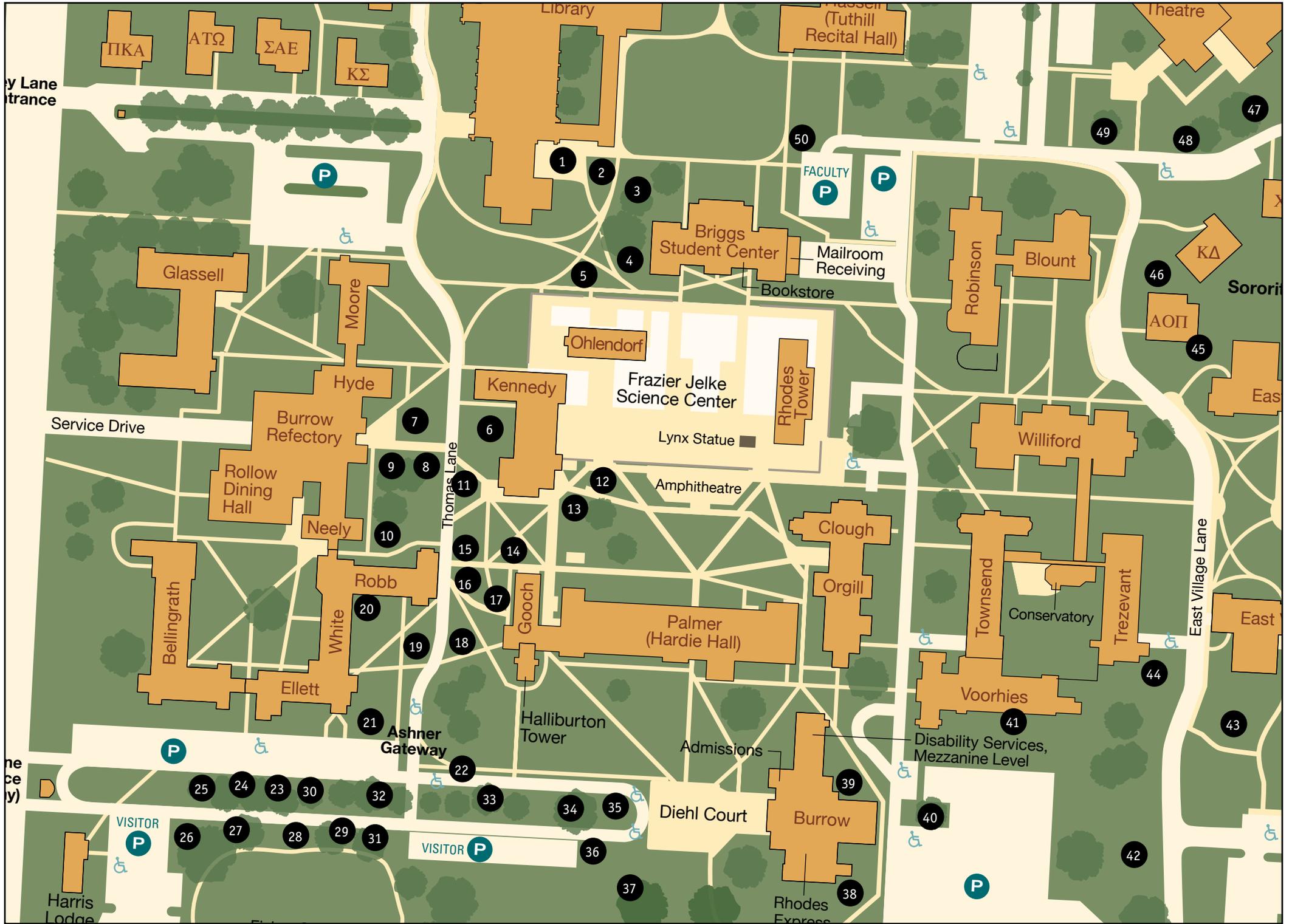
Bitternut hickory, also called bitternut and swamp hickory, typically reaches a height of 30 m with a diameter between 61 and 91 cm. The bark of this species is light gray and sinewy, but growing interlacing ridges and shallow furrows with age. The leaves of the bitternut hickory are 15.2-25.4 cm long, alternate, and pinnately compound with 7-11 leaflets. They are a medium-dark green in spring and green to a golden yellow in fall. An identifying characteristic is its bright sulfur-yellow winter buds. No other hickory has this distinguishing feature. The fruit, which give this species its name, is composed of a bitter kernel surrounded by a thick shell and a thin husk that splits into four sections when ripe. Like for other hickories, its wood is used for smoking meat and by Native Americans to make bows. Most abundant of all the hickories, bitternut hickory ranges throughout the eastern United States, but is most common from southern New England west to Iowa and from southern Michigan south to Kentucky.



24. *Liriodendron tulipifera*, Tulip Poplar

The tulip poplar, also known as yellow poplar, is among the tallest and most commercially valuable of the eastern hardwoods. Tulip poplars normally reach 40 m in height with trunk diameters up to 1.75 m, however some specimens have been found to exceed 55 m in height and 2.75 m in diameter. The bark of the mature trees is gray to brown and rough, furrowed with rounded ridges. The long-stalked leaves are 10-17 cm long, 7-15 cm wide and have 4 or 6 short-pointed paired lobes. The leaves are an unusual shape, almost square in outline. In early summer the tulip poplar has large yellow, green and orange, tulip-like flowers. The flowers develop into dry cone-like fruits about 7 cm long, which persist on the tree into winter. The tulip poplar is a member of the Magnolia family. Due to its rapid growth and ornamental attractiveness, tulip poplars are planted as shade trees far outside of their normal range, which extends from Massachusetts to southern Michigan, south to northern Florida and Louisiana.





25. *Acer saccharum*, Sugar Maple

The sugar maple is a large tree with a dense, oval crown and multi-colored autumn foliage. Sugar maple frequently grows to 20-25 m in height and 0.5-1 m in diameter. Mature bark is rough, gray, and deeply furrowed into scaly ridges. The irregularly toothed leaves usually have 5 deep, long-pointed lobes. The sinuses between the lobes are U-shaped at the base. Sugar maple leaves are dark green and 9-14 cm long and wide. Fall color is golden yellow, orange, and sometimes red. The 2.5 cm long (including wing), one seeded, brown, forking samaras mature in 1 season and sometimes persist into winter. The natural range of the sugar maple extends from Newfoundland to Minnesota, south to western Tennessee and central Missouri. It is used extensively in the landscape as a shade tree and is also grown for the production of maple syrup. Sugar maple grows best on fertile, well-drained soils, but can survive well on poor and rocky soil types.



26. *Prunus serotina*, Black Cherry

Black cherry, also called wild black cherry or rum cherry, is the largest of the native cherries, growing to 15.24-18.29 m in height and 25.4-50.8 cm in diameter. This deciduous tree has a natural defense mechanism against herbivores; it releases the toxic chemical hydrogen cyanide when crushed, which gives the species its distinctive cherry-like aroma. Leaves of the black cherry are 6-14 cm long, simple, alternate, oval to oblong, and lance-shaped. This species flowers later than other native cherries, producing masses of fragrant, 10-15 mm in diameter, white flowers in the spring along with one-seeded drupes that are green to red, and black when ripe. The fruit of this species is important to many species of wildlife. Black cherry ranges from Eastern Canada and into the Eastern United States, south from Texas to Florida.

27. *Prunus laurocesarus*, Cherry Laurel

It is an evergreen shrub or small tree, growing to 5-10 m tall, rarely to 18 m tall, with a trunk up to 50 cm diameter. The 5 – 10 cm long and 2 cm wide leaves are **alternate**, **simple**, elliptical-shaped, and **glossy**. The fragrant, fuzzy, white flowers are favored by bees and bloom from late March to April, and are followed by prolific fruit. The round, fleshy, 3/8 - 1/2 inch fruit is green and matures to blue-black. It ripens in October and will persist into the winter. The seeds are favored by birds and some mammals. It is found in gardens where it is cultivated to form hedges, especially in the West and in the South of Europe. Parts of this tree, including the fruit, are poisonous if ingested by humans or livestock. The leaves and fruit pips contain cyanolipids that are capable of releasing cyanide and benzaldehyde,



Photinia fraseri, Fraser (red tip) Photinia

It is an evergreen shrub or small tree, growing to 5-10 m tall, rarely to 18 m tall, with a trunk up to 50 cm diameter. In the spring, and during the summer a new flushes of growth appear followed by flowers in mid to late spring. Red-tip photinia blossoms appear in dense, rounded clusters. They are cream to ivory white, with five petals and pollen-rich centers which attract bees. These blooms are noted for their unusual aroma, which is not typically described as pleasant. In autumn, these malodorous blooms give way to clusters of bright red berries. This species was created by crossing two other Photinia species: Japanese photinia (*Photinia glabra*) and Chinese or Taiwanese photinia (*Photinia serratifolia*). Once widely used as a hedge, this plant has almost been eliminated in the South because of a fungal pathogen known as *Entomosporium*, that causes leaf spots and ultimately defoliation.

29. *Celtis laevigata*, Sugarberry



Sugarberry, also known as hackberry, is identified easily due to its bark, which is covered in wart-like bumps. Sugarberry reaches up to 18-24 m in height and 46 cm in diameter. The leaves of this species are 5.-13 cm long, alternate, simple, pinnately-veined, and light green. The fruit of the Sugarberry are single-seeded, 6-13 mm in diameter drupes that turn a deep purplish color when ripe. Sugarberry is found south from southeastern Virginia to southern Florida, west to central Texas and northeastern Mexico, and north to western Oklahoma, southern Kansas, Missouri, southern Illinois, southern Indiana, and western Kentucky. Its range overlaps the southern part of the range of the common hackberry. Sugarberry is often confused with the common hackberry due to their overlapping ranges, but sugarberry has narrower leaves that are smooth on top.

30. *Carya ovata*, Shagbark Hickory

Shagbark hickory is the most noted species of hickory due to its loose-plated bark. The leaves of this species are alternate and pinnately compound with 5, but sometimes 7 leaflets. The lateral leaflets are lanceolate, while the terminal leaflets are much larger. Leaf color is often a medium-dark green that can change to yellow in the fall. The fruit of the shagbark hickory is contained within a thick husk that split into four halves and are brown when ripe. The individual fruit is 1-3 cm long and the nut is a light-brownish white and contains a sweet, edible kernel. Shagbark hickory is found throughout the eastern United States and its sweet nuts were once a staple food for Native Americans, and still are for most wildlife. Mature shagbarks are easy to recognize because, as their name implies, they have shaggy bark.



31. *Tsuga canadensis*, Hemlock

Hemlock is an evergreen conifer with upsweeping branches that typically grows to 18-21 m in height and 61-122 cm in diameter. The bark of this species is brown and changes from smooth to flaky and scaly with age. The leaves of the hemlock are spirally arranged, flattened, two-ranked needles. They are 1.3 cm long, dark green, and have two white stomata bands underneath. The flowers are insignificant and the fruit are small cones that are 1.3-2.5 cm long, light brown, with round scales on the entirety of the cone. Hemlock is native to eastern Canada and the Appalachian range.

32. *Quercus bicolor*, Swamp White Oak

Swamp white oak is a medium-sized tree reaching 18-25 m in height and 0.6 to 0.9 m in diameter. It has an open, irregularly shaped crown and its bark is dark gray, scaly or flat-ridged, and often peels off in large papery curls. The leaves of this oak are 12-18 cm long, 7-11 cm wide, and have regularly spaced, shallow, rounded teeth. They are a glossy dark green, lighter underneath, arranged alternately, softly hairy, and turn brown in autumn. The acorns are 1.5-3 cm long, clustered in groups of 2-4, and the tan bowl-shaped cap covers two thirds of the acorn. This species is a member of the white oak group that occurs naturally in rich, moist to wet soils. Swamp white oak is found most commonly in the Midwestern United States, but has a full range from Iowa to Massachusetts, from Quebec and Ontario to North Carolina and Tennessee.





33. *Chionanthus virginicus*, American Fringe Tree

American fringe tree is a small tree that reaches 3.7-6 m in height. The bark of this tree is dark gray-brown and color and becomes slightly furrowed and ridged with age. The leaves of the American fringe tree are opposite, simple, and elliptical to elongate. They are 7.6-20.3 cm long, green, and pinnately veined. Fall color is yellowish-green to brown. Flowers are white and fringe-like, giving the appearance of a long, white beard (hence the common name). Fruiting occurs on female plants and consists of blue-black drupes in the fall. American fringe tree is native to southeastern and the southern central United States and is used as a shrub border or as an attraction for birds. One of our finest spring bloomers, this species is considered by many to be one of the most beautiful North American native plants.



35. *Ostrya virginiana*, Hophornbeam

Hophornbeam, also called eastern hophornbeam and American hophornbeam, is a small, slow-medium growing tree that are usually less than 12 m in height and less than 30 cm in diameter. The bark of this species is smooth and reddish-brown when young, but ages to light brown with a shredded scaly appearance. The leaves of the hophornbeam are alternate, elliptical, doubly serrated, and have a prominent tip and veins. Fall color ranges from green, yellow to brown. The male flowers of this species are staminate, green catkins, while the female flowers appear with leaf development. The buds and catkins of the hophornbeam are important winter food for the ruffed grouse as well as for several other bird species. It is found in the eastern half of the United States and Eastern Canada.

34. *Ulmus americana*, American Elm

American elm, also known as white elm, water elm, or Florida elm, can reach between 30-38 m in height. The bark of this species is dark, ashy gray, and has broad ridges separated by diamond-shaped fissures. The leaves of the American elm are alternate, simple, and 7-15 cm long. They are dark green, oblong to ovate, and are yellow in the fall. The fruit of the American elm are rounded, flat, and papery, winged samaras. They are hairy at the margins and change from light green to tan. The American elm prefers rich, moist, well-drained soils and is found throughout Eastern North America.



36. *Quercus shumardii*, Shumard Oak

Shumard oak has been found to reach 60 m in height and 2.5 m in diameter. It can grow taller than any other American oak, but is usually 30-40 m in height and up to 2 m in diameter. The bark is quite thick, but only shallowly furrowed. The leaves are variable from tree to tree and in different parts of the crown, but are commonly 10-20 cm long, 9-12.5 cm wide, and have 7-9 bristle-tipped lobes. Like many oaks, shumard oak is relatively difficult to identify. The two most reliable characteristics are the hairless, straw or gray colored, egg-shaped buds and the light brown, 2.5 cm long acorns, which are held by a short, thick cup and are borne stemless or on short stalks. Shumard oak is most often found along streams, near swamps, and in deep moist soils from North Carolina to central Indiana and eastern Kansas, south to central Texas and northern Florida. It is most common in the lower Mississippi Valley.





37. *Sophora japonica*, Pagoda Tree

The Pagoda tree, or Chinese scholar tree is native to eastern Asia. This plant is relatively small in stature and after thirty years of growth can only reach 7 to 10 m in height. The leaves are alternate, pinnately compound, 15-25 cm long, and have 7 to 17 leaflets which are ovate, 2.5-5 cm long. Its flowers are creamy white, pea-like, in a long hanging cluster, each flower 1 cm long. The flowers appear in late summer. Its legumes are 7 to 20 cm long, yellow-green becoming light brown at maturity. Constricted between seeds, they look like string of pearls, maturing in early fall, and persisting all winter.

38. *Cercis canadensis* var. *alba*, Texas White Red Bud

Texas white redbud is a significant variant of the species, as it has white flowers instead of pink-lavender flowers. This species typically grows 6-9 m in height. The bark is brown-gray; exfoliating in thin strips, and becomes criss-crossed and furrowed with age. The leaves of the Texas white redbud are alternate, simple, and wide heart-shaped leaves that emerge a red-tinged bright green, but mature to a dark green. Flowers occur in clusters of 2-8 and are produced from small buds on old twigs, branches, and trunks. Flowering occurs between March and May before leafing, and self-pollination is evident. The fruit of the Texas white redbud is a reddish-brown pod that is 5-10 cm long and 1.3 cm wide, that contains 4-10 brown bean-like seeds. Texas white redbud is planted as an ornamental tree found throughout the eastern United States. The bark of the redbud has been used in the treatment of dysentery.



39. *Acer buergerianum*, Trident Maple

Trident Maple is popularly used as a bonsai tree, but can grow naturally to 6-10 m in height with a rounded crown. The bark of this species is light brown-gray and exfoliates in scales and plates, revealing a slight orange color. The leaves of the trident maple are 8-9 cm long, opposite, 3-lobed, and resemble duck feet. They are a light to dark green and range from yellow to red in the fall. Trident maple flowers are green-yellow, inconspicuous, and arrive with leaf emergence. This species occurs naturally on varied well-drained soils. The trident maple can be found widely across the United States.



40. *Quercus imbricaria*, Shingle Oak

Shingle oak, also called laurel oak, is a deciduous tree in the red oak group. This species has been found to reach 18 m in height, but can grow much larger in the open. The bark is smooth, brown-gray, but becoming shallowly furrowed with age. The leaves alternate, 7.5-15 cm long, 2-5 cm wide, elliptical to oblong, and laurel-shaped. They are a shiny dark green and turn yellow-brown late in the fall. The acorns are small, 15-25 mm long, mature by the second year, and are held by a deep cup. Shingle oak is most often found in the eastern United States from Illinois and Kansas to New York, south from Georgia to Louisiana.



41. *Taxodium distichum*, Bald Cypress

The baldcypress is a large tree that can live in excess of 1000 years and grow to 50 m in height and over 3 m in diameter. More commonly, baldcypress is 30-40 m in height and 1-1.5 m in diameter. This species has a narrow crown when young, becoming wide-spreading with age. The bark is reddish brown with furrows dividing broad flat plates. The leaves are deciduous needles up to 2.5 cm in length. The seeds are produced in 2-2.5 cm round, woody, spherical cones. Each cone may yield 16-30 brown, winged seeds. In the wild, this conifer is usually encountered along low bottomlands that are flooded either year round or seasonally. In this type of environment the baldcypress often exists in pure stands and develops knees up to forty feet away from its buttressed trunk. The baldcypress can be found in a wild state from southern Delaware to southern Florida, west to south central Texas; and northward up the Mississippi Valley to southern Illinois.



42. *Zelkova sinica*, Chinese Zelkova

Chinese zelkova is a fast-growing deciduous tree that grows up to 30 m in height and 60 cm in diameter, although it is widely used as a bonsai tree. The bark of this species is smooth to exfoliating and grayish-white. The leaves of the Chinese zelkova are deciduous, ovate to elliptical, and papery. Male flowers occur singly or in groups of up to 3, and the stamens are often white. Female flowers occur singly and contain an ovary that is ovoid in shape. Chinese Zelkova can survive throughout most of the United States.



43. *Liquidambar styraciflua*, American Sweetgum

American sweetgum is a large tree 20-30 m in height and 1 m in diameter. It typically has a straight trunk and pyramidal crown that matures round and spreading. The bark is thick, deeply furrowed and gray-brown in color. Sweetgum's star-shaped leaves are 10-18 cm long and wide, glossy, aromatic, and have 5-7 long-pointed, finely sawtoothed lobes. They are alternately arranged on the slender, greenish-brown twigs. The fruit is borne in a 2.5 cm in diameter, dry, spiked seedball that matures in the fall and persists over the winter to fall in the early spring. The seedball contains many long-winged seeds that are curved into prickly points. Sweetgum is second only to the oaks in production of hardwood lumber. In colonial times, the sweet inner bark resin of this species was used as a chewing gum, hence its common name. Especially in the northern portion of its range, sweetgum is one of the best of all trees in terms of fall color. Individual sweetgum can turn yellow, orange, red, and purple. Sweetgum occupies bottomlands or floodplains, with a native range extending from New Jersey to central Indiana, southwest to eastern Texas, and along the Gulf coast to Florida.



44. *Cercidiphyllum japonica*, Katsura Tree

The katsuratree has a full and dense crown that is pyramidal in youth and more rounded with age. In the landscape, it typically grows 15-25 m in height and 1 m in diameter. However, in its native range China and Japan, katsuratree can grow to a height of over 40 m. Katsuratree bark is brown and slightly shaggy on old trunks. The leaves, which resemble those of the redbud, are 5-10 cm long and wide. They are oppositely arranged on the stem and are attached by a slender, pinkish, 2.5 cm long petiole. The fragrant leaves unfold pinkish-purple, mature bluish green, and change orange or yellow in the fall. The fruit is a 0.8-2 cm long dehiscent pod borne in groups of 2-4 on a short stalk. The paper thin, winged seeds are released from the pods in September or October. Because of its brilliant fall color and neat habitat, katsuratree is become increasingly popular in this country as an ornamental and shade tree.



**45. *Prunus cerasifera*,
Purple Leaf Plum (FIG 074)**

Purple leaf plum, also called cherry plum, grows to 4.5-7.6 m in height with a rounded shape. The leaves of the Purple leaf plum are 3.8-7.6 cm long, alternate, reddish-purple, and with no significant fall color. The flowers of this species are small, fragrant, and can be white or pink. Purple leaf plum can have 2-7 cm long, yellow, purple, or reddish fruit in the summer. This species is habitat and food to many bird species, as well as habitat for small and large mammals. Purple leaf plum is found in full sun and well-drained soil across the United States.



46. *Populus deltoides*, Eastern Cottonwood (F075)

An inhabitant of moist lowlands, this member of the willow family is a tall, open crowned tree that can reach over 30 m in height. Young trees have thin, smooth, yellowish bark which becomes thick and deeply furrowed with age. The leaves are 7-18 cm long, 10-12 cm wide, triangular with toothed margins and are arranged alternately on the stem. They are dark green above, lighter below, and smooth on both surfaces. The petioles are 4-8 cm long, often with a distinct swelling where an insect has deposited eggs. Flowers are arranged in a dangling inflorescence, the catkin, with male and female flowers on separate trees. Fruits are small capsules, opening to release many small seeds that are covered by fine hairs (the cotton of the Eastern cottonwood). The Eastern cottonwood ranges from southern Canada, south through Montana all the way to south-central Texas, and east to the Atlantic seaboard.



47. *Fraxinus ornus*, Flowering Ash (F077)

Flowering ash is a medium-sized deciduous tree that grows up to 15-25 m in height with a trunk of up to 1 m in diameter and has a rounded, dense crown. The bark of this species is smooth, gray-brown and the leaves are opposite, dark green, and compound with 5-9 leaflets. The flowers of the flowering ash are slender, white, showy, and fragrant. The fruit is a one-seeded samara that changes from green to tan. Flowering ash is planted for a wide variety of reasons, including shade and landscape. Native to southern Europe and southwestern Asia, it is also cultivated for its sugary sap, or manna, which contains the chemical mannitol which might work as a laxative.



**48. *Styrax japonicus*,
Japanese Snowbell (F076)**

Japanese snowbell is a small deciduous tree growing 6-9 m in height with a rounded crown. The bark of this tree is smooth and gray-brown, but develops attractive orange-brown fissures with age. The leaves of the Japanese snowbell are simple, alternate, serrated, and elliptical to ovate. They are 5-10 cm long, a glossy green, and yellow in the fall. The flowers of this species are 2 cm long white, bell-shaped, and are borne in groups of 3-6 flowers. They are 5-lobed with yellow stamens and bloom between May and June. This species, although sensitive to the cold, is a beautiful patio and commercial tree. The Japanese snowbell is found throughout the warmer regions of the United States.



49. *Cornus kousa*, Kousa Dogwood

Kousa dogwood, also known as Japanese flowering dogwood, is a small deciduous tree growing 6-9 m in height and 9-10 cm in diameter. The bark of this species is a light gray-brown, but later exfoliates in patches creating a camouflage pattern. Its more upright growing habit distinguishes this tree from the American native, flowering dogwood. The leaves of the Kousa dogwood are 5-10 cm long, opposite, simple, and oval to ovate. They are a medium-dark green with tufts of hair on the underside, and turn a brilliant reddish-purple to scarlet in the fall. The fruit of the Kousa dogwood is 2-3 cm in diameter, pink to red compound berry. While the flowers of this dogwood are unimpressive yellow-green inflorescences, the four white, tapered bracts make a brilliant display, blooming later in spring than other dogwoods. A native to eastern Asia, this species is resistant to the dogwood anthracnose disease caused by the fungus *Discula destructiva*, and, for this reason, Kousa dogwood is being widely planted as an ornamental tree in areas affected by the disease.



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Photos are from:



50. *Ilex decidua*, Possumhaw (FIG 078)

Possumhaw, also called deciduous holly or swamp holly, is a small tree or bush that generally reaches up to 10 m in height. The leaves of this species are alternate, simple, obovate, and 2.5-7.5 cm long. Possumhaw flowers are greenish-white with four petals and are found in clusters. The fruit of this species is a bright reddish-orange, 4-7 seeded drupes that are found in clusters of 2-4. The fruit attracts many songbirds, and because of their attractiveness, humans use the possumhaw as an ornamental tree. Possumhaw is native to the eastern United States and ranges from Kansas to Maryland, south from Texas to Florida. Like the bald cypress, this species prefers floodplain habitats near swamps and lakes.



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