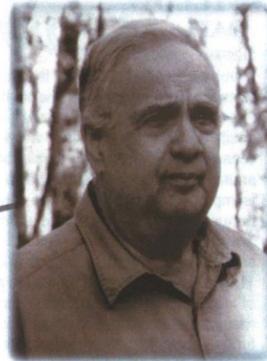
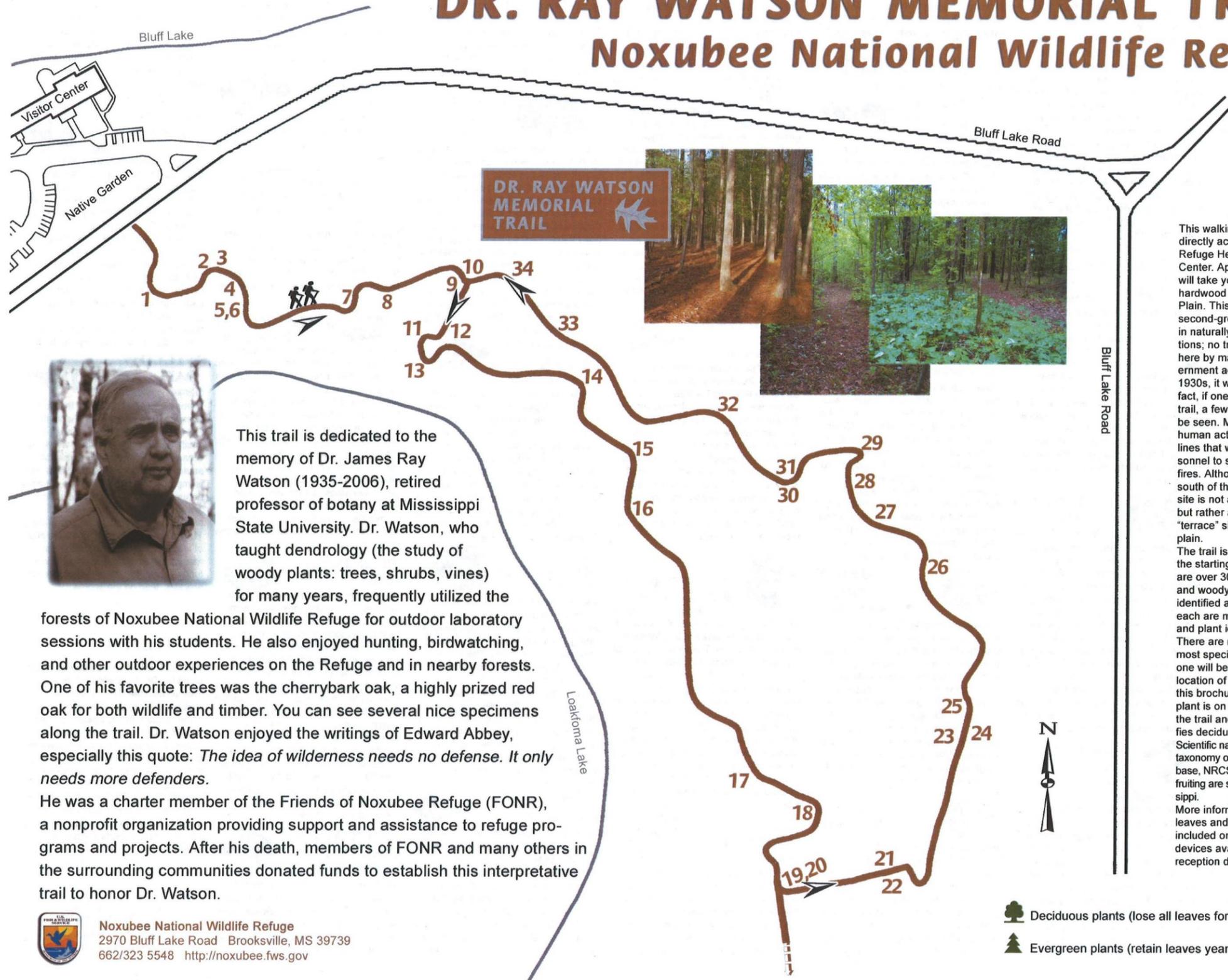


DR. RAY WATSON MEMORIAL TRAIL

Noxubee National Wildlife Refuge



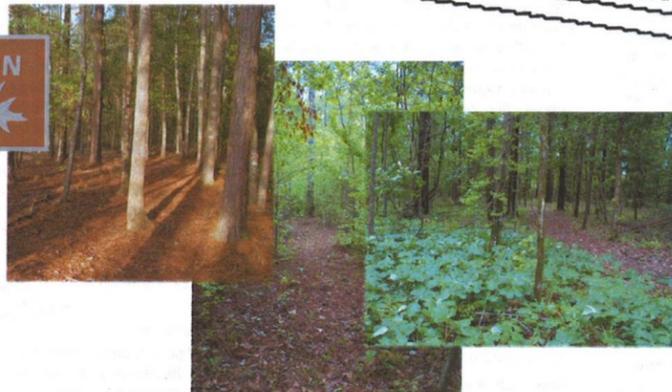
This trail is dedicated to the memory of Dr. James Ray Watson (1935-2006), retired professor of botany at Mississippi State University. Dr. Watson, who taught dendrology (the study of woody plants: trees, shrubs, vines) for many years, frequently utilized the

forests of Noxubee National Wildlife Refuge for outdoor laboratory sessions with his students. He also enjoyed hunting, birdwatching, and other outdoor experiences on the Refuge and in nearby forests. One of his favorite trees was the cherrybark oak, a highly prized red oak for both wildlife and timber. You can see several nice specimens along the trail. Dr. Watson enjoyed the writings of Edward Abbey, especially this quote: *The idea of wilderness needs no defense. It only needs more defenders.*

He was a charter member of the Friends of Noxubee Refuge (FONR), a nonprofit organization providing support and assistance to refuge programs and projects. After his death, members of FONR and many others in the surrounding communities donated funds to establish this interpretative trail to honor Dr. Watson.



Noxubee National Wildlife Refuge
2970 Bluff Lake Road Brooksville, MS 39739
662/323 5548 <http://noxubee.fws.gov>



This walking trail originates and ends directly across the road from the Refuge Headquarters and Visitor Center. Approximately ¼ mile long, it will take you through a typical pine-hardwood forest of the upper Coastal Plain. This is not a virgin forest but a second-growth stand that has seeded in naturally under "old-field" conditions; no trees have been planted here by man. Before the federal government acquired this land in the 1930s, it was under cultivation. In fact, if one looks closely along the trail, a few old elevated rows can still be seen. More recent evidence of human activity is the furrowed fire lines that were plowed by refuge personnel to stop the spread of forest fires. Although only about 1½ miles south of the Noxubee River, the trail site is not a true river-bottom forest, but rather a "second bottom," or "terrace" site within the river's floodplain.

The trail is laid out to return users to the starting point (trailhead). There are over 30 species of trees, shrubs, and woody vines that have been identified along the trail; examples of each are marked by numbered signs and plant identification markers.

There are numerous examples of most species along the trail, but only one will be marked with a sign. The location of the numbered leaves in this brochure indicates whether the plant is on the left or the right side of the trail and a symbol (deciduous/evergreen) identifies deciduous or evergreen plants. Scientific names of all plants follow the taxonomy of the USDA Plants Database, NRCS 2006. Times of blooming or fruiting are specific to Northeast Mississippi.

More information and photographs of leaves and fruits or seeds are included on the hand-held electronic devices available for check-out at the reception desk in the Visitor Center.

- Deciduous plants (lose all leaves for part of the year)
- Evergreen plants (retain leaves year-round)

1 WHITE OAK

Quercus alba

White oak is one of the most familiar oaks in the eastern United States, as it occurs in every state east of the Mississippi River. It grows on a wide variety of soils and sites, but best development is on well-drained loamy soils where it may reach 100 feet in height. The wood of white oak is used to make barrel staves, leading many people to call this oak "stave oak." White oak seeds are in acorns, which may be up to 1 inch long. A large tree can produce over 20,000 acorns per year. More than 180 species of birds and animals may feed on its acorns.

2 PAWPAW

Asimina triloba

Pawpaw is a shrub or small tree that occurs on deep, rich, moist soils along streams and bottoms and prefers dense shade. The wood is of no commercial value, but there is a local market for the fruits. With a taste somewhat like banana, they are used to make jam and jelly. In pioneer days, they were sometimes used to make "moonshine" liquor. The fruits are cylindrical and oblong, 3 to 5 inches long, and 1 to 1½ inches thick. They are green while growing, then turn yellowish when mature. Each fruit contains several brown, flattened seeds. Animals, such as opossums and raccoons, eat the fruits.

3 MOCKERNUT HICKORY

Carya tomentosa

Mockernut hickory is found primarily on dry, upland soils, but it also grows on moist bottomlands. The wood of this tree is strong and hard, making it valuable for tool handles, ladder rungs, poles, shafts, and athletic equipment. It is also excellent for firewood and charcoal production. The 1 to 1½ inch long nuts are enclosed in thick husks. Squirrels love these nuts so well that they eat them green (immature). Other wildlife species that eat mockernut nuts include black bears, foxes, rabbits, beavers, and to a lesser extent, turkeys, quail, and ducks.

4 AMERICAN HORNBEAM

Carpinus caroliniana

American hornbeam, also called ironwood or musclewood, occurs throughout the eastern United States and into Canada. It grows on many sites, but the best development is in rich stream bottoms. Tree trunks are small, resembling a flexed muscle. Its use is limited to firewood and specialty products like tool handles and wedges. The fruit is a small, ribbed nutlet that occurs in groups of 5 to 10. They are a favorite food of squirrels and are also eaten by a number of birds, including bobwhite quail, turkeys, and many songbirds.

RAITAN VINE

Berberia scandens 5
Rattan, also known as Alabama supplejack, is a perennial woody vine that occurs almost anywhere except on sandy soils. It prefers moist or wet sites and climbs high on large trees. The larger woody vines can kill a host tree by twisting around its trunk and constricting the tissues that conduct water. The vines provide nesting sites for shrikes, thrashers, and mockingbirds. The single-seeded fruits of rattan are 1/4 inch blue drupes, maturing in the fall. They are eaten by bobwhite quail, turkeys, and numerous small songbirds. Deer will eat both fruits and foliage.

BLACK CHERRY

Prunus serotina 6
Black cherry is found throughout the eastern half of the United States and grows best on acidic soils. In the Allegheny Plateau in the East, black cherry produces large trees that provide lumber for many uses, such as furniture and veneers. In the Appalachian Mountains, bark is stripped from young trees to make tonics and cough syrups. The fruits are used to make jelly and wine. In the South, the best use is for wildlife food. The fruits are clusters of round, single-seeded drupes that turn black when ripe. Wildlife that eats the fruit includes turkey, many songbirds, deer, and squirrels.

AMERICAN BEAUTYBERRY

Callicarpa americana 7
American beautyberry is a small woody shrub, usually no taller than 6 to 8 feet, found in mixed pine-hardwood stands in the Southern Coastal Plain. It grows in sun and in shade but needs some sun for best growth and fruiting. The purplish fruit is a berrylike drupe containing four small seeds and grows in clusters of up to 300. The very conspicuous clusters of highly astringent fruits on the bare branches last well into the winter and are an important food for numerous songbirds and other animals after other sources are depleted.

CHERRYBARK OAK

Quercus pagoda 8
One of Dr. Watson's favorites, this red oak is fairly common in bottomland forests but easily confused with southern red oak (#32), of which it was formerly considered a variety (*pagodifolia*). It is a very valuable timber species, producing wood of exceptional quality. The strong and heavy wood is used for furniture, interior finish, veneers, factory lumber, and railroad ties. The 1/2 inch acorns mature in late fall. High in lipid content (20%), they are a major food for wild-

life. Heavy eaters include turkey, deer, squirrels, blue jays, grackles, crows, woodpeckers, and wood ducks.

PEPPERVINE

Ampelopsis arborea 9
Peppervine is a perennial woody vine that occurs in stream bottoms. It grows on many soils but thrives on heavy clays, where many consider it to be a pest. It is tolerant of dense shade, and the vines can grow into nearly impenetrable thickets. The fruit of this vine is a round berry, from 1/4 to 3/4 inch in diameter, and is a favorite food of many species of birds.

SPARKLE-BERRY

Vaccinium arboreum 10
A small shrubby tree, sometimes also called tree huckleberry, sparkleberry grows up to 30 feet in height. It is related to blueberries and is the only species of that genus that grows on alkaline soils. The tree is found in shaded sites but develops best at the edges of clearings. In the past the wood was used to make tobacco pipes. The palatable black berries are about 1/4 inch in diameter and mature in the fall. Birds like towhees, thrushes, blue jays, cedar waxwings, and woodpeckers eat the berries. Deer will browse the shoots in winter and the foliage in spring.

FLOWERING DOGWOOD

Cornus florida 11
Flowering dogwood is a common native tree used in ornamental plantings. This understory tree grows on a wide variety of soils, from moist stream bottoms to well-drained upland soils. The wood is very hard and was formerly used to make shuttles for textile weaving; now plastics have the market. The wood is used for some specialty products, such as golf club heads, mallets, and other products that require tough wood. All sorts of animals, from black bears to beavers, feed on the fruits, and at least 36 species of birds are known to eat them also.

DWARF PALMETTO

Sabal minor 12
Dwarf palmetto is a woody perennial "shrub" that occurs on stream bottoms from Georgia to Texas. It normally grows to a height of 2 to 3 feet, but it can be as tall as 8 feet. It also may form dense thickets. The small, whitish flowers occur on stalks up to 10 feet in height in May through July. Fruits are small, single-seeded, rounded drupes about 1/2 inch in diameter. Cattle and deer will browse the fan-shaped leaves, and the fruits are eaten by birds and deer.

WINGED ELM

Ulmus alata 13
Winged elm is the "little brother" of the stately American elm that everyone knows. Winged elm grows on almost any site, reaching close to 100 feet in height on the best soils. The branches of winged elm make it easy to identify. Small branches have corky projections (wings), and the larger branches have a droopy habit. The wood has limited use in furniture manufacture. Maturing in early spring, the fruit is a small single-seeded samara that is eaten by birds such as cardinals, goldfinches, purple finches, and white-throated sparrows. Orioles and kingbirds are known to nest in winged elms.

DEVIL'S WALKING-STICK

Aralia spinosa 14
Devil's walkingstick is named for the infection-causing spines on its trunk. This is a small understory tree, seldom exceeding 30 feet in height, found primarily on rich bottomlands and slopes. The root, bark and fruit tissues have some medicinal value. Individual fruits are small, black berries, about 1/4 inch in diameter, each containing up to 5 small, flattened seeds. The berries occur in large clusters at the tops of the main shoots. Small birds feed on the berries, quickly stripping the fruiting tops after they mature.

WINGED SUMAC

Rhus copallinum 15
This small colonial tree is also called shining sumac and is sometimes planted as an ornamental, reaching heights of 30 feet. It is most common on dry slopes and ridges, where it forms thickets. The fall foliage color is a bright red, and the reddish fruit clusters are noticeable. These clusters are 4 to 5 inches long and are composed of up to 2500 ovoid, crimson drupes. The sour fruit can be made into a lemonade-like drink. Deer have been known to eat entire clusters, which remain on the tree throughout the winter. It is also a favorite food of many bird species.

SASSAFRAS

Sassafras albidum 16
Sassafras is a widely-known, medium-sized tree that occurs over most of the eastern United States and will grow on almost any soil. The wood can be used for furniture, paneling, and specialty products. Oil of sassafras is extracted from the roots and used in perfumes and soaps. Tea brewed from the bark of dried roots was once a favorite in the South. Ground sassafras leaves or filé is the traditional condiment used in gumbo. The early Cajuns learned about it from the Choctaw Indians, who used it to thicken soups.

The aromatic leaves are found in four different shapes. The fruit is a rounded drupe, about 1/2 inch long and dark blue when ripe, that contains a single hard seed. Deer will browse the twigs in winter and the foliage in spring and summer. Large songbirds, turkeys, and bobwhite quail eat the fruits.

SOUTHERN WAX MYRTLE

Myrica cerifera 17
This evergreen shrub or small tree, which grows in almost any moist site, is also called bayberry. Tiny resin droplets on the underside of the leaf emit an aromatic fragrance. The fruit is a one-seeded globose drupe, about 1/4 inch in diameter, which is borne along the twigs on short spikes. The bluish waxy coating of the fruits has been used to make candles that burn with a blue flame. Numerous small songbirds, bobwhite quail, turkeys and rodents eat the fruits. Tree swallows are reported to favor the fruits when wintering along the Gulf Coast. Deer will browse the twigs.

GREEN ASH

Fraxinus pennsylvanica 18
Green ash, also called red ash, is the widest ranging ash and occurs over the entire eastern U.S. It is found on a wide array of soils. Green ash wood is strong and has excellent bending capabilities. It is used in the manufacture of many tool handles and baseball bats, although white ash is favored for bats. The fruit, a one-seeded samara, is not a favorite food of wildlife, but a number of game and non-game animals and birds do eat them. The seeds contain 10% fats, 15% protein, and 20% carbohydrates.

COMMON GREENBRIER

Smilax rotundifolia 19
Also called roundleaf greenbrier, this plant is a tough, greenish, climbing vine with stout thorns. It occurs throughout the East and grows on almost any site and soil where moisture is sufficient. In many areas it forms dense thickets, sometimes strangling trees. The fruits are round blue-black berries, about 1/4 inch in diameter, each containing 2 seeds. They are eaten by turkeys, bobwhite quail, wood ducks and numerous songbirds. Greenbrier is an important browse for deer and rabbit.

RED MAPLE

Acer rubrum 20
Red maple is common in Mississippi on stream bottoms and other moist sites. The wood is not of the high quality that occurs in the "hard" maples, but it does have some use in industry. While not a prime syrup species, it can be used for that purpose. It is also commonly planted as an ornamental. The winged, single-seeded fruit, called a samara, is

borne in pairs and is 1 to 2 inches long. The fruits ripen in April and are shortly thereafter spread by the wind. Some birds eat the seeds, but the major wildlife benefit is deer browse.

LOBLOLLY PINE

Pinus taeda 21
Loblolly pine is the single most economically important tree in the South and grows on a wide variety of soil types. Early settlers in the Carolinas gave it the name "loblolly," because it thrived in the wet areas that they called "loblollies." It will grow in association with numerous other species and produces large crops of seeds. The small, winged seeds can be blown as much as 300 feet from the mother tree when the cones open in October. The seeds are eaten by squirrels and numerous species of birds. Loblolly pine is notable on Noxubee Refuge as the cavity tree for the endangered red-cockaded woodpecker.

SHORTLEAF PINE

Pinus echinata 22
Shortleaf pine is the "little cousin" of loblolly pine. Its needles are shorter, its cones smaller, and the tree does not usually reach the size of loblolly pine on the same site. Found in 22 states, shortleaf has the widest natural range of any pine in the Southeast. It can grow on a wide variety of soils and in combination with many other tree and shrub species. The wood is used for lumber, plywood, and pulpwood. Its cones open naturally to release the small, winged seeds which are eaten by squirrels and many species of birds.

SWEETGUM

Liquidambar styraciflua 23
Sweetgum is one of the most common hardwoods of the East. It grows on almost any site but does best in stream bottoms. The wood is used for plywood, pulpwood, and lumber for crates and boxes. The woody fruit is a dangling spiny-tipped "gum ball" with brown, winged seeds. The fruits contain significant amounts of shikimic acid, which is used to produce the main antiviral agent in flu drugs. The seeds are not well known for wildlife food, but they are eaten by goldfinches, pine siskins, and other small birds. The trees are favored nest sites for the Mississippi kite.

EASTERN RED CEDAR

Juniperus virginiana 24
As its Latin name indicates, this tree is not a true cedar, but a juniper. One of the most widely distributed conifers in the eastern United States, its fragrant wood is used to manufacture specialty items and to discourage moths. Dense thickets of this tree provide cover for

deer and nesting sites for birds. With maturity, the green, 1/2 inch, fleshy cones turn bluish with a white coating. These "berries" are eaten by many birds, such as cedar waxwings, mockingbirds, doves, and quail, as well as rabbits, foxes, raccoons, and opossums.

AMERICAN HOLLY

Ilex opaca 25
The well-known American holly is loved for its foliage, colorful fruits, and use in Christmas decorations. This medium-sized tree develops best on the moist, slightly acid soils in stream bottoms and swamps of the coastal plains of the Southeast. The wood is used for specialty items, such as handles, cabinet inlays, wood engravings, and small furniture pieces. The berry-like fruit contains 4 - 9 nutlets, turning red when mature. The fruits are eaten by many species of birds, such as quail, doves, cedar waxwings, goldfinches, mockingbirds, and woodpeckers.

ELLIOTT'S BLUEBERRY

Vaccinium elliotii 26
This wild blueberry is found on moist sites from Virginia to Florida and west to Texas. It rarely grows to more than 8 feet in height and is found in small clumps with multiple green stems. Opening in the early spring before the new leaves appear, its pale pink flowers are long and bell-shaped. The small blue-black berries are edible but not very tasty to humans. They ripen in May and are eaten by many species of birds. Deer will browse the foliage.

RED MULBERRY

Morus rubra 27
Red mulberry is found all over the eastern United States and as far west as Texas and Oklahoma. It grows on a variety of soils but does best on moist soils alongside streams. The wood is used for fence posts and a number of specialty products. As with sassafras, the leaf shapes are highly variable. The greatest value of this tree is the sweet, juicy fruits, which resemble blackberries and are about 1 inch long. They can be used in jams, jellies, pies, and drinks. The fruits are widely eaten by squirrels, raccoons, opossums, and many species of birds.

WATER OAK

Quercus nigra 28
Water oak is a common red oak which grows well on silty clay and loamy soils, in stream bottoms and well-drained upland sites. Water oak does not compete well with other species on the same site because of slow early growth, but it can exceed 100 feet in height by age 50. Water oak is a valuable species for lumber, fuel, and wildlife habitat. Its acorns are small with a flattened cap.

They mature about 18 months after pollination, in the fall of the second year, and are valuable for wildlife. They are eaten by deer, squirrels and other rodents, and birds, such as blue jays, grackles, and several species of woodpeckers.

POST OAK

Quercus stellata 29
Post oak is a medium-sized white oak, 50 to 60 feet tall at maturity, which grows throughout the southeastern and central United States. It is found primarily on dry upland sites. The wood has many uses: mine timbers, cross ties, stair treads, veneer, pulp, and the use that gives it its name - fence posts. It is also a favorite ornamental tree on dry soils. Its acorns are high in carbohydrates and are a favorite food of turkey, deer, and squirrels. Post oak is also a good den tree, as it can provide numerous cavities for birds and animals.

BLACKGUM

Nyssa sylvatica 30
Blackgum occurs in stream bottoms and upland sites throughout the eastern United States. The wood of this species has no notable uses, but the tree is often planted for ornamental purposes. Its colorful fall foliage can be seen very early. The fruit is an oblong drupe, about 1/2 inch long. The blue-black fruits are high in nutrients and are favored by several species of animals and birds, including mockingbirds, thrushes, and cedar waxwings. Larger trees often have many cavities that are used as animal dens. Blackgum is also known as a good "honey tree," as bees like the small, greenish white flowers.

PERSIMMON

Diospyros virginiana 31
Persimmon grows on almost any soil and site, from rocky ridges to stream bottoms. The wood is prized for its beauty and extreme density and is used for golf club heads and pool cues. The tree is well known for its fruits, a favorite of people and wildlife alike. When the tree is shaken gently, its ripe fruits fall to the ground. If a fruit is pulled off the tree and eaten, it will surely cause one's mouth to pucker. The spherical fruits ripen in late fall, reaching 2 inches in diameter, with up to 8 flat seeds per fruit. The fruit is eaten by squirrel, fox, skunk, deer, bear, coyote, raccoon, opossum, and various birds, including quail, wild turkey, cedar waxwing, and catbird.

SOUTHERN RED OAK

Quercus falcata 32
Southern red oak is a very common eastern oak and looks very much like cherrybark oak (#8). It is typically found on upland sites, but it also grows in stream bottoms in the South. The wood is strong and heavy, but tends to be

rough and coarse-grained. It is used mainly for factory lumber and railroad ties. Red oak acorns are an important food source in the winter because those of the white oaks germinate soon after falling. Like all oaks, the acorns of this species are loved by deer, squirrels, jays, woodpeckers, and other large songbirds.

MUSCADINE

Vitis rotundifolia 33
Muscadine is a climbing woody grapevine. Many varieties of this grape have been selected and planted for superior fruit production. Vines can climb into the highest trees and produce stems nearly 2 inches in diameter. The fruits reach 1/4 inch in diameter, with a tough skin. They are green in summer, then turn dark purple as they mature in August. Each fruit contains several small, bony seeds. Among the birds that eat muscadine fruits are turkeys, bobwhite quail, wood ducks, cardinals, blue jays, and woodpeckers. Deer, squirrels, and raccoons also eat the fruits.

WILLOW OAK

Quercus phellos 34
Commonly called pin oak in the South because of its narrow leaf shape, this red oak is a favored shade tree. It is easily transplanted and used widely in urban areas. The wood is a valuable source for lumber and pulp. Willow oak is important to wildlife because of heavy annual acorn production. The acorns are about 1/2 inch long, or slightly smaller than those of water oak (#28). They are highly favored by a wide array of wildlife. Deer, squirrels, mice and many species of birds, such as ducks, turkeys, blue jays, all woodpeckers and grackles, feed on the acorns.

THESE 34 SPECIES

have been identified along the Dr. Ray Watson Memorial Trail at Noxubee National Wildlife Refuge in Northeast Mississippi. They occur naturally in this typical pine-hardwood forest of the upper Coastal Plain. Scientific names of all plants follow the taxonomy of the USDA Plants Database, NRCS 2006. Times of blooming or fruiting are specific to Northeast Mississippi. The Dr. Ray Watson Memorial Trail was laid out, the plants identified, and all information compiled by Franklin Bonner for the Friends of Noxubee Refuge.