Enclosure No. 1
Duke Letter Dated: December 11, 2009

Attachment 89SB-6

Gaddy, L.L., 2009,

A Botanical Inventory of Make-Up Pond C Study Area; Cherokee County, South Carolina

A BOTANICAL INVENTORY OF

MAKE-UP POND C STUDY AREA;

CHEROKEE COUNTY, SOUTH CAROLINA

The rare Georgia aster is found on disturbed clayey soils on open land near Sampling Location 2.6.

by

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for

Duke Energy Corporation
Charlotte, North Carolina

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This report is a compilation of the botanical field surveys conducted in both 2008 and 2009 at the Make-Up Pond C Study Area (also referred to as the London Creek Study Area). The report summarizing the 2008 studies—A Botanical Inventory of the Make-Up Pond C Study Area, Cherokee County, South Carolina, October 2008—remains a stand-alone document. The data from that report, however, were assimilated into this document in order to have both 2008 and 2009 data available in one report.

EXECUTIVE SUMMARY

The Make-Up Pond C Study Area is a typical upper Piedmont landscape of rolling hills [the site ranges from just under 600 feet (~182 m) to just over 800 feet (~243 m) in elevation] dissected by London Creek and its small, unnamed intermittent tributaries. The study area is comprised of two large tracts where access was first authorized in 2008 and extensive surrounding lands in the London Creek drainage inventoried in 2009 (Figure 1 gives study area boundaries for 2009). The ridges and upper slopes (over 50 percent of the study area) of the study area have been logged and are presently forested with young to middle-aged pines [primarily loblolly (*Pinus taeda*) and Virginia pine (*Pinus virginiana*)]. The mid- to lower slopes, the lowlands, and the bottoms of the study area are forested with second-growth to mature mixed hardwood species. Eight major cover types—Upland Scrub (USC), Mixed Hardwood-Pine (MHP), Mixed Hardwood (MH), Pine-Mixed Hardwood (PMH), Pine (P), Open Pine-Mixed Hardwood (OPMH), Open Areas, Fields and Meadows (OFM), and Open Water (OW)—are described above from the Make-Up Pond C Study Area.

Most of these cover types and the communities found within them harbor typical Piedmont forest stands. None of the upper slope pine, pine-mixed hardwoods, or cut/over mixed hardwoods stands is particularly noteworthy. On the other hand, ten significant natural areas were noted in plant communities found on the lower slopes and bottoms of the study area. Two of these natural areas were lowland mixed hardwoods stands along London Creek, and two were bluff mixed hardwoods stands with scattered mature hardwood trees (up to 30-40 inches in dbh on the bluffs) and rich associated herbaceous flora. The other six natural areas included a fern ravine and a mountain laurel ravine near Sampling Location 2.6, a ravine/bottomland forest of mixed hardwoods in Little London Creek with noteworthy trees and non-woody flora, a beech-Piedmont rhododendron (*Rhododendron minus*) bluff with a disjunct population of the Piedmont rhododendron (found in Sampling Location 0.9), and two fern-dominated bogs near Sampling Location 2.6.

The flora of the study area is typical upper Piedmont flora, reminding one more of the North Carolina than the South Carolina Piedmont. In total, 426 species were identified in field surveys during 2008 and 2009 (see Appendix for complete list). There was an unusually high number of tree species (56) and sedges of the genus *Carex* (33) in the study area. One federal candidate species for listing—Georgia aster—was found on a power line right-of-way near Sampling Location 2.6 in the London Creek study area; five state-listed species (all listed as "of state concern")—drooping sedge (*Carex prasina*), southern enchanter's nightshade (*Circaea lutetiana* ssp. *canadensis*), southern adder's-tongue fern (*Ophioglossum vulgatum*), single-flowered cancer-root (*Orobanche uniflora*), and Canada moonseed (*Menispermum canadense*)—were found in rich mixed hardwood forests; and five other rare or noteworthy plant species—mountain holly (*Ilex montana*), golden ragwort (*Senecio aureus*), tuberous dwarf-dandelion (*Krigia dandelion*), yellowish milkweed vine (*Matalea flavidula*), and Kral's sedge (*Carex kraliana*)—were also found in the study area.

INTRODUCTION

London Creek is a small stream in east-central Cherokee County, SC whose headwaters are Lake Cherokee, an 18.2 ha (45 ac) impoundment owned and operated by the South Carolina Department of Natural Resources. The majority of the water in London Creek, with the exception of the small, intermittent, un-named streams/seeps that flow into London Creek, is provided by over-the-standpipe spillage from Lake Cherokee. London Creek flows 5.3 km (3.3 mi) in a northeasterly direction and enters the upper end of Ninety-Nine Islands Reservoir; a Duke Energy Corporation run-of-the-river impoundment on the Broad River.

Mixed hardwood forests and pine plantations covers the majority of the London Creek valley interspersed with pastureland and some upslope farmsteads/ residences. As mentioned earlier, London Creek's flow is largely dependant on Lake Cherokee [0.2 mi^2 (0.4 km^2) watershed; average depth 3.4 m (11 ft.)]. Considering the small watershed of Lake Cherokee coupled with the seasonal flows of the small tributaries entering London Creek, London Creek's flow in low-rainfall seasons like spring and summer 2008 and summer 2009, resulted in extended periods where London Creek was essentially dry with only a series of small, shallow, isolated, pools.

Biological (fish, aquatic macroinvertebrate, avian, mammal, and amphibian/reptile) and botanical investigations were designed and carried out during 2008 and 2009. The purpose of this array of studies was to characterize the flora and fauna of selected areas of the London Creek valley where ingress was authorized (Figure 1).

This document reports on the botanical studies of the London Creek Properties. The objectives were to:

1) conduct a botanical inventory of the London Creek Properties, documenting the vascular flora of the study area as completely as possible;
2) map all locations of "noteworthy"—endangered, threatened, rare, state- and federally-listed—vascular plants; and
3) collect quantitative data on all plant communities present within the study area.

A rocky seepage on an unnamed, intermittent tributary of London Creek

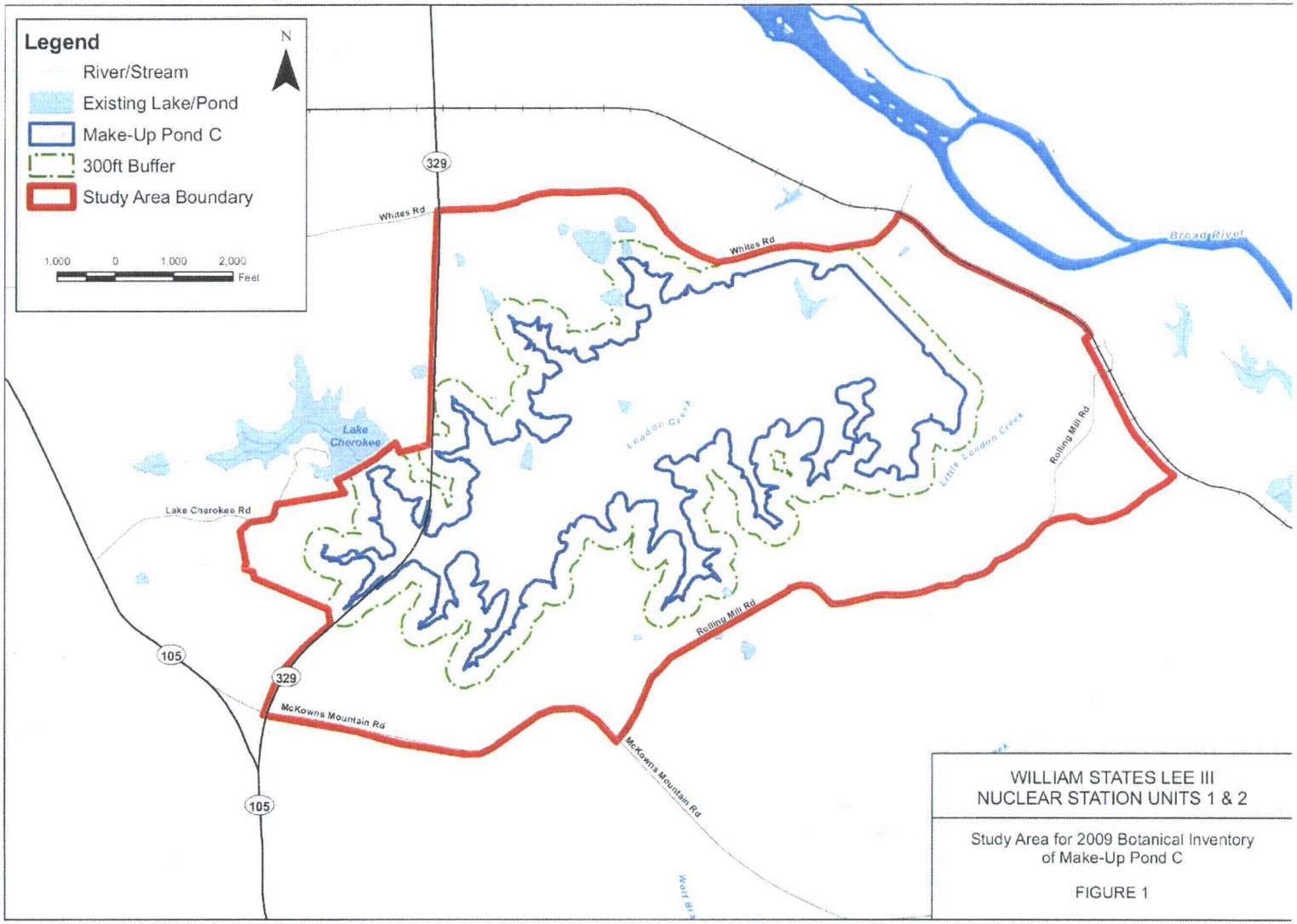
MATERIALS AND METHODS

Study Area

Make-Up Pond C Study Area includes much of the greater London Creek drainage (Figure 1). London Creek, a small tributary of the Broad River in Cherokee County, South Carolina, is approximately 5 miles (8.05 km) southeast of Gaffney. It is located just east of South Carolina Road 329 (Victory Trail Road) and McKown's Mountain Road (SSR 13). London Creek flows into the Broad River in the upper reaches of Ninety-Nine Islands Reservoir. The 2008 London Creek study area included two large tracts of land on the south side of London Creek. There were four major sampling areas within these two tracts (Figure 3). The numbering system for the specific sampling locations is based roughly on the distance upstream, in miles, from the creek's confluence with the Broad River. Sampling Location 2.6, the farthest west and most upstream sampling area, encompasses the area from where South Carolina Highway 329 crosses London Creek downstream (east) to the point at which an unnamed tributary enters London Creek. Sampling Location 1.7 includes the area from the intersection of a Duke Power electric distribution line right-of-way with London Creek to approximately 0.25 mile (0.40 km) upstream and downstream. Sampling Location 0.9 is approximately 0.6 mi (~1000 m) upstream of the point where London Creek goes under an old railroad embankment. Finally, Sampling Location 0.3 is the easternmost and farthest downstream sampling area on London Creek. It is located immediately upstream and immediately downstream of the point where London Creek goes under the abandoned railroad corridor. In 2009, the study area was expanded to encompass most of the north side of London Creek and the upper reaches of the London Creek west of SC 329 below Lake Cherokee, both areas which heretofore had been inaccessible due to lack of authorized ingress. Unlike the remainder of London Creek valley, the lands on the north side of London Creek are dominated by pastureland (Figure 2).

The elevation of the study area ranges from just under 600 feet (~182 m) in the bottomlands near Sampling Location 0.3 near where the creek empties into the Broad River to just over 800 feet (~243 m) on ridges south of Sampling Location 2.6. The soils of the tract are predominantly Tatum fine sandy loams on ridges and Tatum silt clay loams on slopes and in ravines. Mixed alluvium and mixed wet alluvium are found along London Creek and its intermittent tributaries. A large area of Nason very fine sandy loam is found along London Creek south of Sampling Location 2.6 (www.websoilsurvey.nrcs.usda.gov).

The south side of London Creek and its upper reaches are predominantly forested, while much of the north side of London Creek is in pastureland and isolated stands of pine and mixed hardwoods. Open water ponds, power line rights-of-way, and several structures (on the northern side of the creek) are also present in the London Creek study area. Eight major cover types and eight plant community types are described below from the London Creek study area (Figure 2).


Legend
River/Stream
Existing Lake/Pond
Make-Up Pond C
300ft Buffer
Study Area Boundary
N
1,000 0 1,000 2,000
Feet
329
Whites Rd
Whites Rd
Broad River
Lake Cherokee
Lake Cherokee Rd
Rolling Mill Rd
Rolling Mill Rd
105
329
McKowns Mountain Rd
McKowns Mountain Rd
105
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NUCLEAR STATION UNITS 1 & 2
Study Area for 2009 Botanical Inventory
of Make-Up Pond C
FIGURE 1

Large pool on tributary of London Creek.

Methodology

The purpose of this investigation was to conduct a botanical inventory of the Make-Up Pond C Study Area. Fieldwork began in January of 2008 and continued into October of 2009. The study area was surveyed by vehicle and on foot where roads and trails did not exist. Special attention was paid to the possible presence of state- and federally-listed endangered and threatened plant and animal species, to rare plant communities, and to outstanding natural areas.

The vegetation of the study area was quantitatively sampled with 42 plots (30 in 2008 and 12 in 2009). Forty of these plots were circular 0.10-acre (0.004 ha) plots located in forested or mostly-forested areas; two plots located in a non-forested power line right-of-way each consisted of a cluster of five 0.001-acre (0.0004 ha) plots. Within each 0.10-acre (0.004 ha) plot, all tree species [single woody stems 3 inches (7.6 cm) in diameter at breast (4.5 ft) (1.4 m) height (dbh) or over] were sampled. Within a nested 0.01-acre plot, all shrubs and saplings [trees species less than 3 inches in dbh but greater than 10 inches (25.4 cm) tall] were sampled. Finally, within a smaller (0.001-acre) plot, herbs, grasses, forbs, vines, and seedlings (tree and shrub species less than 10 inches tall) were sampled. In the powerline right-of-way, all ten subplots were 0.001-acre plots. The vegetation cover map (Figure 2), compiled using 2006 false-color infrared imagery of the site, was ground-truthed at the sample plots and at various other points in the study area in 2008 and in 2009.

The vascular flora of the study area was sampled by walking transects through the major plant communities. A general master species list of potential species known to occur in the Piedmont of South Carolina was compiled before fieldwork for this investigation began. The list was then edited as vascular plants were found. A species list was compiled for all species encountered in 2008 and 2009 in the greater study area. The species list follows Tables 1 and 2 in the Appendix [taxonomy here follows Radford et al. (1968) with common names and published new taxa from www.itis.gov].

Finally, special detailed inventories were carried out in habitats that potentially harbored federally- and state-listed or otherwise rare vascular plant species. Detailed inventories of the study area were also conducted where noteworthy plant communities were encountered.

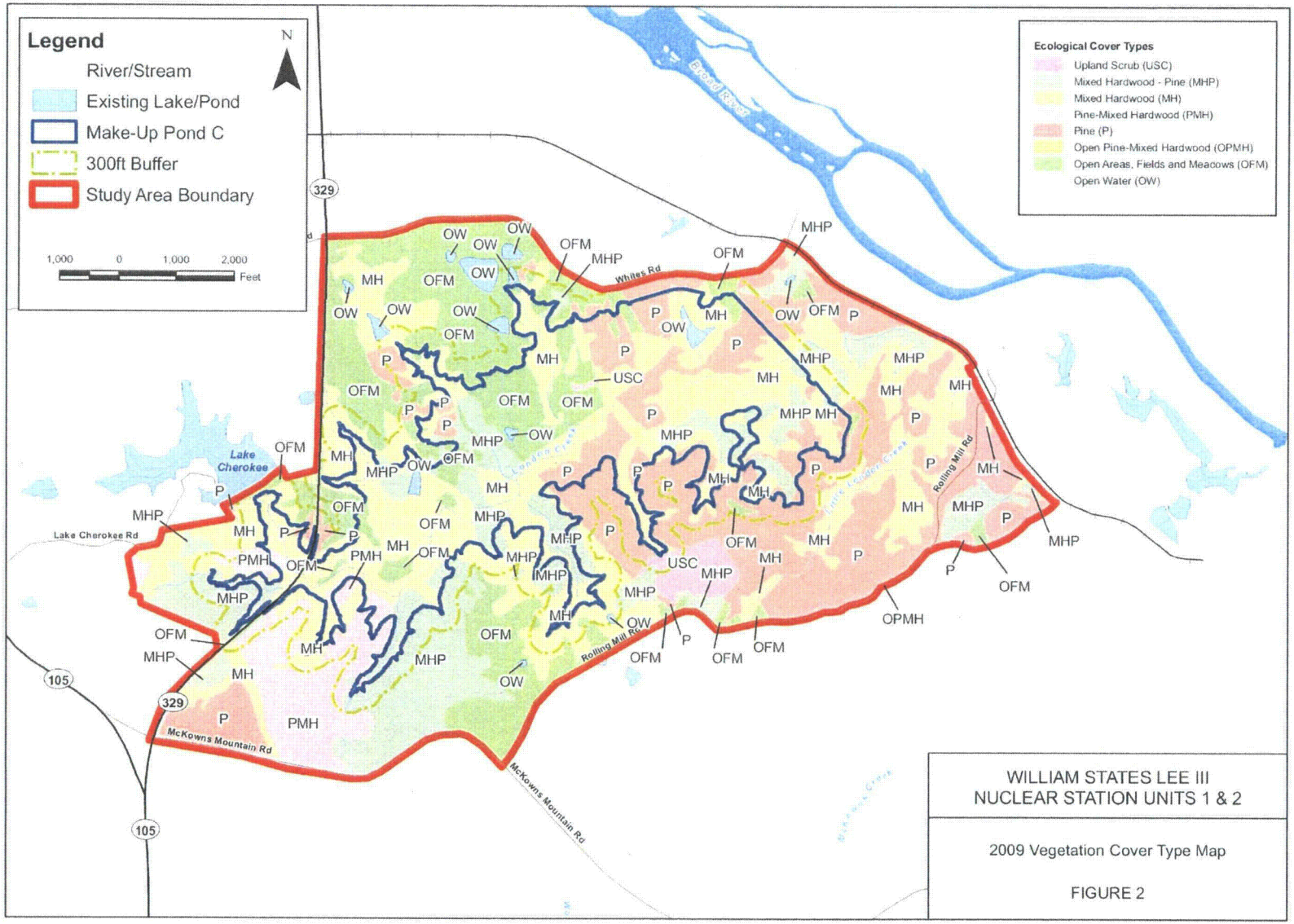
RESULTS AND DISCUSSION

Vegetation Cover Map

Figure 2 is a map of the vegetation cover of the greater London Creek study area. Compiled from 2006 false-color infrared imagery of the site and over 40 ground truth points, this map includes eight cover types: 1) Open Areas, Fields, and Meadows (OFM), 2) Upland Scrub(USC), 3) Pine (P), 4) Pine-Mixed Hardwoods (PMH), 5) Mixed Hardwoods-Pine (MHP), 6) Mixed Hardwoods (MH), 7) Open Pine-Mixed Hardwoods (OPMH), and 8) Open Water (OW). The vegetation of each cover type is discussed in detail in the following section.

Plant Communities

Plant community types closely correspond to vegetation cover types. Some cover types in the study area such as "Open Water," however, have no vascular plants. Eight major plant community types were encountered during the 2008 and 2009 fieldwork. They were: 1) Open/Meadow/Field, 2) Pine, 3) Pine-Mixed Hardwoods, 4) Mixed Hardwoods-Pine, 5) Cut-over Mixed Hardwoods, 6) Mixed Hardwoods, 7) Bluff Mixed Hardwoods, and 8) Lowland Mixed Hardwoods. Because the last four community types are dominated by mixed hardwoods and are difficult to separate on false-color infrared imagery, they are lumped together into "Mixed Hardwoods" on the vegetation cover type map. The plant community types are discussed below. Data used to summarize each type come from 42 sample plots placed in the Make-Up Pond C Study Area (see Figure 2; Table 1 and 2 below summarizes data from the plots). [For complete plot data, see Appendix Table 1 (2008 plots) and Appendix Table 2 (2009 plots).]


Legend
River/Stream
Existing Lake/Pond
Make-Up Pond C
300ft Buffer
Study Area Boundary
N
1,000 0 1,000 2,000
Feet
Ecological Cover Types
Upland Scrub (USC)
Mixed Hardwood - Pine (MHP)
Mixed Hardwood (MH)
Pine-Mixed Hardwood (PMH)
Pine (P)
Open Pine-Mixed Hardwood (OPMH)
Open Areas, Fields and Meadows (OFM)
Open Water (OW)
Broad River
Whites Rd
Lake Cherokee
Lake Cherokee Rd
McKowns Mountain Rd
Rolling Mill Rd
329
105
WILLIAM STATES LEE III
NUCLEAR STATION UNITS 1 & 2
2009 Vegetation Cover Type Map
FIGURE 2

Ice-covered London Creek at Sampling Location 1.6 in January of 2008.

Mature beech trees on a steep bluff of London Creek.

Table 1. Summary of London Creek Properties plant community plot data.*

Plot No./ Cover Type**	Dominant Tree	Subdominant Tree	Dominant Understory Tree	Dominant Shrub Layer Species	Dominant Herbaceous Layer Species
1/PINE	loblolly pine	tulip poplar	black cherry	s. red oak	open
2/LOW MH	red maple	tulip poplar	American holly	pawpaw	Christmas fern
3/C/O MH	white oak	red oak	black cherry	sweet gum	oat grass/nut rush
4/MH	white oak	sweet gum	sourwood	mt. laurel	Piedmont heartleaf/sweet shrub
5/MH	white oak	red maple	open	red maple	Christmas fern
6/LOW MH	tulip poplar	red maple	sourwood	dog hobble	Dog hobble
7/BL MH	beech	tulip poplar	sourwood	dog hobble	Christmas fern
8/LOW MH	black walnut	red maple	cane	ironwood	chickweed
9/LOW MH	sweet gum	red maple	ironwood	ironwood	chickweed
10/LOW MH	beech	tulip poplar	sourwood	beech	Christmas fern
11/BL MH	red oak	bitternut hickory	Mt. laurel	silverbell	Christmas fern
12/BL MH	mt. laurel	red oak	sourwood	mt. laurel	Aster sp.
13/LOW MH	beech	tulip poplar	chalk maple	chalk maple	Christmas fern
14/ BL MH	beech	white oak	American holly	mt. laurel	Piedmont heartleaf
15/LOW MH	tulip poplar	sweet gum	ironwood	pawpaw	Jack-in-the-pulpit
16/LOW MH	black walnut	white ash	ironwood	ironwood	mayapple
17/LOW MH	green ash	tulip poplar	ironwood	ironwood	green ash
18/PINE	loblolly pine	Virginia pine	black cherry	red maple	Pied. plume grass
19/PINE-MH	loblolly pine	red maple	sourwood	red maple	muscadine
20/MH	white oak	sweet gum	sourwood	American holly	highbush blueberry
21/MH	beech	pignut hickory	sourwood	Open	Sweet shrub/Christmas fern
22/MH	beech	tulip poplar	sourwood	beech	black cherry
23/C/O MH	tulip poplar	sweet gum	ironwood	red maple	black cherry
24/PINE	Va. pine	white oak	black cherry	tulip poplar	blackberry
25/MH	tulip poplar	red maple	ironwood	ironwood	Red maple
26/LOW MH	sweet gum	cottonwood	box elder	open	water-willow
27/MH	sweet gum	tulip poplar	American holly	ironwood	Christmas fern
28/LOW MH	cottonwood	Sycamore	box elder	muscadine	water-willow
29/OFM	-	-	-	-	little bluestem
30/OFM	-	-	-	-	purple top

*** Appendix Table 1 includes complete plot data.**
****Abbreviations: LOW MH-Lowland Mixed Hardwoods; MH-Mixed Hardwoods; BL MH-Bluff Mixed Hardwoods; C/O MH-Cut-Over Mixed Hardwoods; OFM-Open/Field/Meadow.**
Because the study area was dominated by mixed hardwood cover and community types, more sample plots were located in these types.

Table 2. Summary of London Creek Properties plant community plot data: 2009—Plots 31-42*

Plot No./ Cover Type**	Dominant Tree	Subdominant Tree	Dominant Understory Tree	Dominant Shrub Layer Species	Dominant Herbaceous Layer Species
31/BL MH	white oak	beech	sourwood	Piedmont rhododendron	galax
32/LOW MH	beech	sycamore	ironwood	dog hobble	mayapple
33/LOW MH	sweet gum	sycamore	tag alder	ironwood	needlerush
34/LOW MH	red maple	sweet gum	ironwood	spicebush	violet sorrel
35/ MH	sweet gum	basswood	ironwood	native cane	violet sorrel
36/MH	tulip poplar	beech	ironwood	ironwood	broad beechfern
37/LOW MH	red maple	black gum	open	highbush blueberry	netted chainfern
38/LOW MH	beech	basswood	sourwood	chalk maple	wild geranium/ Christmas fern
39/ LOW MH	tulip poplar	red maple	open	tag alder	fringed sedge/ arrow-arum
40/LOW MH	red maple	green ash	open	red maple	water hemlock
41/MH	beech	white oak	open	*Ilex longipes*	Christmas fern
42/PMH	shortleaf pine	beech	sourwood	ironwood	Christmas fern

*** Appendix Table 1 includes complete plot data.**
****Abbreviations: LOW MH-Lowland Mixed Hardwoods; MH-Mixed Hardwoods; BL MH-Bluff Mixed Hardwoods; C/O MH-Cut-Over Mixed Hardwoods; OFM-Open/Field/Meadow.**
Because the study area was dominated by mixed hardwood cover and community types, more sample plots were located in these types.

Open/Field/Meadow. The non-forested areas in the study area are residential areas, fields, pastures, and the rights-of-way of roads and power transmission and distribution lines. Numerous non-woody vascular plant species are found within these openings (see Appendix for checklist of species). Species abundant in the drier portions of this habitat include little bluestem (*Schizachyrium scoparium*), broomsedge (*Andropogon virginicus*), purple top (*Tridens flavus*), blackberry (*Rubus* sp.), fescue (*Festuca elatior*), goldenrod (*Solidago* spp.), asters (*Aster* spp.), sunflowers (*Helianthus* spp.), and plantains (*Plantago* spp.). On heavier clays, more mesic species such as Georgia aster (*Aster georgianus*), skullcap (*Scutellaria integrilabia*), false indigo (*Baptisia alba*), and southern beardtongue (*Penstemon australis*) were found. In low areas, cane (*Arundinaria gigantea*), chaffseed (*Verbesina occidentalis*), and ironweed (*Vernonia noveboracensis*) were abundant. Fescue dominated the extensive pastures on the northern side of London Creek.

Upland Scrub. The upland scrub community is rare in the study area. It is often found where forests on poor soils have been logged or where high-grade logging historically took place in erosion-prone areas. After logging, the subsequent successional vegetation of this type does not reach canopy size. The community is usually dominated by eastern red cedar (*Juniperus virginiana*), Virginia pine (*Pinus virginiana*), blackberries (*Rubus* spp.), and sumacs (*Rhus glabra* and *Rhus copallina*).

Pine. Most of the pine stands in the study area are less than 50 years old. These stands are dominated by loblolly (*Pinus taeda*) pine with scattered Virginia pine often present (in the youngest stands). This cover type is found primarily on dry, sandy ridges and upper slopes.

Pine-Mixed Hardwoods. On upper slopes and in successional stands that have been recently cut-over, pine-mixed hardwoods dominate. Loblolly pine and Virginia pine are dominant in the low to mid-level canopy. In successional stands, tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), and sweet gum (*Liquidambar styraciflua*) are common in the canopy and understory.

Mixed Hardwood-Pine. On lower slopes and in areas transitional between pine-mixed hardwood stands and mixed hardwood stands, the mixed hardwood-pine community is present. Here, white oak (*Quercus alba*), sweet gum, beech, and tulip poplar are dominant in the canopy with scattered pine. Middle-aged to mature shortleaf pine (*Pinus echinata*) is often found in the canopy of this type (see Plot 42 for a mature shortleaf pine-mixed hardwood stand on a streamside terrace of a London Creek tributary.

Cut/Over Mixed Hardwoods. This type consists of stands where the upland mixed hardwoods and/or pine-mixed hardwoods/mixed hardwoods-pine types previously existed. These stands have recently (within the last 25 years) been logged for the canopy pine and hardwood species that dominated. Now, young to middle-aged mixed hardwood species such as tulip poplar, red maple, red oak, white oak, sweet gum, and hickories (*Carya* spp.) are dominant. The cover type is widely scattered over the tract, with several large blocks throughout the study area.

Mixed Hardwoods. Some of the mixed hardwoods formerly present in the study area have been cut-over and planted in pines or now exist as the cut-over mixed hardwoods type. Nearly all of the xeric or ridge top mixed hardwoods type is gone. The "mixed hardwoods" cover type designation here includes upper and mid-slope mixed hardwood communities. Bluff, lower slope, riparian, and bottomland mixed hardwoods are discussed under separate cover types below. Most of the sample plots in the mixed hardwood cover type were dominated by white oak, but beech (*Fagus grandifolia*), tulip poplar, sweet gum, red oak, and red maple were also dominants in the canopy of this type (Table 1). Sourwood (*Oxydendrum arboreum*), American holly (*Ilex opaca*), and ironwood (*Carpinus caroliniana*) were common in the understory.

Bluff Mixed Hardwoods. Several relatively undisturbed bluffs dominated by mature mixed hardwoods are found along London Creek. Here, plant communities ranging from species-rich mixed hardwood slopes dominated by beech and red oak to rocky heath dominated bluffs are present [common heath species here are mountain laurel (*Kalmia latifolia*) and Piedmont rhododendron (*Rhododendron minus*)]. Beech, white oak, red oak, tulip poplar, bitternut hickory (*Carya cordiformis*), shortleaf pine, sourwood, and mountain laurel are the dominant canopy and understory species on these bluffs, according to data from four sample plots in this cover type. The heath bluffs have dense thickets of mountain laurel and Piedmont rhododendron with scattered sourwood. The richer bluffs often have a diverse herbaceous flora.

Lowland Mixed Hardwoods. Numerous lower slope, riparian, bog, and bottomland mixed hardwood stands are present in the study area (see Plots 6, 8, 9, 10, 13, 16, 15, 17, 32, 33, 34, 37, 38, 39, and 40). Sweet gum, beech, tulip poplar, red maple, black walnut (*Juglans nigra*), green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and white ash (*Fraxinus americana*) are all present in the canopy of this type. Just upstream from the Broad River where London Creek flows into the floodplain of Broad River, cottonwood (*Populus deltoides*) and sycamore (*Platanus occidentalis*) are also common in the canopy. American hornbeam or ironwood and box elder (*Acer negundo*) are common in the understory of this cover type with native cane, pawpaw (*Asimina triloba*), and spicebush (*Lindera benzoin*) the shrub layer dominants. In the richer bottoms, mayapple (*Podophyllum peltatum*) and rich-site herbs such as Jack-in-the-pulpit (*Arisaema triphyllum*) are present in the herbaceous layer of this type.

Most of this community type is found in low coves and high floodplains and is not jurisdictional wetland. Several small beaver ponds and their backwaters, oxbow lakes, seepage bogs, old stream channels, and jurisdictional floodplain wetlands, however, are present in the study area. The dominant species in these small (usually less than one-half acre) wetlands are black willow (*Salix nigra*), river birch (*Betula nigra*), green ash, sycamore, and red maple. In openings, sedges (*Carex* spp.), common needlerush (*Juncus effusus*), and ferns are present. Tag alder (*Alnus serrulata*), red maple, and ferns were present in seepage bogs (see Plots 17, 33, 37, and 39 for representative wetlands).

Large cinnamon ferns in Fern Bog Natural Area.

Tall mountain laurels in Laurel Ravine Natural Area.

Significant Natural Areas

Several locations within the study area were determined to be "significant natural areas" based on the presence of rare plant communities, rare plant species, or mature to old-growth trees. These natural areas were generally small, ranging in size from around one-half acre (Chain Fern Bog) to just over five acres (London Creek Bottoms). They are discussed below

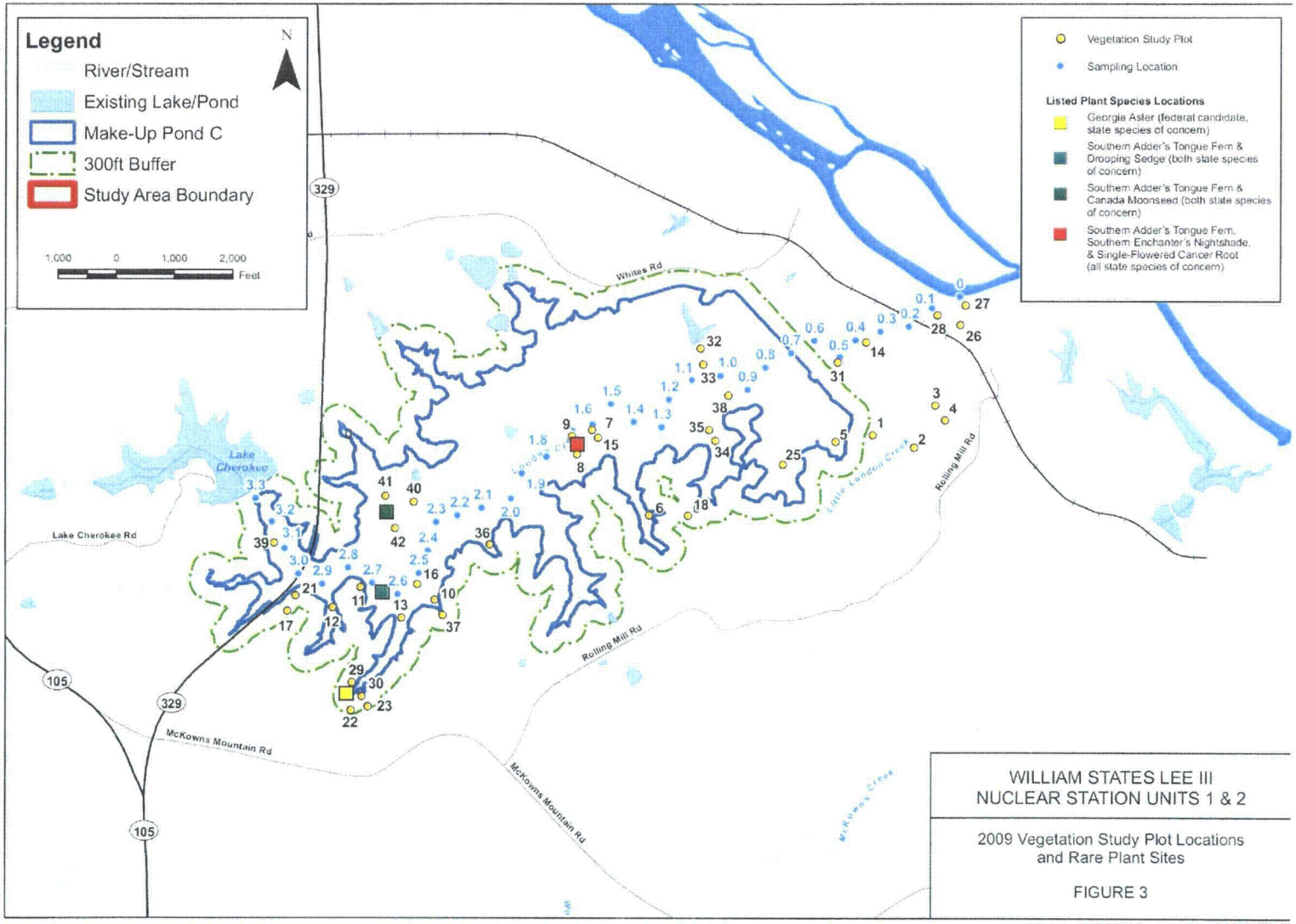
Cinnamon Fern Bog. Near the westernmost portion of Sampling Location 2.6, a seepage bog dominated by green ash and tulip poplar with several dominant sedges (*Carex styloflexa, Carex abscondita, Carex atlantica)* and a luxuriant fern flora with large cinnamon (*Osmunda cinnamomea*), royal (*Osmunda regalis var. spectabilis*), and sensitive ferns (*Onoclea sensibilis*) was found (see Plot 17 in Appendix Table 1 and Figure 3).

Laurel Ravine. Laurel Ravine is a mountain laurel-dominated ravine just east of Fern Bog in Sampling Location 2.6. Extremely large mountain laurel up to 25 feet in height and over four inches in diameter are present here. The total basal area of mountain laurel in this ravine is greater than that of any tree species in the study plot here (see Plot 12 in Appendix Table 1 and Figure 3).

West Bluff. Just downstream from Laurel Ravine (again in Sampling Area 2.6), a steep, north-facing bluff harbors a stand of mature red oak, bitternut hickory (*Carya cordiformis*), and beech with trees up to 30-40 inches in dbh. Large sourwood—up to 11 inches in dbh—are also present here (see Plot 11 in Appendix Table 1 and Figure 3).

West Bottoms. In Sampling Location 2.6 along London Creek, a rich bottomland with a diverse assemblage of species is found. Here, black walnut, American elm, eastern red cedar (*Juniperus virginiana*), white ash, winged elm, tulip poplar, sweet gum, and other species are present in the canopy. In the understory, redbud (*Cercis canadensis*), pawpaw (*Asimina triloba*), and spicebush (*Lindera benzoin*) are common. In the herbaceous layer, two state-listed species—southern adder's-tongue fern (*Ophioglossum vulgatum*) and drooping sedge (*Carex prasina*)—are present along with mayapple, Jack-in-the-pulpit, and other rich-site species (see Plot 11 in Appendix Table 1 and Figure 3).

Sample Location 1.7 and Adjacent Bluff. Sampling Location 1.7 and the adjacent bluff is a complex of rich-site forest and herbaceous species. Here, a bluff dominated by mature (to 30 inches in dbh) beech, tulip poplar, and bitternut hickory overlooks a rich bottom. The bottom has black walnut, red maple, tulip poplar, American elm, and sweet gum in the canopy with southern enchanter's nightshade (*Circaea lutetiana ssp. canadensis*), southern adder's tongue fern, and single-flowered cancer root (*Orobanche uniflora*)—all state-listed "of concern" species—in the herbaceous layer. See Plots 7, 8, 9, and 15 in Appendix Table 1 and Figure 3).



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NUCLEAR STATION UNITS 1 & 2

2009 Vegetation Study Plot Locations
and Rare Plant Sites

FIGURE 3

Rhododendron Bluff. Rhododendron bluff is a rocky bluff overlooking lower London Creek at Sampling Area 0.9. It is dominated by Piedmont rhododendron, mountain laurel, beech, sourwood, and American holly. This site is noteworthy in that Piedmont rhododendron, which is found in the Piedmont of Virginia and North Carolina, is rarely dominant on bluffs in the Piedmont of South Carolina. In South Carolina, this flowering shrub is usually a Blue Ridge species and is, therefore, somewhat out of its normal range here (see Plot 14 in Appendix Table 1 and Figure 2).

London Creek Bottoms. In the downstream portion of Sampling Area 0.3, London Creek enters the rich floodplain of the Broad River. Here, a mature forest of trees typically found in larger floodplains is present. The dominant species here are large cottonwoods (*Populus deltoides*) and sweet gums over 36 inches in dbh. Mature sycamore (*Platanus occidentalis*), green ash, and American elm are also found in the canopy. The understory is open with scattered box elders. Yellowish milkweed vine, rare in the Piedmont of South Carolina, was found in the herbaceous layer of London Creek Bottoms (see Plots 26 and 28 in Appendix Table 1 and Figure 3).

Little London Creek Bottoms. Little London Creek is located in the upper portion of Sampling Area 0.3. The primary ravine in which Little London Creek flows is rich in mature hardwood species. The two stands sampled (see sample plot 2 and 4 in the Appendix) harbor mature white oak, sweet gum, tulip poplar, water oak (*Quercus nigra*), beech, and black gum (*Nyssa sylvatica*). The soils are acidic in Little London Creek bottoms—American holly is common in the understory with southern lady fern (*Athryium felix-femina*), Christmas fern, and partridgeberry (*Mitchella repens*) common in the herbaceous layer (see Plots 2, 3, and 4 in Appendix Table 1 and in Figure 3).

Fern Ravine. Upstream from Sampling Location 2.6, a north-facing ravine with a small rocky stream enters London Creek. This pristine area has small falls and slides and is dominated by scattered mature beeches (to 43 inches in dbh) and tulip poplars. American holly is the understory dominant and broad beech fern (*Thelypteris hexagonoptera*) and maidenhair fern (*Adiantum pedatum*) are common along the creek (see Plot 36 in Appendix Table 2 and Figure 3).

Chain Fern Bog. Chain Fern Bog is a small natural area found adjacent to a small tributary of London Creek southeast of Sampling Location 2.6 and upstream from Plots 16 and 10. Here, netted chain fern (*Woodwardia areolata*) is the dominant species in this mucky seepage bog. The canopy is scattered red maple and black gum (*Nyssa sylvatica*) and highbush blueberry (*Vaccinium corymbosum*) is common in the understory. Other wetland plants in the bog are arrow-arum (*Peltandra virginica*) and turtlehead (*Chelone obliqua*) (see Plot 37 in Appendix Table 2 and Figure 3).

The Broad River at the mouth of London Creek just below London Creek Bottoms.

Flora, Fauna, and Vegetation

Flora

The flora of the London Creek Tract is similar to that of the upper Piedmont of North and South Carolina. A total of 426 species of vascular plants were encountered in the study area during the 2008 and 2009 growing seasons (see vascular plant checklist, Appendix). Tree species richness on the tract was high, with over 50 species of trees present. Adding around 35 shrub and vine species, there is a total of approximately 90 woody plants on the property; the remaining species are non-woody plants—herbs, grasses, rushes, and sedges. Of the total documented vascular flora, around 20 species were exotics or invasives. *Carex*, a genus in the sedge family (Cyperaceae), led all genera in richness with 33 species present in the London Creek study area.

Federal and State Listed and Otherwise Rare Species

Table 3 includes all known federally- or state-listed endangered, threatened, candidate or otherwise noteworthy vascular plant species potentially-occurring in the study area. This table is derived from Cherokee and York County data from South Carolina Department of Natural Resources and U. S. Fish and Wildlife Service state and county lists.

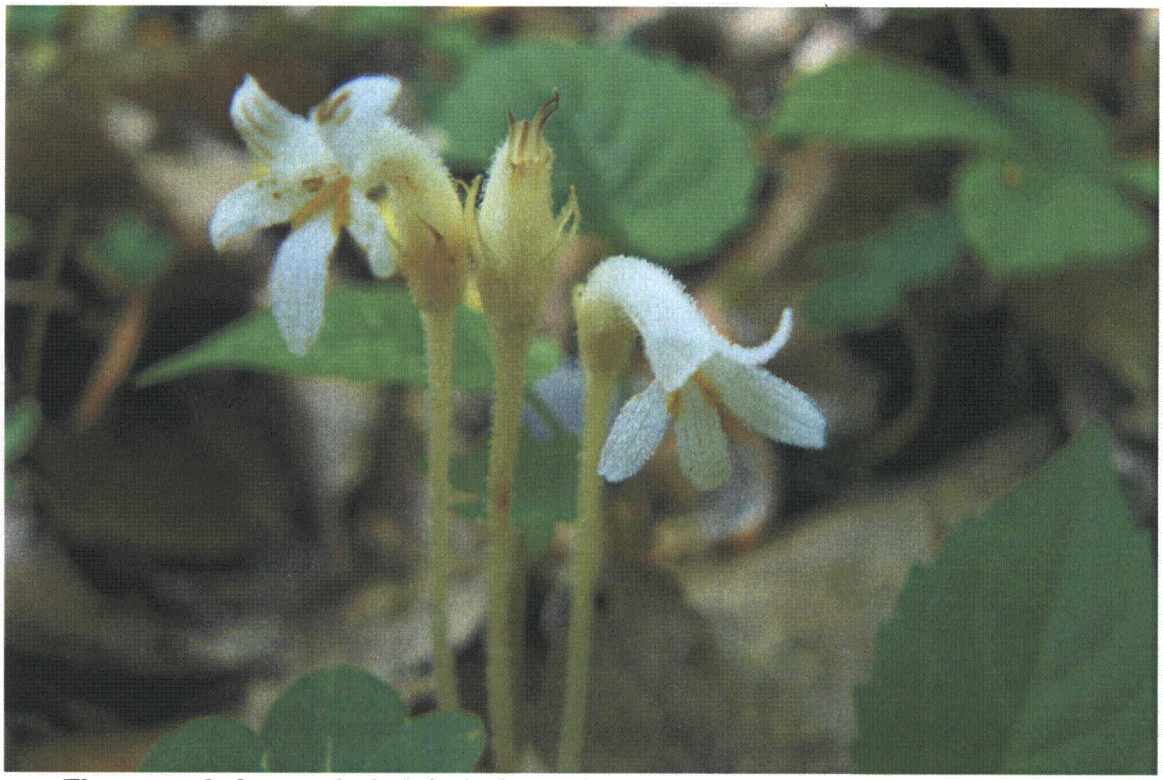
During the course of the field inventory of the study area, six plant species listed by either the Fish and Wildlife Service or the South Carolina Department of Natural Resources were found. The population size and location of each of these species are discussed below.

Georgia aster. One federally-noteworthy species, the Georgia aster, was found in early October 2008 in the study area during this inventory. The Georgia aster is a "candidate" species for listing by the Fish and Wildlife Service and is not officially listed as endangered or threatened. Five plants with ten flowering stems of the species were found in 2008 on rich soil with grasses and herbs in a power line right-of-way just west of Plot 29 near Sampling Location 2.6. In an October 2009 revisit to the site, 14 flowering stems were present (see Figure 3).

Five state-listed plant species were also found within the Make-Up Pond C Study Area. All five are listed on the South Carolina Department of Natural Resources web site (www.dnr.sc.gov) as "of state concern." They are:

Drooping sedge. About twenty plants of *Carex prasina* (drooping sedge) were found in mid-April along a tributary of London Creek in Sampling Location 2.6 of the study area. Drooping sedge occurs in bogs, low woods, and seepage areas (Figure 3).

The rare Georgia aster flowers in early and mid-October.



The rare and often overlooked single-flowered cancer root was found along London Creek.

Southern enchanter's-nightshade. Approximately 25 plants of southern enchanter's-nightshade (*Circaea lutetiana ssp. canadensis*) were found in late April a rich lowland mixed hardwood forest in Sampling Location 1.7. The plants were growing with mayapple, wild geranium (*Geranium maculatum*), and other rich woods species (Figure 3).

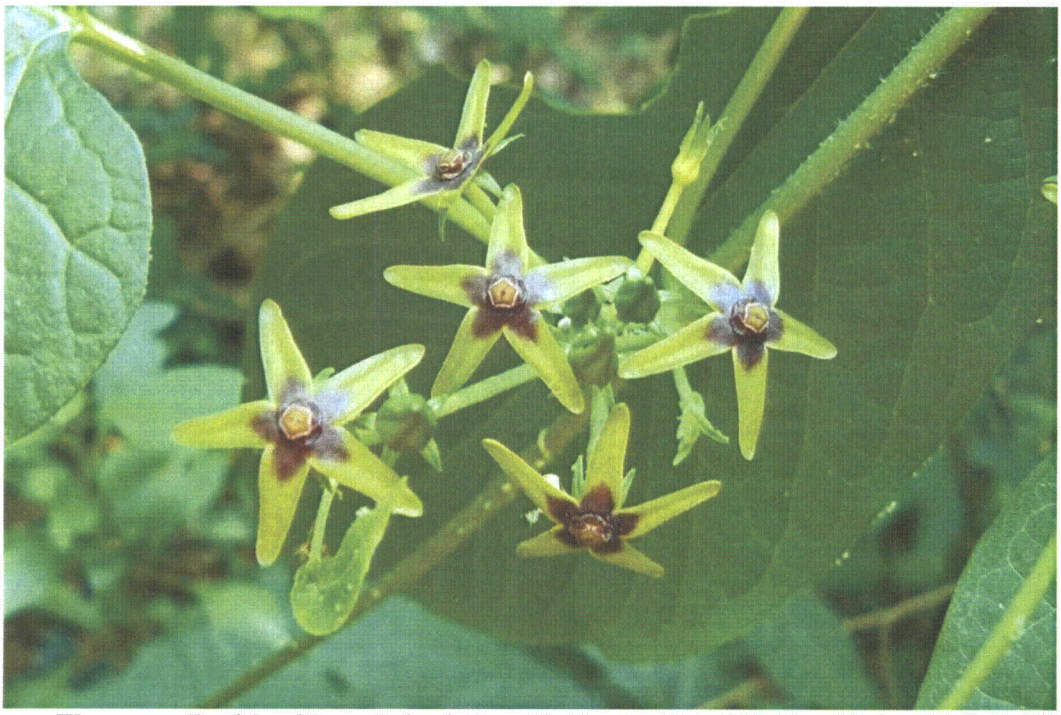
Southern adder's-tongue fern. Hundred of plants of southern adder's-tongue fern (*Ophioglossum vulgatum*), many of them fertile, were found in mid- and late April at two locations (Sampling Locations 2.6 and 1.7) in rich lowland woods at both sites. The plants were growing with mayapple under black walnut (*Juglans nigra*), tulip poplar, white ash, and American elm (Figure 2). In 2009, numerous subpopulations of the fern were found in the floodplain of London Creek, including a subpopulation growing with Canada moonseed (*Menispermum canadense*) (see below) north of Sampling Location 2.6 near Plot 42 (Figure 3).

Single-flowered cancer root. Two stems of cancer root (*Orobanche uniflora*) were found in mid-April along London Creek in rich, lowland woods in Sampling Location 1.7 with Jack-in-the-pulpit, rattlesnake fern (*Botrychium virginianum*), and Catesby's trillium (*Trillium catesbaei*) (Figure 3).

Canada moonseed. Six stems of the vine Canada moonseed (*Menispermum canadense*) were found growing in an opening along a tributary of London Creek just north of Sampling Location 2.6 near Plot 42. Pawpaw, black walnut, mayapple, and southern adder's-tongue fern were also found at the moonseed site (Figure 3).

Other rare and noteworthy vascular plant species encountered in the study area included mountain holly (*Ilex montana*) and golden ragwort (*Senecio aureus*) (both rare outside of the Blue Ridge), tuberous dwarf-dandelion (*Krigia dandelion*) (widely scattered in the Piedmont of South Carolina), yellowish milkweed vine (*Matalea flavidula*) (known from only four counties in South Carolina), and Kral's sedge (*Carex kraliana*) [unreported in the South Carolina Plant Atlas (http://cricket.biol.sc.edu/herb) and possibly the second record for the state].

No federally-listed species were found in the Make-Up Pond C Study Area. Special searches were conducted for the dwarf-flowered heartleaf (*Hexastylis naniflora*) (threatened), known from north and east of the study area, for Schweinitz's sunflower (*Helianthus schweinitzii*) (endangered), known from eastern York County, and for smooth coneflower (*Echinacea laevigata*) (endangered), known from the Piedmont of nearby North Carolina. None of these species nor habitat for these plants was found in the study area.



The rare yellowish milkweed vine is found in London Creek Bottoms Natural Area.

The uncommon golden ragwort is found in Fern Bog Natural Area.

Table 3. Endangered, threatened, and otherwise noteworthy species potentially found in the Make-Up Pond C Study Area, Cherokee County, South Carolina.

SCIENTIFIC NAME	COMMON NAME	DATA SOURCE*	FEDERAL STATUS**	STATE STATUS**	HABITAT PRESENT AT SITE?	SPECIES PRESENT AT SITE?
Agalinis auriculata	ear-leaved foxglove	YORK	--	SC	NO	NO
Agrimonia pubescens	soft groovebur	YORK	--	SC	NO	NO
Allium cernuum	nodding onion	CHEROKEE	--	SC	YES	NO
Amphianthus pusillus	pool sprite	YORK	FT	ST	NO	NO
ASTER GEORGIANUS	**Georgia aster**	**BOTH**	**FC**	**SC**	**YES**	**YES**
Aster laevis	smooth blue aster	YORK	--	SC	NO	NO
Camassia scilloides	wild hyacinth	YORK	--	RC	NO	NO
CAREX PRASINA	**drooping sedge**	**FIELD SURVEY**	**--**	**SC**	**YES**	**YES**
Carex scabrata	rough sedge	CHEROKEE	--	SC	NO	NO
CIRCAEA LUTETIANA SSP. CANADENSIS	**southern enchanter's nightshade**	**FIELD SURVEY**	**--**	**SC**	**YES**	**YES**
Cyperus granitophilus	granite-loving flatsedge	YORK	--	SC	NO	NO
Dasistoma macrophylla	mullein foxglove	YORK	--	SC	NO	NO
Echinacea laevigata	smooth coneflower	USFWS	FE	SE	NO	NO
Eleocharis palustris	creeping spikerush	YORK	--	SC	YES	NO
Eupatorium sessilifolium var. *vaseyi*	Vasey's dogfennel	CHEROKEE	--	SC	?	NO
Helianthus laevigatus	smooth sunflower	BOTH	--	SC	YES	later
Helianthus schweinitzii	Schweinitz's sunflower	YORK	FE	SE	NO	NO
Hexastylis naniflora	dwarf-flowered heartleaf	CHEROKEE	FT	ST	YES	NO
Hydrangea cinerea	ashy hydrangea	CHEROKEE	--	SC	YES	NO
Hymenocallis coronaria	shoals spider-lily	YORK	--	NC	NO	NO
Isoetes piedmontana	Piedmont quillwort	YORK	--	SC	NO	NO
Juglans cinerea	white walnut	YORK	--	SC	NO	NO
Juncus georgianus	Georgia rush	YORK	--	SC	NO	NO
Lilium canadense	Canada lily	YORK	--	SC	NO	NO
Lipocarpa micrantha	dwarf bulrush	YORK	--	SC	NO	NO
Lotus purshianus var. *helleri*	prairie birdsfoot-trefoil	USFWS	FSC	NL	NO	NO
Melanthium virginicum	Virginia bunchflower	YORK	--	SC	YES	NO
MENISPERMUM CANADENSE	**CANADA MOONSEED**	**CHEROKEE**	**--**	**SC**	**YES**	**YES**
Minuartia uniflora	one-flowered stichwort	YORK	--	SC	NO	NO
Najas flexilis	slender naiad	YORK	--	SC	NO	NO

SCIENTIFIC NAME	COMMON NAME	DATA SOURCE*	FEDERAL STATUS**	STATE STATUS**	HABITAT PRESENT AT SITE?	SPECIES PRESENT AT SITE?
OPHIOGLOSSUM VULGATUM	**southern adder's tongue fern**	**FIELDSURVEY**	--	**SC**	**YES**	**YES**
OROBANCHE UNIFLORA	**single-flowered cancer root**	**FIELD SURVEY**	--	**SC**	**YES**	**YES**
Panax quinquefolius	American ginseng	YORK	--	RC	YES	NO
Poa alsodes	blue grass	YORK	--	SC	NO	NO
Quercus bicolor	swamp white oak	YORK	--	SC	NO	NO
Quercus oglethorpensis		YORK	--	SC	NO	NO
Ranunculus fascicularis	early buttercup	YORK	--	SC	NO	NO
Ratiba pinnata	gray-headed prairie coneflower	YORK	--	SC	NO	NO
Rhododendron eastmanii	Creel's azalea	YORK	--	SC	YES	NO
Rudbeckia heliopsidis	sun-facing coneflower	YORK	--	NC	NO	NO
Scutellaria parvula	dwarf skullcap	YORK	--	SC	NO	NO
Silphium terebinthinaceum	prairie rosinweed	YORK	--	SC	NO	NO
Solidago ptarmicoides	prairie goldenrod	YORK	--	SC	NO	NO
Solidago rigida	rigid prairie goldenrod	YORK	--	SC	NO	NO
Smilax biltmoreana	Biltmore greenbrier	USFWS	--	SC	NO	NO
Thermopsis mollis	soft-haired thermopsis	CHEROKEE	--	SC	NO	NO
Tiarella cordifolia var. cordifolia	heart-leaved foamflower	YORK	--	SC	NO	NO
Torreyochloa pallida	Pale manna grass	YORK	--	SC	NO	NO
Trillium rugelii	southern nodding trillium	YORK	--	SC	NO	NO
Verbena simplex	narrow-leaved vervain	YORK	--	SC	NO	NO
Veronicastrum virginicum	culver's-root	YORK	--	SC	NO	NO
Xerophyllum asphodeloides	turkey-beard	CHEROKEE	--	SC	NO	NO

***DATA SOURCE**: YORK-SCDNR York County list; CHEROKEE-SCDNR Cherokee County list; USFWS-U. S. Fish and Wildlife Service; FIELDSURVEY-found during field inventory of site.

****ABBREVIATIONS:** FT-federally-listed, threatened; FC-federal candidate, not yet listed; ST-state-listed, threatened; NC-state-listed, of national concern; RC-state-listed, of regional concern; SC-state-listed, of state concern; NL-not listed. ALL CAPITALS-state-listed species.

LITERATURE CITED

International Taxonomic Information System. 2008. www.itis.gov.

Radford, A. E., H. Ahles, and C. R. Bell. 1968. Manual of the vascular flora of the Carolinas. University of North Carolina Press. Chapel Hill. 1183 p.

South Carolina Plant Atlas. 2008. http://cricket.biol.sc.edu/herb.

South Carolina Department of Natural Resources Department. 2008. https://www.dnr.sc.gov:4443/pls/heritage/species.login.

APPENDIX

Appendix Table 1. Data from 2008 plots (Plots 1-30).*

PLOT NUMBER	SPECIES	BASAL AREA	REL B/A	DENSITY	REL DEN	IMPORTANCE VALUE
1	***Pinus taeda***	**46.8**	**0.69**	**21**	**0.6**	**128**
	Liriodendron tulipifera	13.6	0.2	8	0.23	42
	Prunus serotina	2.4	0.04	2	0.06	10
	Liquidambar styraciflua	1.31	0.02	1	0.03	5
	Quercus falcata	1.31	0.02	1	0.04	6
	Oxydendrum arboreum	2.12	0.03	2	0.06	9
		68.54		35		
2	***Acer rubrum***	**26.7**	**0.34**	**6**	**0.19**	**53**
	Liriodendron tulipifera	18.4	0.24	5	0.16	40
	Liquidambar styraciflua	12.1	0.16	3	0.1	26
	Nyssa sylvatica	3.97	0.05	5	0.16	21
	Quercus nigra	0.91	0.01	1	0.03	4
	Ilex opaca	**14.8**	**0.19**	**7**	**0.23**	**42**
	Carpinus caroliniana	0.34	0.001	2	0.06	7
	Diospyros virginiana	0.66	0.01	2	0.06	7
		77.88		31		
3	***Quercus alba***	**47.1**	**0.75**	**15**	**0.44**	**119**
	Quercus rubra	13.1	0.21	7	0.21	42
	Quercus nigra	0.92	0.01	3	0.09	10
	Liriodendron tulipifera	0.34	0.005	2	0.06	6
	Liquidambar styraciflua	0.66	0.01	2	0.06	7
	Prunus serotina	0.44	0.007	2	0.06	7
	Ilex opaca	0.27	0.004	2	0.06	6
	Juniperus virginiana	0.27	0.004	1	0.03	3
		63.1		34		
4	***Quercus alba***	**11**	**0.26**	**2**	**0.09**	**35**
	Acer rubrum	1.77	0.04	2	0.09	13
	Liquidambar styraciflua	**6.67**	**0.16**	**4**	**0.17**	**33**
	Fagus grandifolia	**9.06**	**0.21**	**2**	**0.09**	**30**
	Oxydendrum arboreum	**12.6**	**0.3**	**7**	**0.3**	**60**
	Ilex opaca	1.05	0.02	2	0.09	11
	Carpinus caroliniana	0.27	0.006	1	0.04	5
	Kalmia latifolia	0.196	0.005	2	0.09	9
	Cornus florida	0.087	0.002	1	0.04	4
		42.7		23		

5	***Quercus alba***	**41.3**	**0.86**	**8**	**0.62**	**147**
	Liriodendron tulipifera	1.4	0.03	1	0.08	11
	Acer rubrum	5.23	0.11	3	0.23	34
	Carya alba	0.35	0.007	1	0.08	8
		48.3		13		
6	***Liriodendron tulipifera***	**153.9**	**0.85**	**11**	**0.42**	**127**
	Acer rubrum	5.57	0.03	4	0.15	18
	Fagus grandifolia	3.27	0.02	1	0.38	6
	Quercus falcata	13.1	0.07	1	0.38	11
	Quercus nigra	1.06	0.0058	1	0.38	4
	Carya glabra	0.65	0.004	1	0.38	4
	Liquidambar styraciflua	1.57	0.01	2	0.77	9
	Oxydendrum arboreum	1.06	0.0058	2	0.76	8
	Ilex opaca	0.34	0.002	1	0.38	3
	Carpinus caroliniana	0.44	0.002	1	0.38	4
	Prunus serotina	0.65	0.004	1	0.38	4
		181.61		26		
7	***Fagus grandifolia***	**29.8**	**0.85**	**4**	**0.44**	**129**
	Liriodendron tulipifera	2.17	0.06	1	0.11	17
	Magnolia acuminata	1.23	0.04	1	0.11	15
	Carya cordiformis	0.92	0.03	1	0.11	14
	Oxydendrum arboreum	0.78	0.02	1	0.11	13
	Halesia carolina	0.05	0.001	1	0.11	12
		34.9		9		
8	***Juglans nigra***	**8.76**	**0.47**	**3**	**0.23**	**70**
	Liquidambar styraciflua	1.37	0.07	1	0.08	15
	Liriodendron tulipifera	0.78	0.04	1	0.08	12
	Acer rubrum	2.68	0.14	2	0.15	29
	Ulmus americana	0.2	0.01	1	0.08	9
	Fagus grandifolia	0.54	0.03	1	0.08	11
	Carpinus carolinana	4.25	0.23	4	0.31	54
		18.6		13		
9	***Liquidambar styraciflua***	**129.3**	**0.84**	**15**	**0.48**	**132**
	Acer rubrum	5.94	0.04	3	0.1	14
	Platanus occidentalis	3.7	0.02	2	0.06	8
	Liriodendron tulipifera	5.94	0.04	2	0.06	11
	Fraxinus pennsylvanica	4.22	0.03	2	0.06	9
	Carpinus carolinana	4.29	0.03	5	0.16	19
	Cornus florida	0.8	0.001	2	0.06	7
		154.2		31		

10	***Fagus grandifolia***	**27.5**	**0.57**	**7**	**0.41**	**98**
	Liriodendron tulipifera	10.1	0.21	3	0.18	39
	Quercus rubra	5.57	0.12	1	0.06	18
	Nyssa sylvatica	1.77	0.04	2	0.12	16
	Carya cordiformis	1.1	0.02	1	0.06	8
	Fraxinus americana	0.78	0.016	1	0.06	7
	Oxydendrum arboreum	0.75	0.015	1	0.06	7
	Diospyros virginiana	0.65	0.01	1	0.06	7
		48.2		17		
11	***Quercus rubra***	**26.7**	**0.43**	**2**	**0.1**	**53**
	Carya cordiformis	**16.6**	**0.27**	**4**	**0.2**	**47**
	Fagus grandifolia	10.1	0.16	3	0.15	31
	Oxydendrum arboreum	4	0.06	3	0.15	21
	Kalmia latifolia	**3.1**	**0.05**	**5**	**0.25**	**30**
	Tilia heterophylla	0.78	0.01	1	0.05	6
	Liriodendron tulipifera	0.31	0.005	1	0.05	6
	Cornus florida	0.27	0.005	1	0.05	6
		61.9		20		
12	***Kalmia latifolia***	**70.8**	**0.62**	**26**	**0.58**	**120**
	Quercus rubra	18.4	0.16	2	0.04	20
	Acer rubrum	10.5	0.09	4	0.09	18
	Oxydendrum arboreum	7.1	0.06	4	0.09	15
	Fagus grandifolia	4.9	0.04	3	0.07	11
	Nyssa sylvatica	1.1	0.01	2	0.04	5
	Liriodendron tulipifera	0.55	0.005	1	0.02	2
	Ilex opaca	0.55	0.005	2	0.04	4
	Carpinus carolinana	0.54	0.004	2	0.04	3
	Tilia heterophylla	0.34	0.003	1	0.02	2
		114.8		45		
13	***Fagus grandifolia***	**88.8**	**0.57**	**13**	**0.42**	**99**
	Liriodendron tulipifera	30.7	0.2	6	0.2	40
	Liquidambar styraciflua	24.8	0.16	3	0.1	26
	Quercus rubra	2.6	0.02	1	0.03	6
	Carya glabra	7.1	0.04	3	0.1	15
	Quercus alba	1.4	0.01	1	0.03	4
	Acer leucoderme	0.5	0	2	0.06	6
	Oxydendrum arboreum	0.27	0	1	0.03	4
		156.2		31		
14	***Fagus grandifolia***	**24.5**	**0.69**	**7**	**0.3**	**99**
	Oxydendrum arboreum	4.6	0.13	3	0.13	26
	Quercus alba	2	0.06	1	0.04	10
	Ilex opaca	2.2	0.06	5	0.22	28
	Kalmia latifolia	2.2	0.06	5	0.22	28
	Rhododendron minus	0.2	0.01	2	0.09	10
		35.7		23		

15	***Liriodendron tulipifera***	**102.2**	**0.69**	**8**	**0.29**	**98**
	Liquidambar styraciflua	31.5	0.21	5	0.18	39
	Carya cordiformis	5.2	0.04	2	0.07	11
	Fagus grandifolia	1.1	0.01	2	0.07	8
	Fraxinus americana	0.78	0.01	1	0.04	5
	Ulmus americana	0.78	0.01	1	0.04	5
	Juglans nigra	0.66	0.004	1	0.04	4
	Ulmus alata	0.6	0.004	1	0.04	3
	Quercus rubra	0.39	0.003	1	0.04	3
	Cornus florida	1.8	0.01	3	0.11	12
	Carpinus caroliniana	2.1	0.01	3	0.11	12
		147.1		28		
16	***Juglans nigra***	**2.9**	**0.12**	**2**	**0.12**	**24**
	Fraxinus americana	**2.6**	**0.11**	**1**	**0.06**	**17**
	Carya cordiformis	1.8	0.08	1	0.06	14
	Acer rubrum	0.78	0.03	1	0.06	9
	Ulmus alata	0.78	0.03	1	0.06	9
	Carpinus caroliniana	**13.1**	**0.55**	**5**	**0.29**	**84**
	Prunus serotina	0.84	0.4	2	0.12	16
	Cercis canadensis	0.68	0.03	1	0.06	9
	Cornus florida	0.27	0.01	2	0.12	13
	Ulmus americana	0.12	0.005	1	0.06	6
		23.9		17		
17	***Fraxinus pennsylvanica***	**7.9**	**0.42**	**4**	**0.3**	**72**
	Liriodendron tulipifera	**6.3**	**0.34**	**3**	**0.25**	**59**
	Fagus grandifolia	3.1	0.17	1	0.08	25
	Carpinus caroliniana	**0.54**	**0.03**	**3**	**0.25**	**28**
	Oxydendrum arboreum	0.54	0.03	1	0.08	11
		18.7		12		
18	***Pinus taeda***	**37.6**	**0.85**	**16**	**0.62**	**147**
	Pinus virginiana	5.6	0.13	9	0.35	48
	Prunus serotina	0.9	0.02	1	0.04	5
		44.1		26		
19	***Pinus taeda***	**190.6**	**0.97**	**21**	**0.64**	**161**
	Acer rubrum	3.7	0.02	7	0.21	23
	Liriodendron tulipifera	1.9	0.01	2	0.06	7
	Quercus alba	0.05	0.0003	1	0.03	3
	Oxydendrum arboreum	0.2	0.001	2	0.06	6
		196.5		33		

20	***Quercus alba***	**17.7**	**0.52**	**7**	**0.28**	**80**
	Liriodendron tulipifera	5.6	0.16	4	0.16	32
	Liquidambar styraciflua	4	0.12	3	0.12	24
	Acer rubrum	2.9	0.08	6	0.24	32
	Quercus falcata	1.4	0.04	1	0.04	8
	Oxydendrum arboreum	**2.3**	**0.07**	**3**	**0.12**	**19**
	Cornus florida	0.14	0.004	1	0.04	5
		34		25		
21	***Fagus grandifolia***	**69.5**	**0.8**	**10**	**0.56**	**136**
	Carya glabra	2.9	0.03	2	0.11	14
	Acer rubrum	2.2	0.02	1	0.06	8
	Oxydendrum arboreum	12.1	0.14	5	0.28	42
		86.7		18		
22	***Fagus grandifolia***	**70.8**	**0.61**	**12**	**0.39**	**100**
	Liriodendron tulipifera	29.8	0.25	6	0.19	44
	Liquidamabar styraciflua	10.5	0.09	7	0.22	31
	Quercus alba	0.2	0.002	1	0.03	4
	Acer rubrum	0.66	0.006	1	0.03	4
	Oxydendrum arboreum	4.9	0.04	4	0.13	17
		116.9		31		
23	***Liriodendron tulipifera***	**3.4**	**0.45**	**4**	**0.29**	**74**
	Liquidambar styraciflua	1.8	0.24	3	0.21	45
	Acer rubrum	1.6	0.21	3	0.21	42
	Carpinus caroliniana	0.35	0.05	2	0.14	19
	Pinus virginiana	0.27	0.04	1	0.07	11
	Prunus serotina	0.2	0.03	1	0.07	9
		7.6		14		
24	***Pinus virginiana***	**13.1**	**0.69**	**10**	**0.43**	**112**
	Quercus alba	5.6	0.29	8	0.35	64
	Acer rubrum	0.27	0.01	2	0.09	10
	Liquidambar styraciflua	0.19	0.01	1	0.04	5
	Liriodendron tulipifera	0.05	0.002	1	0.04	4.5
	Prunus serotina	0.05	0.002	1	0.04	4.5
		19.3		23		
25	***Liriodendron tulipifera***	**20.9**	**0.48**	**7**	**0.22**	**70**
	Carpinus caroliniana	10.5	0.24	10	0.31	55
	Acer rubrum	6.3	0.15	6	0.19	34
	Oxydendrum arboreum	0.92	0.02	3	0.09	11
	Prunus serotina	0.92	0.02	2	0.06	9
	Liquidambar styraciflua	2.4	0.06	2	0.06	12
	Pinus echinata	0.54	0.01	1	0.03	5
	Nyssa sylvatica	0.44	0.01	1	0.03	4
		42.9		32		

26	***Populus deltoides***	**76**	**0.25**	**7**	**0.19**	**44**
	Liquidambar styraciflua	**213.7**	**0.71**	**19**	**0.53**	**124**
	Fraxinus pennsylvanica	4.9	0.02	3	0.08	10
	Platanus occidentalis	4	0.01	3	0.08	9
	Ulmus alata	0.35	0.001	2	0.06	6
	Ulmus americana	0.35	0.001	1	0.03	4
	Acer negundo	0.09	0.0001	1	0.03	3
		299.4		36		
27	***Liquidambar styraciflua***	**33.2**	**0.62**	**10**	**42**	**104**
	Liriodendron tulipifera	5.6	0.1	1	4	15
	Quercus alba	4.9	0.09	1	4	14
	Nyssa sylvatica	3.7	0.07	1	4	11
	Ulmus alata	0.55	0.01	2	8	9
	Carpinus caroliniana	0.14	0.003	1	4	4
	Prunus serotina	0.55	0.01	1	4	5
	Ilex opaca	3.7	0.07	5	21	28
	Oxydendrum arboreum	1.2	0.02	2	8	10
		53.5		24		
28	***Populus deltoides***	**283.4**	**0.82**	**7**	**0.28**	**110**
	Platanus occidentalis	33.2	0.1	5	0.2	30
	Acer negundo	17.1	0.05	7	0.28	33
	Ulmus americana	8.3	0.02	4	0.16	18
	Fraxinus pennsylvanica	1.8	0.005	2	0.08	9
		343.8		25		

SAPLING DATA FROM NESTED 1/100TH (0.01) ACRE PLOTS

PLOT NUMBER	*SPECIES*	BASAL AREA	REL B/A	DENSITY	REL DEN	IMPORTANCE VALUE
1	***Quercus falcata***	**0.14**	**0.64**	**4**	**0.4**	**104**
	Quercus stellata	0.02	0.09	1	0.1	19
	Carya tomentosa	0.05	0.23	3	0.3	53
	Liriodendron tulipifera	0.005	0.02	1	0.1	12
	Oxydendrum arboreum	0.005	0.02	1	0.1	12
		0.22		10		
2	***Asimina triloba***	**0.66**	**1**	**11**	**1**	**200**
3	*Acer rubrum*	0.05	0.28	2	0.25	53
	Liriodendron tulipifera	0.02	0.11	1	0.125	23
	Quercus alba	0.005	0.03	1	0.125	15
	Liquidambar styraciflua	**0.1**	**0.56**	**3**	**0.375**	**94**
	Vaccinium arboreum	0.005	0.03	1	0.125	15
		0.18		8		

4	***Kalmia latifolia***	**0.03**	**0.86**	**10**	**0.91**	**177**
	Acer rubrum	0.005	0.14	1	0.09	23
		0.035		11		
5	***Acer rubrum***	**0.27**	**0.62**	**6**	**0.43**	**106**
	Liquidambar styraciflua	0.14	0.32	3	0.21	54
	Fagus grandifolia	0.005	0.01	1	0.07	8
	Quercus nigra	0.005	0.01	1	0.07	8
	Prunus serotina	0.005	0.01	1	0.07	8
	Oxydendrum arboreum	0.005	0.01	1	0.07	8
	Gelsemium sempervirens	0.005	0.01	1	0.07	8
		0.435		14		
6	*Liquidambar styraciflua*	0.005	0.003	1	0.02	2
	Carpinus carolinana	0.005	0.003	1	0.02	2
	Kalmia latifolia	1.2	0.62	10	0.18	80
	Leucothoe fontesiana	**0.54**	**0.28**	**40**	**0.74**	**102**
	Vitis rotundifolia	0.005	0.003	1	0.02	2
	*Wisteria sinensis**	0.005	0.003	1	0.02	2
		1.94		54		
7	***Leucothoe fontesiana***	**3.4**	**0.99**	**100**	**0.99**	**198**
	Halesia carolina	0.005	0.01	1	0.01	2
		3.405		101		
8	***Arundinaria gigantea***	**8.7**	**0.725**	**80**	**0.82**	**154**
	Lindera benzoin	3.4	0.275	17	0.18	46
		12.1		97		
9	***Carpinus caroliniana***	**0.03**	**0.75**	**6**	**0.75**	**150**
	Juniperus virginiana	0.005	0.125	1	0.125	25
	Campsis radicans	0.005	0.125	1	0.125	25
		0.04		8		
10	*Carpinus caroliniana*	0.03	0.1	3	0.33	43
	Fagus grandifolia	**0.28**	**0.9**	**6**	**0.67**	**157**
		0.31		9		
11	***Halesia carolina***	**0.14**	**0.93**	**4**	**0.67**	**160**
	Acer rubrum	0.005	0.035	1	0.165	20
	Carya cordiformis	0.005	0.035	1	0.165	20
		0.15		6		
12	***Kalmia latifolia***	**0.03**	**0.75**	**2**	**0.5**	**125**
	Fagus grandifolia	0.005	0.125	1	0.25	37.5
	Carpinus caroliniana	0.005	0.125	1	0.25	37.5
		0.04		4		

13	***Acer leucoderme***	**2.1**	**0.95**	**15**	**0.88**	**183**
	Fagus grandifolia	0.005	0.025	1	0.06	8.5
	Carpinus caroliniana	0.005	0.025	1	0.06	8.5
		2.2		17		
14	***Kalmia latifolia***	**2.4**	**0.8**	**22**	**0.67**	**147**
	Symplocus tinctoria	0.27	0.09	4	0.12	21
	Rhododendron minus	0.2	0.07	4	0.12	19
	Ilex opaca	0.12	0.04	3	0.09	13
		2.99		33		
15	***Asimina triloba***	**0.46**	**0.7**	**23**	**0.51**	**121**
	Lindera benzoin	0.2	0.3	12	0.49	79
		0.66		45		
16	*Lindera benzoin*	0.2	0.06	12	0.54	60
	Asimina triloba	0.02	0.006	4	0.18	19
	Carpinus caroliniana	**2.15**	**0.69**	**3**	**0.14**	**83**
	Viburnum prunifolium	0.5	0.16	2	0.09	25
	Ilex opaca	0.25	0.08	1	0.04	12
		3.12		22		
17	***Carpinus caroliniana***	**3.5**	**0.41**	**5**	**0.39**	**80**
	Fraxinus pennsylvanica	2.5	0.29	3	0.23	52
	Lindera benzoin	2.5	0.29	5	0.39	68
		8.5		13		
18	***Acer rubrum***	**2.5**	**0.83**	**3**	**0.75**	**158**
	Quercus falcata	0.5	0.17	1	0.25	42
		3		4		
19	***Acer rubrum***	**0.14**		**4**		**200**
20	***Ilex opaca***	**0.49**	**0.875**	**4**	**0.31**	**119**
	Acer rubrum	0.03	0.05	2	0.15	20
	Kalmia latifolia	0.03	0.05	4	0.31	36
	Vaccinium corymbosum	0.01	0.02	3	0.23	25
		0.56		13		
21	*OPEN*					
22	***Fagus grandifolia***	**1**		**6**	**1**	**200**
23	***Acer rubrum***	**19.5**	**0.53**	**18**	**0.44**	**97**
	Carpinus caroliniana	8.5	0.23	14	0.34	57
	Fagus grandifolia	2	0.05	4	0.1	15
	Quercus alba	3.5	0.1	3	0.07	17
	Liriodendron tulipifera	3	0.08	2	0.05	14
		36.5		41		

24	***Liriodendron tulipifera***	**7.8**	**0.69**	**13**	**0.65**	**134**
	Oxydendrum arboreum	1.5	0.13	3	0.15	28
	Fagus grandifolia	1.5	0.13	2	0.1	24
	Liquidamabar styraciflua	0.25	0.02	1	0.05	7
	Cornus florida	0.25	0.02	1	0.05	7
		11.3		20		
25	***Carpinus caroliniana***	**0.2**	**0.69**	**4**	**0.4**	**109**
	Kalmia latifolia	0.07	0.24	3	0.3	54
	Ilex opaca	0.02	0.07	2	0.2	27
	Acer rubrum	0.001	0.003	1	0.1	10
		0.291		10		
26	*Open*					
27	***Carpinus caroliniana***	**3**	**0.35**	**12**	**0.71**	**106**
	Vitis rotundifolia	2	0.23	2	0.12	35
	Kalmia latifolia	2	0.23	1	0.06	29
	Cornus florida	1	0.12	1	0.06	18
	Ilex opaca	0.6	0.07	1	0.06	14
		8.6		17		
28	***Vitis rotundifolia***	**4**	**0.8**	**2**	**0.4**	**120**
	Asimina triloba	1	0.2	3	0.6	80
		5		5		

SEEDLINGS, SHRUBS, AND WOODY VINE (> 4.5") DATA FROM NESTED 1/1000 (0.001) ACRE PLOTS

PLOT NUMBER	*SPECIES*	DENSITY	(REL DENSITY) IMPORTANCE VALUE
1	***OPEN***		
2	***Polystichum acrostichoides***	**6**	**50**
	Leucothoe fontesiana	3	25
	Asimina	2	17
	Quercus nigra	1	8
		12	
3	***Chasmanthium laxum***	**1**	**50**
	Scleria triglomerata	**1**	**50**
		2	
4	***Hexastylis minor***	**1**	**50**
	Calycanthus florida	**1**	**50**
		2	

5	***Juniperus virginiana***	**1**	**25**
	Carex striatula	**1**	**25**
	Polystichum acrostichoides	**1**	**25**
	Smilax sp.	**1**	**25**
		4	
6	***Leucothoe fontesiana***	**1**	**100**
7	*Hexastylis minor*	1	33
	Polystichum acrostichoides	**2**	**67**
		3	
8	*Allium bivalve*	3	10
	Stellaria meadia	**25**	**83**
	Carex sp.	2	7
		30	
9	*Galium triflorum*	15	38
	Stellaria meadia	**20**	**50**
	Carex sp.	2	5
	Krigia dandelion	3	7
		40	
10	***Polystichum acrostichoides***	**3**	**43**
	Oxalis violacea	1	14.2
	Stellaria pubera	1	14.2
	Botrychium biternatum	1	14.2
	Euonymus americanus	1	14.2
		7	
11	***Polystichum acrostichoides***	**3**	**43**
	Stellaria pubera	2	28.5
	Poa sp.	1	14.2
	Hexastylis minor	1	14.2
		7	
12	***Aster sp.***	**7**	**54**
	Carex sp.	2	15.3
	Chasmanthium laxum	2	15.3
	Carpinus caroliniana	2	15.3
		13	
13	***Polystichum acrostichoides***	**3**	**60**
	Bignonia capreolata	2	40
		5	
14	***Hexastylis minor***	**2**	**100**

15	***Arisaema triphyllum***	**17**	**32.7**
	Oxalis violacea	12	23.1
	Podophyllum peltatum	6	11.5
	Lonicera japonica	6	11.5
	Galium obtusum	5	9.6
	Trillium catesbaei	2	3.8
	Parthenocissus quinquefolia	2	3.8
	Geum canadense	1	1.9
	Carex sp.	1	1.9
		52	
16	***Podophyllum peltatum***	**10**	**58.8**
	Arisaema triphyllum	3	17.6
	Chasmanthium latiofolium	1	5.9
	Chasmanthiium laxum	1	5.9
	Carex styloflexa	1	5.9
	Carex retroflexa	1	**5.9**
		17	
17	***Fraxinus pennsylvanica***	**3**	**30**
	Carex prasina	**3**	**30**
	Carex styloflexa	2	20
	Osmunda cinnamomea	1	10
	Lycopus virginicus	1	10
18	***Erianthus contortus***	**2**	**67**
	Rubus sp.	1	33
		3	
19	***Vitis rotundifolia***	**4**	**100**
20	***Vaccinium corymbosum***	**4**	**57.1**
	Vitis rotundifolia	2	28.6
	Smilax sp.	1	14.3
		7	
21	***Calycanthus florida***	**2**	**33**
	Polystichum acrostostichoides	**2**	**33**
	Trillium catesbaei	1	17
	Quercus alba	1	17
		6	
22	***Prunus serotina***	**15**	**60**
	Acer rubrum	5	20
	Fagus grandifolia	2	8
	Mitchella repens	2	8
	Polystichum acrostichoides	1	4
		25	

23		***Prunus serotina***	**5**	**63**
		Parthenocissus quinquefolia	1	12
		Carya sp.	1	12
		Juniperus virginiana	1	13
			8	
24		***Rubus sp.***	**8**	**80**
		Smilax sp.	2	20
			10	
25		***Acer rubrum***	**9**	**90**
		Carpinus caroliniana	1	10
			10	
26		***Justicia ovata***	**25**	**81**
		Microstegium vimineum	6	19
			31	
27		***Polystichum acrostichoides***	**4**	**33**
		Parthenocissus quinquefolia	**4**	**33**
		Carpinus caroliniana	2	17
		Prunus serotina	2	17
			12	
28		***Justicia ovata***	**15**	**50**
		Boehmeria cylindrica	6	20
		Microstegium vimineum	5	17
		Campsis radicans	2	7
		Phytolacca americana	2	7
			30	
29		Five 0.001 acre plots in ROW		
	1	***Schizachyrium scoparium***	**20**	**69**
		Marshallia graminifolia	3	10
		Chrysopsis mariana	3	10
		Helianthus microcephalus	1	3
		Solidago sp.	1	3
		Hypericum gentianoides	1	3
			29	
	2	***Schizachyrium scoparium***	**15**	**54**
		Helianthus microcephalus	6	21
		Diodia teres	3	11
		Chrysopsis mariana	3	11
		Hypericum gentianoides	1	3
			28	

	3	***Schizachyrium scoparium***	**12**	**46**
		Lysimachia quadrifolia	7	27
		Helianthus microcephalus	4	15
		Coreopsis major	1	4
		Eupatorium capillifolium	1	4
		Eupatorium album	1	4
			26	
	4	***Schizachyrium scoparium***	**11**	**65**
		Marshallia graminifolia	3	18
		Helianthus atrorubens	2	12
		Ulmus alata	1	5
			17	
	5	***Erianthus contortus***	**11**	**31**
		Chyrsopsis mariana	11	31
		Lysimachia quadrifolia	6	17
		Schizachyrium scoparium	6	17
		Eupatorium album	1	3
			35	
30		Five 0.001 acre plots in ROW		
	1	***Tridens flavus***	**8**	**42**
		Rubus sp. 1 (small-leaved)	6	32
		Panicum dichotomum	2	11
		Eupatorium capillifolium	2	11
		Aster pilosus	1	4
			19	
	2	***Tridens flavus***	**11**	**37**
		Panicum dichotomum	7	23
		Schizachyrium scoparium	4	13
		Rhus radicans	3	10
		Sorghastrum nutans	2	7
		Lespedeza cuneata	2	7
		Pancium sp.	1	3
			30	
	3	***Tridens flavus***	**6**	**29**
		Rhus radicans	6	29
		Rubus sp.	4	19
		Paspalum floridanum	2	9
		Apocynum cannabinum	1	5
		Rosa sp.	1	5
		Carex sp.	1	5
			21	

4	***Rubus sp.***	**10**	**33**
	Rhus radicans	10	33
	Coreopsis major	3	10
	Panicum dichtomum	2	7
	Eupatorium album	1	3
	Lespedeza cuneata	1	3
	Panicum sp.	1	3
	Aster pilosus	2	7
		30	
5	***Rubus sp.***	**10**	**38**
	Rhus radicans	8	31
	Paspalum floridanum	4	15
	Panicum dichotomum	1	4
	Apocynum cannabinum	1	4
	Eupatorium capillifolium	1	4
	Lespedeza cuneata	1	4
		26	

***Basal area in square feet; maximum Importance Value in tree and shrub/sapling plots is 200 and in herbaceous/seedlings plots is 100. Emboldened species are dominants.**
Scientific names follow Radford et al. 1968.

Appendix Table 2. Data from all plots: 2009.

PLOT NUMBER	SPECIES	BASAL AREA	REL B/A	DENSITY	REL DEN	IMPORTANCE VALUE
31	***Quercus alba***	**2.18**	**0.49**	**1**	**0.25**	**74**
	Fagus grandifolia	1.77	0.39	1	0.25	64
	Oxydendrum arboreum	0.34	0.08	1	0.25	33
	Ilex opaca	0.2	0.001	1	0.25	35
		4.49		4		
32	***Fagus grandifolia***	**26.7**	**0.57**	**5**	**0.19**	**76**
	Platanus occidentalis	7.86	0.17	5	0.19	36
	Liriodendron tulipifera	4.29	0.09	2	0.08	17
	Liquidambar styraciflua	1.4	0.03	1	0.04	7
	Carpinus caroliniana	4.01	0.09	6	0.23	31
	Oxydendrum arboreum	0.44	0.01	1	0.04	5
	Ilex opaca	1.31	0.03	3	0.12	15
	Acer rubrum	0.34	0.01	1	0.04	5
	Ulmus alata	0.54	0.01	1	0.04	5
	Diospyros virginiana	0.2	0	1	0.04	4
		47.1		26		
33	*Platanus occidentalis*	19.2	0.33	5	0.26	59
	Liquidambar styraciflua	**31.5**	**0.54**	**6**	**0.32**	**86**
	Liriodendron tulipifera	2.18	0.04	1	0.05	9
	Fagus grandifolia	1.4	0.02	1	0.05	7
	Carya cordiformis	1.31	0.02	2	0.11	13
	Salix nigra	0.54	0.01	1	0.05	6
	Alnus serrulata	0.16	0	1	0.05	5
	Betula nigra	1.77	0.03	2	0.11	14
		58.1		19		
34	***Acer rubrum***	**54.4**	**0.66**	**10**	**0.42**	**108**
	Liquidambar styraciflua	19.6	0.24	5	0.21	45
	Populus deltoides	1.77	0.02	1	0.04	6
	Platanus occidentalis	1.77	0.02	2	0.08	10
	Quercus nigra	1.1	0.01	1	0.04	5
	Carpinus caroliniana	3.78	0.05	5	0.21	26
		82.4		24		
35	***Tilia heterophylla***	**19.2**	**0.44**	**7**	**0.44**	**88**
	Liquidambar styraciflua	**23.5**	**0.54**	**6**	**0.38**	**92**
	Fagus grandifolia	0.61	0.01	2	0.12	13
	Carpinus caroliniana	0.34	0.01	1	0.06	7
		43.6		16		
36	***Fagus grandifolia***	**10.1**	**0.5**	**1**	**0.08**	**58**
	Liriodendron tulipifera	**6.01**	**0.3**	**3**	**0.23**	**53**
	Carya cordiformis	0.82	0.04	1	0.08	12
	Liquidambar styraciflua	0.26	0.01	1	0.08	9

	Quercus rubra	0.54	0.01	1	0.08	9
	Acer rubrum	0.34	0.02	1	0.08	10
	Carpinus caroliniana	1.31	0.07	3	0.23	30
	Ilex opaca	0.12	0.01	1	0.08	9
	Oxydendrum arboreum	0.54	0.03	1	0.08	11
		20		13		
37	***Acer rubrum***	**2.18**	**0.73**	**2**	**0.67**	**140**
	Nyssa sylvatica	0.82	0.27	1	0.33	60
		3		3		
38	***Fagus grandifolia***	**9.9**	**0.38**	**4**	**0.19**	**57**
	Tilia heterophylla	5.12	0.2	3	0.14	34
	Acer rubrum	1.2	0.04	1	0.05	9
	Quercus rubra	0.92	0.04	1	0.05	9
	Liriodendron tulipifera	1.61	0.06	3	0.14	20
	Liquidambar styraciflua	2.75	0.13	4	0.19	32
	Ulmus alata	0.2	0.01	1	0.05	6
	Prunus serotina	0.44	0.02	1	0.05	7
	Cercis canadensis	0.34	0.01	1	0.05	6
	Nyssa sylvatica	0.34	0.01	1	0.05	6
	Acer leucoderme	0.12	0	1	0.05	5
	Oxydendrum arboreum	1.93	0.08	3	0.14	22
		24.9		21		
39	***Liriodendron tulipifera***	**2.18**	**0.61**	**5**	**0.83**	**144**
	Acer rubrum	1.4	0.39	1	0.17	56
		3.58		6		
40	*Fraxinus pennsylvanica*	5.1	0.15	4	0.33	49
	Acer rubrum	**27.5**	**0.83**	**7**	**0.59**	**142**
	Liriodendron tulipifera	0.6	0	1	0.08	9
		33.2		12		
41	***Fagus grandifolia***	**8.5**	**0.41**	**3**	**0.28**	**69**
	Liriodendron tulipifera	1.77	0.09	1	0.09	18
	Fraxinus americana	1.77	0.09	1	0.09	18
	Quercus alba	5.43	0.26	2	0.18	44
	Quercus rubra	1.22	0.06	1	0.09	15
	Acer rubrum	0.89	0.04	2	0.18	22
	Liquidambar styraciflua	1.22	0.06	1	0.09	15
		20.8		11		
42	***Pinus echinata***	**52.5**	**0.96**	**6**	**0.55**	**151**
	Fagus grandifolia	1.4	0.02	3	0.28	30
	Liquidambar styraciflua	0.54	0.01	1	0.09	10
	Oxydendrum arboreum	0.2	0	1	0.09	9
		54.6		11		

SHRUBS AND SAPLINGS FROM NESTED 1/100TH (0.01) ACRE PLOTS

	SPECIES	BASAL AREA	REL B/A	DENSITY	REL DEN	IMPORTANCE VALUE
31	***Rhododendron minus***	**9**	**100**	**18**	**100**	**200**
32	***Leucothoe fontesiana***	**1.4**	**0.53**	**25**	**0.76**	**128**
	Ilex opaca	0.92	0.35	5	0.15	50
	Carpinus caroliniana	0.34	0.13	3	0.09	22
		2.66		33		
33	***Carpinus caroliniana***	**1.61**	**0.95**	**6**	**0.75**	**170**
	Fagus grandifolia	0.08	0.05	2	0.25	30
		1.69		8		
34	*Asimina triloba*	0.16	0.15	2	0.17	32
	Carpinus caroliniana	0.2	0.19	3	0.25	44
	Lindera benzoin	**0.7**	**0.66**	**6**	**0.5**	**116**
	Ilex opaca	0	0	1	0.08	8
		1.06		12		
35	*Lindera benzoin*	0.8	0.33	5	0.27	60
	Asimina triloba	0.9	0.37	3	0.14	51
	Arundinaria gigantea	**0.54**	**0.22**	**10**	**0.46**	**68**
	Carpinus caroliniana	0.2	0.08	4	0.18	26
		2.44		22		
36	*Ilex opaca*	0.2	0.19	4	0.57	76
	Carpinus caroliniana	**0.88**	**0.81**	**3**	**0.43**	**124**
		1.08		7		
37	***Vaccinium corymbosum***	**0.02**	**0.67**	**2**	**0.67**	**134**
	Acer rubrum	0.01	0.33	1	0.33	66
		0.03		3		
38	***Acer leucoderme***	**0.2**	**0.95**	**8**	**89**	**184**
	Carpinus caroliniana	0.01	0.05	1	11	16
		0.21		9		
39	***Alnus serrulata***	**0.9**	**0.58**	**7**	**0.35**	**93**
	Sambucus canadensis	0.16	0.1	3	0.15	25
	Liquidambar styraciflua	0.2	0.13	6	0.3	43
	Liriodendron tulipifera	0.3	0.19	4	0.2	39
		1.56		20		

40	***Acer rubrum***	**0.88**	**0.88**	**3**	**0.43**	**131**
	Fraxinus pennsylvanica	0.12	0.12	4	0.57	69
		1		7		
41	***Ilex longipes***	**0.9**	**0.69**	**3**	**0.5**	**119**
	Ilex opaca	0.4	0.31	3	0.5	81
		1.3		6		
42	*Fagus grandifolia*	0.16	0.08	2	0.33	40
	Liquidambar styraciflua	0.04	0.03	2	0.33	36
	Quercus alba	0.8	0.43	1	0.17	60
	Carpinus caroliniana	**0.9**	**0.47**	**1**	**0.17**	**64**
		1.9		6		

SEEDLINGS, SHRUBS, AND WOODY VINE DATA FROM 1/1000 (0.001) ACRE PLOTS

PLOT NUMBER		DENSITY	(RELATIVE DENSITY) IMPORANCE VALUE
31	***Galax aphylla***	**4**	**80**
	Hexastylis minor	1	20
		5	
32	***Podophyllum peltatum***	**8**	**57**
	Tiarella sp.	3	21
	Polystichum acrostichoides	1	8
	Luzula acuminata	2	14
		14	
33	***Juncus effusus***	**4**	**44**
	Carex sp.	3	33
	Mimulus ringens	1	11
	Ludwigia alternifolia	1	11
		9	
34	***Oxalis violacea***	**10**	**47**
	Podophyllum peltatum	7	33
	Stellaria pubera	1	5
	Polystichum acrostichoides	1	5
	Ilex opaca	1	5
	Carex styloflexa	1	5
		21	
35	***Oxalis violacea***	**10**	**47**
	Podophyllum peltatum	5	24
	Lonicera japonica	5	24
	Carex sp.	1	5
		21	

36	*Tiarella sp.*	2	13
	Thelypteris hexagonoptera	**12**	**80**
	Adiantum pedatum	1	7
		15	
37	***Woodwardia areolata***	**14**	**82**
	Peltandra virginica	1	6
	Chelone obliqua	1	6
	Osmunda regalis var. spect.	1	6
		17	
38	***Geranium maculatum***	**3**	**33**
	Carex albicans	1	11
	Polystichum acrostichoides	**3**	**33**
	Luzula acuminata	2	23
		9	
39	***Carex crinita***	**3**	**33**
	Juncus effusus	2	23
	Peltandra virginica	**3**	**33**
	Carex intumescens	1	11
		9	
40	***Cicuta maculata***	**4**	**33**
	Carex crinita	2	17
	Peltandra virginica	2	17
	Impatiens capensis	3	25
	Alnus serrulata	1	8
		12	
41	*Carex crebriflora*	4	50
	Polystichum acrostichoides	**4**	**50**
		8	
42	***Polystichum acrostichoides***	**6**	**86**
	Poa cuspidata	1	14
		7	

SPECIES LIST/VASCULAR PLANTS

426 species

LEGEND

ALL CAPS—species listed by U. S. Department of Interior, Fish and Wildlife Service or South Carolina Natural Heritage Program as endangered, threatened, or otherwise noteworthy (see text).

Exotic, introduced, or invasive species in italics.

Taxonomy based on Radford et al. (1968) unless otherwise noted; common names from Radford et al. (1968) and www.itis.gov.

Acalypha sp. (three-seeded mercury)
Acer rubrum (red maple)
Agalinis obtusifolia (blunt-leaved false foxglove)
Agrimonia parviflora (groovebur)
Agrostis perennans (perennial bent grass)
Ailanthus altissima (tree-of-heaven)
Aletris farinosa (colic root)
Alnus serrulata (tag alder)
Ambrosia artemisiifolia (common ragweed)
Ambrosia triloba (giant ragweed)
Amelanchier arborea (sarvisberry)
Amianthium muscaetoxicum (fly poison)
Amphicarpa bracteata (hog peanut)
Amsonia taebermontana (blue star)
Andropogon virginicus (broomsedge)
Aneilema keisak (Asiatic dayflower)
Anemone lancifolia (windflower)
Antennaria plantaginifolia (plantain-leaved pussy-toes)
Anthoxanthum odoratum (sweet vernal grass)
Apios americana (ground nut)
Apocynum cannabinum (dogbane)
Aralia spinosa (spikenard)
Arisaema dracontium (green dragon)
Arisaema triphyllum (Jack-in-the-pulpit)
Aristida oligantha (oldfield wiregrass)
Aristolochia serpentaria (Virginia snakeroot)
Arundinaria gigantea (cane)
Asarum canadense (wild ginger)
Ascelpias tuberose (orange milkweed)
Asimina parviflora (dwarf pawpaw)
Asimina triloba (pawpaw)
Asplenium platyneuron (ebony spleenwort)
Aster concolor (eastern silver aster)
Aster cordifolius (heart-leaved aster)
Aster divaricatus (white aster)
Aster dumosus (rice button aster)
ASTER GEORGIANUS (Georgia aster) (=Symphyotrichum georgianum)
Aster patens (Piedmont aster)
Aster pilosus (frost aster)
Aster solidagineus (goldenrod aster)

Athyrium asplenoides (southern lady fern)
Aureolaria pectinata (toothed foxglove)
Baccharis halimifolia (false willow)
Baptisia alba (false indigo)
Barbarea verna (spring cress)
Betula nigra (river birch)
Bidens bipinnafida (Spanish needles)
Bignonia capreolata (cross vine)
Boehmeria cylindrica (false nettle)
Botrychium biternatum (grape fern)
Botrychium virginianum (rattlesnake fern)
Brachyelytrum erectum (long-awned wood grass)
Bromus sp. (brome grass)
Brousonetia papyrifera (paper mulberry)
Cacalia atriplicifolia (Indian plantain)
Calycanthus floridus (sweetshrub)
Campsis radicans (trumpet creeper)
Cardamine diphylla (twinleaved toothwort)
Cardamine hirsuta (hairy bittercress)
Carduus lanceolatus (bull thistle)
Carex abscondita (thicket sedge)
Carex albicans (white-tinged sedge)
Carex annectens (
Carex atlantica (prickly bog sedge)
Carex amphibola (eastern narrow-leaved sedge)
Carex appalachia (Appalachian sedge)
CAREX CHEROKEENSIS (CHEROKEE SEDGE)
Carex crebriflora (Coastal Plain sedge)
Carex comosa (long-haired sedge)
Carex communis (fibrous-rooted sedge)
Carex complanata (blue sedge)
Carex cumberlandensis (Cumberland sedge)
Carex debilis var. rudgei (white-edged sedge)
Carex flaccosperma (thin-fruited sedge)
Carex gynandra (=C. crinita var. gynandra) (fringed or nodding sedge)
Carex intumescens (great bladder sedge)
Carex kraliana (Kral's sedge)
Carex laevivaginata (smooth-sheathed sedge)
Carex laxiculmis (spreading sedge)
Carex lurida (shallow sedge)
Carex nigromarginata (black-edged sedge)
Carex oxylepis (sharp-scaled sedge)
CAREX PRASINA (DROOPING SEDGE)
Carex retroflexa (reflexed sedge)
Carex rosea (rosy sedge)
Carex scoparia (pointed broom sedge)
Carex stipata (owlfruit sedge)
Carex striatula (lined sedge)
Carex styloflexa (bent sedge)
Carex torta (twisted sedge)
Carex venusta (dark green sedge)
Carex virescens (ribbed sedge)
Carpinus carolininana (hop hornbeam)
Carya cordiformis (bitternut hickory)
Carya glabra (pignut hickory)
Carya ovata (shagbark hickory)

Carya tomentosa (mockernut hickory)
Ceanothus americanus (New Jersey tea)
Celtis laevigata (sugarberry)
Centaurea maculosa (spotted knapweed)
Cephalanthus occidentalis (buttonbush)
Cercis candensis (redbud)
Chaerophyllum sp. (chervil)
Chelone obliqua (green turtlehead)
Chimaphila maculata (pipsissewa)
Chionanthus virginicus (fringe tree)
Chrysanthemum leucathemum (ox-eye daisy)
Chrysopsis graminifolia (grass-leaved goldenaster)
Chrysopsis mariana (Maryland goldenaster)
Cicuta maculata (spotted water hemlock)
CIRCAEA LUTETIANA SSP. CANDADENIS (southern enchanter's nightshade)
Cimicifuga racemosa (black cohosh)
Clematis virginiana (Virgin's bower)
Cocculus carolinus (coral beads)
Collinsonia canadensis (Canada horsebalm)
Coreopsis auriculata (auriculate-leaved tickseed)
Coreopis major (coreopsis)
Coreopsis pubescens (hairy tickseed)
Cornus amomum (swamp dogwood)
Cornus florida (dogwood)
Corylus americana (American hazelnut)
Crataegus viridis (greenish hawthorn)
Cynoglossum virginianum (Virginia dog's-tongue)
Cyperus rotundifolia (round-fruited flatsedge)
Cystopteris protrusa (bladder fern)
Dactylon sp. (orchard grass)
Danthonia sp. (oat grass)
Daucus carota (Queen Anne's lace)
Decumaria barbara (climbing hydrangea)
Desmodium virginianum (Virginia beggar-ticks)
Dicanthelium boscianum (Bosc's panic grass)
Dicanthelium sp. (unidentified panic grass)
Diodia virginiana (buttonweed)
Dioscorea villosa (wild yam)
Diospyros virginiana (persimmon)
Duchesnea indica (Indian strawberry)
Eleaegnus umbellata (autumn olive)
Eleocharis obtusa (blunt spikerush)
Elephantopus carolinianus (Carolina elephant's-foot)
Elymus sp. (wild rye grass)
Epifagus virginiana (beech-drops)
Epigaea repens (trailing arbutus)
Eragrostis spectabilis (purple love grass)
Eragrostis sp. (love grass)
Erectites hieracifolia (fireweed)
Erianthus contortus (Piedmont plumegrass)
Erigeron pulchellus (daisy fleabane)
Erigeron strigosus (rough fleabane)
Euonymus americanus (hearts-a-bursting)
Eupatorium album (white thoroughwort)
Eupatorium capillifolium (dog fennel)
Eupatorium purpureum (Joe-pye weed)

Eupatorium rotundifolium (round-leaved thoroughwort)
Euphorbia corollata (spurge)
Fagus grandifolia (American beech)
Festuca sp. (fescue)
Fragaria virginiana (wild strawberry)
Fraxinus americana (white ash)
Fraxinux pensylvanica (green ash)
Galax aphylla (galax)
Galium circaezans (Piedmont bedstraw)
Galium obtusum (blunt bedstraw)
Galium triflorum (triflorate bedstraw)
Gelsemium sempervirens (yellow jessamine)
Geranium maculatum (wild geranium)
Geum canadense (Canada avens)
Gleditsia triacanthos (honeylocust)
Glyceria melicaria (manna grass)
Glyceria striata (manna grass)
Gnaphalium sp. (rabbit tobacco)
Goodyera pubescens (rattlesnake plantain)
Gratiola virginiana (Virginia hedge-hyssop)
Halesia carolina (silverbell)
Hamamelis virginiana (witch-hazel)
Hedera helix (English ivy)
Helenium amarum (bitterweed)
Helianthus atrorubens (red-leaved sunflower)
Helianthus divaricatus (spreading sunflower)
Helianthus microcephalus (small-headed sunflower)
Helianthus tomentosus (rough sunflower)
Hepatica americana (American liverleaf)
Heterotheca mariana (Maryland golden aster)
Heuchera americana (American alumroot)
Hexastylis arifolia (common heartleaf)
Hexastylisminor (Piedmont heartleaf)
Hieracium venosum (hawkweed)
Houstonia caerulea (bluets)
Houstonia purpurea (purple bluets)
Hypericum hypericoides (St. Johnswort)
Hypericum mutilum (dwarf St. Johnswort)
Ilex longipes (Georgia holly)
Ilex montana (mountain winterberry)
Ilex opaca (American holly)
Impatiens capensis (jewelweed)
Ipomaea pandurata (wild man of the earth)
Iris cristata (dwarf crested iris)
Itea virginica (Virginia willow)
Juglans nigra (black walnut)
Juncus sp. (needlerush)
Juncus acuminatus (sharp-fruited needlerush)
Juncus canadensis (Canadian needlerush)
Juncus coriaceous (tough needlerush)
Juncus effusus (common needlerush)
Juncus tenuis (path rush)
Juniperus virginiana (eastern red cedar)
Justicia ovata (loose-flowered water-willow)
Kalmia latifolia (mountain laurel)
Krigia dandelion (tuberous dwarf-dandelion)

Krigia virginica (Virginia dwarf-dandelion)
Lactuca canadensis (wild lettuce)
Leersia oryzoides (rice cutgrass)
Leersia virginica (Virginia cutgrass)
Leptoloma cognatum (witch grass)
Lespedeza sp. (bush clover)
Lespedeza cuneatum (sericea)
Lespedeza repens (creeping bush clover)
Lespedeza virginica (Virginia bush clover)
Leucothoe fontanesiana (dog-hobble)
Liatris graminifolia (grass-leaved blazing star)
Ligustrum sinense (Chinese privet)
Lilium michauxii (Michaux's lily)
Lindera benzoin (spicebush)
Liquidambar styraciflua (sweet gum)
Liriodendron tulipifera (tulip poplar)
Lobelia cardinalis (cardinal flower)
Lobelia puberula (downy lobelia)
Lobelia sp. (lobelia)
Lonicera japonica (Japanese honeysuckle)
Lonicera sempervirens (coral honeysuckle)
Ludwigia alternifolia (alternate-leaved seedbox)
Ludwigia palustris (marsh seedbox)
Ludwigia uraguayensis (Uraguayan water primrose)
Luzula echinata (wood rush)
Lycopodium flabelliforme (running pine)
Lycopodium lucidulum (shining clubmoss)
Lycopus americanus (water horehound)
Lysimachia quadrifolia (whorled loosestrife)
Magnolia acuminata (cucumber tree)
Magnolia tripetala
Marshallia obovata (Piedmont Barbara's-buttons)
Matalea flavidula (yellowish milkweed vine)
Medeola virginiana (Indian cucumber root)
Melanthium latifolium (slender bunchflower)
Melica mutica (melic grass)
MENISPERMUM CANADENSE (CANADA MOONSEED)
Microstegium vimineum (Vietnam grass)
Mimulus ringens (monkey flower)
Mitchella repens (partridgeberry)
Morus rubra (red mulberry)
Muscari comosum (grape hyacinth)
Narcissus sp. (daffodil)
Nyssa sylvatica (black gum)
Oenothera biennis (common evening primrose)
Oenothera perennis (little evening primrose)
Onoclea sensibilis (sensitive fern)
OPHIOGLOSSUM VULGATUM (SOUTHERN ADDER'S-TONGUE FERN)
Orchis spectabilis (showy orchid)
OROBANCHE UNIFLORA (SINGLE-FLOWERED CANCER-ROOT)
Osmunda cinnamomea (cinnamon fern)
Osmunda regalis var. spectabilis (royal fern)
Oxalis dillenii (yellow wood sorrel)
Oxalis violacea (purple wood sorrel)
Oxydendrum arboreum (sourwood)
Panicum dichotomum (fall panicum)

Panicum sp. 1 (panic grass)
Panicum sp. 2 (panic grass)
Parthenium sp. (feverweed)
Parthenocissus quinquefolia (Virginia creeper)
Paspalum urvillei (Vasey grass)
Paspalum sp. (paspalum)
Passiflora incarnata (purple passion-flower)
Passiflora lutea (yellow passion-plant)
Paulownia tomentosa (princess tree)
Pedicularis canadensis (lousewort)
Peltandra virginica (arrow-arum)
Phlox carolina (Carolina phlox)
Phlox nivalis var. hentzii (Piedmont trailing phlox)
Phryma leptostachya (lopseed)
Pinus echinata (shortleaf pine)
Pinus taeda (loblolly)
Pinus virginiana (Virginia pine)
Plantago aristata (blue plantain)
Plantago lanceolata (English plantain)
Plantago rugelii (round-leaved plantain)
Platanus occidentalis (sycamore)
Poa sp. (spring bluegrass)
Podophyllum peltatum (mayapple)
Polygala mariana (common milkwort)
Polygonatum biflorum (Solomon's seal)
Polygonum lapathifolium (curlytop knotweed)
Polygonum pennsylvanicum (Pennsylvania smartweed)
Polygonum punctatum (spotted smartweed)
Polygonum sagittatum (tear-thumb)
Polymnia uvedalia (bearpaw)
Polypremum procumbens (polypremum)
Polystichum acrostichoides (Christmas fern)
Populus deltoides (eastern cottonwood)
Potentilla sp. (cinquefoil) ROW
Prenanthes trifoliata (gall-of-the-earth)
Prunella vulgaris (self-heal)
Prunus serotina (black cherry)
Psoralea psoraloides (Samson snakeroot) (=Orbexilum)
Pteridium aquilium (bracken fern)
Ptilimnium capillaceum (narrow-leaved bishopweed)
Pycnanthemum incancum
Pycnanthemum tenuifolium
Quercus alba (white oak)
Quercus coccinea (scarlet oak)
Quercus falcata (southern red oak)
Quercus nigra (water oak)
Quercus phellos (willow oak)
Quercus prinus (chestnut oak)
Quercus rubra (red oak)
Quercus stellata (post oak)
Quercus velutina (black oak)
Ranunculus acris (common buttercup)
Ranunculus hispidus (hispid buttercup)
Ranunculus recurvatus (hairy buttercup)
Rhexia mariana (Maryland meadowbeauty)
Rhododendron maximum (great laurel)

Rhododendron minus (deer-tongue rhod.)
Rhododendron nudiflorum (pinkster-flower)
Rhus copallina (winged sumac)
Rhus glabra (smooth sumac)
Rhus radicans (poison ivy)
Rhus toxicodendron (poison oak)
Robinia pseudoacacia (black locust)
Rosa carolina (Cherokee rose)
Rosa multiflora (multiflora rose)
Rosa palustris (swamp rose)
Rosa sp. (rose)
Rubus canadensis (Canada blackberry)
Rubus sp. (sand blackberry)
Rubus sp. (dewberry)
Rudbeckia hirta (black-eyed Susan)
Rudbeckia laciniata (lace-leaved coneflower)
Ruellia caroliniensis (wild petunia)
Rumex acetosella (sourweed)
Rumex crispus (curly dock)
Sagittaria latifolia (duck-potato)
Salix nigra (black willow)
Salvia lyrata (lyre-leaved sage)
Sambucus canadensis (elderberry)
Sanguinaria canadensis (bloodroot)
Sanicula sp. (snakeroot)
Sassafras albidum (sassafras)
Schizachyrium scoparium (little bluestem)
Scirpus cyperinus (woolgrass bulrush)
Scirpus polyphyllus (many-leaved bulrush)
Scleria pauciflora (few-flowered nutrush)
Scleria triglomerata (nutrush)
Scutellaria integrifolia (skullcap)
Senecio anonymus (Small's ragwort)
Senecio aureus (golden ragwort)
Setaria glauca (foxtail grass)
Shrankia microphylla (sensitive brier)
Sicyos angulatus (bur cucumber)
Silphium compositum (rosinweed)
Silphium sp. (rosinweed)
Sisyrinchium sp. (blue-eyed grass)
Smilacina racemosa (false Solomon's-seal)
Smilax glauca (white-leaved greenbriar)
Smilax herbacea (herbaceous greenbriar)
Smilax hispida (hispid greenbrier)
Solanum carolinensis (Carolina nightshade)
Solidago arguta (early goldenrod)
Solidago odora (fragrant goldenrod)
Solidago rugosa (rough goldenrod)
Sonchus sp. (sow thistle)
Sorghastrum nutans (Indian grass)
Sorghum halepense (Johnson grass)
Stellaria meadia (common chickweed)
Stellaria pubera (giant chickweed)
Stenanthium gramineum (eastern featherbells)
Stipa avenacea (needle grass)
Strophostyles uniflora (pencil flower)

Styrax grandifolia (large-leaved storax)
Tephrosia sp. (goats-rue)
Thalictrum thalictroides (rue anemone)
Thaspium barbinode (hairy-jointed meadow parsnip)
Thelypteris hexagonoptera (broad beech-fern)
Thelypteris noveboracenis (New York fern)
Tiarella sp. (foamflower)
Tilia heterophylla (white basswood)
Tipularia discolor (crane-fly orchid)
Tovara virginiana (jumpseed)
Trichostema dichotomum (blue curls)
Tridens flavus (purple top)
Trifolium sp. 1 (clover)
Trifolium sp. 2 (clover)
Trillium catesbaei (Catesby's trillium)
Ulmus alata (winged elm)
Ulmus americana (American elm)
Ulmus rubra (slippery elm)
Uvularia perfoliata (perfoliate bellwort)
Uvularia sessilifolia (sessile-leaved bellwort)
Vaccinium arboreum (sparkleberry)
Vaccinium corymbosum (highbush blueberry)
Vaccinium elliottii (Elliott's blueberry)
Vaccinium pallidum (lowbush blueberry)
Vaccinium stamineum (squawberry)
Valerinella sp. (corn salad)
Verbascum sp. (mullein)
Verbascum blattaria (moth mullein)
Verbena brasiliensis (Brazilian verbena)
Verbena urticifolia (nettle-leaved verbena)
Verbesina occidentalis (chaffseed)
Vernonia noveboracensis (New York ironweed)
Viburmum acerifolium (maple-leaved viburmum)
Viburnum dentatum (arrow-wood)
Viburnum prunifolium (haw)
Vicia caroliniana (Carolina vetch)
Vinca minor (lesser periwinkle)
Viola affinis (floodplain violet)
Viola hastata (halberd-leaved violet)
Viola palmata (palmate violet)
Viola pedata (bird's foot violet)
Viola primulifolia (primrose-leaved violet)
Viola sagittata (arrow-leaved violet)
Viola sororia (common violet)
Vitis aestivalis (summer grape)
Vitis rotundifolia (muscadine)
Woodwardia areolata (netted chain fern)
Xanthorhiza simplissima (yellowroot)
Yucca aloifolia (Spanish bayonet)
Zephranthes atamasca (Atamasco lily)