



Vegetation Mapping at Horseshoe Bend National Military Park

Photointerpretation Key and Final Vegetation Map

Natural Resource Report NPS/SECN/NRR—2019/2034



ON THE COVER

‘A Calm before the Storm’ Looking southwest across a freshly cut Bahiagrass field, Horseshoe Bend National Military Park
Photograph by: David Cotten, June 13, 2014.

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Executive Summary

The University of Georgia Department of Geography's Center for Geospatial Research (CGR), with the support of the National Park Service (NPS) Vegetation Mapping Inventory (VMI) Program, described and mapped vegetation at Horseshoe Bend National Military Park (HOBE). This mapping effort was accomplished through collaboration with the NPS Southeast Coast Network (SECN), the North Carolina office of NatureServe (/Durham, N.C.), and Atkins North America, Inc.

A final map of vegetation communities was created for Horseshoe Bend National Military Park (NMP) to the association level of the National Vegetation Classification System and in a 500-meter (1,640-foot [ft]) buffer zone around the park using the more general Anderson Level II classification. This map represents the vegetation found in the park during 2011, the year the images were acquired. We were provided with the vegetation communities occurring in the park, as determined by NatureServe from ground plots. We overlaid the location of the NatureServe plots on leaf-on color-infrared aerial photographs to determine the image signature of vegetation communities in terms of color, tone, texture, and topographic position. We also conducted our own field surveys to refine and verify photointerpretation.

The park encompasses 829 hectares (2,049 acres [ac]) while the buffer alone covers 712 hectares (1,759 ac). Within the park boundary, there were 23 vegetation communities, with pine and hardwood forest communities dominating (88%). While forested, most of the forests (66% of total area) are mid-successional forests 30 to 75 years of age, reflecting past anthropogenic influences. The most common vegetation class is Early-to Mid-Successional Loblolly Pine Forest (24%). Areas impacted by exotic invasives or pine bark beetles were minimal (less than 1%).

The buffer area (712 hectares [1,759 ac]) was 81% forested. There is a small component of rangeland (12%), which depending upon location and actual use, may influence water quality. Less than 3% of the buffer zone is high intensity anthropogenic land-uses.

Because of the extensive past land use history, using the National Vegetation Classification System (NVCS) to the association level was challenging. Determining CEG codes was particularly difficult because the National Vegetation Classification System was designed for relatively undisturbed vegetation communities. Using 16 NatureServe vegetation plots, color-infrared aerial photos, and data collected in the field, vegetation communities were delineated and assigned attributes. Using dominant vegetation classes and secondary vegetation classes, as well as modifiers to describe the diversity of species, detailed vegetation maps were created for Horseshoe Bend NMP. Polygons and attributes within the 500-meter (1,640-ft) buffer were created on a broader scale using a system based on the Anderson Level II classification scheme which includes anthropogenic and land use/land cover (LULC) classes. Within the park, the more detailed vegetation classes were used.

The most common class found in Horseshoe Bend NMP is Early- to Mid-Successional Loblolly Pine Forest (6011) covering 24% of the park. This class combined with the second and third most common classes, Successional Sweetgum Floodplain Forest and Mid- to Late-Successional Loblolly Pine - Sweetgum Forest respectively, covers 57% of the park's 829 hectares (2,049 ac). The smallest

class in the park that is larger than one half hectare is Highland Rim Pond (Woolgrass Bulrush—Threeway Sedge Type; 4719) which covers roughly one hectare. A rigorous accuracy assessment was conducted on the 23 map classes within the boundary of Horseshoe Bend NHP representing floristic types within the National Vegetation Classification System. Results showed 69% map accuracy and a kappa rating of 66% using 167 accuracy assessment points.

The products generated from this project include vegetation maps, a photointerpretation key, summary statistics of each vegetation class, and a detailed geodatabase with digital maps.

Acknowledgments

We would like to thank the Horseshoe Bend NMP staff for helping us with this project. Former Park Superintendent Doyle Sapp kindly granted access to internal roads within the park, park staff, and discussed resource management issues. Brian Anderson graciously and patiently escorted us around the park and supplemented our supply of bug spray.

Introduction

Horseshoe Bend National Military Park Vegetation Mapping Project

As part of the National Park Service (NPS) Vegetation Inventory Program (Schmoldt et al. 1994; Fancy et al. 2009), The University of Georgia Center for Geospatial Research (CGR) in the Department of Geography was asked to produce vegetation maps of eight park units in the NPS-Southeast Coast (SECN) Inventory and Monitoring Network using mapping standards defined under the National Vegetation Classification System (NVCS; Jennings et al. 2009). Under Task Agreement # P13AC01319, the University of Georgia Center for Geospatial Research agreed to analyze existing leaf-on color infrared (CIR) aerial photography to develop photointerpretation keys, accuracy assessment study plans, final digital maps of vegetation, geodatabases and associated metadata in accordance with NPS vegetation mapping standards, and field verification surveys in accordance with standard mapping practices. The Horseshoe Bend National Military Park (HOBE Vegetation Mapping project coordinated by the University of Georgia Center for Geospatial Research between 2014 and 2018, with assistance from the Southeast Coast Network, the North Carolina office (Durham) of NatureServe (for the vegetation classification portion of the project), and Atkins North America, Inc. (for accuracy assessment).

While the National Vegetation Classification System intends to capture stable vegetation categories, either man-made or natural disturbances may change some areas during the seven years required to produce a vegetation map. For example, changes in non-tree dominated areas, which are typically wetlands in this region, may shift annually depending upon local weather, or cover by invasive exotics may change rapidly. More importantly, both natural and anthropogenic changes will likely continue in the future. Therefore, the vegetation map should be evaluated as a snapshot of the park in 2011.

A photointerpretation key is included as Appendix A. The key contains a ground image and CIR image chip for each NVCS over story vegetation class occurring in Horseshoe Bend NMP and a description of the CIR signature based upon color, tone, texture, height, size, shape, location, and association.

This report provides written details on the photointerpretation and database/map generation procedures, and field work. It also includes summary statistics of area coverage and number polygons for each vegetation class (Table 1). Summary statistics were also developed for the general land use/land cover classes within the 500-meter (1,640-ft) buffer surrounding the park (Table 2).

Table 1. Community element global code (CEGL) classes, frequency of occurrence, mean area, total area, and percentage of total area within the park boundary of Horseshoe Bend National Military Park [ha—hectare].

CEGL	Description	Frequency	Mean Area (ha)	Total Area (ha)	Percentage of Total Area
3836	Floodplain Canebrake	3	0.4	0.1	<0.1%
4048	Open Grass	4	7.2	1.8	0.9%
4290	Smartweed - Cutgrass Beaver Pond	1	0.2	0.2	<0.1%
4700	Bahia Grass Herbaceous Vegetation	13	21.0	1.6	2.5%
4719	Highland Rim Pond (Woolgrass Bulrush - Threeway Sedge Type)	1	1.1	1.1	0.1%
6011	Early- to Mid-Successional Loblolly Pine Forest	20	198.7	9.9	24.0%
7201	Southern Mesic Beech - Tuliptree Slope	4	18.5	4.6	2.2%
7213	Cumberland Plateau Mesic White Oak- Beech Forest	2	13.6	6.8	1.6%
7216	Successional Sweetgum Forest	8	11.6	1.5	1.4%
7217	Interior Mid- to Late Successional Sweetgum - Oak Forest	4	52.5	13.1	6.3%
7221	Successional Tuliptree Forest	2	15.0	7.5	1.8%
72461	Southern Red Oak - White Oak Mixed Forest/ Lower Piedmont Chestnut Oak Forest	9	52.5	13.1	6.3%
7312	River Birch Levee Forest	6	14.5	2.4	1.7%
7330	Successional Sweetgum Floodplain Forest	8	137.5	17.2	16.6%
7353	Sweetgum - Cherrybark Oak Floodplain Forest	7	9.8	1.4	1.2%
7806	Southeastern Coastal Plain Green Ash - Elm Bottomland Forest	5	21.6	4.3	2.6%
8437	Montane Mixed Longleaf Woodland	6	10.3	1.7	1.2%
8462	Mid- to Late-Successional Loblolly Pine - Sweetgum Forest	26	139.0	5.3	16.8%
8474	Southeastern Smooth Alder Swamp	2	1.1	0.6	0.1%
8493	East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest	4	8.6	2.1	1.0%
8552	Upper East Gulf Coastal Plain Sweetbay - Blackgum Seepage Forest	3	12.1	4.0	1.5%
8583	Overcup Oak - Sweetgum Forest	2	4.8	2.4	0.6%
9998	Water	2	65.1	32.6	7.9%
9999	Human Influence	5	7.5	1.5	0.9%

Table 2. Land use/land cover class, frequency of occurrence, mean area, total area, and percentage of total area within the buffer area of Horseshoe Bend National Military Park [ha—hectare].

Class	Frequency	Mean Area (ha)	Total Area (ha)	Percentage of Total Area
Deciduous Forest Land	68	3.3	223.4	31.4%
Evergreen Forest Land	40	6.2	249.1	35.0%
Forested Wetland	1	0.5	0.5	<0.1%
Herbaceous Rangeland	32	1.8	58.6	8.2%
Mixed Forest Land	21	5.2	108.2	15.2%
Mixed Rangeland	3	3.0	8.9	1.2%
Reservoirs	1	0.1	0.1	<0.1%
Residential	4	1.2	5.0	0.7%
Shrub and Brush Rangeland	8	3.2	25.3	3.6%
Streams and Canals	2	8.8	17.7	2.5%
Transitional Areas	2	5.3	10.5	1.5%
Transportation, Communications, and Utilities	8	0.7	5.2	0.7%
Total	190	–	712.4	100.0

Summary statistics of area coverage and number of polygons for each vegetation class within Horseshoe Bend NMP were generated. This information was then used to develop the study design for the accuracy assessment of the final vegetation map found later in this report.

Vegetation Mapping Inventory Program

The Vegetation Mapping Inventory (VMI) Program is an effort by the National Park Service to classify, describe, inventory, and map vegetation communities in more than 280 national park units across the United States. The primary objective of the Vegetation Mapping Inventory Program is to produce high-quality, standardized maps and associated data sets of vegetation and other land-cover occurring within parks. Since vegetation species and communities are unique from park to park, the inventory of these resources assists park managers on a wide array of management issues. For more information about the Vegetation Mapping Inventory Program, visit the program website (see NPS 2015).

NPS Southeast Coast Inventory and Monitoring Network

National Park managers across the country need a broad-based understanding about the status and trends of park natural resources. The NPS Inventory & Monitoring Division (IMD) systematically gathers and analyzes information on the plants, animals, and ecosystems within the parks. Parks use

this information for planning, research, education, and to help guide decisions related to park management. Results are also shared widely with other agencies, researchers, and scientists. IMD staff and networks share a set of common goals, established when the division was first launched:

- Inventory the natural resources under National Park Service stewardship to determine their nature and status.
- Monitor park ecosystems to better understand their dynamic nature and condition and to provide reference points for comparisons with other, altered environments.
- Establish natural resource inventory and monitoring as a standard practice throughout the National Park system that transcends traditional program, activity, and funding boundaries.
- Integrate natural resource inventory and monitoring information into National Park Service planning, management, and decision making.
- Share National Park Service accomplishments and information with other natural resource organizations and form partnerships for attaining common goals and objectives.

To accomplish these goals, more than 280 parks with significant natural resources were grouped into the 32 I&M networks, which were determined based on geography and shared natural resource characteristics. The network organization increases collaboration among parks, information sharing, and economies of scale in natural resource inventory and monitoring (NPS 2018a).

The Southeast Coast Network (SECN) includes 17 parks with significant natural resources in 15 administrative units. The network extends along the Atlantic Coast from the North Carolina-Virginia border southward to Cape Canaveral, Florida and inland to Atlanta, Georgia and the Alabama Coastal Plain. The network's purpose is to provide parks with data and information about their natural resources, and to help with information sharing in natural resource monitoring (NPS 2018b).

Location of Horseshoe Bend National Military Park

Horseshoe Bend National Military Park (Figure 1) covers 829 hectares (2,049 ac) in northern Tallapoosa County, Alabama. The region is rural, with the closest town being Alexander City, population 15,000, located approximately 24 kilometers (14.9 mi) to the west. The Tallapoosa River is a significant physical and cultural feature of the park. The park name is derived from the horseshoe shaped meander of the Tallapoosa River within the park. This meander of the river was thought to be a strategic military position and the associated battlefield is the impetus for the park. The park was established to preserve and commemorate cultural history, rather than any unusual flora or fauna.

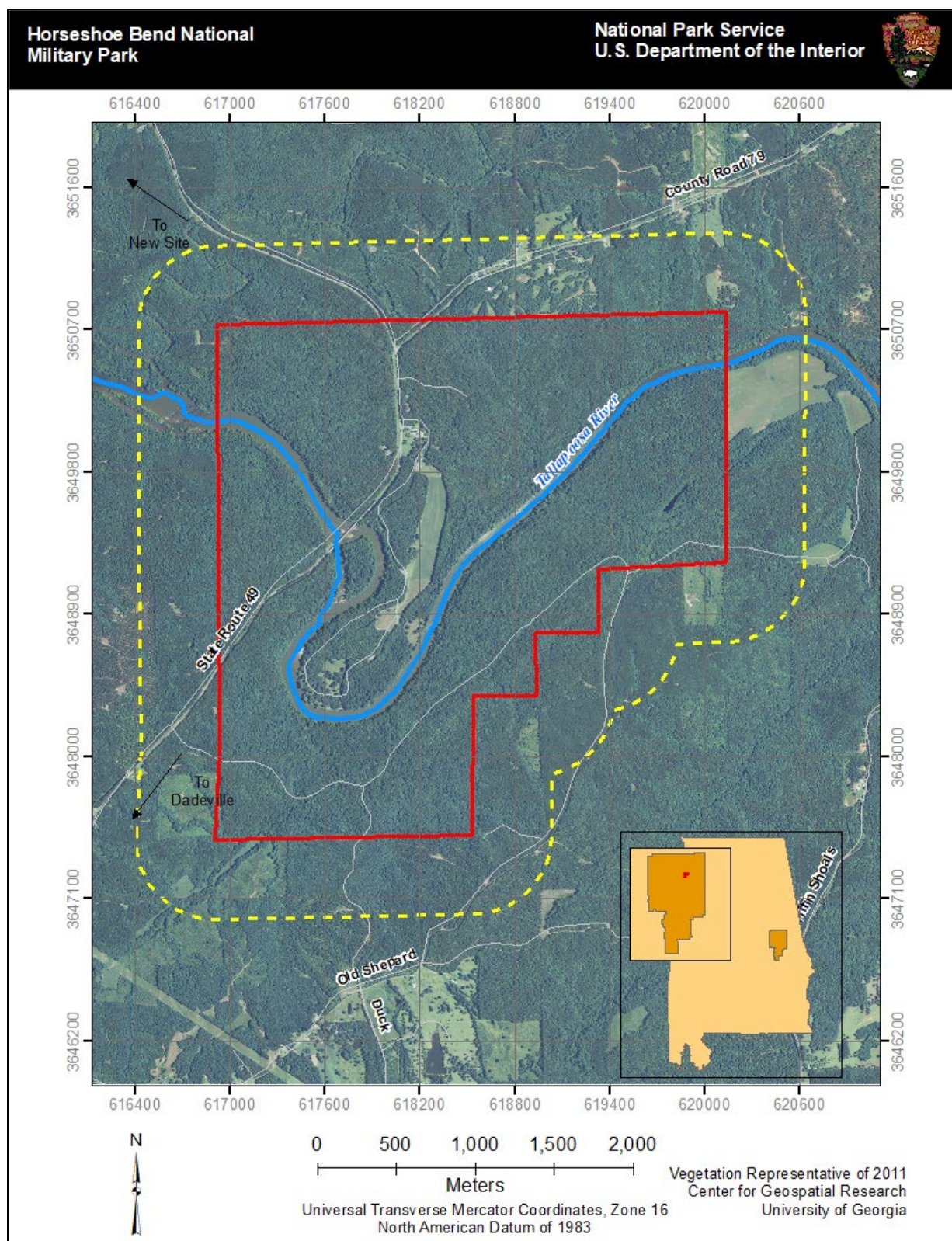


Figure 1. Location of Horseshoe Bend National Military Park and its position relative to the State of Alabama.

The Battle of Horseshoe Bend took place in 1814 and was the final conflict in the Creek War (1813–1814). In the early 20th century, the land was owned by the Alabama Power Company. The company initially had plans to build a dam downstream from the site and inundate the area but an executive mindful of the land's cultural significance convinced the company to sell the land to the state and build a dam further downstream.

On 25 July 1956, President Eisenhower signed congressional legislation to establish Horseshoe Bend National Military (Martin 1960). The park boundaries have changed little since this original congressional act. The park opened officially to the public in March 1964 with dedication of a visitor center showcasing cultural artifacts and interpretive displays and currently offers visitors opportunities to engage in activities such as bicycling, fishing, boating, and hiking. Recently, during the ten-year period ending in 2008, visitation increased seven percent. It is estimated that one million travelers pass through the park on Highway 49 each year.

Most of the park is forested land that ranges from stands of relatively young pine trees to forests of older established hardwoods. There is one paved road, State Route 49, which passes through the park as well as a short section of paved road, Country Road 79, which intersects SR 49 near the northern border of the park. The boundary of the park is clearly demarcated by clear-cut path, 5-meters (16.4-ft) wide, to reduce unintentional hunting on park lands.

There are several resource management issues that may affect the vegetation within the park. Horseshoe Bend National Military Park is home to roughly 900 known plant species with very few exotic species. There is an active burn plan, exotic removal plan, and longleaf pine planting areas. While longleaf pine occurs naturally in the park there are very few pure stands of longleaf pine. To facilitate cultural interpretation and historical re-enactments, former Superintendent Doyle Sapp considered options to actively manage a portion of the forest so that forest structure more closely resembles that which occurred at the time of the Battle of Horseshoe Bend. At the time of the Battle, the forests had very little undergrowth, allowing movement of troops and artillery.

Vegetation Classification System

The task agreement for mapping requires the National Vegetation Classification System (NVCS) be used for areas inside each park. The National Vegetation Classification System was developed by the Nature Conservancy (Anderson et al. 1998; Grossman et al. 1998). It is primarily based upon vegetation rather than climatic or edaphic factors. It emphasizes the existing natural vegetation and recognizes that vegetation communities form a continuum. The system has seven hierarchical levels so that vegetation can be described at multiple scales, depending upon the amount of information available. Higher levels can be broken down to lower levels as more information is available; conversely, lower levels can be aggregated to upper levels. The five upper levels (formation class, formation subclass, formation group, formation subgroup, and formation) describe vegetation physiognomy rather than actual species composition and is a modification of the UNESCO World Physiognomic Classification of Vegetation (UNESCO 1973). The two lowest levels (the alliance and association) are determined by floristic composition. The alliance level is determined by the species composition in the dominant or diagnostic species in the most prevalent stratum. A diagnostic species does not have to be dominant.

The association level is determined by diagnostic species in all strata (tree canopy, sub-canopy, tall shrub, short shrub, herbaceous, non-vascular, vine/liana and epiphyte), recognizing that each of these strata may not occur in every association. The tallest stratum may not be the diagnostic/dominant stratum. The association level is assigned a unique community element global code (CEGL). The CEGL code for the vegetation association is the target vegetation classification specified in the task agreement.

The dominant species in the tallest stratum are always visible in leaf-on aerial photographs. If the tallest stratum is dense, with a closed canopy, then the shorter sub canopy and understory layers are obstructed from the camera's view and are not visible. In vegetation communities where the tallest stratum is open, other strata will be visible in the aerial photograph. In some cases, a CEGL code can be determined solely by identifying its location (e.g., along a ridge or on the south slope) and viewing the uppermost stratum. In other cases, a lower stratum (or strata) not visible in the aerial photography must be used to determine CEGL code. In such cases, it is impossible to use only aerial photographs recorded during leaf-on conditions to accurately determine the NVCS code at the association level. If it was not possible to determine the association-level class, a second vegetation was assigned as a supplement to the dominant vegetation code.

Prior to the University of Georgia Center for Geospatial Research's photointerpretation, NatureServe conducted field surveys in accordance with standard practices (Jennings et al. 2009) to create a list of NVCS CEGL codes for Horseshoe Bend NMP, see Table 3 (NatureServe 2009). Their detailed report includes a dichotomous key for separating the CEGL codes described for the park, Appendix B. Many of the couplets in the dichotomous key relied upon differences in the dominant vegetation in the tallest stratum or the presence or absence of diagnostic species. However, some couplets relied

upon lower strata which may not be evident in the aerial photographs and/or edaphic factors¹ (e.g. soil pH) which would not be evident in leaf-on CIR photographs. The NatureServe report also includes comprehensive descriptions of diagnostic species for each CEG, and additional information on both the global and local expressions of the vegetation community type.

Table 3. Land cover classes found within the park area of Horseshoe Bend National Military Park during the initial NatureServe assessment based on the National Vegetation Classification System.

Code	Description
3836	Floodplain Canebrake
4048	Open Grass
4290	Smartweed - Cutgrass Beaver Pond
4700	Bahia Grass Herbaceous Vegetation
4719	Highland Rim Pond (Woolgrass Bulrush - Threeway Sedge Type)
6011	Early- to Mid-Successional Loblolly Pine Forest
7201	Southern Mesic Beech - Tuliptree Slope
7213	Cumberland Plateau Mesic White Oak- Beech Forest
7216	Successional Sweetgum Forest
7217	Interior Mid- to Late Successional Sweetgum - Oak Forest
7221	Successional Tuliptree Forest
7244	Southern Red Oak - White Oak Mixed Forest
7261	Lower Piedmont Chestnut Oak Forest
7312	River Birch Levee Forest
7330	Successional Sweetgum Floodplain Forest
7353	Sweetgum - Cherrybark Oak Floodplain Forest
7806	Southeastern Coastal Plain Green Ash - Elm Bottomland Forest
8437	Montane Mixed Longleaf Woodland
8462	Mid- to Late-Successional Loblolly Pine - Sweetgum Forest
8474	Southeastern Smooth Alder Swamp
8493	East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest

¹ Vegetation tends to reflect edaphic factors. Yet if the indicator vegetation is not visible in the aerial photograph, edaphic factors cannot be inferred.

Table 3 (continued). Land cover classes found within the park area of Horseshoe Bend National Military Park during the initial NatureServe assessment based on the National Vegetation Classification System.

Code	Description
8552	Upper East Gulf Coastal Plain Sweetbay - Blackgum Seepage Forest
8583	Overcup Oak - Sweetgum Forest

In general, the National Vegetation Classification System is best suited to natural or semi-natural vegetation communities that have been relatively undisturbed long enough for vegetation communities to develop in accordance with the environmental and climatic conditions of the site (Anderson et al. 1998; Grossman et al. 1998). Areas that are regularly or extensively disturbed by logging, fire, wind damage, exotic insects, exotic vegetation, and human activities are not easily classified with the National Vegetation Classification System. For this reason, the University of Georgia Department of Geography's Center for Geospatial Research augmented the NVCS classes identified by NatureServe as occurring in HOBE to include additional disturbed, managed, successional, and modified classes, along with alphanumeric modifiers to provide detailed information to users of the vegetation databases and maps. Modifiers to the NVCS classes reflected variations of a particular NVCS class that are characteristic for the local site, but atypical of the global NVCS description.

The task agreement also required mapping a 500-meter (1,640-ft) buffer around each park. The buffer area contained extensive areas of human influence; consequently, the NVCS system was not applicable. Buffer areas were therefore mapped using guidelines derived from the Anderson Level II classification system, which includes human influences and water categories (Anderson et al. 1976). Modifiers were also greatly utilized within the buffer to increase the knowledge base about what LULC categories surround Horseshoe Bend NMP, though different modifiers were generally used in the buffer compared to in the park.

In summary, the park was initially mapped to the association (CEGL) level of the National Vegetation Classification System (Table 3), while the buffer area was more appropriately mapped using Anderson Level II guidelines (Table 4). Modifiers to these classification systems were used, as appropriate, to ensure a meaningful classification system for this particular park (Table 5).

Table 4. Land cover/land use classes found within the buffer of Horseshoe Bend National Military Park.

Code	Description
11	Residential
14	Transportation, Communications, and Utilities
31	Herbaceous Rangeland
32	Shrub and Brush Rangeland
33	Mixed Rangeland
41	Deciduous Forest Land
42	Evergreen Forest Land
43	Mixed Forest Land
51	Streams and Canals
53	Reservoirs
61	Forested Wetland
76	Transitional Areas

Table 5. Modifiers used throughout the park area and buffer of Horseshoe Bend National Military Park.

Code	Description
CLt	Contains Liriodendron tulipifera
CQf	Contains Quercus falcata
Cul	Cultivated
DPs	Dominated by Pines (spp)
DQn	Dominated by Quercus nigra
DQnFp	Dominated by Quercus nigra and Fraxinus americana
PBB	Pine Bark Beetle

Vegetation Mapping Workflow

The general workflow for this vegetation mapping followed a series of steps, including:

1. Define CEGL codes within the study area based upon plot-level ground data (completed by NatureServe)
2. Contact park staff to discuss their needs and concerns as applicable to the final vegetation map, obtain any existing background information on management activities to include in a GIS database (see below), and arrange access
3. Collect base data and construct a GIS foundation geodatabase
 - a. Collect and inventory the aerial photographs
 - b. If needed, scan and orthorectify the aerial photographs
 - c. Obtain available GIS layers on exotic plant removal or prescribed burns that may affect vegetation communities
4. Create an initial photointerpretation key
 - a. Overlay NatureServe Vegetation Survey points on photos
 - b. Examine photos to understand signatures of vegetation communities as identified by ELCodes or CEGL number
5. Perform initial delineation of vegetation communities on CIR aerial photographs, supplemented by other leaf-off imagery (see Table 6) using photointerpretation from both stereo-pairs and 2D imagery by heads-up GIS methods
 - a. Identify spectral signatures dissimilar to the example spectral signatures around the NatureServe ground plots so that vegetation can be evaluated in field visits
6. Field visits
 - a. Schedule field trips to the site to visit specific areas where questions exist
 - b. Verify vegetation communities present
 - c. Reconcile photo signature with NatureServe CEGL code
 - d. Refine classification as necessary with reference to field work and ongoing communication with park staff regarding results
 - e. If needed, assign additional CEGL numbers or combine certain CEGL numbers if specific classes exist within the park that were not discovered by the NatureServe Vegetation Survey or were indiscernible through aerial interpretation

7. Refine and extend photointerpretation key and delineation of polygons
 - a. As needed, print photos and vegetation polygons for review and refinement
8. Prepare draft deliverable products
 - a. Prepare draft GIS files
 - b. Clean up line work and attribute tables
 - c. Compute statistics for vegetation polygons
 - d. Prepare metadata for vegetation polygon files
 - e. Finalize photointerpretation keys
9. Accuracy Assessment
 - a. Using accuracy assessment guidelines points are chosen for a separate team to visit and quantify
 - b. Overlay Accuracy Assessment data points on photos and draft vegetation maps
 - c. Calculate percent accuracy and kappa for the polygons
10. Prepare final deliverable products
 - a. Prepare final GIS files
 - b. Clean up line work and attribute tables using accuracy assessment data as a guide
 - c. Compute statistics for vegetation polygons
 - d. Prepare metadata for vegetation polygon files
 - e. Finalize photointerpretation keys

Note that steps 4–7 reflect an iterative, rather than a linear, process. Steps 1, 2, and 3 are self-explanatory; the detailed workflow for the other steps, as pertains to the mapping of the park, is described below.

Table 6. Data sets, descriptions, source, date, and scale imported into the Geodatabase.

Data set	Description	Source	Date	Scale/Resolution
Contours	Statewide contours	ESRI	1996	1:100,000
Counties	County outline for Tallapoosa	US Census	2013	1:100,000
Park	Park and Buffer outlines	NPS Data store and buffer analysis	2013	Unknown
Roads	Tiger Line Roads	US Census	2013	1:12,000
Hydrology	Rivers	National Hydrography Dataset (NHD)	–	1:24,000
DEM	USGS Digital Elevation Model	USGS National Map Viewer	2010	1/9 arc second
NAIP Imagery	Natural color orthoimagery in three bands	U.S. Geological Survey	2013	1 meters (3.3 ft)

Base Data and GIS Geodatabase Construction

Relevant publically available GIS data sets that cover the study area were downloaded and archived on a local server in University of Georgia Center for Geospatial Research. Data sets include roads, hydrology, boundary files (political and NPS), digital elevation models (DEMs), and additional aerial photographs. These data are available from sources such as the NPS Integrated Resource Management Applications (IRMA) portal, Georgia GIS Data Clearinghouse, the U.S. Geological Survey National Map, and the NOAA Digital Coast websites. Also obtained were trail network and exotic plant removal data sets. These layers are not publicly available and were obtained through NPS contacts. The data sets used to populate the foundation GIS Database were from different sources, compiled for different reasons, and may not be in the same map projection. The task agreement specified that the spatial data be projected to the Universal Transverse Mercator (UTM) Coordinate System, North American Datum of 1983 (NAD83). Finally, a geodatabase in ArcGIS 10.2 format was created as a container to store and organize the data. Details of this database are presented in Figure 2.

Color infrared (CIR) aerial photographs of the park at 1:12,000 scale were acquired by Aero-Metric, Inc. on May 1, 2011. These photos were scanned and converted to digital orthophotographs at 0.3-meter (1 ft) resolution before being delivered to the NPS. Digital orthophotographs and hardcopy photographs in both film transparency and paper print formats were provided to UGA-CGR. A total of 12 photos in two flight lines were required to cover Horseshoe Bend NMP. Details about the flight lines and photo center locations can be found in Figure 3 and Appendix C.

The mapping area was split in two sections: park and buffer. The park was defined as the area within the prescribed park boundaries while the buffer pertained to the region within 500 meters (1,640 ft) outside of the park boundary. Detailed vegetation mapping using CEG codes was performed within the park whereas more general mapping using a revised Anderson-type II hierarchical classification scheme was used in the buffer area.

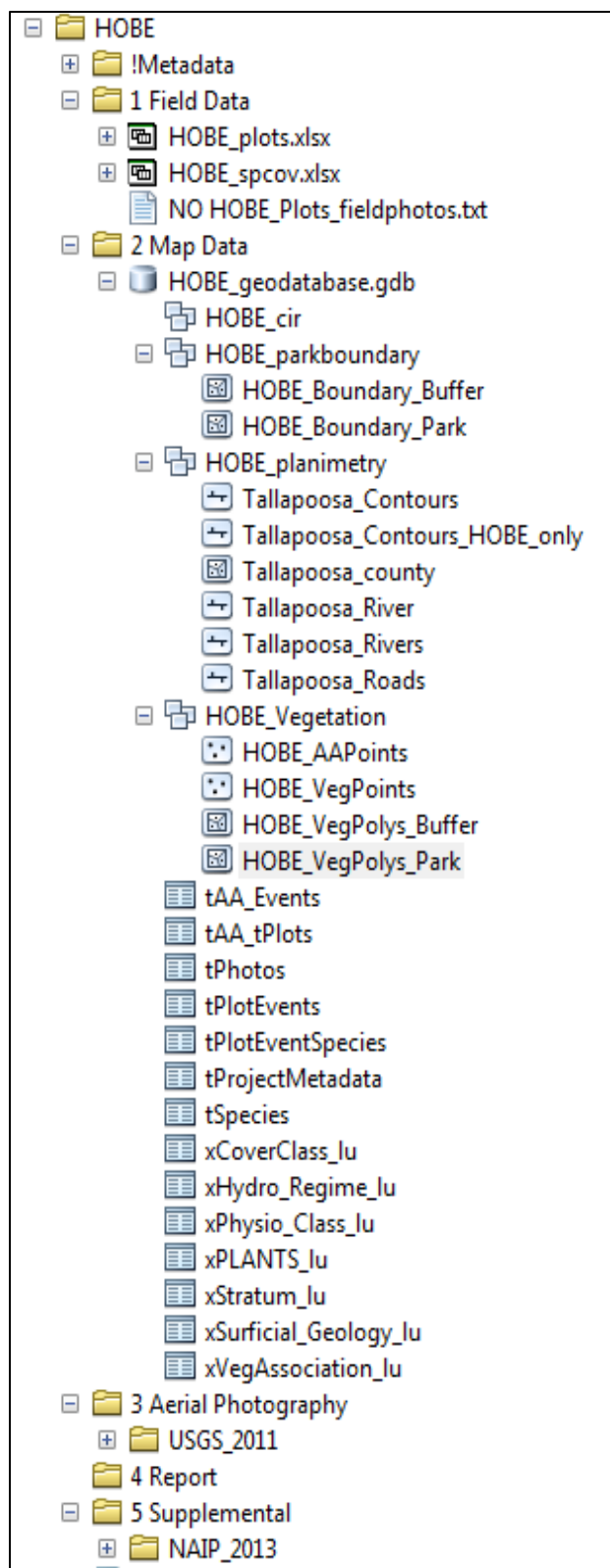


Figure 2. Foundation Geodatabase created for Horseshoe Bend National Military Park.

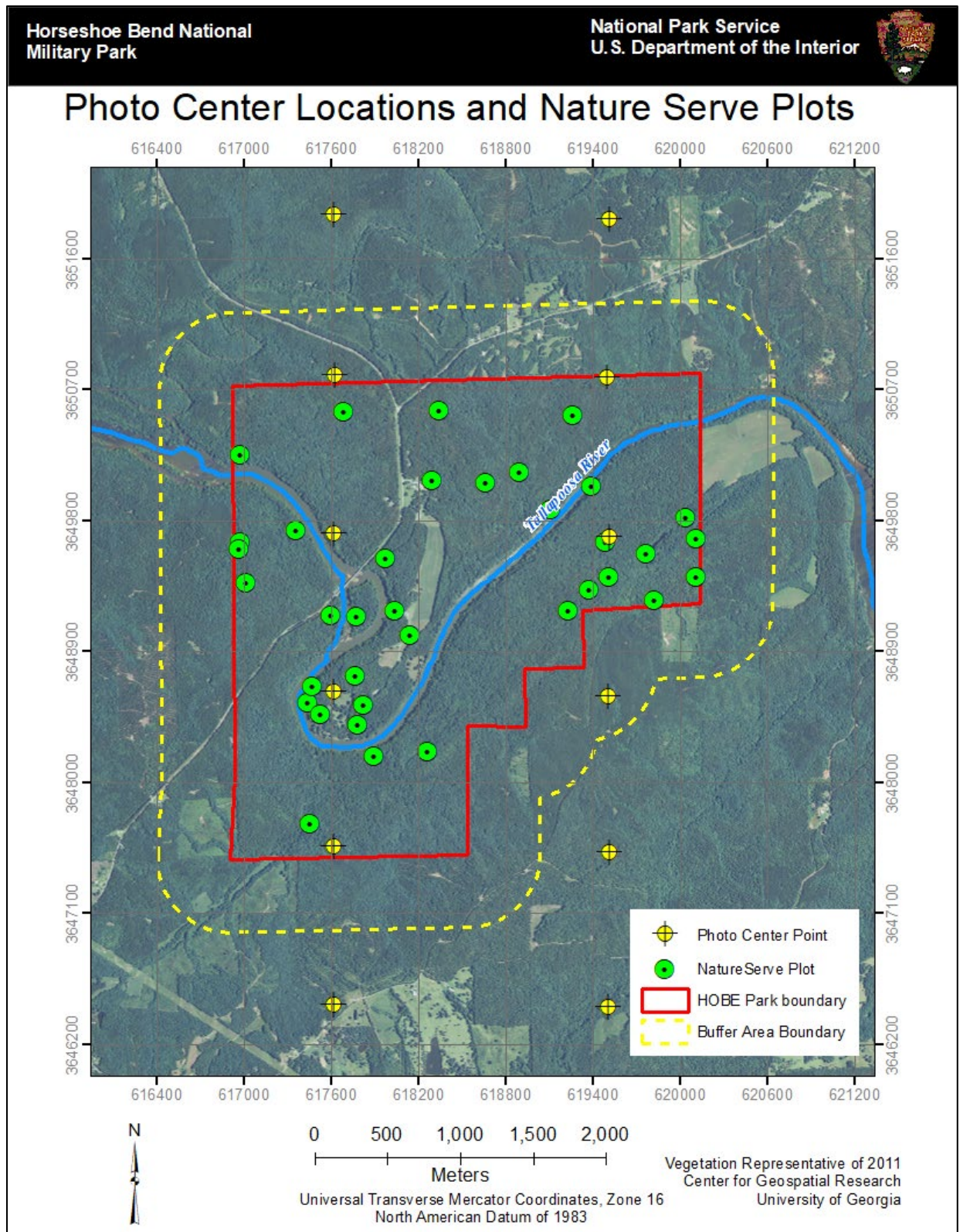


Figure 3. NatureServe vegetation plots and aerial photo center points for Horseshoe Bend National Military Park.

Initial Photointerpretation Key and Vegetation Delineation

Classifying the different vegetation communities within the park was aided by the use of a photointerpretation key. The initial photointerpretation key was based upon the NCVS vegetation classes at the association level. These associates were determined by NatureServe through independent plot level vegetation surveys in accordance with standard NVCS field methods (Jennings et al. 2009). Plot sizes in Horseshoe Bend NMP ranged in size from 100 square meters (10×10 meters [or 1,076 square feet {ft²} or 32.8×32.8 ft]) to 1,000 square meters (10,764 ft²) or (50×20 meters [164×65.6 ft]). Plot level species presence or abundance was used to assign a four-digit CEGL number. The results of the survey are reported as a list of a point locations and CEGL codes, as well as descriptions and field notes (see Appendix B). The vegetation associations for Horseshoe Bend NMP were determined by NatureServe from 36 plots and included 22 associations. Researchers from the University of Georgia Center for Geospatial Research visited 213 points to interpret the CIR signatures of these vegetation associations to delineate vegetation.

The NatureServe vegetation plot points were overlaid on the CIR aerial photographs and the photo signature was examined. Some vegetation classes were represented by multiple locations. As a result, multiple signatures exist for such codes. The National Vegetation Classification System recognizes that vegetation communities form a continuum both within and between CEGL codes; spectral signatures are also likely to reflect this natural variation.

The photointerpretation key was developed to assist in the extension of the signatures at the plot level to the remainder of the park. The key noted color, tree crown shapes and sizes, texture, context, and any other characteristics that could help to differentiate one community from the others on the spectral signature of the leaf-on CIR aerial photography. The orthophotographs were examined on-screen in heads-up mode using the ArcGIS software. Where needed, the hardcopy photographs were viewed in stereo/3D using a light table and a mirror stereoscope. This method is excellent for using relative heights of the trees and terrain to assist in determining the vegetation community and to delineate the boundaries of the individual features.

The strength and intensity of the image were described using color (varying from green to pink to purple), tone (light to dark), and texture (fine to coarse). Other categories were based on canopy structure such as pattern (open to dense canopy) and height (short to tall). The remaining categories were used to express how the different codes are interrelated. These include shape (elongated to broad), size (based on total area, average size, and standard deviations of the polygons in a given class), location (relative to specific areas in the park), association (communities typically found near the specific class), and comments (to express any hints or issues that may arise). Also included are images taken from the field to provide a ground level perspective that can be compared to the sample image chips taken from the airborne CIR images. The NatureServe summary of the vegetation association and its distribution both globally and within the park are included for each class following the visual cue description.

The CEGL codes are listed in ascending numerical order in the key. While the National Vegetation Classification System is hierarchical, the numbering system for the codes is not hierarchical. Thus, it

is impossible to determine physiognomy, species composition or edaphic factors (e.g. soil saturation or inundation, soil pH, slope) from the CEGL code alone.

Using ArcGIS software, standard GIS methods, and a minimum mapping unit (MMU) of 0.5 hectares (1.2 ac), preliminary lines were drawn to delineate areas of uniform signature. Where the vegetation communities were clearly identifiable, polygons were tagged with the appropriate CEGL code. Where confusion existed, the polygons were tagged with an ‘unknown’ code until field visits could determine the appropriate CEGL code.

Field Surveys and Ground Truth

In developing the photointerpretation keys and delineating vegetation communities based upon their CIR signatures, a number of signatures were found that did not easily match the signatures from the NatureServe survey of 36 ground lots. These areas required field visits to clarify vegetation communities.

Field work and ground truthing for Horseshoe Bend NMP took place in May and June 2014. Field visits were aimed at giving specific attention to representative habitats, rare and important communities, areas that have been managed, disturbed, or invaded, and plots previously surveyed by NatureServe to collect data on canopy species composition, diagnostic species for the National Vegetation Classification System, and terrain, similar to NatureServe’s “Quick Plot” surveys.

Field crews carried paper field maps with the UTM grid coordinates, elevations, roads, rivers, initial vegetation polygons with CEGL codes, and points of interest superimposed on CIR photographs. They also used a Trimble Geo 6000 Xh Global Positioning System (GPS) handheld receiver loaded with similar GIS layers. On some trips, an Apple iPad 4 with a geoPDF (Wuthrich 2006; Pardue 2008) replaced paper field maps. The geoPDF gave the user both a higher level of detail of the original CIR compared paper maps, along with the ability to determine location in real-time using the device’s internal GPS relative to the overlay of the line work.

The Trimble GPS was used to record the location of each site sampled. The coordinates were later post-processed by differential correction using Trimble’s Pathfinder Office Software and base station data from multiple continuously operating reference stations in eastern Alabama.. However, even when multiple base stations were used for a particular day, complete time coverage was not guaranteed. Some GPS locations could not be successfully differentially-corrected. Overall, post-processing produced a final accuracy of ± 1 to 5 meters (3.3 to 16.4 ft). Accuracy was higher in open areas than in closed canopy forested areas.

At each sampling site, researchers recorded GPS position, species data, canopy cover, and topography (e.g., relative slope and aspect) inside an area between 250 and 1,000 square meters (2,691 and 10,764 square feet [ft²]), based upon visual uniformity. Also noted were the presence of exotics, evidence of past or present human influence (e.g., agriculture, grazing, logging, mowing, exotic vegetation removal, old home sites), damage by insects, wild hogs, blow down, or fire. Prior to leaving a sampling location, researchers determined the primary association type, i.e. CEGL code (Grossman et al. 1994; Anderson et al. 1998; Grossman et al. 1998). Some sites were located in a

mixed area indicative of an ecotone or an area of successional recovery. In such cases, secondary associations were determined in addition to dominant associations. Tertiary modifiers were often determined as well. For this reason all polygons have the possibility of having a secondary association and a modifier in addition to the required dominate association. In cases where researchers were unable to determine a clear match to a NVCS CEGL in the field, more detailed notes were taken to assign an appropriate CEGL or CGR-created class (e.g., a managed, damaged, human influence, or successional class) after further review of CIR signatures. The dominate associations used in Horseshoe Bend NMP can be found in Table 3 and the modifiers can be found in Table 5.

The GPS points collected in the field were superimposed on CIR images in ArcMap. Field points were used in conjunction with the aerial photographs to refine vegetation delineation and assigned classification attributes (dominant CEGL, secondary CEGL, and modifiers, as appropriate). Additional field visits were conducted during the iterative interpretation process on an as-needed basis to refine interpretations, identify communities with unusual signatures, and resolve any questions. Maps were updated between field visits to reflect the ongoing process of photointerpretation of vegetation communities. Any areas visited that were already classified were checked for accuracy throughout the mapping process.

A total number of seven field visits or investigations and 213 discrete point locations were collected at Horseshoe Bend NMP (Table 7 and Figure 4). The number of sites visited in a single day ranged from 13 to 53 and was often influenced by terrain, weather, and point of interest density. Usually, if more than two people were in the field, two independent field teams worked simultaneously to cover more area.

Table 7. Field visits and number of data points collected for Horseshoe Bend National Military Park.

Date (2014)	Team Member(s)	Number of Data Points
May 29 - 30	N. K. O'Hare, M. Madden, B. P. Adams	62
June 12 - 13	N. K. O'Hare, D. L. Cotten, M. Madden, B. P. Adams	115
July 2 - 3	D. L. Cotten, B. P. Adams	36
Total	—	213

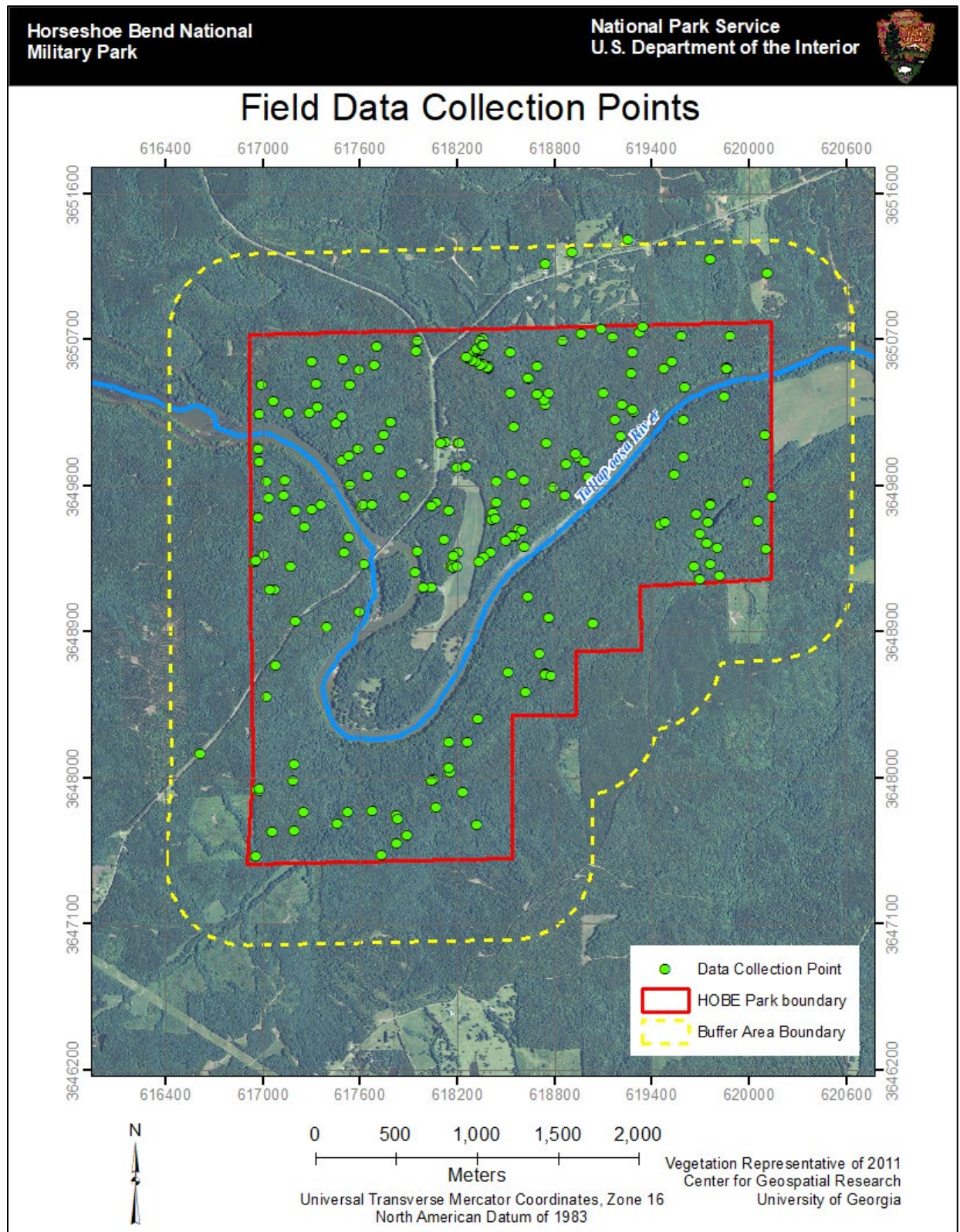


Figure 4. Field data collection locations from Horseshoe Bend National Military Park overlaid on NAIP imagery.

Photointerpretation and GIS Methods

The industry-standard GIS software, ArcGIS, offers a variety of methods and procedures to do most common mapping tasks. For the purposes of this project, photointerpretation was performed using heads-up digitizing methods in ArcGIS 10.2 using the CIR digital orthophotographs as the primary source material. Lines were drawn on-screen delineating the boundaries between different classes of vegetation. Where ecotones between features were broad, the line was drawn in the middle of the transition area. While the minimum mapping unit for this project was one half of a hectare (1.2 ac), features smaller than this threshold that were distinct and could be easily mapped were delineated.

As vegetation areas were delineated with vector lines, points were digitized within each delineated area. These points were assigned attribute information such as the dominate vegetation (a CEGLE value if located within the park or an Anderson-type code for the buffer), secondary vegetation, a modifier, the interpreter's initials, the date, the confidence of the classification, and other relevant information.

After the line work was completed and points attributed, the lines were converted to polygons and the attributes assigned to each polygon by joining the tables of the point features and polygons based on spatial location. In this operation, the attributes of the point closest to the polygon were assigned to that polygon. A 'distance' field was also assigned which indicates the distance of the point location from the polygon. If the distance was zero, the point was inside the polygon. Any other value greater than zero meant that the point used to populate the attribute fields was outside of the polygon. Consequently, the 'distance > 0' values were used as flags to select and examine polygons that were not properly attributed. Where necessary, additional points were added to the database to complete the map. The process was repeated until all polygons were properly attributed.

The initial draft maps were plotted at large scale on 'E-size' (34 × 48 inches [86.4 × 121.9 centimeters {cm}]) paper such that the hollow polygons with their respective CEGLE labels were overlaid on the original aerial photographs. Each polygon was individually inspected by a person not directly involved in the original mapping to make sure that the line work followed the vegetation feature properly, and that the CEGLE codes were consistent with spectral signature. Edits were marked on the hardcopy maps and then applied to the database within ArcGIS. This review process was repeated to ensure completeness.

Additional editing and refinement was performed as necessary using information collected during the field surveys.

Final Vegetation Mapping and Summary Statistics

A total of 23 distinct NVCS CEGL association level vegetation communities were found in Horseshoe Bend NMP (Figure 5). One CEGL code, Cultivated Meadow (4048), was not provided in the classification key but was found at the park. Two non-CEGL codes, Water (9998) and Human Influence (9999), were also used. Additionally, two classes were combined (72461 represents 7244—Southern Red Oak—White Oak Mixed Forest and 7261—Lower Piedmont Chestnut Oak Forest). For more information see the Accuracy Assessment section.

In the buffer zone, there were 12 distinct Anderson Level II codes (Table 4). Both the park and buffer area were further classified using modifiers (Table 8). These modifiers were generated by the University of Georgia Center for Geospatial Research to provide additional information regarding species content or areas with a large human influence.

Table 8. Modifiers used throughout the park and buffer areas, including frequency of occurrence, mean area, and total area [ha—hectare].

Code	Description	Frequency	Mean Area (ha)	Total Area (ha)
CLt	Contains Liriodendron tulipifera	3	11.9	35.8
CQf	Contains Quercus falcata	1	2.1	2.1
Cul	Cultivated	1	0.8	0.8
DPs	Dominated by Pinus spp	1	12.5	12.5
DQn	Dominated by Quercus nigra	2	1.3	2.6
DQnFp	Dominated by Quercus nigra and Fraxinus americana	1	7.9	7.9
PBB	Pine Bark Beetle	3	1.5	4.6
Total	–	12	–	66.3



Final Vegetation Map

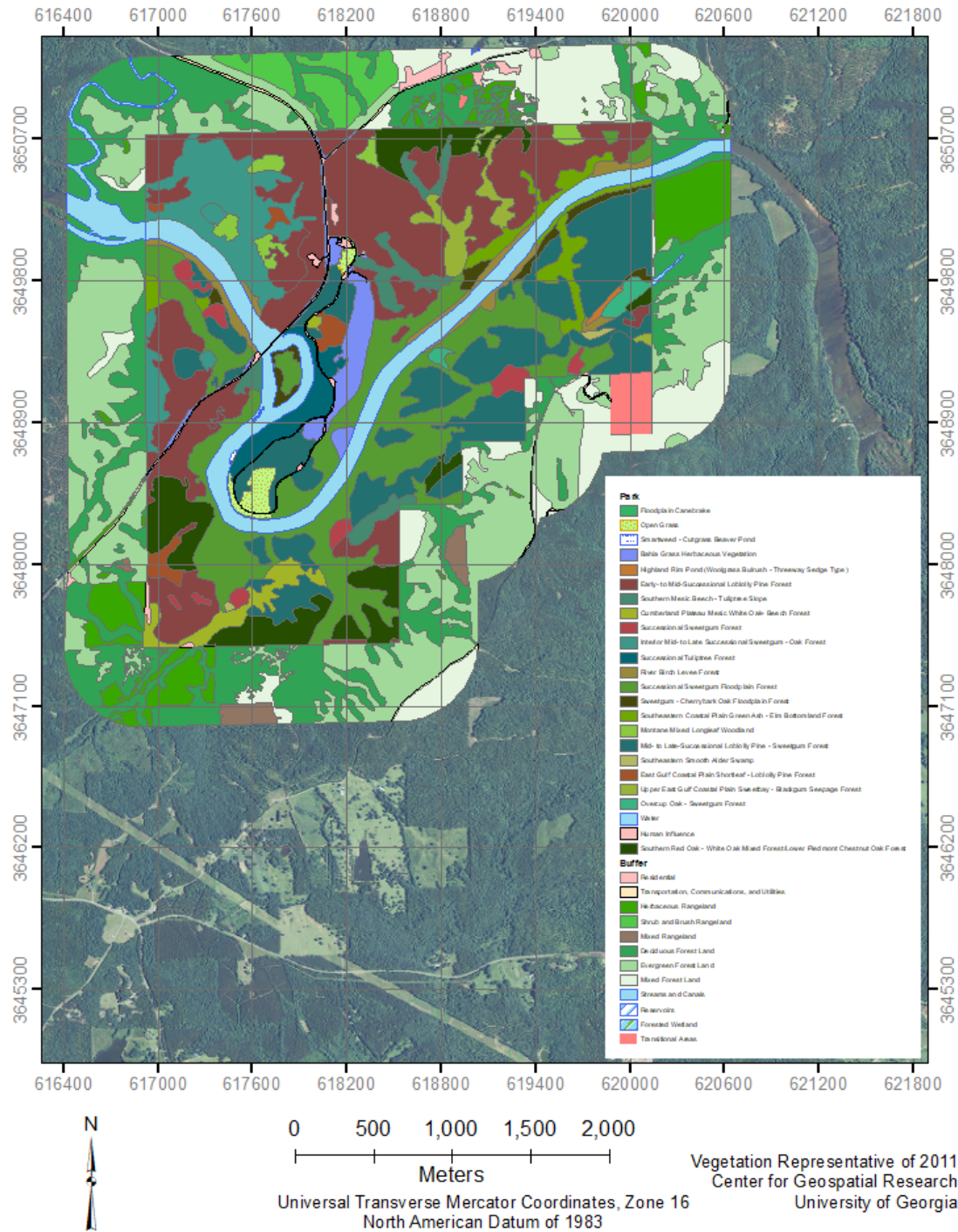


Figure 5. Vegetation map of the main section of Horseshoe Bend National Military Park.

The most common class found in Horseshoe Bend NMP is Early- to Mid-Successional Loblolly Pine Forest (6011) covering 24% of the park (Figure 6). This class combined with the second and third most common classes, Successional Sweetgum Floodplain Forest and Mid- to Late-Successional Loblolly Pine - Sweetgum Forest respectively, covers 57% of the park's 829 hectares. The smallest class in the park that is larger than one half hectare is Highland Rim Pond (Woolgrass Bulrush—Threeway Sedge Type; 4719) which covers roughly one hectare. There are two classes, Smartweed—Cutgrass Beaver Pond (4290) and Floodplain Canebrake (3836), that occur in the park but the area they cover is less than the minimum mapping unit. These areas were delineated and given their own polygons because they were identified by NatureServe vegetation plots.

Outside the park, the two most common classes are Evergreen Forest Land (42) and Deciduous Forest Land (41) which covers 35 percent and 31 percent of the buffer area respectively (Figure 7). These two classes cover two-thirds of the buffer area. Four classes—Transportation, Communications, and Utilities (14), Residential (11), Forested Wetland (61), Reservoirs (53)—each cover less than one percent of the buffer area.

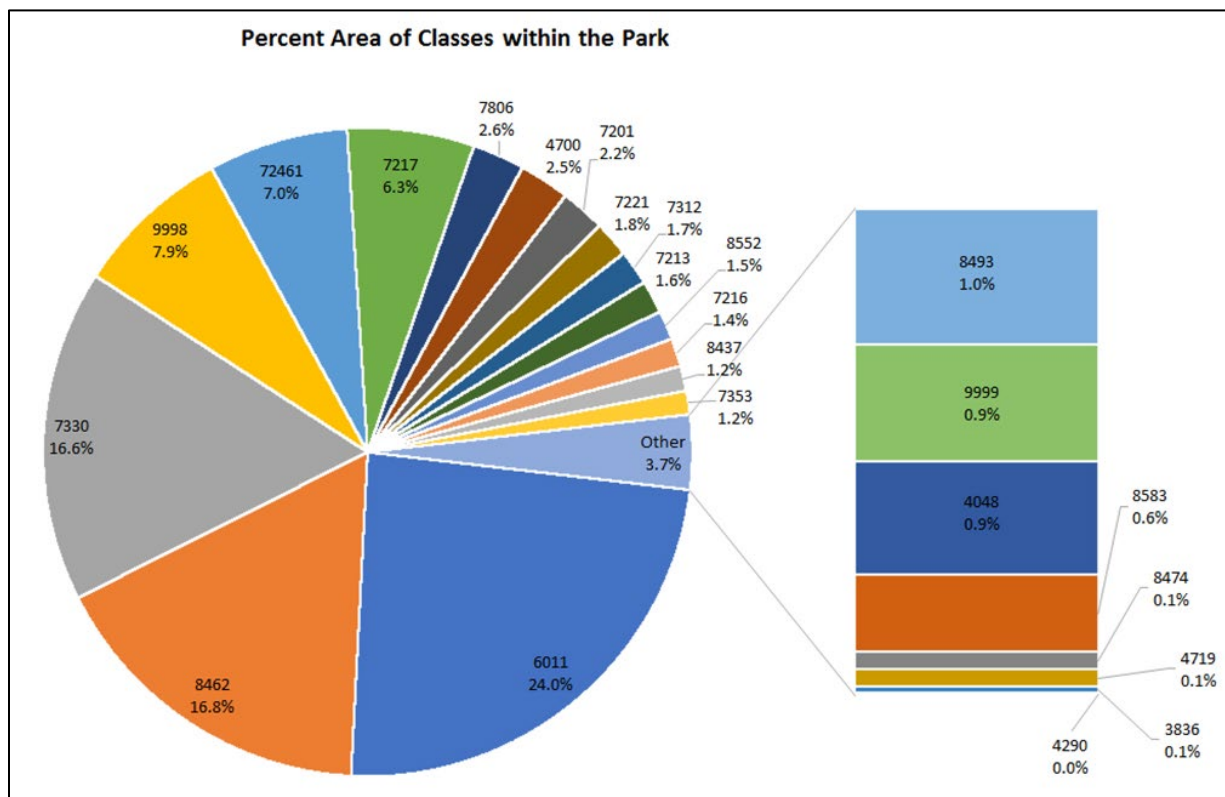


Figure 6. Park vegetation classes organized by relative size.

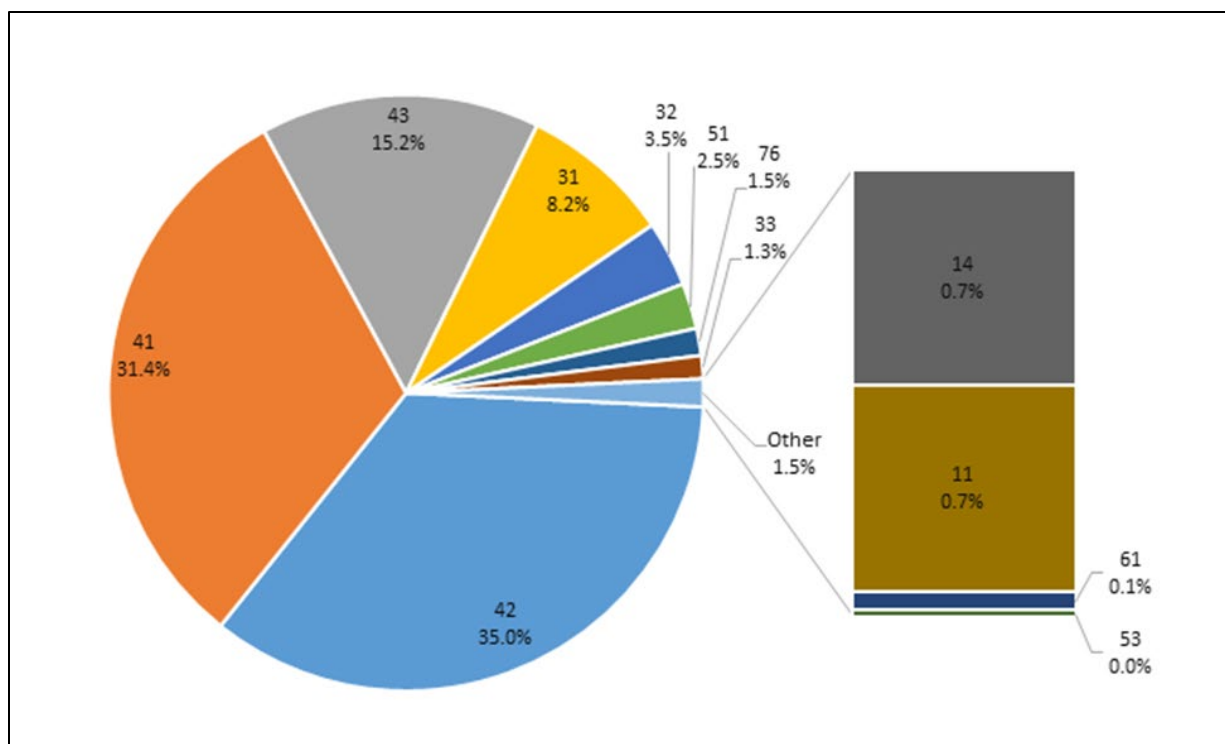


Figure 7. Buffer classes organized by relative size found in Horseshoe Bend National Military Park.

Accuracy Assessment

Point Selection

As a part of the total mapping effort, a separate accuracy analysis of the thematic contents of the vegetation maps is required. Only classes with CEGLE codes assigned and only polygons that fall within the prescribed park boundary are evaluated. To accomplish this, a set of points is selected to represent the distribution and rarity of the mapped vegetation classes. The number of accuracy assessment (AA) sample points per class depends on the total area (in hectares) of the particular vegetation class within the map area, according to the rule set established by the NPS for this purpose (Lea and Curtis 2010):

- Classes with < 8.33 ha
 - 5 points per class
- Classes with ≥ 8.33 AND < 50 ha
 - number of points is $0.6 \times$ the area in ha
- Classes with ≥ 50 ha
 - 30 points per class

Protocol dictates that the points be randomly distributed and stratified by class. For example, if 30 points are required for a particular class, those 30 points should be randomly distributed within all of the polygons of that particular class. The distribution of classes, the number of polygons, and the areas of each class was given in Table 1.

Point Acquisition

The Accuracy Assessment plots were collected in May 18–21, June 6–16, and June 22–26, 2015 by Ben Cogdell, Brad Rosenblatt, Matt Thomas, and Jeremy Schmid. Figure 8 shows the locations of these plots and Appendix D has the detailed information gathered at each of the 222 half-hectare (1.2 ac) plot locations.

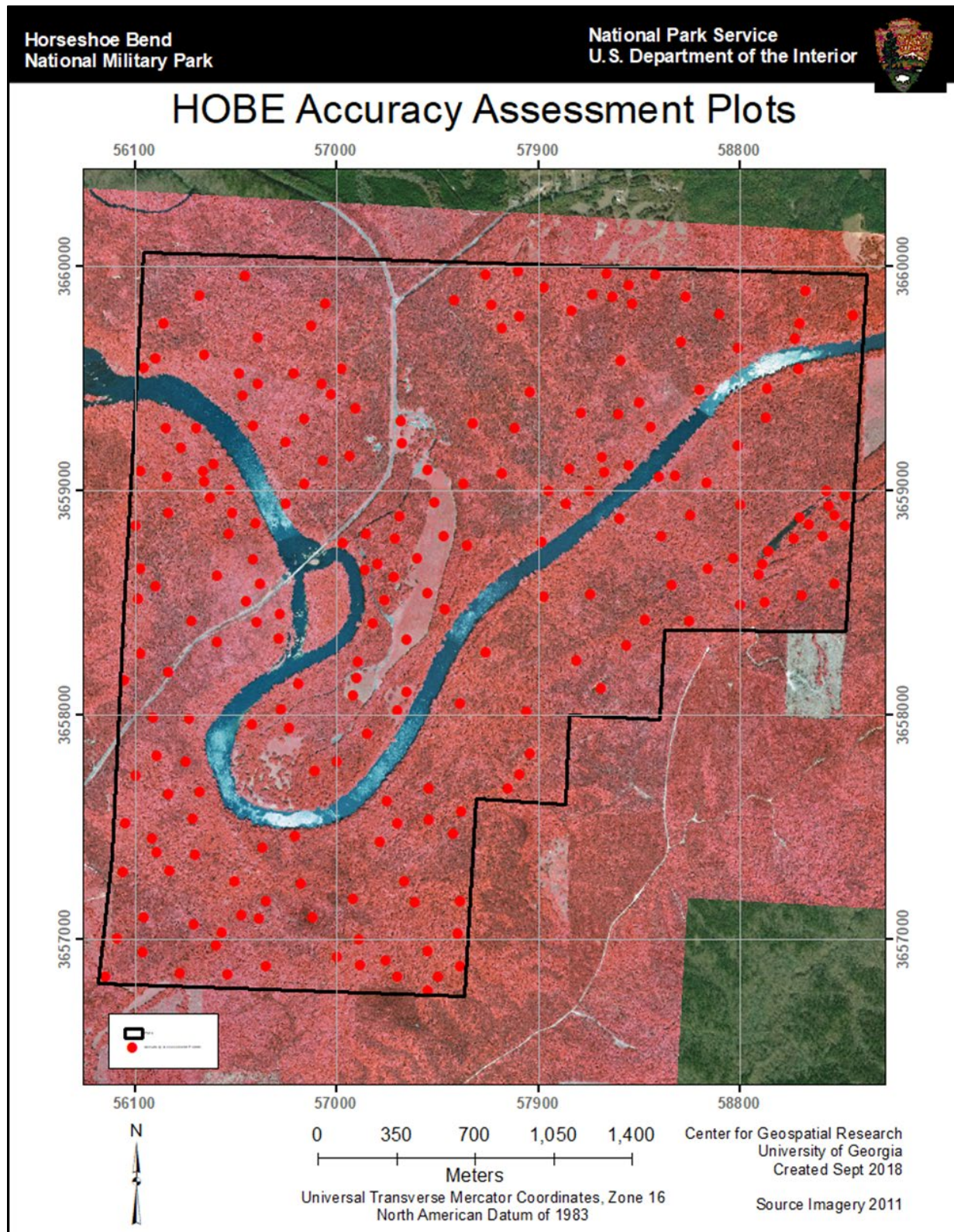


Figure 8. Accuracy Assessment data collection locations from Horseshoe Bend National Military Park overlaid on visual image

Accuracy of Vegetation Map

Once the accuracy assessment plot data were received they were overlaid on top of the draft vegetation maps to determine the accuracy of the map. This process entailed determining whether predicted vegetation classes matched observed accuracy assessment plots. To ensure the most accurate assessment was made, numerous factors had to be considered to determine if the accuracy assessment plots were placed in locations representative of their polygons. Plots that were deemed unrepresentative of the polygons in question were removed from the final analysis. The different quality assurance and quality control (QA/QC) categories are presented in Table 9, and the final accuracy assessment is presented in the next section (Quality Assurance of AA Plots) in Table 10a–b.

Table 9. Breakdown of how the AA plots are related to the vegetation polygons and 2011 imagery.

Type	Code	Number	Status for Final Analysis
Perfect match – primary codes matched	M1	59	Retained
Primary-Secondary code match	M1a	17	Retained
Secondary-Secondary code match	M1b	2	Retained
Temporal change – changes since images were acquired	M2	3	Retained
Key discrepancies – disagreements, with nearby NatureServe vegetation plot	M3a	19	Kicked out
Key discrepancies – disagreements with imagery	M3b	9	Kicked out
Incorrect Match	M5	53	Retained
Changed polygon	M6	22	Retained (7 polygons adjusted, 12 polygons with merged classes)
Non-existing class – Code used in AA plot did not have NatureServe plot	N1	7	Kicked out
Poor fit as deemed by AA field observations	P1	2	Kicked out
Spatial Error – plots were too close to boundaries	S1	20	Retained
Spatial Error – plots were within an ecotone	S1e	9	Kicked out
Total	–	222	176 used for analysis

Quality Assurance of AA Plots

Each point was given a primary CEGL Code and an optional secondary CEGL Code created by the Cogdell et al. field team. To attribute each polygon the University of Georgia Center for Geospatial Research (CGR) team created a Vegetation Code and an optional secondary Vegetation Code. Not all points had a secondary CEGL Code or alternate Vegetation Code. The AA plots were divided into 10 categories to better understand issues regarding representativeness of accuracy assessment plot locations within Horseshoe Bend NMP (Table 10): “perfect match” (M1) if AA plots were assigned

the same CEGL code as the polygon that they fell in, if a secondary class determined by photo interpretation method matched the accuracy assessment plot (M1a), if a secondary class determined by photo interpretation method matched the secondary class of the accuracy assessment plot (M1b), if successional areas influenced the AA plot since the imagery and AA points differed by four years (M2), if the AA plot description greatly differed from an overlapping NatureServe plot (M3a), or if the AA plot description greatly differed from the imagery (M3b), if the AA plot used a polygon of a nonexistent a CEGL code from the initial NatureServe survey (N1), if the AA plot was labeled as a “poor fit” by the AA field observations (P1), if the plot was within 20 meters (65.6 ft) of a polygon boundary (S1), and if the plot was in an area smaller than the minimum mapping unit (MMU) and represented and ecotone of adjacent polygons (S1e).

The 59 M1 points out of the 222 total AA plots means that the Primary code in both the AA plot and the polygon matched one to one. The secondary matches were divided into two separate classes based on if the AA plot and vegetation polygon matched primary to secondary (M1a—17) or if the AA plot and vegetation polygon matched secondary to secondary (M1ba—2). There were a few locations that showed only emergent vegetation when the imagery was acquired yet during the accuracy assessment there was a well-developed short canopy, thus causing a class discrepancy. These temporal mismatches were labeled M2 which occurred three times in the park. Additionally, there were 20 points labeled as spatial errors. These S1 points were adjusted to reflect the nearby polygon they overlapped.

The AA plot locations were randomly selected within a given polygon, therefore, there was no guarantee that they landed in a location representative of either the polygon or of the plant associations included within the polygon’s map unit. For example, an AA plot could easily land in a small gully, an inclusion that is too small to map, i.e. less than the minimum mapping unit (0.5 hectare [1.2 ac]), or an ecotone where trees are invading a shrub land. To account for these situations, field observers were tasked with determining not only the vegetation within the AA sample area, but the surrounding area as well. An AA plot would be deemed a poor fit (P1) in cases where the assigned AA location was not easily classified by one of the designated vegetation classes. These instances included AA plots that fell inside of an ecotone or inclusion, or in an anomalous situation such as in a gully or sandy area (McManamay et al. 2012).

The AA plots labeled as non-existing class refer to those plots that used a CEGL code that was not surveyed in the initial NatureServe assessment. If an AA plot used one of these codes they were deemed non-existing class (N1) and those seven plots were not included in the final accuracy assessment.

The AA plots that were found to overlap ecotones between polygons or were within an area smaller than MMU were labeled “spatial mismatch” (S1e). Plots that fall in these regions are difficult to classify and can be easily misinterpreted therefore those nine points were removed accordingly.

Discrepancies between what could be seen from an aerial perspective versus the ground perspective were also considered, in addition to plot locations that disagreed with a nearby NatureServe (within 40 meters [131.2 ft]) vegetation plot. These AA plots were labeled “key mismatches” (M3a and

M3b). Those 19 M3a instances were removed since there were disagreements from overlapping vegetation plots. Additionally, there were nine M3b instances removed where the descriptors used in the AA plot greatly disagreed with the aerial imagery. For instance, AA plot 128 was labeled 6011 - Early- to Mid-Successional Loblolly Pine Forest, but the imagery was greatly lacking pines in that polygon.

Finally, to ensure the most effective map was created, seven polygons were adjusted based on the new information provided by the AA plots. In addition, the new data showed the need to merge two classes 7244 (Southern Red Oak—White Oak Mixed Forest) and 7261 (Lower Piedmont Chestnut Oak Forest) into a new class labeled 72461 due to the similarity in the spectral signature. This merger resulted in 12 polygons changed to reflect this new class. Overall 22 AA points were affected by these polygon adjustments.

Overall, 46 AA points were removed (M3a, M3b, P1, and S1e) based on the points lying in locations that were deemed unrepresentative of the polygon or imagery from 2011. This left 167 AA points that were used to assess the map based on the 2011 imagery. The confusion matrix for the park is shown in Table 10a–b with the overall confusion matrix showing 69% accuracy and a kappa rating of 66%.

Table 10a. Confusion matrix for the accuracy assessment. The rows are the expected vegetation class as predicted by the photo interpretation conducted by the UGA Center for Geospatial Research, and the columns are the observed vegetation class at the AA point.

Vegetation Class	4700	4719	6011	7201	7213	7216	7217	7312	7330	7353	7806	8437	8462	8474	8493	8552	8583	72461	Total
4700	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
4719	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
6011	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
7201	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	4
72132	0	0	0	1	8	0	0	0	3	0	0	0	0	0	0	0	0	0	11
7216	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3
7217	0	0	0	1	1	0	5	0	1	0	0	0	1	0	0	0	0	7	16
7312	0	0	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	8
7330	0	0	0	0	0	0	0	2	13	5	1	0	1	0	0	1	1	2	28
7353	0	0	0	0	0	0	0	0	1	5	0	0	0	0	0	0	0	0	6
7806	0	0	0	0	0	0	1	0	5	0	2	1	2	0	0	0	0	0	11
8437	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	4
8462	0	0	1	0	0	0	0	0	0	0	0	0	10	0	0	1	0	0	12
8474	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
8493	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
8552	0	0	0	0	2	0	0	0	0	0	0	1	1	0	0	0	0	1	5
8583	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
72461	0	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	25	28
Total	13	2	19	2	11	4	11	6	26	10	3	8	15	2	1	2	5	36	176

Table 10b. Accuracy and error for the confusion matrix. Overall accuracy is 69. Kappa is 66.

Accuracy / error type	4700	4719	6011	7201	7213	7216	7217	7312	7330	7353	7806	8437	8462	8474	8493	8552	8583	72461
Producer Accuracy	100 ^a	100 ^a	95 ^a	50 ^b	73 ^a	75 ^a	45 ^b	100 ^a	50 ^b	50 ^b	67 ^b	50 ^b	67 ^b	100 ^a	100 ^a	0 ^b	80 ^a	69 ^b
Omission Error	0	0	5	50	27	25	55	0	50	50	33	50	33	0	0	100	20	31
User Accuracy	100 ^a	100 ^a	100 ^a	25 ^b	73 ^a	100 ^a	31 ^b	75 ^a	46 ^b	83 ^a	18 ^b	100 ^a	83 ^a	100 ^a	100 ^a	0 ^b	100 ^a	89 ^a
Commission Error	0	0	0	75	27	0	69	25	54	17	82	0	17	0	0	100	0	11

^a Green represents accuracy greater than or equal to 70%

^b Red represents accuracy less than 70%

Potential Improvements

During the analysis of this park a few key issues were identified that could increase the efficiency and effectiveness of this process. These issues, which will be described in more detail below, involve supplying the AA companies with more data, including the imagery used for photointerpretation, polygon boundaries, and NatureServe plots.

The largest errors associated with the AA plots in Horseshoe Bend NMP were based on key discrepancies. Accuracy assessors should have access to the Nature Serve Plot locations and information, so they can better understand the system the photo interpretation was based upon. There are a few instances in every park that have a Nature Serve and AA point within 40 meters (131.2 ft) of each other that assign conflicting classes. There were 19 points removed due to the AA points disagreeing with nearby, less than 50 meters (164 ft), vegetation plots (M3a).

Finally, if the AA companies were provided digital copies of the aerial photographs in GeoPDF form then they could see the vegetation over from an aerial perspective, thus providing a broader context of the area in question. Using the GeoPDF, blank polygon files could be provided to reduce errors caused by AA points that are within 20 meters, or often less, to a polygon boundary. These areas are very difficult to classify and typically represent a very gradual change between vegetation classes that could span tens of meters. Thus, it is very difficult to accurately assign a classification to them. By utilizing this technique even more errors can be reduced: 18 of 222 (M3b and S1e) for Horseshoe Bend NMP were attributed to these errors.

Overall using these simple additions up to 17% more points could have been used in the accuracy assessment of the park.

Conclusion

Most of (88%) of Horseshoe Bend NMP is forested; much of the area (66% of total area) is successional forest classes. The Tallapoosa River is 8% of park area. The most common NVCS vegetation association within the park boundary is Early-to Mid-Successional Loblolly Pine Forest (6011) which covers 23% of the park. There is no vegetation association dominated by exotic species, and it was rarely necessary to use a modifier necessary to denote the presence of exotics. While pine associations were dominant, there was little current evidence of pine bark beetle. The use of controlled burns and maintaining the easement surrounding the park boundary has helped maintain the biological integrity of native plant communities.

In the 500-meter (1,640-ft) buffer zone surrounding the park, 81% is forested, with Evergreen Forest Land being the most common land cover (35%). There is a small component of rangeland (12%), which depending upon location and actual use, may influence water quality. Less than 3% of the buffer zone is high intensity anthropogenic land-uses.

Producing an accurate vegetation map based on color infrared imagery is a lengthy process and can take three to seven years to complete. During this time, disturbances may change some areas significantly. As a result, conclusions made from ground observations that were conducted during the middle or end of the overall process may be different from conclusions made from interpreting aerial photographs that were collected at the onset of the project.

Literature Cited

- Anderson, J. R., E. E. Hardy, J. T. Roach, and R. E. Witmer. 1976. A land use and land cover classification system for use with remote sensor data. Geological Survey Professional Paper 964. U.S. Government Printing Office, Washington, D.C., USA.
- Anderson, M., P. Bourgeron, M. Bryer, R. Crawford, L. Engelking, D. Faber-Langendoen, M. Gallyoun, K. Goodin, D. Grossman, and S. Landaal. 1998. International classification of ecological communities: Terrestrial vegetation of the United States. Volume II. The National Vegetation Classification System: List of types. The Nature Conservancy, Arlington, Virginia, USA.
- Fancy, S. G., J. E. Gross, and S. L. Carter. 2009. Monitoring the condition of natural resources in US national parks. *Environmental Monitoring and Assessment* 151:161-174.
- Grossman, D. H., D. Faber-Langendoen, A. S. Weakley, M. Anderson, P. Bourgeron, Crawford, K. Goodin, S. Landaal, K. Metzler, K. Patterson, M. Pyne, M. Reid, and L. Sneddon. 1998. International classification of ecological communities: Terrestrial vegetation of the United States. Volume I. The National Vegetation Classification System: Development, status, and applications. The Nature Conservancy, Arlington, Virginia, USA.
- Grossman, D. H., K. L. Goodin, and C. L. Reuss, editors. 1994. Rare plant communities of the conterminous United States: An initial survey. The Nature Conservancy, Arlington, Virginia, USA.
- Jennings, M. D., D. Faber-Langendoen, O. L. Loucks, R. K. Peet, and D. Roberts. 2009. Standards for associations and alliances of the U.S. National Vegetation Classification. *Ecological Monographs* 79(2):173-199.
- Lea, C., and A. C. Curtis. 2010. Thematic accuracy assessment procedures: National Park Service Vegetation Inventory, version 2.0. Natural Resource Report NPS/2010/NRR—2010/204.
- Martin, T. W. 1960. The Story of Horseshoe Bend National Military Park.
- McManamay, R. H., S. L. Corbett, and A. C. Curtis. 2019. Field procedures for vegetation mapping accuracy assessment: Cape Lookout National Seashore and Cape Hatteras National Seashore—Version 1.0. Standard Operating Procedure. NPS/SECN/SOP—1.4.17. Southeast Coast Network, Athens, Georgia. Available at: <https://irma.nps.gov/DataStore/Reference/Profile/2266071> (last accessed September 2019).
- NatureServe. 2009. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Associations and Alliances of Horseshoe Bend National Military Park. NatureServe, Arlington, Virginia, USA.
- National Park Service (NPS). 2015. Vegetation inventory. NPS Inventory and Monitoring. Available at: <https://www.nps.gov/im/vegetation-inventory.htm> (last accessed July 2019).

- National Park Service (NPS). 2018a. NPS Inventory and Monitoring. Available at: <https://www.nps.gov/im/about.htm> (last accessed July 2019).
- National Park Service (NPS). 2018b. NPS Southeast Coast Inventory & Monitoring Network. Available at: <https://www.nps.gov/im/secn/index.htm> (last accessed July 2019).
- Pardue, J. 2008. The GeoPDF file; a new solution for the digital publication, distribution, and collaboration of geospatial data. 30 pages. U. S. Geological Survey, Reston, VA, USA.
- Schmoldt, D. L., D. L. Peterson, and D. G. Silsbee. 1994. Developing inventory and monitoring programs based on multiple objectives. *Environmental Management* 18(5):707-727.
- UNESCO. 1973. International Classification and Mapping of Vegetation. Series 6. Ecology and conservation. United Nations Educational, Scientific, and Cultural Organization, Paris, France.
- Wuthrich, D. 2006. Data sharing with GeoPDFs. *Geospatial Solutions* 16:34-35.

Appendix A. Photointerpretation Key

The photointerpretation key describes the attributes of the color infrared (CIR) images used to delineate the vegetation association CEGL codes found within the park. For each CEGL, a CIR image chip from within the park is included. For most CEGL codes, we also included a ground based digital photo of the vegetation, taken within the park. The standard visual cues to interpret and distinguish vegetation are described, including color, tone, texture, and pattern. When applicable, we also include comments on location within the park or topographic position. If there were other vegetation associations within the park that appeared similar on the CIR photographs, traits used to distinguish between similar vegetation associations are described.

The Vegetation Description for the CEGL codes within the park was copied directly from NatureServe (2009) to provide plot level information on species composition, dominance, characteristic species, and percent estimate of vegetation cover in understory, midstory, or canopy. It also includes the Global Description and geographic distribution. A separate literature cited section of the references from NatureServe (2009) text that was directly copied into the photointerpretation key is included at the end of this appendix.

Mid to Late Successional Loblolly Pine Sweetgum Forest

Attributes, descriptions, a photo, and a map are shown in Table A-1 and Figures A-1 and A-2.

Table A-1. Attributes and Descriptions for Mid to Late Successional Loblolly Pine Sweetgum Forest.

Attributes	Descriptions
CEGL Code	8462
Color	Pink to Red
Tone	Medium to Dark
Texture	Coarse
Pattern	Moderate to Dense
Height	Tall
Shape	Expansive broad areas
Size	Common class. Third largest in area.
Location	Pine dominated forest found on slopes or ridge tops that are never flooded.
Association	7330, 7261, and 7213
Comments	Easily distinguishable from deciduous classes.



Figure A-1. Example of Mid to Late Successional loblolly Pine Sweetgum Forest (3643).



Figure A-2. Map showing Mid to Late Successional loblolly Pine Sweetgum Forest (3643).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate to dense (40–80% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated by *Liquidambar styraciflua* (sweetgum) and *Pinus taeda* (loblolly pine); additional canopy species may include *Quercus falcata* (southern red oak) and more commonly *Quercus nigra* (water oak). The sparse to moderately dense (30–70%) subcanopy (10–20 meters [32.8–65.6 ft]) is dominated by *Liquidambar styraciflua* (sweetgum) and may include other canopy species as well as *Acer rubrum* (red maple), *Prunus serotina* (black cherry), and *Quercus stellata* (post oak). The sparse to moderately dense (30–70%) tall-shrub layer (2–10 meters [6.6–32.8 ft]) is also dominated by *Liquidambar styraciflua* (sweetgum) along with *Cornus florida* (flowering dogwood) and saplings of

the above-mentioned tree species along with other hardwood species. The sparse (30–40%) short-shrub layer (1–5 meters [3.3–16.4 ft]) includes species from the upper layers and may include *Asimina parviflora* (smallflower pawpaw), *Callicarpa americana* (American beautyberry), *Diospyros virginiana* (common persimmon), *Fagus grandifolia* (American beech), *Ostrya virginiana* (hophornbeam), *Vaccinium arboreum* (farkleberry), and *Vaccinium elliotii* (Elliott's blueberry). The very sparse to moderately dense (10–70%) herbaceous layer includes *Carex debilis* (white edge sedge), *Centrosema virginianum* (spurred butterfly pea), *Chasmanthium sessiliflorum* (longleaf woodoats), *Clitoria mariana* (Atlantic pigeonwings), *Dichanthelium commutatum* (variable panicgrass), and *Polystichum acrostichoides* (Christmas fern), among others. Common vines (20–50%) include *Gelsemium sempervirens* (evening trumpetflower), *Smilax glauca* (cat greenbrier), *Toxicodendron radicans* (eastern poison ivy), *Vitis rotundifolia* (muscadine), and *Lonicera japonica* (Japanese honeysuckle) (exotic).

Global Vegetation

Stands of this community type are strongly codominated by *Pinus taeda* (loblolly pine) and *Liquidambar styraciflua* (sweetgum). Some other species which may be present in stands of this association include *Quercus phellos* (willow oak), *Quercus nigra* (water oak), *Ulmus alata* (winged elm), *Acer rubrum* (red maple), *Quercus michauxii* (swamp chestnut oak), *Nyssa sylvatica* (blackgum), and *Prunus serotina* (black cherry), along with *Vitis rotundifolia* (muscadine), *Toxicodendron radicans* (eastern poison ivy), *Rubus argutus* (sawtooth blackberry), *Smilax rotundifolia* (roundleaf greenbrier), *Eupatorium capillifolium* (dogfennel), *Eupatorium hyssopifolium* (hyssopleaf thoroughwort), *Erigeron strigosus* (prairie fleabane), *Solidago gigantea* (giant goldenrod), *Ambrosia artemisiifolia* (annual ragweed), *Juncus effusus* (common rush), *Juncus subcaudatus* (woodland rush), and the exotics *Lespedeza cuneata* (Chinese lespedeza) and *Ligustrum sinense* (Chinese privet). Examples of this association in low-lying areas may also have a dense herbaceous layer of *Microstegium vimineum* (Nepalese browntop).

Early- to Mid-Successional Loblolly Pine Forest (6011)

Attributes, descriptions, a photo, and a map are shown in Table A-2 and Figures A-3 and A-4.

Table A-2. Attributes and Descriptions for Early- to Mid-Successional Loblolly Pine Forest (6011).

Attributes	Descriptions
CEGL code	6011
Color	Pink to Red
Tone	Dark
Texture	Coarse
Pattern	Moderate to dense
Height	Tall
Shape	Expansive broad areas.

Table A-2 (continued). Attributes and Descriptions for Early- to Mid-Successional Loblolly Pine Forest (6011).

Attributes	Descriptions
Size	Largest class. Represents roughly 23% of the park
Location	Gently to moderate, south and north facing slopes.
Association	7201, 8552, 8437, 7217, and 7806
Comments	Easily distinguishable from deciduous classes.



Figure A-3. Example of Early- to Mid-Successional Loblolly Pine Forest (6011).



Figure A-4. Map showing Early- to Mid-Successional Loblolly Pine Forest (6011).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate (40–60% cover) tree canopy, 20–35 meters (65.6–114.8) tall, is dominated by *Pinus taeda* (loblolly pine). The moderate to dense (40–80%) subcanopy (5–15 meters [16.4–49.2 ft]) may include *Cornus florida* (flowering dogwood), *Fagus grandifolia* (American beech), *Liquidambar styraciflua* (sweetgum), *Oxydendrum arboreum* (sourwood), and *Pinus taeda* (loblolly pine), among others. The moderately sparse (30–40%) tall-shrub layer (2–10 meters [6.6–32.8 ft]) is made up of saplings of trees from the upper layers, as is the sparse (20–30%) short-shrub layer (0.5–2 meters [1.6–6.6 ft]) which likely also includes *Vaccinium arboreum* (farkleberry). The very sparse (10–20%) herbaceous layer includes *Chasmanthium sessiliflorum* (longleaf woodoats), *Elephantopus tomentosus* (devil's grandmother), and *Saccharum brevibarbe* var. *contortum* (shortbeard plumegrass), among others. The most common vine (10–20%) is *Vitis rotundifolia* (muscadine).

Global Vegetation

The tree canopy of *Pinus taeda* (loblolly pine) is at least 60% but may be considerably denser, up to and including closed canopies. Tree subcanopy density varies with stand disturbance history but generally is less than 50%. Shrub and herb layer coverages do not exceed 25% and decrease with increasing age of the stand. Other species of pine, especially *Pinus echinata* (shortleaf pine) and *Pinus virginiana* (Virginia pine) may be sparingly present in the canopy. Other species that may be present in the subcanopy in addition to *Liquidambar styraciflua* (sweetgum) and *Acer rubrum* var. *rubrum* (red maple) include *Quercus coccinea* (scarlet oak), *Quercus velutina* (black oak), *Quercus alba* (white oak), *Quercus falcata* (southern red oak), *Nyssa sylvatica* (blackgum), *Carya glabra* (pignut hickory), *Carya alba* (mockernut hickory), *Diospyros virginiana* (common persimmon), *Prunus serotina* (black cherry), *Cornus florida* (flowering dogwood), *Liriodendron tulipifera* (tuliptree), and *Sassafras albidum* (sassafras) (NatureServe Ecology unpubl. data). Other species in addition to *Vaccinium stamineum* (deerberry) that may be present in the shrub stratum include *Juniperus virginiana* (eastern redcedar), *Vaccinium arboreum* (farkleberry), *Rhus copallinum* (flameleaf sumac), *Gaylussacia baccata* (black huckleberry), *Callicarpa americana* (American beautyberry), and probably others. The herbaceous layer usually forms <5% cover and contains such species as *Gelsemium sempervirens* (evening trumpetflower), *Chimaphila maculata* (striped prince's pine), *Polystichum acrostichoides* (Christmas fern), and *Potentilla canadensis* (dwarf cinquefoil). An example from Oconee National Forest has a thinned canopy and grassy herbaceous layer.

Southern Mesic Beech-Tuliptree Slope (7201)

Attributes, descriptions, a photo, and a map are shown in Table A-3 and Figures A-5 and A-6.

Table A-3. Attributes and Descriptions for Southern Mesic Beech-Tuliptree Slope (7201).

Attributes	Descriptions
CEGL code	7201
Color	Pink to Light Red
Tone	Light to Medium

Table A-3 (continued). Attributes and Descriptions for Southern Mesic Beech-Tuliptree Slope (7201).

Attributes	Descriptions
Texture	Coarse
Pattern	Dense
Height	Tall
Shape	Irregular
Size	Represents between two and eight percent of park
Location	Typically along a drainage networks and on north side of slopes.
Association	6011 and 8462
Comments	–



Figure A-5. Example of Southern Mesic Beech-Tuliptree Slope (7201).

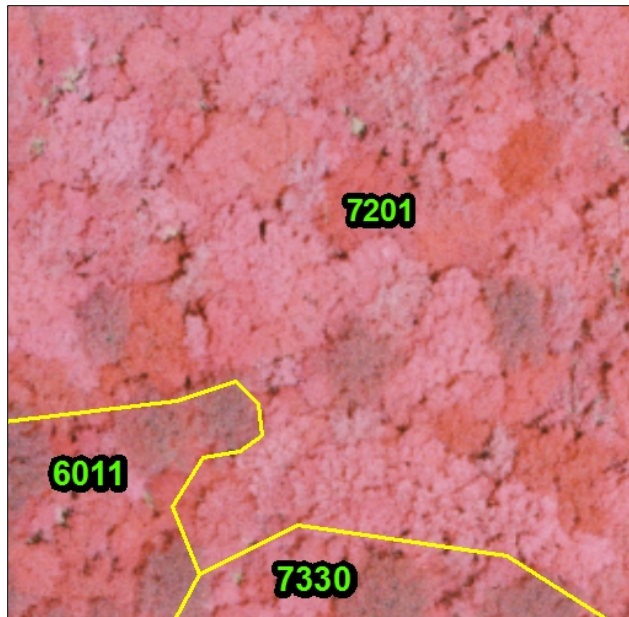


Figure A-6. Map showing Southern Mesic Beech-Tuliptree Slope (7201).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate (60% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated by *Fagus grandifolia* (American beech) along with *Liquidambar styraciflua* (sweetgum), *Liriodendron tulipifera* (tuliptree), *Quercus rubra* (northern red oak), and *Ulmus alata* (winged elm). The moderate (50%) subcanopy (10–15 meters [32.8–49.2 ft]) includes *Fagus grandifolia* (American beech) and *Oxydendrum arboreum* (sourwood). The moderate (50%) tall-shrub layer (2–5 meters [6.6–16.4 ft]) is also dominated by *Fagus grandifolia* (American beech) along with lesser amounts of *Carpinus caroliniana* (American hornbeam), *Hamamelis virginiana* (American witchhazel), *Liquidambar styraciflua* (sweetgum), and *Rhododendron canescens* (mountain azalea). The moderate (50%) short-shrub layer (1–2 meters [3.3–6.6 ft]) is dominated by *Acer barbatum* (southern sugar maple) and includes *Asimina parviflora* (smallflower pawpaw), *Callicarpa americana* (American beautyberry), and *Vaccinium elliotii* (Elliott's blueberry). The sparse (20%) herbaceous layer includes *Chasmanthium sessiliflorum* (longleaf woodoats), *Epifagus virginiana* (beechdrops), *Hexastylis arifolia* var. *arifolia* (littlebrownjug), *Mitchella repens* (partridgeberry), *Polystichum acrostichoides* (Christmas fern), and *Scleria oligantha* (littlehead nutrush). Vines (40%) include *Decumaria barbara* (woodvamp), *Smilax rotundifolia* (roundleaf greenbrier), and *Vitis rotundifolia* (muscadine).

Global Vegetation

These mesic slope forests are dominated by *Fagus grandifolia* (American beech) and *Liriodendron tulipifera* (tuliptree). According to Golden (1979), other important canopy/subcanopy species include *Acer rubrum* (red maple), *Liquidambar styraciflua* (sweetgum), *Fraxinus americana* (white ash), *Quercus rubra* (northern red oak), *Carpinus caroliniana* (American hornbeam), *Magnolia virginiana* (sweetbay), *Nyssa sylvatica* (blackgum), *Diospyros virginiana* (common persimmon), *Oxydendrum arboreum* (sourwood), and *Cornus florida* (flowering dogwood). Shrubs and woody vines include

Decumaria barbara (woodvamp), *Euonymus americanus* (strawberry bush), *Rhododendron canescens* (mountain azalea), *Toxicodendron radicans* (eastern poison ivy), *Vitis rotundifolia* (muscadine), *Smilax glauca* (cat greenbrier), and the exotic *Lonicera japonica* (Japanese honeysuckle). Important herbs include *Athyrium filix-femina ssp. asplenoides* (asplenium ladyfern), *Polystichum acrostichoides* (Christmas fern), *Woodwardia areolata* (netted chainfern), *Osmunda cinnamomea* (cinnamon fern), *Mitchella repens* (partridgeberry), and *Hexastylis arifolia* (littlebrownjug).

Cumberland Plateau Mesic White Oak-Beech Forest (7213)

Attributes, descriptions, and a map are shown in Table A-4 and Figure A-7.

Table A-4. Attributes and Descriptions for Cumberland Plateau Mesic White Oak-Beech Forest (7213).

Attributes	Descriptions
CEGL code	7213
Color	Pink to Red
Tone	Light
Texture	Coarse
Pattern	Dense
Height	Tall
Shape	Irregular
Size	Represents less than two percent of the park
Location	–
Association	6011, 8462, and 7261
Comments	–

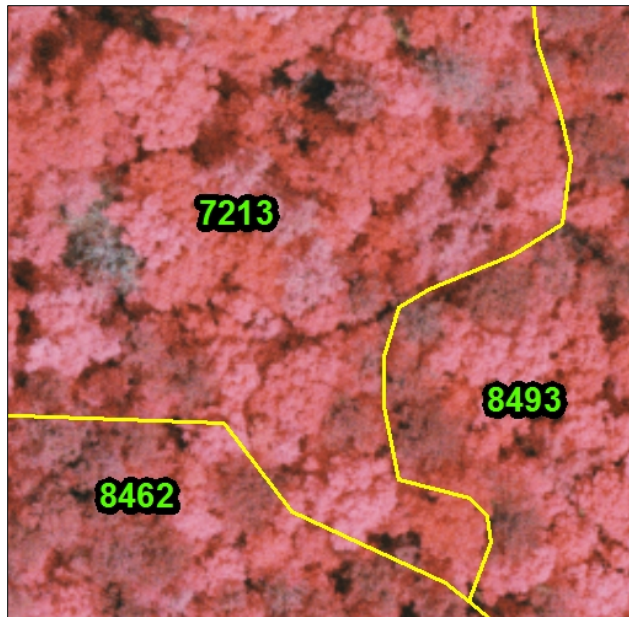


Figure A-7. Map showing Cumberland Plateau Mesic White Oak-Beech Forest (7213).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate (50% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated by *Quercus alba* (white oak) along with *Fagus grandifolia* (American beech), *Liquidambar styraciflua* (sweetgum), *Quercus nigra* (water oak), and *Quercus rubra* (northern red oak). The moderately sparse (40%) subcanopy (15–20 meters [49.2–65.6 ft]) includes *Carya glabra* (pignut hickory), *Halesia diptera* (two-wing silverbell), and *Liriodendron tulipifera* (tuliptree), among others. The moderate (60%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is dominated by *Halesia diptera* (two-wing silverbell) and includes *Carpinus caroliniana* (American hornbeam), *Cornus florida* (flowering dogwood), *Liquidambar styraciflua* (sweetgum), and *Nyssa sylvatica* (blackgum). The moderately sparse (40%) short-shrub layer (1–2 meters [3.3–6.6 ft]) includes *Acer barbatum* (southern sugar maple), *Callicarpa americana* (American beautyberry), *Carpinus caroliniana* (American hornbeam), *Fagus grandifolia* (American beech), *Halesia diptera* (two-wing silverbell), and *Vaccinium elliotii* (Elliott's blueberry), among others. The sparse (20%) herbaceous layer includes *Carex digitalis* (slender woodland sedge), *Chasmanthium latifolium* (Indian woodoats), *Chasmanthium sessiliflorum* (longleaf woodoats), *Dichanthelium boscii* (Bosc's panicgrass), and *Polystichum acrostichoides* (Christmas fern). Vines (30%) include *Bignonia capreolata* (crossvine), *Decumaria barbara* (woodvamp), *Toxicodendron radicans* (eastern poison ivy), and *Vitis rotundifolia* (muscadine).

Global Vegetation

This is a deciduous forest with a well-developed canopy and subcanopy, a variable shrub layer, and an open to sparse herbaceous layer. The canopy is always dominated by *Quercus alba* (white oak) with codominance by *Fagus grandifolia* (American beech) and/or *Liriodendron tulipifera* (tuliptree). Some examples may have large individuals of *Pinus taeda* (loblolly pine) blending in from forests on adjacent, higher slopes, or as an artifact of past disturbance. Other common canopy trees include

Tilia americana var. *heterophylla* (American basswood), *Magnolia acuminata* (cucumber-tree), *Liquidambar styraciflua* (sweetgum), *Quercus prinus* (chestnut oak), *Quercus rubra* (northern red oak), and *Carya alba* (mockernut hickory). Species most typically abundant in the subcanopy include *Ostrya virginiana* (hophornbeam), *Acer barbatum* (southern sugar maple), *Magnolia macrophylla* (bigleaf magnolia), and *Ilex opaca* (American holly). Other subcanopy species include *Acer rubrum* (red maple), *Carpinus caroliniana* (American hornbeam), *Carya alba* (mockernut hickory), *Carya glabra* (pignut hickory), *Carya cordiformis* (bitternut hickory), *Cornus florida* (flowering dogwood), and *Ulmus rubra* (slippery elm). The most typically abundant shrubs are *Hydrangea quercifolia* (oakleaf hydrangea), *Euonymus americanus* (strawberry bush), and *Viburnum acerifolium* (mapleleaf viburnum). Other shrubs are *Asimina triloba* (pawpaw), *Asimina parviflora* (smallflower pawpaw), *Lindera benzoin* (northern spicebush), *Styrax grandifolius* (bigleaf snowbell), *Ilex opaca* (American holly), *Arundinaria gigantea* (giant cane), *Kalmia latifolia* (mountain laurel), and *Rhododendron canadense* (rhodora). Common vines are *Decumaria barbara* (woodvamp), *Smilax rotundifolia* (roundleaf greenbrier), and *Toxicodendron radicans* (eastern poison ivy). Herbaceous composition varies from site to site. The most abundant and constant species are *Carex picta* (Boott's sedge), *Polystichum acrostichoides* (Christmas fern), *Solidago caesia* (wreath goldenrod), and *Brachyelytrum erectum* (bearded shorthusk). Other typical species include *Chasmanthium sessiliflorum* (longleaf woodoats), *Chimaphila maculata* (striped prince's pine), *Dioscorea quaternata* (fourleaf yam), *Goodyera pubescens* (downy rattlesnake plantain), *Hexastylis arifolia* (littlebrownjug), *Epifagus virginiana* (beechdrops), *Campanula divaricata* (small bonny bellflower), *Desmodium nudiflorum* (nakedflower ticktrefoil), *Dioscorea quaternata* (fourleaf yam), *Maianthemum racemosum* (feathery false lily of the valley), *Mitchella repens* (partridgeberry), *Thelypteris noveboracensis* (New York fern), and *Tiarella cordifolia* (heartleaf foamflower). In addition, *Hybanthus concolor* (eastern greenviolet) may be present. A plot attributed here from the Talladega National Forest, Oakmulgee Ranger District has abundant *Illicium floridanum* (Florida anisetree) (NatureServe Ecology unpubl. data). This sample is atypical and presumably at the southern range limit of the type.

Interior Mid to Late Successional Sweetgum-Oak Forest (7217)

Attributes, descriptions, a photo, and a map are shown in Table A-5 and Figures A-8 and A-9.

Table A-5. Attributes and Descriptions for Interior Mid to Late Successional Sweetgum-Oak Forest (7217).

Attributes	Descriptions
CEGL code	7217
Color	Pink to Dark Red
Tone	Light to Medium
Texture	Coarse
Pattern	Moderate to Dense

Table A-5 (continued). Attributes and Descriptions for Interior Mid to Late Successional Sweetgum-Oak Forest (7217).

Attributes	Descriptions
Height	Medium to Tall
Shape	Irregular
Size	Represents between two and eight percent of park
Location	–
Association	6011, 8437, and 8493
Comments	–



Figure A-8. Example of Interior Mid to Late Successional Sweetgum-Oak Forest (7217).

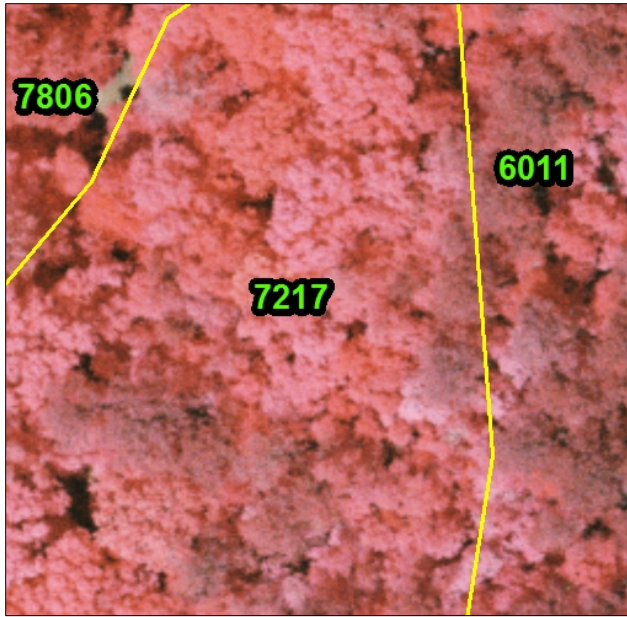


Figure A-9. Map showing Interior Mid to Late Successional Sweetgum-Oak Forest (7217).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate (50% cover) tree canopy, 15–20 meters (16.4–65.6 ft) tall, is dominated by *Quercus alba* (white oak) along with *Liquidambar styraciflua* (sweetgum) and *Liriodendron tulipifera* (tuliptree). The moderate (50%) subcanopy (10–15 meters [6.6–49.2 ft]) includes *Fagus grandifolia* (American beech), *Liquidambar styraciflua* (sweetgum), and *Oxydendrum arboreum* (sourwood). The moderate (40%) tall-shrub layer (2–5 meters [6.6–16.4 ft]) includes *Cornus florida* (flowering dogwood) and *Liquidambar styraciflua* (sweetgum), as does the sparse (30%) short-shrub layer (1–2 meters [3.3–6.6 ft]) which also includes *Asimina triloba* (pawpaw), *Fagus grandifolia* (American beech), *Fraxinus americana* (white ash), *Halesia diptera* (two-wing silverbell), and *Oxydendrum arboreum* (sourwood). The sparse (20%) herbaceous layer includes *Chasmanthium sessiliflorum* (longleaf woodoats) and *Polystichum acrostichoides* (Christmas fern). Vines (20%) include *Decumaria barbara* (woodvamp), *Parthenocissus quinquefolia* (Virginia creeper), *Smilax glauca* (cat greenbrier), *Toxicodendron radicans* (eastern poison ivy), and *Vitis rotundifolia* (muscadine).

Global Vegetation

The overstory of stands of this association are usually dominated by *Liquidambar styraciflua* (sweetgum), but may also support other species such as *Quercus alba* (white oak), *Liriodendron tulipifera* (tuliptree), and *Quercus falcata* (southernred oak). Other woody species encountered in plots attributed to this type include *Fraxinus americana* (white ash), *Cornus florida* (flowering dogwood), *Diospyros virginiana* (common persimmon), *Quercus velutina* (black oak), *Quercus rubra* (northern red oak), and *Carya* (hickory) spp. (NatureServe Ecology unpubl. data).

Successional Sweetgum Forest (7216)

Attributes, descriptions, a photo, and a map are shown in Table A-6 and Figures A-10 and A-11.

Table A-6. Attributes and Descriptions for Successional Sweetgum Forest (7216).

Attributes	Descriptions
CEGL code	7216
Color	Pink to Red
Tone	Light to Medium
Texture	Coarse
Pattern	Sparse to Dense
Height	Short to Tall
Shape	Small patches
Size	Represents less than two percent of total area.
Location	Typically found in lowlands.
Association	8462 and 6011
Comments	–



Figure A-10. Example of Successional Sweetgum Forest (7216).

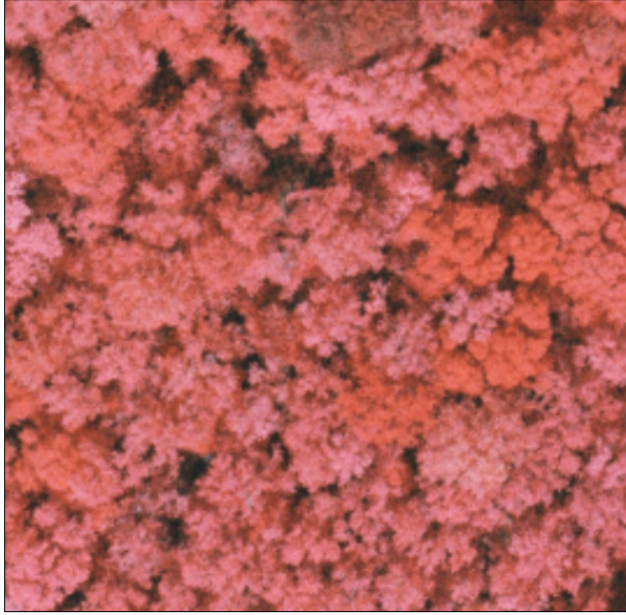


Figure A-11. Map showing Successional Sweetgum Forest (7216).

Summary

Horseshoe Bend National Military Park Vegetation

The dense (80% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated almost exclusively by *Liquidambar styraciflua* (sweetgum). The sparse (30%) subcanopy (15–20 meters [49.2–65.6 ft]) includes *Acer rubrum* (red maple), *Fraxinus pennsylvanica* (green ash), *Liquidambar styraciflua* (sweetgum), *Liriodendron tulipifera* (tuliptree), and *Quercus nigra* (water oak). The moderate (50%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is also dominated by *Liquidambar styraciflua* (sweetgum) and includes *Cornus florida* (flowering dogwood) and *Nyssa sylvatica* (blackgum). The very sparse (10%) short-shrub layer (1–2 meters [3.3–6.6 ft]) includes *Callicarpa americana* (American beautyberry). The moderate (50%) herbaceous layer is dominated by the invasive exotic *Microstegium vimineum* (Nepalese browntop). Vines (20%) include *Smilax rotundifolia* (roundleaf greenbrier) and *Vitis rotundifolia* (muscadine).

Global Vegetation

Stands are dominated by *Liquidambar styraciflua* (sweetgum), sometimes to the exclusion of other species.

Successional Tuliptree Forest (7221)

Attributes, descriptions, a photo, and a map are shown in Table A-7 and Figures A-12 and A-13.

Table A-7. Attributes and Descriptions for Successional Tuliptree Forest (7221).

Attributes	Descriptions
CEGL code	7221
Color	Pink to Red
Tone	Light to Medium
Texture	Medium to Rough
Pattern	Open to Dense
Height	Medium to Tall
Shape	Irregular
Size	Represents less than two percent of total area.
Location	Along river
Association	8462, 4700, 8493
Comments	–



Figure A-12. Example of Successional Tuliptree Forest (7221).



Figure A-13. Map showing Successional Tuliptree Forest (7221).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is codominated by *Acer barbatum* (southern sugar maple), *Liriodendron tulipifera* (tuliptree), *Quercus nigra* (water oak), and *Quercus stellata* (post oak). The moderate (50%) subcanopy (15–20 meters [49.2–65.6 ft]) is dominated by *Liquidambar styraciflua* (sweetgum) and includes *Acer rubrum* (red maple), *Carya alba* (mockernut hickory), *Prunus serotina* (black cherry), and *Quercus alba* (white oak). The moderate (50%) tallshrub layer (5–10 meters [16.4–32.8]) is codominated by *Carpinus caroliniana* (American hornbeam), *Halesia diptera* (two-wing silverbell), and *Liquidambar styraciflua* (sweetgum), as is the moderately sparse (40%) short-shrub layer (1–2 meters [3.3–6.6 ft]). The sparse (30%) herbaceous layer includes *Chasmanthium sessiliflorum* (longleaf woodoats) and *Polystichum acrostichoides* (Christmas fern). Vines (20%) include *Bignonia capreolata* (crossvine), *Toxicodendron radicans* (eastern poison ivy), and *Vitis rotundifolia* (muscadine).

Global Vegetation

The canopy of this semi-natural upland association is dominated by *Liriodendron tulipifera* (tuliptree). *Quercus* (oak) species (*Quercus alba* (white oak), *Quercus rubra* (northern red oak), *Quercus falcata* (southern red oak), *Quercus nigra* (water oak), *Quercus velutina* (black oak)) are often present; additional associates may include *Acer barbatum* (southern sugar maple), *Acer rubrum* (red maple), *Carya* (hickory) spp., *Fagus grandifolia* (American beech), *Nyssa sylvatica* (blackgum), *Cornus florida* (flowering dogwood), and *Robinia pseudoacacia* (black locust). *Betula lenta* (sweet birch) is a common associate at the northern range limit. Shrub layers may include saplings of the canopy species and *Acer pensylvanicum* (striped maple), *Amelanchier arborea* (common serviceberry), *Hamamelis virginiana* (American witchhazel), *Lindera benzoin* (northern spicebush) (in small amounts), and *Vaccinium pallidum* (Blue Ridge blueberry). Herbs vary across the range but

may include *Actaea racemosa* (black bugbane), *Dichanthelium clandestinum* (deertongue), *Dioscorea quaternata* (fourleaf yam), *Galium circaezans* (licorice bedstraw), *Geranium maculatum* (spotted geranium), *Goodyera pubescens* (downy rattlesnake plantain), *Medeola virginiana* (Indian cucumber), *Potentilla simplex* (common cinquefoil), *Scutellaria serrata* (showy skullcap), *Thelypteris noveboracensis* (New York fern), and *Uvularia perfoliata* (perfoliate bellwort). *Lycopodium digitatum* (fan clubmoss) may be abundant in some stands.

Southern Red Oak - White Oak Mixed Forest (7244)

Attributes, descriptions, a photo, and a map are shown in Table A-8 and Figures A-14 and A-15.

Table A-8. Attributes and Descriptions for Southern Red Oak - White Oak Mixed Forest (7244).

Attributes	Descriptions
CEGL code	7244
Color	Pink to Red
Tone	Light to Medium
Texture	Coarse
Pattern	Sparse to Dense
Height	Medium to Tall
Shape	Irregular
Size	Represents approximately four percent of total area
Location	Wetland and Upland areas.
Association	6011 and 8437
Comments	—



Figure A-14. Example of Southern Red Oak - White Oak Mixed Forest (7244).

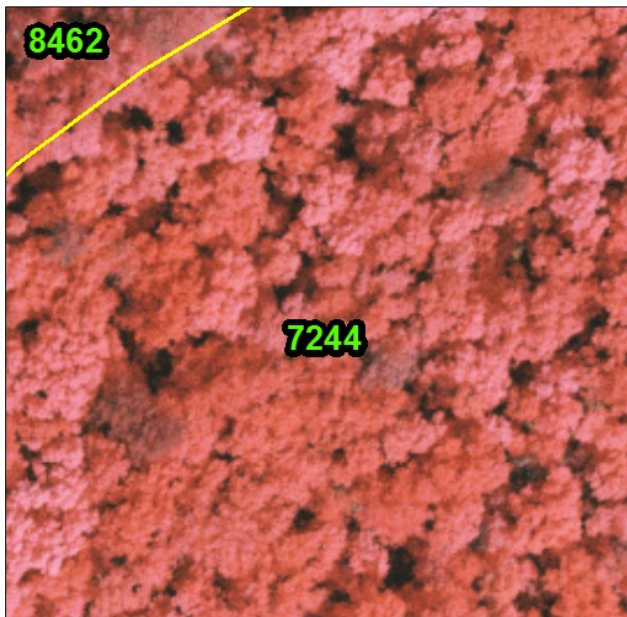


Figure A-15. Map showing Southern Red Oak - White Oak Mixed Forest (7244).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is comprised of *Quercus alba* (white oak), *Quercus coccinea* (scarlet oak), and *Quercus falcata* (southern red oak). The moderate (50%) subcanopy (15–20 meters [49.2–65.6 ft]) includes canopy species as well as *Carya alba* (mockernut hickory), *Fagus grandifolia* (American beech), *Oxydendrum arboreum* (sourwood), and *Quercus prinus* (chestnut oak). The moderately sparse (40%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) and sparse (30%) short-shrub layer (1–2 meters [3.3–6.6 ft]) include *Acer rubrum* (red maple), *Cornus florida* (flowering dogwood), and *Oxydendrum arboreum* (sourwood). The very sparse (< 5%) herbaceous layer includes trace amounts of *Aristolochia serpentaria*.

(Virginia snakeroot), *Danthonia sericea* (downy danthonia), *Euphorbia mercurialina* (mercury spurge), *Iris verna* var. *smalliana* (dwarf violet iris), *Pleopeltis polypodioides* (resurrection fern), and *Trillium catesbaei* (bashful wakerobin), among others.

Global Vegetation

The vegetation is dominated by *Quercus* (oak) spp. and lesser amounts of *Carya* (hickory) spp. The canopy is continuous, and several species of *Quercus* (oak) may be present (e.g., *Quercus falcata* (southern red oak), *Quercus alba* (white oak), *Quercus velutina* (black oak), *Quercus coccinea* (scarlet oak), and *Quercus stellata* (post oak)). The subcanopy closure is variable, ranging from less than 25% to more than 40% cover, and the shrub and herb layers generally are sparse. Subcanopy species include canopy species and *Acer rubrum* (red maple), *Liriodendron tulipifera* (tuliptree), *Oxydendrum arboreum* (sourwood), *Liquidambar styraciflua* (sweetgum), *Ulmus alata* (winged elm), *Cornus florida* (flowering dogwood), *Nyssa sylvatica* (blackgum), *Juniperus virginiana* var. *virginiana* (eastern redcedar), and *Vaccinium arboreum* (farkleberry). The tall-shrub stratum may contain *Rhododendron canescens* (mountain azalea) and *Vaccinium arboreum* (farkleberry). The low-shrub stratum is dominated by various ericaceous shrubs such as *Vaccinium pallidum* (Blue Ridge blueberry), *Vaccinium stamineum* (deerberry), *Vaccinium fuscatum* (black highbush blueberry), and *Gaylussacia baccata* (black huckleberry). *Smilax glauca* (cat greenbrier) and *Vitis rotundifolia* (muscadine) are common vines. Herbaceous species that may be present include *Aristolochia serpentaria* (Virginia snakeroot), *Symphotrichum dumosum* (rice button aster), *Clitoria mariana* (Atlantic pigeonwings), *Desmodium nudiflorum* (nakedflower ticktrefoil), *Euphorbia corollata* (flowering spurge), *Galium circaezans* (licorice bedstraw), *Chimaphila maculata* (striped prince's pine), *Polystichum acrostichoides* (Christmas fern), *Asplenium platyneuron* (ebony spleenwort), *Hexastylis arifolia* (littlebrownjug), *Coreopsis major* (greater tickseed), *Solidago odora* (anisescented goldenrod), *Tephrosia virginiana* (Virginia tephrosia), *Potentilla simplex* (common cinquefoil), *Porteranthus stipulatus* (Indian physic), *Pteridium aquilinum* (western brackenfern), *Lespedeza* (lespedeza) spp., *Dichanthelium* (rosette grass) spp., and *Hieracium venosum* (rattlesnakeweed).

Lower Piedmont Chestnut Oak Forest (7261)

Attributes, descriptions, and a map are shown in Table A-9 and Figure A-16.

Table A-9. Attributes and Descriptions for Lower Piedmont Chestnut Oak Forest (7261).

Attributes	Descriptions
CEGL code	7261
Color	Pink to Red
Tone	Light to Medium
Texture	Coarse
Pattern	Moderate to Dense
Height	Medium to Tall

Table A-9 (continued). Attributes and Descriptions for Lower Piedmont Chestnut Oak Forest (7261).

Attributes	Descriptions
Shape	Finger like
Size	Represents approximately three percent of total area
Location	Typically in upland areas
Association	7330
Comments	–

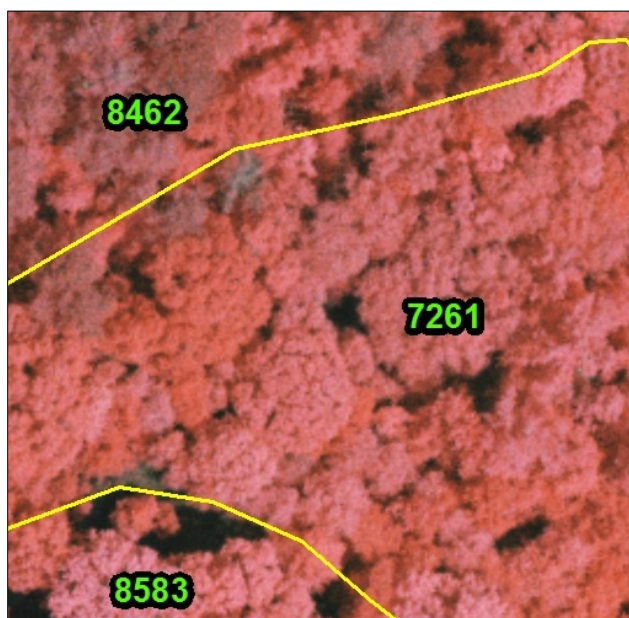


Figure A-16. Map showing Lower Piedmont Chesnut Oak Forest (7261).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is codominated by *Carya glabra* (pignut hickory) and *Quercus prinus* (chestnut oak). The moderate (60%) subcanopy (15–20 meters [49.2–65.6 ft]) is made up of *Liriodendron tulipifera* (tuliptree), *Oxydendrum arboreum* (sourwood), and *Tilia americana* var. *caroliniana* (Carolina basswood). The moderately dense (70%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is codominated by *Acer rubrum* (red maple), *Fagus grandifolia* (American beech), *Liquidambar styraciflua* (sweetgum), and *Oxydendrum arboreum* (sourwood), as is the moderate (50%) short-shrub layer (1–2 meters [3.3–6.6 ft]) which also includes *Halesia diptera* (two-wing silverbell), *Hydrangea quercifolia* (oakleaf hydrangea), *Magnolia tripetala* (umbrella-tree), and *Vaccinium elliotii* (Elliott's blueberry), among others. The moderate (50%) herbaceous layer is dominated by *Polystichum acrostichoides* (Christmas fern). Vines (20%) include *Smilax glauca* (cat greenbrier), *Toxicodendron radicans* (eastern poison ivy),

and *Vitis rotundifolia* (muscadine). In addition, this community supports globally and state-vulnerable *Aesculus parviflora* (bottlebrush buckeye).

Global Vegetation

The canopy of stands of this association is strongly dominated by *Quercus prinus* (chestnut oak), *Carya alba* (mockernut hickory), and *Quercus velutina* (black oak). Other tree species present include *Quercus falcata* (southern red oak), *Quercus alba* (white oak), *Quercus stellata* (post oak), *Carya glabra* (pignut hickory), and *Pinus echinata* (shortleaf pine). Understory woody species include *Cornus florida* (flowering dogwood), *Nyssa sylvatica* (blackgum), and *Oxydendrum arboreum* (sourwood). Shrubs and woody vines include *Aesculus pavia* (red buckeye), *Asimina parviflora* (smallflower pawpaw), *Ceanothus americanus* (New Jersey tea), *Epigaea repens* (trailing arbutus), *Euonymus americanus* (strawberry bush), *Gaylussacia dumosa* (dwarf huckleberry), *Hydrangea quercifolia* (oakleaf hydrangea), *Parthenocissus quinquefolia* (Virginia creeper), *Rhododendron canescens* (mountain azalea), *Smilax glauca* (cat greenbrier), *Smilax rotundifolia* (roundleaf greenbrier), *Symplocos tinctoria* (common sweetleaf), *Toxicodendron pubescens* (Atlantic poison oak), *Toxicodendron radicans* (eastern poison ivy), *Vaccinium arboreum* (farkleberry), *Vaccinium elliotii* (Elliott's blueberry), *Vaccinium pallidum* (Blue Ridge blueberry), *Vaccinium stamineum* (deerberry), and *Vitis rotundifolia* (muscadine) (Golden 1979). Herbs and herbaceous vines present include *Coreopsis major* (greater tickseed), *Desmodium nudiflorum* (nakedflower ticktrefoil), *Dioscorea villosa* (wild yam), *Elephantopus tomentosus* (devil's grandmother), *Hexastylis arifolia* (littlebrownjug), *Iris verna* var. *smalliana* (dwarf violet iris), *Maianthemum racemosum* (feathery false lily of the valley), *Mimosa microphylla* (littleleaf sensitive-briar), *Mitchella repens* (partridgeberry), *Silphium compositum* (kidneyleaf rosinweed), *Tephrosia virginiana* (Virginia tephrosia), and *Uvularia perfoliata* (perfoliate bellwort). Ferns include *Polystichum acrostichoides* (Christmas fern) and *Pteridium aquilinum* (western brackenfern). In addition, Beckett and Golden (1982) include *Carya pallida* (sand hickory), *Quercus coccinea* (scarlet oak), *Quercus velutina* (black oak), *Liquidambar styraciflua* (sweetgum), *Liriodendron tulipifera* (tuliptree), *Carya ovalis* (red hickory), *Acer rubrum* (red maple), *Pinus taeda* (loblolly pine), and *Magnolia macrophylla* (bigleaf magnolia) as components of this type (in decreasing order of frequency).

River Birch Levee Forest (7312)

Attributes, descriptions, a photo, and a map are shown in Table A-10 and Figures A-17 and A-18.

Table A-10. Attributes and Descriptions for River Birch Levee Forest (7312).

Attributes	Descriptions
CEGL code	7312
Color	Pink
Tone	Light
Texture	Coarse

Table A-10 (continued). Attributes and Descriptions for River Birch Levee Forest (7312).

Attributes	Descriptions
Pattern	Moderate to Dense
Height	Medium to Tall
Shape	Long and narrow
Size	Represents approximately two percent of total area inside the park
Location	Along river bank
Association	7217 and 7330
Comments	—



Figure A-17. Example of River Birch Levee Forest (7312).

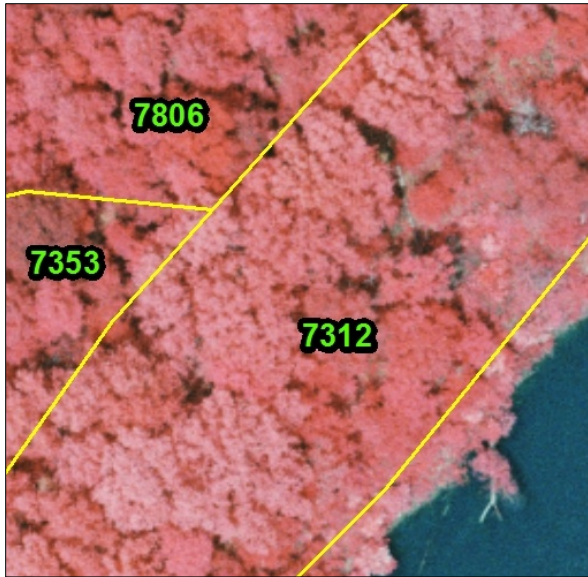


Figure A-18. Map showing River Birch Levee Forest (7312).

Summary

Horseshoe Bend National Military Park Vegetation

The dense (70-80% cover) tree canopy, 20–35 meters 65.6–114.8 ft) tall, is codominated by *Betula nigra* (river birch), *Fraxinus pennsylvanica* (green ash), and *Platanus occidentalis* (American sycamore) and may include a substantial amount of *Juglans nigra* (black walnut). The moderately dense (50–70%) subcanopy (15–20 meters [49.2–65.6 ft]) is dominated by *Acer negundo* (boxelder) and may include *Carya cordiformis* (bitternut hickory), *Celtis laevigata* (sugarberry), *Fraxinus pennsylvanica* (green ash), *Ostrya virginiana* (hophornbeam), and *Platanus occidentalis* (American sycamore). The moderate (50–60%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is dominated in several areas by the invasive exotic *Ligustrum sinense* (Chinese privet) and may include *Acer negundo* (boxelder), *Halesia diptera* (two-wing silverbell), and *Quercus nigra* (water oak). The moderate (40–50%) short-shrub layer (1–2 meters [3.3–6.6 ft]) has the same composition as the tall-shrub layer along with *Styrax grandifolius* (bigleaf snowbell). The moderately dense (70%) herbaceous layer is dominated by *Arundinaria gigantea ssp. gigantea* (giant cane); additional species include *Chasmanthium latifolium* (Indian woodoats), *Verbesina alternifolia* (wingstem), *Verbesina occidentalis* (yellow crownbeard), and the invasive exotic *Microstegium vimineum* (Nepalese browntop) which can also dominate. Vines (30%) include *Campsis radicans* (trumpet creeper), *Smilax bona-nox* (saw greenbrier), *Smilax rotundifolia* (roundleaf greenbrier), *Smilax tamnoides* (bristly greenbrier), and *Vitis rotundifolia* (muscadine).

Global Vegetation

Betula nigra (river birch) contributes at least 50%, and often more, of the tree density of stands of this community. *Platanus occidentalis* (American sycamore) may be codominant, or at least prominent, with large individuals overtopping the *Betula* (birch), which tends to have a greater number of stems, but *Platanus occidentalis* (American sycamore) may be more conspicuous because of its larger size. Other canopy associates include *Liriodendron tulipifera* (tuliptree), *Liquidambar*

styraciflua (sweetgum), *Acer rubrum* (red maple), *Acer negundo* (boxelder), *Ulmus americana* (American elm), *Ulmus rubra* (slippery elm), *Celtis* (hackberry) spp., and *Quercus* (oak) spp. *Pinus echinata* (shortleaf pine), *Pinus strobus* (eastern white pine), or *Pinus virginiana* (Virginia pine) may be found in some montane or submontane examples. The subcanopy or tall-shrub strata may include *Cornus florida* (flowering dogwood) and *Carpinus caroliniana* (American hornbeam), along with *Acer rubrum* (red maple), *Ilex opaca* (American holly), *Ulmus alata* (winged elm), *Prunus serotina* (black cherry), and *Carya* (hickory) spp. Shrubs and woody vines may include *Alnus serrulata* (hazel alder), *Euonymus americanus* (strawberry bush), *Parthenocissus quinquefolia* (Virginia creeper), *Smilax rotundifolia* (roundleaf greenbrier), *Toxicodendron radicans* (eastern poison ivy), and *Vitis rotundifolia* (muscadine). Herbs may include *Boehmeria cylindrica* (smallspike false nettle), *Polygonum virginianum* (jumpseed), *Rudbeckia laciniata* (cutleaf coneflower), *Sanicula* (sanicle) sp., *Symphotrichum lateriflorum* (calico aster), *Thalictrum dioicum* (early meadow-rue), *Viola sororia* (common blue violet), *Polystichum acrostichoides* (Christmas fern), *Woodwardia areolata* (netted chainfern), *Botrychium dissectum* (cutleaf grapefern), *Botrychium virginianum* (rattlesnake fern), and *Impatiens capensis* (jewelweed). The exotics *Ligustrum sinense* (Chinese privet), *Lonicera japonica* (Japanese honeysuckle), *Microstegium vimineum* (Nepalese browntop), and *Rosa multiflora* (multiflora rose) may spread into disturbed examples of this community. No effort has been made to subdivide this type into northern and southern, or Coastal Plain and Interior variants, although there are undoubtedly some floristic differences between these extremes, at least in the lower strata.

Southeastern Coastal Plain Green Ash - Elm Bottomland Forest (7806)

Attributes, descriptions, and a map are shown in Table A-11 and Figure A-19.

Table A-11. Attributes and Descriptions for Southeastern Coastal Plain Green Ash - Elm Bottomland Forest (7806).

Attributes	Descriptions
CEGL code	7806
Color	Pink to Red
Tone	Light to Medium
Texture	Smooth to Coarse
Pattern	Moderate to Dense
Height	Short to Tall
Shape	Long and narrow
Size	Represents roughly three percent of park
Location	Along river bank
Association	6011 and 7312
Comments	–

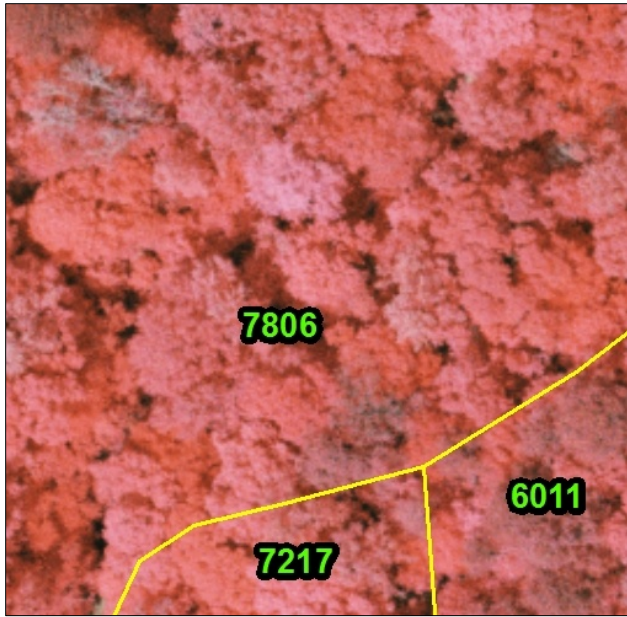


Figure A-19. Map showing Southeastern Coastal Plain Green Ash - Elm Bottomland Forest (7806).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately sparse (40% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is made up of *Fraxinus pennsylvanica* (green ash) and *Liquidambar styraciflua* (sweetgum). The moderate (60%) subcanopy (10–20 meters [32.8–65.6 ft]) includes *Acer negundo* (boxelder), *Carpinus caroliniana* (American hornbeam), *Morus rubra* (red mulberry), and *Ulmus americana* (American elm). The moderately sparse (40%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) contains *Acer rubrum* (red maple), *Carpinus caroliniana* (American hornbeam), and *Halesia diptera* (two-wing silverbell), among others. The sparse (20%) short-shrub layer (1–2 meters [3.3–6.6 ft]) is made up of species from the upper layers. The moderately sparse (20%) herbaceous layer is dominated by the invasive exotic *Microstegium vimineum* (Nepalese browntop) and native fern *Polystichum acrostichoides* (Christmas fern).

Global Vegetation

This community typically has an uneven-aged canopy dominated by *Fraxinus pennsylvanica* (green ash), *Ulmus americana* (American elm), and *Celtis laevigata* (sugarberry). Other typical canopy species include *Acer negundo* (boxelder), *Liquidambar styraciflua* (sweetgum), *Acer rubrum* (red maple), *Acer saccharinum* (silver maple), *Morus rubra* (red mulberry), *Platanus occidentalis* (American sycamore), *Ulmus alata* (winged elm), and others. The understory stratum includes *Carpinus caroliniana* (American hornbeam), *Cornus foemina* (stiff dogwood), *Ilex decidua* (possumhaw), *Morus rubra* (red mulberry), and *Crataegus* (hawthorn) spp. The herbaceous and vine strata are sparse to abundant. Composition may vary somewhat with flooding regime and geographic location. Common species are *Boehmeria cylindrica* (smallspike false nettle), *Carex lupulina* (hop sedge), *Carex retroflexa* (reflexed sedge), *Carex grayi* (Gray's sedge), *Carex abscondita* (thicket sedge), *Pilea pumila* (Canadian clearweed), *Carex louisianica* (Louisiana sedge), *Arisaema*

dracontium (green dragon), *Saururus cernuus* (lizard's tail), *Matelea carolinensis* (maroon Carolina milkvine), *Leersia lenticularis* (catchfly grass), *Chasmanthium latifolium* (Indian woodoats), *Justicia ovata* (looseflower water-willow), *Carex intumescens* (greater bladder sedge), and others. Common vine species in this community are *Vitis rotundifolia* (muscadine), *Campsis radicans* (trumpet creeper), *Parthenocissus quinquefolia* (Virginia creeper), *Toxicodendron radicans* (eastern poison ivy), *Bignonia capreolata* (crossvine), *Cocculus carolinus* (Carolina coralbead), and others. Some earlier successional stands may contain *Betula nigra* (river birch).

Successional Sweetgum Floodplain Forest (7330)

Attributes, descriptions, and a map are shown in Table A-12 and Figure A-20.

Table A-12. Attributes and Descriptions for Successional Sweetgum Floodplain Forest (7330).

Attribute	Description
CEGL code	7330
Color	Pink to Red
Tone	Light to Medium
Texture	Medium to Coarse
Pattern	Moderate to Dense
Height	Medium to Tall
Shape	Irregular
Size	Second largest vegetation class in park
Location	Lowland
Association	6011 and 8462
Comments	–



Figure A-20. Map showing Successional Sweetgum Floodplain Forest (7330).

Summary

Horseshoe Bend National Military Park Vegetation

The structures (particularly the height of the canopy) of the sampled stands are quite variable, likely due to differences in age. The moderately dense (60–70% cover) tree canopy, 15–35 meters (49.2–114.8 ft) tall, is dominated by *Liquidambar styraciflua* (sweetgum) and *Liriodendron tulipifera* (tuliptree) and may include *Carya glabra* (pignut hickory), *Fagus grandifolia* (American beech), *Magnolia virginiana* (sweetbay), *Pinus taeda* (loblolly pine), and *Quercus nigra* (water oak). The moderate (40–60%) subcanopy (15–20 meters [49.2–65.6 ft]) includes the canopy species as well as *Acer rubrum* (red maple), *Carpinus caroliniana* (American hornbeam), *Quercus alba* (white oak), and *Ulmus alata* (winged elm). The moderate (30–50%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is made up of saplings of the canopy layers as well as *Carpinus caroliniana* (American hornbeam) and *Halesia diptera* (two-wing silverbell) as is the moderate (40–50%) short-shrub layer (1–2 meters [3.3–6.6 ft]) along with *Vaccinium elliotii* (Elliott's blueberry). The herbaceous layer may be lacking or very dense (90%) and is dominated by *Arundinaria gigantea ssp. gigantea* (giant cane), when present (up to 90% cover); additional species may include *Carex debilis* (white edge sedge), *Carex digitalis* (slender woodland sedge), *Chasmanthium sessiliflorum* (longleaf woodoats), *Polystichum acrostichoides* (Christmas fern), and *Verbesina occidentalis* (yellow crownbeard), among others. Vines (20–30%) are diverse (nine species recorded in three plots) and may include *Berchemia scandens* (Alabama supplejack), *Parthenocissus quinquefolia* (Virginia creeper), *Smilax rotundifolia* (roundleaf greenbrier), and *Vitis rotundifolia* (muscadine).

Global Vegetation

The canopy of this association is dominated by *Liquidambar styraciflua* (sweetgum) but can be dominated by *Liriodendron tulipifera* (tuliptree) in some cases. *Acer rubrum* (red maple) may be a major component of the canopy and subcanopy and may even partially dominate in some instances

(TNC 1998). In more mature examples, other canopy/subcanopy species which may occur to a lesser extent and often as scattered emergents are *Quercus alba* (white oak), *Quercus phellos* (willow oak), *Quercus nigra* (water oak), *Fraxinus americana* (white ash), *Carya* (hickory) spp., *Nyssa sylvatica* (blackgum), and *Cornus florida* (flowering dogwood). Stands in the Inner Coastal Plain of South Carolina typically contain *Persea palustris* (swamp bay) and *Magnolia virginiana* (sweetbay) (Jones et al. 1981). The shrub layer contains *Carpinus caroliniana* (American hornbeam), *Itea virginica* (Virginia sweetspire), *Vitis rotundifolia* (muscadine), *Parthenocissus quinquefolia* (Virginia creeper), *Smilax rotundifolia* (roundleaf greenbrier), and *Rubus* (blackberry) sp., in addition to canopy/subcanopy species. *Lonicera japonica* (Japanese honeysuckle) is often abundant in the understory. On disturbed sites, the shrub layer is often dominated by *Ligustrum sinense* (Chinese privet), and the ground layer is typically solid *Microstegium vimineum* (Nepalese browntop) or a tangle of *Smilax rotundifolia* (roundleaf greenbrier) and *Rubus* (blackberry) sp. The herbaceous layer may include *Chasmanthium laxum* (slender woodoats), *Carex* (sedge) spp., *Boehmeria cylindrica* (smallspike false nettle), and *Botrychium biternatum* (sparselobe grapefern), sometimes growing on hummocks in standing water. Various *Carex* (sedge) species may be present.

Sweetgum - Cherrybark Oak Floodplain Forest (7353)

Attributes, descriptions, and a map are shown in Table A-13 and Figure A-21.

Table A-13. Attributes and Descriptions for Sweetgum - Cherrybark Oak Floodplain Forest (7353).

Attribute	Description
CEGL code	7353
Color	Pink to Red
Tone	Light to Medium
Texture	Medium to Coarse
Pattern	Moderate to Dense
Height	Tall
Shape	Typically elongated
Size	Less than one percent of total park area
Location	Usually follows outline of adjacent water bodies
Association	7330
Comments	–

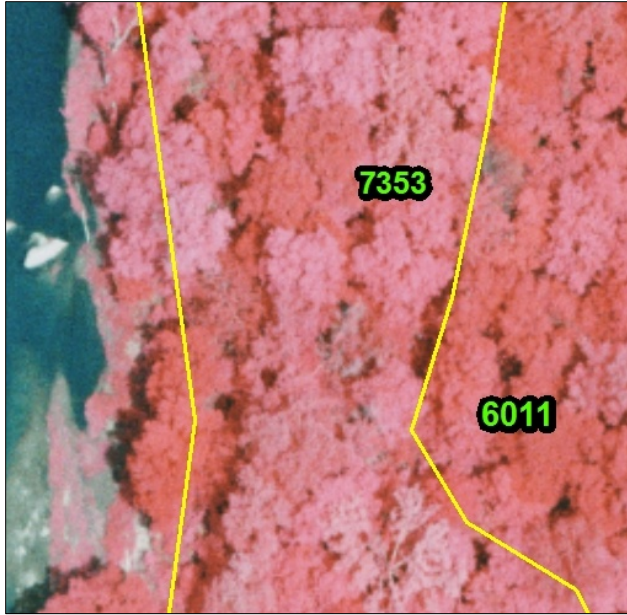


Figure A-21. Map showing Sweetgum—Cherrybark Oak Floodplain Forest (7353).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is codominated by *Carya cordiformis* (bitternut hickory) and *Quercus nigra* (water oak) and may include *Juglans nigra* (black walnut), *Liriodendron tulipifera* (tuliptree), and *Platanus occidentalis* (American sycamore). The moderate (60%) subcanopy (15–20 meters [49.2–65.6 ft]) includes *Acer negundo* (boxelder), *Carya cordiformis* (bitternut hickory), *Liquidambar styraciflua* (sweetgum), *Quercus nigra* (water oak), and *Ulmus americana* (American elm), among others. The moderate (60%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is may be dominated by *Asimina triloba* (pawpaw), *Carpinus caroliniana* (American hornbeam), *Cornus florida* (flowering dogwood), *Halesia diptera* (two-wing silverbell), *Liquidambar styraciflua* (sweetgum), and/or *Ulmus alata* (winged elm). The moderate (50–60%) short-shrub layer (1–2 meters [3.3–6.6 ft]) includes *Asimina triloba* (pawpaw), *Carpinus caroliniana* (American hornbeam), *Halesia diptera* (two-wing silverbell), and *Ostrya virginiana* (hophornbeam). The moderately dense (60–70%) herbaceous layer is dominated by *Arundinaria gigantea* ssp. *Gigantea* (giant cane) and may include *Carex digitalis* (slender woodland sedge), *Chasmanthium sessiliflorum* (longleaf woodoats), *Dichanthelium boscii* (Bosc's panicgrass), and *Verbesina occidentalis* (yellow crownbeard). Vines (20–40%) include *Smilax rotundifolia* (roundleaf greenbrier) and *Vitis rotundifolia* (muscadine), among others.

Global Vegetation

The canopy of stands of this bottomland hardwood forest is dominated by *Liquidambar styraciflua* (sweetgum), *Quercus pagoda* (cherrybark oak), and *Carya* (hickory) spp. (including *Carya cordiformis* (bitternut hickory), *Carya ovata* (shagbark hickory), *Carya laciniata* (shellbark hickory), *Carya ovalis* (red hickory)). The understory may contain *Carpinus caroliniana* (American hornbeam), *Fraxinus pennsylvanica* (green ash), *Ulmus americana* (American elm), *Carya alba*

(mockernut hickory), *Carya ovalis* (red hickory), and *Quercus nigra* (water oak). Portions of the stand may exhibit canopy dominance by *Liquidambar styraciflua* (sweetgum), *Platanus occidentalis* (American sycamore), and *Carya* (hickory) spp, with lower coverage by oaks. Shrubs include *Asimina triloba* (pawpaw), *Arundinaria gigantea* (giant cane) and *Ilex decidua* (possumhaw), along with smaller individuals of successional tree species such as *Acer negundo* (boxelder) and *Celtis laevigata* (sugarberry). Woody and herbaceous vines found here include *Bignonia capreolata* (crossvine), *Vitis rotundifolia* (muscadine), *Parthenocissus quinquefolia* (Virginia creeper), *Dioscorea villosa* (wild yam), *Smilax bona-nox* (saw greenbrier), *Smilax rotundifolia* (roundleaf greenbrier), *Menispermum canadense* (common moonseed), *Toxicodendron radicans* (eastern poison ivy), *Amphicarpaea bracteata* (American hogpeanut), and *Passiflora lutea* (yellow passionflower). Herbs include *Arisaema dracontium* (green dragon), *Arisaema triphyllum* (Jack in the pulpit), *Aristolochia serpentaria* (Virginia snakeroot), *Hymenocallis caroliniana* (Carolina spiderlily), *Ruellia* (wild petunia) sp., *Leersia* (cutgrass) sp., *Boehmeria cylindrica* (smallspike false nettle), *Laportea canadensis* (Canadian woodnettle), *Polygonum virginianum* (jumpseed), *Spigelia marilandica* (woodland pinkroot), *Carex debilis* (white edge sedge), *Carex grayi* (Gray's sedge), *Carex squarrosa* (squarrose sedge), *Carex tribuloides* (blunt broom sedge), *Chasmanthium latifolium* (Indian woodoats), *Viola* (violet) spp., and *Commelina virginica* (Virginia dayflower). The exotics *Ligustrum sinense* (Chinese privet), *Alliaria petiolata* (garlic mustard), and *Microstegium vimineum* (Nepalese browntop) may be present in examples of this association.

Overcup Oak – Sweetgum Forest (8583)

Attributes, descriptions, a photo, and a map are shown in Table A-14 and Figures A-22 and A-23.

Table A-14. Attributes and Descriptions for Overcup Oak – Sweetgum Forest (8583).

Attribute	Description
CEGL code	8583
Color	Pink to Red
Tone	Light to Dark
Texture	Coarse
Pattern	Moderate to Dense
Height	Medium to Tall
Shape	Rectangular
Size	Represent less than one percent of total park area
Location	Wetland
Association	4719, 7353, and 7261
Comments	–



Figure A-22. Example of Overcup Oak - Sweetgum Forest (8583).

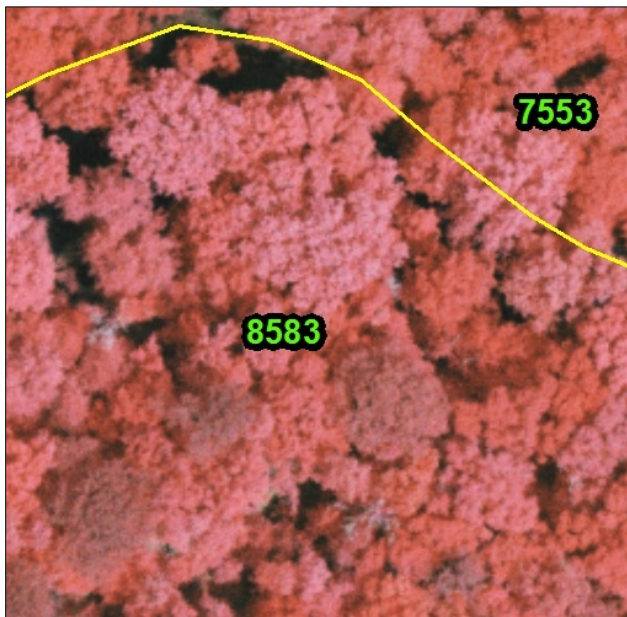


Figure A-23. Map showing Overcup Oak - Sweetgum Forest (8583).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated exclusively by *Quercus lyrata* (overcup oak). The moderate (50%) subcanopy (15–20 meters [49.2–65.6 ft]) includes *Acer rubrum* (red maple), *Quercus lyrata* (overcup oak), and *Quercus phellos* (willow oak). The moderate (50%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is dominated by *Acer rubrum* (red maple) and the sparse (20%) short-shrub layer (1–2 meters [3.3–6.6 ft]) by *Itea virginica* (Virginia sweetspire). The very sparse (< 5%) herbaceous layer includes *Panicum rigidulum* (redtop panicgrass) and *Pluchea camphorata* (camphor pluchea).

Global Vegetation

Stands are dominated by a variable combination of *Quercus lyrata* (overcup oak), *Liquidambar styraciflua* (sweetgum), and *Quercus phellos* (willow oak). The use of *Liquidambar styraciflua* (sweetgum) as a nominal indicates a shorter hydroperiod than *Quercus lyrata* (overcup oak) by itself. Occasional examples have a canopy dominated by *Quercus phellos* (willow oak) almost exclusively. One example on the Chattahoochee floodplain in Alabama on Fort Benning is dominated by *Fraxinus pennsylvanica* (green ash) with lesser amounts of *Quercus phellos* (willow oak). These are small-scale seasonally flooded depressions in a temporarily flooded bottomland that appear to flood more often as the result of rainfall accumulation rather than stream or river overflow. *Quercus lyrata* (overcup oak) dominates the center of the depressions (the wettest areas) with *Quercus phellos* (willow oak) and *Liquidambar styraciflua* (sweetgum) fringing the depressions. The open subcanopy is well-developed and contains *Carpinus caroliniana* (American hornbeam), *Acer rubrum* (red maple), and *Ulmus alata* (winged elm) in addition to canopy species regeneration. Shrubs are sparse and include *Ilex decidua* (possumhaw) and *Rubus* (blackberry) spp. Herbaceous vegetation is also sparse (< 5% cover) and includes *Carex* (sedge) spp. and *Zephyranthes atamasca* (Atamasco lily) on small rises in the soil surface. The vast majority of the ground surface (95% or more) is covered by a combination of leaf detritus in various stages of decomposition, and exposed mud.

Upper East Gulf Coastal Plain Sweetbay - Blackgum Seepage Forest (8552)

Attributes, descriptions, a photo, and a map are shown in Table A-15 and Figures A-24 and A-25.

Table A-15. Attributes and Descriptions for Upper East Gulf Coastal Plain Sweetbay - Blackgum Seepage Forest (8552).

Attribute	Description
CEGL code	8552
Color	Pink to Red
Tone	Light to Medium
Texture	Coarse
Pattern	Moderate to Dense
Height	Medium
Shape	Long and narrow
Size	Less than two percent of total area
Location	Typically along drainage networks
Association	6011, 8462, 7201, 7330
Comments	–



Figure A-24. Example of Upper East Gulf Coastal Plain Sweetbay - Blackgum Seepage Forest (8552).



Figure A-25. Map showing Upper East Gulf Coastal Plain Sweetbay - Blackgum Seepage Forest (8552).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (60–70% cover) tree canopy, 15–35 meters (49.2–114.8 ft) tall, is dominated by *Magnolia virginiana* (sweetbay) and *Liquidambar styraciflua* (sweetgum) and may include substantial amounts of *Acer rubrum* (red maple), *Liriodendron tulipifera* (tuliptree), *Quercus nigra* (water oak), and/or *Quercus phellos* (willow oak). The moderately dense (60–70%) subcanopy (10–20 meters [32.8–65.6 ft]) is dominated by *Acer rubrum* (red maple), *Liquidambar styraciflua* (sweetgum), and *Magnolia virginiana* (sweetbay) and may include *Cornus florida* (flowering dogwood), *Fagus grandifolia* (American beech), and *Juniperus virginiana* var. *virginiana* (eastern redcedar). The moderate (50%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is made up of saplings

of the tree species as well as *Carpinus caroliniana* (American hornbeam). The moderately sparse (40%) short-shrub layer (1–2 meters [3.3–6.6 ft]) includes *Callicarpa americana* (American beautyberry), *Ilex opaca* (American holly), *Magnolia virginiana* (sweetbay), and *Vaccinium elliotii* (Elliott's blueberry). The sparse to moderate (30–60%) herbaceous layer may include *Arundinaria gigantea* ssp. *gigantea* (giant cane), *Chasmanthium sessiliflorum* (longleaf woodoats), *Dichanthelium dichotomum* (cypress panicgrass), *Juncus coriaceus* (leathery rush), *Polystichum acrostichoides* (Christmas fern), and *Woodwardia areolata* (netted chainfern). Vines (30–40%) include *Gelsemium sempervirens* (evening trumpetflower), *Smilax rotundifolia* (roundleaf greenbrier), and *Vitis rotundifolia* (muscadine), among others. This community also supports state-vulnerable *Gentiana saponaria* (harvestbells).

Global Vegetation

The canopy is dominated by the nominal species, *Magnolia virginiana* (sweetbay) and *Nyssa biflora* (swamp tupelo); *Acer rubrum* var. *trilobum* (red maple), *Liquidambar styraciflua* (sweetgum), *Liriodendron tulipifera* (tuliptree), *Pinus taeda* (loblolly pine), and *Quercus nigra* (water oak) can also be important. The subcanopy typically contains the canopy species and additionally *Oxydendrum arboreum* (sourwood). These species may also occur in the shrub stratum, along with *Photinia pyrifolia* (red chokeberry), *Alnus serrulata* (hazel alder), *Arundinaria gigantea* ssp. *tracta* (switchcane), *Illicium floridanum* (Florida anisetree), *Itea virginica* (Virginia sweetspire), *Leucothoe racemosa* (swamp doghobble), *Morella caroliniensis* (southern bayberry), *Rhododendron* (rhododendron) sp. (deciduous), *Vaccinium fuscatum* (black highbush blueberry), and *Viburnum nudum* var. *nudum* (possumhaw). Lianas include *Decumaria barbara* (woodvamp), *Smilax laurifolia* (laurel greenbrier), *Smilax rotundifolia* (roundleaf greenbrier), *Toxicodendron radicans* (eastern poison ivy), and *Vitis rotundifolia* (muscadine). Herbs are sparse, consisting primarily of *Mitchella repens* (partridgeberry), *Osmunda cinnamomea* (cinnamon fern), *Osmunda regalis* var. *spectabilis* (royal fern), and *Woodwardia areolata* (netted chainfern). *Sphagnum* (sphagnum) spp. are usually abundant.

East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest (8493)

Attributes, descriptions, a photo, and a map are shown in Table A-16 and Figures A-26 and A-27.

Table A-16. Attributes and Descriptions for East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest (8493).

Attribute	Description
CEGL code	8493
Color	Red to Dark Red
Tone	Dark
Texture	Coarse
Pattern	Moderate to Dense
Height	Medium to Tall

Table A-16 (continued). Attributes and Descriptions for East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest (8493).

Attribute	Description
Shape	Irregular
Size	Less than two percent of total area
Location	—
Association	6011, 8462, 8437, and 7221
Comments	—



Figure A-26. Example of East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest (8493).

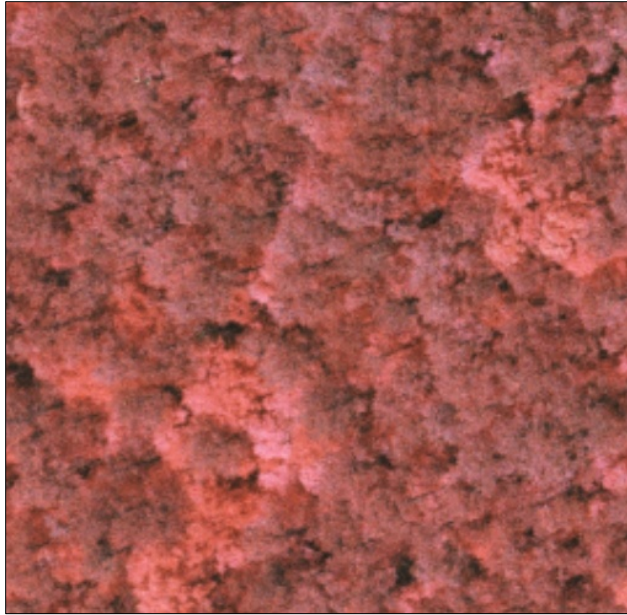


Figure A-27. Map showing East Gulf Coastal Plain Shortleaf - Loblolly Pine Forest (8493).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate (60% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated by *Pinus taeda* (loblolly pine) and includes *Carya glabra* (pignut hickory), *Liriodendron tulipifera* (tuliptree), *Quercus alba* (white oak), *Quercus coccinea* (scarlet oak), *Quercus falcata* (southern red oak), and a small amount of *Pinus echinata* (shortleaf pine). The sparse (30%) subcanopy (10–15 meters [32.8–49.2 ft]) includes canopy species along with *Oxydendrum arboreum* (sourwood) and *Nyssa sylvatica* (blackgum). The moderate (40%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is dominated by *Cornus florida* (flowering dogwood). The sparse (30%) short-shrub layer (1–2 meters [3.3–6.6 ft]) is dominated by *Vaccinium pallidum* (Blue Ridge blueberry) and includes saplings of *Acer rubrum* (red maple), *Carya glabra* (pignut hickory), *Liquidambar styraciflua* (sweetgum), *Nyssa sylvatica* (blackgum), and *Ostrya virginiana* (hophornbeam), among others. The very sparse (< 5%) herbaceous layer includes trace amounts of *Dioscorea villosa* (wild yam), *Lilium michauxii* (Carolina lily), *Pteridium aquilinum* var. *pseudocaudatum* (western brackenfern), and *Trillium catesbaei* (bashful wakerobin), among others. The dominant vine (40%) is *Vitis rotundifolia* (muscadine).

Global Vegetation

The open canopy is characterized by *Pinus echinata* (shortleaf pine) and a mixture of mesic hardwoods, including *Quercus alba* (white oak), *Quercus stellata* (post oak), *Carya alba* (mockernut hickory), *Carya glabra* (pignut hickory), *Quercus falcata* (southern red oak), and *Quercus velutina* (black oak). In addition to overstory species, the subcanopy includes *Cornus florida* (flowering dogwood), *Oxydendrum arboreum* (sourwood), *Nyssa sylvatica* (blackgum), and *Liquidambar styraciflua* (sweetgum). The patchy shrub layer includes *Vaccinium elliotii* (Elliott's blueberry), *Asimina parviflora* (smallflower pawpaw), *Aesculus pavia* (red buckeye), *Hamamelis virginiana* (American witchhazel), and *Arundinaria gigantea* (giant cane). This community has a sparse

herbaceous layer including *Piptochaetium avenaceum* (blackseed speargrass), *Chasmanthium sessiliflorum* (longleaf woodoats), *Elephantopus tomentosus* (devil's grandmother), *Hexastylis arifolia* (littlebrownjug), *Iris verna* (dwarf violet iris), *Rudbeckia fulgida* (orange coneflower), *Solidago juncea* (early goldenrod), *Euphorbia pubentissima* (false flowering spurge), and *Mitchella repens* (partridgeberry).

Montane Mixed Longleaf Woodland (8437)

Attributes, descriptions, a photo, and a map are shown in Table A-17 and Figures A-28 and A-29.

Table A-17. Attributes and Descriptions for Montane Mixed Longleaf Woodland (8437).

Attribute	Description
CEGL code	8437
Color	Red
Tone	Medium to Dark
Texture	Coarse
Pattern	Sparse to Moderate
Height	Tall
Shape	Small patches
Size	Less than two percent of total park area
Location	Typically upland areas
Association	6011, 8493, and 7217
Comments	–



Figure A-28. Example of Montane Mixed Longleaf Woodland (8437).

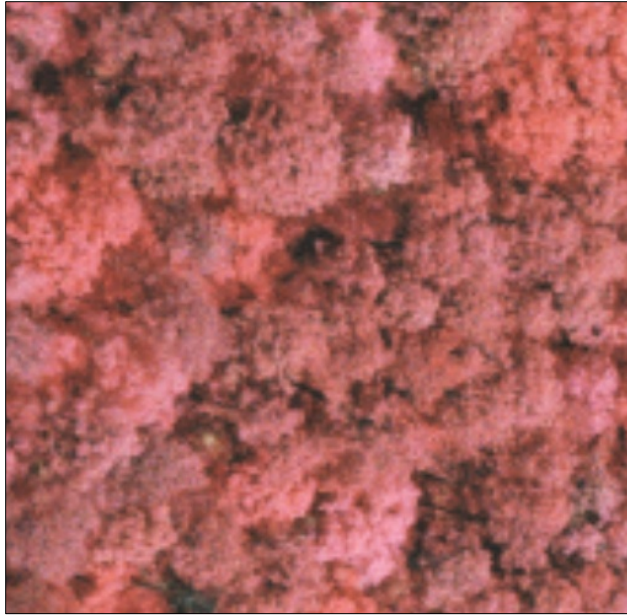


Figure A-29. Map showing Montane Mixed Longleaf Woodland (8437).

Summary

Horseshoe Bend National Military Park Vegetation

The moderate (50–70% cover) tree canopy, 20–35 meters (65.6–114.8 ft) tall, is dominated by *Pinus palustris* (longleaf pine); additional canopy species may include lesser amounts of *Liquidambar styraciflua* (sweetgum), *Pinus echinata* (shortleaf pine), *Quercus alba* (white oak), and *Quercus falcata* (southern red oak). The moderate (60%) subcanopy (15–20 meters [49.2–65.6 ft]) may include *Pinus palustris* (longleaf pine) and *Pinus taeda* (loblolly pine) along with *Liriodendron tulipifera* (tuliptree) and *Quercus falcata* (southern red oak), among others. The moderate (60%) tall-shrub layer (5–15 meters [16.4–49.2 ft]) is dominated by *Cornus florida* (flowering dogwood) and may include *Fagus grandifolia* (American beech), *Liquidambar styraciflua* (sweetgum), *Nyssa sylvatica* (blackgum), *Oxydendrum arboreum* (sourwood), and sapling canopy species. The moderately sparse (40%) short-shrub layer (1–5 meters [3.3–16.4 ft]) includes *Acer rubrum* (red maple), *Cornus florida* (flowering dogwood), and *Vaccinium arboreum* (farkleberry). The very sparse (< 5–20%) herbaceous layer includes *Chasmanthium sessiliflorum* (longleaf woodoats) and *Polystichum acrostichoides* (Christmas fern). Vines (10–50%) are dominated by *Vitis rotundifolia* (muscadine) and include *Gelsemium sempervirens* (evening trumpetflower) and *Smilax rotundifolia* (roundleaf greenbrier).

Global Vegetation

Vegetation structure is variable and depends on frequency and recency of fire. The canopy is open to closed. In addition to *Pinus palustris* (longleaf pine), the canopy may include *Pinus echinata* (shortleaf pine), *Pinus taeda* (loblolly pine), and *Pinus virginiana* (Virginia pine). Subcanopy species present include *Quercus marilandica* (blackjack oak), *Quercus stellata* (post oak), *Quercus prinus* (chestnut oak), *Quercus coccinea* (scarlet oak), *Quercus velutina* (black oak), *Quercus falcata* (southern red oak), and *Quercus alba* (white oak). Other characteristic subcanopy trees are *Nyssa*

sylvatica (blackgum), *Oxydendrum arboreum* (sourwood), *Acer rubrum* var. *rubrum* (red maple), *Sassafras albidum* (sassafras), *Carya pallida* (sand hickory), *Carya alba* (mockernut hickory), and sometimes *Cornus florida* (flowering dogwood). At Spirewell Bluff State Park (Pine Mountain, Georgia), stands of this type include some oak associates more typical of sandhill longleaf pine communities such as *Quercus laevis* (turkey oak) and *Quercus margarettiae* (runner oak). It is believed that in the historically more frequently burned landscape, pines, and especially *Pinus palustris* (longleaf pine) and *Pinus echinata* (shortleaf pine) would have predominated in the canopy, with some oaks as well. Following fire exclusion, the oaks and less fire-tolerant pines (*Pinus virginiana* (Virginia pine) and *Pinus taeda* (loblolly pine)) increase their importance. The shrub stratum is of variable density; characteristic species include *Vaccinium pallidum* (Blue Ridge blueberry), *Vaccinium arboreum* (farkleberry), *Vaccinium stamineum* (deerberry), *Symplocos tinctoria* (common sweetleaf), and (in some portions of the range) *Gaylussacia frondosa* (blue huckleberry) and *Vaccinium tenellum* (small black blueberry). Woody vines include *Smilax glauca* (cat greenbrier) and *Vitis rotundifolia* (muscadine). The herb layer may be highly suppressed following fire exclusion and canopy closure, but can be dense and grassy with fire. Characteristic species are *Schizachyrium scoparium* (little bluestem), *Sorghastrum nutans* (Indiangrass), *Andropogon ternarius* (splitbeard bluestem), *Danthonia sericea* (downy danthonia), *Danthonia spicata* (poverty oatgrass), *Iris verna* (dwarf violet iris), *Pteridium aquilinum* var. *pseudocaudatum* (western brackenfern), *Solidago odora* var. *odora* (anisescented goldenrod), *Tephrosia virginiana* (Virginia tephrosia), *Clitoria mariana* (Atlantic pigeonwings), *Lespedeza* (lespedeza) spp., *Desmodium* (ticktrefoil) spp., *Pityopsis graminifolia* var. *latifolia* (narrowleaf silkgrass), *Dichanthelium commutatum* (variable panicgrass), *Coreopsis major* (greater tickseed), *Silphium compositum* (kidneyleaf rosinweed), *Parthenium integrifolium* var. *integrifolium* (wild quinine), *Scleria triglomerata* (whip nutrush), *Liatris* (blazing star) sp., and *Solidago* (goldenrod) sp.

Floodplain Canebrake (3836)

Attributes, descriptions, and a map are shown in Table A-18 and Figure A-29.

Table A-18. Attributes and Descriptions for Floodplain Canebrake (3836).

Attribute	Description
CEGL code	3836
Color	Pink
Tone	Light
Texture	Smooth to Medium
Pattern	Open
Height	Short
Shape	Long and narrow
Size	Second smallest class in park.

Table A-18 (continued). Attributes and Descriptions for Floodplain Canebrake (3836).

Attribute	Description
Location	Along bank of Tallapoosa River
Association	4048
Comments	–

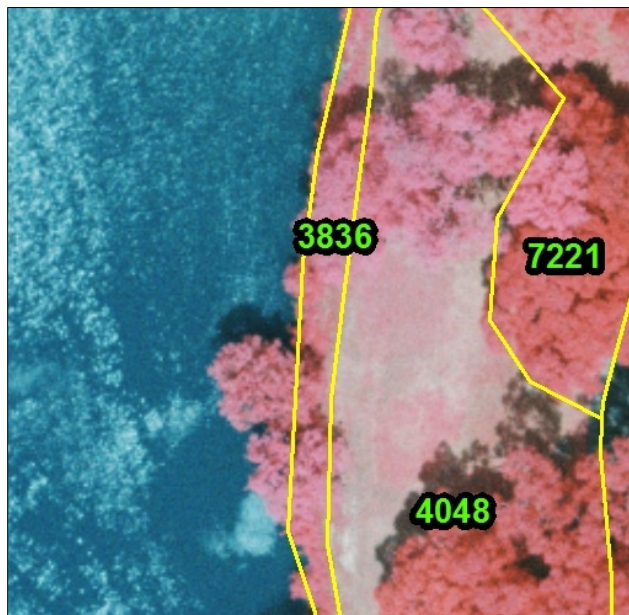


Figure A-30. Map showing Floodplain Canebrake (3836).

Summary

Horseshoe Bend National Military Park Vegetation

The sparse (20%) short-shrub layer (1–2 meters [3.3–6.6 ft]) includes *Cornus amomum* (silky dogwood) and *Sambucus canadensis* (common elderberry). The moderate (50%) herbaceous layer is dominated by *Arundinaria gigantea ssp. gigantea* (giant cane) and includes *Chasmanthium latifolium* (Indian woodoats), *Dichanthelium clandestinum* (deertongue), *Eupatorium serotinum* (lateflowering thoroughwort), *Rubus argutus* (sawtooth blackberry), *Verbesina alternifolia* (wingstem), and *Verbesina occidentalis* (yellow crownbeard). Vines (30%) include *Smilax bona-nox* (saw greenbrier) and *Vitis rotundifolia* (muscadine).

Global Vegetation

The vegetation is dominated by *Arundinaria gigantea* (giant cane). Little else is known about its vegetational characteristics. However, information on its historic patterns of distribution provides some clues as to its ecology. General Land Office surveys and other historical accounts indicate that canebrakes were present in southern Illinois, southern Indiana, Kentucky, Missouri, Arkansas, eastern Texas, Louisiana, Tennessee, Mississippi, Alabama, Georgia, and South Carolina. Historical

accounts refer to both "pure" stands of cane without an overstory of trees (cane shrublands) and areas with variable overstory closure (woodlands or forests) but with a dense understory dominated by cane as "canebrakes." As currently described, this association refers only to the former, cane shrublands. Cane was abundant along the Wabash and Ohio drainage systems (B. McClain pers. comm. 2000). In Missouri, these canebrakes were also thought to be common in the Ozark Highlands, particularly in southward draining rivers and streams with finer-textured, more developed soils on upper floodplain terraces (T. Nigh pers. comm. 2000). Stands may be found along larger rivers (Buffalo, White, Norfork) in the Arkansas Ozarks in addition to the Ouachitas. In the Central Appalachians various wetlands, including those on alluvial or loess substrates (streamside flats, bottomlands), were dominated by *Arundinaria* (cane), without an overstory, or with widely scattered trees (Central Appalachian Forest Ecoregional Team pers. comm. 1998). Historic accounts describe large expanses (one area was described as 75 miles (120.7 kilometers [km]) long by 1–3 miles [1.6–4.8 km] wide) of an "ocean of cane" in bottomlands of the Coastal Prairie of Texas (Smeins et al. 1992). No extant occurrences of this vegetation are known from this area today.

Southeastern Smooth Alder Swamp (8474)

Attributes, descriptions, and a map are shown in Table A-19 and Figure A-31.

Table A-19. Attributes and Descriptions for Southeastern Smooth Alder Swamp (8474).

Attribute	Description
CEGL code	8474
Color	Pink to Red
Tone	Light to Medium
Texture	Smooth to Medium
Pattern	Open to Moderate
Height	Short to Medium
Shape	Small patches
Size	Less than one percent of the total park area
Location	Wetland
Association	8462, 7312, 7213, 7330, and 7216
Comments	–

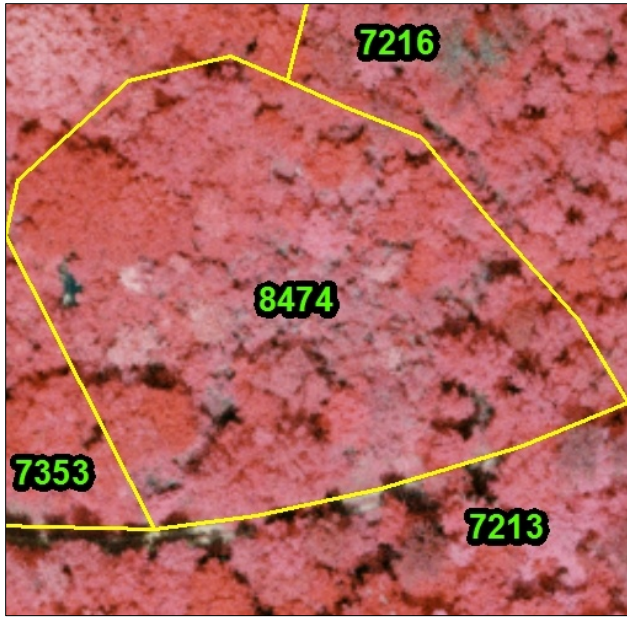


Figure A-31. Map showing Southeastern Smooth Alder Swamp (8474).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70%) tall-shrub layer (5–10 meters [16.4–32.8 ft]) is dominated by *Alnus serrulata* (hazel alder); additional species include sapling *Acer rubrum* (red maple), *Magnolia virginiana* (sweetbay), and *Quercus michauxii* (swamp chestnut oak). *Alnus serrulata* (hazel alder) also dominates the moderately sparse (40%) short-shrub layer (1–2 meters [3.3–6.6 ft]) which includes *Acer rubrum* (red maple), *Cornus amomum* (silky dogwood), and *Ilex verticillata* (common winterberry). The very dense (100%) herbaceous layer is dominated by the invasive exotic *Microstegium vimineum* (Nepalese browntop) to the near exclusion of any other species. Native species at trace amounts include *Boehmeria cylindrica* (smallspike false nettle), *Commelina virginica* (Virginia dayflower), *Geum canadense* (white avens), *Juncus effusus* (common rush), *Onoclea sensibilis* (sensitive fern), *Rubus argutus* (sawtooth blackberry), *Solidago rugosa* (wrinkleleaf goldenrod), *Symphotrichum lateriflorum* (calico aster), *Triadenum walteri* (greater marsh St. Johnswort), and others.

Global Vegetation

Stands of this vegetation are dominated by tall shrubs and are characterized by some combination of *Alnus serrulata* (hazel alder), *Viburnum* (viburnum) spp., *Cornus* (dogwood) spp., and *Salix* (willow) spp. In addition, saplings of *Acer rubrum* (red maple) are typical. Other shrubs present may include *Cephalanthus occidentalis* (common buttonbush), *Decodon verticillatus* (swamp loosestrife), and *Ilex verticillata* (common winterberry). Herbaceous associates include *Osmunda regalis* (royal fern), *Thelypteris palustris* (eastern marsh fern), *Boehmeria cylindrica* (smallspike false nettle), *Polygonum sagittatum* (arrowleaf tearthumb), *Commelina virginica* (Virginia dayflower), *Galium* (bedstraw) spp., *Lycopus* (waterhorehound) spp., *Typha latifolia* (broadleaf cattail), *Peltandra virginica* (green arrow arum), *Mikania scandens* (climbing hempvine), and *Carex* (sedge) spp. (e.g., *Carex crinita*

(fringed sedge), *Carex atlantica* (prickly bog sedge)). Tree species such as *Acer rubrum* (red maple) and *Juglans nigra* (black walnut) may exist on the fringes of such an association, occasionally overshadowing parts of it. The exotic *Murdannia keisak* (wartremoving herb) may also be present.

Bahia Grass Herbaceous Vegetation (4700)

Attributes, descriptions, a photo, and a map are shown in Table A-20 and Figures A-32 and A-33.

Table A-20. Attributes and Descriptions for Bahia Grass Herbaceous Vegetation (4700).

Attribute	Description
CEGL code	4700
Color	Pink
Tone	Light
Texture	Smooth
Pattern	Open
Height	Short
Shape	Irregular
Size	Represents three percent of park
Location	Wetland, Low areas
Association	7330, 8462, 8493, 6011, and 7221
Comments	–



Figure A-32. Example of Bahia Grass Herbaceous Vegetation (4700).



Figure A-33. Map showing Bahia Grass Herbaceous Vegetation (4700).

Summary

Horseshoe Bend National Military Park Vegetation

The dense (80%) herbaceous layer is dominated by *Paspalum notatum* (bahiagrass) and includes lesser amounts of *Cynodon dactylon* (Bermudagrass), *Paspalum dilatatum* (dallisgrass), *Paspalum urvillei* (Vasey's grass), and *Solanum carolinense* (Carolina horsenettle).

Global Vegetation

These improved pastures, roadsides and lawns are dominated by *Paspalum notatum* (bahiagrass), with varying degrees of native composition remaining. Various remnant native species occur to varying degrees and are sometimes codominant.

Highland Rim Pond (Woolgrass Bulrush - Threeway Sedge Type) (4719)

Attributes, descriptions, and a map are shown in Table A-21 and Figure A-34.

Table A-21. Attributes and Descriptions for Highland Rim Pond (Woolgrass Bulrush - Threeway Sedge Type) (4719).

Attribute	Description
CEGL code	4719
Color	Dark gray to black
Tone	Dark
Texture	Smooth
Pattern	Open

Table A-21 (continued). Attributes and Descriptions for Highland Rim Pond (Woolgrass Bulrush - Threeway Sedge Type) (4719).

Attribute	Description
Height	Short
Shape	Long and narrow
Size	–
Location	Lowland areas
Association	8583, 8462, 7312
Comments	–

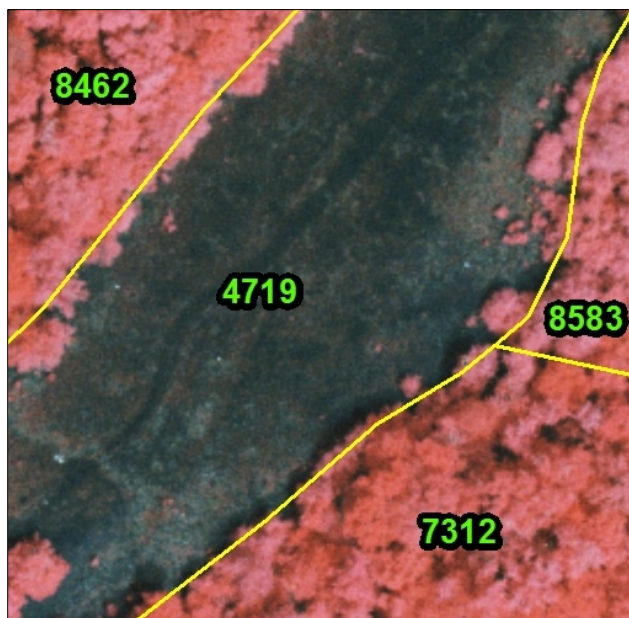


Figure A-34. Map showing Highland Rim Pond (Woolgrass Bulrush - Threeway Sedge Type). CEGL code is 4719.

Summary

Horseshoe Bend National Military Park Vegetation

The dense (80%) herbaceous layer is dominated almost exclusively by *Panicum rigidulum* (redtop panicgrass) but does include small amounts of *Pluchea camphorata* (camphor pluchea) and *Polygonum hydropiperoides* (swamp smartweed).

Global Vegetation

The vegetation is typically dominated by patches or zones of *Scirpus cyperinus* (woolgrass), possibly with thick mats of *Dulichium* (dulichium). In addition to these, various *Carex* (sedge) spp., *Juncus coriaceous* (leathery rush), *Juncus effusus* (common rush), *Osmunda regalis* var. *spectabilis* (royal

fern), *Panicum rigidulum* (redtop panicgrass), *Rhynchospora* (beaksedge) spp., and scattered *Itea virginica* (Virginia sweetspire) and *Cephalanthus occidentalis* (common buttonbush) are often found. Floristics and gradient expression vary with context and management. Some examples (Interior Low Plateau of Tennessee) may have additional small trees and shrubs, such as *Hibiscus moscheutos* (crimson-eyed rosemallow), *Liquidambar styraciflua* (sweetgum), *Quercus phellos* (willow oak), and *Rosa palustris* (swamp rose) scattered within. The Upper East Gulf Coastal Plain (Alabama) example has *Nyssa biflora* (swamp tupelo), *Alnus serrulata* (hazel alder), *Itea virginica* (Virginia sweetspire), *Liquidambar styraciflua* (sweetgum), *Pinus taeda* (loblolly pine) and *Acer rubrum* var. *trilobum* (red maple) as scattered woody plants. *Scirpus cyperinus* (woolgrass) may share dominance with *Panicum rigidulum* var. *elongatum* (redtop panicgrass) and *Rhynchospora corniculata* (shortbristle horned beaksedge) on drier ground surrounding the pond center, or scattered about on hummocks. Zones or areas of deeper water may support floating aquatics, including *Nymphaea odorata* (American white waterlily) and *Utricularia gibba* (humped bladderwort). In more open examples (Tennessee), some other species present may include *Xyris laxifolia* var. *iridifolia* (irisleaf yellow-eyed grass), *Carex bullata* (button sedge), *Carex gigantea* (giant sedge), *Carex lurida* (shallow sedge), *Calamagrostis coarctata* (arctic reedgrass), *Leersia hexandra* (southern cutgrass), *Rhynchospora corniculata* (shortbristle horned beaksedge), *Rhynchospora glomerata* (clustered beaksedge), *Rhynchospora perplexa* (pineland beaksedge), *Andropogon virginicus* (broomsedge bluestem), *Dichanthelium scoparium* (velvet panicum), *Dichanthelium dichotomum* var. *ramulosum*, *Dichanthelium longiligulatum* (coastalplain panicgrass), *Saccharum baldwinii* (narrow plumegrass), and *Proserpinaca pectinata* (combleaf mermaidweed). Some additional herbaceous species seen in the Alabama occurrence include *Eleocharis* (spikerush) sp., *Ludwigia alternifolia* (seedbox), *Ludwigia leptocarpa* (anglestem primrose-willow), *Ludwigia palustris* (marsh seedbox), *Lycopus* (waterhorehound) sp., *Rhexia mariana* (Maryland meadowbeauty), *Rhynchospora chalarocephala* (loosehead beaksedge), *Triadenum virginicum* (Virginia marsh St. Johnswort), and *Xyris smalliana* (Small's yellow-eyed grass). The vegetation may consist of monospecific clumps of the component species, which are present around the pond margin, or scattered clumps in examples with less clear zonation.

Smartweed – Cutgrass Beaver Pond (4290)

Attributes, descriptions, and a map are shown in Table A-22 and Figure A-35.

Table A-22. Attributes and Descriptions for Smartweed – Cutgrass Beaver Pond (4290).

Attribute	Description
CEGL code	4290
Color	White to Pink
Tone	Light
Texture	Smooth
Pattern	Open

Table A-22 (continued). Attributes and Descriptions for Smartweed – Cutgrass Beaver Pond (4290).

Attribute	Description
Height	n/a
Shape	Long and narrow
Size	Smallest class inside park
Location	Along Tallapoosa River
Association	7221
Comments	–

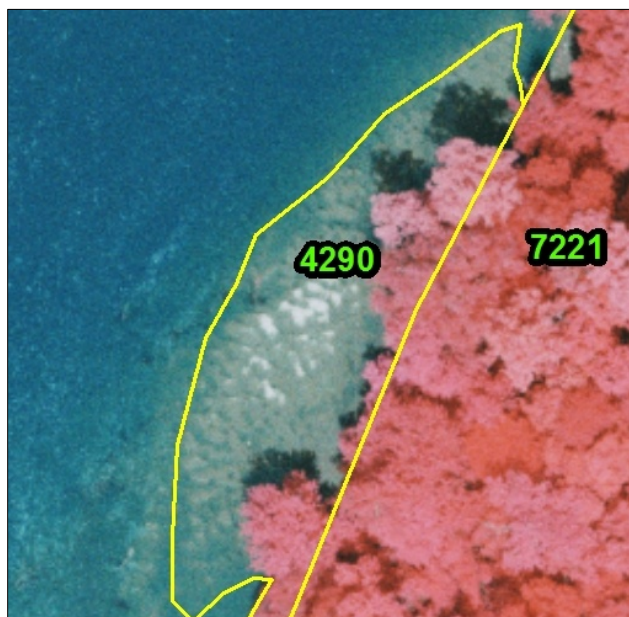


Figure A-35. Map showing Smartweed – Cutgrass Beaver Pond (4290).

Summary

Horseshoe Bend National Military Park Vegetation

The moderately dense (70%) herbaceous layer is dominated by *Leersia oryzoides* (rice cutgrass) and includes *Agrostis stolonifera* (creeping bentgrass), *Eupatorium serotinum* (lateflowering thoroughwort), *Pluchea camphorata* (camphor pluchea), *Polygonum punctatum* (dotted smartweed), *Polygonum sagittatum* (arrowleaf tearthumb), and others.

Global Vegetation

Stands of this vegetation are dominated by some combination of *Polygonum punctatum* (dotted smartweed), *Polygonum hydropiperoides* (swamp smartweed), *Leersia lenticularis* (catchfly grass), *Leersia oryzoides* (rice cutgrass), and/or *Leersia virginica* (whitegrass). Other herbaceous species which may be present include *Polygonum densiflorum* (denseflower knotweed), *Saururus cernuus*

(lizard's tail), *Proserpinaca* (mermaidweed) sp., *Sparganium americanum* (American bur-reed), *Typha latifolia* (broadleaf cattail), *Scirpus cyperinus* (woolgrass), *Lobelia cardinalis* (cardinalflower), *Onoclea sensibilis* (sensitive fern), *Penthorum sedoides* (ditch stonecrop), *Boehmeria cylindrica* (smallspike false nettle), *Sambucus canadensis* (common elderberry), *Bidens aristosa* (bearded beggarticks), and *Xanthium strumarium* (rough cocklebur). Scattered individuals of *Cephalanthus occidentalis* (common buttonbush) and *Acer saccharinum* (silver maple) or other woody plants may be present. Examples which have become dried-out (through drought and/or beaver dam failure) may exhibit greater dominance by *Leersia* (cutgrass) rather than *Polygonum* (knotweed). The combination of *Polygonum punctatum* - *Leersia virginica* was first noted, but the combination of *Polygonum hydropiperoides* (swamp smartweed) and *Leersia lenticularis* (catchfly grass) has also been observed in the Oconee National Forest.

Open Grass (4048)

Attributes, descriptions, and a map are shown in Table A-23 and Figure A-36.

Table A-23. Attributes and Descriptions for Open Grass (4048).

Attribute	Description
CEGL code	4048
Color	Pink
Tone	Light
Texture	Smooth
Pattern	Open
Height	Short
Shape	Irregular
Size	3%
Location	Wetland, Low areas
Association	8462, 7330
Comments	—

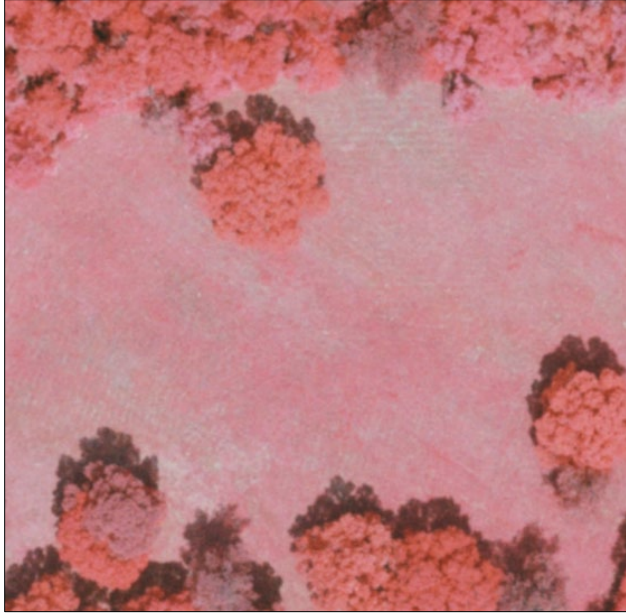


Figure A-36. Map showing Open Grass (4048).

Summary

This association includes grassland pastures and hayfields, more-or-less cultural, though sometimes no longer actively maintained. It is currently defined for the Central and Southern Appalachians, Ozarks, Ouachita Mountains, and parts of the Piedmont and Interior Low Plateau, but it is possible throughout much of the eastern United States and southern Canada. The dominant species in this type are the European "tall or meadow fescues" of uncertain and controversial generic placement. Several other exotic grasses (*Agrostis gigantea*, *Dactylis glomerata*, *Holcus lanatus*, *Phleum pratense*, and *Poa pratensis*, for example) are common associates. These communities are sometimes nearly monospecific but can also be very diverse and contain many native as well as exotic species of grasses, sedges, and forbs. Exotic forbs include the legumes *Lespedeza cuneata*, *Trifolium campestre*, *Trifolium hybridum*, *Trifolium pratense*, and *Trifolium repens*, as well as *Achillea millefolium*, *Calystegia sepium*, *Daucus carota*, *Leucanthemum vulgare*, *Oxalis stricta*, and *Plantago lanceolata*. Common native herbs include *Apocynum cannabinum*, *Desmodium canescens*, *Dichanthelium clandestinum*, *Erigeron annuus*, *Fragaria virginiana*, *Potentilla simplex*, *Solanum carolinense*, *Solidago canadensis*, and *Verbesina occidentalis*.

Literature Cited

Literature Citations from the Vegetation Description of each CEGLE Code provided by NatureServe.

- Beckett, S., and M. S. Golden. 1982. Forest vegetation and vascular flora of Reed Brake Research Natural Area, Alabama. *Castanea* 48:368-392.
- CAP [Central Appalachian Forest Working Group]. 1998. Central Appalachian Working group discussions. The Nature Conservancy, Boston, Massachusetts.
- Golden, M. S. 1979. Forest vegetation of the lower Alabama Piedmont. *Ecology* 60:770-782.
- McClain, W. E. Personal communication. Ecologist, Illinois Department of Natural Heritage.
- Jones, S. M., D. H. Van Lear, and S. K. Cox. 1981. Major forest community types of the Savannah River Plant: A field guide. USDE Savannah River Plant, National Environmental Research Park Program. Report No. SRO-NERP-9. 79 pp. plus 24 illustrations.
- NatureServe Ecology - Southeastern United States. No date. Unpublished data. NatureServe, Durham, N.C.
- Nigh, T. A. Personal communication. Ecologist, Missouri Conservation Commission, Jefferson City, Missouri.
- Smeins, F. E., D. D. Diamond, and C. W. Hanselka. 1992. Coastal Prairie. Pages 269-290 in: R. T. Coupland, editor. *Natural Grasslands*. Elsevier, New York.
- TNC [The Nature Conservancy]. 1998. An investigation and assessment of the vegetation of Arnold Air Force Base. Coffee and Franklin counties, Tennessee. The Nature Conservancy, Tennessee Field Office, Nashville. 37 pp. plus appendices.

Appendix B. NatureServe Vegetation Plot Locations and Notes

Table B-1. Field data acquired by L. Echols, L. Kruse and G. Burke in May, July, August, September and October of 2007 and August and September of 2008.

Plot Code	Field X	Field Y	Provisional	Elcode	Environment	Leaf Type	Leaf Phenology	Physiological Class
HOBE01	32.97900	-85.74819	bottomland hardwood forest	7806	-	Broad-leaved	Cold-deciduous	Forest
HOBE02	32.97860	-85.74822	upland oak-hickory forest	7217	-	Broad-leaved	Cold-deciduous	Forest
HOBE03	32.97650	-85.74780	loblolly pine-hardwood forest	6011	-	Needle-leaved	Evergreen	Forest
HOBE04	32.96760	-85.73972	bottomland hardwood forest	7330	-	Broad-leaved	Cold-deciduous	Forest
HOBE05	32.97310	-85.73577	maintained field	4700	-	Graminoid	Perennial herb	Herbaceous vegetation
HOBE06	32.97060	-85.73983	loblolly pine-hardwood forest	8462	-	Needle-leaved	Mixed evergreen - cold-deciduous	Forest
HOBE07	32.98270	-85.73402	loblolly pine-hardwood forest	6011	-	Needle-leaved	Mixed evergreen - cold-deciduous	Forest
HOBE08	32.98440	-85.74805	pine-hardwood forest	8493	-	Broad-leaved	Cold-deciduous	Forest
HOBE09	32.98700	-85.74041	montane longleaf pine forest	8437	-	Broad-leaved	Mixed evergreen - cold-deciduous	Forest
HOBE10	32.97450	-85.72405	mid-successional sweetgum forest	7216	-	Broad-leaved	Cold-deciduous	Forest
HOBE11	32.96150	-85.74325	alder swamp	8474	site appears to be the bed of a former beaver impoundment; gradually reverting to woodland	Broad-leaved	Cold-deciduous	Shrubland
HOBE12	32.96590	-85.73458	upland oak-hickory forest	7244	-	Broad-leaved	Cold-deciduous	Forest

Plot Code	Field X	Field Y	Provisional	Elcode	Environment	Leaf Type	Leaf Phenology	Physiological Class
HOBE13	32.96560	-85.73852	bottomland loblolly pine-hardwood forest	8462	-	Needle-leaved	Mixed evergreen - cold-deciduous	Forest
HOBE14	32.97460	-85.73686	upland hardwood forest	7221	-	Broad-leaved	Cold-deciduous	Forest
HOBE15	32.96900	-85.74330	riverine herbaceous vegetation	3836	densely vegetated	Broad-leaved herbaceous	Perennial herb	Herbaceous vegetation
HOBE16	32.97000	-85.74302	herbaceous mudflat	4290	-	Graminoid	Perennial herb	Herbaceous vegetation
HOBE17	32.96830	-85.74238	maintained hardwood forest	8462	-	Broad-leaved	Cold-deciduous	Forest
HOBE18	32.97790	-85.73744	small stream ravine forest	7213	-	Broad-leaved	Cold-deciduous	Forest
HOBE19	32.96880	-85.73925	early-successional sweetgum forest	7330	-	Broad-leaved	Cold-deciduous	Forest
HOBE20	32.97580	-85.72250	loblolly pine-hardwood forest	8462	-	Needle-leaved	Evergreen	Forest
HOBE21	32.97660	-85.72108	small stream ravine forest	7330	-	Broad-leaved	Cold-deciduous	Forest
HOBE22	32.97870	-85.72130	bottomland loblolly pine-hardwood forest	8462	-	Broad-leaved	Cold-deciduous	Forest
HOBE23	32.98220	-85.72222	riverine hardwood forest	7312	-	Broad-leaved	Cold-deciduous	Forest
HOBE24	32.97430	-85.73969	riverine hardwood forest	7353	-	Broad-leaved	Cold-deciduous	Forest
HOBE25	32.97440	-85.74152	beech forest	7201	-	Broad-leaved	Cold-deciduous	Forest
HOBE26	32.97800	-85.71830	herbaceous depression	4719	-	Graminoid	Perennial herb	Herbaceous vegetation
HOBE27	32.98020	-85.71533	oak slough	8583	-	Broad-leaved	Cold-deciduous	Forest
HOBE28	32.97890	-85.71458	hardwood slope	7261	-	Broad-leaved	Cold-deciduous	Forest
HOBE29	32.97650	-85.71463	sweetbay streamside forest	8552	-	Broad-leaved	Cold-deciduous	Forest

Plot Code	Field X	Field Y	Provisional	Elcode	Environment	Leaf Type	Leaf Phenology	Physiological Class
HOBE30	32.97510	-85.71777	loblolly pine - hardwood forest	8462	-	Needle-leaved	Evergreen	Forest
HOBE31	32.98080	-85.72530	riverine forest	7312	-	Broad-leaved	Cold-deciduous	Forest
HOBE32	32.98660	-85.72361	loblolly pine - hardwood forest	8462	-	Needle-leaved	Evergreen	Forest
HOBE33	32.98310	-85.72758	sweetbay streamside forest	8552	-	Broad-leaved	Cold-deciduous	Forest
HOBE34	32.98250	-85.73005	early-successional loblolly pine forest	6011	-	Needle-leaved	Evergreen	Forest
HOBE35	32.98700	-85.73338	montane longleaf pine forest	8437	-	Needle-leaved	Evergreen	Forest
HOBE36	32.97970	-85.74402	bottomland hardwood forest	7353	-	Broad-leaved	Cold-deciduous	Forest

Appendix C. Flight Line Information

Table C-1. Horseshoe Bend National Military Park flight line and photo numbers and photo center coordinates (UTM Zone 16, NAD83). Photos were acquired by Aero-Metric at 1:12,000 scale on May 1, 2011.

Flight line	Photo	Easting	Northing
1	1	617610.9	3646471.6
1	2	617611.6	3647557.7
1	3	617613.6	3648625.4
1	4	617610.8	3649707.7
1	5	617617.0	3650800.4
1	6	617616.5	3651900.0
2	1	619503.8	3646456.4
2	2	619508.4	3647523.0
2	3	619505.1	3648593.0
2	4	619507.3	3649688.1
2	5	619493.2	3650785.7
2	6	619509.7	3651869.9

Appendix D Accuracy Assessment

Table D-1. Data points acquired by J. Schmid, B. Cogdell, F. Barksdale, and B. Rosenblatt May, 2015.

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_025_005	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008474	None	TRUE	Good fit. Stream floodplain/swamp	6/13/2015	Ben Cogdell
HOBE_AA_025_006	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008474	None	TRUE	Good fit. Shrub swamp along tributary	6/9/2015	Ben Cogdell
HOBE_AA_050_003	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004290	None	TRUE	Poor fit. Freshwater marsh. No cutgrass or agrostis stolonifera	6/9/2015	Ben Cogdell
HOBE_AA_050_004	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004290	None	TRUE	Fair fit. Freshwater shrub marsh. No Agrostis stolonifera or Leersia oryzoides	6/9/2015	Ben Cogdell
HOBE_AA_050_007	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Fair Fit. Floodplain forest adjacent to freshwater marsh/oxbow. No hickory, sycamore or black walnut.	6/9/2015	Ben Cogdell
HOBE_AA_050_008	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008583	None	TRUE	Good fit. Wetland hardwood forest	6/9/2015	Ben Cogdell
HOBE_AA_050_009	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest	6/9/2015	Ben Cogdell
HOBE_AA_050_010	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	CEGL007353	TRUE	Good fit. Mesic forest adjacent to slope. Lacking liquidambar styraciflua in canopy and <30% pine in canopy	6/9/2015	Ben Cogdell
HOBE_AA_050_011	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Stream/forested floodplain. No Platanus occidentalis	6/22/2015	Ben Cogdell
HOBE_AA_050_012	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest. No liriodendron tulipifera	6/8/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_013	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007353	None	TRUE	Good fit. On upland berm within floodplain of river swell between river and upland berm. Bottomland floodplain wetland NNW of point. Quercus nigra dominant portion of canopy, co-dominated by Liquidambar styraciflua, Platanus occidentalis beyond plot radius.	5/20/2015	Ben Cogdell
HOBE_AA_050_014	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. On terrace of river (500 feet to the S), mainted fire break road (100 feet to the NE). Quercus nigra dominant in canopy, Liquidambar styraciflua and Liriodendron tulipifera dominate the sub canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_015	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008583	None	TRUE	Fair fit. Floodplain forest. No quercus lyrata	6/8/2015	Ben Cogdell
HOBE_AA_050_016	5/20/2015	Ben Cogdell, Matt Thomas	CEGL006011	CEGL008437	FALSE	Fair fit. Side slope 4-8% with small gully where point occurs. No presence of Fagus grandifolia or Quercus nigra in canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_017	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008493	None	TRUE	Good fit. Slope forest. No Pinus palustris, no Quercus coccinea. Quercus stellata and Fagus grandifolia present.	6/24/2015	Ben Cogdell
HOBE_AA_050_018	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Ridgetop forest adjacent to Talapoosa river.	6/24/2015	Ben Cogdell
HOBE_AA_050_019	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Ridgetop pine forest.	6/24/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_020	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Point on top of ridge. Upland community-periodic burning. Quercus stellata substitutes for Quercus alba. No Quercus coccinea.	6/25/2015	Ben Cogdell
HOBE_AA_050_021	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Good fit. Ridge top with slope down to stream 1000 to 1500 feet to west, headwater crenulation to the east. Several dead mature pines with in plot (Pitch tubes). Pinus taeda dominate with co-dominant Pinus palustris, Pinus echinata present but to a lesser degree than taeda or palustris, regular fire intervals.	5/19/2015	Ben Cogdell
HOBE_AA_050_022	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Site within streambed of beech/white oak forest. Site was within stream bed/quercus nigra major component	6/9/2015	Ben Cogdell
HOBE_AA_050_023	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Good fit. Quercus alba present but not dominant. Quercus nigra present but not dominant.	5/20/2015	Ben Cogdell
HOBE_AA_050_024	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Fair fit. Located in crenulation between two ridges. Ephemeral drain occurs but no indication of surface flow in it. Stream starts 500 feet SE. Quercus alba and Quercus coccinea not present, Quercus falcata and Quercus nigra dominate canopy, Fagus grandifolia is a major component of the upper sub-canopy.	5/19/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_025	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007216	None	TRUE	Good fit. Adjacent to left stream bank. Perennial stream 6 feet wide, 6-12 inches deep. Located in floodplain of stream between two slopes; floodplain contains wetlands. Quercus nigra present but not dominant. Nyssa biflora represents dominant species.	5/19/2015	Ben Cogdell
HOBE_AA_050_026	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Good fit. Side slope between ridge top and headwater wetland beside perennial and intermittent stream with side slope wetland seeps. Canopy not containing Liriodendron tulipifera but dominates the sub canopy, Quercus alba in canopy and sub canopy.	5/19/2015	Ben Cogdell
HOBE_AA_050_027	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008462	None	TRUE	Good fit. On lower end of slope near stream head (intermittent) on east side, west goes up 15-25% toward ridgetop around 2000 feet towards east. Not codominated by Pinus taeda, but present.	5/19/2015	Ben Cogdell
HOBE_AA_050_028	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Fair fit. Side slope is forested, ridge top the west, within floodplain. No Quercus alba, significant amount of Quercus falcata in canopy, no Liquidambar styraciflua, little poplar, presence of Quercus nigra.	5/19/2015	Ben Cogdell
HOBE_AA_050_029	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007213	None	TRUE	Good fit. Located in crenulation at convergence of two small streams with wetlands adjacent. Streams come into plot from NE and leaves from SW. Side slope seepage.	5/21/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_030	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upland pine/hardwood slope forest	6/15/2015	Ben Cogdell
HOBE_AA_050_031	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest adjacent to stream	6/15/2015	Ben Cogdell
HOBE_AA_050_032	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Stream swamp floodplain. No quercus nigra	6/13/2015	Ben Cogdell
HOBE_AA_050_033	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Stream floodplain forest	6/13/2015	Ben Cogdell
HOBE_AA_050_034	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Floodplain swamp forest. No liriodendron tulipifera	6/13/2015	Ben Cogdell
HOBE_AA_050_035	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007216	None	TRUE	Good fit. Wetland swamp/bottomland forest. No groundcover or shrubs	6/11/2015	Ben Cogdell
HOBE_AA_050_036	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Ridgetop forest with pine, sweetgum, and hickory.	6/12/2015	Ben Cogdell
HOBE_AA_050_037	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007312	None	TRUE	Good fit. Tallapoosa River levee forest. No Betula nigra or Platanus occidentalis	6/8/2015	Ben Cogdell
HOBE_AA_050_038	5/18/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Fair fit. Spine of ridge with rock exposed along spine. No Pinus echinata, sparse Pinus Palustris in canopy. Pinus taeda is more dominant.	5/18/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_039	5/18/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Fair fit. Upland community with ephemeral swell through middle, very close proximity to river but not within floodplain and terrace. Rock on ground on west side of point. Canopy does not contain Liquidambar styraciflua nor Quercus alba. Dominated by Liriodendron tulipifera.	5/18/2015	Ben Cogdell
HOBE_AA_050_040	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Floodplain on terrace of Tallapoosa River. Ridge to the north.	5/20/2015	Ben Cogdell
HOBE_AA_050_041	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Crook meanders entering at north and meanders west of center point. Center point falls within terrace and floodplain of unnamed tributary. Perennial stream. Liquidambar styraciflua in canopy but not dominant.	5/19/2015	Ben Cogdell
HOBE_AA_050_042	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Along western boundary of park. Ridge/ mid-slope forest upland. Fagus grandifolia not prominent in canopy but present.	6/23/2015	Ben Cogdell
HOBE_AA_050_043	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Forested floodplain adjacent to major stream/tributary to Talapoosa river. No Platanus occidentalis, No Juglans nigra.	6/22/2015	Ben Cogdell
HOBE_AA_050_044	5/18/2015	Ben Cogdell, Matt Thomas	CEGL008493	None	TRUE	Good fit. Upland mid slope, not on a ridge. Pinus taeda dominant, Pinus palustris present, Pinus echinata absent.	5/18/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_045	5/18/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. West of unnamed tributary by about 20 feet in the terrace of Tall River. <i>Arundinaria gigantea</i> , <i>Microstegium vimineum</i> and <i>Ligustrum sinense</i> dominate herbaceous understory.	5/18/2015	Ben Cogdell
HOBE_AA_050_046	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest. No <i>Liriodendron tulipifera</i> and <40% shrubs	6/8/2015	Ben Cogdell
HOBE_AA_050_047	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Floodplain forest. Pure <i>Liquidambar styraciflua</i> / <i>Liriodendron tulipifera</i> forest	6/8/2015	Ben Cogdell
HOBE_AA_050_048	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Stream/terrace forested wetland. Stream runs through plot. No <i>liquidambar styraciflua</i>	6/9/2015	Ben Cogdell
HOBE_AA_050_049	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	CEGL008583	TRUE	Fair fit. Floodplain forest. No <i>Liriodendron tulipifera</i> or <i>Quercus lyrata</i> /phellos	6/8/2015	Ben Cogdell
HOBE_AA_050_050	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007312	None	TRUE	Good fit. Floodplain from river, backside of depositional berm (15 feet NW from river). Terrace begins 100 feet to the NW, swell on floodplain, maintained trail in swell. <i>Betula nigra</i> not present, high density of <i>Acer negunda</i> in sub canopy, making its way into canopy but not dominant in canopy. <i>Juglans nigra</i> , <i>Celtis laevigata</i> , <i>Fraxinus pennsylvanica</i> not present. Canopy dominated by <i>Platanus occidentalis</i> .	5/20/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_051	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007312	None	TRUE	Good fit. Along right bank of Tallapoosa River (right). Several blowdowns and several species covered in vines and dying. River to south, grades up to floodplain and terrace to the north. Juglans nigra and Celtis laevigata not present.	5/20/2015	Ben Cogdell
HOBE_AA_050_052	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007312	None	TRUE	Good fit. River banks levee forest	6/8/2015	Ben Cogdell
HOBE_AA_050_053	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007806	None	TRUE	Good fit. Floodplain terrace. No Juglans nigra or Betula nigra	6/8/2015	Ben Cogdell
HOBE_AA_050_054	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	CEGL007312	TRUE	Fair fit. Limited Quercus nigra. No Carya cordifomis. Juglans nigra/Liquidambar styraciflua not present. Strong presence of Arundinaria, but no Ligustrum.	6/25/2015	Ben Cogdell
HOBE_AA_050_055	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008552	None	TRUE	Fair fit. Floodplain forest. No Magnolia virginiana	6/9/2015	Ben Cogdell
HOBE_AA_050_056	5/18/2015	Ben Cogdell, Matt Thomas	CEGL007300	CEGL008462	TRUE	Good fit. Terrace of river. Greater amount of Quercus nigra just outside of plot. Arundinaria gigantea throughout herbaceous layer.	5/18/2015	Ben Cogdell
HOBE_AA_050_057	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Tallapoosa River adjacent forested floodplain. No Juglans nigra, no Quercus nigra.	6/22/2015	Ben Cogdell
HOBE_AA_050_058	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007312	None	TRUE	Good fit. Within Tallapoosa Active floodplain; approx. 30 meters from river. Nominal presence of Ligustrum sinense.	6/23/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_059	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Within upper limits of crenulation-small seep immediately adjacent to point following topo crenulation downstream. Mostly upland. Liquidambar styraciflua, fagus grandifolia, quercus nigra not present in canopy, all are present in sub canopy.	6/25/2015	Ben Cogdell
HOBE_AA_050_060	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upper slope within topographic crenulation. No Quercus nigra, considerable coverage of Fagus grandifolia in sub canopy. Dense coverage of sourwood in sub canopy.	6/25/2015	Ben Cogdell
HOBE_AA_050_061	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Mid to upper slope-frequently burned. Little understory; small ephem/intermit. Channel just beyond plot radius. Dominated by Pinus palustris. No Pinus taeda, No Pinus echinata, No Quercus falcata. Quercus alba in sub canopy. Dominated by Pinus palustris.	6/25/2015	Ben Cogdell
HOBE_AA_050_062	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Fair fit. Locate on side slope (12-24%). Gravel ATV trail to east. Side slope seep located to west of plot. Quercus alba dominant. Does not contain Liquidambar styraciflua in canopy. Liriodendron tulipifera not present. Quercus alba co-dominant with Acer rubrum. Liquidambar styraciflua present in sub canopy layer.	5/21/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_063	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Located along ridge top, slopes (2-6%) along west and south. Lacks Quercus coccinea, good coverage of Quercus rubra, not dominated by Quercus prinus. Dominated by Quercus alba and Quercus rubra.	5/21/2015	Ben Cogdell
HOBE_AA_050_064	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007217	None	TRUE	Good fit. Ridgetop forest adjacent to Talapoosa river. With Quercus alba, Pinus taeda, and Carya tomentosa.	6/24/2015	Ben Cogdell
HOBE_AA_050_065	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with Pine, White oak and Southern Red oak. No Quercus coccinea	6/13/2015	Ben Cogdell
HOBE_AA_050_066	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	CEGL007217	TRUE	Fair fit. Upland pine/hardwood slope forest. No Quercus nigra	6/15/2015	Ben Cogdell
HOBE_AA_050_067	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. At top of crenulation. Point dominated by upland, small ephemeral chan. Immediately adjacent to point. Mostly slopes/ridges. Liquidambar styraciflua and Acer rubrum not canopy components, but present in sub canopy.	6/25/2015	Ben Cogdell
HOBE_AA_050_068	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007261	CEGL006011	TRUE	Fair fit. Slope forest adjacent to Talapoosa river. Pine/oak mix. No Quercus prinus, No Carya glabra.	6/26/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_069	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Lcoated on bluff over looking Tallapoosa River. Slopes 6-12% up towards to North, river to the South. Liriodendron tulipifera and Quercus nigra dominate. Liquidambar styraciflua is present but not dominant.	5/21/2015	Ben Cogdell
HOBE_AA_050_070	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007312	None	TRUE	Poor fit. Tallapoosa floodplain forest on levee. Dominated by Acer negundo. No Betula nigra, Platanus occidentalis, Celtis laevigata, or Fraxinus pennsylvanica	6/16/2015	Ben Cogdell
HOBE_AA_050_071	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Forested floodplain/slope forest mix. Adjacent to Talaposa river. No Platanus Occidentalis, No Juglans nigra.	6/26/2015	Ben Cogdell
HOBE_AA_050_072	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Located on side slope near ridgetop. Disturbed/maintained battlefield 200 feet to the west. Not co-dominated by Quercus prinus. Lacks Quercus coccinea.	5/21/2015	Ben Cogdell
HOBE_AA_050_073	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Fair fit. Ridgetop pine/oak forest. No Pinus echinata.	6/26/2015	Ben Cogdell
HOBE_AA_050_074	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Slope forest with pine and sweetgum. Pine appears mature >50 years	6/16/2015	Ben Cogdell
HOBE_AA_050_075	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007806	None	TRUE	Good fit. Wetland forested stream swamp. No Ulmus, No Celtis.	6/26/2015	Ben Cogdell
HOBE_AA_050_076	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Slope forest with Quercus nigra adjacent to Talapoosa river.	6/26/2015	Ben Cogdell

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HOBE_AA_050_077	5/21/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Side slope, with ridgetop 300 feet to NW. No hydrology, vegetated by early successional.	5/21/2015	Ben Cogdell
HOBE_AA_050_078	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Located in floodplain just at edge of slope to the west, perennial stream occurs 250 feet to the east. Ephemeral drawl occurs through north central portion of plot.	5/21/2015	Ben Cogdell
HOBE_AA_050_079	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007217	None	TRUE	Fair fit. Slope forest. No Quercus alba	6/10/2015	Ben Cogdell
HOBE_AA_050_080	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Along trib channel through old floodplain between two ridge tops. South ridge top very steep pine dominated north ridgetop low/moderate gradient to pine dominated. Liquidambar tulipifera is codominant in th sub canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_081	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest with mesic vegetation	6/16/2015	Ben Cogdell
HOBE_AA_050_082	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Mesic slope hardwood forest	6/16/2015	Ben Cogdell
HOBE_AA_050_083	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	CEGL007261	TRUE	Fair fit. Slope forest with hickory and oak. No Liriodendron tulipifera or Liquidambar styraciflua	6/11/2015	Ben Cogdell
HOBE_AA_050_084	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	CEGL007244	TRUE	Fair fit. Ridgetop forest with oak and pine. No Liriodendron tulipifera or Quercus coccinea	6/11/2015	Ben Cogdell
HOBE_AA_050_085	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with pine. No Quercus coccinea	6/11/2015	Ben Cogdell

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HOBE_AA_050_086	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with Red/White oaks. No Quercus coccinea	6/11/2015	Ben Cogdell
HOBE_AA_050_087	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007213	None	TRUE	Good fit. Located on side slope, lower end of radius touches floodplain wetland and side slope seepage. No Liquidambar styraciflua or Quercus nigra in the canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_088	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007201	None	TRUE	Good fit. Point falls in middle of stream taken 5 feet est on left bank. Falls in floodplain and terrace of perennial drawl.	5/19/2015	Ben Cogdell
HOBE_AA_050_089	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_090	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Plot on Horseshoe Bend Battlefield.	5/21/2015	Ben Cogdell
HOBE_AA_050_091	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_092	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_093	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_094	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_095	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_096	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Disturbed/Maintained grass field in front of visitors center.	5/21/2015	Ben Cogdell

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HOBE_AA_050_097	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field of visitors center that is Disturbed/Maintained.	5/21/2015	Ben Cogdell
HOBE_AA_050_098	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed upland within highway right of way and powerline easement with 1 pine tree	6/16/2015	Ben Cogdell
HOBE_AA_050_099	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_100	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_101	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_102	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest with Beech/White oak. No Liquidambar styraciflua or Quercus nigra	6/9/2015	Ben Cogdell
HOBE_AA_025_005	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008474	None	TRUE	Good fit. Stream floodplain/swamp	6/13/2015	Ben Cogdell
HOBE_AA_025_006	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008474	None	TRUE	Good fit. Shrub swamp along tributary	6/9/2015	Ben Cogdell
HOBE_AA_050_003	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004290	None	TRUE	Poor fit. Freshwater marsh. No cutgrass or agrostis stolonifera	6/9/2015	Ben Cogdell
HOBE_AA_050_004	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004290	None	TRUE	Fair fit. Freshwater shrub marsh. No Agrostis stolonifera or Leersia oryzoides	6/9/2015	Ben Cogdell
HOBE_AA_050_007	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Fair Fit. Floodplain forest adjacent to freshwater marsh/oxbow. No hickory, sycamore or black walnut.	6/9/2015	Ben Cogdell

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HOBE_AA_050_008	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008583	None	TRUE	Good fit. Wetland hardwood forest	6/9/2015	Ben Cogdell
HOBE_AA_050_009	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest	6/9/2015	Ben Cogdell
HOBE_AA_050_010	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	CEGL007353	TRUE	Good fit. Mesic forest adjacent to slope. Lacking liquidambar styraciflua in canopy and <30% pine in canopy	6/9/2015	Ben Cogdell
HOBE_AA_050_011	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Stream/forested floodplain. No Platanus occidentalis	6/22/2015	Ben Cogdell
HOBE_AA_050_012	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest. No liriodendron tulipifera	6/8/2015	Ben Cogdell
HOBE_AA_050_013	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007353	None	TRUE	Good fit. On upland berm within floodplain of river swell between river and upland berm. Bottomland floodplain wetland NNW of point. Quercus nigra dominant portion of canopy, co-dominated by Liquidambar styraciflua, Platanus occidentalis beyond plot radius.	5/20/2015	Ben Cogdell
HOBE_AA_050_014	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. On terrace of river (500 feet to the S), mainted fire break road (100 feet to the NE). Quercus nigra dominant in canopy, Liquidambar styraciflua and Liriodendron tulipifera dominate the sub canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_015	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008583	None	TRUE	Fair fit. Floodplain forest. No quercus lyrata	6/8/2015	Ben Cogdell

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HOBE_AA_050_016	5/20/2015	Ben Cogdell, Matt Thomas	CEGL006011	CEGL008437	FALSE	Fair fit. Side slope 4-8% with small gully where point occurs. No presence of Fagus grandifolia or Quercus nigra in canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_017	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008493	None	TRUE	Good fit. Slope forest. No Pinus palustris, no Quercus coccinea. Quercus stellata and Fagus grandifolia present.	6/24/2015	Ben Cogdell
HOBE_AA_050_018	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Ridgetop forest adjacent to Talapoosa river.	6/24/2015	Ben Cogdell
HOBE_AA_050_019	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Ridgetop pine forest.	6/24/2015	Ben Cogdell
HOBE_AA_050_020	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Point on top of ridge. Upland community-periodic burning. Quercus stellata substitutes for Quercus alba. No Quercus coccinea.	6/25/2015	Ben Cogdell
HOBE_AA_050_021	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Good fit. Ridge top with slope down to stream 1000 to 1500 feet to west, headwater crenulation to the east. Several dead mature pines with in plot (Pitch tubes). Pinus taeda dominate with co-dominant Pinus palustris, Pinus echinata present but to a lesser degree than taeda or palustris, regular fire intervals.	5/19/2015	Ben Cogdell
HOBE_AA_050_022	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Site within streambed of beech/white oak forest. Site was within stream bed/quercus nigra major component	6/9/2015	Ben Cogdell

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HOBE_AA_050_023	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Good fit. Quercus alba present but not dominant. Quercus nigra present but not dominant.	5/20/2015	Ben Cogdell
HOBE_AA_050_024	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Fair fit. Located in crenulation between two ridges. Ephemeral drain occurs but no indication of surface flow in it. Stream starts 500 feet SE. Quercus alba and Quercus coccinea not present, Quercus falcata and Quercus nigra dominate canopy, Fagus grandifolia is a major component of the upper sub-canopy.	5/19/2015	Ben Cogdell
HOBE_AA_050_025	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007216	None	TRUE	Good fit. Adjacent to left stream bank. Perennial stream 6 feet wide, 6-12 inches deep. Located in floodplain of stream between two slopes; floodplain contains wetlands. Quercus nigra present but not dominant. Nyssa biflora represents dominant species.	5/19/2015	Ben Cogdell
HOBE_AA_050_026	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Good fit. Side slope between ridge top and headwater wetland beside perennial and intermittent stream with side slope wetland seeps. Canopy not containing Liriodendron tulipifera but dominates the sub canopy, Quercus alba in canopy and sub canopy.	5/19/2015	Ben Cogdell
HOBE_AA_050_027	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008462	None	TRUE	Good fit. On lower end of slope near stream head (intermittent) on east side, west goes up 15-25% toward ridgetop around 2000 feet towards east. Not codominated by Pinus taeda, but present.	5/19/2015	Ben Cogdell

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HOBE_AA_050_028	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Fair fit. Side slope is forested, ridge top the west, within floodplain. No Quercus alba, significant amount of Quercus falcata in canopy, no Liquidambar styraciflua, little poplar, presence of Quercus nigra.	5/19/2015	Ben Cogdell
HOBE_AA_050_029	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007213	None	TRUE	Good fit. Located in crenulation at convergence of two small streams with wetlands adjacent. Streams come into plot from NE and leaves from SW. Side slope seepage.	5/21/2015	Ben Cogdell
HOBE_AA_050_030	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upland pine/hardwood slope forest	6/15/2015	Ben Cogdell
HOBE_AA_050_031	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest adjacent to stream	6/15/2015	Ben Cogdell
HOBE_AA_050_032	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Stream swamp floodplain. No quercus nigra	6/13/2015	Ben Cogdell
HOBE_AA_050_033	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Stream floodplain forest	6/13/2015	Ben Cogdell
HOBE_AA_050_034	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Floodplain swamp forest. No liriodendron tulipifera	6/13/2015	Ben Cogdell
HOBE_AA_050_035	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007216	None	TRUE	Good fit. Wetland swamp/bottomland forest. No groundcover or shrubs	6/11/2015	Ben Cogdell
HOBE_AA_050_036	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Ridgetop forest with pine, sweetgum, and hickory.	6/12/2015	Ben Cogdell
HOBE_AA_050_037	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007312	None	TRUE	Good fit. Tallapoosa River levee forest. No Betula nigra or Platanus occidentalis	6/8/2015	Ben Cogdell

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HOBE_AA_050_038	5/18/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Fair fit. Spine of ridge with rock exposed along spine. No Pinus echinata, sparse Pinus Palustris in canopy. Pinus taeda is more dominant.	5/18/2015	Ben Cogdell
HOBE_AA_050_039	5/18/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Fair fit. Upland community with ephemeral swell through middle, very close proximity to river but not within floodplain and terrace. Rock on ground on west side of point. Canopy does not contain Liquidambar styraciflua nor Quercus alba. Dominated by Liriodendron tulipifera.	5/18/2015	Ben Cogdell
HOBE_AA_050_040	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Floodplain on terrace of Tallapoosa River. Ridge to the north.	5/20/2015	Ben Cogdell
HOBE_AA_050_041	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Crook meanders entering at north and meanders west of center point. Center point falls within terrace and floodplain of unnamed tributary. Perennial stream. Liquidambar styraciflua in canopy but not dominant.	5/19/2015	Ben Cogdell
HOBE_AA_050_042	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Along western boundary of park. Ridge/ mid-slope forest upland. Fagus grandifolia not prominent in canopy but present.	6/23/2015	Ben Cogdell
HOBE_AA_050_043	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Forested floodplain adjacent to major stream/tributary to Talapoosa river. No Platanus occidentalis, No Juglans nigra.	6/22/2015	Ben Cogdell

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HOBE_AA_050_044	5/18/2015	Ben Cogdell, Matt Thomas	CEGL008493	None	TRUE	Good fit. Upland mid slope, not on a ridge. Pinus taeda dominant, Pinus palustris present, Pinus echinata absent.	5/18/2015	Ben Cogdell
HOBE_AA_050_045	5/18/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. West of unnamed tributary by about 20 feet in the terrace of Tall River. Arundinaria gigantea, Microstegium vimineum and Ligustrum sinense dominate herbaceous understory.	5/18/2015	Ben Cogdell
HOBE_AA_050_046	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest. No Liriodendron tulipifera and <40% shrubs	6/8/2015	Ben Cogdell
HOBE_AA_050_047	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Floodplain forest. Pure Liquidambar styraciflua/Liriodendron tulipifera forest	6/8/2015	Ben Cogdell
HOBE_AA_050_048	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Stream/terrace forested wetland. Stream runs through plot. No liquidambar styraciflua	6/9/2015	Ben Cogdell
HOBE_AA_050_049	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	CEGL008583	TRUE	Fair fit. Floodplain forest. No Liriodendron tulipifera or Quercus lyrata/phellos	6/8/2015	Ben Cogdell

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HOBE_AA_050_050	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007312	None	TRUE	Good fit. Floodplain from river, backside of depositional berm (15 feet NW from river). Terrace begins 100 feet to the NW, swell on floodplain, maintained trail in swell. Betula nigra not present, high density of Acer negunda in sub canopy, making its way into canopy but not dominant in canopy. Juglans nigra, Celtis laevigata, Fraxinus pennsylvanica not present. Canopy dominated by Platanus occidentalis.	5/20/2015	Ben Cogdell
HOBE_AA_050_051	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007312	None	TRUE	Good fit. Along right bank of Tallapoosa River (right). Several blowdowns and several species covered in vines and dying. River to south, grades up to floodplain and terrace to the north. Juglans nigra and Celtis laevigata not present.	5/20/2015	Ben Cogdell
HOBE_AA_050_052	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007312	None	TRUE	Good fit. River banks levee forest	6/8/2015	Ben Cogdell
HOBE_AA_050_053	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007806	None	TRUE	Good fit. Floodplain terrace. No Juglans nigra or Betula nigra	6/8/2015	Ben Cogdell
HOBE_AA_050_054	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	CEGL007312	TRUE	Fair fit. Limited Quercus nigra. No Carya cordifolia. Juglans nigra/Liquidambar styraciflua not present. Strong presence of Arundinaria, but no Ligustrum.	6/25/2015	Ben Cogdell
HOBE_AA_050_055	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008552	None	TRUE	Fair fit. Floodplain forest. No Magnolia virginiana	6/9/2015	Ben Cogdell

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HOBE_AA_050_056	5/18/2015	Ben Cogdell, Matt Thomas	CEGL007300	CEGL008462	TRUE	Good fit. Terrace of river. Greater amount of Quercus nigra just outside of plot. Arundinaria gigantea throughout herbaceous layer.	5/18/2015	Ben Cogdell
HOBE_AA_050_057	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Talapoosa River adjacent forested floodplain. No Juglans nigra, no Quercus nigra.	6/22/2015	Ben Cogdell
HOBE_AA_050_058	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007312	None	TRUE	Good fit. Within Talapoosa Active floodplain; approx. 30 meters from river. Nominal presence of Ligustrum sinense.	6/23/2015	Ben Cogdell
HOBE_AA_050_059	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Within upper limits of crenulation-small seep immediately adjacent to point following topo crenulation downstream. Mostly upland. Liquidambar styraciflua, fagus grandifolia, quercus nigra not present in canopy, all are present in subcanopy.	6/25/2015	Ben Cogdell
HOBE_AA_050_060	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upper slope within topographic crenulation. No Quercus nigra, considerable coverage of Fagus grandifolia in subcanopy. Dense coverage of sourwood in subcanopy.	6/25/2015	Ben Cogdell

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HOBE_AA_050_061	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Mid to upper slope-frequently burned. Little understory; small ephem/intermit. Channel just beyond plot radius. Dominated by Pinus palustris. No Pinus taeda, No Pinus echinata, No Quercus falcata. Quercus alba in subcanopy. Dominated by Pinus palustris.	6/25/2015	Ben Cogdell
HOBE_AA_050_062	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Fair fit. Locate on side slope (12-24%). Gravel ATV trail to east. Side slope seep located to west of plot. Quercus alba dominant. Does not contain Liquidambar styraciflua in canopy. Liriodendron tulipifera not present. Quercus alba co-dominant with Acer rubrum. Liquidambar styraciflua present in sub canopy layer.	5/21/2015	Ben Cogdell
HOBE_AA_050_063	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Located along ridge top, slopes (2-6%) along west and south. Lacks Quercus coccinea, good coverage of Quercus rubra, not dominated by Quercus prinus. Dominated by Quercus alba and Quercus rubra.	5/21/2015	Ben Cogdell
HOBE_AA_050_064	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007217	None	TRUE	Good fit. Ridgetop forest adjacent to Talapoosa river. With Quercus alba, Pinus taeda, and Carya tomentosa.	6/24/2015	Ben Cogdell
HOBE_AA_050_065	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with Pine, White oak and Southern Red oak. No Quercus coccinea	6/13/2015	Ben Cogdell

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HOBE_AA_050_066	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	CEGL007217	TRUE	Fair fit. Upland pine/hardwood slope forest. No Quercus nigra	6/15/2015	Ben Cogdell
HOBE_AA_050_067	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. At top of crenulation. Point dominated by upland, small ephemeral chan. Immediately adjacent to point. Mostly slopes/ridges. Liquidambar styraciflua and Acer rubrum not canopy components, but present in subcanopy.	6/25/2015	Ben Cogdell
HOBE_AA_050_068	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007261	CEGL006011	TRUE	Fair fit. Slope forest adjacent to Tallapoosa river. Pine/oak mix. No Quercus prinus, No Carya glabra.	6/26/2015	Ben Cogdell
HOBE_AA_050_069	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Lcoated on bluff over looking Tallapoosa River. Slopes 6-12% up towards to North, river to the South. Liriodendron tulipifera and Quercus nigra dominate. Liquidambar styraciflua is present but not dominant.	5/21/2015	Ben Cogdell
HOBE_AA_050_070	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007312	None	TRUE	Poor fit. Tallapoosa floodplain forest on levee. Dominated by Acer negundo. No Betula nigra, Platanus occidentalis, Celtis laevigata, or Fraxinus pennsylvanica	6/16/2015	Ben Cogdell
HOBE_AA_050_071	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Forested floodplain/slope forest mix. Adjacent to Talaposa river. No Platanus Occidentalis, No Juglans nigra.	6/26/2015	Ben Cogdell

AA_Event	Event Date	Surveyors	Primary Co	Secondary Code	AA Photos	General_Co	AA Update	AA User
HOBE_AA_050_072	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Located on side slope near ridgetop. Disturbed/maintained battlefield 200 feet to the west. Not co-dominated by Quercus prinus. Lacks Quercus coccinea.	5/21/2015	Ben Cogdell
HOBE_AA_050_073	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Fair fit. Ridgetop pine/oak forest. No Pinus echinata.	6/26/2015	Ben Cogdell
HOBE_AA_050_074	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Slope forest with pine and sweetgum. Pine appears mature >50 years	6/16/2015	Ben Cogdell
HOBE_AA_050_075	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007806	None	TRUE	Good fit. Wetland forested stream swamp. No Ulmus, No Celtis.	6/26/2015	Ben Cogdell
HOBE_AA_050_076	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Slope forest with Quercus nigra adjacent to Talapoosa river.	6/26/2015	Ben Cogdell
HOBE_AA_050_077	5/21/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Side slope, with ridgetop 300 feet to NW. No hydrology, vegetated by early successional.	5/21/2015	Ben Cogdell
HOBE_AA_050_078	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Located in floodplain just at edge of slope to the west, perennial stream occurs 250 feet to the east. Ephemeral drawl occurs through north central portion of plot.	5/21/2015	Ben Cogdell
HOBE_AA_050_079	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007217	None	TRUE	Fair fit. Slope forest. No Quercus alba	6/10/2015	Ben Cogdell

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HOBE_AA_050_080	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007330	None	TRUE	Good fit. Along trib channel through old floodplain between two ridge tops. South ridge top very steep pine dominated north ridgetop low/moderate gradient to pine dominated. Liquidambar tulipifera is codominant in th sub canopy.	5/20/2015	Ben Cogdell
HOBE_AA_050_081	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest with mesic vegetation	6/16/2015	Ben Cogdell
HOBE_AA_050_082	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Mesic slope hardwood forest	6/16/2015	Ben Cogdell
HOBE_AA_050_083	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	CEGL007261	TRUE	Fair fit. Slope forest with hickory and oak. No Liriodendron tulipifera or Liquidambar styraciflua	6/11/2015	Ben Cogdell
HOBE_AA_050_084	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	CEGL007244	TRUE	Fair fit. Ridgetop forest with oak and pine. No Liriodendron tulipifera or Quercus coccinea	6/11/2015	Ben Cogdell
HOBE_AA_050_085	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with pine. No Quercus coccinea	6/11/2015	Ben Cogdell
HOBE_AA_050_086	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with Red/White oaks. No Quercus coccinea	6/11/2015	Ben Cogdell
HOBE_AA_050_087	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007213	None	TRUE	Good fit. Located on side slope, lower end of radius touches floodplain wetland and side slope seepage. No Liquidambar styraciflua or Quercus nigra in the canopy.	5/20/2015	Ben Cogdell

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HOBE_AA_050_088	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007201	None	TRUE	Good fit. Point falls in middle of stream taken 5 feet est on left bank. Falls in floodplain and terrace of perennial drawl.	5/19/2015	Ben Cogdell
HOBE_AA_050_089	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_090	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Plot on Horseshoe Bend Battlefield.	5/21/2015	Ben Cogdell
HOBE_AA_050_091	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_092	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_093	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_094	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_095	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_096	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Disturbed/Maintained grass field in front of visitors center.	5/21/2015	Ben Cogdell
HOBE_AA_050_097	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field of visitors center that is Disturbed/Maintained.	5/21/2015	Ben Cogdell
HOBE_AA_050_098	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed upland within highway right of way and powerline easement with 1 pine tree	6/16/2015	Ben Cogdell
HOBE_AA_050_099	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell

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HOBE_AA_050_100	5/21/2015	Ben Cogdell, Matt Thomas	CEGL004700	None	TRUE	Good fit. Grass field on disturbed/maintained battle ground.	5/21/2015	Ben Cogdell
HOBE_AA_050_101	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL004700	None	TRUE	Good fit. Mowed field	6/16/2015	Ben Cogdell
HOBE_AA_050_102	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest with Beech/White oak. No Liquidambar styraciflua or Quercus nigra	6/9/2015	Ben Cogdell
HOBE_AA_050_103	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest. No Quercus nigra	6/9/2015	Ben Cogdell
HOBE_AA_050_104	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	None	TRUE	Good fit. Slope forest with beech, oak, and hickory. No Liquidambar styraciflua or Liriodendron tulipifera	6/12/2015	Ben Cogdell
HOBE_AA_050_105	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest adjacent to ridgetop with Red/White/Chestnut oak and hickory	6/12/2015	Ben Cogdell
HOBE_AA_050_106	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Ridgetop forest with pine, oak, and hickory. No Liquidambar styraciflua	6/12/2015	Ben Cogdell
HOBE_AA_050_107	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	CEGL008552	TRUE	Poor fit. Forested slope adjacent to stream just south of park boundary. No Quercus nigra or Liquidambar styraciflua	6/12/2015	Ben Cogdell
HOBE_AA_050_108	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Ridgetop forest with oak and hickory. No Quercus coccinea	6/12/2015	Ben Cogdell
HOBE_AA_050_109	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Fair fit. Slope forest with hickory and oak. No Quercus prinus, Quercus coccinea, or Quercus falcata	6/15/2015	Ben Cogdell

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HOBE_AA_050_110	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Slope forest with beech, oak, and hickory	6/12/2015	Ben Cogdell
HOBE_AA_050_111	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Fair fit. Slope forest. No Quercus prinus or Quercus coccinea	6/15/2015	Ben Cogdell
HOBE_AA_050_112	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with oak, hickory, and poplar	6/12/2015	Ben Cogdell
HOBE_AA_050_113	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	None	TRUE	Good fit. Ridgetop/slope forest with pine and oak. No Quercus coccinea	6/12/2015	Ben Cogdell
HOBE_AA_050_114	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Ridgetop/slope forest with oak. No Quercus coccinea	6/12/2015	Ben Cogdell
HOBE_AA_050_115	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest with white oak and poplar. No Quercus coccinea	6/12/2015	Ben Cogdell
HOBE_AA_050_116	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Fair fit. Slope forest with oak and sweetgum. No Quercus nigra	6/12/2015	Ben Cogdell
HOBE_AA_050_117	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	None	TRUE	Fair fit. Rocky slope forest. No Quercus prinus	6/16/2015	Ben Cogdell
HOBE_AA_050_118	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Rocky slope forest with white oak. No Quercus prinus or Quercus coccinea	6/16/2015	Ben Cogdell
HOBE_AA_050_119	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	CEGL007261	TRUE	Fair fit. Mesic slope forest. No Quercus nigra, Liriodendron tulipifera, or Quercus prinus	6/15/2015	Ben Cogdell
HOBE_AA_050_120	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008552	CEGL007201	TRUE	Good fit. Forested stream swamp/slope forest. Half of plot located in stream/swamp and other half on slope forest with Fagus grandifolia	6/15/2015	Ben Cogdell

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HOBE_AA_050_121	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	None	TRUE	Fair fit. Upland rocky slope forest with hardwoods. No Quercus prinus	6/15/2015	Ben Cogdell
HOBE_AA_050_122	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007217	None	TRUE	Fair fit. Slope forest with poplar and maple. <40% Liquidambar styraciflua	6/15/2015	Ben Cogdell
HOBE_AA_050_123	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Good fit. Forested side slope and upper end of ridge where slope is less than 2-4%.	5/19/2015	Ben Cogdell
HOBE_AA_050_124	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Xeric ridge top, slopes slight up to the east. Slopes down 2-6% to west. No Quercus coccinea.	5/20/2015	Ben Cogdell
HOBE_AA_050_125	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007244	CEGL008493	TRUE	Fair fit. Upper crenulation near ridgetop. No hydrology or disturbances. Quercus alba dominate, with Quercus falcata in canopy and subcanopy. About 30% Pinus taeda.	5/20/2015	Ben Cogdell
HOBE_AA_050_126	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Slope 6-12% in upper crenulation of watershed. No signs of surface flow. Lacking Quercus coccinea. Quercus rubra dominate.	5/20/2015	Ben Cogdell
HOBE_AA_050_127	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007244	CEGL008437	TRUE	Good fit. Slight slope in upper headwaters of watershed with no signs of hydrology or overland flow. Presence of fire.	5/19/2015	Ben Cogdell
HOBE_AA_050_128	5/18/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Forested side slope, ephemeral drawl 500-750 feet south. Liquidambar styraciflua and Acer rubrum is not in canopy but in subcanopy.	5/18/2015	Ben Cogdell

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HOBE_AA_050_129	5/19/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Good fit. Upper portion of crenulation between two ridge tops. No hydrology or signs of surface flow.	5/19/2015	Ben Cogdell
HOBE_AA_050_130	5/19/2015	Ben Cogdell, Matt Thomas	CEGL007244	CEGL008437	TRUE	Fair fit. Side slope near ridge top and upper crenulation in upper watershed. Quercus coccinea not present. Quercus falcata and Quercus alba present; Quercus stalatta present. Approximately 30% Quercus taeda component in canopy.	5/19/2015	Ben Cogdell
HOBE_AA_050_131	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Ridgetop forest with oak and hickory. No Quercus nigra or Liriodendron tulipifera	6/15/2015	Ben Cogdell
HOBE_AA_050_132	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007217	None	TRUE	Fair fit. Upland slope forest. <40% Liquidambar styraciflua	6/15/2015	Ben Cogdell
HOBE_AA_050_133	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007244	None	TRUE	Good fit. Ridge top, west goes downslope (4-10%) to stream/wetland; east slopes (6-12%). Not codominated by Quercus prinus, Approximately 30% canopy is Pinus taeda. Occurs on ridge. No Quercus coccinea. Quercus falcata and Quercus alba are codominant.	5/20/2015	Ben Cogdell
HOBE_AA_050_134	5/20/2015	Ben Cogdell, Matt Thomas	CEGL008437	None	TRUE	Good fit. Located on slope near ridgetop to the west. No hydrology or recent disturbance. More Pinus taeda than Pinus palustris or Pinus echinata, but both are present.	5/20/2015	Ben Cogdell
HOBE_AA_050_135	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Fair fit. Forested floodplain. No Liriodendron tulipifera	6/13/2015	Ben Cogdell

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HOBE_AA_050_136	6/13/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Slope forest with oak and sweetgum. No Acer rubrum	6/13/2015	Ben Cogdell
HOBE_AA_050_137	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upland pine/hardwood forest, no slope, early successional	6/15/2015	Ben Cogdell
HOBE_AA_050_138	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Mesic forest with pine. No Quercus nigra	6/10/2015	Ben Cogdell
HOBE_AA_050_139	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008552	None	TRUE	Good fit. Stream swamp forest adjacent to stream	6/10/2015	Ben Cogdell
HOBE_AA_050_140	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upland forest<50 years old. No Fagus grandifolia	6/10/2015	Ben Cogdell
HOBE_AA_050_141	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Rocky upper to mid ridge/slope upland. Less than 100 meters from park boundary to west. Western edge of plot drops down into lowland/floodplain. Majority of plot is on ridge. No Quercus coccinea.	6/23/2015	Ben Cogdell
HOBE_AA_050_142	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Fair fit. Point on mid slope approximately 30 meters from park boundary and road to west. No Fagus grandifolia, dense shrub layer.	6/23/2015	Ben Cogdell
HOBE_AA_050_143	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Fair fit. Stream, forested floodplain. No Quercus nigra. Liriodendron tulipifera dominant	6/16/2015	Ben Cogdell
HOBE_AA_050_144	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Floodplain forest-flat. Adjacent to Tallapoosa River.	6/22/2015	Ben Cogdell
HOBE_AA_050_145	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Bottomland within low terrace of Tallapoosa river-early successional.	6/23/2015	Ben Cogdell

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HOBE_AA_050_146	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Forested terrace adjacent to Tallapoosa River.	6/22/2015	Ben Cogdell
HOBE_AA_050_147	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Mesic slope forest adjacent to small trib flowing into Tallapoosa River-less than 100 meters to river.	6/25/2015	Ben Cogdell
HOBE_AA_050_148	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest within draw just north of Tallapoosa River. No Quercus prinus, no Quercus coccinea.	6/24/2015	Ben Cogdell
HOBE_AA_050_149	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007261	None	TRUE	Good fit. Misic slope forest adjacent to draw. No Quercus prinus.	6/24/2015	Ben Cogdell
HOBE_AA_050_150	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Fair fit. Point located within crenulation just beyond Tallapoosa Floodplain. Intermittent stream chan. 20 meters to south. Steep valley wall to south beyond stream. Community is not best characterized by wetland or upland key breaks.	6/25/2015	Ben Cogdell
HOBE_AA_050_151	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Slope forest with pine, oak, beech. No Acer rubrum	6/24/2015	Ben Cogdell
HOBE_AA_050_152	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Forested floodplain with sweetgum, poplar, and water oak	6/11/2015	Ben Cogdell
HOBE_AA_050_153	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007217	None	TRUE	Fair fit. Slope forest with poplar and white oak. Only 20 percent Liq. Sty.	6/24/2015	Ben Cogdell
HOBE_AA_050_154	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008552	None	TRUE	Good fit. Forested stream swamp.	6/16/2015	Ben Cogdell
HOBE_AA_050_155	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007201	None	TRUE	Good fit. Lacking Poplar in canopy, prominence of Carya spp. In subcanopy.	6/25/2015	Ben Cogdell

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HOBE_AA_050_156	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest dominated by Quercus alba. No Quercus coccinea.	6/24/2015	Ben Cogdell
HOBE_AA_050_157	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	CEGL008462	TRUE	Fair fit. Pine/slope forest adjacent to stream. No Acer rubrum except for shrubs.	6/24/2015	Ben Cogdell
HOBE_AA_050_158	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Slope forest adjacent to Tallapoossa river. No Quercus coccinea, No Quercus prinus.	6/24/2015	Ben Cogdell
HOBE_AA_050_159	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Upland slopoe forest with oaks. No Quercus coccinea.	6/24/2015	Ben Cogdell
HOBE_AA_050_160	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Site within saddle/midslope. Hardwood dominant. Few pines in canopy.	6/23/2015	Ben Cogdell
HOBE_AA_050_161	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Forested floodplain with sweetgum, poplar, and water oak	6/11/2015	Ben Cogdell
HOBE_AA_050_162	6/24/2015	Ben Cogdell, Brad Rosenblatt	CEGL008437	None	TRUE	Good fit. Ridgetop pine forest.	6/24/2015	Ben Cogdell
HOBE_AA_050_163	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Side slope-adjacent to seep/stream. Plot mostly characterized as slope-not bottomland. Mesic.	6/25/2015	Ben Cogdell
HOBE_AA_050_164	6/25/2015	Ben Cogdell, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Located in draw with ephemeral drainage adjacent. Site is generally characterized as midslope upland. Rhododendron spp. Within ephemeral chan. Carya tomentosa constitutes significant portion of canopy. No Quercus coccinea, Quercus alba in subcanopy.	6/25/2015	Ben Cogdell

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HOBE_AA_050_165	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	CEGL007217	TRUE	Fair fit. Center of point just below ridge top. North facing slope for majority of plot-upland.	6/23/2015	Ben Cogdell
HOBE_AA_050_166	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Forested floodplain adjacent to Tallapoosa River.	6/22/2015	Ben Cogdell
HOBE_AA_050_167	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Forested floodplain with pines. No Quercus nigra.	6/22/2015	Ben Cogdell
HOBE_AA_050_168	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Pine/sweetgum floodplain.	6/22/2015	Ben Cogdell
HOBE_AA_050_169	6/22/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Flat floodplain forest. No Quercus nigra.	6/22/2015	Ben Cogdell
HOBE_AA_050_170	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Ridge top at center of point-North of Hwy. 49 by 50 meters. Upland-pine dominant-early successional. Sourwood significant portion of subcanopy.	6/23/2015	Ben Cogdell
HOBE_AA_050_171	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Ridge tope/upper slope. Pine dominant-rocky. Early successional.	6/23/2015	Ben Cogdell
HOBE_AA_050_172	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Mid-ridge about 100 meters north of Hwy. 49. Upland-pine dominant-early successional.	6/23/2015	Ben Cogdell
HOBE_AA_050_173	5/21/2015	Ben Cogdell, Matt Thomas	CEGL006011	CEGL007217	TRUE	Fair fit. Spine of ridgetop sloping (6-10%) to crenulations. Small gravel ATV trail on east side of plot. Few dead mature pines with pitch holes, possible beetle. Liquidambar styraciflua occuring in the canopy, heavy in the subcanopy. Acer rubrum occurs heavily in the subcanopy.	5/21/2015	Ben Cogdell

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HOBE_AA_050_174	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Pine ridgetop forest. No Quercus nigra in canopy	6/16/2015	Ben Cogdell
HOBE_AA_050_175	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Mesic slope forest with pine and sweetgum	6/16/2015	Ben Cogdell
HOBE_AA_050_176	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007213	None	TRUE	Fair fit. Upland slope forest with pine, beech, sweetgum, water oak. No Quercus alba.	6/26/2015	Ben Cogdell
HOBE_AA_050_177	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest with pine/oaks.	6/26/2015	Ben Cogdell
HOBE_AA_050_178	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Ridgetop pine forest. No Quercus nigra or Liquidambar styraciflua	6/16/2015	Ben Cogdell
HOBE_AA_050_179	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upland pine/oak ridgetop forest	6/15/2015	Ben Cogdell
HOBE_AA_050_180	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008552	None	TRUE	Good fit. Wetland forest seepage area	6/11/2015	Ben Cogdell
HOBE_AA_050_181	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Tallapoosa River floodplain forest. No Quercus nigra	6/12/2015	Ben Cogdell
HOBE_AA_050_182	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Pine, sweetgum, poplar forest with Chinese Privet. No Fagus grandifolia	6/12/2015	Ben Cogdell
HOBE_AA_050_183	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007261	None	TRUE	Fair fit. Slope forest with hickory and pine. No Quercus prinus. Site has drainage feature through plot.	6/11/2015	Ben Cogdell
HOBE_AA_050_184	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Fair fit. Upland slope forest with pine. No Acer rubrum	6/10/2015	Ben Cogdell

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HOBE_AA_050_185	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest. No Quercus nigra	6/11/2015	Ben Cogdell
HOBE_AA_050_186	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Floodplain forest	6/11/2015	Ben Cogdell
HOBE_AA_050_187	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007216	None	TRUE	Good fit. Upland/wetland forest. No Liriodendron tulipifera	6/10/2015	Ben Cogdell
HOBE_AA_050_188	6/9/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Upland pine forest. No Fagus grandifolia or Acer rubrum	6/9/2015	Ben Cogdell
HOBE_AA_050_189	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Mesic pine/hardwood forest	6/10/2015	Ben Cogdell
HOBE_AA_050_190	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL006011	None	TRUE	Good fit. Floodplain forest - mesic	6/8/2015	Ben Cogdell
HOBE_AA_050_191	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Flat, floodplain mesic forest. No Quercus pagoda or Carya cordiformis	6/8/2015	Ben Cogdell
HOBE_AA_050_192	5/18/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Forested moderate slope. Potential tributary 300 feet to the south. Pinus taeda dominant. Liquidambar styraciflua is dominant in subcanopy but not canopy. Acer rubrum is dominant in subcanopy but not canopy.	5/18/2015	Ben Cogdell

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HOBE_AA_050_193	5/19/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Center plot on side slope near ridge top, more xeric. Liquidambar styraciflua substantial in subcanopy, none in the canopy. Fagus grandifolia not present, Quercus nigra is present. Pinus taeda is greater than 50% of canopy cover. Quercus falcata filling mesophytic tree requirements.	5/19/2015	Ben Cogdell
HOBE_AA_050_194	5/19/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Located on gently sloping hillside. Pinus taeda dominate in canopy with Quercus nigra. Liquidambar styraciflua and Acer rubrum dominant in the subcanopy.	5/19/2015	Ben Cogdell
HOBE_AA_050_195	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007216	None	TRUE	Good fit. On Tallapoosa River low terrace. Approximately 300 meters south of river. Liriodendron tulipifera no co-dominant, only present.	6/23/2015	Ben Cogdell
HOBE_AA_050_196	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007217	None	TRUE	Good fit. Mid slope with relic "haul-road" about 30 feet to east of center. Ephemeral swale about 50 feet to west.	6/23/2015	Ben Cogdell
HOBE_AA_050_197	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	CEGL007330	TRUE	Fair fit. Slope forest adjacent to Tallapoosa river. Area is split by slope forest and Tallapoosa floodplain forest	6/16/2015	Ben Cogdell
HOBE_AA_050_198	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Within Tallapoosa low terrace. Small perennial stream 75 meters to south of point. Dominant sweetgum in canopy, lacking Quercus nigra in canopy, no platanus occidentalis-still a good fit.	6/23/2015	Ben Cogdell

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HOBE_AA_050_199	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Mesic forest with altered topography. Minimal Liquidambar styraciflua in canopy.	6/26/2015	Ben Cogdell
HOBE_AA_050_200	6/16/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Fair fit. Upland slope forest. No Quercus prinus or Quercus coccinea	6/16/2015	Ben Cogdell
HOBE_AA_050_201	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Fair fit. Mesic slope forest adjacent to stream swamp. No Juglans nigra, Platanus occidentalis, or Carya cordiformis	6/15/2015	Ben Cogdell
HOBE_AA_050_202	6/15/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Fair fit. Stream floodplain forest. No Juglans nigra, Platanus occidentalis, or Carya cordiformis. Chinese privet dominated shrub layer	6/15/2015	Ben Cogdell
HOBE_AA_050_203	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008462	None	TRUE	Good fit. Tallapoosa floodplain forest	6/12/2015	Ben Cogdell
HOBE_AA_050_204	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Fair fit. Terraced forest adjacent to stream with sweetgum/poplar. No Quercus nigra	6/12/2015	Ben Cogdell
HOBE_AA_050_205	6/12/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Mesic slope forest. No Quercus alba	6/12/2015	Ben Cogdell
HOBE_AA_050_206	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Forested floodplain adjacent to Tallapoosa river	6/11/2015	Ben Cogdell
HOBE_AA_050_207	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008583	None	TRUE	Fair fit. Slope forest with Quercus nigra canopy. No Quercus lyrata or Quercus phellos	6/10/2015	Ben Cogdell
HOBE_AA_050_208	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007806	None	TRUE	Good fit. Forested floodplain adjacent to stream channel. No Celtis laevigata or Ulmus americana	6/8/2015	Ben Cogdell

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HOBE_AA_050_209	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007213	None	TRUE	Good fit. Upland ridgetop forest. No Liquidambar styraciflua	6/8/2015	Ben Cogdell
HOBE_AA_050_210	5/20/2015	Ben Cogdell, Matt Thomas	CEGL007312	None	TRUE	Good fit. Point falls in center channel, soil pit top of left bank. Beside tributary that flows to confluence of river around 150-200 feet linear feet downstream.	5/20/2015	Ben Cogdell
HOBE_AA_050_211	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Good fit. Plot located on ridgetop overlooking Tallapoosa River. M/D battlefield 200 feet west; slope (35-40%) to river to east. One lane gravel road through plot from north to south.	5/21/2015	Ben Cogdell
HOBE_AA_050_212	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007244	None	TRUE	Good fit. Upland forest with slight slope. No Quercus alba or Quercus coccinea	6/10/2015	Ben Cogdell
HOBE_AA_050_213	6/11/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007216	None	TRUE	Good fit. Stream floodplain forest	6/11/2015	Ben Cogdell
HOBE_AA_050_214	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Forested stream swamp	6/10/2015	Ben Cogdell
HOBE_AA_050_215	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Forested floodplain adjacent to dirt road and Tallapoosa river. No Quercus phellos	6/8/2015	Ben Cogdell
HOBE_AA_050_216	5/18/2015	Ben Cogdell, Matt Thomas	CEGL008462	None	TRUE	Good fit. Forested mixed headwater with pine in floodplain. Lacking Quercus nigra and Acer rubrum. Acer rubrum is dominant in subcanopy.	5/18/2015	Ben Cogdell
HOBE_AA_050_217	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Flat, floodplain forest. No Liriodendron tulipifera or Juglans nigra	6/8/2015	Ben Cogdell

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HOBE_AA_050_218	5/21/2015	Ben Cogdell, Matt Thomas	CEGL007217	None	TRUE	Good fit. Upper crenulation, slope gradient 2-4%. Gravel one lane road to east (just inside plot).	5/21/2015	Ben Cogdell
HOBE_AA_050_219	5/18/2015	Ben Cogdell, Matt Thomas	CEGL006011	None	TRUE	Good fit. Hillslope east of stream (UT to River) burn marks on trees (not recent), possible burn regime. No <i>Fagus grandifolia</i> in canopy, present in subcanopy. Do not have <i>Quercus nigra</i> in canopy. Less than 40% shrub, sparse herb.	5/18/2015	Ben Cogdell
HOBE_AA_050_220	6/26/2015	Ben Cogdell, Brad Rosenblatt	CEGL007353	None	TRUE	Good fit. Hardwood floodplain forest adjacent to Tallapoosa River.	6/26/2015	Ben Cogdell
HOBE_AA_050_221	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007330	None	TRUE	Good fit. Wetland sweetgum forest in floodplain of Tallapoosa river	6/10/2015	Ben Cogdell
HOBE_AA_050_222	6/23/2015	Ben Cogdell, Brad Rosenblatt	CEGL008552	None	TRUE	Good fit. Point at toe of slope-north of Hwy. 49 by 20 feet. Small intermittent stream to north. Within Tallapoosa River floodplain. Sparse herb layer.	6/23/2015	Ben Cogdell
HOBE_AA_050_223	6/10/2015	Jeremy Schmid, Brad Rosenblatt	CEGL008583	None	TRUE	Fair fit. Floodplain forest with oak canopy. No <i>Quercus lyrata</i> or <i>Quercus phellos</i>	6/10/2015	Ben Cogdell
HOBE_AA_050_224	6/8/2015	Jeremy Schmid, Brad Rosenblatt	CEGL007217	None	TRUE	Good fit. Disturbed upland forest adjacent to access road	6/8/2015	Ben Cogdell

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