

TREES, SHRUBS, AND WOODY VINES
OF THE
BLUFF EXPERIMENTAL FOREST,
WARREN COUNTY, MISSISSIPPI

Robert L. Johnson and Elbert L. Little, Jr.

SOUTHERN FOREST EXPERIMENT STATION
T. C. Nelson, Director
FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE



TREES, SHRUBS, AND WOODY VINES OF THE BLUFF EXPERIMENTAL FOREST, WARREN COUNTY, MISSISSIPPI

Robert L. Johnson¹ and Elbert L. Little, Jr.²

Nearly 100 species of trees, shrubs, and woody vines grow naturally on the 450-acre Bluff Experimental Forest in west-central Mississippi. This publication lists the plants and provides information on silvical characteristics of the tree species.

The Bluff Experimental Forest is about 10 miles northeast of Vicksburg (17 miles by road) and 15 miles due east of the Mississippi River in Warren County, Miss. (fig. i). It lies within Sections 21 and 28, Township 17 North, Range 5 East (Washington Meridian), extending 1½ miles in greatest north-south length and ¾ mile east-west. In 1956 the land was leased for 99 years by the Southern Hardwoods Laboratory³ of the Southern Forest Experiment Station, U. S. Forest Service, from the Anderson-Tully Company of Vicksburg and Memphis, Tenn. The forest is used for research on methods of planting trees, removing culls, securing natural regeneration, improving utilization, and making harvest cuts.

¹**Southern** Hardwoods Laboratory, Southern Forest Experiment Station, **Stoneville**, Miss. 38776.

²**Dendrologist**, Division of Timber Management Research, U.S. Forest Service, Washington, D. C. 20250.

³The Southern Hardwoods Laboratory, Stoneville, Miss., is maintained by the Southern Forest Experiment Station, U.S. Forest Service, in cooperation with the Mississippi Agricultural Experiment Station and the Southern Hardwood Forest Research Group.

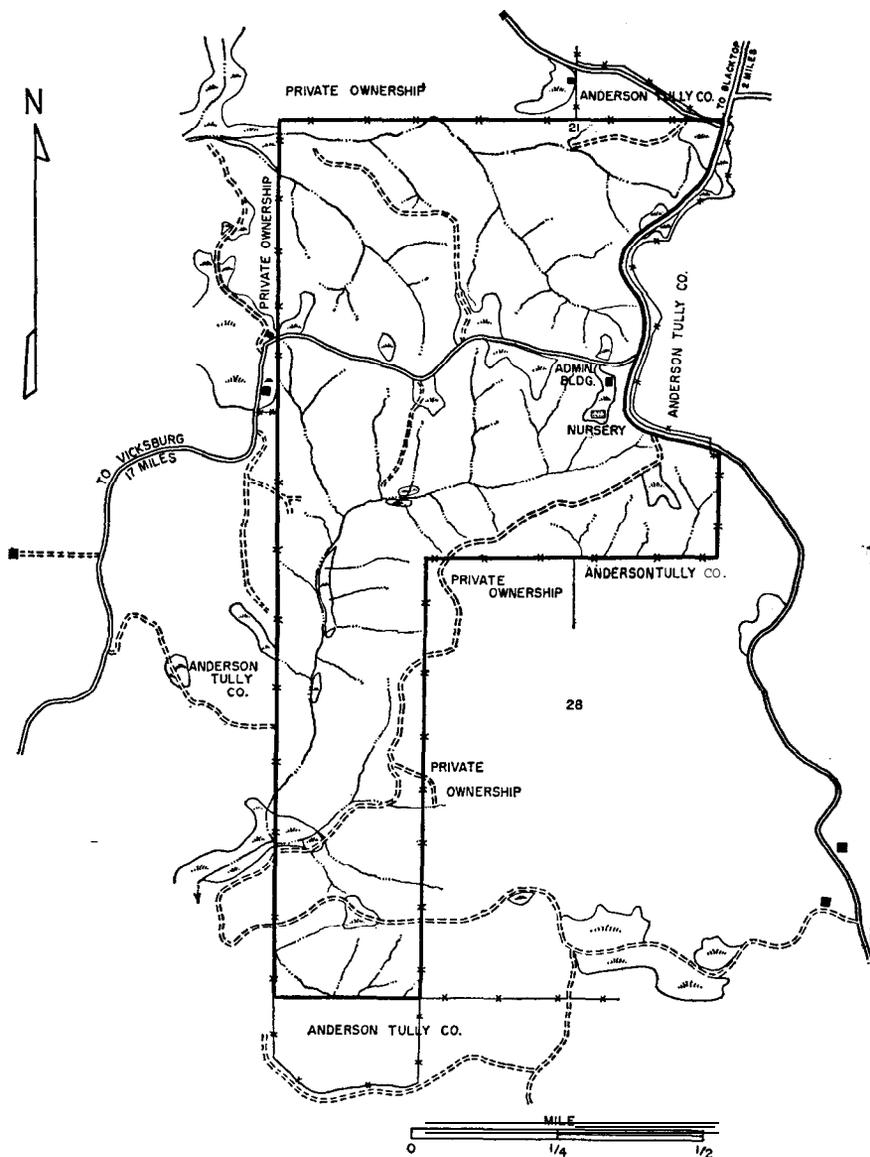


Figure 1.-The 450-acre Bluff Experimental Forest is about 17 miles north-east of Vicksburg in Warren County, Mississippi.

The tract is generally representative of 4½ million acres of forested uplands variously called the Deep Loess area, the Brown Loam Bluffs, the Bluff Hills, or the Bluffs. These uplands are from 5 to 25 miles wide and meander along the eastern edge of the Mississippi River Valley from

Cairo, Ill., to St. Francisville, La. (fig. 2). They consist of wind-blown deposits of silt loam that are up to 100 feet deep along the river but thin out to the east, finally giving way to the clay and sands common to the uplands of Mississippi and Tennessee. Crowley's Ridge in eastern Arkansas is similar in soil and vegetation.

The Bluff Experimental Forest is on, and most typical of, the deep loess. Its elevation ranges from 240 to 340 feet above sea level. Physiographic features are small drainages with narrow bottoms, gradual to steep slopes to 45 percent gradient, and narrow ridges (fig. 3). No permanent streams occur within the boundaries.

Rainfall at Vicksburg averages 49.5 inches a year. Monthly temperatures range from 49° F. in January to 82° in July and August; they average 66°. The highest temperature recorded since 1885 was 102° and the lowest -2°. The frost-free period extends approximately 7 months from April through October (4). This area is approximately in the center of Plant Hardiness Zone 8, which has average annual minimum temperatures of 10° to 20° F. (5).

Except for the steepest slopes, the land now in the forest was farmed for cotton from about 1835 to 1900. A few flat ridgetops and narrow bottoms were in cultivation as late as 1950.

A number of sawtimber cuttings, the last in 1946, removed nearly all the old-growth trees. The present vegetation is upland hardwood forest of mixed species and uneven age (fig. 4). Most of it may be classed within the oak-hickory type. Hardwoods here seem unaffected by aspect

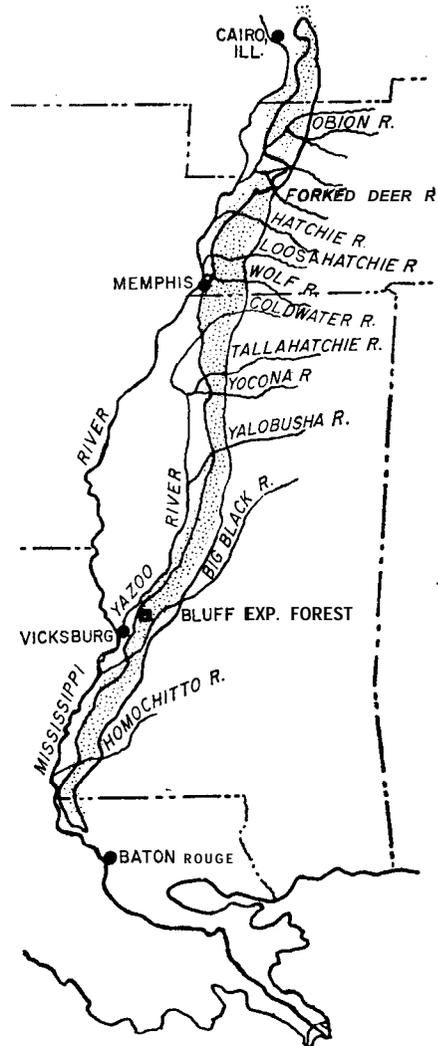


Figure 2.-The Deep Loess area, or Bluff Hills, indicated by the dotted area, comprises 4½ million acres along the eastern edge of the Mississippi River Valley from Illinois to Louisiana.



Figure 3.-Narrow bottoms, gradual to steep slopes of up to 45 percent gradient, and narrow ridges characterize the physiography of the Bluff Experimental Forest and the surrounding area.



Figure 4.-Small groups of mixed tree species ranging in size from seedlings to large sawtimber are common to the forests in and around the Bluff Experimental Forest.

and thrive on all sites except eroded ridges with less than 6 inches of topsoil, where pine, primarily loblolly, excels. Well over 50 percent of the commercially valuable trees are oaks. Cherrybark oak is most numerous, followed by southern red oak, Shumard oak, water oak, black oak, white oak, chinkapin oak, and swamp chestnut oak. Lowland species—black willow, cottonwood, green ash, American elm, and sycamore—are found mainly in the wider drainages.

Trees of sawtimber size range from 50 to 80 years old and up to 30 inches in diameter at breast height. An occasional residual is 40 to 60 inches in d.b.h. and 150 to 200 years old. Unusual among the larger trees are a 3-log sassafras 34 inches in d.b.h. and 70-80 years old, and a 4-log cottonwood 30 inches d.b.h. and 40-50 years old.

About 160 herbarium specimens were collected by Elbert L. Little, Jr., and Robert L. Johnson on July 18-21, 1961, and April 15, 1963. Several additional specimens were collected by Johnson in August and September 1963 and in August and September 1965. Identifications were made by Little. Duplicate sets have been deposited in the U.S. Forest Service Herbarium, Washington, D.C.; and in herbaria at the Southern Hardwoods Laboratory, Stoneville, Miss.; headquarters of the Bluff Experimental Forest near Vicksburg, Miss.; and Mississippi State University, Starkville, Miss.

The 97 species of woody plants of the Bluff Experimental Forest include 66 species of trees, 10 of shrubs, and 20 of woody vines. There is one epiphyte or partial parasite. The plants belong to 68 genera in 43 families. Of these species, 93 are native and 5 are introduced. Two of the introduced species (*Lonicera japonica* and *Paulownia tomentosa*) are naturalized, and the others are uncommon escapes from cultivation (*Broussonetia papyrifera*, *Robinia pseudoacacia*, and *Melia azedarach*). Five additional woody species found nearby are mentioned at the end of the main list (see p. 14). A few more species of shrubs and woody vines may be present within the boundaries in small numbers.

Lowe (3, pp. 42-44) has published lists of the characteristic trees, shrubs, and climbers of the loess or bluff area. No unusual records or range extensions were noted at the experimental forest.

The ligneous flora of the bluff area is partly northeastern in relationships, containing many species of Eastern or northeastern United States near their southern limits. All the native woody species of the Bluff Experimental Forest are native also within the area covered by Fernald's revision of Gray's Manual (1) except two southeastern tree species (*Magnolia grandiflora* and *Tilia caroliniana*), two shrubby species (*Hydrangea quercifolia*—mentioned as introduced—and *Vaccinium virgatum*), and a vine (*Schisandra glabra*). *Magnolia grandiflora* here is near its northern limit in the Mississippi Valley. Other Coastal Plain species

of southeastern United States include *Decumaria barbara*, *Rubus floridus*, *Styrax grandifolia*, and *Zanthoxylum clava-herculis*.

Because of its small size and limited habitats, the experimental forest obviously lacks some woody species native locally, especially in the bottom-land hardwood forests. Warren County borders the Mississippi River and two tributaries, the Yazoo and Big Black Rivers, and has extensive flood plain forests as well as upland.

In the following annotated list, the scientific names and approved common names of trees follow the Forest Service Check List (?). Scientific names of shrubs and woody vines are mostly from Fernald (1). Local common names have been added where different from those in the Check List or Fernald. Size of mature trees is indicated as large (taller than 70 feet), medium (40 to 70 feet), and small (shorter than 40 feet). Heights by 10-foot intervals and diameters at breast height by 6-inch intervals are estimated for the largest trees of each species on the forest. For species that ordinarily do not reach 6 inches d.b.h., only height estimates are shown. Large shrubs are taller than 5 feet, and small shrubs, are less than 5 feet tall. Maximum heights of shrubs are listed where known. Sizes are not indicated for most woody vines. Abundance is listed as abundant, common, uncommon, or rare. Tree species are designated as intolerant, medium tolerant, or tolerant; and growth of medium- and large-sized tree species is classed as fast (at least 4 inches in trunk diameter in 10 years), medium (2-4 inches), or slow (less than 2 inches). Growth rates are applicable mainly to dominant, free-growing individuals.

ANNOTATED LIST

Pinaceae, pine family

Juniperus virginiana L., eastern redcedar, cedar. Medium-sized tree, uncommon, largely in old fields on ridgetops. Medium tolerant, slow-growing. Largest: **70** feet tall, 18 inches d.b.h.

Pinus echinata Mill., shortleaf pine, pine. Large tree, uncommon on Bluff Experimental Forest but planted in adjacent fields. Medium tolerant, medium-growing. Largest: **100** feet tall, 18 inches d.b.h.

Pinus taeda L., loblolly pine, pine. Large tree, common and widespread, mostly on ridges. Medium tolerant, medium-growing. Largest : **100** feet tall, 30 inches d.b.h.

Gramineae, grass family

Arundinaria gigantea (Walt.) Chapm., giant cane, cane. Common large shrub reaching 25-30 feet tall. Most common along drainages but found elsewhere.

Liliaceae, lily family

Smilax glauca Walt., cat greenbrier, sawbrier. This and the two species listed immediately below are woody vines common and widespread

in old fields, along rights-of-way, and in newly created forest openings.

Smilax hispida Muhl., bristly greenbrier.

Smilax rotundifolia L., common greenbrier.

Salicaceae, willow family

Populus deltoides Bartr., eastern cottonwood, cottonwood. Large tree, uncommon, mainly along drainages but not restricted to such. Intolerant, fast-growing. Largest: 120 feet tall, 36 inches d.b.h.

Salix nigra Marsh., black willow, willow. Large tree, uncommon, mainly along drainages but not restricted to such. Intolerant, fast-growing. Largest: 90 feet tall, 18 inches d.b.h.

Juglandaceae, walnut family

Carya cordif ormis (Wangenh.) K. Koch, bitternut hickory, hickory. Large tree, common, on upper slopes and ridges but found on all sites. Tolerant, medium-growing. Largest: 80 feet tall, 18 inches d.b.h.

Carya glabra (Mill.) Sweet, pignut hickory, hickory. Large tree, uncommon on upper slopes and ridges but found on all sites. Tolerant, medium-growing. Largest: 80 feet tall, 18 inches d.b.h.

Carya tomentosa Nutt., mockernut hickory, mockernut. Large tree, common on upper slopes and ridges but found on all sites. Tolerant, medium-growing. Largest: 80 feet tall, 18 inches d.b.h.

Juglans nigra L., black walnut, walnut. Large tree, uncommon. Scattered individuals grow best on lower slopes or bottoms. Intolerant, medium-growing. Largest: 80 feet tall, 24 inches d.b.h.

Betulaceae, birch family

Carpinus caroliniana Walt., American hornbeam, ironwood. Small tree, abundant, throughout the understory, often becoming dominant when larger overstory trees are removed. Tolerant. Largest: 40 feet tall, 12 inches d.b.h.

Ostrya virginiana (Mill.) K. Koch, eastern hophornbeam, ironwood. Small tree, abundant, throughout the understory, often becoming dominant when larger overstory trees are removed. Tolerant. Largest : 40 feet tall, 12 inches d.b.h.

Fagaceae, beech family

Fagus grandifolia Ehrh., American beech, beech. Large tree, common, especially on lower slopes. Tolerant, slow-growing, having the oldest individuals of all species of this forest. Largest: 90 feet tall, 36 inches d.b.h.

Quercus alba L., white oak. Large tree, common, mainly on upper slopes and ridges. Medium tolerant, medium-growing. Largest: 90 feet tall, 24 inches d.b.h.

Quercus falcata Michx. var. *falcata*, southern red oak, red oak. Large tree, common, concentrated on ridges but found all over. Medium tolerant, medium-growing. Largest: 100 feet tall, 30 inches d.b.h.

Quercus falcata Michx. var. ***pagodaefolia*** Ell., cherrybark oak, red oak. Large tree, abundant, the most common tree species on this forest, on all sites. Medium tolerant, fast-growing. Largest: 120 feet tall, 36 inches d.b.h.

Quercus michauxii Nutt., swamp chestnut oak, cow oak. Large tree, uncommon, single trees scattered through the stand. Medium tolerant, medium-growing. Largest: 100 feet tall, 24 inches d.b.h.

Quercus muehlenbergii Engelm., chinkapin oak, white oak. Large tree, uncommon, single trees scattered through the stand. Medium tolerant, medium-growing. Largest: 100 feet tall, 18 inches d.b.h.

Quercus nigra L., water oak. Large tree, common, mostly on ridges, where it tends to produce numerous epicormic branches. Medium tolerant, medium-growing. Largest: 110 feet tall, 30 inches d.b.h.

Quercus phellos L., willow oak, pin oak. Large tree, rare, generally in broad drainages. Medium tolerant, medium-growing. Largest: 80 feet tall, 12 inches d.b.h.

Quercus shumardii Buckl., Shumard oak, striped oak. Large tree, common, the second most common red oak, found with cherrybark oak on all sites. Largest: 120 feet tall, 36 inches d.b.h.

Quercus velutina Lam., black oak. Large tree, common, mostly on upper slopes and ridges. Medium tolerant, of medium growth rate. A few trees may be hybrids, apparently with *Quercus falcata*, which large trees resemble. Largest: 100 feet tall, 24 inches d.b.h.

***Ulmaceae*, elm family**

Celtis laevigata Willd., sugarberry, hackberry. Large tree, uncommon, generally found in the wider bottoms. Tolerant, of medium growth rate. Largest: 60 feet tall 18 inches d.b.h.

Ulmus alata Michx., winged elm, cork elm. Large tree, common, most numerous on upper slopes and ridges. Tolerant, of medium growth rate. Largest: 90 feet tall, 18 inches d.b.h.

Ulmus americana L., American elm, elm. Large tree, common in wider bottoms and lower slopes. Tolerant, of medium growth rate. Largest: 100 feet tall, 30 inches d.b.h.

Ulmus rubra Muhl., slippery elm. Large tree, uncommon, only scattered trees, generally on the slopes. Tolerant, of medium growth rate. Largest: 100 feet tall, 18 inches d.b.h.

***Moraceae*, mulberry family**

Broussonetia papyrifera (L.) Vent. Very rare introduced tree, one planted near old home site.

Morus rubra L., red mulberry, mulberry. Small to medium-sized tree, common, generally in the understory. Tolerant. Largest: 40 feet tall, 12 inches d.b.h.

Loranthaceae, mistletoe family

Phoradendron serotinum (Raf.) M. C. Johnston (Ph. *flavescens* auth.). Small shrubby epiphyte and partial parasite with leathery evergreen leaves, on trees of many species.

Menispermaceae, moonseed family

Cocculus carolinus (L.) DC., Carolina snailseed, Carolina moonseed. Woody vine with bright red berries, common, mostly in and around openings in the forest.

Magnoliaceae, magnolia family

Liriodendron tulipifera L., yellow-poplar, poplar. Large tree, common, growing best on the slopes. Exhibits very fast early growth in forest openings. Intolerant. Largest: 120 feet tall, 30 inches d.b.h.

Magnolia acuminata L. (var. *acuminata*), cucumbertree, cucumber. Large tree, uncommon. Scattered single trees most numerous on lower slopes. Intolerant, medium-growing. Largest: 90 feet tall, 24 inches d.b.h.

Magnolia grandiflora L., southern magnolia, magnolia. Large tree, common on narrow drainages and lower slopes. Medium tolerant, medium-growing. Largest: 80 feet tall, 30 inches d.b.h.

Schisandra glabra (Brickel) Rehd. (X. *coccinea* Michx.), Carolina magnolia-vine. This rare vine was seen but not in flower.

Annonaceae, annona family

Asimina triloba (L.) Dunal, pawpaw. Small understory tree seldom exceeding 30 feet tall, common. Tolerant.

Lauraceae, laurel family

Lindera benzoin (L.) Blume, spicebush. Large aromatic shrub reaching height of 10-15 feet. Common, generally in the understory along drainages.

Sassafras albidum (Nutt.) Nees, sassafras. Large tree, common on slopes and in the bottoms. A pioneer on old eroded ridges but rarely grows well there. Intolerant, medium-growing. Largest: 100 feet tall, 36 inches d.b.h.

Ranunculaceae, crowfoot family

Clematis virginiana L., virgin's_bower. Climbing vine, common.

Saxifragaceae, saxifrage family

Decumaria barbara L., southeast decumaria. Climbing vine to 50 feet, common.

Hydrangea arborescens L. (var. *arborescens*), smooth hydrangea, hydrangea. Large shrub to 10 feet tall, growing singly or in clumps, common.

Hydrangea quercifolia Bartr., oakleaf hydrangea, hydrangea. Large shrub to 10 feet tall, growing singly or in clumps, common. The large leaves are conspicuous.

Hamamelidaceae, witch-hazel family

Hamamelis virginiana L., witch-hazel. Small tree seldom taller than 30 feet, abundant, on most sites, generally in the understory. Tolerant.

Liquidambar styraciflua L., sweetgum. Large tree, abundant, the second most common tree species, behind cherrybark oak. Found on all sites but grows poorly on eroded ridgetops. Intolerant, medium-growing. Largest: 120 feet tall, 36 inches d.b.h.

Platanaceae, sycamore family

Platanus occidentalis L., American sycamore, sycamore. Large tree, uncommon, found only along the drainages. Intolerant, medium-growing. Largest: 100 feet tall, 24 inches d.b.h.

Rosaceae, rose family

Crataegus viridis L., green hawthorn, haw. Small tree, up to 20 feet tall, often found in the understory, also common on old fields. Tolerant.

Prunus angustifolia Marsh., Chickasaw plum, tame plum. Small tree, up to 20 feet tall, common along rights-of-way and in old fields. Intolerant.

Prunus mexicana S. Wats., Mexican plum, wild plum. Small tree, up to 20 feet tall, common along rights-of-way and in old fields. Intolerant.

Prunus serotina Ehrh. (var. **serotina**), black cherry, cherry. Large tree, common. Found on most sites but grows best on slopes. Tolerant, medium-growing. Largest: 80 feet tall, 36 inches d.b.h.

Rubus floridus Tratt., blackberry. Bramble shrub and vine, reaching heights of 6 feet, common, forming thickets in forest openings and along rights-of-way.

Leguminosae, legume family

Cercis canadensis L., eastern redbud, redbud. Small tree, common, on most sites, generally in the understory. Tolerant. Largest: 40 feet tall, 6 inches d.b.h.

Gleditsia triacanthos L., honeylocust. Large tree, uncommon, generally occurs along drainages as a single tree. Intolerant, slow-growing. Largest: 80 feet tall, 18 inches d.b.h.

Robinia pseudoacacia L., black locust. Medium-sized tree, introduced, uncommon, rarely large. Only known concentration of saplings occurs along main gravel road about ½ mile west of the headquarters building. Intolerant, slow-growing. Largest: 30 feet tall, 6 inches d.b.h.

Rutaceae, rue family

Zanthoxylum clava-herculis L. (var. **clava-herculis**), Hercules-club, toothache-tree. Small tree, common, mainly along drainages and on lower slopes. Tolerant. Largest: 50 feet tall, 12 inches d.b.h.

Meliaceae, mahogany family

Melia axedarach L., chinaberry. Medium-sized tree, introduced, uncommon. Planted as shade tree around homes, escaping along roadsides,

and rare in the forest. Intolerant, slow-growing. Largest: **60** feet tall, 18 inches d.b.h.

Anacardiaceae, cashew family

Rhus copallina L. (var. *copallina*), shining sumac, sumac. Small tree, common in old fields, along rights-of-way, and in large forest openings. Intolerant. Largest: 30 feet tall, 6 inches d.b.h.

Rhus glabra L., smooth sumac, sumac. Small tree, common in old fields, along rights-of-way, and in large forest openings. Intolerant. Largest: 30 feet tall, 6 inches d.b.h.

Rhus radicans L. (*Toxicodendron radicans* (L.) Kuntze), poison-ivy. Woody vine, common, widespread on the ground and on trees.

Aquifoliaceae, holly family

Ilex decidua Walt., possumhaw, deciduous holly. Small tree, to about 12 feet tall, uncommon, generally single tree along drainages. Tolerant.

Ilex opaca Ait., American holly, holly. Medium-sized tree, uncommon, scattered over the forest but seldom on upper slopes and ridges. Tolerant, slow-growing. Largest: **50** feet tall, 12 inches d.b.h.

Celastraceae, bittersweet family

Celastrus scandens L., American bittersweet, Woody vine, common, on most sites.

Euonymus americanus L., brook euonymus, wahoo. Large shrub to 5 feet high, common, mostly along drainages.

Aceraceae, maple family

Acer barbatum Michx. (*A. floridanum* (Chapm.) Pax), Florida maple, maple. Medium-sized tree, common to abundant in the understory, rarely large. Tolerant, slow-growing. Largest : 70 feet tall, 18 inches d.b.h.

Acer negundo L., boxelder. Medium-sized tree, common, mainly along drainages. Tolerant, slow-growing. Largest: 60 feet tall, 18 inches d.b.h.

Acer rubrum L. (var. *tridens* Wood), red maple, maple. Medium-sized tree, common to abundant in the understory, rarely large. Tolerant, medium-growing. Largest: 50 feet tall, 12 inches d.b.h.

Rhamnaceae, buckthorn family

Berchemia scandens (Hill) K. Koch, Alabama supplejack. Large moody vine to 50 feet high and 1 inch in diameter, common.

Rhamnus caroliniana Walt., Carolina buckthorn. Small tree growing to about 30 feet tall, uncommon, generally found on the slopes. Tolerant.

Vitaceae, grape family

Ampelopsis arborea (L.) Koehne, peppervine, buckvine. Woody vine, common, normally found in large openings.

Parthenocissus quinquefolia (L.) Planch., Virginia-creeper. Woody vine, common in the understory or climbing on trees.

Vitis aestivalis Michx., summer grape, grape. Large climbing woody vine, common.

Vitis riparia Michx., riverbank grape, grape. Large climbing woody vine, common.

Vitis rotundifolia Michx., muscadine. Large climbing woody vine, common.

Vitis vulpina L., frost grape, grape. Very large climbing vine, uncommon. Grape vines grow to 50 feet high and 6 inches in diameter.

***Tiliaceae*, basswood or linden family**

Tilia caroliniana Mill., Carolina basswood, linn. Large tree, common. Prolific sprouter occurring on most sites. Medium tolerant, medium-growing. Largest: 100 feet tall, 24 inches d.b.h.

***Guttiferae*, mangosteen family**

Ascyrum hypericoides L. var. *hypericoides* (*Hypericum hypericoides* (L.) Crantz), St. Andrews-cross. Small shrub 1-3 feet high, common on the forest floor.

***Araliaceae*, ginseng family**

Aralia spinosa L., devils-walkingstick. Small tree, to about 30 feet tall, common, invading newly created forest openings. Intolerant. Fast initial growth, but soon becomes suppressed by other trees.

***Cornaceae*, dogwood family**

Cornus drummondii C. A. Meyer, roughleaf dogwood, dogwood. Shrub or small tree, to about 20 feet tall, uncommon, at edge of openings and along drainages. Tolerant.

Cornus florida L., flowering dogwood, dogwood. Small tree, abundant throughout the understory. Tolerant. Largest : 40 feet tall, 6 inches d.b.h.

Nyssa sylvatica Marsh., black tupelo, blackgum. Large tree, uncommon. Scattered large trees mainly on the slopes. Reproduction general. Intolerant, slow-growing. Largest: 80 feet tall, 24 inches d.b.h.

***Ericaceae*, heath family**

Vaccinium arboreum Marsh., tree sparkleberry. Small tree, to about 20 feet tall. Rare, found only around site of an old home on the north side of the forest.

Vaccinium virgatum Ait., huckleberry. Small shrub 3-5 feet high, uncommon, found mainly around sites of old homes or along rights-of-way in dry upland.

***Sapotaceae*, sapodilla family**

Bumelia sp., bumelia. One small tree 20 feet high and 3 inches d.b.h., the only one known on this forest, grew in the dry upland along a roadside and was destroyed.

***Ebenaceae*, ebony family**

Diospyros virginiana L., common persimmon, persimmon. Large tree, common and general over forest. Reproduction common on old fields and

along rights-of-way. Intolerant, slow-growing. Largest: 80 feet tall, 12 inches d.b.h.

Styracaceae, snowbell or storax family

Styrax grandifolia Ait., bigleaf snowbell, snowbell. Small tree growing to about 20 feet tall, common, especially along drainages. Tolerant.

Symplocaceae, sweetleaf family

Symplocos tinctoria (L.) L'Her., common sweetleaf. Small evergreen tree reaching about 20 feet tall, uncommon, general. Tolerant.

Oleaceae, olive family

Fraxinus americana L., white ash. Large tree, common. Tolerant, medium-growing. Largest: 110 feet tall, 30 inches d.b.h.

Fraxinus pennsylvanica Marsh., green ash. Large tree, common along wider drainages. Tolerant, medium-growing. Largest : 90 feet tall, 18 inches d.b.h.

Apocynaceae, dogbane family

Trachelospermum difforme (Walt.) A. Gray, star-jasmine, climbing dogbane. Entwining vine, common.

Verbenaceae, verbena family

Callicarpa americana L., American beautyberry. Large shrub reaching about 10 feet tall, occurring singly or in clumps, common.

Bignoniaceae, bignonia family

Bignonia capreolata L. (*Anisostichus capreolata* (L.) Bureau), cross-vine, buckvine. Woody climbing vine, common, general.

Campsis radicans (L.) Seem., trumpet-creeper. Woody vine, common in large openings and along rights-of-way.

Paulownia *tomentosa* (Thunb.) Sieb & Zucc., royal paulownia, blue-bell. Large tree, introduced, common. Planted near old home sites and now naturalized and general over the forest. Largest: 70 feet tall, 24 inches d.b.h.

Caprifoliaceae, honeysuckle family

Lonicera japonica Thunb., Japanese honeysuckle, honeysuckle. Woody vine, introduced and naturalized. Common in forest openings along drainages and rights-of-way.

Sambucus canadensis L., American elder, elder. Small tree, invading forest openings and growing up to about 30 feet tall quickly. Common. Found mainly along drainages. Intolerant.

Viburnum rufidulum Ra., rusty blackhaw. Small understory tree growing to about 20 feet tall, uncommon. General. Tolerant.

Compositae, composite family

Baccharis halimifolia L., eastern baccharis. Small shrub, rare.

ADDITIONAL SPECIES NEARBY

Carya illinoensis (Wangenh.) K. Koch, pecan, sweet pecan. Large tree, planted in many locations. Native in Mississippi River bottom lands and westward. Tolerant, medium-growing.

Castanea alnifolia Nutt. var. ***floridana*** Sarg., Florida chinkapin, chinkapin. Medium-sized tree to 50 feet high and 20 inches d.b.h. Only two known trees on ridge near the site of an old home, 4 miles northeast of Bluff Experimental Forest.

Maclura pomifera (Raf.) Schneid., Osage-orange, mockorange, bodock, horse-apple. Medium-sized tree, introduced. Planted and escaping from cultivation. Widely scattered in areas around Bluff Experimental Forest. Tolerant, slow-growing.

Magnolia macrophylla Michx., bigleaf magnolia, magnolia. Small tree, fairly common to area around Bluff Experimental Forest, occurring in nearly a pure stand in one abandoned field. Tolerant, slow-growing.

Ptelea trifoliata L. (var. ***trifoliata***), common hoptree, hoptree. Large shrub 5-15 feet tall, uncommon. One found 1 mile west of Bluff Experimental Forest, and others in the area.

LITERATURE CITED

1. Fernald, M. L.
1950. Gray's manual of botany. Ed. 8, 1632 pp., illus. New York: American Book Co.
2. Little, E. L., Jr.
1953. Check list of native and naturalized trees of the United States (including Alaska). U.S. Dep. Agr., Agr. Handbook 41, 472 pp.
3. Lowe, E. N.
1921. Plants of Mississippi, a list of flowering plants and ferns. Miss. State Geol. Surv. Bull. 17, 292 pp., illus.
4. McWhorter, J. C.
1962. Climatic patterns of Mississippi. Miss. Agr. Exp. Sta. Bull. 650, 24 pp., illus.
5. U.S. National Arboretum, Agricultural Research Service.
1960. Plant hardiness zone map. U.S. Dep. Agr. Misc. Pub. 814.