

PLANT COMMUNITY CLASSIFICATION FOR SHILOH NATIONAL MILITARY PARK



Report for the Vertebrate and Vascular Plant Inventories:
Appalachian Highlands and Cumberland/Piedmont Network

Prepared by NatureServe for the National Park Service
Southeast Regional Office
December 2004

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A NatureServe Technical Report

Prepared for the National Park Service under Cooperative Agreement H 5028 01 0435.

Citation:

Nordman, Carl. 2004. *Plant Community Classification for Shiloh National Military Park*.
Durham, North Carolina: NatureServe.

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This report consists of the main report along with a series of appendices with information about the plants and plant communities found at the site. Electronic files have been provided to the National Park Service in addition to hard copies. Current information on all communities described here can be found on NatureServe Explorer at www.natureserve.org/explorer.

Cover photo: SHIL plot 14. Photo by Carl Nordman.

Acknowledgments

We wish to thank all park employees, co-workers, volunteers, and academics that helped with aspects of the preparation, fieldwork, specimen identification, and report writing for this project.

Dennis Turnbo was especially helpful when we were getting started, and with information needs during the project. His knowledge of Shiloh and its current and past natural resource management were very helpful.

We want to thank the Shiloh National Military Park staff for giving us shelter at the Visitors Center on the morning of May 5, 2003 while tornados broke out across West Tennessee. We appreciate the importance that was put on our safety during that week.

Also, special thanks to Josh Clemmons and Robert Vick, for their help in the field.

This report was prepared for Shiloh National Military Park in cooperation with the Inventory and Monitoring Division of the Cumberland/Piedmont Network, National Park Service, Department of the Interior. Teresa Leibfreid of the network provided logistical help throughout the year while supporting the project in an encouraging, thoughtful manner. In addition, Sammi Jo Doyle expertly transferred our data into the correct format for the database NPSpecies.

Staff at the University of North Carolina – Chapel Hill Herbarium were especially helpful, patient, and considerate. Erin Lunsford proofed our plant specimens for identification mistakes and mounted most of the specimens in the collection. Assistant Curator Carol Ann McCormick supplied all the necessary tools for identification (rulers, magnifying lenses, parking permits, coffee). Curator Alan Weakley contributed time in helping with the most challenging plant identification issues.

Finally, we thank the entire NatureServe South team for their support throughout the project. Judy Teague used her invaluable ArcView skills to provide us with all plot locations and maps needed to complete the project. Mary Russo entered and managed the plot and species data. Milo Pyne was always available to help with classification questions and was great to work with in the field. All members of the team contributed a great deal to the final product.

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Summary

The first step in any effort to monitor the vital signs or ecological health of a tract of land is to develop a baseline from which to measure and gauge trends. We established a baseline for Shiloh National Military Park in three ways:

- 1) Ecologists from NatureServe established fourteen permanently marked one-hectare circular plots within the park in a grid system and another nine circular plots in ecological areas that were not covered by the initial grid-based plot layout. These permanently marked plots are available to be used by researchers on studies ranging from bird point counts to individual plant monitoring.
- 2) Ecologists collected data on unique vegetation communities within the park and identified 27 National Vegetation Classification (NVC) associations for the park. All but one, are known to be present. The Bald-cypress Swamp (CEGL002420) is believed to be present but not documented. Each vegetation association is “a plant community type of definite floristic composition, uniform habitat conditions, and uniform physiognomy” (Grossman, et. al., 1998). The Cultivated meadow (CEGL004048) is exotic species dominated; the 26 other associations are dominated by native plant species. Twenty natural vegetation associations are representative of six ecological systems, which are broader natural landscape units representative of the local region. Three vegetation associations are successional hardwood forest types, considered ruderal (GRANK is RNA) and not of conservation concern, but are nonetheless representative of two of the broader ecological systems and make an important contribution to overall habitat diversity at Shiloh NMP. These are Interior Mid- to Late- Successional Sweetgum – Oak Forest (CEGL007217), Interior Mid- to Late- Successional Tuliptree – Hardwood Upland Forest (Acid Type) (CEGL007221), and Successional Sweetgum Floodplain Forest (CEGL007330). Three associations are considered ruderal (GRANK is RNA) and early successional. These are not of conservation concern and not representative of natural ecological systems. These are the Virginia Pine Successional Forest (CEGL002591), Red-cedar Successional Forest (CEGL007124), and the Successional Broomsedge Vegetation (CEGL004044). Five vegetation associations warrant special attention due to their relatively high global rank/rarity (with GRANKs of G2?, G3, and G3?). These are the White Oak – Red Oak Dry- Mesic Acid Forest (CEGL002067), Southern Red Oak Flatwoods Forest (CEGL004412), Upper East Gulf Coastal Plain Chinquapin Oak – Mixed Oak – Hickory Forest (CEGL003903), Central Interior Upland Cherrybark Oak Forest (CEGL003871), and Interior Forested Acid Seep (CEGL004425).
- 3) Ecologists collected and vouchered 87 new species to add to the list of species generated by Ronald L. Jones and Peter S. White in 1981. We now count 740 documented taxa of vascular plants in the park. We estimate that over 90% of the vascular flora of the park is now documented.

Introduction

Effective management of natural resources in our national parks relies upon ready access to comprehensive and scientifically credible information on species and habitats found within park boundaries. Until recently, only a few units have compiled the baseline information needed to begin to assess the current state of natural resources at specific parks. Fewer still have begun to track and assess trends over time. With the passage of the National Parks Omnibus Management Act of 1998 by Congress, the National Park Service was given the mandate to “undertake a program of inventory and monitoring of National Park System resources to establish baseline information and to provide information on the long-term trends and the condition of National Park system resources.” Funding for this initiative was appropriated in fiscal year 2000. In August 2002, NatureServe began work on the vascular plant inventory portion of the project at Shiloh National Military Park.

Although Shiloh National Military Park is known for its historic importance in the Civil War, the park contains significant natural resources, especially in hardwood forests. The research emphasis here, however, has traditionally focused on the human history of the land. Ronald L. Jones and Peter S. White collected plants for their floristic study between November 1979 and September 1981 (Jones and White, 1981). Their report was completed in 1981. Relatively few additional collections have been made since that time. After assessing the past and current state of research in the park, we began to work on accomplishing three primary objectives:

- 1) Establish at least 20 permanent plots throughout the park for present and future monitoring purposes.
- 2) Document all ecological communities on the site as defined by the United States National Vegetation Classification (Grossman et al. 1998, Anderson et al. 1998, NatureServe, 2004).
- 3) Collect any species found in plots that were not already collected by Ronald L. Jones and Peter S. White.

The ultimate goal of the project is to deliver the information described in this report to all interested parties, to inform land management, conservation priorities, and future research at the park, and to ensure that future generations of visitors will visit a park that is both ecologically and historically intact.

Study Area

Shiloh National Military Park is located on the west side of the Tennessee River near Savannah, Tennessee. It preserves much of the site of a major Civil War battle, which took place April 6 - 7, 1862. General Albert Sidney Johnston's Army of the Mississippi surprised the Federals on the morning of April 6. General Johnston was killed later in the day and General P.G.T. Beauregard took over the Confederate command. In the Battle of Shiloh, there were high casualties on both sides. By the end of the day on April 7, 1862

the Confederates were low on ammunition and 15,000 men were killed, wounded or missing. After the battle, Confederate forces withdrew towards Corinth, Mississippi, leaving the Shiloh area to the Federals (NPS, 1998 reprint). The ravines, woodlands and fields at Shiloh played a significant role in the battle, which occurred there.

The Shiloh National Military Park site is 2047.6 hectares (5059.56 acres) with recent acquisitions (pers. com., Tom Diggs). There are 43 soil types within the park (USDA Soil Conservation Service, 1962), from the dry upland soils to deep, floodplain soils by Owl Creek and the Tennessee River. Paden silt loams are strongly acid and low in fertility. They dominate the uplands and often have a fragipan at 2 ft. depth (Jones and White, 1981). There are a variety of forest types on the uplands and bottomlands. There are many mowed monument areas and the National Cemetery which has a maintained lawn and ornamental trees and shrubs. All of the Shiloh National Military Park is within the watershed of the Tennessee River. Elevation ranges from approximately 365 feet at the Tennessee River (Kentucky Lake) to 530 feet along the southern park boundary (Jones and White, 1981). Significant are the 100-foot bluffs along the Tennessee River.

Shiloh National Military Park occurs in the Upper Loam Hills Subsection of the Upper Gulf Coastal Plain Section (Keys, et al 1995) of the Eastern Broadleaf Forest (Continental) Province (Bailey 1994). The Tennessee River is a large tributary of the Mississippi River. Dams have altered the natural flow and flooding cycles on the Tennessee River. The geology is characterized by Quaternary and Tertiary river deposits, 100 feet thick, which consist of sands, gravels, and silts (Jones and White, 1981). There are some outcrops of conglomerate on the bluffs of the Tennessee River and in some creek ravines (Jones and White, 1981).

Shiloh National Military Park is in Hardin County, Tennessee. Hardin County's climate consists of mild wet winters and hot humid summers. There is no climate station on site, but records from the area show that the mean January temperature is 40 degrees F (14 degrees C). Mean July temperature is 82 degrees F (29 degrees C). The average rainfall is 53 inches (135 cm) annually and average frostless period is 220 days (Ruffner and Bair, 1977). Violent thunderstorms and tornados occur. The tornados are part of the natural disturbance ecology of the forests at Shiloh National Military Park.

Land History

Shiloh National Military Park was established in 1894 to preserve the Civil War battlefield. The land upon which the park is located was settled earlier in the 19th century. Woodlands, pastures and fields were part of the local landscape in the 19th century. Shiloh battlefield was originally purchased by the War Department for the purpose of training cadets from West Point. Shiloh and other Civil War battlefields were visited and the students learned the strategies and events, which occurred there. The War Department used prescribed fire to keep the wooded areas open, as they were during the Civil War (pers. com., Dennis Turnbo). At that time open range was burned periodically to improve the forage for livestock.

Methods

The inventory and monitoring project covers two main areas: permanent plot establishment for future research in the park, and a vegetation classification of all the vegetation associations within the park according to the National Vegetation Classification (Grossman et al. 1998, NatureServe 2004). A vascular plant inventory within the park boundary was already accomplished, but plants new to the park were collected to build upon the existing plant list for the park.

Permanent plot establishment

In order to set up a gridded system of one-hectare circular plots within the park boundary as mandated by the *Study Plan for Vertebrate and Vascular Plant Inventories* (Nichols 2000), Judy Teague from NatureServe used GIS layers supplied by the National Park Service's Cumberland Piedmont Network. She manipulated the GIS layers supplied to us with the program ArcView (ArcView 1992). We chose a 56-meter buffer just within the current park boundary since each point represents the center of a one-hectare circular plot and we did not wish to sample any private holdings outside of the park. With this buffer in place, an evenly spaced grid system was established. We chose the approximate grid size of 1000 meters by 1000 meters, slightly larger than the 900 X 900 meter size (Nichols 2000). At each north-south and east-west line, we recorded the coordinates for one grid point (Figure 1 and Table 1).

Once we had fully laid out the grid using ArcView and recorded all of the GPS coordinates for use onsite, we identified areas of the park that were most likely to hold unique associations not represented by the gridded points. We added points in various places, including the slopes and bottomlands near Owl Creek and the Tennessee River. We flagged these areas for visits and established plots there and in other suitable habitat that was not represented by the gridded plots.

Prior to visiting the park, we contacted park personnel, described the project's goals, and asked for their collaboration in the project. Through this process, we identified priority areas of the park for additional plot establishment and species inventory. In the summer of 2002 and the spring of 2003, we established fourteen plots on the grid system and an additional nine plots off of the grid in habitats not covered by the grid points (Figure 1). Using the GPS units (Garmin Corp. 1999), we attempted to position ourselves within at least five meters of the "real" map location (the hypothetical location that we created in the lab prior to visiting the site). Once we were within five meters, we monumented each plot with a one foot long piece of steel conduit and a small blue anodized aluminum tag with a distinctive number attached to an adjacent distinctive tree. General written directions to each permanent plot exist on the vegetation plot sheets filled out during the course of fieldwork and can also be found in the Access database archive of plot information held by the National Park Service. Due to variation in signal strength, accuracy may be more than five meters in some cases. In 2002 and 2003, we recorded

additional data at each point and worked in other locations as part of the vegetation mapping work.

Vegetation classification

After the establishment of each permanent one-hectare plot, we visually surveyed the area. We chose a representative and relatively homogenous 20 by 50-meter section of the hectare in which to place our standardized vegetation-monitoring plot. Within the plot, we measured environmental characteristics and identified every vascular plant within the plot (see Appendix I for a blank version of the data sheets used). We assigned each species a cover value by strata and an overall cover value for the plot based on a modified Braun Blanquet cover class scale. In addition, we searched for and identified any species within the full hectare that were not represented in the 20 by 50-meter sample. Finally, we returned in the spring of 2003 to resample the plots to attempt to document any species that we had missed the previous summer. Due to safety concerns related to heavy rain and flooding in May 2003, plots SHIL.7, SHIL.15, SHIL.16, and SHIL.19 were not revisited at that time. The original plot sheets are archived. Please contact the archivist or resource manager at the park or Cumberland Piedmont Network office for details and specific plot locations.

We proofed the plot sheets, entered the data into the National Park Service PLOTS database, and assigned each plot to an association based on floristic composition and environmental factors using the National Vegetation Classification (Anderson et al. 1998, Grossman et al. 1998, NatureServe 2004). We compared the plots with similar plots in other parks and with written descriptions of each related classification unit. We also used vegetation plots done at Shiloh in 1994 by Dorothy Allard and Felicien Ntawukuliryayo of The Nature Conservancy (TNC). These plots have a different, hyphenated numbering system used by TNC (i.e. 2c-2, 4-32, 5-SE-1) on this previous project (Ntawukuliryayo, 1995). The comparisons, combined with a thorough review of all classification possibilities and a review of the literature for some of these association types, allowed us to produce the current park vegetation classification.

Vascular plant inventory

While gathering plot data, we occasionally discovered plant species within the plots that had not already been documented for Shiloh National Military Park. We collected any new specimens encountered within the plots and recorded the GPS coordinates using our Garmin GPS unit. We pressed and thoroughly dried all specimens, identified any unknowns that could be identified, and then vouchered all new species according to National Park Service standards using the Integrated Taxonomic Information System (ITIS) as the naming standard.

To assess the success of past inventories, we used the program PC-ORD (McCune and Grace 2002, McCune and Mefford 1999) to create a species area curve using the data gathered at each one-hectare plot. In addition, we used a jackknife method within PC-ORD to estimate the total number of species found in the park (Palmer 1990). This

method used the formula $JACK1 = SO + r1[n-1]/n$ where SO is the number of species observed in n quadrats, $r1$ is the number of species present in only one quadrat, and n is the number of plots sampled.

Results

During the species inventory work, we encountered and collected specimens (Tables 2,3) of 87 species that had not been confirmed previously from the park. We created 87 vouchers for the National Park Service from the plants we collected and photographed. In addition to collecting all new plants encountered within the plots, we estimated what percentage of the flora in the park is now documented. Eliminating all varieties, subspecies, and questionable identifications and including previously collected specimens and taxa observed and documented but not collected, researchers have documented 740 species for the park. We estimated the total number of plant species in the park using PC-ORD software. Based on the plot data taken throughout the park, the estimates of the total number of plant species were 714 using all 23 full plots and the first-order jackknife method, and 831 using all 23 plots and the second-order jackknife method. Using just the 14 gridded plots and the first-order jackknife method we estimated 589 species, and using just the 14 gridded plots and the second-order jackknife method (Table 4) we estimated 682 species.

Using the information gathered in each plot, we attributed plots to National Vegetation Classification alliances and associations. These are the two finest units of vegetation in NatureServe's National Vegetation Classification (NVC), and are referred to as the floristic units of the National Vegetation Classification (NatureServe 2004). Attributions of plots were generally made first to the alliance level, then to an association (the finest unit) within that alliance. This was done based on the similarities between the species composition, dominant species, physical environment and geographic location of the plot and those same aspects of the described alliance and association. Edits were made to the descriptions of associations based on the new and detailed information from these plots. Six distinct ecological systems were determined to be present at Shiloh National Military Park. These are part of NatureServe's standard Classification of Ecological Systems (NatureServe 2004). The attribution of plots to ecological systems was done following the existing attributions of described associations to ecological systems. In some cases, associations were linked to ecological systems based on the new information from Shiloh National Military Park. Twenty seven distinct vegetation associations were identified, as defined by the United States National Vegetation Classification (Table 5) (NatureServe 2004). The Cultivated meadow (CEGL004048) is exotic species dominated; the 26 other associations are dominated by native plant species. 20 natural vegetation associations are representative of six ecological systems, broader natural landscape units representative of the local region. Three additional vegetation associations are successional hardwood forest types, considered ruderal (GRANK is RNA) and not of conservation concern as vegetation associations, but are nonetheless representative of two of the broader ecological systems and make an important contribution to overall habitat diversity at Shiloh NMP. Three associations are considered ruderal (GRANK is RNA) and early

successional. These three are not of conservation concern as vegetation associations and not representative of natural ecological systems. These are the Virginia Pine Successional Forest (CEGL002591), Red-cedar Successional Forest (CEGL007124), and the Successional Broomsedge Vegetation (CEGL004044). Five vegetation associations warrant special attention due to their relatively high global rank/rarity (with GRANKs of G2?, G3, and G3?). The four associations which are early successional or are exotic species dominated are not represented by an ecological system unit. The common names of all of the communities are as follows:

Virginia Pine Successional Forest (CEGL002591)
Red-cedar Successional Forest (CEGL007124)
Southern Mesic Beech - Tuliptree Slopes (CEGL007201)
Central Interior Beech – White Oak Forest (CEGL007881)
Interior Mid- to Late- Successional Sweetgum – Oak Forest (CEGL007217)
Interior Mid- to Late- Successional Tuliptree – Hardwood Upland Forest (Acid Type) (CEGL007221)
White Oak – Red Oak Dry- Mesic Acid Forest (CEGL002067)
Southern Red Oak – White Oak – Mixed Oak Forest (CEGL007244)
Dry Acid Eastern Coastal Plain Oak- Hickory Forest (CEGL007246)
Southern Red Oak Flatwoods Forest (CEGL004412)
Upper East Gulf Coastal Plain Chinquapin Oak – Mixed Oak – Hickory Forest (CEGL003903)
Central Interior Upland Cherrybark Oak Forest (CEGL003871)
Box-elder Floodplain Forest (CEGL005033)
River Birch Levee Forest (CEGL007312)
East Gulf Coastal Plain Beech Floodplain Forest (CEGL004745)
Southern Green Ash - Elm - Sugarberry Forest (CEGL002427)
Successional Sweetgum Floodplain Forest (CEGL007330)
Sycamore – Silver Maple Calcareous Floodplain Forest (CEGL007334)
Gulf Coastal Plain Sycamore – Sweetgum Floodplain Forest (CEGL007335)
Sweetgum Cherrybark Oak Floodplain Forest (CEGL007353)
Water Tupelo Swamp Forest (CEGL002419)
Bald-cypress Swamp (CEGL002420)
Interior Forested Acid Seep (CEGL004425)
Southern Buttonbush Pond (CEGL002191)
Successional Broomsedge Vegetation (CEGL004044)
Cultivated meadow (CEGL004048)
Smartweed – Cutgrass Beaver Pond (CEGL004290)

While working in the park, we also captured digital images of plots and plants. These images are indexed (Table 6) and a selection of them can be seen in Appendix III.

Discussion/Conclusions

Species Inventory

The fieldwork from this project added 87 plant taxa to the list of species already known to be present within Shiloh National Military Park (Table 2). One goal of the Inventory and Monitoring program of the National Park Service is to document at least 90% of the vascular flora of the park. Using various estimates and assumptions, the estimate for total number of species in the park ranged from 589 to 831. Excluding varieties, subspecies, and unidentifiable collections, researchers past and present have confirmed 740 taxa within the park. First-order jackknife estimates often underestimate number of species as evidenced by the lowest estimate in our first-order jackknife, whereas second-order jackknife estimates often overestimate the number of species (McCune and Grace 2002). Using only the gridded plots we estimated that 100% of the species in the park had been documented. Using all of the plot data (Figure 2), we found that between 89% and 100% of the species in the park have been documented. Based on our own knowledge of the park, we feel that over 90% of the vascular flora of the park is documented. These numbers should only be used as an estimate, since tests of these indices have shown even the best ones to routinely underestimate the number of species in a park. Since we did sample systematically and without bias, we most likely have a more accurate number than if we had sampled only in areas that were of similar vegetation or only focused on particular parts of the park (Palmer 1990, McCune and Grace 2002).

A total of 740 plant species or lesser taxa have been documented on Shiloh National Military Park. Many of these are cultivars or introduced species. Certain introduced (non-native) species can be found throughout Shiloh National Military Park. Of the introduced (non-native) species present, 28 are considered to be invasive by the Tennessee Exotic Pest Plant Council (TN-EPPC, 2001) and 10 of these are considered a severe threat. These species found within the park are considered aggressive or potentially aggressive invasive species that are out competing and replacing native species in other parts of the Southeast or even within the park. These species may be the biggest single threat to the overall ecological health of the park at this point in time. The plants found at Shiloh and listed as severe threat by the Tennessee Exotic Pest Plant Council are Mimosa (*Albizia julibrissin*), Air-potato (*Dioscorea oppositifolia*), English ivy (*Hedera helix*), Sericea Lespedeza (*Lespedeza cuneata*), Chinese Privet (*Ligustrum sinense*), Japanese Honeysuckle (*Lonicera japonica*), Nepalese brown-top (*Microstegium vimineum*), Princess tree (*Paulownia tomentosa*), Kudzu (*Pueraria montana* var. *lobata*), and Johnson Grass (*Sorghum halepense*). These plants have colonized areas and seem to be expanding in cover over time. Other species may need monitoring and attention to assure that they are not spreading. In areas where exotics have become a monoculture, removal should occur in conjunction with planting and seeding of natives to help prevent quick recolonization by the same or new invasive exotic species.

Vegetation community analysis

The unit of association is the finest level of the vegetation classification and is defined as “a plant community type of definite floristic composition, uniform habitat conditions, and uniform physiognomy” (Grossman et al. 1998). Ecological community information such as that gathered for this project and described in Appendix II can be very useful as a management and monitoring tool for the parks. Once identified to the association level, it is possible for land managers on a local scale to use the ecological community information gathered by researchers throughout the association’s range to make more informed decisions about how to manage locally. In addition to the information contained in Appendix II, we have included the NatureServe ecological system to which each association belongs. Ecological systems represent recurring groups of biological communities that are found in similar physical environments and are influenced by similar dynamic ecological processes, such as fire or flooding. These are practical, mid-scale ecological units designed to inform conservation and resource management decisions. (Comer, et al. 2003). Also included are global and local descriptions for each association, specific information on the status of each association both globally and within the park, possible threats to the association in the park, plants of concern found in the park, and management concerns where they apply.

Virginia Pine Successional Forest (CEGL002591)

This community occurs in areas where canopy removal has created dry, open conditions and bare mineral soil, allowing for the establishment of Virginia pine (*Pinus virginiana*). These habitats include old fields, old pastures, clearcuts, and burned or eroded areas. This forest typically has a very dense canopy of Virginia pine (*Pinus virginiana*) and little understory vegetation. The dense canopy may also include admixtures of Loblolly pine (*Pinus taeda*), Shortleaf pine (*Pinus echinata*) or other early successional deciduous trees such as, Red maple (*Acer rubrum*), Sweetgum (*Liquidambar styraciflua*), Tuliptree (*Liriodendron tulipifera*). Associated woody and herbaceous species vary with geography but are typically ruderal or exotic species. Shrub and herb layers are frequently very sparse. Stands are short-lived, generally less than 75 years.

No plot was done in this vegetation association at Shiloh National Military Park.

Red-cedar Successional Forest (CEGL007124)

This is a successional community dominated by a nearly monospecific Eastern red-cedar (*Juniperus virginiana* var. *virginiana*) canopy. Species composition and cover are variable depending upon geographic location and disturbance history. Some examples are densely forested (75-100% total cover) with Eastern red-cedar (*Juniperus virginiana* var. *virginiana*) and sparse subcanopy, shrub and herb strata. Other examples, especially those that are somewhat more open-canopied, are more species-rich and other tree species may enter the canopy in low levels of abundance.

At Shiloh one site was characterized as follows, canopy is open over dense subcanopy; Willow oak (*Quercus phellos*), Loblolly pine (*Pinus taeda*), Black cherry (*Prunus serotina*), and a small amount of Sweetgum (*Liquidambar styraciflua*) are over the dense subcanopy of Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), with Sweetgum (*Liquidambar styraciflua*), Winged elm (*Ulmus alata*), Black cherry (*Prunus serotina*), Blackgum (*Nyssa sylvatica*), and in small amounts Loblolly pine (*Pinus taeda*), Red maple (*Acer rubrum*), and Green ash (*Fraxinus pennsylvanica*). Sweetgum (*Liquidambar styraciflua*), Red maple (*Acer rubrum*), Mockernut hickory (*Carya alba*), Green ash (*Fraxinus pennsylvanica*), and Blackgum (*Nyssa sylvatica*) are the dominant shrubs. Other shrubs are Willow oak (*Quercus phellos*), Farkleberry (*Vaccinium arboreum*), Virginia creeper (*Parthenocissus quiquefolia*), Common greenbrier (*Smilax rotundifolia*), Muscadine (*Vitis rotundifolia*), Chinese privet (*Ligustrum sinense*), Poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), Southern blackberry (*Rubus argutus*), Deerberry (*Vaccinium stamineum*), Black walnut (*Juglans nigra*), and Persimmon (*Diospyros virginiana*). A sedge (*Carex albicans* var. *australis*) is the dominant herbaceous plant. Other herbs are Longleaf spikegrass (*Chasmanthium sessiliflorum*), Slender spikegrass (*Chasmanthium laxum*), Short-styled sanicle (*Sanicula canadensis*), Nepalese brown-top (*Microstegium vimineum*), Elephant's foot (*Elephantopus tomentosus*), Fireweed (*Erechtites hieraciifolia*), Beaked panic grass (*Panicum anceps*), Ebony spleenwort (*Asplenium platyneuron*), and Lyre-leaf sage (*Salvia lyrata*).

Southern Mesic Beech - Tuliptree Slopes (CEGL007201)

This association includes mesic hardwood forests dominated by American beech (*Fagus grandifolia*) and Tuliptree (*Liriodendron tulipifera*) generally lacking an oak component. At Shiloh National Military Park (Dill Branch) the canopy of this association is dominated by American beech (*Fagus grandifolia*), Tuliptree (*Liriodendron tulipifera*), and White ash (*Fraxinus americana*). Red oak (*Quercus rubra*) and Black walnut (*Juglans nigra*) are also common in the canopy. In the subcanopy, American beech (*Fagus grandifolia*) and Tuliptree (*Liriodendron tulipifera*) are dominant, with Pignut hickory (*Carya glabra*), Appalachian basswood (*Tilia americana* var. *heterophylla*), Silverbell (*Halesia tetraptera* var. *tetraptera*), Eastern Hop-hornbeam (*Ostrya virginiana*), Sourwood (*Oxydendrum arboreum*), Black cherry (*Prunus serotina*), Bitternut hickory (*Carya cordiformis*), and Mockernut hickory (*Carya alba*). The dominant shrubs are Common pawpaw (*Asimina triloba*) and Spicebush (*Lindera benzoin*). Other shrubs (tall and short) are Winged elm (*Ulmus alata*), Silverbell (*Halesia tetraptera* var. *tetraptera*), Eastern Hop-hornbeam (*Ostrya virginiana*), Sourwood (*Oxydendrum arboreum*), Poison ivy (*Toxicodendron radicans*), Common greenbrier (*Smilax rotundifolia*), Hydrangea (*Hydrangea arborescens*), Muscadine (*Vitis rotundifolia*), Ironwood (*Carpinus caroliniana*), Japanese honeysuckle (*Lonicera japonica*), Squaw root (*Conopholus americana*), American strawberry-bush (*Euonymus americanus*), and Sugarberry (*Celtis laevigata*). Christmas fern (*Polystichum acrostichoides*) is the most common herbaceous plant.

Central Interior Beech – White Oak Forest (CEGL007881)

This beech-white oak (*Fagus grandifolia* – *Quercus alba*) forest is found in the Interior Low Plateau of Tennessee, the Cumberland region of Kentucky, and adjacent areas of the Upper East Gulf Coastal Plain. Stands occur on mesic mid to lower slopes in moderately dissected terrain. Stand positions vary from north-facing slopes and low slopes to high terraces along streams. The vegetation is generally dominated by American beech (*Fagus grandifolia*) with more or less White oak (*Quercus alba*) depending on past logging history.

The Shiloh plot is on somewhat steep, east facing midslope of a small ravine on the east side of Shiloh NMP. Presumably the association is in many ravines on Shiloh. The soil is a well drained loam with river pebbles and cobbles shallow in the soil profile. Stand canopy is dominated by White oak (*Quercus alba*) with Mockernut hickory (*Carya alba*), Pignut hickory (*Carya glabra*), Sand hickory (*Carya pallida*), Shagbark hickory (*Carya ovata*), Southern red oak (*Quercus falcata*), and Post oak (*Quercus stellata*). The subcanopy is dominated by American beech (*Fagus grandifolia*), Mockernut hickory (*Carya alba*), and Shagbark hickory (*Carya ovata*) with Red maple (*Acer rubrum*), Sweetgum (*Liquidambar styraciflua*), Blackgum (*Nyssa sylvatica*), Winged elm (*Ulmus alata*), Sand hickory (*Carya pallida*), and Sourwood (*Oxydendrum arboreum*). White oak (*Quercus alba*), Mockernut hickory (*Carya alba*), Flowering dogwood (*Cornus florida*), and Sand hickory (*Carya pallida*) are the most common tall shrubs, with American beech (*Fagus grandifolia*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Red maple (*Acer rubrum*), Sweetgum (*Liquidambar styraciflua*), Blackgum (*Nyssa sylvatica*), Winged elm (*Ulmus alata*), Sassafras (*Sassafras albidum*), Black cherry (*Prunus serotina*), Red oak (*Quercus rubra*), Farkleberry (*Vaccinium arboreum*), Persimmon (*Diospyros virginiana*), Pignut hickory (*Carya glabra*), and Tuliptree (*Liriodendron tulipifera*). White oak (*Quercus alba*), Mockernut hickory (*Carya alba*) and Sassafras (*Sassafras albidum*) are the dominant short shrubs. Other (less abundant) short shrubs are Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Sweetgum (*Liquidambar styraciflua*), Blackgum (*Nyssa sylvatica*), Winged elm (*Ulmus alata*), Sand hickory (*Carya pallida*), Tuliptree (*Liriodendron tulipifera*), Black oak (*Quercus velutina*), Muscadine (*Vitis rotundifolia*), Deerberry (*Vaccinium stamineum*), St. Andrew's cross (*Hypericum hypericoides*), Poison ivy (*Toxicodendron radicans*), Whiteleaf greenbrier (*Smilax glauca*), Carolina rose (*Rosa carolina*), Persimmon (*Diospyros virginiana*), and Southern arrow-wood (*Viburnum dentatum*). Herbaceous plants are somewhat diverse, but sparse.

Interior Mid- to Late- Successional Sweetgum – Oak Forest (CEGL007217)

Stands of this successional forest association are dominated by Sweetgum (*Liquidambar styraciflua*), but also support additional species in the overstory such as White oak (*Quercus alba*), Tuliptree (*Liriodendron tulipifera*), and/or Southern red oak (*Quercus falcata*). This forest is somewhat later successional and/or more diverse than pure Sweetgum (*Liquidambar styraciflua*) forests. This type may arise following disturbance of mixed Oak – Hickory (*Quercus* – *Carya*) forests.

At Shiloh National Military Park, this vegetation is documented from a plot (SHIL.4), which was disturbed by a tornado in 1971 or 1972 (Dennis Turnbo, pers. comm, 2003). There are stumps and tip up mounds from the tornado and the salvage logging which followed. Plot is southeast of Rhea Springs, south of Peabody Road. Shiloh is in an area where tornados are not infrequent, so there may be other areas where these successional stands developed after tornado disturbance. The dominant tree is Sweetgum (*Liquidambar styraciflua*) with Red maple (*Acer rubrum*) the canopy subdominant. Mockernut hickory (*Carya alba*), White oak (*Quercus alba*) are also important, with Southern red oak (*Quercus falcata*), Black cherry (*Prunus serotina*), Blackgum (*Nyssa sylvatica*), and Pignut hickory (*Carya glabra*). Flowering dogwood (*Cornus florida*), Sand hickory (*Carya pallida*), and Red oak (*Quercus rubra*) are important primarily in the subcanopy and tall shrub strata. Deerberry (*Vaccinium stamineum*) and Possum-haw (*Ilex decidua*) are tall shrubs, most of the Oak (*Quercus* spp.) and Hickory (*Carya* spp.) also occur as tall shrubs. Short shrubs include Willow oak (*Quercus phellos*), Winged elm (*Ulmus alata*), Carolina rose (*Rosa carolina*), Muscadine (*Vitis rotundifolia*), Japanese honeysuckle (*Lonicera japonica*), Sensitive brier (*Mimosa microphylla*), St. Andrew's cross (*Hypericum hypericoides*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Chinese privet (*Ligustrum sinense*), Deerberry (*Vaccinium stamineum*), Persimmon (*Diospyros virginiana*), Blackgum (*Nyssa sylvatica*), Whiteleaf greenbrier (*Smilax glauca*), Pignut hickory (*Carya glabra*), Farkleberry (*Vaccinium arboreum*), and Southern blackberry (*Rubus argutus*). The herbaceous stratum has 30% cover, but there are no dominant species. The most abundant herbaceous species are Bosc's witchgrass (*Dichanthelium boscii*) and Sparse-lobed grape-fern (*Botrychium biternatum*).

Interior Mid- to Late- Successional Tuliptree – Hardwood Upland Forest (Acid Type) (CEGL007221)

This semi-natural or successional community is one of several described upland associations dominated by Tuliptree (*Liriodendron tulipifera*). No plots of this association were done at Shiloh NMP. Within its range, it differs from other described Tuliptree (*Liriodendron tulipifera*) dominated types based on the lack of a significant pine component and the absence of species affiliated with circumneutral conditions; it is a later successional and species diverse association. Examples are common across large areas of the upland landscape, which have been previously disturbed. Stands attributable to this type may be fairly diverse and varied in species composition. Red maple (*Acer rubrum*), Oak (*Quercus* spp.), and occasionally Sweetgum (*Liquidambar styraciflua*) may be common in some stands of this type. These successional forests often follow cropping, clearcut logging, or other severe disturbance, and are successional to mixed Oak – Hickory (*Quercus* – *Carya*) forests. The oak in these stands will frequently be multi-stemmed, resulting from coppicing.

White Oak – Red Oak Dry- Mesic Acid Forest (CEGL002067)

This community is found in the Interior Highlands of the south-central United States to the Western Allegheny Plateau. Stands occur on gentle to moderately steep slopes of

dissected hills and plains. Soils are well-drained, shallow to deep, often over sandstone, cherts, or cherty limestone. Stands are dominated by a closed-canopy deciduous tree layer. The dominants are White oak (*Quercus alba*) and Red oak (*Quercus rubra*). At Shiloh NMP, dominant trees include White oak (*Quercus alba*), Pignut hickory (*Carya glabra*), Red oak (*Quercus rubra*), Tuliptree (*Liriodendron tulipifera*), and Blackgum (*Nyssa sylvatica*). Subcanopy dominants include Sourwood (*Oxydendrum arboreum*), American beech (*Fagus grandifolia*), Flowering dogwood (*Cornus florida*) and Ironwood (*Carpinus caroliniana*). The most abundant shrubs are Mockernut hickory (*Carya alba*), Sourwood (*Oxydendrum arboreum*), and Common pawpaw (*Asimina triloba*). Christmas fern (*Polystichum acrostichoides*) is the most abundant herbaceous plant. Vines include Virginia creeper (*Parthenocissus quinquefolia*), Poison ivy (*Toxicodendron radicans*), Whiteleaf greenbrier (*Smilax glauca*), and Muscadine (*Vitis rotundifolia*). Occurs on Mesic to dry-mesic NE slopes. Soil mapped as Waynesboro very gravelly sandy loam. Short slope in a narrow ravine is the description of one plot (5-SE-1) location, down the ravine from Rogers Homestead. The other plot (4-32) is SE of the Indian Mounds.

Southern Red Oak – White Oak – Mixed Oak Forest (CEGL007244)

This southern red oak - white oak dry forest is found in the Piedmont of Georgia, South Carolina, North Carolina, and Virginia, and in the interior uplands and Cumberland Plateau of Kentucky and Tennessee. It has also been reported from the Upper East Gulf Coastal Plain of Mississippi, Tennessee and Georgia. It generally is a second-growth forest on low-fertility Ultisols. The vegetation is dominated by Oak (*Quercus* spp.) and lesser amounts of Hickory (*Carya* spp.)

At Shiloh NMP (west Tennessee) this association was documented from 3 plots in 2002, the canopy is dominated by White oak (*Quercus alba*), Southern red oak (*Quercus falcata*), Post oak (*Quercus stellata*), Winged elm (*Ulmus alata*), and Mockernut hickory (*Carya alba*). Chinquapin oak (*Quercus muehlenbergii*) is also present as a canopy species in one of the plots. Subcanopy dominants are Sweetgum (*Liquidambar styraciflua*), Winged elm (*Ulmus alata*), Blackgum (*Nyssa sylvatica*), White ash (*Fraxinus americana*), and Pignut hickory (*Carya glabra*). Other subcanopy trees are Red oak (*Quercus rubra*), White oak (*Quercus alba*), Mockernut hickory (*Carya alba*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Red hickory (*Carya ovalis*), Persimmon (*Diospyros virginiana*), and American beech (*Fagus grandifolia*). The most abundant tall shrubs are Mockernut hickory (*Carya alba*), Southern red oak (*Quercus falcata*), Winged elm (*Ulmus alata*), and Sweetgum (*Liquidambar styraciflua*). Other tall shrubs are Red hickory (*Carya ovalis*), Sassafras (*Sassafras albidum*), White oak (*Quercus alba*), Blackgum (*Nyssa sylvatica*), Farkleberry (*Vaccinium arboreum*), Deerberry (*Vaccinium stamineum*), and less abundant Black oak (*Quercus velutina*), Red oak (*Quercus rubra*), American beech (*Fagus grandifolia*), White ash (*Fraxinus americana*), Red maple (*Acer rubrum*), Common greenbrier (*Smilax rotundifolia*), and American holly (*Ilex opaca*). Short shrubs are diverse, Southern red oak (*Quercus falcata*), Muscadine (*Vitis rotundifolia*), Deerberry (*Vaccinium stamineum*) and Mockernut hickory (*Carya alba*) are the most abundant. Other short shrubs are Southern red oak (*Quercus velutina*), Winged elm (*Ulmus alata*), White oak (*Quercus alba*),

Blackgum (*Nyssa sylvatica*), Virginia creeper (*Parthenocissus quiquefolia*), Black cherry (*Prunus serotina*), and Sassafras (*Sassafras albidum*). Short shrubs otherwise are sparse. In one of the three plots Longleaf spikegrass (*Chasmanthium sessiliflorum*) is the dominant herb, in the other plots there is no single dominant and herbs are all sparse. Other herbs include Bosc's witchgrass (*Dichanthelium boscii*), Hirsute sedge (*Carex complanata*), Lax-flower witchgrass (*Dichanthelium laxiflorum*), Poverty oatgrass (*Danthonia spicata*), Creeping bush-clover (*Lespedeza repens*), Trailing bush-clover (*Lespedeza procumbens*), Leavenworth sedge (*Carex leavenworthii*), Little bluestem (*Schizachyrium scoparium*) and others present a in trace amounts.

Dry Acid Eastern Coastal Plain Oak- Hickory Forest (CEGL007246)

This forest occurs on dry, acidic soils in naturally fire-protected landscapes in the Atlantic Coastal Plain and portions of the lower East Gulf Coastal Plain and Upper East Gulf Coastal Plain. Examples are generally dominated by Southern red oak (*Quercus falcata*) and Post oak (*Quercus stellata*), with less White oak (*Quercus alba*). In addition, Mockernut hickory (*Carya alba*) or Sand hickory (*Carya pallida*) may be a component. Pines, for example Shortleaf pine (*Pinus echinata*), Longleaf pine (*Pinus palustris*), and/or Loblolly pine (*Pinus taeda*) may be significant components but are not dominant. Many examples have a well-developed subcanopy of Flowering dogwood (*Cornus florida*). Poverty oatgrass (*Danthonia spicata*) is the dominant herbaceous plant on some sites in Tennessee (Shiloh NMP).

This association is documented in 5 plots at Shiloh NMP. One of these plots (SHIL.5) is in monument area which is mowed and lacks any tall shrubs. The dominant canopy tree is Southern red oak (*Quercus falcata*) with Mockernut hickory (*Carya alba*), Post oak (*Quercus stellata*) and Sweetgum (*Liquidambar styraciflua*) also important or codominant in the canopy. Virginia pine (*Pinus virginiana*) and Shortleaf pine (*Pinus echinata*) can also be found in the canopy in some plots. The subcanopy can be dominated by White oak (*Quercus alba*), Southern red oak (*Quercus falcata*), Post oak (*Quercus stellata*), Blackjack oak (*Quercus marilandica*), or Virginia pine (*Pinus virginiana*). Other subcanopy trees include Ironwood (*Carpinus caroliniana*), Mockernut hickory (*Carya alba*), and Sweetgum (*Liquidambar styraciflua*), Flowering dogwood (*Cornus florida*), Blackgum (*Nyssa sylvatica*), Shortleaf pine (*Pinus echinata*), Red maple (*Acer rubrum*), Downy serviceberry (*Amelanchier arborea*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Pignut hickory (*Carya glabra*), Loblolly pine (*Pinus taeda*), Sand hickory (*Carya pallida*), Black cherry (*Prunus serotina*), Red oak (*Quercus rubra*), Black oak (*Quercus velutina*), and Winged elm (*Ulmus alata*). Tall shrubs are absent from some plots, but where present Farkleberry (*Vaccinium arboreum*) and Deerberry (*Vaccinium stamineum*) are the most abundant. Blackgum (*Nyssa sylvatica*), Red maple (*Acer rubrum*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Sand hickory (*Carya pallida*), Blackjack oak (*Quercus marilandica*), Black oak (*Quercus velutina*), American beech (*Fagus grandifolia*), and Sweetgum (*Liquidambar styraciflua*) also can be present, and at sparse amounts of tall shrub cover Red oak (*Quercus rubra*), Scarlet oak (*Quercus coccinea*), Flowering dogwood (*Cornus florida*), Sassafras (*Sassafras albidum*), Persimmon (*Diospyros virginiana*), Downy

serviceberry (*Amelanchier arborea*), Winged elm (*Ulmus alata*), and Virginia pine (*Pinus virginiana*). Short shrubs tend to be quite sparse, but Farkleberry (*Vaccinium arboreum*) and Deerberry (*Vaccinium stamineum*) are the most abundant. Poverty oatgrass (*Danthonia spicata*) is the most abundant herb in the plots where it is found. Potato dandelion (*Krigia dandelion*) and Little bluestem (*Schizachyrium scoparium*) are also important. Herbs are otherwise sparse.

Southern Red Oak Flatwoods Forest (CEGL004412)

This southern red oak flatwoods forest is found in parts of the Interior Low Plateau and adjacent areas of the Upper East Gulf Coastal Plain of the southern United States. Stands occur on somewhat poorly drained sites. The vegetation is dominated by Southern red oak (*Quercus falcata*). It is perhaps marginally a wetland and is better drained than Willow oak (*Quercus phellos*) flatwoods. The canopy may also contain some White oak (*Quercus alba*) and Post oak (*Quercus stellata*), and possibly Mockernut hickory (*Carya alba*). The ground cover is predominantly leaf litter and most occurrences are thought to be fire-suppressed. At Shiloh National Military Park (Tennessee), Slender spikegrass (*Chasmanthium laxum*), Potato dandelion (*Krigia dandelion*), and Hirsute sedge (*Carex complantata*) were the most abundant herbaceous plants. It is known historically from the Upper East Gulf Coastal Plain of western Kentucky (eastern Gulf Coastal Plain on tertiary terraces), western Tennessee, and northwestern Mississippi (the 'flatwoods belt'), as well as the Shawnee Hills and the Knobs region of Kentucky. This is a globally rare (G2?) association.

At Shiloh National Military Park (Tennessee) this association occurs in an area which is very flat, called flatwoods. It had standing water after heavy rain (>5 inches of rain during the prior 2 days). The site may have a fragipan or other impermeable soil horizon which allows water to stay for short periods at the surface of the soil and stand. Despite this, the site was described as mesic and not called a wetland. The surface soil was silt loam.

This association as documented at Shiloh National Military Park (Tennessee) is a forest with the canopy completely dominated by Southern red oak (*Quercus falcata*). Many of these trees are quite large. There are no other canopy trees in the plot (SHIL.22). The subcanopy has a variety of trees, the most common being Blackgum (*Nyssa sylvatica*), Sweetgum (*Liquidambar styraciflua*), and Red maple (*Acer rubrum*). Also in the subcanopy (in order of abundance) are Post oak (*Quercus stellata*), Mockernut hickory (*Carya alba*), Winged elm (*Ulmus alata*), Tuliptree (*Liriodendron tulipifera*), Green ash (*Fraxinus pennsylvanica*), and Black cherry (*Prunus serotina*). The most abundant tall shrubs (including tree species) are Red maple (*Acer rubrum*), Sweetgum (*Liquidambar styraciflua*), then Mockernut hickory (*Carya alba*), Blackgum (*Nyssa sylvatica*), and Flowering dogwood (*Cornus florida*). Less common as tall shrubs are Southern red oak (*Quercus falcata*), Farkleberry (*Vaccinium arboreum*), Winged elm (*Ulmus alata*), Pignut hickory (*Carya glabra*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Downy serviceberry (*Amelanchier arborea*), and Willow oak (*Quercus phellos*). The most abundant plant in the short shrub layer is Muscadine (*Vitis rotundifolia*). Other plants are

rather sparse as short shrubs; (in order of abundance) Southern red oak (*Quercus falcata*), Blackgum (*Nyssa sylvatica*), Farkleberry (*Vaccinium arboreum*), Southern blackberry (*Rubus argutus*), Japanese honeysuckle (*Lonicera japonica*), Deerberry (*Vaccinium stamineum*), Winged elm (*Ulmus alata*), St. Andrew's cross (*Hypericum hypericoides*), Downy serviceberry (*Amelanchier arborea*), Carolina rose (*Rosa carolina*), Virginia creeper (*Parthenocissus quinquefolia*), Willow oak (*Quercus phellos*). The open areas have the most herbaceous plant cover. The most abundant herbaceous plants are Slender spikegrass (*Chasmanthium laxum*) and (less abundant) Potato dandelion (*Krigia dandelion*), then Hirsute sedge (*Carex complanata*), Poverty oatgrass (*Danthonia spicata*), Lax-flower witchgrass (*Dichanthelium laxiflorum*), and Carolina elephant-foot (*Elephantopus carolinianus*). Other herbaceous plants are present at trace amounts.

Upper East Gulf Coastal Plain Chinquapin Oak – Mixed Oak – Hickory Forest (CEGL003903)

This dry-mesic to mesic chinquapin oak - mixed oak-hickory forest association is found in the Upper East Gulf Coastal Plain of Tennessee. Stands include dry-mesic to subseric forests of gently sloping topography. The vegetation could be influenced by shells and shell fragments which are in the soil.

The vegetation of this association at Shiloh NMP is dominated by a mixture of Chinquapin oak (*Quercus muehlenbergii*), White oak (*Quercus alba*), and Black oak (*Quercus velutina*), with White ash (*Fraxinus americana*) and Black walnut (*Juglans nigra*) in smaller amounts or in the understory (NatureServe Ecology unpubl. data). Hickories (*Carya* spp.) are prominent in the canopy and subcanopy, including Shagbark hickory (*Carya ovata*), Red hickory (*Carya ovalis*), Mockernut hickory (*Carya alba*), and Pignut hickory (*Carya glabra*). All the lower woody strata contain substantial Eastern Hop-hornbeam (*Ostrya virginiana*). Other woody plants include Winged elm (*Ulmus alata*), Bladdernut (*Staphylea trifolia*), Rusty haw (*Viburnum rufidulum*), and Red mulberry (*Morus rubra*). In the one stand sampled, Florida maple (*Acer barbatum*) and/or Sugar maple (*Acer saccharum*) are apparently absent. The herbaceous layer includes some mesic forest species, including Bloodroot (*Sanguinaria canadensis*) and Smoother sweet-cicely (*Osmorhiza longistylis*), as well as several Sedge (*Carex*) species.

Central Interior Upland Cherrybark Oak Forest (CEGL003871)

This dry-mesic forest community is restricted to apparently calcareous-influenced or basic soils associated with high terraces and adjacent slopes in western Tennessee and possibly adjacent areas. These are upland stands with a significant, if not dominant, component of Pagoda oak (*Quercus pagoda*). These forests are on distinctly upland areas isolated from the river floodplains.

At Shiloh NMP this association occurs on dry-mesic loam soil on a gentle west facing slope. There may be circumneutral conditions here, perhaps a clay subsoil. The forest canopy is dominated by Pagoda oak (*Quercus pagoda*), and to a lesser extent Black oak (*Quercus velutina*). Sweetgum (*Liquidambar styraciflua*) and White ash (*Fraxinus*

americana) are also present at low cover in the canopy. The subcanopy is dominated by Sweetgum (*Liquidambar styraciflua*) and Eastern Hop-hornbeam (*Ostrya virginiana*) with Winged elm (*Ulmus alata*), Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Red maple (*Acer rubrum*), Black cherry (*Prunus serotina*) and Red oak (*Quercus rubra*). The dominant tall shrubs are Eastern Hop-hornbeam (*Ostrya virginiana*), Winged elm (*Ulmus alata*), and Red maple (*Acer rubrum*). Other tall shrubs are Eastern red-cedar (*Juniperus virginiana* var. *virginiana*), Mockernut hickory (*Carya alba*), Deerberry (*Vaccinium stamineum*), Blackgum (*Nyssa sylvatica*), Red oak (*Quercus rubra*), and the exotic plant Silktree (*Albizia julibrissin*). Poison ivy (*Toxicodendron radicans*) is the only vine present. Herbs are sparse, Slender spikegrass (*Chasmanthium laxum*) is the most common.

Box-elder Floodplain Forest (CEGL005033)

This box-elder floodplain forest is found on floodplains in the southern, eastern, and Midwestern United States. Stands occur on large rivers in the active floodplain and on sandbars, and may form farther from the riverfront following disturbance. They are typically temporarily flooded in the spring. These early successional forests are dominated by Box-elder (*Acer negundo*). Other characteristic species include Sycamore (*Platanus occidentalis*), Sugarberry (*Celtis laevigata*), Red maple (*Acer rubrum*), Sweetgum (*Liquidambar styraciflua*), Silver maple (*Acer saccharinum*), Winged elm (*Ulmus alata*), *Ulmus rubra*, Ironwood (*Carpinus caroliniana*), Red mulberry (*Morus rubra*), and Eastern cottonwood (*Populus deltoides*). The shrub and herb layers range from sparse to relatively lush, and the vine component often is heavy.

Found at mouth of Dill Branch near Tennessee River at Shiloh NMP, plot 3-29. The stand sampled is dominated by Box-elder (*Acer negundo*) with Red maple (*Acer rubrum*), White ash (*Fraxinus americana*), and Sweetgum (*Liquidambar styraciflua*). Subcanopy trees include Ironwood (*Carpinus caroliniana*), Elm (*Ulmus* sp.) and Box-elder (*Acer negundo*). Shrubs include Box-elder (*Acer negundo*), Ironwood (*Carpinus caroliniana*), Mockernut hickory (*Carya alba*), and Elm (*Ulmus* sp.) Also present as short shrubs were Giant cane (*Arundinaria gigantea*), Poison ivy (*Toxicodendron radicans*), Greenbrier (*Smilax* sp.) and Virginia creeper (*Parthenocissus quinquefolia*). False nettle (*Boehmeria cylindrica*) was an important herbaceous plant.

River Birch Levee Forest (CEGL007312)

This riverfront forest, dominated by River birch (*Betula nigra*) and Sycamore (*Platanus occidentalis*), occurs primarily on levees along small rivers and streams. It ranges from Virginia to southern Georgia in the Piedmont and Coastal Plain (and into the southern and lower-elevation parts of the Southern Blue Ridge, excluding the highest elevations of the Mountains) and west to eastern Texas, and possibly the Cumberland Plateau of northern Alabama.

At Shiloh NMP occurs along Shiloh Branch (Plot 2A-6), and probably occurs along other creeks as well. The canopy is dominated by River birch (*Betula nigra*), Tuliptree

(*Liriodendron tulipifera*), and to a lesser extent Sycamore (*Platanus occidentalis*). The subcanopy has Tuliptree (*Liriodendron tulipifera*), Sweetgum (*Liquidambar styraciflua*), and Flowering dogwood (*Cornus florida*). Tall shrubs (in order of dominance) are Flowering dogwood (*Cornus florida*), Red maple (*Acer rubrum*), Black cherry (*Prunus serotina*), and Winged elm (*Ulmus alata*). Poison ivy (*Toxicodendron radicans*) is a common low shrub. Nepalese brown-top (*Microstegium vimineum*), an exotic is the dominant herbaceous plant.

East Gulf Coastal Plain Beech Floodplain Forest (CEGL004745)

The canopy of stands of this floodplain forest of the East Gulf and Upper East Gulf coastal plains is strongly dominated by American beech (*Fagus grandifolia*). At Shiloh NMP this community occurs in the small stream floodplain of Dill Branch, at intersection of first stream from northeast. Dominated by Hickory (*Carya sp.*) With American beech (*Fagus grandifolia*) and Blackgum (*Nyssa sylvatica*) both subdominant. Sweetgum (*Liquidambar styraciflua*) less abundant in the canopy. Subcanopy trees are Ironwood (*Carpinus caroliniana*), American beech (*Fagus grandifolia*) and in small amounts Swamp chestnut oak (*Quercus michauxii*) and Green ash (*Fraxinus pennsylvanica*). Common pawpaw (*Asimina triloba*), Ironwood (*Carpinus caroliniana*), Red mulberry (*Morus rubra*), and Sugarberry (*Celtis laevigata*) are common tall shrubs. Low shrubs include Giant cane (*Arundinaria gigantea*), Poison ivy (*Toxicodendron radicans*), and Greenbrier (*Smilax sp.*) Partridge berry (*Mitchella repens*) is the most common herbaceous plant, others include False nettle (*Boehmeria cylindrica*), River oats (*Chasmanthium latifolium*), Virginia snakeroot (*Aristolochia serpentaria*), and Yellow yam (*Dioscorea villosa*).

Southern Green Ash - Elm - Sugarberry Forest (CEGL002427)

This green ash - American elm - sugarberry community is found throughout the central and southern United States. Stands occur in floodplains of major rivers where water is absent for most of the growing season. Soils are moist alluvial clay or silt loams. American elm (*Ulmus americana*) was once the most prominent member of this forest, but Dutch elm disease (*Ceratostomella ulmi*) and logging have eliminated many of the largest mature *Ulmus* spp. from most of the species natural range. Green ash (*Fraxinus pennsylvanica*) dominates on moist flats and shallow sloughs, while Sugarberry (*Celtis laevigata*) is most prevalent on new land or front sites. Other species commonly encountered include Water hickory (*Carya aquatica*), Overcup oak (*Quercus lyrata*), Sweetgum (*Liquidambar styraciflua*), and Box-elder (*Acer negundo*). The subcanopy is often dense and dominated by Green ash (*Fraxinus pennsylvanica*) which sprouts prolifically.

Found at Shiloh NMP in floodplain in bend of Owl Creek near old bridge. This part not impounded by beavers. It probably floods seasonally (late spring) up to 1.5 m above ground. Soil is silt loam, temporarily flooded and somewhat poorly drained. There is mature forest, but not old growth in this plot. The forest at Owl Creek is dominated by American elm (*Ulmus americana*) and to a lesser extent Sugarberry (*Celtis laevigata*), with Silver maple (*Acer saccharinum*) and Green ash (*Fraxinus pennsylvanica*) also in

the canopy. The subcanopy is dominated by Sugarberry (*Celtis laevigata*), Silver maple (*Acer saccharinum*) and Box-elder (*Acer negundo*), with American elm (*Ulmus americana*) and Green ash (*Fraxinus pennsylvanica*). Possum-haw (*Ilex decidua*) is the only tall shrub. Vines dominate the short shrub layer. Poison ivy (*Toxicodendron radicans*) is the dominant, also present is Sugarberry (*Celtis laevigata*), Trumpetvine (*Campsis radicans*), Ladies' eardrops (*Brunnichia ovata*), and Halberd-leaf greenbrier (*Smilax tamnoides*). River oats (*Chasmanthium latifolium*), Virginia day-flower (*Commelina virginica*), and Wood nettle (*Laportea canadensis*) are the most abundant herbs.

Successional Sweetgum Floodplain Forest (CEGL007330)

This association is generally dominated by Sweetgum (*Liquidambar styraciflua*) but can be dominated by Tuliptree (*Liriodendron tulipifera*) in some cases, and occurs on heavily disturbed sites such as wetland old fields that have been recovering for the past 10-60 years. This is a successional community that develops following clearcutting or other disturbance along floodplains of major creeks and other temporarily flooded areas. This association is known from the Piedmont, Interior Low Plateau, Inner South Atlantic Coastal Plain, Upper East Gulf Coastal Plain, and possibly other provinces. Red maple (*Acer rubrum*) may be a major component of the canopy and subcanopy and may even partially dominate in some instances. In more mature examples, other canopy/subcanopy species which may occur to a lesser extent and often as scattered emergents are White oak (*Quercus alba*), Willow oak (*Quercus phellos*), Water oak (*Quercus nigra*), Blackgum (*Nyssa sylvatica*), and Flowering dogwood (*Cornus florida*).

Occurs along Shiloh Branch, in a small stream floodplain. Also occurs elsewhere on Shiloh NMP in similar habitat. At Shiloh NMP occurs in a small stream floodplain, the canopy is dominated by Tuliptree (*Liriodendron tulipifera*), or Sweetgum (*Liquidambar styraciflua*), with Red maple (*Acer rubrum*), and Willow oak (*Quercus phellos*). Red maple (*Acer rubrum*), Sweetgum (*Liquidambar styraciflua*), Tuliptree (*Liriodendron tulipifera*), and Flowering dogwood (*Cornus florida*) are common subcanopy trees. Tall shrubs include Possum-haw (*Ilex decidua*), Spicebush (*Lindera benzoin*), Flowering dogwood (*Cornus florida*), Red maple (*Acer rubrum*), and short shrubs and low vines include American strawberry-bush (*Euonymus americanus*), Poison ivy (*Toxicodendron radicans*), Japanese honeysuckle (*Lonicera japonica*), and Virginia creeper (*Parthenocissus quinquefolia*).

Sycamore – Silver Maple Calcareous Floodplain Forest (CEGL007334)

This sycamore - silver maple floodplain forest occurs along riverfronts in calcareous areas of the east-central United States. Stands are dominated by Sycamore (*Platanus occidentalis*), with a mixture of other species, including Box-elder (*Acer negundo*), Silver maple (*Acer saccharinum*), White ash (*Fraxinus americana*), Green ash (*Fraxinus pennsylvanica*), Black walnut (*Juglans nigra*), American elm (*Ulmus americana*), and Slippery elm (*Ulmus rubra*). Shrubs include Common pawpaw (*Asimina triloba*) and

Spicebush (*Lindera benzoin*). Vines may be abundant, including Virginia creeper (*Parthenocissus quinquefolia*) and Poison ivy (*Toxicodendron radicans*).

This community was documented from plot 2c-2 at Shiloh NMP, in the small stream floodplain of Dill Branch, just upstream from Tennessee River. Dominated by Green ash (*Fraxinus pennsylvanica*), Box-elder (*Acer negundo*), and to a lesser extent Sycamore (*Platanus occidentalis*), and Silver maple (*Acer saccharinum*). The subcanopy is dominated by Slippery elm (*Ulmus rubra*) and Silver maple (*Acer saccharinum*). Shrubs include Sugarberry (*Celtis laevigata*), Silver maple (*Acer saccharinum*), Winged elm (*Ulmus alata*), Red maple (*Acer rubrum*), and the low vines Poison ivy (*Toxicodendron radicans*), Trumpetvine (*Campsis radicans*) and Common greenbrier (*Smilax rotundifolia*). False Nettle (*Boehmeria cylindrica*) and Cutgrass (*Leersia sp.*) are the most abundant herbs.

Gulf Coastal Plain Sycamore – Sweetgum Floodplain Forest (CEGL007335)

This floodplain forest of the Upper East and West Gulf coastal plains has a canopy dominated by Sycamore (*Platanus occidentalis*) and Sweetgum (*Liquidambar styraciflua*). Examples may be found on stabilized natural levees, point bars and first bottoms of large streams and rivers. Depending upon location and previous disturbance history (including hydrologic regime), a number of other tree species may also be present in lesser amounts. These may include American elm (*Ulmus americana*), Pecan (*Carya illinoensis*), Swamp blackgum (*Nyssa biflora*), Sugarberry (*Celtis laevigata*), Eastern cottonwood (*Populus deltoides*), Water oak (*Quercus nigra*), Black willow (*Salix nigra*), Green ash (*Fraxinus pennsylvanica*), River birch (*Betula nigra*), Box-elder (*Acer negundo*), and Water hickory (*Carya aquatica*). Shrubs are sparse to moderately dense in this community with covers ranging from 10-40%. Species may include Green hawthorn (*Crataegus viridis*), Possum-haw (*Ilex decidua*), Spicebush (*Lindera benzoin*), Ironwood (*Carpinus caroliniana*), and Red buckeye (*Aesculus pavia* var. *pavia*). Characteristic herbs include Bottle-brush grass (*Elymus hystrix*), False nettle (*Boehmeria cylindrica*), River oats (*Chasmanthium latifolium*), and Violets (*Viola* spp.) Patches of Giant cane (*Arundinaria gigantea*) can be common in this community.

At Shiloh NMP occurs in the Owl Creek floodplain (plot 1B-13), a regularly flooded area. The soils are mapped as either Waverly silt loam or Collins silt loam. At Shiloh NMP this association is dominated by Sweetgum (*Liquidambar styraciflua*), Sycamore (*Platanus occidentalis*), Green ash (*Fraxinus pennsylvanica*) with Sugarberry (*Celtis laevigata*). The subcanopy is characterized by Sugarberry (*Celtis laevigata*), Box-elder (*Acer negundo*), American elm (*Ulmus americana*), Ironwood (*Carpinus caroliniana*), and Water tupelo (*Nyssa aquatica*). Possum-haw (*Ilex decidua*) and Giant cane (*Arundinaria gigantea*) dominate the shrub strata. Spicebush (*Lindera benzoin*), Common pawpaw (*Asimina triloba*), and Sugarberry (*Celtis laevigata*) are also common shrubs. Poison ivy (*Toxicodendron radicans*) and Trumpetvine (*Campsis radicans*) are common low vines (covering the ground). Wood nettle (*Laportea canadensis*), and Sensitive fern (*Onoclea sensibilis*) are common herbaceous plants.

Sweetgum Cherrybark Oak Floodplain Forest (CEGL007353)

This bottomland hardwood forest is found on higher terraces of floodplains in the northern Upper East Gulf Coastal Plain and East Gulf Coastal Plain. The canopy of stands is dominated by Sweetgum (*Liquidambar styraciflua*), Pagoda oak (*Quercus pagoda*), and Hickories (*Carya* spp.), including Shagbark hickory (*Carya ovata*), Kingnut hickory (*Carya laciniosa*), and Red hickory (*Carya ovalis*). Originally described from Shiloh National Park (Hardin County, Tennessee), where the understory may contain Ironwood (*Carpinus caroliniana*), Green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), Mockernut hickory (*Carya alba*), Red hickory (*Carya ovalis*), and Water oak (*Quercus nigra*). Portions of the stand may exhibit canopy dominance by Sweetgum (*Liquidambar styraciflua*) and Hickories (*Carya* spp.), with lower coverage by oaks. Shrubs include Common pawpaw (*Asimina triloba*), Giant cane (*Arundinaria gigantea*) and Possum haw (*Ilex decidua*), along with smaller individuals of successional tree species such as Box-elder (*Acer negundo*) and Sugarberry (*Celtis laevigata*).

At Shiloh NMP in the vicinity of Owl Creek this bottomland hardwood forest is found on higher terraces of floodplains. Soils on which this type is found (Shiloh National Park, Hardin County, Tennessee) include the Collins and the Waverly silt loams, at an elevation of about 115 m (380 feet). It is dominated by Sweetgum (*Liquidambar styraciflua*), Pagoda oak (*Quercus pagoda*), and Shagbark hickory (*Carya ovata*). The understory contains Ironwood (*Carpinus caroliniana*), American elm (*Ulmus americana*), Mockernut hickory (*Carya alba*), Shagbark hickory (*Carya ovata*), Pignut hickory (*Carya glabra*), Sweetgum (*Liquidambar styraciflua*), and Swamp chestnut oak (*Quercus michauxii*). River oats (*Chasmanthium latifolium*) and Virginia knotweed (*Polygonum virginianum*) are dominant herbs, there are many others also.

Water Tupelo Swamp Forest (CEGL002419)

This semipermanently flooded water tupelo swamp forest is found in the Coastal Plain from Virginia south to Florida, west to Texas, and north in the Mississippi delta region to Missouri, Illinois, and Kentucky. Stands occur on permanently saturated soils on low, wet flats and sloughs, swales and backswamps. The association is on floodplains of rivers.

At Shiloh National Military Park this vegetation occurs in an area of Owl Creek bottomland which is open canopied, due to beaver activity (both impounding and chewing of bark which has killed trees). Dominant canopy tree is Water tupelo (*Nyssa aquatica*). Black willow (*Salix nigra*) is also present in the canopy. Red maple (*Acer rubrum*) is the only subcanopy tree. Shrubs are fairly dense, Red maple (*Acer rubrum*), *Alnus serrulata*, *Cornus foemina*, Virginia willow (*Itea virginica*) are the most important, with Water tupelo (*Nyssa aquatica*), Buttonbush (*Cephalanthus occidentalis*) and Black willow (*Salix nigra*). Arrow-leaved tearthumb (*Polygonum sagittatum*), Rice cutgrass (*Leersia oryzoides*), Nepalese brown-top (*Microstegium vimineum*), Orange jewelweed

(*Impatiens capensis*) and Dotted smartweed (*Polygonum punctatum*) are the dominant herbaceous plants.

Bald-cypress Swamp (CEGL002420)

This bald-cypress swamp is found in the Atlantic and Gulf coastal plains of the United States in a variety of ecological settings. Examples may occur in oxbow lakes and ponds, and along the banks of rivers and lakes in saturated or flooded soils. This type is characterized by a monospecific canopy of straight, tall individuals of Bald cypress (*Taxodium distichum*) above shallow to deep water (depths ranging from soil saturation to approximately 6 m) during all or most of the year. Flooding is seasonal, occurring during winter and spring. Stands have a sparse to moderate subcanopy and depauperate shrub and herb layers. The trunks of the canopy trees typically form swelled buttresses. Canopy cover is variable, from at or near 100% to less than 60% in some examples. More open examples of this type tend to occur in deeper water. In the deepest water situations scattered trees grow over an open water surface covered by floating and submersed aquatic plants. Bald cypress (*Taxodium distichum*) regeneration is absent in areas of permanent inundation, as seed germination does not occur in standing water. The subcanopy and herbaceous layers are dependent upon timing, duration, and depth of flooding. Buttonbush (*Cephalanthus occidentalis*) and Swamp rose (*Rosa palustris*) may be common shrubs in some examples of this community, while Water ash (*Fraxinus caroliniana*) in its range, and Swamp red maple (*Acer rubrum* var. *drummondii*) are common in the subcanopy. Shallow water emergents, floating-leaved aquatics, such as Eastern mosquito fern (*Azolla caroliniana*), Watershield (*Brasenia schreberi*), Carolina fanwort (*Cabomba caroliniana*), Swamp pennywort (*Hydrocotyle ranunculoides*), American spongeplant (*Limnobium spongia*), Dotted water-flaxseed (*Spirodela punctata*), Watermeal (*Wolffia columbiana*), Duckweed (*Lemna* spp.), Water-lily (*Nymphaea* spp.), and submerged hydrophytes, such as Coontail (*Ceratophyllum demersum*), Brazilian water-weed (*Egeria densa*), Parrot-feather (*Myriophyllum aquaticum*), and Longleaf pondweed (*Potamogeton nodosus*) are common in permanent water zones throughout the range of Bald cypress (*Taxodium distichum*) swamps. This community is differentiated from other swamp forests by lacking Swamp blackgum or Water tupelo (*Nyssa* spp.) as other than occasional individuals. No plots were done in this association. It is not confirmed at Shiloh, but may be present in the park along Owl Creek or the Tennessee River.

Interior Forested Acid Seep (CEGL004425)

This forested acid seep occurs at the base of steep to moderate slopes where water percolates out through Cretaceous or Pennsylvanian sands and gravels. Stands are known primarily from the northern part of the Upper Coastal Plain of Kentucky and Tennessee.

At Shiloh NMP this association occurs in the seepage saturated floodplain of a West Branch, just east of TN Hwy 22. It may occur elsewhere on Shiloh NMP in similar saturated small creek floodplains. Seepage from the adjacent hillside maintains a moderately saturated condition, which is reflected in the flora. Apparently a former dam

site, there was an apparent “millrace” and a ditch along the bottom of the bluff. This ditch should be blocked at the far (downstream) end to allow the area to be more saturated. the canopy was dominated by Blackgum (*Nyssa sylvatica*) with Sweetgum (*Liquidambar styraciflua*), Tuliptree (*Liriodendron tulipifera*), and Pagoda oak (*Quercus pagoda*) also important. White oak (*Quercus alba*) also occurs in the canopy. The subcanopy is dominated by American beech (*Fagus grandifolia*), Sourwood (*Oxydendrum arboreum*), and Ironwood (*Carpinus caroliniana*) with Red maple (*Acer rubrum*) and Mockernut hickory (*Carya alba*). The tall shrubs had 20% total cover. In order of abundance, they were Wild azalea (*Rhododendron canescens*), Sourwood (*Oxydendrum arboreum*), American beech (*Fagus grandifolia*), and Black highbush blueberry (*Vaccinium fuscatum*). Short shrubs were sparse. In order of abundance, they were White oak (*Quercus alba*), Common greenbrier (*Smilax rotundifolia*), Climbing hydrangea (*Decumaria barbara*), Whiteleaf greenbrier (*Smilax glauca*), Muscadine (*Vitis rotundifolia*), Sassafras (*Sassafras albidum*), Persimmon (*Diospyros virginiana*), Black cherry (*Prunus serotina*), Mockernut hickory (*Carya alba*), and the invasive exotic plants Chinese privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*). The herbaceous layer was completely dominated by New York fern (*Thelypteris noveboracensis*). Other common herbaceous plants were Sessile-leaf bellwort (*Uvularia sessilifolia*), Longleaf spikegrass (*Chasmanthium sessiliflorum*), Southern lady fern (*Athyrium filix-femina* ssp. *asplenoides*), Virginia knotweed (*Polygonum virginianum*), Netted chain fern (*Woodwardia areolata*), Royal fern (*Osmunda regalis*), White cutgrass (*Leersia virginica*), White-edge sedge (*Carex debilis*), Cinnamon fern (*Osmunda cinnamomea*), and Solomon's plume (*Maianthemum racemosum*).

Southern Buttonbush Pond (CEGL002191)

This buttonbush shrubland occurs widely throughout the southeastern United States. Stands occupy shallow water depressions, oxbow ponds, beaver ponds, and backwater sloughs of stream and river floodplains. It also occurs in upland pond depressions. Inundation is usually continuous throughout the year, but these sites can become dry in mid or late summer or during periods of prolonged drought. In floodplain situations, soils are deep (1 m or more) consisting of peat or muck over alluvial parent material. Buttonbush (*Cephalanthus occidentalis*) comprises nearly 90% of the shrub layer in waters 1-2 m deep.

In the Upper East Gulf Coastal Plain at Shiloh NMP occurs at the edge of the beaver kill area close to Owl Creek in NW corner of Shiloh NMP. This is in an area with (1-1.5 feet of) standing water. The association is dominated by the shrub Buttonbush (*Cephalanthus occidentalis*), with Walter St. John's wort (*Triadenum walteri*), Black willow (*Salix nigra*), and Trumpetvine (*Campsis radicans*). Some associated herbs (e.g. at Shiloh National Military Park) include Rice cutgrass (*Leersia oryzoides*), Smartweeds (*Polygonum* spp.), Beggars ticks (*Bidens* sp.), Seedbox (*Ludwigia* sp.) and Lizard's-tail (*Saururus cernuus*).

Successional Broomsedge Vegetation (CEGL004044)

This association includes herbaceous-dominated vegetation that has been altered and/or maintained by people, especially on old fields, and pastures. Examples support predominately native species, one of the most dominant or characteristic species being Common broomsedge (*Andropogon virginicus* var. *virginicus*). This is a very common and wide-ranging association and can be quite variable in terms of species composition. Additional components are other perennial grasses and herbaceous species, most with pioneer or weedy tendencies, the exact composition of which will vary with geography, management history, and habitat.

Occurs on old fields, or hayfields at Shiloh NMP, on well drained loam soil. The plot at Shiloh NMP was a mowed field of mostly native species, dominated by Common broomsedge (*Andropogon virginicus* var. *virginicus*). Slender crowngrass (*Paspalum setaceum*) and Redtop (*Tridens flavus*) were codominant (with less cover). Other herbaceous plants with high cover values were Bristly foxtail (*Setaria geniculata*), Poor Joe (*Diodia teres*), Little bluestem (*Schizachyrium scoparium*), and less common Small's ragwort (*Packera anomyma*), Johnson grass (*Sorghum halepense*), Retrorse flatsedge (*Cyperus retrorsus*). Other plants were present at less than 1% cover.

Cultivated meadow (CEGL004048)

This association includes grassland pastures and hayfields, more-or-less cultural, though sometimes no longer actively maintained. Occurs on old fields, or hayfields at Shiloh NMP, on well drained loam soil. The dominant species in this alliance are the European 'tall or meadow fescues,' of uncertain and controversial generic placement. Although traditionally treated as *Festuca pratensis* (= *Festuca elatior*) and *Festuca arundinacea*, these two closely related species are now usually treated as either *Lolium pratense* and *Lolium arundinaceum* (Kartesz 1999), or as *Schedonorus pratensis* and *Schedonorus arundinaceus*. These communities are sometimes nearly monospecific but can also be very diverse and contain many native species of grasses, sedges, and forbs. In the Black Belt region of Alabama and Mississippi, it is commonly found in mixture with Dallis grass (*Paspalum dilatatum*) (Bransby n.d.). The exotics Sericea (*Lespedeza cuneata*) and Cheat grass (*Bromus tectorum*) may be present in stands. This vegetation is currently defined for the 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.

Smartweed – Cutgrass Beaver Pond (CEGL004290)

This association incorporates vegetation of beaver ponds and other semipermanent impoundments in the Piedmont, South Atlantic Coastal Plain, Upper East Gulf Coastal Plain, scattered localities in the Blue Ridge, and possibly other adjacent provinces. Stands of this vegetation are dominated by some combination of Dotted smartweed (*Polygonum punctatum*), Swamp smartweed (*Polygonum hydropiperoides*), Catchfly cutgrass (*Leersia lenticularis*), and/or White cutgrass (*Leersia virginica*). Other herbaceous species present include Lizard's-tail (*Saururus cernuus*), Mermaid-weed (*Proserpinaca* sp.), Bearded beggarticks (*Bidens aristosa* = *Bidens polylepis*), and Rough cockle-bur (*Xanthium*

strumarium). Scattered individuals of Buttonbush (*Cephalanthus occidentalis*) and Silver maple (*Acer saccharinum*) may be present.

At Shiloh NMP this association is found in bottomland area flooded by beavers (Owl Creek), in which the canopy is sparse, and most trees have been killed by beavers (plot 1B-16). The scattered vines Trumpetvine (*Campsis radicans*) and Common greenbrier (*Smilax rotundifolia*) and very sparse tall shrubs of Buttonbush (*Cephalanthus occidentalis*) and Silver maple (*Acer saccharinum*) are present, over the dominant herbaceous cover of Smartweed (*Polygonum sp.*) Other important herbaceous plants are Cutgrass (*Leersia sp.*), Rough cockle-bur (*Xanthium strumarium*), Bearded beggarticks (*Bidens polylepis*) and Lizard's-tail (*Saururus cernuus*).

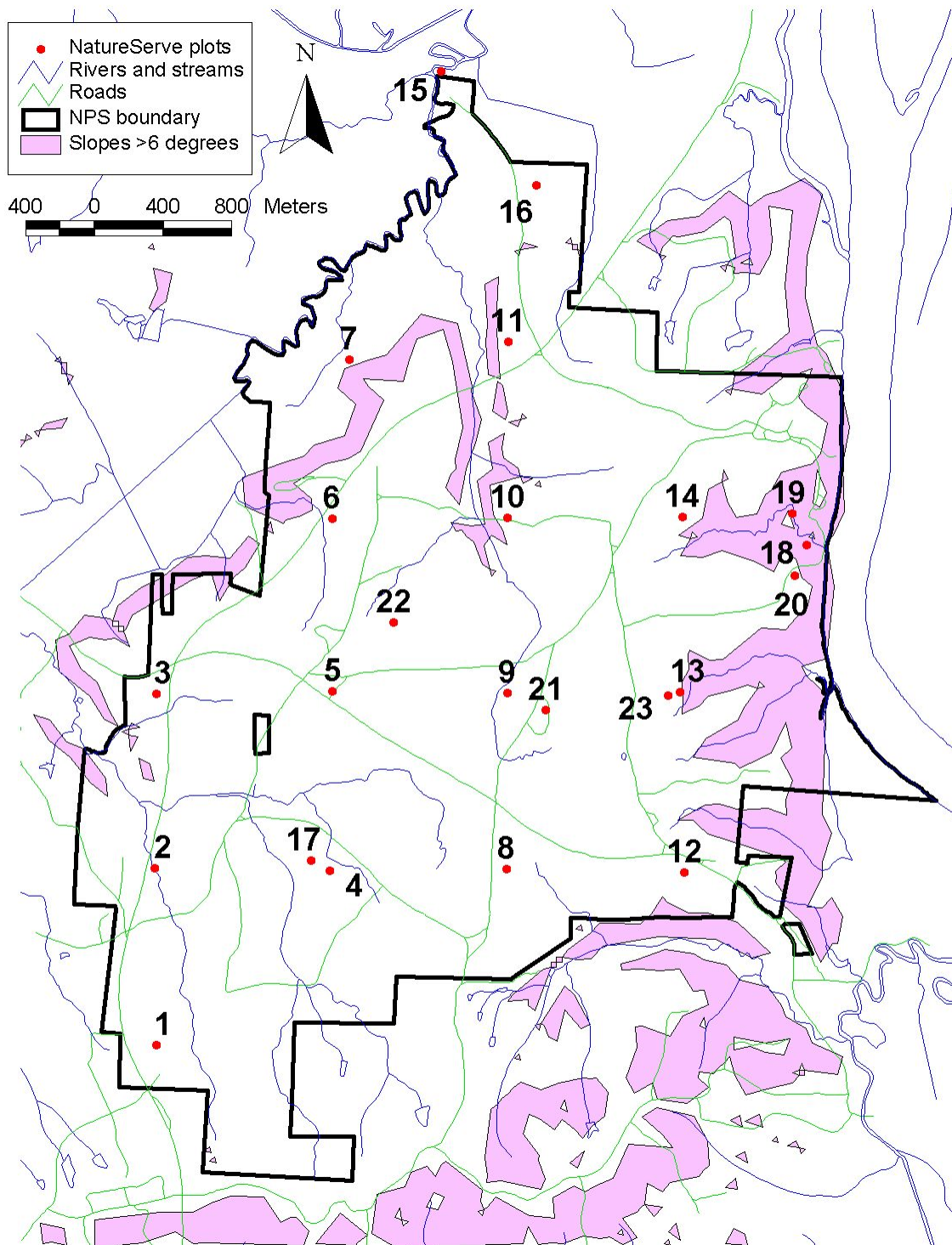
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Figure 1 Map of Shiloh NMP with all NatureServe plots marked



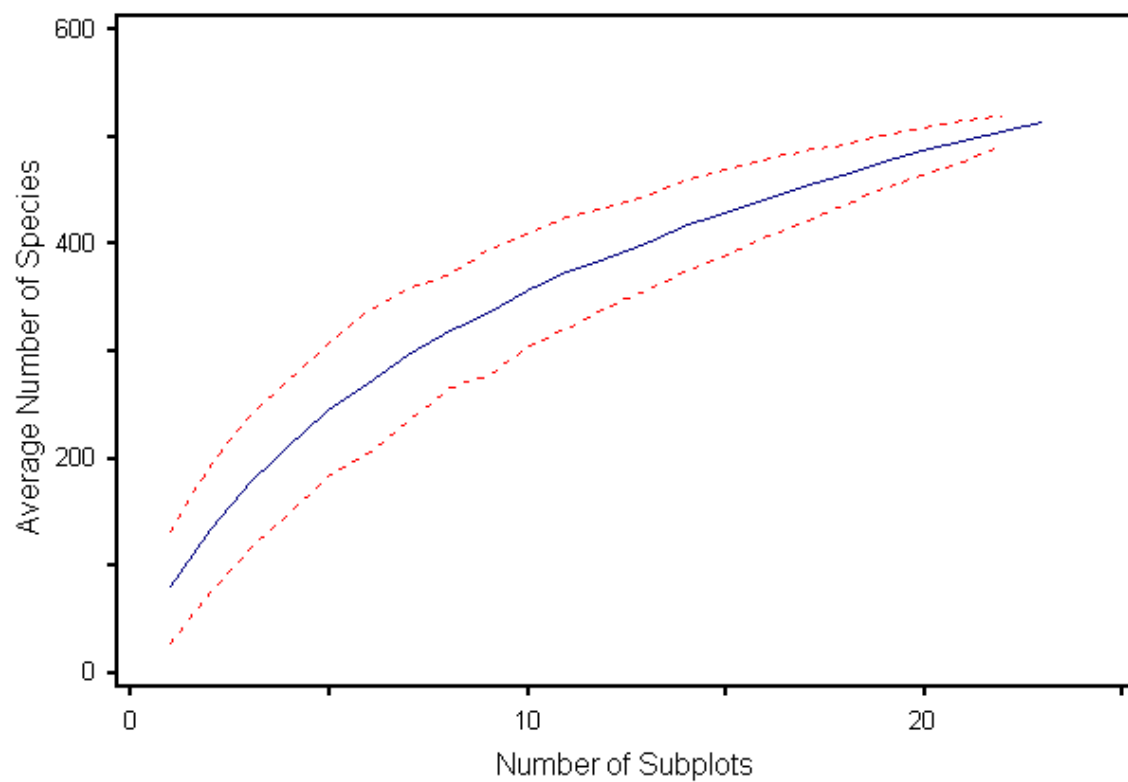


Figure 2a Shiloh species area curve for all plots

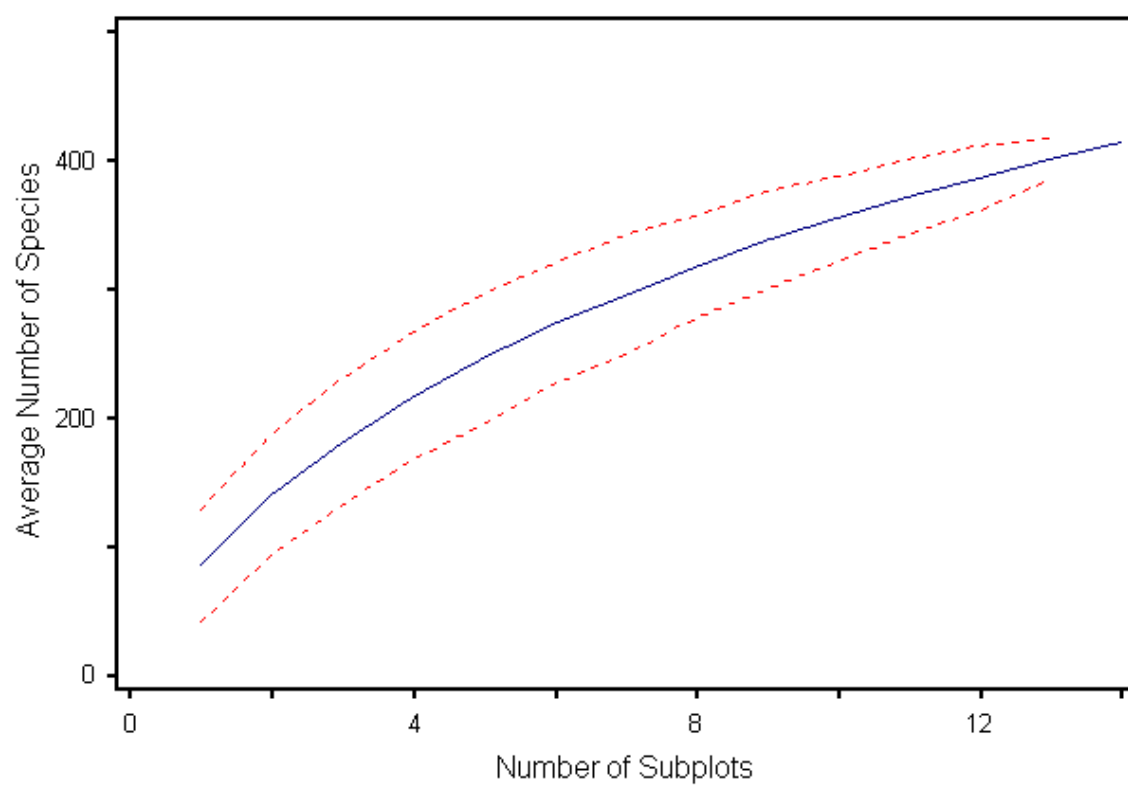


Figure 2b Shiloh species area curve for gridded plots

Table 1. Plots established at Shiloh National Military Park

Plot Number	X Coordinate	Y Coordinate	Projection	Zone	Type of plot
1	0375942	3886974	NAD83	16	FULL
2	0375930	3887999	NAD83	16	FULL
3	0375943	3889014	NAD83	16	FULL
4	0376949	3887988	NAD83	16	FULL
5	0376967	3889028	NAD83	16	FULL
6	0376965	3890032	NAD83	16	FULL
7	0377064	3890956	NAD83	16	FULL
8	0377979	3887994	NAD83	16	FULL
9	0377981	3889017	NAD83	16	FULL
10	0377984	3890037	NAD83	16	FULL
11	0377982	3891057	NAD83	16	FULL
12	0379013	3887978	NAD83	16	FULL
13	0378988	3889023	NAD83	16	FULL
14	0379000	3890039	NAD83	16	FULL
15	0377598	3892632	NAD83	16	FULL
16	0378152	3891969	NAD83	16	FULL
17	0376842	3888045	NAD83	16	FULL
18	0379721	3889878	NAD83	16	FULL
19	0379641	3890059	NAD83	16	FULL
20	0379654	3889701	NAD83	16	FULL
21	0378207	3888918	NAD83	16	FULL
22	0377322	3889430	NAD83	16	FULL
23	0378901	3889011	NAD83	16	FULL

Table 2. List of plants documented in park, alphabetically by scientific name

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Acalypha gracilens</i>	Native	slender threeseed mercury	Euphorbiaceae	G5	28183	NatureServe 2002-2003
<i>Acalypha rhomboidea</i>	Native	common copperleaf	Euphorbiaceae	G5T5	28193	Jones and White 1981
<i>Acalypha virginica</i>	Native	Virginia threeseed mercury	Euphorbiaceae	G5	28195	Jones and White 1981
<i>Acer negundo</i>	Native	boxelder	Aceraceae	G5	28749	Jones and White 1981
<i>Acer rubrum</i>	Native	red maple	Aceraceae	G5	28728	Jones and White 1981
<i>Acer rubrum</i> var. <i>drummondii</i>	Native	Drummond's maple	Aceraceae	G5T5	526853	Jones and White 1981
<i>Acer saccharinum</i>	Native	silver maple	Aceraceae	G5	28757	Jones and White 1981
<i>Acer saccharum</i> var. <i>saccharum</i>	Native	sugar maple	Aceraceae	G5T5	28732	Jones and White 1981
<i>Achillea millefolium</i>	Native/ Exotic	common yarrow	Asteraceae	G5	35423	Jones and White 1981
<i>Acorus americanus</i>	Native	sweetflag	Acoraceae	G4?	42523	Jones and White 1981
<i>Acorus calamus</i>	Native	calamus	Acoraceae	G4?	564989	Jones and White 1981
<i>Adiantum pedatum</i>	Native	northern maidenhair	Pteridaceae	G5	17311	Jones and White 1981
<i>Aesculus pavia</i>	Native	red buckeye	Hippocastanaceae	G5	28723	Jones and White 1981
<i>Agalinis fasciculata</i>	Native	beach false foxglove	Scrophulariaceae	G5	33021	Jones and White 1981
<i>Agalinis gattingeri</i>	Native	roundstem false foxglove	Scrophulariaceae	G4	33024	Jones and White 1981
<i>Agalinis purpurea</i>	Native	purple false foxglove	Scrophulariaceae	G5	33007	Jones and White 1981
<i>Agalinis tenuifolia</i>	Native	slenderleaf false foxglove	Scrophulariaceae	G5	33036	Jones and White 1981
<i>Ageratina altissima</i> var. <i>altissima</i>	Native	white snakeroot	Asteraceae	G5T5	513345	Jones and White 1981
<i>Ageratina aromatica</i> var. <i>aromatica</i>	Native	lesser snakeroot	Asteraceae	G4G5T?	184895	Jones and White 1981
<i>Agrimonia gryposepala</i>	Native	tall hairy agrimony	Rosaceae	G5	25095	Jones and White 1981
<i>Agrimonia microcarpa</i>	Native	smallfruit agrimony	Rosaceae	G5	25097	NatureServe 2002-2003
<i>Agrimonia parviflora</i>	Native	harvestlice	Rosaceae	G5	25098	NatureServe 2002-2003
<i>Agrimonia rostellata</i>	Native	beaked agrimony	Rosaceae	G5	25100	NatureServe 2002-2003
<i>Agrostis hyemalis</i>	Native	winter bentgrass	Poaceae	G5	40394	NatureServe 2002-2003
<i>Agrostis scabra</i>	Native	rough bentgrass	Poaceae	G5	40424	Jones and White 1981
<i>Aira elegans</i>	Exotic	annual silver hairgrass	Poaceae	G?	564994	Jones and White 1981
<i>Albizia julibrissin</i>	Exotic EPPC-1	silktree	Fabaceae	G?	26449	Jones and White 1981
<i>Allium canadense</i>	Native	meadow garlic	Liliaceae	G5	42635	Jones and White 1981
<i>Alnus serrulata</i>	Native	hazel alder	Betulaceae	G5	19468	Jones and White 1981
<i>Amaranthus hybridus</i>	Exotic	slim amaranth	Amaranthaceae	G?	20735	Jones and White 1981
<i>Ambrosia artemisiifolia</i>	Native	annual ragweed	Asteraceae	G5	36496	Jones and White 1981
<i>Ambrosia bidentata</i>	Native	lanceleaf ragweed	Asteraceae	G5	36500	Jones and White 1981
<i>Ambrosia trifida</i>	Native	great ragweed	Asteraceae	G5	36521	Jones and White 1981
<i>Amelanchier arborea</i>	Native	common serviceberry	Rosaceae	G5	25110	Jones and White 1981
<i>Ampelopsis arborea</i>	Native	peppervine	Vitaceae	G5	28631	Jones and White 1981
<i>Ampelopsis cordata</i>	Native	heartleaf peppervine	Vitaceae	G5	28633	Jones and White 1981
<i>Amsonia tabernaemontana</i>	Native	eastern bluestar	Apocynaceae	G5	30148	Jones and White 1981
<i>Andropogon ternarius</i>	Native	splitbeard bluestem	Poaceae	G5	40455	Jones and White 1981
<i>Anemone virginiana</i>	Native	tall thimbleweed	Ranunculaceae	G5	18451	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Angelica venenosa</i>	Native	hairy angelica	Apiaceae	G5	29453	NatureServe 2002-2003
<i>Antennaria plantaginifolia</i>	Native	woman's tobacco	Asteraceae	G5	36717	Jones and White 1981
<i>Antennaria solitaria</i>	Native	singlehead pussytoes	Asteraceae	G5	36756	Jones and White 1981
<i>Anthoxanthum odoratum</i>	Exotic	sweet vernalgrass	Poaceae	G?	41395	Jones and White 1981
<i>Apios americana</i>	Native	groundnut	Fabaceae	G5	25390	Jones and White 1981
<i>Arabidopsis thaliana</i>	Exotic	mouseear cress	Brassicaceae	G?	23041	Jones and White 1981
<i>Arabis laevigata</i>	Native	smooth rockcress	Brassicaceae	G5	22706	Jones and White 1981
<i>Aralia spinosa</i>	Native	devil's walkingstick	Araliaceae	G5	29378	Jones and White 1981
<i>Arenaria serpyllifolia</i>	Exotic	thymeleaf sandwort	Caryophyllaceae	G?	20270	Jones and White 1981
<i>Arisaema dracontium</i>	Native	green dragon	Araceae	G5	42529	Jones and White 1981
<i>Arisaema triphyllum</i>	Native	Jack in the pulpit	Araceae	G5	42525	Jones and White 1981
<i>Aristida dichotoma</i>	Native	churchmouse threeawn	Poaceae	G5	41415	Jones and White 1981
<i>Aristida longispica</i>	Native	slimspike threeawn	Poaceae	G5	41423	Jones and White 1981
<i>Aristida oligantha</i>	Native	prairie threeawn	Poaceae	G5	41405	Jones and White 1981
<i>Aristolochia serpentaria</i>	Native	Virginia snakeroot	Aristolochiaceae	G4	18342	Jones and White 1981
<i>Aristolochia tomentosa</i>	Native	woolly dutchman's pipe	Aristolochiaceae	G5	18343	Jones and White 1981
<i>Arnoglossum atriplicifolium</i>	Native	pale Indian plaintain	Asteraceae	G4G5	509850	Jones and White 1981
<i>Arthraxon hispidus</i>	Exotic EPPC-2	small carpgrass	Poaceae	G?	41445	NatureServe 2002-2003
<i>Arundinaria gigantea</i>	Native	giant cane	Poaceae	G5	40477	Jones and White 1981
<i>Asarum canadense</i>	Native	Canadian wildginger	Aristolochiaceae	G5	18353	Jones and White 1981
<i>Asclepias perennis</i>	Native	aquatic milkweed	Asclepiadaceae	G5	30293	Jones and White 1981
<i>Asclepias tuberosa</i>	Native	butterfly milkweed	Asclepiadaceae	G5?	30313	Jones and White 1981
<i>Asclepias variegata</i>	Native	redring milkweed	Asclepiadaceae	G5	30319	Jones and White 1981
<i>Asimina triloba</i>	Native	pawpaw	Annonaceae	G5	18117	Jones and White 1981
<i>Asparagus officinalis</i>	Exotic	garden asparagus	Liliaceae	G5?	42784	Jones and White 1981
<i>Asplenium platyneuron</i>	Native	ebony spleenwort	Aspleniaceae	G5	17355	Jones and White 1981
<i>Athyrium filix-femina</i>	Native	common ladyfern	Dryopteridaceae	G5	17413	Jones 1981
<i>Athyrium filix-femina</i> ssp. <i>asplenoides</i>	Native	asplenium ladyfern	Dryopteridaceae	G5T?	17415	Jones and White 1981
<i>Aureolaria flava</i>	Native	smooth yellow false foxglove	Scrophulariaceae	G5	33484	Jones and White 1981
<i>Aureolaria pectinata</i>	Native	combleaf yellow false foxglove	Scrophulariaceae	G5?	33488	Jones and White 1981
<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	Native	twining screwstem	Gentianaceae	G5T5	30021	NatureServe 2002-2003
<i>Belamcanda chinensis</i>	Exotic	blackberry lily	Iridaceae	G?	43280	Jones and White 1981
<i>Betula nigra</i>	Native	river birch	Betulaceae	G5	19480	Jones and White 1981
<i>Bidens aristosa</i>	Native	bearded beggarticks	Asteraceae	G5	35732	Jones and White 1981
<i>Bidens aristosa</i>	Native	bearded beggarticks	Asteraceae	G5	35713	Jones and White 1981
<i>Bidens bipinnata</i>	Native	Spanish needles	Asteraceae	G5	500993	Jones and White 1981
<i>Bidens frondosa</i>	Native	devil's beggartick	Asteraceae	G5	35707	Jones and White 1981
<i>Bignonia capreolata</i>	Native	crossvine	Bignoniaceae	G5	508879	Jones and White 1981
<i>Blephilia ciliata</i>	Native	downy pagoda-plant	Lamiaceae	G5	32460	Jones and White 1981
<i>Boehmeria cylindrica</i>	Native	smallspike false nettle	Urticaceae	G5	19121	Jones and White 1981
<i>Boltonia diffusa</i>	Native	smallhead doll's daisy	Asteraceae	G4	36855	Jones and White 1981
<i>Botrychium biternatum</i>	Native	sparselobe grapefern	Ophioglossaceae	G5	17175	NatureServe 2002-2003

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Botrychium dissectum</i>	Native	cutleaf grapefern	Ophioglossaceae	G5	17171	Jones and White 1981
<i>Botrychium virginianum</i>	Native	rattlesnake fern	Ophioglossaceae	G5	17173	Jones and White 1981
<i>Brachyelytrum erectum</i>	Native	bearded shorthusk	Poaceae	G5	41527	Jones and White 1981
<i>Brickellia eupatorioides</i> var. <i>eupatorioides</i>	Native	false boneset	Asteraceae	G5T5	515518	Jones and White 1981
<i>Bromus commutatus</i>	Exotic EPPC-2	meadow brome	Poaceae	G?	40497	Jones and White 1981
<i>Bromus japonicus</i>	Exotic EPPC-2	Japanese brome	Poaceae	G?	40479	NatureServe 2002-2003
<i>Bromus pubescens</i>	Native	hairy woodland brome	Poaceae	G5	565861	Jones and White 1981
<i>Bromus pubescens</i>	Native	hairy woodland brome	Poaceae	G5	40514	NatureServe 2002-2003
<i>Broussonetia papyrifera</i>	Exotic EPPC-3	paper mulberry	Moraceae	G?	19107	Jones and White 1981
<i>Brunnichia ovata</i>	Native	American buckwheat vine	Polygonaceae	G4G5	20997	Jones and White 1981
<i>Calycanthus floridus</i>	Native	eastern sweetshrub	Calycanthaceae	G5	18142	Jones and White 1981
<i>Calycocarpum lyonii</i>	Native	cupseed	Menispermaceae	G5	18862	NatureServe 2002-2003
<i>Calystegia sepium</i>	Native	hedge false bindweed	Convolvulaceae	G5	30650	NatureServe 2002-2003
<i>Calystegia sepium</i> ssp. <i>sepium</i>	Exotic	hedge false bindweed	Convolvulaceae	G5	30702	Jones and White 1981
<i>Campanulastrum americanum</i>	Native	American bellflower	Campanulaceae	G5	501172	Jones and White 1981
<i>Campsis radicans</i>	Native	trumpet creeper	Bignoniaceae	G5	34309	Jones and White 1981
<i>Cardamine bulbosa</i>	Native	bulbous bittercress	Brassicaceae	G5	22769	Jones and White 1981
<i>Cardamine concatenata</i>	Native	cutleaf toothwort	Brassicaceae	G5	512172	Jones and White 1981
<i>Cardamine diphylla</i>	Native	crinkleroot	Brassicaceae	G5	512164	Jones and White 1981
<i>Cardamine hirsuta</i>	Exotic	hairy bittercress	Brassicaceae	G?	22797	Jones and White 1981
<i>Cardiospermum halicacabum</i>	Exotic EPPC-3	love in a puff	Sapindaceae	G5	28667	Jones and White 1981
<i>Carex albicans</i> var. <i>albicans</i>	Native	whitetinge sedge	Cyperaceae	G5T4T5	527064	NatureServe 2002-2003
<i>Carex albicans</i> var. <i>australis</i>	Native	stellate sedge	Cyperaceae	G5T5	39754	Jones and White 1981
<i>Carex albicans</i> var. <i>australis</i>	Native	stellate sedge	Cyperaceae	G5T5	527065	NatureServe 2002-2003
<i>Carex albolutescens</i>	Native	greenwhite sedge	Cyperaceae	G5	39371	Jones and White 1981
<i>Carex amphibola</i>	Native	eastern narrowleaf sedge	Cyperaceae	G5	39491	Jones and White 1981
<i>Carex annectens</i>	Native	yellowfruit sedge	Cyperaceae	G5	39373	Jones and White 1981
<i>Carex atlantica</i> ssp. <i>capillacea</i>	Native	prickly bog sedge	Cyperaceae	G5Q	39400	Jones and White 1981
<i>Carex baileyi</i>	Native	Bailey's sedge	Cyperaceae	G4	39376	Jones and White 1981
<i>Carex blanda</i>	Native	eastern woodland sedge	Cyperaceae	G5?	39379	Jones and White 1981
<i>Carex bromoides</i>	Native	bromelike sedge	Cyperaceae	G5	39380	Jones and White 1981
<i>Carex caroliniana</i>	Native	Carolina sedge	Cyperaceae	G5	39382	Jones and White 1981
<i>Carex cephalophora</i>	Native	oval-leaf sedge	Cyperaceae	G5	39383	Jones and White 1981
<i>Carex complanata</i>	Native	hirsute sedge	Cyperaceae	G5	39551	Jones and White 1981
<i>Carex crinita</i>	Native	fringed sedge	Cyperaceae	G5	39385	Jones and White 1981
<i>Carex debilis</i>	Native	white edge sedge	Cyperaceae	G5	39572	Jones and White 1981
<i>Carex digitalis</i>	Native	slender woodland sedge	Cyperaceae	G5	39576	NatureServe 2002-2003
<i>Carex festucacea</i>	Native	fescue sedge	Cyperaceae	G5	39391	NatureServe 2002-2003
<i>Carex flaccosperma</i>	Native	thinfruit sedge	Cyperaceae	G5	39605	Jones and White 1981
<i>Carex frankii</i>	Native	Frank's sedge	Cyperaceae	G5	39393	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Carex grayi</i>	Native	Gray's sedge	Cyperaceae	G4	39622	Jones and White 1981
<i>Carex hirsutella</i>	Native	fuzzy wuzzy sedge	Cyperaceae	G5	39636	NatureServe 2002-2003
<i>Carex intumescens</i>	Native	greater bladder sedge	Cyperaceae	G5	39403	Jones and White 1981
<i>Carex laevivaginata</i>	Native	smoothsheath sedge	Cyperaceae	G5	39410	Jones and White 1981
<i>Carex leavenworthii</i>	Native	Leavenworth's sedge	Cyperaceae	G5	39663	NatureServe 2002-2003
<i>Carex leptalea</i>	Native	bristlystalked sedge	Cyperaceae	G5	39669	Jones and White 1981
<i>Carex louisianica</i>	Native	Louisiana sedge	Cyperaceae	G5	39460	Jones and White 1981
<i>Carex lupulina</i>	Native	hop sedge	Cyperaceae	G5	39413	Jones and White 1981
<i>Carex lurida</i>	Native	shallow sedge	Cyperaceae	G5	39414	Jones and White 1981
<i>Carex muehlenbergii</i>	Native	Muhlenberg's sedge	Cyperaceae	G5	39423	Jones and White 1981
<i>Carex oxylepis</i>	Native	sharp-scale sedge	Cyperaceae	G5?	39424	Jones and White 1981
<i>Carex picta</i>	Native	Boott's sedge	Cyperaceae	G4G5	39755	Jones and White 1981
<i>Carex retroflexa</i>	Native	reflexed sedge	Cyperaceae	G5	39782	Jones and White 1981
<i>Carex rosea</i>	Native	rosy sedge	Cyperaceae	G5	39429	Jones and White 1981
<i>Carex seorsa</i>	Native	weak stellate sedge	Cyperaceae	G4	39433	Jones and White 1981
<i>Carex striatula</i>	Native	lined sedge	Cyperaceae	G4G5	39822	NatureServe 2002-2003
<i>Carex swanii</i>	Native	Swan's sedge	Cyperaceae	G5	39437	NatureServe 2002-2003
<i>Carex tribuloides</i>	Native	blunt broom sedge	Cyperaceae	G5	39438	NatureServe 2002-2003
<i>Carex typhina</i>	Native	cattail sedge	Cyperaceae	G5	39439	Jones and White 1981
<i>Carex venusta</i>	Native	darkgreen sedge	Cyperaceae	G4	39441	Jones and White 1981
<i>Carex willdenowii</i>	Native	Willdenow's sedge	Cyperaceae	G5	39443	NatureServe 2002-2003
<i>Carpinus caroliniana</i>	Native	American hornbeam	Betulaceae	G5	19504	Jones and White 1981
<i>Carya alba</i>	Native	mockernut hickory	Juglandaceae	G5	19247	Jones and White 1981
<i>Carya aquatica</i>	Native	water hickory	Juglandaceae	G5	19224	Jones and White 1981
<i>Carya cordiformis</i>	Native	bitternut hickory	Juglandaceae	G5	19227	Jones and White 1981
<i>Carya glabra</i>	Native	pignut hickory	Juglandaceae	G5	19231	Jones and White 1981
<i>Carya laciniosa</i>	Native	shellbark hickory	Juglandaceae	G5	19235	Jones and White 1981
<i>Carya ovalis</i>	Native	red hickory	Juglandaceae	G5	19241	Jones and White 1981
<i>Carya ovata</i>	Native	shagbark hickory	Juglandaceae	G5	19242	Jones and White 1981
<i>Carya pallida</i>	Native	sand hickory	Juglandaceae	G5	19244	Jones and White 1981
<i>Castanea dentata</i>	Native	American chestnut	Fagaceae	G4	19454	Jones and White 1981
<i>Catalpa speciosa</i>	Native	northern catalpa	Bignoniaceae	G3G4	34315	Jones and White 1981
<i>Ceanothus americanus</i>	Native	New Jersey tea	Rhamnaceae	G5	28454	Jones and White 1981
<i>Celastrus scandens</i>	Native	American bittersweet	Celastraceae	G5	27974	Jones and White 1981
<i>Celtis laevigata</i>	Native	sugarberry	Ulmaceae	G5	19042	Jones and White 1981
<i>Celtis occidentalis</i>	Native	common hackberry	Ulmaceae	G5	19040	NatureServe 2002-2003
<i>Cephalanthus occidentalis</i>	Native	common buttonbush	Rubiaceae	G5	34786	Jones and White 1981
<i>Cerastium nutans</i>	Native	nodding chickweed	Caryophyllaceae	G5	19958	Jones and White 1981
<i>Ceratophyllum demersum</i>	Native	coon's tail	Ceratophyllaceae	G5	18403	NatureServe 2002-2003
<i>Cercis canadensis</i>	Native	eastern redbud	Fabaceae	G5	25782	Jones and White 1981
<i>Chaenomeles speciosa</i>	Exotic	common flowering quince	Rosaceae		510655	Jones and White 1981
<i>Chaerophyllum tainturieri</i>	Native	hairyfruit chervil	Apiaceae	G5	29617	Jones and White 1981
<i>Chamaecrista fasciculata</i> var. <i>fasciculata</i>	Native	sleepingplant	Fabaceae	G5T4T5	25736	Jones and White 1981
<i>Chamaecrista nictitans</i> ssp. <i>nictitans</i> var. <i>nictitans</i>	Native	partridge pea	Fabaceae	G5	25760	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Chamaesyce maculata</i>	Native	spotted sandmat	Euphorbiaceae	G5?	513410	Jones and White 1981
<i>Chamaesyce nutans</i>	Native	eyebane	Euphorbiaceae	G5	28034	Jones and White 1981
<i>Chasmanthium latifolium</i>	Native	Indian woodoats	Poaceae	G5	41547	Jones and White 1981
<i>Chasmanthium laxum</i>	Native	slender woodoats	Poaceae	G5	41548	Jones and White 1981
<i>Chasmanthium sessiliflorum</i>	Native	longleaf woodoats	Poaceae	G5T5	41551	Jones and White 1981
<i>Chelone glabra</i>	Native	white turtlehead	Scrophulariaceae	G5	33182	Jones and White 1981
<i>Chenopodium album</i>	Exotic	lambsquarters	Chenopodiaceae	G5	20592	Jones and White 1981
<i>Chenopodium album</i>	Exotic	lateflowering goosefoot	Chenopodiaceae	G5	20592	Jones and White 1981
<i>Chenopodium ambrosioides</i>	Exotic	Mexican tea	Chenopodiaceae	G?	20590	Jones and White 1981
<i>Chimaphila maculata</i>	Native	striped prince's pine	Pyrolaceae	G5	23767	Jones and White 1981
<i>Chionanthus virginicus</i>	Native	white fringetree	Oleaceae	G5	32950	Jones and White 1981
<i>Chrysopsis mariana</i>	Native	Maryland goldenaster	Asteraceae	G5	202495	Jones and White 1981
<i>Cimicifuga racemosa</i>	Native	black bugbane	Ranunculaceae	G4	18757	Jones and White 1981
<i>Cinna arundinacea</i>	Native	sweet woodreed	Poaceae	G5	40583	Jones and White 1981
<i>Circaea lutetiana</i> ssp. <i>canadensis</i>	Native	broadleaf enchanter's nightshade	Onagraceae	G5T5	27569	Jones and White 1981
<i>Cirsium horridulum</i>	Native	yellow thistle	Asteraceae	G5	36379	Jones and White 1981
<i>Claytonia virginica</i>	Native	Virginia springbeauty	Portulacaceae	G5	20382	Jones and White 1981
<i>Clematis crispa</i>	Native	swamp leather flower	Ranunculaceae	G5	18694	Jones and White 1981
<i>Clitoria mariana</i>	Native	Atlantic pigeonwings	Fabaceae	G5	26542	Jones and White 1981
<i>Cocculus carolinus</i>	Native	Carolina coralbead	Menispermaceae	G5	18864	Jones and White 1981
<i>Collinsonia canadensis</i>	Native	richweed	Lamiaceae	G5	32474	Jones and White 1981
<i>Comandra umbellata</i>	Native	bastard toadflax	Santalaceae	G5	501614	Jones and White 1981
<i>Commelina erecta</i>	Native	whitemouth dayflower	Commelinaceae	G5	39132	Jones and White 1981
<i>Commelina virginica</i>	Native	Virginia dayflower	Commelinaceae	G5	39128	Jones and White 1981
<i>Conoclinium coelestinum</i>	Native	blue mistflower	Asteraceae	G5	502504	Jones and White 1981
<i>Conopholis americana</i>	Native	American squawroot	Orobanchaceae	G5	34274	Jones and White 1981
<i>Conyza canadensis</i>	Native	Canadian horseweed	Asteraceae	G5	37113	Jones and White 1981
<i>Corallorrhiza wisteriana</i>	Native	spring coralroot	Orchidaceae	G5	43528	Jones and White 1981
<i>Coreopsis major</i>	Native	greater tickseed	Asteraceae	G5	37143	Jones and White 1981
<i>Coreopsis pubescens</i>	Native	star tickseed	Asteraceae	G5?	37149	Jones and White 1981
<i>Coreopsis tripteris</i>	Native	tall tickseed	Asteraceae	G5	37154	Jones and White 1981
<i>Cornus amomum</i>	Native	silky dogwood	Cornaceae	G5	27799	Jones and White 1981
<i>Cornus florida</i>	Native	flowering dogwood	Cornaceae	G5	27806	Jones and White 1981
<i>Cornus foemina</i>	Native	stiff dogwood	Cornaceae	G?	511447	Jones and White 1981
<i>Cornus racemosa</i>	Native	gray dogwood	Cornaceae	G5?	501635	Jones and White 1981
<i>Corydalis flavula</i>	Native	yellow fumewort	Fumariaceae	G5	19005	Jones and White 1981
<i>Corylus americana</i>	Native	American hazelnut	Betulaceae	G5	19506	Jones and White 1981
<i>Crataegus calpodendron</i>	Native	pear hawthorn	Rosaceae	G5	24547	NatureServe 2002-2003
<i>Crataegus crus-galli</i>	Native	cockspur hawthorn	Rosaceae	G5	24552	Jones and White 1981
<i>Crataegus punctata</i>	Native	dotted hawthorn	Rosaceae	G5	24598	Jones and White 1981
<i>Crataegus viridis</i>	Native	green hawthorn	Rosaceae	G5	24612	Jones and White 1981
<i>Crataegus viridis</i>	Native	green hawthorn	Rosaceae	G5	24540	Jones and White 1981
<i>Crotalaria sagittalis</i>	Native	arrowhead rattlebox	Fabaceae	G5	26579	Jones and White 1981
<i>Croton glandulosus</i> var. <i>septentrionalis</i>	Native	vente conmigo	Euphorbiaceae	G5T?	527541	NatureServe 2002-2003

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<i>Croton monanthogynus</i>	Native	prairie tea	Euphorbiaceae	G5	28283	Jones and White 1981
<i>Croton willdenowii</i>	Native	Willdenow's croton	Euphorbiaceae	G5	28304	Jones and White 1981
<i>Cruciata pedemontana</i>	Exotic	piedmont bedstraw	Rubiaceae	G?	502717	NatureServe 2002-2003
<i>Cryptotaenia canadensis</i>	Native	Canadian honewort	Apiaceae	G5	29475	Jones and White 1981
<i>Cuscuta compacta</i>	Native	compact dodder	Cuscutaceae	G5	30725	Jones and White 1981
<i>Cuscuta gronovii</i>	Native	scaldweed	Cuscutaceae	G5	30712	Jones and White 1981
<i>Cuscuta pentagona</i>	Native	fiveangled dodder	Cuscutaceae	G5	30745	Jones and White 1981
<i>Cynanchum laeve</i>	Native	honeyvine	Asclepiadaceae	G5	501893	Jones and White 1981
<i>Cynodon dactylon</i>	Exotic	Bermudagrass	Poaceae	G?	41619	Jones and White 1981
<i>Cynoglossum virginianum</i>	Native	wild comfrey	Boraginaceae	G5	31891	Jones and White 1981
<i>Cyperus echinatus</i>	Native	globe flatsedge	Cyperaceae	G5	39895	Jones and White 1981
<i>Cyperus esculentus</i>	Native	chufa flatsedge	Cyperaceae	G5	39888	Jones and White 1981
<i>Cyperus iria</i>	Exotic	ricefield flatsedge	Cyperaceae	G?	39934	Jones and White 1981
<i>Cyperus lupulinus</i> ssp. <i>lupulinus</i>	Native	Great Plains flatsedge	Cyperaceae	G5	39890	Jones and White 1981
<i>Cyperus retrofractus</i>	Native	rough flatsedge	Cyperaceae	G5	39961	Jones and White 1981
<i>Cyperus retrorsus</i>	Native	pine barren flatsedge	Cyperaceae	G5	39898	NatureServe 2002-2003
<i>Cyperus strigosus</i>	Native	strawcolored flatsedge	Cyperaceae	G5	39901	Jones and White 1981
<i>Cystopteris protrusa</i>	Native	lowland bladderfern	Dryopteridaceae	G5	17485	Jones and White 1981
<i>Dactylis glomerata</i>	Exotic	orchardgrass	Poaceae	G?	193446	Jones and White 1981
<i>Danthonia spicata</i>	Native	poverty oatgrass	Poaceae	G5	41642	Jones and White 1981
<i>Dasistoma macrophylla</i>	Native	mullein foxglove	Scrophulariaceae	G4	33581	Jones and White 1981
<i>Datura stramonium</i>	Exotic	jimsonweed	Solanaceae	GU	30520	Jones and White 1981
<i>Daucus carota</i>	Exotic EPPC-2	Queen Anne's lace	Apiaceae	G?	29477	Jones and White 1981
<i>Decumaria barbara</i>	Native	woodvamp	Hydrangeaceae	G5	24323	Jones and White 1981
<i>Delphinium tricorne</i>	Native	dwarf larkspur	Ranunculaceae	G5	18515	Jones and White 1981
<i>Deparia acrostichoides</i>	Native	silver false spleenwort	Dryopteridaceae	G5	501994	NatureServe 2002-2003
<i>Desmodium glabellum</i>	Native	Dillenius' ticktrefoil	Fabaceae	G5	25799	NatureServe 2002-2003
<i>Desmodium glutinosum</i>	Native	pointedleaf ticktrefoil	Fabaceae	G5	25800	Jones and White 1981
<i>Desmodium marilandicum</i>	Native	smooth small-leaf ticktrefoil	Fabaceae	G5	25809	NatureServe 2002-2003
<i>Desmodium nudiflorum</i>	Native	nakedflower ticktrefoil	Fabaceae	G5	25812	Jones and White 1981
<i>Desmodium pauciflorum</i>	Native	fewflower ticktrefoil	Fabaceae	G5	25816	NatureServe 2002-2003
<i>Desmodium perplexum</i>	Native	perplexed ticktrefoil	Fabaceae	G5	25785	NatureServe 2002-2003
<i>Desmodium rotundifolium</i>	Native	prostrate ticktrefoil	Fabaceae	G5	502020	NatureServe 2002-2003
<i>Desmodium viridiflorum</i>	Native	velvetleaf ticktrefoil	Fabaceae	G5?	25833	Jones and White 1981
<i>Dichanthelium acuminatum</i>	Native	tapered rosette grass	Poaceae	G5	41646	NatureServe 2002-2003
<i>Dichanthelium acuminatum</i> var. <i>acuminatum</i>	Native	tapered rosette grass	Poaceae	G5T5	527684	NatureServe 2002-2003
<i>Dichanthelium clandestinum</i>	Native	deertongue	Poaceae	G5?	40905	Jones and White 1981
<i>Dichanthelium depauperatum</i>	Native	starved panicgrass	Poaceae	G5	41658	NatureServe 2002-2003
<i>Dichanthelium dichotomum</i> var. <i>dichotomum</i>	Native	cypress panicgrass	Poaceae	G5T5	565866	Jones and White 1981
<i>Dichanthelium dichotomum</i> var. <i>dichotomum</i>	Native	cypress panicgrass	Poaceae	G5T5	527691	NatureServe 2002-2003

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<i>Dichanthelium dichotomum</i> var. <i>dichotomum</i>	Native	cypress panicgrass	Poaceae	G5T5	527691	NatureServe 2002-2003
<i>Dichanthelium dichotomum</i> var. <i>glabrifolium</i>	Native	cypress panicgrass	Poaceae	G5T?	518282	Jones and White 1981
<i>Dichanthelium dicotomum</i> var. <i>ensifolium</i>	Native	cypress panicgrass	Poaceae	G5T4T5	527692	NatureServe 2002-2003
<i>Dichanthelium laxiflorum</i>	Native	openflower rosette grass	Poaceae	G5	41661	NatureServe 2002-2003
<i>Dichanthelium linearifolium</i>	Native	slimleaf panicgrass	Poaceae	G5	518311	Jones and White 1981
<i>Dichanthelium oligosanthos</i> var. <i>scribnerianum</i>	Native	Scribner's rosette grass	Poaceae	G5T5	518375	Jones and White 1981
<i>Dichanthelium ravenelii</i>	Native	Ravenel's rosette grass	Poaceae	G5	41669	NatureServe 2002-2003
<i>Dichanthelium scabriusculum</i>	Native	woolly rosette grass	Poaceae	G4	565867	Jones and White 1981
<i>Dichanthelium scoparium</i>	Native	velvet panicum	Poaceae	G5	518374	Jones and White 1981
<i>Dichanthelium sphaerocarpon</i>	Native	roundseed panicgrass	Poaceae	G5	41671	NatureServe 2002-2003
<i>Dichanthelium sphaerocarpon</i> var. <i>isophyllum</i>	Native	roundseed panicgrass	Poaceae	G5T5	40911	Jones and White 1981
<i>Dichanthelium sphaerocarpon</i> var. <i>isophyllum</i>	Native	roundseed panicgrass	Poaceae	G5T5	518354	Jones and White 1981
<i>Dichondra carolinensis</i>	Native	Carolina ponysfoot	Convolvulaceae	G5	30834	NatureServe 2002-2003
<i>Dicliptera brachiata</i>	Native	branched foldwing	Acanthaceae	G5	502049	Jones and White 1981
<i>Digitaria ischaemum</i>	Exotic	smooth crabgrass	Poaceae	G?	40637	NatureServe 2002-2003
<i>Digitaria sanguinalis</i>	Exotic	hairy crabgrass	Poaceae	G5	40604	Jones and White 1981
<i>Dioclea multiflora</i>	Native	Boykin's clusterpea	Fabaceae	G4	26670	Jones and White 1981
<i>Diodia teres</i>	Native	poorjoe	Rubiaceae	G5	34789	Jones and White 1981
<i>Diodia teres</i> var. <i>teres</i>	Native	poorjoe	Rubiaceae	G5	527722	ANCS-Jones
<i>Diodia virginiana</i>	Native	Virginia buttonweed	Rubiaceae	G5	34790	Jones and White 1981
<i>Dioscorea oppositifolia</i>	Exotic EPPC-1	Chinese yam	Dioscoreaceae	G?	43368	Jones and White 1981
<i>Dioscorea villosa</i>	Native	wild yam	Dioscoreaceae	G4G5	43367	Jones and White 1981
<i>Diospyros virginiana</i>	Native	common persimmon	Ebenaceae	G5	23855	Jones and White 1981
<i>Draba verna</i>	Exotic	spring draba	Brassicaceae	G?	22923	Jones and White 1981
<i>Duchesnea indica</i>	Exotic	Indian strawberry	Rosaceae	G5	25163	Jones and White 1981
<i>Echinochloa muricata</i>	Native	rough barnyardgrass	Poaceae	G5	40672	Jones and White 1981
<i>Echinochloa muricata</i> var. <i>microstachya</i>	Native	rough barnyardgrass	Poaceae	G5T5	512701	Jones and White 1981
<i>Eclipta prostrata</i>	Native	false daisy	Asteraceae	G5	35802	Jones and White 1981
<i>Eleocharis obtusa</i>	Native	blunt spikerush	Cyperaceae	G5	40017	Jones and White 1981
<i>Eleocharis tenuis</i>	Native	slender spikerush	Cyperaceae	G5	40070	Jones and White 1981
<i>Elephantopus carolinianus</i>	Native	Carolina elephantsfoot	Asteraceae	G5	37297	Jones and White 1981
<i>Elephantopus tomentosus</i>	Native	devil's grandmother	Asteraceae	G5	37300	Jones and White 1981
<i>Eleusine indica</i>	Exotic	Indian goosegrass	Poaceae	G?	41692	Jones and White 1981
<i>Elymus riparius</i>	Native	riverbank wildrye	Poaceae	G5	40706	Jones and White 1981
<i>Elymus virginicus</i> var. <i>virginicus</i>	Native	Virginia wildrye	Poaceae	G5	527870	Jones and White 1981
<i>Enemion biternatum</i>	Native	eastern false rue anemone	Ranunculaceae	G5	515302	Jones and White 1981
<i>Epifagus virginiana</i>	Native	beechdrops	Orobanchaceae	G5	34276	Jones and White 1981

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<i>Eragrostis hypnoides</i>	Native	teal lovegrass	Poaceae	G5	40721	Jones and White 1981
<i>Eragrostis spectabilis</i>	Native	purple lovegrass	Poaceae	G5	40717	Jones and White 1981
<i>Erechtites hieraciifolia</i>	Native	American burnweed	Asteraceae	G5	37320	Jones and White 1981
<i>Eremochloa ophiuroides</i>	Exotic	centipede grass	Poaceae	G?	41713	NatureServe 2002-2003
<i>Erigeron annuus</i>	Native	eastern daisy fleabane	Asteraceae	G5	35804	Jones and White 1981
<i>Erigeron philadelphicus</i>	Native	Philadelphia fleabane	Asteraceae	G5	35809	Jones and White 1981
<i>Erigeron pulchellus</i>	Native	robin's plantain	Asteraceae	G5	35808	NatureServe 2002-2003
<i>Erigeron strigosus</i>	Native	prairie fleabane	Asteraceae	G5	35951	Jones and White 1981
<i>Euonymus americana</i>	Native	strawberry bush	Celastraceae	G5	502577	Jones and White 1981
<i>Eupatorium fistulosum</i>	Native	trumpetweed	Asteraceae	G5?	502509	Jones and White 1981
<i>Eupatorium hyssopifolium</i>	Native	hyssopleaf thoroughwort	Asteraceae	G5	35979	Jones and White 1981
<i>Eupatorium perfoliatum</i>	Native	common boneset	Asteraceae	G5	35980	Jones and White 1981
<i>Eupatorium rotundifolium</i> var. <i>ovatum</i>	Native	roundleaf thoroughwort	Asteraceae	G5T5	528120	Jones and White 1981
<i>Eupatorium serotinum</i>	Native	lateflowering thoroughwort	Asteraceae	G5	35981	Jones and White 1981
<i>Euphorbia corollata</i>	Native	flowering spurge	Euphorbiaceae	G5	28057	Jones and White 1981
<i>Euphorbia pubentissima</i>	Native	false flowering spurge	Euphorbiaceae	G5	28125	NatureServe 2002-2003
<i>Eurybia hemispherica</i>	Native	southern prairie aster	Asteraceae	G4?	35584	Jones and White 1981
<i>Fagus grandifolia</i>	Native	American beech	Fagaceae	G5	19462	Jones and White 1981
<i>Fimbristylis autumnalis</i>	Native	slender fimbry	Cyperaceae	G5	40111	Jones and White 1981
<i>Forestiera acuminata</i>	Native	eastern swampprivet	Oleaceae	G5	32952	Jones and White 1981
<i>Fragaria virginiana</i>	Native	Virginia strawberry	Rosaceae	G5	24639	Jones and White 1981
<i>Frangula caroliniana</i>	Native	Carolina buckthorn	Rhamnaceae	G5	28572	Jones and White 1981
<i>Fraxinus americana</i>	Native	white ash	Oleaceae	G5	32931	Jones and White 1981
<i>Fraxinus pennsylvanica</i>	Native	green ash	Oleaceae	G5	32929	Jones and White 1981
<i>Galactia regularis</i>	Native	eastern milkpea	Fabaceae	G5	26699	Jones and White 1981
<i>Galactia volubilis</i>	Native	downy milkpea	Fabaceae	G5	26703	NatureServe 2002-2003
<i>Galium aparine</i>	Native	stickywilly	Rubiaceae	G5	34797	Jones and White 1981
<i>Galium circaezans</i>	Native	licorice bedstraw	Rubiaceae	G5	34800	Jones and White 1981
<i>Galium obtusum</i>	Native	bluntleaf bedstraw	Rubiaceae	G5	34802	Jones and White 1981
<i>Galium pilosum</i>	Native	hairy bedstraw	Rubiaceae	G5	34907	NatureServe 2002-2003
<i>Galium tinctorium</i>	Native	stiff marsh bedstraw	Rubiaceae	G5	34803	NatureServe 2002-2003
<i>Gentiana villosa</i>	Native	striped gentian	Gentianaceae	G4	29990	NatureServe 2002-2003
<i>Geranium carolinianum</i>	Native	Carolina geranium	Geraniaceae	G5	29105	Jones and White 1981
<i>Geranium maculatum</i>	Native	spotted geranium	Geraniaceae	G5	29107	Jones and White 1981
<i>Geum virginianum</i>	Native	cream avens	Rosaceae	G5	24665	Jones and White 1981
<i>Ginkgo biloba</i>	Exotic	maidenhair tree	Ginkgoaceae	G1	183269	ANCS-Jones 1980
<i>Gleditsia triacanthos</i>	Native	honeylocust	Fabaceae	G5	26714	Jones and White 1981
<i>Glyceria striata</i>	Native	fowl mannagrass	Poaceae	G5	40833	Jones and White 1981
<i>Gratiola virginiana</i>	Native	roundfruit hedgehyssop	Scrophulariaceae	G4G5	33191	Jones and White 1981
<i>Halesia carolina</i>	Native	Carolina silverbell	Styracaceae	G4G5	23864	Jones and White 1981
<i>Hamamelis virginiana</i>	Native	American witchhazel	Hamamelidaceae	G5	19033	Jones and White 1981
<i>Hedeoma hispida</i>	Native	rough false pennyroyal	Lamiaceae	G5	502890	NatureServe 2002-2003
<i>Hedera helix</i>	Exotic EPPC-1	English ivy	Araliaceae	G?	29393	Jones and White 1981
<i>Helenium amarum</i>	Native	yellowdicks	Asteraceae	G5	36007	Jones and White 1981
<i>Helenium flexuosum</i>	Native	purplehead sneezeweed	Asteraceae	G5	36016	Jones and White 1981

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<i>Helianthus angustifolius</i>	Native	swamp sunflower	Asteraceae	G5	502919	Jones and White 1981
<i>Helianthus hirsutus</i>	Native	hairy sunflower	Asteraceae	G5	36646	Jones and White 1981
<i>Helianthus microcephalus</i>	Native	small woodland sunflower	Asteraceae	G5	36654	Jones and White 1981
<i>Helianthus silphioides</i>	Native	rosinweed sunflower	Asteraceae	G3G4	36687	Jones and White 1981
<i>Heliotropium indicum</i>	Exotic	Indian heliotrope	Boraginaceae	G5	31638	Jones and White 1981
<i>Hemerocallis fulva</i>	Exotic	orange daylily	Liliaceae	G?	42943	Jones and White 1981
<i>Heteranthera reniformis</i>	Native	kidneyleaf mudplantain	Pontederiaceae	G5	42616	NatureServe 2002-2003
<i>Heuchera americana</i>	Native	American alumroot	Saxifragaceae	G5	24340	Jones and White 1981
<i>Hibiscus syriacus</i>	Exotic EPPC-A	rose of Sharon	Malvaceae	G?	21638	Jones and White 1981
<i>Hieracium gronovii</i>	Native	queendevil	Asteraceae	G5	37710	Jones and White 1981
<i>Hieracium venosum</i>	Native	rattlesnakeweed	Asteraceae	G5	37734	ANCS-Jones 1980
<i>Holcus lanatus</i>	Exotic	common velvetgrass	Poaceae	G?	41773	Jones and White 1981
<i>Hordeum pusillum</i>	Native	little barley	Poaceae	G5	40866	Jones and White 1981
<i>Houstonia caerulea</i>	Native	azure bluet	Rubiaceae	G5	35038	Jones and White 1981
<i>Houstonia purpurea</i>	Native	Venus' pride	Rubiaceae	G5	35051	Jones and White 1981
<i>Houstonia pusilla</i>	Native	tiny bluet	Rubiaceae	G5	35052	Jones and White 1981
<i>Hybanthus concolor</i>	Native	eastern greenviolet	Violaceae	G5	511843	Jones and White 1981
<i>Hydrangea arborescens</i>	Native	wild hydrangea	Hydrangeaceae	G5	24195	Jones and White 1981
<i>Hydrangea quercifolia</i>	Native	oakleaf hydrangea	Hydrangeaceae	G5	24200	Jones and White 1981
<i>Hydrolea uniflora</i>	Native	oneflower false fiddleleaf	Hydrophyllaceae	G5	31387	Jones and White 1981
<i>Hymenocallis caroliniana</i>	Native	Carolina spiderlily	Liliaceae	G4	503104	Jones and White 1981
<i>Hypericum drummondii</i>	Native	nits and lice	Clusiaceae	G5	21436	NatureServe 2002-2003
<i>Hypericum gentianoides</i>	Native	orangegrass	Clusiaceae	G5	21420	Jones and White 1981
<i>Hypericum hypericoides</i> ssp. <i>hypericoides</i>	Native	St. Andrew's cross	Clusiaceae	G5	21468	Jones and White 1981
<i>Hypericum perforatum</i>	Exotic EPPC-A	common St. Johnswort	Clusiaceae	G?	21454	Jones and White 1981
<i>Hypericum prolificum</i>	Native	shrubby St. Johnswort	Clusiaceae	G5	21455	Jones and White 1981
<i>Hypericum punctatum</i>	Native	spotted St. Johnswort	Clusiaceae	G5	21422	Jones and White 1981
<i>Hypochaeris radicata</i>	Exotic	hairy catsear	Asteraceae	G?	37794	Jones and White 1981
<i>Hypoxis hirsuta</i>	Native	common goldstar	Iridaceae	G5	503146	Jones and White 1981
<i>Ilex ambigua</i>	Native	Carolina holly	Aquifoliaceae	G5	27987	NatureServe 2002-2003
<i>Ilex decidua</i>	Native	possumhaw	Aquifoliaceae	G5	27998	Jones and White 1981
<i>Ilex montana</i>	Native	mountain holly	Aquifoliaceae	G5	28002	Jones and White 1981
<i>Ilex opaca</i>	Native	American holly	Aquifoliaceae	G5	27982	Jones and White 1981
<i>Ilex verticillata</i>	Native	common winterberry	Aquifoliaceae	G5	27985	Jones and White 1981
<i>Ilex verticillata</i> var. <i>verticillata</i>	Native	common winterberry	Aquifoliaceae	G5	502458	ANCS-Jones
<i>Impatiens capensis</i>	Native	jewelweed	Balsaminaceae	G5	29182	Jones and White 1981
<i>Iodanthus pinnatifidus</i>	Native	purplerocket	Brassicaceae	G5	23149	Jones and White 1981
<i>Ipomoea hederacea</i>	Exotic	ivyleaf morning-glory	Convolvulaceae	G5	503177	Jones and White 1981
<i>Ipomoea lacunosa</i>	Native	whitestar	Convolvulaceae	G5?	30776	Jones and White 1981
<i>Ipomoea pandurata</i>	Native	man of the earth	Convolvulaceae	G5	30786	Jones and White 1981
<i>Iris cristata</i>	Native	dwarf crested iris	Iridaceae	G5	43204	Jones and White 1981
<i>Itea virginica</i>	Native	Virginia sweetspire	Grossulariaceae	G4	24202	Jones and White 1981
<i>Iva annua</i>	Native	annual marshelder	Asteraceae	G5	36031	Jones and White 1981

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<i>Iva annua</i> var. <i>annua</i>	Native	annual marshelder	Asteraceae	G5T5	515311	ANCS-Jones 1980
<i>Juglans nigra</i>	Native	black walnut	Juglandaceae	G5	19254	Jones and White 1981
<i>Juncus acuminatus</i>	Native	tapertip rush	Juncaceae	G5	39221	Jones and White 1981
<i>Juncus brachycarpus</i>	Native	whiteroot rush	Juncaceae	G4G5	39226	Jones and White 1981
<i>Juncus coriaceus</i>	Native	leathery rush	Juncaceae	G5	39230	Jones and White 1981
<i>Juncus tenuis</i>	Native	poverty rush	Juncaceae	G5	39243	Jones and White 1981
<i>Juncus validus</i>	Native	roundhead rush	Juncaceae	G5	39327	Jones and White 1981
<i>Juniperus virginiana</i>	Native	eastern redcedar	Cupressaceae	G5	18048	Jones and White 1981
<i>Justicia ovata</i>	Native	looseflower water-willow	Acanthaceae	G5	34357	Jones and White 1981
<i>Justicia ovata</i> var. <i>ovata</i>	Native	looseflower water-willow	Acanthaceae	G5T?	182323	
<i>Kalmia latifolia</i>	Native	mountain laurel	Ericaceae	G5	23677	Jones and White 1981
<i>Krigia biflora</i>	Native	twoflower dwarf dandelion	Asteraceae	G5	37810	Jones and White 1981
<i>Krigia caespitosa</i>	Native	weedy dwarf dandelion	Asteraceae	G5	565260	NatureServe 2002-2003
<i>Krigia dandelion</i>	Native	potato dwarf dandelion	Asteraceae	G5	37812	Jones and White 1981
<i>Kummerowia stipulacea</i>	Exotic EPPC-3	Korean clover	Fabaceae	G?	25893	Jones and White 1981
<i>Kummerowia striata</i>	Exotic EPPC-3	Japanese clover	Fabaceae	G?	25910	Jones and White 1981
<i>Lactuca canadensis</i>	Native	Canada lettuce	Asteraceae	G5	36596	Jones and White 1981
<i>Lactuca floridana</i>	Native	woodland lettuce	Asteraceae	G5	36599	Jones and White 1981
<i>Lagerstroemia indica</i>	Exotic	crapemyrtle	Lythraceae	G?	27110	Jones and White 1981
<i>Lamium album</i>	Exotic	white deadnettle	Lamiaceae	G5	32538	ANCS-Jones 1980
<i>Lamium amplexicaule</i>	Exotic	henbit deadnettle	Lamiaceae	G?	32539	Jones and White 1981
<i>Laportea canadensis</i>	Native	Canadian woodnettle	Urticaceae	G5	19127	Jones and White 1981
<i>Lathyrus latifolius</i>	Exotic	perennial pea	Fabaceae	G?	25856	Jones and White 1981
<i>Lechea minor</i>	Native	thymeleaf pinweed	Cistaceae	G5	22290	Jones and White 1981
<i>Leersia oryzoides</i>	Native	rice cutgrass	Poaceae	G5	40886	Jones and White 1981
<i>Leersia virginica</i>	Native	whitegrass	Poaceae	G5	40890	Jones and White 1981
<i>Leptochloa panicea</i> ssp. <i>brachiata</i>	Native	mucronate sprangletop	Poaceae	G5	41826	Jones and White 1981
<i>Lespedeza cuneata</i>	Exotic EPPC-1	Chinese lespedeza	Fabaceae	G?	25898	Jones and White 1981
<i>Lespedeza procumbens</i>	Native	trailing lespedeza	Fabaceae	G5	25907	NatureServe 2002-2003
<i>Lespedeza repens</i>	Native	creeping lespedeza	Fabaceae	G5	503402	Jones and White 1981
<i>Lespedeza violacea</i>	Native	violet lespedeza	Fabaceae	G5	25914	NatureServe 2002-2003
<i>Lespedeza virginica</i>	Native	slender lespedeza	Fabaceae	G5	25915	Jones and White 1981
<i>Liatris squarrosa</i>	Native	scaly blazing star	Asteraceae	G5	37945	Jones and White 1981
<i>Liatris squarrolosa</i>	Native	Appalachian blazing star	Asteraceae	G4G5	503447	Jones and White 1981
<i>Ligustrum sinense</i>	Exotic EPPC-1	Chinese privet	Oleaceae	G?	32979	Jones and White 1981
<i>Lindera benzoin</i>	Native	northern spicebush	Lauraceae	G5	18147	Jones and White 1981
<i>Lindernia dubia</i>	Native	yellowseed false pimpernel	Scrophulariaceae	G5	33221	Jones and White 1981
<i>Linum medium</i>	Native	stiff yellow flax	Linaceae	G5	503493	Jones and White 1981
<i>Liquidambar styraciflua</i>	Native	sweetgum	Hamamelidaceae	G5	19027	Jones and White 1981
<i>Liriodendron tulipifera</i>	Native	tuliptree	Magnoliaceae	G5	18086	Jones and White 1981
<i>Lobelia cardinalis</i>	Native	cardinalflower	Campanulaceae	G5	34505	Jones and White 1981

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<i>Lobelia inflata</i>	Native	Indian-tobacco	Campanulaceae	G5	34524	Jones and White 1981
<i>Lobelia puberula</i>	Native	downy lobelia	Campanulaceae	G5	34529	Jones and White 1981
<i>Lobelia siphilitica</i>	Native	great blue lobelia	Campanulaceae	G5	34531	Jones and White 1981
<i>Lobelia spicata</i>	Native	palespike lobelia	Campanulaceae	G5	34532	Jones and White 1981
<i>Lolium arundinaceum</i>	Exotic EPPC-2	tall fescue	Poaceae	G?	507979	NatureServe 2002-2003
<i>Lolium pratense</i>	Exotic EPPC-2	meadow ryegrass	Poaceae	G5	513538	Jones and White 1981
<i>Lonicera japonica</i>	Exotic EPPC-1	Japanese honeysuckle	Caprifoliaceae	G?	35283	Jones and White 1981
<i>Ludwigia alternifolia</i>	Native	seedbox	Onagraceae	G5	27335	Jones and White 1981
<i>Ludwigia decurrens</i>	Native	wingleaf primrose-willow	Onagraceae	G5	27333	Jones and White 1981
<i>Ludwigia glandulosa</i>	Native	cylindricfruit primrose-willow	Onagraceae	G5	27345	Jones and White 1981
<i>Ludwigia palustris</i>	Native	marsh seedbox	Onagraceae	G5	27336	Jones and White 1981
<i>Luzula bulbosa</i>	Native	bulbous woodrush	Juncaceae	G5	39338	Jones and White 1981
<i>Luzula echinata</i>	Native	hedgehog woodrush	Juncaceae	G5	39342	NatureServe 2002-2003
<i>Luzula multiflora</i>	Native	common woodrush	Juncaceae	G5	39333	NatureServe 2002-2003
<i>Lycopodium digitatum</i>	Native	fan clubmoss	Lycopodiaceae	G5	516506	Jones and White 1981
<i>Lycopus americanus</i>	Native	American water horehound	Lamiaceae	G5	32254	Jones and White 1981
<i>Lycopus virginicus</i>	Native	Virginia water horehound	Lamiaceae	G5	32255	Jones and White 1981
<i>Lysimachia ciliata</i>	Native	fringed loosestrife	Primulaceae	G5	23984	Jones and White 1981
<i>Maclura pomifera</i>	Native	osage orange	Moraceae	G2G4	19102	Jones and White 1981
<i>Magnolia grandiflora</i>	Native	southern magnolia	Magnoliaceae	G5	18074	Jones and White 1981
<i>Maianthemum racemosum</i> ssp. <i>racemosum</i>	Native	feathery false lily of the valley	Liliaceae	G5T5	43036	Jones and White 1981
<i>Malus angustifolia</i>	Native	southern crabapple	Rosaceae	G5?	25255	Jones and White 1981
<i>Malus pumila</i>	Exotic	paradise apple	Rosaceae	G5	25262	Jones and White 1981
<i>Manfreda virginica</i>	Native	false aloe	Agavaceae	G5	508437	Jones and White 1981
<i>Matelea gonocarpos</i>	Native	angularfruit milkvine	Asclepiadaceae	G5	514184	Jones and White 1981
<i>Mecardonia acuminata</i>	Native	axilflower	Scrophulariaceae	G5	33645	NatureServe 2002-2003
<i>Medeola virginiana</i>	Native	Indian cucumber	Liliaceae	G5	42963	Jones and White 1981
<i>Melanthera nivea</i>	Native	snow squarestem	Asteraceae	G5	38093	Jones and White 1981
<i>Melica mutica</i>	Native	twoflower melicgrass	Poaceae	G5	41858	Jones and White 1981
<i>Melilotus alba</i>	Native	white sweetclover	Fabaceae		26149	Jones and White 1981
<i>Melothria pendula</i>	Native	Guadeloupe cucumber	Cucurbitaceae	G4	22339	Jones and White 1981
<i>Menispermum canadense</i>	Native	common moonseed	Menispermaceae	G5	18871	Jones and White 1981
<i>Microstegium vimineum</i>	Exotic EPPC-1	Nepalese browntop	Poaceae	G?	41738	Jones and White 1981
<i>Mikania scandens</i>	Native	climbing hempvine	Asteraceae	G5	36043	Jones and White 1981
<i>Mimosa microphylla</i>	Native	littleleaf sensitive-briar	Fabaceae	G5	26940	Jones and White 1981
<i>Mimulus alatus</i>	Native	sharpwing monkeyflower	Scrophulariaceae	G5	33234	Jones and White 1981
<i>Mitchella repens</i>	Native	partridgeberry	Rubiaceae	G5	35063	Jones and White 1981
<i>Mollugo verticillata</i>	Exotic	green carpetweed	Molluginaceae	G?	19899	Jones and White 1981
<i>Monarda fistulosa</i>	Native	wild bergamot	Lamiaceae	G5	565311	Jones and White 1981

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<i>Monotropa uniflora</i>	Native	Indianpipe	Monotropaceae	G5	23778	NatureServe 2002-2003
<i>Morus rubra</i>	Native	red mulberry	Moraceae	G5	19070	Jones and White 1981
<i>Muscari neglectum</i>	Exotic	starch grape hyacinth	Liliaceae	G?	42979	Jones and White 1981
<i>Myriophyllum aquaticum</i>	Exotic EPPC-2	parrot feather watermilfoil	Haloragaceae	G?	503904	NatureServe 2002-2003
<i>Nemophila aphylla</i>	Native	smallflower baby blue eyes	Hydrophyllaceae	G5	517513	Jones and White 1981
<i>Nyssa aquatica</i>	Native	water tupelo	Nyssaceae	G5	27824	Jones and White 1981
<i>Nyssa sylvatica</i>	Native	blackgum	Nyssaceae	G5	27821	Jones and White 1981
<i>Oenothera biennis</i>	Native	common evening-primrose	Onagraceae	G5	27368	Jones and White 1981
<i>Oenothera laciniata</i>	Native	cutleaf evening-primrose	Onagraceae	G5	27371	NatureServe 2002-2003
<i>Onoclea sensibilis</i>	Native	sensitive fern	Dryopteridaceae	G5	17637	Jones and White 1981
<i>Orbexilum pedunculatum</i> var. <i>psoraloides</i>	Native	Sampson's snakeroot	Fabaceae	G5T4?	26913	Jones and White 1981
<i>Ornithogalum umbellatum</i>	Exotic EPPC-3	sleepydick	Liliaceae	G2?	42754	Jones and White 1981
<i>Osmorhiza longistylis</i>	Native	longstyle sweetroot	Apiaceae	G5	29791	Jones and White 1981
<i>Osmunda cinnamomea</i>	Native	cinnamon fern	Osmundaceae	G5	17219	Jones and White 1981
<i>Osmunda regalis</i>	Native	royal fern	Osmundaceae	G5	17218	Jones and White 1981
<i>Ostrya virginiana</i>	Native	hophornbeam	Betulaceae	G5	19511	Jones and White 1981
<i>Oxalis corniculata</i>	Exotic	creeping woodsorrel	Oxalidaceae	G?	29067	Jones and White 1981
<i>Oxalis stricta</i>	Native	common yellow oxalis	Oxalidaceae	G5	29079	Jones and White 1981
<i>Oxalis stricta</i>	Native	common yellow oxalis	Oxalidaceae	G5	29095	Jones and White 1981
<i>Oxalis violacea</i>	Native	violet woodsorrel	Oxalidaceae	G5	29098	Jones and White 1981
<i>Oxydendrum arboreum</i>	Native	sourwood	Ericaceae	G5	23690	Jones and White 1981
<i>Packera anonyma</i>	Native	Small's ragwort	Asteraceae	G5	36095	Jones and White 1981
<i>Packera glabella</i>	Native	butterweed	Asteraceae	G5	36138	Jones and White 1981
<i>Panicum anceps</i>	Native	beaked panicgrass	Poaceae	G5	40904	Jones and White 1981
<i>Panicum dichotomiflorum</i>	Native	fall panicgrass	Poaceae	G5	40908	Jones and White 1981
<i>Panicum philadelphicum</i>	Native	Philadelphia panicgrass	Poaceae	G5	504104	Jones and White 1981
<i>Panicum rigidulum</i>	Native	redtop panicgrass	Poaceae	G5	40956	Jones and White 1981
<i>Panicum rigidulum</i> var. <i>elongatum</i>	Native	redtop panicgrass	Poaceae	G4G5	518385	Jones and White 1981
<i>Parthenocissus quinquefolia</i>	Native	Virginia creeper	Vitaceae	G5	28602	Jones and White 1981
<i>Parthenocissus quinquefolia</i>	Native	Virginia creeper	Vitaceae	G5	28602	Jones and White 1981
<i>Paspalum boscianum</i>	Native	bull crowngrass	Poaceae	G5	41012	Jones and White 1981
<i>Paspalum dilatatum</i>	Exotic	dallisgrass	Poaceae	G?	40997	Jones and White 1981
<i>Paspalum laeve</i>	Native	field paspalum	Poaceae	G4G5	41024	Jones and White 1981
<i>Paspalum pubiflorum</i>	Native	hairyseed paspalum	Poaceae	G5	40994	Jones and White 1981
<i>Paspalum setaceum</i>	Native	thin paspalum	Poaceae	G5	41042	NatureServe 2002-2003
<i>Passiflora incarnata</i>	Native	purple passionflower	Passifloraceae	G5	504139	Jones and White 1981
<i>Passiflora lutea</i>	Native	yellow passionflower	Passifloraceae	G5	22226	Jones and White 1981
<i>Paulownia tomentosa</i>	Exotic EPPC-1	princesstree	Scrophulariaceae	G?	33460	Jones and White 1981
<i>Pedicularis canadensis</i>	Native	Canadian lousewort	Scrophulariaceae	G5	33362	Jones and White 1981
<i>Peltandra virginica</i>	Native	green arrow arum	Araceae	G5	42534	Jones and White 1981

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<i>Penstemon calycosus</i>	Native	longsepal beardtongue	Scrophulariaceae	G5	33845	Jones and White 1981
<i>Penstemon pallidus</i>	Native	pale beardtongue	Scrophulariaceae	G5	33967	Jones and White 1981
<i>Penthorum sedoides</i>	Native	ditch stonecrop	Crassulaceae	G5	504241	Jones and White 1981
<i>Phegopteris hexagonoptera</i>	Native	broad beechfern	Thelypteridaceae	G5	504296	Jones and White 1981
<i>Phlox divaricata</i>	Native	wild blue phlox	Polemoniaceae	G5	30934	Jones and White 1981
<i>Phlox nivalis</i>	Native	trailing phlox	Polemoniaceae	G4	30967	ANCS-Jones
<i>Phlox paniculata</i>	Native	fall phlox	Polemoniaceae	G5	30973	Jones and White 1981
<i>Phlox pilosa</i>	Native	downy phlox	Polemoniaceae	G5	30974	Jones and White 1981
<i>Phoradendron leucarpum</i>	Native	oak mistletoe	Viscaceae	G5	27865	Jones and White 1981
<i>Photinia melanocarpa</i>	Native	black chokeberry	Rosaceae	G5	25127	Jones and White 1981
<i>Photinia pyrifolia</i>	Native	red chokeberry	Rosaceae	G5	25126	Jones and White 1981
<i>Phyllanthus caroliniensis</i>	Native	Carolina leaf-flower	Euphorbiaceae	G5	28368	Jones and White 1981
<i>Physalis angulata</i>	Native	cutleaf groundcherry	Solanaceae	G5	30590	Jones and White 1981
<i>Physalis longifolia</i>	Native	longleaf groundcherry	Solanaceae	G5	30603	Jones and White 1981
<i>Physalis pubescens</i>	Native	husk tomato	Solanaceae	G5	30607	NatureServe 2002-2003
<i>Physalis virginiana</i>	Native	Virginia groundcherry	Solanaceae	G5	30612	NatureServe 2002-2003
<i>Phytolacca americana</i>	Native	American pokeweed	Phytolaccaceae	G5	19523	Jones and White 1981
<i>Pilea pumila</i>	Native	Canadian clearweed	Urticaceae	G5	19130	Jones and White 1981
<i>Pinus echinata</i>	Native	shortleaf pine	Pinaceae	G5	183335	Jones and White 1981
<i>Pinus taeda</i>	Native	loblolly pine	Pinaceae	G5	18037	Jones and White 1981
<i>Pinus virginiana</i>	Native	Virginia pine	Pinaceae	G5	183394	Jones and White 1981
<i>Pityopsis graminifolia</i> var. <i>graminifolia</i>	Native	narrowleaf silkgrass	Asteraceae	G5T4	510955	Jones and White 1981
<i>Planera aquatica</i>	Native	planertree	Ulmaceae	G5	19061	Jones and White 1981
<i>Plantago aristata</i>	Native	largebracted plantain	Plantaginaceae	G5	32875	Jones and White 1981
<i>Plantago lanceolata</i>	Exotic	narrowleaf plantain	Plantaginaceae	G5	32874	Jones and White 1981
<i>Plantago rugelii</i>	Native	blackseed plantain	Plantaginaceae	G5	504439	NatureServe 2002-2003
<i>Plantago virginica</i>	Native	Virginia plantain	Plantaginaceae	G5	32895	Jones and White 1981
<i>Platanthera clavellata</i>	Native	small green wood orchid	Orchidaceae	G5	514356	Jones and White 1981
<i>Platanus occidentalis</i>	Native	American sycamore	Platanaceae	G5	19020	Jones and White 1981
<i>Pleopeltis polypodioides</i> ssp. <i>polypodioides</i>	Native	resurrection fern	Polypodiaceae	G5T?	17229	Jones and White 1981
<i>Pluchea camphorata</i>	Native	camphor pluchea	Asteraceae	G5	36061	Jones and White 1981
<i>Poa autumnalis</i>	Native	autumn bluegrass	Poaceae	G5	41111	Jones and White 1981
<i>Poa pratensis</i>	Native	Kentucky bluegrass	Poaceae	G?	41088	Jones and White 1981
<i>Poa sylvestris</i>	Native	woodland bluegrass	Poaceae	G5	41162	Jones and White 1981
<i>Podophyllum peltatum</i>	Native	mayapple	Berberidaceae	G5	18850	Jones and White 1981
<i>Polemonium reptans</i>	Native	Greek valerian	Polemoniaceae	G5	31003	Jones and White 1981
<i>Polygala curtissii</i>	Native	Curtiss' milkwort	Polygalaceae	G5	29332	NatureServe 2002-2003
<i>Polygala mariana</i>	Native	Maryland milkwort	Polygalaceae	G5	29303	NatureServe 2002-2003
<i>Polygala verticillata</i>	Native	whorled milkwort	Polygalaceae	G5	29320	NatureServe 2002-2003
<i>Polygonatum biflorum</i>	Native	smooth Solomon's seal	Liliaceae	G5	43006	Jones and White 1981
<i>Polygonum caespitosum</i> var. <i>longisetum</i>	Native	Oriental Lady's-thumb	Polygonaceae	G?T?	566299	NatureServe 2002-2003
<i>Polygonum hydropiper</i>	Exotic	marshpepper knotweed	Polygonaceae	G5	20856	Jones and White 1981
<i>Polygonum pensylvanicum</i>	Native	Pennsylvania smartweed	Polygonaceae	G5	20861	Jones and White 1981

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<i>Polygonum pensylvanicum</i> var. <i>pensylvanicum</i>	Native	Pennsylvania smartweed	Polygonaceae		-502750	ANCS-Jones
<i>Polygonum punctatum</i>	Native	dotted smartweed	Polygonaceae	G5	20862	Jones and White 1981
<i>Polygonum sagittatum</i>	Native	arrowleaf tearthumb	Polygonaceae	G5	20863	Jones and White 1981
<i>Polygonum virginianum</i>	Native	jumpseed	Polygonaceae	G5	20931	Jones and White 1981
<i>Polypremum procumbens</i>	Native	juniper leaf	Buddlejaceae	G5	29959	Jones and White 1981
<i>Polystichum acrostichoides</i>	Native	Christmas fern	Dryopteridaceae	G5	17675	Jones and White 1981
<i>Populus deltoides</i>	Native	eastern cottonwood	Salicaceae	G5	22445	Jones and White 1981
<i>Porteranthus stipulatus</i>	Native	Indian physic	Rosaceae	G5	514065	Jones and White 1981
<i>Potamogeton diversifolius</i>	Native	waterthread pondweed	Potamogetonaceae	G5	39026	Jones and White 1981
<i>Potentilla simplex</i>	Native	common cinquefoil	Rosaceae	G5	24751	Jones and White 1981
<i>Prenanthes altissima</i>	Native	tall rattlesnakeroot	Asteraceae	G5?	38273	Jones and White 1981
<i>Prunella vulgaris</i>	Native	common selfheal	Lamiaceae	G5	32381	Jones and White 1981
<i>Prunus angustifolia</i>	Native	Chickasaw plum	Rosaceae	G5	24768	Jones and White 1981
<i>Prunus serotina</i>	Native	black cherry	Rosaceae	G5	24764	Jones and White 1981
<i>Pseudognaphalium obtusifolium</i> ssp. <i>obtusifolium</i>	Native	rabbittobacco	Asteraceae	G5	36694	Jones and White 1981
<i>Pteridium aquilinum</i>	Native	western brackenfern	Dennstaedtiaceae	G5	17224	Jones and White 1981
<i>Pueraria montana</i> var. <i>lobata</i>	Native	kudzu	Fabaceae	G?T?	26936	Jones and White 1981
<i>Pycnanthemum incanum</i>	Native	hoary mountainmint	Lamiaceae	G5	32662	Jones and White 1981
<i>Pycnanthemum tenuifolium</i>	Native	narrowleaf mountainmint	Lamiaceae	G5	32668	Jones and White 1981
<i>Pycnanthemum torrei</i>	Native	Torrey's mountainmint	Lamiaceae	G2	32656	Jones and White 1981
<i>Pycnanthemum verticillatum</i> var. <i>pilosum</i>	Native	whorled mountainmint	Lamiaceae	G5T5	32654	Jones and White 1981
<i>Pyrrhopappus carolinianus</i>	Native	Carolina desert-chicory	Asteraceae	G5	38324	Jones and White 1981
<i>Pyrus communis</i>	Exotic	common pear	Rosaceae	G5	25295	Jones and White 1981
<i>Quercus alba</i>	Native	white oak	Fagaceae	G5	19290	Jones and White 1981
<i>Quercus coccinea</i>	Native	scarlet oak	Fagaceae	G5	19288	Jones and White 1981
<i>Quercus falcata</i>	Native	southern red oak	Fagaceae	G5	19277	Jones and White 1981
<i>Quercus lyrata</i>	Native	overcup oak	Fagaceae	G5	19278	Jones and White 1981
<i>Quercus marilandica</i>	Native	blackjack oak	Fagaceae	G5	19374	Jones and White 1981
<i>Quercus michauxii</i>	Native	swamp chestnut oak	Fagaceae	G5	19279	Jones and White 1981
<i>Quercus muehlenbergii</i>	Native	chinkapin oak	Fagaceae	G5	504714	Jones and White 1981
<i>Quercus nigra</i>	Native	water oak	Fagaceae	G5	19280	Jones and White 1981
<i>Quercus pagoda</i>	Native	cherrybark oak	Fagaceae	G5	195195	Jones and White 1981
<i>Quercus palustris</i>	Native	pin oak	Fagaceae	G5	19281	Jones and White 1981
<i>Quercus phellos</i>	Native	willow oak	Fagaceae	G5	19282	Jones and White 1981
<i>Quercus rubra</i> var. <i>ambigua</i>	Native	northern red oak	Fagaceae	G5T5	19303	Jones and White 1981
<i>Quercus shumardii</i>	Native	Shumard's oak	Fagaceae	G5	19417	Jones and White 1981
<i>Quercus stellata</i>	Native	post oak	Fagaceae	G5	19422	Jones and White 1981
<i>Quercus velutina</i>	Native	black oak	Fagaceae	G5	19447	Jones and White 1981
<i>Ranunculus abortivus</i>	Native	littleleaf buttercup	Ranunculaceae	G5	18559	Jones and White 1981
<i>Ranunculus bulbosus</i>	Exotic	St. Anthony's turnip	Ranunculaceae	G?	18594	NatureServe 2002-2003
<i>Ranunculus fascicularis</i>	Native	early buttercup	Ranunculaceae	G5	18602	Jones and White 1981
<i>Ranunculus micranthus</i>	Native	rock buttercup	Ranunculaceae	G5	18628	Jones and White 1981
<i>Ranunculus recurvatus</i>	Native	blisterwort	Ranunculaceae	G5	18641	Jones and White 1981

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<i>Rhexia mariana</i> var. <i>interior</i>	Native	Maryland meadowbeauty	Melastomataceae	G5T4T5	529992	Jones and White 1981
<i>Rhexia mariana</i> var. <i>mariana</i>	Native	Maryland meadowbeauty	Melastomataceae	G5T5	529993	Jones and White 1981
<i>Rhexia virginica</i>	Native	handsome Harry	Melastomataceae	G5	27686	Jones and White 1981
<i>Rhododendron canescens</i>	Native	mountain azalea	Ericaceae	G5	23712	Jones and White 1981
<i>Rhus aromatica</i>	Native	fragrant sumac	Anacardiaceae	G5	28779	Jones and White 1981
<i>Rhus copallinum</i>	Native	flameleaf sumac	Anacardiaceae	G5	504754	Jones and White 1981
<i>Rhus glabra</i>	Native	smooth sumac	Anacardiaceae	G5	28782	Jones and White 1981
<i>Rhynchospora corniculata</i>	Native	shortbristle horned beaksedge	Cyperaceae	G5	40146	Jones and White 1981
<i>Robinia pseudoacacia</i>	Exotic	black locust	Fabaceae	G5	504804	Jones and White 1981
<i>Rorippa sessiliflora</i>	Native	stalkless yellowcress	Brassicaceae	G5	23013	Jones and White 1981
<i>Rosa carolina</i>	Native	Carolina rose	Rosaceae	G4G5	24808	Jones and White 1981
<i>Rosa multiflora</i>	Exotic EPPC-1	multiflora rose	Rosaceae	G?	520228	Jones and White 1981
<i>Rotala ramosior</i>	Native	lowland rotala	Lythraceae	G5	27115	Jones and White 1981
<i>Rubus argutus</i>	Native	sawtooth blackberry	Rosaceae	G5	24877	Jones and White 1981
<i>Rubus bifrons</i>	Exotic	Himalayan berry	Rosaceae	G5	24891	Jones and White 1981
<i>Rubus trivialis</i>	Native	southern dewberry	Rosaceae	G5	25067	Jones and White 1981
<i>Rudbeckia fulgida</i> var. <i>fulgida</i>	Native	orange coneflower	Asteraceae	G5T?	530161	Jones and White 1981
<i>Rudbeckia hirta</i>	Native	blackeyed Susan	Asteraceae	G5	36765	ANCS-Jones
<i>Rudbeckia hirta</i> var. <i>hirta</i>	Native	blackeyed Susan	Asteraceae	G5TU	530171	Jones and White 1981
<i>Ruellia caroliniensis</i>	Native	Carolina wild petunia	Acanthaceae	G5	34373	Jones and White 1981
<i>Ruellia strepens</i>	Native	limestone wild petunia	Acanthaceae	G4G5	34390	Jones and White 1981
<i>Rumex acetosella</i>	Exotic	common sheep sorrel	Polygonaceae	G?	20934	Jones and White 1981
<i>Rumex altissimus</i>	Native	pale dock	Polygonaceae	G5	20949	Jones and White 1981
<i>Rumex crispus</i>	Native	curly dock	Polygonaceae	G?	20937	Jones and White 1981
<i>Rumex obtusifolius</i>	Exotic	bitter dock	Polygonaceae	G?	20939	Jones and White 1981
<i>Rumex verticillatus</i>	Native	swamp dock	Polygonaceae	G5	20946	Jones and White 1981
<i>Saccharum giganteum</i>	Native	sugarcane plumegrass	Poaceae	G5	40787	Jones and White 1981
<i>Sagittaria australis</i>	Native	longbeak arrowhead	Alismataceae	G?	520720	Jones and White 1981
<i>Sagittaria australis</i>	Native	longbeak arrowhead	Alismataceae	G5	182452	NatureServe 2002-2003
<i>Sagittaria latifolia</i>	Native	broadleaf arrowhead	Alismataceae	G?	520719	Jones and White 1981
<i>Salix nigra</i>	Native	black willow	Salicaceae	G5	22484	Jones and White 1981
<i>Salvia lyrata</i>	Native	lyreleaf sage	Lamiaceae	G5	32690	Jones and White 1981
<i>Salvia urticifolia</i>	Native	nettleleaf sage	Lamiaceae	G5	32750	NatureServe 2002-2003
<i>Sambucus nigra</i> ssp. <i>canadensis</i>	Native	common elderberry	Caprifoliaceae	G5	35317	Jones and White 1981
<i>Sanguinaria canadensis</i>	Native	bloodroot	Papaveraceae	G5	18990	Jones and White 1981
<i>Sanicula canadensis</i>	Native	Canadian blacksnakeroot	Apiaceae	G5	29850	Jones and White 1981
<i>Sanicula odorata</i>	Native	clustered blacksnakeroot	Apiaceae	G4	29853	Jones and White 1981
<i>Sanicula smallii</i>	Native	Small's blacksnakeroot	Apiaceae	G5	29860	Jones and White 1981
<i>Sassafras albidum</i>	Native	sassafras	Lauraceae	G5	18158	Jones and White 1981
<i>Saururus cernuus</i>	Native	lizard's tail	Saururaceae	G5	18221	Jones and White 1981
<i>Saxifraga virginiana</i>	Native	early saxifrage	Saxifragaceae	G5	24303	Jones and White 1981
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	Native	little bluestem	Poaceae	G5	40451	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Scirpus atrovirens</i>	Native	green bulrush	Cyperaceae	G5?	40227	Jones and White 1981
<i>Scirpus cyperinus</i>	Native	woolgrass	Cyperaceae	G5	40228	Jones and White 1981
<i>Scirpus polyphyllus</i>	Native	leafy bulrush	Cyperaceae	G5	40274	Jones and White 1981
<i>Scrophularia marilandica</i>	Native	carpenter's square	Scrophulariaceae	G5	34037	Jones and White 1981
<i>Scutellaria elliptica</i> var. <i>hirsuta</i>	Native	hairy skullcap	Lamiaceae	G5T?	196140	Jones and White 1981
<i>Scutellaria incana</i> var. <i>incana</i>	Native	hoary skullcap	Lamiaceae	G5T?	196124	Jones and White 1981
<i>Scutellaria integrifolia</i>	Native	helmet flower	Lamiaceae	G5	32801	Jones and White 1981
<i>Scutellaria lateriflora</i>	Native	blue skullcap	Lamiaceae	G5	32765	Jones and White 1981
<i>Scutellaria parvula</i>	Native	small skullcap	Lamiaceae	G4	32776	Jones and White 1981
<i>Sedum ternatum</i>	Native	woodland stonecrop	Crassulaceae	G5	24184	Jones and White 1981
<i>Senna marilandica</i>	Native	Maryland senna	Fabaceae	G5	25759	Jones and White 1981
<i>Senna obtusifolia</i>	Native	Java-bean	Fabaceae	G5	25761	Jones and White 1981
<i>Sericocarpus linifolius</i>	Native	narrowleaf whitetop aster	Asteraceae	G5	35656	Jones and White 1981
<i>Setaria italica</i>	Exotic EPPC-2	foxtail bristlegrass	Poaceae	G?	41248	Jones and White 1981
<i>Setaria parviflora</i>	Native	marsh bristlegrass	Poaceae	G5	41235	Jones and White 1981
<i>Setaria viridis</i>	Exotic EPPC-2	green bristlegrass	Poaceae	G?	41231	Jones and White 1981
<i>Sherardia arvensis</i>	Exotic	blue fieldmadder	Rubiaceae	G?	35237	Jones and White 1981
<i>Sicyos angulatus</i>	Native	oneseed burr cucumber	Cucurbitaceae	G5	22402	Jones and White 1981
<i>Sida spinosa</i>	Exotic	prickly fanpetals	Malvaceae	G5?	21732	Jones and White 1981
<i>Sideroxylon lycioides</i>	Native	buckthorn bully	Sapotaceae	G5	23806	Jones and White 1981
<i>Silene stellata</i>	Native	widowsfrill	Caryophyllaceae	G5	20127	Jones and White 1981
<i>Silene virginica</i>	Native	fire pink	Caryophyllaceae	G5	20141	Jones and White 1981
<i>Silphium trifoliatum</i> var. <i>latifolium</i>	Native	whorled rosinweed	Asteraceae	G4?T4?	530390	Jones and White 1981
<i>Sisyrinchium angustifolium</i>	Native	narrowleaf blue-eyed grass	Iridaceae	G5	43240	Jones and White 1981
<i>Smilax bona-nox</i>	Native	saw greenbrier	Smilacaceae	G5	43341	Jones and White 1981
<i>Smilax glauca</i>	Native	cat greenbrier	Smilacaceae	G5	43342	Jones and White 1981
<i>Smilax herbacea</i>	Native	smooth carrionflower	Smilacaceae	G5	43356	Jones and White 1981
<i>Smilax rotundifolia</i>	Native	roundleaf greenbrier	Smilacaceae	G5	43346	Jones and White 1981
<i>Smilax tamnoides</i>	Native	bristly greenbrier	Smilacaceae	G5Q	43343	Jones and White 1981
<i>Solanum carolinense</i>	Native	Carolina horsenettle	Solanaceae	G5	30413	Jones and White 1981
<i>Solanum nigrum</i>	Exotic	black nightshade	Solanaceae	G?	565525	Jones and White 1981
<i>Solanum ptychanthum</i>	Native	West Indian nightshade	Solanaceae	G?	30448	Jones and White 1981
<i>Solidago arguta</i> var. <i>caroliniana</i>	Native	Atlantic goldenrod	Asteraceae	G5T3T5	530438	Jones and White 1981
<i>Solidago caesia</i>	Native	wreath goldenrod	Asteraceae	G5	36238	Jones and White 1981
<i>Solidago canadensis</i>	Native	Canada goldenrod	Asteraceae	G5	36224	Jones and White 1981
<i>Solidago gigantea</i>	Native	giant goldenrod	Asteraceae	G5	36259	Jones and White 1981
<i>Solidago hispida</i>	Native	hairy goldenrod	Asteraceae	G5	36266	Jones and White 1981
<i>Solidago nemoralis</i>	Native	gray goldenrod	Asteraceae	G5	36281	Jones and White 1981
<i>Solidago odora</i>	Native	anisescented goldenrod	Asteraceae	G5	36284	Jones and White 1981
<i>Solidago patula</i>	Native	roundleaf goldenrod	Asteraceae	G5	36288	Jones and White 1981
<i>Solidago patula</i> var. <i>patula</i>	Native	roundleaf goldenrod	Asteraceae	G5T?	530468	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Solidago rugosa</i>	Native	wrinkleleaf goldenrod	Asteraceae	G5	36299	Jones and White 1981
<i>Solidago rugosa</i> ssp. <i>aspera</i>	Native	wrinkleleaf goldenrod	Asteraceae	G5T5	36301	Jones and White 1981
<i>Solidago ulmifolia</i>	Native	elmleaf goldenrod	Asteraceae	G5	36225	Jones and White 1981
<i>Sorghum halepense</i>	Exotic EPPC-1	Johnsongrass	Poaceae	G?	42111	Jones and White 1981
<i>Sphenopholis intermedia</i>	Native	slender wedgescale	Poaceae	G5	505324	Jones and White 1981
<i>Sphenopholis nitida</i>	Native	shiny wedgescale	Poaceae	G5	41281	Jones and White 1981
<i>Sphenopholis obtusata</i>	Native	prairie wedgescale	Poaceae	G5	41279	NatureServe 2002-2003
<i>Spigelia marilandica</i>	Native	woodland pinkroot	Loganiaceae	G5	505330	Jones and White 1981
<i>Spiraea prunifolia</i>	Exotic	bridalwreath spirea	Rosaceae	G5	25337	NatureServe 2002-2003
<i>Spiranthes cernua</i>	Native	nodding ladies'-tresses	Orchidaceae	G5	43444	Jones and White 1981
<i>Spiranthes tuberosa</i>	Native	little ladies'-tresses	Orchidaceae	G5	505346	Jones and White 1981
<i>Stachys tenuifolia</i>	Native	smooth hedgenettle	Lamiaceae	G5	32323	Jones and White 1981
<i>Staphylea trifolia</i>	Native	American bladdernut	Staphyleaceae	G5	28646	Jones and White 1981
<i>Stellaria media</i>	Exotic	common chickweed	Caryophyllaceae	G?	20169	Jones and White 1981
<i>Stellaria pubera</i>	Native	star chickweed	Caryophyllaceae	G5	20193	Jones and White 1981
<i>Stylosanthes biflora</i>	Native	sidebeak pencilflower	Fabaceae	G5	26973	Jones and White 1981
<i>Styrax grandifolius</i>	Native	bigleaf snowbell	Styracaceae	G5	505399	Jones and White 1981
<i>Symphoricarpos orbiculatus</i>	Native	coralberry	Caprifoliaceae	G5	35337	Jones and White 1981
<i>Symphotrichum concolor</i>	Native	eastern silver aster	Asteraceae	G4?	35548	Jones and White 1981
<i>Symphotrichum cordifolium</i>	Native	common blue wood aster	Asteraceae	G5	35645	Jones and White 1981
<i>Symphotrichum drummondii</i> var. <i>drummondii</i>	Native	Drummond's aster	Asteraceae	G5Q	35559	Jones and White 1981
<i>Symphotrichum dumosum</i> var. <i>dumosum</i>	Native	rice button aster	Asteraceae	G5	35511	Jones and White 1981
<i>Symphotrichum lanceolatum</i> ssp. <i>lanceolatum</i> var. <i>lanceolatum</i>	Native	white panicle aster	Asteraceae	G5T5	35514	Jones and White 1981
<i>Symphotrichum lateriflorum</i> var. <i>lateriflorum</i>	Native	calico aster	Asteraceae	G5T5	35601	Jones and White 1981
<i>Symphotrichum lateriflorum</i> var. <i>lateriflorum</i>	Native	calico aster	Asteraceae	G5T5	193168	Jones and White 1981
<i>Symphotrichum patens</i> var. <i>patens</i>	Native	late purple aster	Asteraceae	G5	35624	Jones and White 1981
<i>Symphotrichum patens</i> var. <i>patens</i>	Native	late purple aster	Asteraceae	G5T5	193235	Jones and White 1981
<i>Symphotrichum pilosum</i> var. <i>pilosum</i>	Native	hairy white oldfield aster	Asteraceae	G5	35630	Jones and White 1981
<i>Symphotrichum shortii</i>	Native	Short's aster	Asteraceae	G4G5	35652	Jones and White 1981
<i>Symphotrichum undulatum</i>	Native	waxleaf aster	Asteraceae	G5	35672	Jones and White 1981
<i>Taraxacum officinale</i>	Native	common dandelion	Asteraceae	G5	36213	Jones and White 1981
<i>Taxodium distichum</i>	Native	bald cypress	Taxodiaceae	G5	18041	Jones and White 1981
<i>Tephrosia virginiana</i>	Native	Virginia tephrosia	Fabaceae	G5	26998	Jones and White 1981
<i>Thalictrum thalictroides</i>	Native	rue anemone	Ranunculaceae	G5	508858	Jones and White 1981
<i>Thaspium barbinode</i>	Native	hairyjoint meadowparsnip	Apiaceae	G5	29888	Jones and White 1981
<i>Thaspium trifoliatum</i>	Native	purple meadowparsnip	Apiaceae	G5	29890	Jones and White 1981
<i>Thelypteris noveboracensis</i>	Native	New York fern	Thelypteridaceae	G5	17261	Jones and White 1981
<i>Tilia americana</i> var. <i>heterophylla</i>	Native	American basswood	Tiliaceae	G5T5	21539	Jones and White 1981
<i>Tipularia discolor</i>	Native	crippled crane-fly	Orchidaceae	G4G5	43703	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Toxicodendron radicans</i> ssp. <i>radicans</i>	Native	eastern poison ivy	Anacardiaceae	G5T5	28776	Jones and White 1981
<i>Trachospermum difforme</i>	Native	climbing dogbane	Apocynaceae	G4G5	30230	Jones and White 1981
<i>Tradescantia ohiensis</i>	Native	bluejacket	Commelinaceae	G5	39169	Jones and White 1981
<i>Tradescantia subaspera</i>	Native	zigzag spiderwort	Commelinaceae	G5	39176	Jones and White 1981
<i>Tradescantia virginiana</i>	Native	Virginia spiderwort	Commelinaceae	G5	39178	Jones and White 1981
<i>Trepocarpus aethusae</i>	Native	whitenymph	Apiaceae	G4G5	29899	Jones and White 1981
<i>Triadenum walteri</i>	Native	greater marsh St. Johnswort	Clusiaceae	G5	515023	Jones and White 1981
<i>Trichostema dichotomum</i>	Native	forked bluecurls	Lamiaceae	G5	32364	Jones and White 1981
<i>Tridens flavus</i>	Native	purpletop tridens	Poaceae	G5	42227	Jones and White 1981
<i>Trifolium campestre</i>	Exotic	field clover	Fabaceae	G?	522864	Jones and White 1981
<i>Trifolium pratense</i>	Exotic	red clover	Fabaceae	G?	26313	Jones and White 1981
<i>Trifolium repens</i>	Exotic	white clover	Fabaceae	G?	26206	Jones and White 1981
<i>Trillium recurvatum</i>	Native	bloody butcher	Liliaceae	G5	43059	Jones and White 1981
<i>Trillium stamineum</i>	Native	Blue Ridge wakerobin	Liliaceae	G3G5	43090	Jones and White 1981
<i>Triodanis perfoliata</i>	Native	clasping Venus' looking-glass	Campanulaceae	G5	34615	Jones and White 1981
<i>Triodanis perfoliata</i> var. <i>biflora</i>	Native	clasping Venus' looking-glass	Campanulaceae	G5T?	530742	NatureServe 2002-2003
<i>Triosteum angustifolium</i>	Native	yellowfruit horse-gentian	Caprifoliaceae	G5	35344	Jones and White 1981
<i>Tripsacum dactyloides</i>	Native	eastern gamagrass	Poaceae	G5	41287	NatureServe 2002-2003
<i>Ulmus alata</i>	Native	winged elm	Ulmaceae	G5	19051	Jones and White 1981
<i>Ulmus americana</i>	Native	American elm	Ulmaceae	G5?	19049	Jones and White 1981
<i>Ulmus rubra</i>	Native	slippery elm	Ulmaceae	G5	19050	Jones and White 1981
<i>Uvularia grandiflora</i>	Native	largeflower bellwort	Liliaceae	G5	43109	Jones and White 1981
<i>Uvularia sessilifolia</i>	Native	sessileleaf bellwort	Liliaceae	G5	43112	Jones and White 1981
<i>Vaccinium arboreum</i>	Native	farkleberry	Ericaceae	G5	23580	Jones and White 1981
<i>Vaccinium fuscum</i>	Native	black highbush blueberry	Ericaceae	G5	23572	Jones and White 1981
<i>Vaccinium stamineum</i>	Native	deerberry	Ericaceae	G5	23615	Jones and White 1981
<i>Valerianella locusta</i>	Exotic	Lewiston cornsalad	Valerianaceae	G5	35392	Jones and White 1981
<i>Valerianella radiata</i>	Native	beaked cornsalad	Valerianaceae	G5	35397	Jones and White 1981
<i>Verbascum blattaria</i>	Exotic	moth mullein	Scrophulariaceae	G?	33389	Jones and White 1981
<i>Verbascum thapsus</i>	Exotic EPPC-2	common mullein	Scrophulariaceae	G?	33394	Jones and White 1981
<i>Verbena scabra</i>	Native	sandpaper vervain	Verbenaceae	G5	32077	ANCS-Jones
<i>Verbena simplex</i>	Native	narrowleaf vervain	Verbenaceae	G5	32123	Jones and White 1981
<i>Verbena urticifolia</i>	Native	white vervain	Verbenaceae	G5	32127	Jones and White 1981
<i>Verbesina alternifolia</i>	Native	wingstem	Asteraceae	G5	38597	Jones and White 1981
<i>Verbesina virginica</i>	Native	white crownbeard	Asteraceae	G4G5	38613	Jones and White 1981
<i>Vernonia gigantea</i>	Native	giant ironweed	Asteraceae	G5	38634	Jones and White 1981
<i>Vernonia gigantea</i> ssp. <i>gigantea</i>	Native	giant ironweed	Asteraceae	G5T5	523205	ANCS-Jones
<i>Vernonia missurica</i>	Native	Missouri ironweed	Asteraceae	G4G5	38643	Jones and White 1981
<i>Veronica arvensis</i>	Exotic	corn speedwell	Scrophulariaceae	G?	33411	Jones and White 1981
<i>Viburnum acerifolium</i>	Native	mapleleaf viburnum	Caprifoliaceae	G5	35255	Jones and White 1981
<i>Viburnum dentatum</i>	Native	southern arrowwood	Caprifoliaceae	G5	35251	Jones and White 1981

Scientific Name	Origin	Common name	Family	Grank	TSN #	Data Source
<i>Viburnum nudum</i>	Native	possumhaw	Caprifoliaceae	G5	35252	Jones and White 1981
<i>Viburnum rufidulum</i>	Native	rusty blackhaw	Caprifoliaceae	G5	35274	Jones and White 1981
<i>Vicia sativa</i> ssp. <i>nigra</i>	Exotic EPPC-2	garden vetch	Fabaceae	G?T?	26330	Jones and White 1981
<i>Vicia sativa</i> ssp. <i>nigra</i>	Exotic EPPC-2	garden vetch	Fabaceae	G?T?	524809	NatureServe 2002-2003
<i>Vinca minor</i>	Exotic EPPC-2	common periwinkle	Apocynaceae	G?	30238	Jones and White 1981
<i>Viola affinis</i>	Native	sand violet	Violaceae	G5	22035	Jones and White 1981
<i>Viola bicolor</i>	Native	field pansy	Violaceae	G5	523327	Jones and White 1981
<i>Viola palmata</i>	Native	early blue violet	Violaceae	G5	22125	Jones and White 1981
<i>Viola pedata</i>	Native	birdfoot violet	Violaceae	G5	22130	Jones and White 1981
<i>Viola pubescens</i>	Native	downy yellow violet	Violaceae	G5	22144	NatureServe 2002-2003
<i>Viola sororia</i>	Native	common blue violet	Violaceae	G5	22169	Jones and White 1981
<i>Viola x bernardii</i>	Native	violet	Violaceae	HYB	22046	NatureServe 2002-2003
<i>Vitis aestivalis</i>	Native	summer grape	Vitaceae	G5	28607	Jones and White 1981
<i>Vitis cinerea</i>	Native	graybark grape	Vitaceae	G4G5	28615	Jones and White 1981
<i>Vitis palmata</i>	Native	catbird grape	Vitaceae	G4	28623	Jones and White 1981
<i>Vitis riparia</i>	Native	riverbank grape	Vitaceae	G5	28624	NatureServe 2002-2003
<i>Vitis rotundifolia</i>	Native	muscadine	Vitaceae	G5	28609	Jones and White 1981
<i>Wisteria sinensis</i>	Exotic EPPC-2	Chinese wisteria	Fabaceae	G?	27023	Jones and White 1981
<i>Woodsia obtusa</i>	Native	bluntlobe cliff fern	Dryopteridaceae	G5	17744	Jones and White 1981
<i>Woodwardia areolata</i>	Native	netted chainfern	Blechnaceae	G5	17749	Jones and White 1981
<i>Xanthium strumarium</i>	Native EPPC-2	rough cocklebur	Asteraceae	G5	38692	Jones and White 1981
<i>Yucca filamentosa</i>	Native	Adam's needle	Agavaceae	G5	43140	Jones and White 1981

Global ranks:

G# = Numeric rank

G1 = Critically imperiled globally

G2 = Imperiled globally

G3 = Rare or uncommon

G4 = Widespread, abundant, and apparently secure, but with cause for long-term concern

G5 = Demonstrably widespread, abundant and secure

G#G# = Numeric range rank

G#T# = Numeric rank for species, followed by numeric rank for variety or subspecies

G? = Unranked

GNR = Not ranked (usually because it is an exotic species)

GNRTNR = Not ranked (usually because it is an exotic species)

n/a = not ranked (usually because only genus was identified)

Qualifiers:

? = Inexact numeric rank

Q = Questionable taxonomy

Tennessee Exotic Pest Plant Council (EPPC) Ranks:
May 2001 (First Revision)

http://www.tneppc.org/invasive_plants

EPPC-1 = **Severe Threat:** Exotic plant species that possess characteristics of invasive species and spread easily into native plant communities and displace native vegetation.

EPPC-2 = **Significant Threat:** Exotic plant species that possess characteristics of invasive species but are not presently considered to spread as easily into native plant communities as those species listed as **Rank 1**.

EPPC-3 = **Lesser Threat:** Exotic plant species that spread in or near disturbed areas; and are not presently considered a threat to native plant communities.

EPPC-A = **Watch List A:** Exotic plants that naturalize and may become a problem in the future; includes species that are or could become widespread in Tennessee. At this time more information is needed, and there is no consensus about their status.

Table 3. List of vouchers collected in park, alphabetically by scientific name.

Scientific Name	Common name	Family	G rank	TSN #	Catalog #	Habitat
<i>Acalypha gracilens</i>	slender threeseed mercury	Euphorbiaceae	G5	28183	SHIL 45002	dry ridge southern red oak forest
<i>Agrimonia microcarpa</i>	smallfruit agrimony	Rosaceae	G5	25097	SHIL 45008	white oak - hickory - beech forest
<i>Agrimonia parviflora</i>	harvestlice	Rosaceae	G5	25098	SHIL 44980	dry oak forest and edge of bushhogged field
<i>Agrimonia rostellata</i>	beaked agrimony	Rosaceae	G5	25100	SHIL 44988	oak hickory forest
<i>Agrostis hyemalis</i>	winter bentgrass	Poaceae	G5	40394	SHIL 45032	open canopy southern red oak - mockernut hickory forest
<i>Angelica venenosa</i>	hairy angelica	Apiaceae	G5	29453	SHIL 45009	white oak - hickory - beech forest
<i>Arthraxon hispidus</i>	small carpgrass	Poaceae	G?	41445	SHIL 44989	open canopy water tupelo - red maple swamp
<i>Bartonia paniculata</i> ssp. <i>paniculata</i>	twining screwstem	Gentianaceae	G5T5	30021	SHIL 44976	saturated small stream floodplain forest
<i>Botrychium biternatum</i>	sparselobe grapefern	Ophioglossaceae	G5	17175	SHIL 44984	dry oak-sweetgum successional forest
<i>Bromus japonicus</i>	Japanese brome	Poaceae	G?	40479	SHIL 45035	mowed field
<i>Bromus pubescens</i>	hairy woodland brome	Poaceae	G5	40514	SHIL 45034	chinquapin oak - shagbark hickory forest
<i>Calycocarpum lyonii</i>	cupseed	Menispermaceae	G5	18862	SHIL 45026	Old field
<i>Calystegia sepium</i>	hedge false bindweed	Convolvulaceae	G5	30650	SHIL 45036	oak hickory forest
<i>Carex albicans</i> var. <i>albicans</i>	whitening sedge	Cyperaceae	G5T4T5	527064	SHIL 45037	oak hickory forest
<i>Carex albicans</i> var. <i>australis</i>	stellate sedge	Cyperaceae	G5T5	527065	SHIL 44995	willow oak - sweetgum forest
<i>Carex digitalis</i>	slender woodland sedge	Cyperaceae	G5	39576	SHIL 45001	upland pagoda oak - black oak forest
<i>Carex festucacea</i>	fescue sedge	Cyperaceae	G5	39391	SHIL 45038	saturated small stream floodplain forest
<i>Carex hirsutella</i>	fuzzy wuzzy sedge	Cyperaceae	G5	39636	SHIL 45039	oak hickory forest
<i>Carex leavenworthii</i>	Leavenworth's sedge	Cyperaceae	G5	39663	SHIL 44981	dry oak forest and edge of bushhogged field
<i>Carex striatula</i>	lined sedge	Cyperaceae	G4G5	39822	SHIL 45040	chinquapin oak - shagbark hickory forest
<i>Carex swanii</i>	Swan's sedge	Cyperaceae	G5	39437	SHIL 44982	dry oak forest and edge of bushhogged field
<i>Carex tribuloides</i>	blunt broom sedge	Cyperaceae	G5	39438	SHIL 44977	saturated small stream floodplain forest
<i>Carex willdenowii</i>	Willdenow's sedge	Cyperaceae	G5	39443	SHIL 45041	chinquapin oak - shagbark hickory forest
<i>Celtis occidentalis</i>	common hackberry	Ulmaceae	G5	19040	SHIL 45017	swamp forest dominated by American elm
<i>Ceratophyllum demersum</i>	coon's tail	Ceratophyllaceae	G5	18403	SHIL 44990	open canopy water tupelo - red maple swamp
<i>Crataegus calpodendron</i>	pear hawthorn	Rosaceae	G5	24547	SHIL 44978	saturated small stream floodplain forest
<i>Croton glandulosus</i> var. <i>septentrionalis</i>	vente conmigo	Euphorbiaceae	G5T?	527541	SHIL 44983	dry oak forest and edge of bushhogged field
<i>Cruciata pedemontana</i>	piedmont bedstraw	Rubiaceae	G?	502717	SHIL 45042	mowed field
<i>Cyperus retrorsus</i>	pine barren flatsedge	Cyperaceae	G5	39898	SHIL 44971	mowed field
<i>Deparia acrostichoides</i>	silver false spleenwort	Dryopteridaceae	G5	501994	SHIL 45043	mesic slope forest of beech, red oak, white ash, & tulip poplar
<i>Desmodium glabellum</i>	Dillenius' ticktrefoil	Fabaceae	G5	25799	SHIL 45018	swamp forest dominated by pagoda oak
<i>Desmodium marilandicum</i>	smooth small-leaf ticktrefoil	Fabaceae	G5	25809	SHIL 45044	open canopy southern red

Scientific Name	Common name	Family	G rank	TSN #	Catalog #	Habitat
						oak - mockernut hickory forest
Desmodium pauciflorum	fewflower ticktrefoil	Fabaceae	G5	25816	SHIL 45019	swamp forest dominated by pagoda oak
Desmodium perplexum	perplexed ticktrefoil	Fabaceae	G5	25785	SHIL 45021	green ash - sweetgum floodplain
Desmodium rotundifolium	prostrate ticktrefoil	Fabaceae	G5	502020	SHIL 45027	
Dichanthelium acuminatum	tapered rosette grass	Poaceae	G5	41646	SHIL 45045	wet upland flat dominated by southern red oak
Dichanthelium acuminatum var. acuminatum	tapered rosette grass	Poaceae	G5T5	527684	SHIL 44996	mowed field
Dichanthelium depauperatum	starved panicgrass	Poaceae	G5	41658	SHIL 45010	white oak - hickory - beech forest
Dichanthelium dichotomum var. dichotomum	cypress panicgrass	Poaceae	G5T5	527691	SHIL 45011	white oak - hickory - beech forest
Dichanthelium dichotomum var. dichotomum	cypress panicgrass	Poaceae	G5T5	527691	SHIL 44979	saturated small stream floodplain forest
Dichanthelium dicotomum var. ensifolium	cypress panicgrass	Poaceae	G5T4T5	527692	SHIL 44985	native grass dominated, mowed monument area
Dichanthelium laxiflorum	openflower rosette grass	Poaceae	G5	41661	SHIL 45012	white oak - hickory - beech forest
Dichanthelium ravenelii	Ravenel's rosette grass	Poaceae	G5	41669	SHIL 45003	dry ridge southern red oak forest
Dichanthelium sphaerocarpon	roundseed panicgrass	Poaceae	G5	41671	SHIL 44997	mowed field
Dichondra carolinensis	Carolina ponysfoot	Convolvulaceae	G5	30834	SHIL 44986	native grass dominated, mowed monument area
						mowed and unmowed field and southern red oak woods
Digitaria ischaemum	smooth crabgrass	Poaceae	G?	40637	SHIL 44999	native grass dominated, mowed monument area
Eremochloa ophiuroides	centipede grass	Poaceae	G?	41713	SHIL 44987	
Erigeron pulchellus	robin's plantain	Asteraceae	G5	35808	SHIL 45049	oak hickory forest
Euphorbia pubentissima	false flowering spurge	Euphorbiaceae	G5	28125	SHIL 45050	white oak - hickory - beech forest
Galactia volubilis	downy milkpea	Fabaceae	G5	26703	SHIL 45004	dry ridge southern red oak forest
Galium pilosum	hairy bedstraw	Rubiaceae	G5	34907	SHIL 44998	mowed field
Galium tinctorium	stiff marsh bedstraw	Rubiaceae	G5	34803	SHIL 44991	open canopy water tupelo - red maple swamp
Gentiana villosa	striped gentian	Gentianaceae	G4	29990	SHIL 45051	dry oak forest and edge of bushhogged field
Hedeoma hispida	rough false pennyroyal	Lamiaceae	G5	502890	SHIL 45052	Old field
Heteranthera reniformis	kidneyleaf mudplantain	Pontederiaceae	G5	42616	SHIL 44992	open canopy water tupelo - red maple swamp
Hypericum drummondii	nits and lice	Clusiaceae	G5	21436	SHIL 44972	mowed field
						white oak - hickory - beech forest
Ilex ambigua	Carolina holly	Aquifoliaceae	G5	27987	SHIL 45013	
Krigia caespitosa	weedy dwarf dandelion	Asteraceae	G5	565260	SHIL 45053	mowed field
Lespedeza procumbens	trailing lespedeza	Fabaceae	G5	25907	SHIL 45005	dry ridge southern red oak forest
Lespedeza violacea	violet lespedeza	Fabaceae	G5	25914	SHIL 45024	chinquapin oak - shagbark hickory forest
Lolium arundinaceum	tall fescue	Poaceae	G?	507979	SHIL 45054	mowed field
						mesic slope forest of beech, red oak, white ash, & tulip poplar
Luzula echinata	hedgehog woodrush	Juncaceae	G5	39342	SHIL 45055	
Luzula multiflora	common woodrush	Juncaceae	G5	39333	SHIL 45056	saturated small stream floodplain forest
Mecardonia acuminata	axilflower	Scrophulariaceae	G5	33645	SHIL 44973	mowed field
Monotropa uniflora	Indianpipe	Monotropaceae	G5	23778	SHIL 45028	Road in mesic bottomland forest

Scientific Name	Common name	Family	G rank	TSN #	Catalog #	Habitat
<i>Myriophyllum aquaticum</i>	parrot feather watermilfoil	Haloragaceae	G?	503904	SHIL 44993	open canopy water tupelo - red maple swamp
<i>Oenothera laciniata</i>	cutleaf evening-primrose	Onagraceae	G5	27371	SHIL 45057	mowed field
<i>Paspalum setaceum</i>	thin paspalum	Poaceae	G5	41042	SHIL 44974	mowed field
<i>Physalis pubescens</i>	husk tomato	Solanaceae	G5	30607	SHIL 45029	Old field
<i>Physalis virginiana</i>	Virginia groundcherry	Solanaceae	G5	30612	SHIL 45015	white oak - hickory - beech forest
<i>Plantago rugelii</i>	blackseed plantain	Plantaginaceae	G5	504439	SHIL 45031	Mowed dry-xeric roadside
<i>Polygala curtissii</i>	Curtiss' milkwort	Polygalaceae	G5	29332	SHIL 45000	mowed and unmowed field and southern red oak woods
<i>Polygala mariana</i>	Maryland milkwort	Polygalaceae	G5	29303	SHIL 45020	open canopy southern red oak forest
<i>Polygala verticillata</i>	whorled milkwort	Polygalaceae	G5	29320	SHIL 44975	mowed field
<i>Polygonum caespitosum</i> var. <i>longisetum</i>	Oriental Lady's-thumb	Polygonaceae	G?T?	566299	SHIL 45022	green ash - sweetgum floodplain
<i>Ranunculus bulbosus</i>	St. Anthony's turnip	Ranunculaceae	G?	18594	SHIL 45058	Lawn
<i>Sagittaria australis</i>	longbeak arrowhead	Alismataceae	G5	182452	SHIL 44994	open canopy water tupelo - red maple swamp
<i>Salvia urticifolia</i>	nettleleaf sage	Lamiaceae	G5	32750	SHIL 45059	mowed field
<i>Sphenopholis obtusata</i>	prairie wedgescale	Poaceae	G5	41279	SHIL 45060	wet upland flat dominated by southern red oak
<i>Spiraea prunifolia</i>	bridalwreath spirea	Rosaceae	G5	25337	SHIL 45006	dry ridge southern red oak forest
<i>Triodanis perfoliata</i> var. <i>biflora</i>	clasping Venus' looking-glass	Campanulaceae	G5T?	530742	SHIL 45061	mowed field
<i>Tripsacum dactyloides</i>	eastern gamagrass	Poaceae	G5	41287	SHIL 45030	Old field
<i>Vicia sativa</i> ssp. <i>nigra</i>	garden vetch	Fabaceae	G?T?	524809	SHIL 45062	mowed field
<i>Viola pubescens</i>	downy yellow violet	Violaceae	G5	22144	SHIL 45063	mesic slope forest of beech, red oak, white ash, & tulip poplar
<i>Viola x bernardii</i>	violet	Violaceae	HYB	22046	SHIL 45016	white oak - hickory - beech forest
<i>Vitis riparia</i>	riverbank grape	Vitaceae	G5	28624	SHIL 45007	dry ridge southern red oak forest

Global ranks:

G# = Numeric rank

G1 = Critically imperiled globally

G2 = Imperiled globally

G3 = Rare or uncommon

G4 = Widespread, abundant, and apparently secure, but with cause for long-term concern

G5 = Demonstrably widespread, abundant and secure

G#G# = Numeric range rank

G#T# = Numeric rank for species, followed by numeric rank for variety or subspecies

G? = Unranked

G#? = Inexact numeric rank

G#Q = Questionable taxonomy

HYB= Hybrid

Table 4. Tables of vascular plant diversity measures and species total estimates

	Diversity Measures			
	N	alpha	beta	Gamma
Gridded plots only	14	85.0	4.9	415
All plots	23	78.7	6.5	514
Total for park				740

alpha = average species richness per plot

beta = measure of the heterogeneity of the data (gamma/alpha)

gamma = total species for all plots or for park

	Estimate of # of species in park	If estimate is correct, % of species confirmed for park (based on 740 species confirmed)
First-order jackknife estimate (all plots)	714	104%
Second-order jackknife estimate (all plots)	831	89%
First-order jackknife estimate (gridded plots)	589	126%
Second-order jackknife estimate (gridded plots)	682	109%

Table 5. Associations and Ecological Systems identified at Shiloh National Military Park

Elcode	Ecological System	NVC Association (Scientific name)	NVC Association (Name #2)	NVC Association (Name #3)	Plots	Global Rank
2591	Early Successional *	<i>Pinus virginiana</i> Successional Forest	Virginia Pine Successional Forest	<i>Virginia Pine Successional Forest</i>	No plot	GNA
7124	Early Successional *	<i>Juniperus virginiana</i> var. <i>virginiana</i> - (<i>Quercus</i> spp.) Forest	Eastern Red-cedar - (Oak species) Forest	<i>Red-cedar Successional Forest</i>	8	GNA
7201	East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest (CES203.477)	<i>Fagus grandifolia</i> - <i>Liriodendron tulipifera</i> / <i>Euonymus americana</i> / <i>Athyrium filix-femina</i> ssp. <i>asplenioides</i> Forest	American Beech - Tuliptree / American Strawberry-bush / Southern Lady Fern Forest	<i>Southern Mesic Beech - Tuliptree Slopes</i>	18, 2C-4	G4
7881	East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest (CES203.477)	<i>Fagus grandifolia</i> - <i>Quercus alba</i> / <i>Cornus florida</i> Forest	American Beech - White Oak / Flowering Dogwood Forest	<i>Central Interior Beech – White Oak Forest</i>	14	G4
7217	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)	<i>Liquidambar styraciflua</i> - <i>Quercus</i> (<i>alba</i> , <i>falcata</i>) Forest	Sweetgum - (White Oak, Southern Red Oak) Forest	<i>Interior Mid- to Late-Successional Sweetgum – Oak Forest</i>	4	GNA
7221	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)	<i>Liriodendron tulipifera</i> - <i>Quercus</i> spp. Forest	Tuliptree - Oak species Forest	<i>Interior Mid- to Late-Successional Tuliptree – Hardwood Upland Forest (Acid Type)</i>	No plot	GNA
2067	East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest (CES203.477)	<i>Quercus alba</i> – <i>Quercus rubra</i> – <i>Carya</i> (<i>alba</i> , <i>ovata</i>) / <i>Cornus florida</i> Acid Forest	White Oak – Northern Red Oak – (Mockernut Hickory, Shagbark Hickory) / Flowering Dogwood Acid Forest	<i>White Oak – Red Oak Dry- Mesic Acid Forest</i>	4-32, 5-SE-1	G3
7244	East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland (CES203.482)	<i>Quercus falcata</i> - <i>Quercus alba</i> - <i>Carya alba</i> / <i>Oxydendrum arboreum</i> / <i>Vaccinium stamineum</i> Forest	Southern Red Oak - White Oak - Mockernut Hickory / Sourwood / Deerberry Forest	<i>Southern Red Oak – White Oak – Mixed Oak Forest</i>	3,6,23, 3-33, 6SH-22 6SH-21 3-31, 7NE-30 6SH-19 7sw-26, 3T-10, 3T-11	G4G5
7246	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)	<i>Quercus falcata</i> - <i>Quercus stellata</i> - <i>Carya alba</i> / <i>Vaccinium</i> spp. Coastal Plain Forest	Southern Red Oak - Post Oak - Mockernut Hickory / Blueberry species Coastal Plain Forest	<i>Dry Acid Eastern Coastal Plain Oak-Hickory Forest</i>	5,12,13, 17,21, 6SH-9, 7SW-8, 7SW-7, 7sw-20	G4?

Elcode	Ecological System	NVC Association (Scientific name)	NVC Association (Name #2)	NVC Association (Name #3)	Plots	Global Rank
4412	South-Central Interior / Upper Coastal Plain Wet Flatwoods (CES203.480)	Quercus falcata Flatwoods Forest	Southern Red Oak Flatwoods Forest	<i>Southern Red Oak Flatwoods Forest</i>	22	G2?
3903	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)	Quercus muehlenbergii - Carya spp. / Ostrya virginiana Upper East Gulf Coastal Plain Forest	Chinquapin Oak - Hickory species / Eastern Hop-hornbeam Upper East Gulf Coastal Plain Forest	<i>Upper East Gulf Coastal Plain Chinquapin Oak – Mixed Oak – Hickory Forest</i>	20	G3
3871	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)	Quercus pagoda / Ostrya virginiana Forest	Cherrybark Oak / Eastern Hop-hornbeam Forest	<i>Central Interior Upland Cherrybark Oak Forest</i>	11	G3?
5033	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)	Acer negundo Forest	Box-elder Forest	<i>Box-elder Floodplain Forest</i>	3-29	G4G5
7312	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Betula nigra - Platanus occidentalis / Alnus serrulata / Boehmeria cylindrica Forest	River Birch - Sycamore / Smooth Alder / False Nettle Forest	<i>River Birch Levee Forest</i>	2A-6	G4G5
4745	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Fagus grandifolia - Carya spp. / (Acer negundo, Magnolia macrophylla, Tilia americana var. heterophylla) Temporarily Flooded Forest	American Beech - Hickory species / (Box-elder, Bigleaf Magnolia, Appalachian Basswood) Temporarily Flooded Forest	<i>East Gulf Coastal Plain Beech Floodplain Forest</i>	2C-3	G3G4
2427	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)	Fraxinus pennsylvanica - Ulmus americana - Celtis laevigata / Ilex decidua Forest	Green Ash - American Elm - Sugarberry / Possum-haw Forest	<i>Southern Green Ash - Elm - Sugarberry Forest</i>	15,19	G4G5
7330	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Liquidambar styraciflua - (Liriodendron tulipifera) Temporarily Flooded Forest	Sweetgum - (Tuliptree) Temporarily Flooded Forest	<i>Successional Sweetgum Floodplain Forest</i>	2a-5, 5NW-31	GNA
7334	Ecological System peripheral, not attributed	Platanus occidentalis - Acer saccharinum - Juglans nigra - Ulmus rubra Forest	Sycamore - Silver Maple - Black Walnut - Slippery Elm Forest	<i>Sycamore – Silver Maple Calcareous Floodplain Forest</i>	2c-2	G4
7335	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Platanus occidentalis - Liquidambar styraciflua - (Ulmus americana) / (Crataegus viridis) Forest	Sycamore - Sweetgum - (American Elm) / (Green Hawthorn) Forest	<i>Gulf Coastal Plain Sycamore – Sweetgum Floodplain Forest</i>	1B-13	G3G4
7353	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)	Liquidambar styraciflua - Quercus pagoda - Carya spp. / Carpinus caroliniana / Carex spp. Forest	Sweetgum - Cherrybark Oak - Hickory species / Ironwood / Sedge species Forest	<i>Sweetgum Cherrybark Oak Floodplain Forest</i>	16, 1B-12, 1B-17, 1B-18	G3G4

Elcode	Ecological System	NVC Association (Scientific name)	NVC Association (Name #2)	NVC Association (Name #3)	Plots	Global Rank
2419	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)	Nyssa aquatica Forest	Water Tupelo Forest	<i>Water Tupelo Swamp Forest</i>	7	G4G5
2420	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)	Taxodium distichum / Lemna minor Forest	Bald-cypress / Lesser Duckweed Forest	<i>Bald-cypress Swamp</i>	No plot, present on Shiloh?	G4G5
4425	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Acer rubrum var. trilobum - Nyssa sylvatica / Rhododendron canescens - Viburnum nudum var. nudum / Woodwardia areolata Forest	Carolina Red Maple - Blackgum / Wild Azalea - Southern Wild Raisin / Netted Chainfern Forest	<i>Interior Forested Acid Seep</i>	2	G2G3
2191	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Cephalanthus occidentalis / Carex spp. - Lemna spp. Southern Shrubland	Buttonbush / Sedge species - Duckweed species Southern Shrubland	<i>Southern Buttonbush Pond</i>	1B-15	G4
4044	Early Successional *	Andropogon virginicus var. virginicus Herbaceous Vegetation	Common Broomsedge Herbaceous Vegetation	<i>Successional Broomsedge Vegetation</i>	1	GNA
4048	Exotic Species Dominated *	Lolium (arundinaceum, pratense) Herbaceous Vegetation	(Tall Fescue, Meadow Fescue) Herbaceous Vegetation	<i>Cultivated meadow</i>	No plot	GNA
4290	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)	Polygonum (hydropiperoides, punctatum) - Leersia (lenticularis, virginica) Herbaceous Vegetation	(Swamp Smartweed, Dotted Smartweed) - (Catchfly Cutgrass, White Cutgrass) Herbaceous Vegetation	<i>Smartweed – Cutgrass Beaver Pond</i>	1B-16	G4?

* Not a unit in NatureServe's Classification of Ecological Systems (NatureServe 2004)

Table 6. Plot photo names and photo descriptions for Shiloh National Military Park

Photo file name	Date taken	Description of photo
Dsc00001.jpg	8/19/02	Plot 14, north from conduit
Dsc00002.jpg	8/19/02	Plot 14, east from conduit
Dsc00003.jpg	8/19/02	Plot 14, south from conduit
Dsc00004.jpg	8/19/02	Plot 14, west from conduit
Dsc00005.jpg	8/19/02	Plot 14, transect @ 170 degrees
Dsc00006.jpg	8/19/02	Plot 13, north from conduit
Dsc00007.jpg	8/19/02	Plot 13, east from conduit
Dsc00008.jpg	8/19/02	Plot 13, south from conduit
Dsc00009.jpg	8/19/02	Plot 13 axis of plot @ 232 degrees from conduit
Dsc00010.jpg	8/19/02	Plot 13, into ravine
Dsc00011.jpg	8/19/02	Plot 13, into ravine
Dsc00012.jpg	8/19/02	Plot 12, north from conduit
Dsc00013.jpg	8/19/02	Plot 12, east from conduit
Dsc00014.jpg	8/19/02	Plot 12, south from conduit
Dsc00015.jpg	8/19/02	Plot 12, west from conduit
Dsc00018.jpg	8/19/02	Plot 5, east from conduit
Dsc00019.jpg	8/19/02	Plot 5, south from conduit
Dsc00020.jpg	8/19/02	Plot 5, west from conduit
Dsc00021.jpg	8/19/02	Plot 5, north from conduit
Dsc00022.jpg	8/19/02	Plot 5, transect @ 220 degrees from conduit
Dsc00023.jpg	8/20/02	Plot 3, north from conduit
Dsc00024.jpg	8/20/02	Plot 3, east from conduit
Dsc00025.jpg	8/20/02	Plot 3, south from conduit
Dsc00026.jpg	8/20/02	Plot 3, west from conduit
Dsc00027.jpg	8/20/02	Plot 3, transect @ 162 degrees from conduit
Dsc00028.jpg	8/20/02	Plot 2, north from conduit
Dsc00029.jpg	8/20/02	Plot 2, east from conduit
Dsc00030.jpg	8/20/02	Plot 2, south from conduit
Dsc00031.jpg	8/20/02	Plot 2, west from conduit
Dsc00032.jpg	8/20/02	Plot 2, transect @ 340 degrees
Dsc00033.jpg	8/20/02	Plot 2, <i>Nyssa sylvatica</i> tree bark
Dsc00034.jpg	8/20/02	Plot 2, box
Dsc00035.jpg	8/20/02	Plot 2, box
Dsc00036.jpg	8/20/02	Plot 2, box
Dsc00037.jpg	8/20/02	Plot 2, swale
Dsc00039.jpg	8/20/02	Plot 4, north from conduit
Dsc00040.jpg	8/20/02	Plot 4, east from conduit
Dsc00041.jpg	8/20/02	Plot 4, south from conduit @ 180 degrees (transect)
Dsc00042.jpg	8/20/02	Plot 4, west from conduit
Dsc00043.jpg	8/21/02	Plot 1, north from conduit

Table 6 (continued)

Photo file name	Date taken	Description of photo
Dsc00044.jpg	8/21/02	Plot 1, west from conduit
Dsc00045.jpg	8/21/02	Plot 1, south from conduit
Dsc00046.jpg	8/21/02	Plot 1, east from conduit
Dsc00047.jpg	8/21/02	Plot 7, north from conduit
Dsc00048.jpg	8/21/02	Plot 7, east from conduit
Dsc00049.jpg	8/21/02	Plot 7, south from conduit
Dsc00050.jpg	8/21/02	Plot 7, west from conduit
Dsc00051.jpg	8/21/02	Plot 7, close up of <i>Leersia</i>
Dsc00052.jpg	8/21/02	Plot 7, close up of <i>Leersia</i>
Dsc00053.jpg	8/21/02	
Dsc00054.jpg	8/21/02	
Dsc00055.jpg	8/21/02	Plot 11, north from conduit
Dsc00056.jpg	8/21/02	Plot 11, east from conduit
Dsc00057.jpg	8/21/02	Plot 11, south from conduit
Dsc00058.jpg	8/21/02	Plot 11, west from conduit
Dsc00059.jpg	8/21/02	Plot 11, transect @ 344 degrees
Dsc00060.jpg	8/21/02	Plot 15, north from conduit
Dsc00061.jpg	8/21/02	Plot 15, east from conduit
Dsc00062.jpg	8/21/02	Plot 15, south from conduit
Dsc00063.jpg	8/21/02	Plot 15, west from conduit
Dsc00064.jpg	8/21/02	Plot 15, transect @ 322 degrees from conduit
Dsc00065.jpg	8/21/02	Plot 16, north from conduit
Dsc00066.jpg	8/21/02	Plot 16, east from conduit
Dsc00067.jpg	8/21/02	Plot 16, south from conduit
Dsc00068.jpg	8/21/02	Plot 16, west from conduit
Dsc00069.jpg	8/22/02	Plot 17, north from conduit
Dsc00070.jpg	8/22/02	Plot 17, east from conduit
Dsc00071.jpg	8/22/02	Plot 17, south from conduit
Dsc00072.jpg	8/22/02	Plot 17, west from conduit
Dsc00073.jpg	8/22/02	Plot 17, 156 degrees from NW end (middle) of 20x50 plot
Dsc00074.jpg	8/22/02	Plot 8, north from conduit
Dsc00075.jpg	8/22/02	Plot 8, east from conduit
Dsc00076.jpg	8/22/02	Plot 8, south from conduit
Dsc00077.jpg	8/22/02	Plot 8, west from conduit
Dsc00078.jpg	8/22/02	Plot 8, transect @ 110 degrees from conduit
Dsc00079.jpg	8/22/02	Hornet's Nest, vicinity of plot 21
Dsc00080.jpg	8/22/02	Hornet's Nest, vicinity of plot 21
Dsc00081.jpg	8/22/02	Hornet's Nest, vicinity of plot 21
Dsc00082.jpg	8/22/02	Hornet's Nest, vicinity of plot 21
Dsc00083.jpg	8/22/02	Plot 18, north from conduit
Dsc00084.jpg	8/22/02	Plot 18, east from conduit
Dsc00085.jpg	8/22/02	Plot 18, south from conduit
Dsc00086.jpg	8/22/02	Plot 18, west from conduit
Dsc00087.jpg	8/22/02	Plot 18, 20x 50
Dsc00088.jpg	8/22/02	Plot 18, cap rock above transect
Dsc00089.jpg	8/22/02	Plot 19, north from conduit
Dsc00090.jpg	8/22/02	Plot 19, east from conduit

Photo file name	Date taken	Description of photo
Dsc00091.jpg	8/22/02	Plot 19, east from conduit (zoom of Milo Pyne)
Dsc00092.jpg	8/22/02	Plot 19, south from conduit (transect)
Dsc00093.jpg	8/22/02	Plot 19, west from conduit
Dsc00094.jpg	8/22/02	Plot 20, north from conduit
Dsc00095.jpg	8/22/02	Plot 20, east from conduit
Dsc00096.jpg	8/22/02	Plot 20, south from conduit
Dsc00097.jpg	8/22/02	Plot 20, west from conduit
Dsc00098.jpg	8/22/02	Plot 20, transect from 10m WSW of conduit @ 67 degrees
Dsc00099.jpg	8/23/02	Plot 9, north from conduit
Dsc00100.jpg	8/23/02	Plot 9, east from conduit
Dsc00101.jpg	8/23/02	Plot 9, south from conduit
Dsc00102.jpg	8/23/02	Plot 9, west from conduit
Dsc00103.jpg	8/23/02	Plot 9, from end of transect (4m S. of tag tree) @ 200 deg
Dsc00104.jpg	8/23/02	Plot 10, north from conduit
Dsc00105.jpg	8/23/02	Plot 10, east from conduit
Dsc00106.jpg	8/23/02	Plot 10, south from conduit
Dsc00107.jpg	8/23/02	Plot 10, west from conduit
Dsc00108.jpg	8/23/02	Plot 10, 270 degrees along 50m transect
Dsc00109.jpg	8/23/02	Plot 6, north from conduit
Dsc00110.jpg	8/23/02	Plot 6, east from conduit (transect)
Dsc00111.jpg	8/23/02	Plot 6, south from conduit
Dsc00112.jpg	8/23/02	Plot 6, west from conduit

Appendix I Plot sheets used for permanent plots (formatted to fit in this report)

Shiloh National Military Park

Location name _____ **Jurisdiction (State):** _____
 Location organization (NPS, USFS, etc.) _____
 Air photo # (if known) _____ Polygon code (if known) _____ Subplot? Y or N Subplot Parent Code _____
Provisional community name _____
 Classified community name _____
 Classifier _____ Date _____
 TUSNVC Elcode _____ EONum-Suffix _____
Sublocation (I.D.able feature on topo map) _____
USGS Quad name _____ **Quad code (if known)** _____
 Survey date: _____ Surveyors: _____

Directions to permanent marker and to the plot (use reverse of sheet if necessary):

Vegetation Plot length (m) _____ **Plot width (m)** _____ **Plot shape (rectangle?)** _____ **Permanent? Y or N**

Digital photos _____ **Regular camera** _____ **No pictures taken** _____ **Roll# or disc #** _____ **Frame #** _____

Plot representativeness (is the matrix the same?) _____

_____ **UTM** _____ **Lat/long** (If lat/long, then values are _____ **N** _____ **W**)

GPS Techniques/Equipment _____ **GPS file name** _____

Field UTM X _____ **m E** **Corrected UTM X** _____ **m E**

Field UTM Y _____ **m N** **Corrected UTM Y** _____ **m N**

Coordinate accuracy _____ **m / ft** **UTM Zone** _____ **GPS location with respect to permanent marker if not 0,0: x** _____ **y** _____

_____ **Estimated position marked on Topo. Sheet.** **Elevation** _____ **m / ft** **topo map?** **altimeter?**
 DEM? GPS?

ENVIRONMENTAL / SITE INFORMATION

Measured Slope _____

_____ Flat 0 ° 0 %
 _____ Gentle 0-5 ° 1-9%
 _____ Mod 6-14 ° 10-25%
 _____ Somewhat steep
 _____ 15-25 ° 26-49%
 _____ Steep 27-45 ° 50-100%
 _____ Very steep
 _____ 45-69 ° 101-275%
 _____ Abrupt
 _____ 70-100 ° 276-300%
 _____ overhanging/sheltered
 _____ >100 ° >300%

Measured Aspect _____ ° (N=0 °)

_____ Flat
 _____ Variable
 _____ N 338-22 °
 _____ NE 23-67 °
 _____ E 68-112 °
 _____ SE 113-157 °
 _____ S 158-202 °
 _____ SW 203-247 °
 _____ W 248-292 °
 _____ NW 293-337 °

Compass: magnetic ? / corrected?

Topographic Position

_____ Interfluvial (Ridge, summit or crest)
 _____ High Slope (upper slope, convex slope)
 _____ Midslope (middle slope)
 _____ Lowslope (lower slope, footslope)
 _____ Toeslope (alluvial toeslope)
 _____ Low level (terrace)
 _____ Channel bed

Cowardin System

_____ Upland _____ Palustrine
 _____ Estuarine _____ Lacustrine
 _____ Riverine

Landform (check most applicable)		
☐ Alluvial flat ☐ Alluvial terrace ☐ Bank ☐ Bar ☐ Bench ☐ Cliff ☐ Colluvial Slope ☐ Cove ☐ Debris slide ☐ Depression	☐ Draw ☐ Floodplain ☐ Gap ☐ Hanging valley ☐ Knob ☐ Midslope ☐ Mima mound ☐ Nose slope ☐ Ravine ☐ Ridge ☐ Ridgetop bedrock outcrop	☐ Saddle ☐ Scour ☐ Seep ☐ Toe slope ☐ Slope ☐ Streambed ☐ Slough ☐ Streamhead ☐ ☐

Geology		
<u>Igneous Rocks:</u> ☐ Granitic (Granite, Schyolite, Syenite, Trachyte) ☐ Dioritic (Diorite, Dacite, Andesite) ☐ Gabbroic (Gabbro, Basalt, Pyroxenite, Peridotite, Diabase, Traprock)	<u>Sedimentary Rocks:</u> ☐ Conglomerates and Breccias ☐ Sandstone & conglomerate ☐ Siltstone (calcareous or noncalc) ☐ Shale (calcareous or noncalc) ☐ Limestone and Dolomite ☐ Gypsum ☐ Marl	<u>Metamorphic Rocks:</u> ☐ Gneiss ☐ Schist ☐ Slate and Phyllite ☐ Marble ☐ Serpentine (Ultramafic) Y Other _____
Hydrologic Regime (check only for wetlands) ☐ Intermittently flooded ☐ Permanently flooded ☐ Semipermanently flooded ☐ Temporarily Flooded (e.g. floodplains) ☐ Seasonally Flooded (e.g. seasonal ponds) ☐ Saturated (e.g. bogs, perennial seeps) ☐ Unknown ☐ Not a wetland (Upland: XERIC : DRY - MESIC : MESIC) ☐ Permanently flooded – Tidal ☐ Tidally flooded ☐ Irregularly flooded ☐ Irregularly exposed	Salinity/Halinity Modifiers: Upland (N/A) Coastal Tidal: Saltwater- Tidal Coastal Tidal – Brackish Coastal Tidal – Freshwater Inland Saltwater Inland Brackish seeps) Unknown	Hydrology Evidence (Describe the hydrological factors that caused you to assign the type to the hydrologic regime that you chose.):

Environmental comments:
Landscape comments:

Soil Texture: ☐ Sand ☐ Sandy loam ☐ Loam ☐ Silt loam ☐ Clay loam ☐ Clay ☐ Peat ☐ Muck	Soil Taxon Description: Drainage: ☐ Rapidly drained ☐ Somewhat poorly drained ☐ Well drained ☐ Poorly drained ☐ Moderately well drained ☐ Very poorly drained Soil depth (optional): _____
--	---

QUANTITATIVE VEGETATION SAMPLE

STRATA	STRATA HEIGHT	COVER CLASS	DOMINANT/DIAGNOSTIC SPECIES	Height scale	Cover cls
Emergent T1				01 < .5m	5%
Tree canopy T2				02 .5-1m	10%
Under- story T3				03 1-2m	20%
Tall shrub S1				04 2-5m	30%
Short shrub S2				05 5-10m	40%
Herb- aceous				06 15-20m	50%
Non- vascular				07 15-20m	60%
Vine/liana				08 20-35m	70%
Other notable species (indicators of distinctive conditions, e.g. high pH soil, elevation, geographic region, other particularly abundant species):				09 35-50m	80%
				10 >50m	90%
					100%

T1: Emergent \ **T2:** Tree Canopy \ **T3** Subcanopy \ **S1** Tall Shrub (>1m; to 5m) \ **S2** Short Shrub (< 1m) \ **H** Herbaceous \ **N** Nonvascular \ **V** Vines (lianas) \ **E** Epiphytes

SPECIES COMP AND COVER CLASS BY STRATUM (enter cover values for each stratum AND for Total cover)

T 1	T 2	T 3	S 1	S 2	H	N	V	E	Total Cover	Name (7 letter code or full name)	Collected? Spec #?	Diagn ostic?	Cover cls
													1 trace
													2 0.1-1%
													3 1-2%
													4 2-5%
													5 5-10%
													6 10-25%
													7 25-50%
													8 50-75%
													9 75-95%
													10 >95%

[illegible]

1.	trace
2.	0.1-1%
3.	1-2%
4.	2-5%
5.	5-10%
6.	10-25%
7.	25-50%
8.	50-75%
9.	75-95%
10.	>95%

E Epiphytes

Appendix II Photos of selected plots of Shiloh National Military Park



Plot 14, transect @ 170 degrees
Shiloh National Military Park
Dsc00005.jpg



Plot 13, east from conduit
Shiloh National Military Park
Dsc00007.jpg



Plot 7, west from conduit
Shiloh National Military Park
Dsc00050.jpg



Plot 9, north from conduit
Shiloh National Military Park
Dsc00099.jpg

**Appendix III Descriptions of alliances and associations found at
Shiloh National Military Park**

**INTERNATIONAL ECOLOGICAL
CLASSIFICATION STANDARD:**

TERRESTRIAL ECOLOGICAL CLASSIFICATIONS

Shiloh National Military Park

13 December 2004

by

NatureServe

1101 Wilson Blvd., 15th floor
Arlington, VA 22209

This subset of the International Ecological Classification Standard covers vegetation association attributed to Shiloh National Military Park. This classification has been developed in consultation with many individuals and agencies and incorporates information from a variety of publications and other classifications. Comments and suggestions regarding the contents of this subset should be directed to Mary J. Russo, Central Ecology Data Manager, Durham, NC <mary_russo@natureserve.org> and Carl W. Nordman, Regional Ecologist, Durham, NC <carl_nordman@natureserve.org>.



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Citations:

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¹ NatureServe is an international organization including NatureServe regional offices, a NatureServe central office, U.S. State Natural Heritage Programs, and Conservation Data Centres (CDC) in Canada and Latin America and the Caribbean. Ecologists from the following organizations have contributed the development of the ecological systems classification:

United States

Central NatureServe Office, Arlington, VA; Eastern Regional Office, Boston, MA; Midwestern Regional Office, Minneapolis, MN; Southeastern Regional Office, Durham, NC; Western Regional Office, Boulder, CO; Alabama Natural Heritage Program, Montgomery AL; Alaska Natural Heritage Program, Anchorage, AK; Arizona Heritage Data Management Center, Phoenix AZ; Arkansas Natural Heritage Commission Little Rock, AR; Blue Ridge Parkway, Asheville, NC; California Natural Heritage Program, Sacramento, CA; Colorado Natural Heritage Program, Fort Collins, CO; Connecticut Natural Diversity Database, Hartford, CT; Delaware Natural Heritage Program, Smyrna, DE; District of Columbia Natural Heritage Program/National Capital Region Conservation Data Center, Washington DC; Florida Natural Areas Inventory, Tallahassee, FL; Georgia Natural Heritage Program, Social Circle, GA; Great Smoky Mountains National Park, Gatlinburg, TN; Gulf Islands National Seashore, Gulf Breeze, FL; Hawaii Natural Heritage Program, Honolulu, Hawaii; Idaho Conservation Data Center, Boise, ID; Illinois Natural Heritage Division/Illinois Natural Heritage Database Program, Springfield, IL; Indiana Natural Heritage Data Center, Indianapolis, IN; Iowa Natural Areas Inventory, Des Moines, IA; Kansas Natural Heritage Inventory, Lawrence, KS; Kentucky Natural Heritage Program, Frankfort, KY; Louisiana Natural Heritage Program, Baton Rouge, LA; Maine Natural Areas Program, Augusta, ME; Mammoth Cave National Park, Mammoth Cave, KY; Maryland Wildlife & Heritage Division, Annapolis, MD; Massachusetts Natural Heritage & Endangered Species Program, Westborough, MA; Michigan Natural Features Inventory, Lansing, MI; Minnesota Natural Heritage & Nongame Research and Minnesota County Biological Survey, St. Paul, MN; Mississippi Natural Heritage Program, Jackson, MI; Missouri Natural Heritage Database, Jefferson City, MO; Montana Natural Heritage Program, Helena, MT; National Forest in North Carolina, Asheville, NC; National Forests in Florida, Tallahassee, FL; National Park Service, Southeastern Regional Office, Atlanta, GA; Navajo Natural Heritage Program, Window Rock, AZ; Nebraska Natural Heritage Program, Lincoln, NE; Nevada Natural Heritage Program, Carson City, NV; New Hampshire Natural Heritage Inventory, Concord, NH; New Jersey Natural Heritage Program, Trenton, NJ; New Mexico Natural Heritage Program, Albuquerque, NM; New York Natural Heritage Program, Latham, NY; North Carolina Natural Heritage Program, Raleigh, NC; North Dakota Natural Heritage Inventory, Bismarck, ND; Ohio Natural Heritage Database, Columbus, OH; Oklahoma Natural Heritage Inventory, Norman, OK; Oregon Natural Heritage Program, Portland, OR; Pennsylvania Natural Diversity Inventory, PA; Rhode Island Natural Heritage Program, Providence, RI; South Carolina Heritage Trust, Columbia, SC; South Dakota Natural Heritage Data Base, Pierre, SD; Tennessee Division of Natural Heritage, Nashville, TN; Tennessee Valley Authority Heritage Program, Norris, TN; Texas Conservation Data Center, San Antonio, TX; Utah Natural Heritage Program, Salt Lake City, UT; Vermont Nongame & Natural Heritage Program, Waterbury, VT; Virginia Division of Natural Heritage, Richmond, VA; Washington Natural Heritage Program, Olympia, WA; West Virginia Natural Heritage Program, Elkins, WV; Wisconsin Natural Heritage Program, Madison, WI; Wyoming Natural Diversity Database, Laramie, WY

Canada

Alberta Natural Heritage Information Centre, Edmonton, AB, Canada; Atlantic Canada Conservation Data Centre, Sackville, New Brunswick, Canada; British Columbia Conservation Data Centre, Victoria, BC, Canada; Manitoba Conservation Data Centre, Winnipeg, MB, Canada; Ontario Natural Heritage Information Centre, Peterborough, ON, Canada; Quebec Conservation Data Centre, Quebec, QC, Canada; Saskatchewan Conservation Data Centre, Regina, SK, Canada; Yukon Conservation Data Centre, Yukon, Canada

Latin American and Caribbean

Centro de Datos para la Conservacion de Bolivia, La Paz, Bolivia; Centro de Datos para la Conservacion de Colombia, Cali, Valle, Columbia; Centro de Datos para la Conservacion de Ecuador, Quito, Ecuador; Centro de Datos para la Conservacion de Guatemala, Ciudad de Guatemala, Guatemala; Centro de Datos para la Conservacion de Panama, Quarry Heights, Panama; Centro de Datos para la Conservacion de Paraguay, San Lorenzo, Paraguay; Centro de Datos para la Conservacion de Peru, Lima, Peru; Centro de Datos para la Conservacion de Sonora, Hermosillo, Sonora, Mexico; Netherlands Antilles Natural Heritage Program, Curacao, Netherlands Antilles; Puerto Rico-Departamento De Recursos Naturales Y Ambientales, Puerto Rico; Virgin Islands Conservation Data Center, St. Thomas, Virgin Islands.

NatureServe also has partnered with many International and United States Federal and State organizations, which have also contributed significantly to the development of the International Classification. Partners include the following The Nature Conservancy; Provincial Forest Ecosystem Classification Groups in Canada; Canadian Forest Service; Parks Canada; United States Forest Service; National GAP Analysis Program; United States National Park Service; United States Fish and Wildlife Service; United States Geological Survey; United States Department of Defense; Ecological Society of America; Environmental Protection Agency; Natural Resource Conservation Services; United States Department of Energy; and the Tennessee Valley Authority. Many individual state organizations and people from academic institutions have also contributed to the development of this classification.

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Virginia Pine Successional Forest

Pinus virginiana Successional Forest

Virginia Pine Successional Forest

Identifier: CEGL002591

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Evergreen forest (I.A.)
Physiognomic Group	Temperate or subpolar needle-leaved evergreen forest (I.A.8.)
Physiognomic Subgroup	Natural/Semi-natural temperate or subpolar needle-leaved evergreen forest (I.A.8.N.)
Formation	Rounded-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.b.)
Alliance	<i>Pinus virginiana</i> Forest Alliance (A.131)
Alliance (English name)	Virginia Pine Forest Alliance
Association	<i>Pinus virginiana</i> Successional Forest
Association (English name)	Virginia Pine Successional Forest
Association (Common name)	Virginia Pine Successional Forest

Ecological System(s):	Central Appalachian Dry Oak-Pine Forest (CES202.591)
	Northeastern Interior Dry-Mesic Oak Forest (CES202.592)
	Southern Appalachian Low Mountain Pine Forest (CES202.332)
	Semi-natural Forest (CES203.285)

ELEMENT CONCEPT

Global Summary: This community occurs in areas where canopy removal has created dry, open conditions and bare mineral soil, allowing for the establishment of *Pinus virginiana*. These habitats include old fields, old pastures, clearcuts, and burned or eroded areas. This forest typically has a very dense canopy of *Pinus virginiana* and little understory vegetation. The dense canopy may also include admixtures of other *Pinus* species (e.g., *Pinus taeda*, *Pinus echinata*) or other early successional deciduous trees (e.g., *Acer rubrum*, *Liquidambar styraciflua*, *Liriodendron tulipifera*). Associated woody and herbaceous species vary with geography but are typically ruderal or exotic species. Shrub and herb layers are frequently very sparse. Stands are short-lived, generally less than 75 years.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment:

Global Environment: This community occurs in areas where canopy removal has created open conditions and bare mineral soil, allowing for the establishment of *Pinus virginiana*. These conditions can include old fields, old pastures, clearcuts, and burned or eroded areas. In the Ridge and Valley of Tennessee, northeastern Monroe County, early successional forests with *Pinus virginiana* dominance were found on low slopes in areas that were cleared for agriculture prior to the 1970s, when Tellico Lake was created (Andreu and Tukman 1995). In the Central Appalachians, this vegetation occurs where soft shales have been farmed (primarily in valleys), resulting in stands with nothing but successional species in the understory. Soils underlying these communities are of two general types, i.e., those derived in residuum from calcareous shale and calcareous sandstone of the Middle Ordovician and those of some other origin. Series of the former type include Dandridge (Lithic Ruptic-Alfic Eutrochrepts), Tellico (Typic Rhododults), and Steekee (Ruptic-Ultic Dystrochrepts). Other soil series that this forest type may occur on include Litz, Dewey, Alcoa, Bland, Etowah, Lobdell and Neubert. All of these soils are well-drained and range in pH from moderate acid to very strongly acidic.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation:

Global Vegetation: This forest typically has a very dense canopy of *Pinus virginiana* and little understory vegetation. *Pinus taeda* or *Pinus echinata* may co-occur with *Pinus virginiana* in the canopy. The canopy can also have significant admixtures of early successional deciduous trees (e.g., *Acer rubrum*, *Liquidambar styraciflua*, *Liriodendron tulipifera*). Associated woody and herbaceous species vary with geography but are typically ruderal or exotic species. Shrub and herb strata are absent to sparse in coverage. In eastern Tennessee the subcanopy may contain *Acer saccharum* and *Cornus florida*; other associated species may include *Cercis canadensis*, *Parthenocissus quinquefolia*, *Lonicera japonica*, and *Microstegium vimineum* (Andreu and Tukman 1995). In the Central Appalachians, associates include *Pinus taeda*, *Pinus echinata*, and *Pinus rigida*. The dense ericaceous shrub stratum contains *Vaccinium* spp., *Gaylussacia* spp., *Kalmia latifolia*, and *Rhododendron* spp.

MOST ABUNDANT SPECIES

Shiloh National Military Park

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Printed from Biotics 13 Dec 2004 Subset: Shiloh National Military Park
on:

Stratum

Lifeform

Species

Global

Stratum

Lifeform

Species

Tree canopy

Needle-leaved tree

Pinus virginiana

Tree subcanopy

Needle-leaved tree

Juniperus virginiana

Tree subcanopy

Broad-leaved deciduous tree

Acer rubrum, *Cornus florida*, *Nyssa sylvatica*, *Oxydendrum arboreum*

Tall shrub/sapling

Broad-leaved deciduous tree

Cornus florida, *Nyssa sylvatica*, *Oxydendrum arboreum*

Tall shrub/sapling

Broad-leaved evergreen tree

Vaccinium arboreum

Tall shrub/sapling

Broad-leaved deciduous shrub

Vaccinium stamineum

Short shrub/sapling

Broad-leaved deciduous tree

Cercis canadensis, *Cornus florida*, *Oxydendrum arboreum*, *Quercus alba*, *Sassafras albidum*

Herb (field)

Vine/Liana

Lonicera japonica, *Smilax glauca*, *Toxicodendron radicans*

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: GNA (ruderal) (13-Jun-2000). This forest represents early successional vegetation and is thus not of conservation concern.

CLASSIFICATION

Status: Standard

Classification Confidence: 1 - Strong

Shiloh National Military Park Comments:

Global Comments: Early successional *Pinus virginiana* vegetation occurring over calcareous substrates is classed in ~*Pinus virginiana* - *Juniperus virginiana* var. *virginiana* - *Ulmus alata* Forest (CEGL007121)\$\$ and has species indicative of calcareous substrates.

Global Similar Associations:

- *Pinus echinata* Early-Successional Forest (CEGL006327)—occurs in similar environments but is dominated (>50% of canopy) by *Pinus echinata* instead of *Pinus virginiana*.
- *Pinus taeda* - *Liquidambar styraciflua* Semi-natural Forest (CEGL008462)—is commonly found in the same area as CEGL002591 in the Piedmont. CEGL008462 contains at least 50% *Pinus taeda* in the canopy, whereas CEGL002591 is mostly *Pinus virginiana*.
- *Pinus taeda* / *Liquidambar styraciflua* - *Acer rubrum* var. *rubrum* / *Vaccinium stamineum* Forest (CEGL006011)—occurs in similar environments with similar disturbance histories but is dominated by (>50% of canopy) *Pinus taeda* instead of *Pinus virginiana*.
- *Pinus virginiana* - *Juniperus virginiana* var. *virginiana* - *Ulmus alata* Forest (CEGL007121)—on more calcareous or circumneutral substrates.
- *Pinus virginiana* - *Pinus (rigida, echinata)* - (*Quercus prinus*) / *Vaccinium pallidum* Forest (CEGL007119)—can have a very similar canopy in the Piedmont and Blue Ridge ecoregions, but CEGL007119 is generally created and maintained by fire and/or logging but not heavy plowing and/or erosion. CEGL002591 generally has signs of heavy agricultural use such as sparse herbaceous or shrub layers, large percentage of invasive exotics such as *Lonicera japonica* in the herbaceous layer, old plowlines, human debris, and extremely even-aged canopy, whereas CEGL007119 generally has a more intact herbaceous/shrub layer (especially *Vaccinium pallidum*) and less signs of severe human disturbance.

Global Related Concepts:

- IA7c. Xeric Virginia Pine Ridge Forest (Allard 1990) B
- Unclassified Old-Field Successional Forest (Fleming and Moorhead 2000) ?
- Virginia Pine - Oak: 78 (Eyre 1980) B
- Virginia Pine, RV (Pyne 1994) B
- Virginia Pine: 79 (Eyre 1980) B Xeric Pine Forest (Ambrose 1990a) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range:

Global Range: This successional community is possible in the Piedmont from Pennsylvania south to Alabama, and ranges west into the Appalachians, Ridge and Valley, the Cumberland Plateau, and in scattered locales of the Interior Low Plateau.

Nations: US

States/Provinces: AL, GA, IN, KY, MD, NC, NJ, PA, SC, TN, VA, WV

USFS Ecoregions: 221D:CC, 221Ha:CCC, 221Hb:CCC, 221Hc:CCC, 221He:CCC, 221J:CC, 222Cg:CCC, 222Ej:CCC, 222En:CCC, 222Eo:CCC, 231Ae:CCC, 231Cd:CCC, M221Aa:CCC, M221Ab:CCC, M221Ac:CCC, M221Ca:CCP, M221Cb:CCP, M221Cc:CCP, M221Cd:CCC, M221Ce:CCP, M221Da:CCC, M221Db:CCC, M221Dc:CCC, M221Dd:CCC

Federal Lands: NPS (Blue Ridge Parkway?, Cumberland Gap, Great Smoky Mountains, Kings Mountain, Little River Canyon?, Mammoth Cave, Shiloh); TVA (Tellico); USFS (Bankhead, Chattahoochee, Cherokee, Daniel Boone, George Washington, Jefferson, Sumter, Uwharrie?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: No plot.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Andreu and M. Tukman, mod. K.D. Patterson

References: Allard 1990, Ambrose 1990a, Andreu and Tukman 1995, Eyre 1980, Fike 1999, Fleming and Coulling 2001, Fleming and Moorhead 2000, Nelson 1986, Patterson et al. 1999, Pyne 1994, Southeastern Ecology Working Group n.d.

Red-cedar Successional Forest

Juniperus virginiana var. *virginiana* - (*Quercus* spp.) Forest

Eastern Red-cedar - (Oak species) Forest

Identifier: CEG007124

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Evergreen forest (I.A.)
Physiognomic Group	Temperate or subpolar needle-leaved evergreen forest (I.A.8.)
Physiognomic Subgroup	Natural/Semi-natural temperate or subpolar needle-leaved evergreen forest (I.A.8.N.)
Formation	Conical-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.c.)
Alliance	<i>Juniperus virginiana</i> Forest Alliance (A.137)
Alliance (English name)	Eastern Red-cedar Forest Alliance
Association	<i>Juniperus virginiana</i> var. <i>virginiana</i> - (<i>Quercus</i> spp.) Forest
Association (English name)	Eastern Red-cedar - (Oak species) Forest
Association (Common name)	Red-cedar Successional Forest

Ecological System(s): East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland (CES203.482)
Semi-natural Forest (CES203.285)

ELEMENT CONCEPT

Global Summary: This is a successional community dominated by a nearly monospecific *Juniperus virginiana* var. *virginiana* canopy. Species composition and cover are variable depending upon geographic location and disturbance history. Some examples are densely forested (75-100% total cover) with *Juniperus virginiana* var. *virginiana* and sparse subcanopy, shrub and herb strata. Other examples, especially those that are somewhat more open-canopied, are more species-rich and other tree species may enter the canopy in low levels of abundance. Species that may occur in the canopy include *Carya alba*, *Carya ovata*, *Cercis canadensis*, and *Pinus virginiana*. Various oaks (including *Quercus coccinea*, *Quercus falcata*, and *Quercus phellos*) may also be present, seeding in from adjacent oak-hardwood forests. The midstory is typically sparse, with canopy species as well as *Cornus florida*, *Ilex opaca*, *Liquidambar styraciflua*, and *Prunus serotina* var. *serotina*. In addition, *Frangula caroliniana* occurs in various strata. Herbs are patchy and typically include *Asplenium platyneuron*, *Chasmanthium laxum*, *Eupatorium* spp., *Polystichum acrostichoides*, and *Carex* spp.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This association was found in an upland flat area which had water flowing across it after heavy rain (5 inches in 2 days). Within the largest upland flat at Shiloh NMP. Soil is moderately well-drained silt loam.

Global Environment: This community occurs in a variety of disturbed areas such as eroded soils on abandoned agricultural land (Andreu and Tukman 1995). In Kentucky this vegetation occurs throughout the state (Bluegrass region, Highland Rim, East Gulf Coastal Plain) on calcareous substrates or on abandoned agricultural land; acreage of this type has increased from presettlement. This

type also includes the *Juniperus virginiana* var. *virginiana* woodland from Tellico Lake (Andreu and Tukman 1995) which occurs on drier sites with shallow, rocky soils.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: The canopy is open over a dense subcanopy. *Quercus phellos*, *Pinus taeda*, *Prunus serotina*, and a small amount of *Liquidambar styraciflua* occur over the dense subcanopy of *Juniperus virginiana* var. *virginiana*, with *Liquidambar styraciflua*, *Ulmus alata*, *Prunus serotina*, *Nyssa sylvatica*, and in small amounts *Pinus taeda*, *Acer rubrum*, and *Fraxinus pennsylvanica*. *Liquidambar styraciflua*, *Acer rubrum*, *Carya alba*, *Fraxinus pennsylvanica*, and *Nyssa sylvatica* are the dominant shrubs. Other shrubs are *Quercus phellos*, *Vaccinium arboreum*, *Parthenocissus quinquefolia*, *Smilax rotundifolia*, *Vitis rotundifolia*, *Ligustrum sinense*, *Toxicodendron radicans*, *Lonicera japonica*, *Hypericum hypericoides*, *Rubus argutus*, *Smilax bona-nox*, *Vaccinium stamineum*, *Juglans nigra*, and *Diospyros virginiana*. *Carex albicans* var. *australis* is the dominant herbaceous plant. Other herbs are *Chasmanthium sessiliflorum*, *Chasmanthium laxum*, *Sanicula canadensis*, *Microstegium vimineum*, *Elephantopus tomentosus*, *Erechtites hieraciifolia*, *Panicum anceps*, *Asplenium platyneuron*, and *Salvia lyrata*.

Global Vegetation: Stands are dominated by *Juniperus virginiana* var. *virginiana*. A host of other woody species may also be present, some of which may occur in the canopy at low levels of abundance. These species include *Carya alba*, *Carya ovata*, *Cercis canadensis*, *Pinus virginiana*, *Quercus coccinea*, *Quercus falcata*, and *Quercus phellos*. The midstory is typically sparse, with canopy species as well as *Cornus florida*, *Ilex opaca*, *Liquidambar styraciflua*, and *Prunus serotina* var. *serotina* (NatureServe Ecology unpubl. data). In addition, *Frangula caroliniana* occurs in various strata. Herbs are patchy and typically include *Asplenium platyneuron*, *Chasmanthium laxum*, *Eupatorium* spp., *Polystichum acrostichoides*, and *Carex* spp. The exotics *Lonicera japonica* and *Microstegium vimineum* may also be present.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree subcanopy	Needle-leaved tree	<i>Juniperus virginiana</i> var. <i>virginiana</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: GNA (ruderal) (3-Sep-2002). This forest represents early-successional, modified, or silviculturally managed vegetation and is thus not of conservation concern and does not receive a conservation status rank.

CLASSIFICATION

Status: Standard

Classification Confidence: 3 - Weak

Shiloh National Military Park Comments:

Global Comments: Originally described from Tellico Pilot Project (Ridge and Valley of Tennessee, northeastern Monroe County) based on 10 stands sampled by Andreu and Tukman (1995). This community is very closely related to *Juniperus virginiana* Woodland and to mixed juniper-oak forest types but is distinguished by the closed-canopy evergreen dominance of *Juniperus virginiana*. *Juniperus virginiana* woodlands may be equivalent to this type.

Global Similar Associations:

- *Juniperus virginiana* Midwest Forest (CEGL002593)
- *Juniperus virginiana* var. *virginiana* / *Rhus copallinum* / *Schizachyrium scoparium* Woodland (CEGL007704)

Global Related Concepts:

- Eastern Redcedar: 46 (Eyre 1980) B
- IB5a. Eastern Red Cedar Woodland (Allard 1990) ?
- Red cedar, RV (Pyne 1994) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is found within the largest upland flat at Shiloh NMP.

Global Range: This community is widely distributed in the southeastern and central United States.

Nations: US

States/Provinces: AL, AR, GA, KY, LA, MS, NC, OK, SC, TN, VA?, WV?

USFS Ecoregions: 221:C, 222Ak:CCP, 222Cg:CCC, 222Eb:CCC, 222Ed:CCC, 222Ej:CCC, 222En:CCC, 222Eo:CCC, 222Lc:CCP, 222Me:CCP, 231:C, 251Cc:CC?, 251Ch:CCP, M221Be:CCC

Federal Lands: DOD (Arnold, Camp Gruber, J. Percy Priest); NPS (Blue Ridge Parkway?, Chickamauga-Chattanooga, Chickasaw NRA, Cumberland Gap, Fort Donelson, Kings Mountain, Mammoth Cave, Natchez Trace, Russell Cave, Shiloh, Stones River); TVA (Columbia, Tellico); USFS (Bankhead, Cherokee?, Daniel Boone, Ouachita)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.8.

Local Description Authors: C.W. Nordman

Global Description Authors: K.D. Patterson

References: Allard 1990, Andreu and Tukman 1995, Evans 1991, Eyre 1980, Gallyoun et al. 1996, Hoagland 2000, NatureServe Ecology - Southeastern U.S. unpubl. data, Pyne 1994, Rice 1960, Rosson 1995, Southeastern Ecology Working Group n.d.

Southern Mesic Beech - Tuliptree Slopes

Fagus grandifolia - *Liriodendron tulipifera* / *Euonymus americana* / *Athyrium filix-femina* ssp.

asplenioides Forest

American Beech - Tuliptree / American Strawberry-bush / Southern Lady Fern Forest

Identifier: CEG007201

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Fagus grandifolia</i> - <i>Acer saccharum</i> - (<i>Liriodendron tulipifera</i>) Forest Alliance (A.227)
Alliance (English name)	American Beech - Sugar Maple - (Tuliptree) Forest Alliance
Association	<i>Fagus grandifolia</i> - <i>Liriodendron tulipifera</i> / <i>Euonymus americana</i> / <i>Athyrium filix-femina</i> ssp. <i>asplenioides</i> Forest
Association (English name)	American Beech - Tuliptree / American Strawberry-bush / Southern Lady Fern Forest
Association (Common name)	Southern Mesic Beech - Tuliptree Slopes

Ecological System(s): East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest (CES203.477)
South-Central Interior Mesophytic Forest (CES202.887)
Southern Piedmont Mesic Forest (CES202.342)

ELEMENT CONCEPT

Global Summary: This association includes mesic hardwood forests dominated by *Fagus grandifolia* and *Liriodendron tulipifera* generally lacking an oak component. This forest occurs on slopes in the 'lower Piedmont' of Alabama, and related habitats of adjacent and ecologically related provinces (Ridge and Valley, Cumberland Plateau, Interior Low Plateau, and Upper East Gulf Coastal Plain). Other important canopy/subcanopy species include *Acer rubrum*, *Quercus rubra*, *Carpinus caroliniana*, *Magnolia virginiana*, *Nyssa sylvatica*, *Diospyros virginiana*, *Oxydendrum arboreum*, and *Cornus florida*. Other shrubs and woody vines include *Decumaria barbara*, *Rhododendron canescens*, *Toxicodendron radicans*, *Vitis rotundifolia*, *Smilax glauca*, and the exotic *Lonicera japonica*. Important herbs include *Polystichum acrostichoides*, *Woodwardia areolata*, *Osmunda cinnamomea*, *Mitchella repens*, and *Hexastylis arifolia*. This type is described from narrow, moderately well-drained floodplains and sheltered coves which have had little or no severe recent disturbance.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This type occurs on a mesic steep north-facing slope on silt loam soil. In some areas small (river) rocks are exposed. It includes some small seepage areas.

Global Environment: This mesic forest occurs on slopes in association with small streams, on narrow, well-drained floodplains and sheltered coves. This type is described from "narrow, moderately well-drained floodplains and sheltered coves which have had little or no severe recent disturbance" (Golden 1979). At Shiloh NMP it occurs on a mesic steep north-facing slope on silt loam soil with some small (river) rocks exposed and includes some small seepage areas.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh National Military Park the canopy of this association is dominated by *Fagus grandifolia*, *Liriodendron tulipifera*, and *Fraxinus americana*. *Quercus rubra* and *Juglans nigra* are also common in the canopy. In the subcanopy, *Fagus grandifolia* and *Liriodendron tulipifera* are dominant, with *Carya glabra*, *Tilia americana* var. *heterophylla*, *Halesia tetraptera* var. *tetraptera*, *Ostrya virginiana*, *Oxydendrum arboreum*, *Prunus serotina*, *Carya cordiformis*, and *Carya alba*. The dominant shrubs are *Asimina triloba* and *Lindera benzoin*. Other shrubs (tall and short) are *Ulmus alata*, *Halesia tetraptera* var. *tetraptera*, *Ostrya virginiana*, *Oxydendrum arboreum*, *Toxicodendron radicans*, *Smilax rotundifolia*, *Hydrangea arborescens*, *Vitis rotundifolia*, *Carpinus caroliniana*, *Lonicera japonica*, *Conopholis americana*, *Euonymus americana*, and *Celtis laevigata*. *Polystichum acrostichoides* is the most common herbaceous plant. Other herbs are *Polygonum virginianum*, *Phegopteris hexagonoptera*, *Asarum canadense*, *Athyrium filix-femina* ssp. *asplenioides*, *Pilea pumila*, *Scutellaria ovata*, *Phryma leptostachya*, *Circaea lutetiana* ssp. *canadensis*, *Passiflora lutea*, *Epifagus virginiana*, *Sedum ternatum*, *Brachyelytrum erectum* (= var. *erectum*), *Sanicula canadensis*, *Rubus argutus*, *Phytolacca americana*, *Mitchella repens*, *Stellaria pubera*, *Maianthemum racemosum*, *Arisaema triphyllum*, *Microstegium vimineum*, and *Prenanthes altissima*.

Global Vegetation: These mesic slope forests are dominated by *Fagus grandifolia* and *Liriodendron tulipifera*. According to Golden (1979), other important canopy/subcanopy species include *Acer rubrum*, *Quercus rubra*, *Carpinus caroliniana*, *Magnolia virginiana*, *Nyssa sylvatica*, *Diospyros virginiana*, *Oxydendrum arboreum*, and *Cornus florida*. Other shrubs and woody vines include *Decumaria barbara*, *Rhododendron canescens*, *Toxicodendron radicans*, *Vitis rotundifolia*, *Smilax glauca*, and the exotic *Lonicera japonica*. Important herbs include *Polystichum acrostichoides*, *Woodwardia areolata*, *Osmunda cinnamomea*, *Mitchella repens*, and *Hexastylis arifolia*.

At Shiloh National Military Park the canopy of this association is dominated by *Fagus grandifolia*, *Liriodendron tulipifera*, and *Fraxinus americana*. *Quercus rubra* and *Juglans nigra* are also common in the canopy. In the subcanopy, *Fagus grandifolia* and *Liriodendron tulipifera* are dominant, with *Carya glabra*, *Tilia americana* var. *heterophylla*, *Halesia tetraptera* var. *tetraptera*, *Ostrya virginiana*, *Oxydendrum arboreum*, *Prunus serotina*, *Carya cordiformis*, and *Carya alba*. The dominant shrubs are *Asimina triloba* and *Lindera benzoin*. Other shrubs (tall and short) are *Ulmus alata*, *Halesia tetraptera* var. *tetraptera*, *Ostrya virginiana*, *Oxydendrum arboreum*, *Toxicodendron radicans*, *Smilax rotundifolia*, *Hydrangea arborescens*, *Vitis rotundifolia*, *Carpinus caroliniana*, *Lonicera japonica*, *Conopholis americana*, *Euonymus americana*, and *Celtis laevigata*. *Polystichum acrostichoides* is the most common herbaceous plant. Other herbs are *Polygonum virginianum*, *Phegopteris hexagonoptera*, *Asarum canadense*, *Athyrium filix-femina* ssp. *asplenioides*, *Pilea pumila*, *Scutellaria ovata*, *Phryma leptostachya*, *Circaea lutetiana* ssp. *canadensis*, *Passiflora lutea*, *Epifagus virginiana*, *Sedum ternatum*, *Brachyelytrum erectum* (= var. *erectum*), *Sanicula canadensis*, *Rubus argutus*, *Phytolacca americana*, *Mitchella repens*, *Stellaria pubera*, *Maianthemum racemosum*, *Arisaema triphyllum*, *Microstegium vimineum*, and *Prenanthes altissima*.

In the Cumberland Plateau of Alabama (Bankhead National Forest), this forest is dominated by *Fagus grandifolia* and *Liriodendron tulipifera* (NatureServe Ecology unpubl. data). Other canopy trees may include *Fraxinus americana*, *Magnolia acuminata*, and *Pinus taeda*. Oaks can be present in the canopy, but are not dominant (*Quercus alba*, *Quercus rubra*, *Quercus prinus*). The most common subcanopy trees are *Acer barbatum*, *Magnolia macrophylla*, *Ostrya virginiana*, *Ulmus alata*, and *Ilex opaca*. The shrub stratum is open to dense, with the most common species being *Euonymus americana* and *Ostrya virginiana*, although many other species occur. *Bignonia capreolata* and *Decumaria barbara* are typical vines in this forest. The herb layer is dense and diverse, and not dominated by any single species. In the range of this association, the "sugar maple" in the stands, if present, may be *Acer barbatum* and/or *Acer leucoderme*, not *Acer saccharum*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Carex brysonii*, *Trillium rugelii*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4 (9-Oct-2001). While this is not an inherently rare type, and some examples are protected on public land, and it has a wide distribution, mature examples are uncommon and vulnerable to timber removal. Many examples are poorly buffered because of upslope land-use change, timber removal, or conversion of upslope forests to managed forest types. Rank changed from G5 to G4, as it is not globally abundant and secure throughout its range.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: The original concept of this association was defined based on four plots from work in the Piedmont of east-central Alabama (Golden 1979; "Small Streambottoms") and later expanded with information from Alabama's Cumberland Plateau (e.g., Bankhead National Forest).

Global Similar Associations:

- *Fagus grandifolia* - *Quercus alba* / *Cornus florida* Forest (CEGL007881)
- *Quercus alba* - *Fagus grandifolia* / *Hydrangea quercifolia* - *Viburnum acerifolium* / *Carex picta* - *Polystichum acrostichoides* Forest (CEGL007213)—with codominance by *Quercus alba*.
- *Quercus rubra* - *Tilia americana* var. *heterophylla* - *Carya carolinae-septentrionalis* / *Acer (barbatum, leucoderme)* / *Hydrangea quercifolia* Forest (CEGL008488)

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found at Dill Branch.

Global Range: This association is known from the lower Piedmont and Cumberland Plateau of Alabama, but may range into adjacent and related provinces (Ridge and Valley, Cumberland Plateau, Interior Low Plateau, and Upper East Gulf Coastal Plain) in Georgia, Kentucky, Mississippi, South Carolina, and Tennessee.

Nations: US

States/Provinces: AL, GA, KY, MS, SC, TN

USFS Ecoregions: 222Cg:CCC, 222Eb:CCC, 222Eg:CCC, 231Ac:CCP, 231Ah:CCP, 231Ai:CCP, 231Ba:CC?, 231Bb:CC?, 231Bc:CCP, 231Bd:CCP, 231Be:CCP, 231Bf:CC?, 231Bh:CCP, 231Bk:CCP, 231Cd:CCC, 232:P

Federal Lands: NPS (Shiloh); USFS (Bankhead, Talladega, Tuskegee)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.18, 1994 plot 2C-4.

Local Description Authors: C.W. Nordman

Global Description Authors: M.S. Golden and D.J. Allard, mod. C.W. Nordman

References: Golden 1979, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

Central Interior Beech - White Oak Forest

Fagus grandifolia - *Quercus alba* / *Cornus florida* Forest

American Beech - White Oak / Flowering Dogwood Forest

Identifier: CEGL007881

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Fagus grandifolia</i> - <i>Quercus rubra</i> - <i>Quercus alba</i> Forest Alliance (A.229)
Alliance (English name)	American Beech - Northern Red Oak - White Oak Forest Alliance
Association	<i>Fagus grandifolia</i> - <i>Quercus alba</i> / <i>Cornus florida</i> Forest
Association (English name)	American Beech - White Oak / Flowering Dogwood Forest
Association (Common name)	Central Interior Beech - White Oak Forest

Ecological System(s): South-Central Interior Mesophytic Forest (CES202.887)
East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest (CES203.477)

ELEMENT CONCEPT

Global Summary: This beech-white oak forest is found in the Interior Low Plateau of Tennessee, the Cumberland region of Kentucky, and adjacent areas of the Upper East Gulf Coastal Plain. Stands occur on mesic mid to lower slopes in moderately dissected terrain. Stand positions vary from north-facing slopes and low slopes to high terraces along streams. The vegetation is

generally dominated by *Fagus grandifolia* with more or less *Quercus alba* depending on past logging history. Associated canopy and subcanopy species can include *Acer saccharum*, *Quercus muehlenbergii*, *Acer rubrum*, *Cornus florida*, *Ostrya virginiana*, and *Ilex opaca*. Shrubs which may be present include *Vaccinium stamineum*, *Viburnum acerifolium*, *Euonymus americana*, and, in some occurrences, *Kalmia latifolia*. The herb layer can be relatively lush with such species as *Polystichum acrostichoides*, *Galium circaeans*, *Desmodium nudiflorum*, *Erythronium americanum*, *Hepatica nobilis* var. *obtusata*, *Epifagus virginiana*, *Tiarella cordifolia* var. *collina*, *Heuchera americana*, *Stellaria pubera*, *Podophyllum peltatum*, *Botrychium virginianum*, and others.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: The Shiloh plot is on a somewhat steep, east-facing midslope of a small ravine. The soil is well-drained loam with river pebbles and cobbles shallow in the soil profile.

Global Environment: Stands occur on mesic mid to lower slopes in moderately dissected terrain. Stand positions vary from north-facing slopes and low slopes to more rocky stands (Franklin et al. 1993). At Land Between the Lakes, this community is restricted to deep limestone-derived soils of the Baxter Series and silty soils of the Brandon Series, generally on lower slopes with northwest, north, to southeast aspects (Franklin 1990).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Stand canopy is dominated by *Quercus alba* with *Carya alba*, *Carya glabra*, *Carya pallida*, *Carya ovata*, *Quercus falcata*, and *Quercus stellata*. The subcanopy is dominated by *Fagus grandifolia*, *Carya alba*, and *Carya ovata* with *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Ulmus alata*, *Carya pallida*, and *Oxydendrum arboreum*. *Quercus alba*, *Carya alba*, *Cornus florida*, and *Carya pallida* are the most common tall shrubs, along with *Fagus grandifolia*, *Juniperus virginiana* var. *virginiana*, *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Ulmus alata*, *Sassafras albidum*, *Prunus serotina*, *Quercus rubra*, *Vaccinium arboreum*, *Diospyros virginiana*, *Carya glabra*, and *Liriodendron tulipifera*. *Quercus alba*, *Carya alba*, and *Sassafras albidum* are the dominant short shrubs. Other (less abundant) short shrubs are *Juniperus virginiana* var. *virginiana*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Ulmus alata*, *Carya pallida*, *Liriodendron tulipifera*, *Quercus velutina*, *Vitis rotundifolia*, *Vaccinium stamineum*, *Hypericum hypericoides*, *Toxicodendron radicans*, *Smilax glauca*, *Rosa carolina*, *Diospyros virginiana*, and *Viburnum dentatum*. Herbaceous plants are somewhat diverse but sparse; they include *Coreopsis major*, *Chimaphila maculata*, *Galium circaeans*, *Dioscorea quaternata*, *Aristolochia serpentaria*, *Phytolacca americana*, *Oxalis stricta*, *Physalis virginiana*, *Circaea lutetiana* ssp. *canadensis*, *Carex albicans* var. *australis*, *Desmodium rotundifolium*, *Desmodium glutinosum*, *Ilex ambigua*, *Dichanthelium dichotomum* var. *dichotomum*, *Cardamine concatenata* (= *Dentaria laciniata*), *Scutellaria elliptica*, *Mitchella repens*, *Iris cristata*, *Erechtites hieraciifolia*, *Dichanthelium laxiflorum*, *Lespedeza procumbens*, *Passiflora lutea*, *Asplenium platyneuron*, *Dichanthelium boscii*, *Chasmanthium sessiliflorum*, *Silene stellata*, *Mimosa microphylla* (= *Mimosa quadrivalvis* var. *angustata*), *Euphorbia corollata*, *Porteranthus stipulatus*, *Manfreda virginica*, *Geum virginianum*, *Maianthemum racemosum*, *Asclepias variegata*, *Angelica venenosa*, *Agrimonia microcarpa*, *Elephantopus tomentosus*, and *Sanicula smallii*.

Global Vegetation: The vegetation is dominated by *Fagus grandifolia* with more or less *Quercus alba* depending on past logging history. Associated canopy and subcanopy species can include *Liriodendron tulipifera*, *Acer saccharum*, *Quercus pagoda*, *Quercus rubra*, *Quercus coccinea*, *Cornus florida*, *Nyssa sylvatica*, *Sassafras albidum*, and *Ostrya virginiana* (NatureServe Ecology unpubl. data, Franklin 1990). Other potential species include *Quercus muehlenbergii*, *Acer rubrum*, and *Ilex opaca*. Shrubs which may be present include *Vaccinium stamineum*, *Viburnum acerifolium*, *Euonymus americana*, and in some occurrences, *Kalmia latifolia*. The herb layer can be relatively lush with such species as *Polystichum acrostichoides*, *Galium circaeans*, *Desmodium nudiflorum*, *Erythronium americanum*, *Hepatica nobilis* var. *obtusata*, *Epifagus virginiana*, *Tiarella cordifolia* var. *collina*, *Heuchera americana*, *Stellaria pubera*, *Podophyllum peltatum*, *Botrychium virginianum*, and others. Campbell (2001) provides an extensive list of species for eastern Kentucky; see also NatureServe Ecology unpublished data from Fort Donelson.

At Shiloh National Military Park (Tennessee) the stand canopy is dominated by *Quercus alba* with *Carya alba*, *Carya glabra*, *Carya pallida*, *Carya ovata*, *Quercus falcata*, and *Quercus stellata*. The subcanopy is dominated by *Fagus grandifolia*, *Carya alba*, and *Carya ovata* with *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Ulmus alata*, *Carya pallida*, and *Oxydendrum arboreum*. *Quercus alba*, *Carya alba*, *Cornus florida*, and *Carya pallida* are the most common tall shrubs, with *Fagus grandifolia*, *Juniperus virginiana* var. *virginiana*, *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Ulmus alata*, *Sassafras albidum*, *Prunus serotina*, *Quercus rubra*, *Vaccinium arboreum*, *Diospyros virginiana*, *Carya glabra*, and *Liriodendron tulipifera*. *Quercus alba*, *Carya alba*, and *Sassafras albidum* are the dominant short shrubs. Other (less abundant) short shrubs are *Juniperus virginiana* var. *virginiana*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Ulmus alata*, *Carya pallida*, *Liriodendron tulipifera*, *Quercus velutina*, *Vitis rotundifolia*, *Vaccinium stamineum*, *Hypericum hypericoides*, *Toxicodendron radicans*, *Smilax glauca*, *Rosa carolina*, *Diospyros virginiana*, and *Viburnum dentatum*. Herbaceous plants are somewhat diverse but sparse and include *Coreopsis major*, *Chimaphila maculata*, *Galium circaeans*, *Dioscorea quaternata*, *Aristolochia serpentaria*, *Phytolacca americana*, *Oxalis stricta*, *Physalis virginiana*, *Circaea lutetiana* ssp. *canadensis*, *Carex albicans* var. *australis*, *Desmodium rotundifolium*, *Desmodium glutinosum*, *Ilex ambigua*, *Dichanthelium dichotomum* var. *dichotomum*, *Cardamine concatenata* (= *Dentaria laciniata*), *Scutellaria elliptica*, *Mitchella repens*, *Iris cristata*, *Erechtites hieraciifolia*, *Dichanthelium laxiflorum*, *Lespedeza procumbens*, *Passiflora lutea*, *Asplenium platyneuron*, *Dichanthelium boscii*, *Chasmanthium sessiliflorum*, *Silene stellata*, *Mimosa microphylla* (= *Mimosa quadrivalvis* var. *angustata*),

Euphorbia corollata, *Porteranthus stipulatus*, *Manfreda virginica*, *Geum virginianum*, *Maianthemum racemosum*, *Asclepias variegata*, *Angelica venenosa*, *Agrimonia microcarpa*, *Elephantopus tomentosus*, and *Sanicula smallii*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G4 (15-Dec-1999). This is not an inherently rare forest type, and many examples are still believed to be extant. The lack of element occurrences of this type does not reflect its relative abundance. Patch size may be small, but this is a somewhat widespread association (and may be merged with others as classification is resolved); many examples are still extant. Some stands have been impacted by removal of more valuable timber species (e.g., *Quercus alba*) and loss of herbaceous species diversity from the disturbance effects of logging. The Rank has been changed from G3G4 to G4 to reflect its true abundance.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This association is similar to ~*Quercus alba* - *Fagus grandifolia* / *Hydrangea quercifolia* - *Viburnum acerifolium* / *Carex picta* - *Polystichum acrostichoides* Forest (CEGL007213)\$\$, found in northern Alabama, but is more broadly defined and geographically distinct from CEGL007213. The associations have been kept separate until more detailed floristic and range information can be obtained for this type (CEGL007881). *Fagus grandifolia* - *Liriodendron tulipifera* / *Euonymus americana* / *Athyrium filix-femina* ssp. *asplenioides* Forest (CEGL007201) is somewhat similar, but lacks dominance by *Quercus* species. Information on species from stands in eastern Kentucky is provided by Campbell 2001, who tentatively crosswalks his 5C3 to this type. Further review is needed before incorporating his description.

Global Similar Associations:

- *Fagus grandifolia* - *Acer saccharum* - *Liriodendron tulipifera* Unglaciaded Forest (CEGL002411)
- *Fagus grandifolia* - *Liriodendron tulipifera* / *Euonymus americana* / *Athyrium filix-femina* ssp. *asplenioides* Forest (CEGL007201)
- *Fagus grandifolia* Ridge and Valley Forest (CEGL007200)
- *Quercus alba* - (*Liriodendron tulipifera*, *Liquidambar styraciflua*) / *Acer leucoderme* / *Calycanthus floridus* / *Athyrium filix-femina* Forest (CEGL008428)—of the southern Ridge and Valley.
- *Quercus alba* - *Fagus grandifolia* / *Hydrangea quercifolia* - *Viburnum acerifolium* / *Carex picta* - *Polystichum acrostichoides* Forest (CEGL007213)
- *Quercus rubra* - *Tilia americana* var. *heterophylla* - *Carya carolinae-septentrionalis* / *Acer (barbatum, leucoderme)* / *Hydrangea quercifolia* Forest (CEGL008488)

Global Related Concepts:

- *Acer saccharum* - *Quercus alba* - *Fagus grandifolia* type (Franklin et al. 1993) ?

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found in a small ravine on east side of Shiloh NMP. Presumably it may be found in many ravines on Shiloh.

Global Range: This association was defined for the Interior Low Plateau of Tennessee. It ranges to the Cumberlands of Kentucky, and Upper East Gulf Coastal Plain in Tennessee, but more information is needed to determine its full range.

Nations: US

States/Provinces: AL?, IN?, KY, TN

USFS Ecoregions: 221Ha:CCC, 221He:CCC, 222Cg:CCC, 222Eb:CCP, 222Eg:CCC, 222Eh:CCP, 222Ei:CCP, 222Ek:CCP, 222Em:CCP, 222En:CCP, 222Eo:CCP

Federal Lands: NPS (Cumberland Gap, Fort Donelson, Natchez Trace, Shiloh); USFS (Daniel Boone, Land Between the Lakes)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.14.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Pyne, mod. C.W. Nordman

References: Campbell 2001, Evans 1991, Franklin et al. 1993, Franklin pers. comm., Southeastern Ecology Working Group n.d.

Interior Mid- to Late-Successional Sweetgum - Oak Forest

Liquidambar styraciflua - *Quercus (alba, falcata)* Forest

Sweetgum - (White Oak, Southern Red Oak) Forest

Identifier: CEG007217

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Liquidambar styraciflua</i> Forest Alliance (A.234)
Alliance (English name)	Sweetgum Forest Alliance
Association	<i>Liquidambar styraciflua</i> - <i>Quercus (alba, falcata)</i> Forest
Association (English name)	Sweetgum - (White Oak, Southern Red Oak) Forest
Association (Common name)	Interior Mid- to Late-Successional Sweetgum - Oak Forest

Ecological System(s):	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)
	East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland (CES203.482)
	Ozark-Ouachita Dry-Mesic Oak Forest (CES202.708)

ELEMENT CONCEPT

Global Summary: Stands of this successional forest association are dominated by *Liquidambar styraciflua*, but also support additional species in the overstory such as *Quercus alba*, *Liriodendron tulipifera*, and/or *Quercus falcata*. This forest is somewhat later successional and/or more diverse than pure *Liquidambar styraciflua* forests [see CEG007216]. This type may be arise following disturbance of mixed *Quercus* - *Carya* forests. This vegetation type would be more prevalent or more likely to be encountered to the north of the range of *Quercus nigra*, i.e., in the interior and Piedmont rather than in the Coastal Plain.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This association occurs in a dry upland flat area on silt loam soil. A tornado came through the area 1971 or 1972 (D. Turnbo pers. comm. 2003).

Global Environment:

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh National Military Park, this vegetation is documented from a plot (SHIL.4) which was disturbed by a tornado in 1971 or 1972 (D. Turnbo pers. comm. 2003). There are stumps and tip-up mounds from the tornado and the salvage logging which followed. The dominant tree is *Liquidambar styraciflua* with *Acer rubrum* as canopy subdominant. *Carya alba* and *Quercus alba* are also important, with *Quercus falcata*, *Prunus serotina*, *Nyssa sylvatica*, and *Carya glabra*. *Cornus florida*, *Carya pallida*, and *Quercus rubra* are important primarily in the subcanopy and tall-shrub strata. *Vaccinium stamineum* and *Ilex decidua* are tall shrubs; most of the *Quercus* spp. and *Carya* spp. also occur as tall shrubs. Short shrubs include *Quercus phellos*, *Ulmus alata*, *Rosa carolina*, *Vitis rotundifolia*, *Lonicera japonica*, *Mimosa microphylla*, *Hypericum hypericoides*, *Juniperus virginiana*, *Ligustrum sinense*, *Vaccinium stamineum*, *Diospyros virginiana*, *Nyssa sylvatica*, *Smilax glauca*, *Carya glabra*, *Vaccinium arboreum*, and *Rubus argutus*. The herbaceous stratum has 30% cover, but there are no dominant species. The most abundant herbaceous species are *Dichanthelium boscii* and *Botrychium biternatum*. Other herbaceous species are *Scutellaria elliptica*, *Houstonia purpurea*, *Elephantopus tomentosus*, *Asplenium platyneuron*, *Polystichum acrostichoides*, *Dichanthelium laxiflorum*, *Viola X palmata*, *Galium circaezans*, *Sanicula canadensis*, *Athyrium filix-femina* ssp. *asplenioides*, *Conoclinium coelestinum*, *Lobelia puberula*, *Cirsium horridulum*, *Lycopodium digitatum* (= *Diphasiastrum digitatum*), *Chasmanthium laxum*, *Lespedeza repens*, *Ruellia strepens*, and *Pycnanthemum verticillatum* var. *pilosum* (= *Pycnanthemum pilosum*).

Global Vegetation: The overstory of stands of this association are usually dominated by *Liquidambar styraciflua*, but may also support other species such as *Quercus alba*, *Liriodendron tulipifera*, and *Quercus falcata*. Other woody species encountered in plots attributed to this type include *Fraxinus americana*, *Cornus florida*, *Diospyros virginiana*, *Quercus velutina*, *Quercus rubra*, and *Carya* spp. (NatureServe Ecology unpubl. data).

At Shiloh National Military Park, this vegetation is documented from a plot (SHIL.4) which was disturbed by a tornado in 1971 or 1972 (D. Turnbo pers. comm. 2003). There are stumps and tip-up mounds from the tornado and the salvage logging which followed. The dominant tree is *Liquidambar styraciflua* with *Acer rubrum* canopy subdominant. *Carya alba* and *Quercus alba* are also important, with *Quercus falcata*, *Prunus serotina*, *Nyssa sylvatica*, and *Carya glabra*. *Cornus florida*, *Carya pallida*, and *Quercus rubra* are important primarily in the subcanopy and tall-shrub strata. *Vaccinium stamineum* and *Ilex decidua* are tall shrubs; most of the *Quercus* spp. and *Carya* spp. also occur as tall shrubs. Short shrubs include *Quercus phellos*, *Ulmus alata*, *Rosa carolina*, *Vitis rotundifolia*, *Lonicera japonica*, *Mimosa microphylla*, *Hypericum hypericoides*, *Juniperus virginiana*, *Ligustrum sinense*, *Vaccinium stamineum*, *Diospyros virginiana*, *Nyssa sylvatica*, *Smilax glauca*, *Carya glabra*, *Vaccinium arboreum*, and *Rubus argutus*. The herbaceous stratum has 30% cover, but there are no dominant species. The most abundant herbaceous species are *Dichanthelium boscii* and *Botrychium biternatum*. Other herbaceous species are *Scutellaria elliptica*, *Houstonia purpurea*, *Elephantopus tomentosus*, *Asplenium platyneuron*, *Polystichum acrostichoides*, *Dichanthelium laxiflorum*, *Viola X palmata*, *Galium circaezans*, *Sanicula canadensis*, *Athyrium filix-femina* ssp. *asplenioides*, *Conoclinium coelestinum*, *Lobelia puberula*, *Cirsium horridulum*, *Lycopodium digitatum* (= *Diphasiastrum digitatum*), *Chasmanthium laxum*, *Lespedeza repens*, *Ruellia strepens*, and *Pycnanthemum verticillatum* var. *pilosum* (= *Pycnanthemum pilosum*).

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
<u>Global</u>		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: GNA (ruderal) (8-Aug-2000). This forest represents successional vegetation. Consequently it is not of conservation concern and does not receive a conservation status rank.

CLASSIFICATION

Status: Standard

Classification Confidence: 3 - Weak

Shiloh National Military Park Comments:

Global Comments:

Global Similar Associations:

- *Liquidambar styraciflua* - *Quercus (nigra, phellos)* - *Pinus taeda* / *Vaccinium elliotii* - *Morella cerifera* Forest (CEGL007726)—which is more likely and more prevalent in the southern Coastal Plain.
- *Liquidambar styraciflua* Forest (CEGL007216)—terms (prior to the appearance of oak saplings in the canopy and subcanopy).

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: The sampled plot is southeast of Rhea Springs, south of Peabody Road, in an area where a tornado went through in 1971 or 1972 (D. Turnbo pers. comm. 2003). Shiloh is in an area where tornados are not infrequent, so there may be other areas where successional stands occur after tornado disturbance.

Global Range: This early successional sweetgum forest has been defined from the Interior Highlands of the central United States and from the Piedmont of the southeastern United States, but is likely much more widespread.

Nations: US

States/Provinces: AL?, AR, GA?, SC, TN

USFS Ecoregions: 222A:CC, 222Cg:CCC, 231:C, M222A:CC, M231A:CC

Federal Lands: NPS (Fort Donelson, Natchez Trace, Shiloh); USFS (Holly Springs, Oconee?, Ouachita, Ozark, Talladega?, Tuskegee?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.4.

Local Description Authors: C.W. Nordman

Global Description Authors: R.E. Evans, mod. C.W. Nordman

References: Gallyoun et al. 1996, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d., Turnbo pers. comm.

Interior Mid- to Late-Successional Tuliptree - Hardwood Upland Forest (Acid Type)

Liriodendron tulipifera - *Quercus* spp. Forest

Tuliptree - Oak species Forest

Identifier: CEG007221

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Liriodendron tulipifera</i> Forest Alliance (A.236)
Alliance (English name)	Tuliptree Forest Alliance
Association	<i>Liriodendron tulipifera</i> - <i>Quercus</i> spp. Forest
Association (English name)	Tuliptree - Oak species Forest
Association (Common name)	Interior Mid- to Late-Successional Tuliptree - Hardwood Upland Forest (Acid Type)

Ecological System(s):	East Gulf Coastal Plain Southern Mesic Slope Forest (CES203.476)
	Southern Interior Low Plateau Dry Oak Forest (CES202.898)
	East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)

ELEMENT CONCEPT

Global Summary: This semi-natural or successional community is one of several described upland associations dominated by *Liriodendron tulipifera*. Within its range, it differs from other described types based on the lack of a significant pine component [see *Liriodendron tulipifera* - *Pinus taeda* Forest (CEGL007521)] and the absence of species affiliated with circumneutral conditions [see *Liriodendron tulipifera* / (*Cercis canadensis*) / (*Lindera benzoin*) Forest (CEGL007220)]; it is later successional and more diverse than *Liriodendron tulipifera* Forest (CEGL007218) or *Liriodendron tulipifera* - *Robinia pseudoacacia* Forest (CEGL007219). Examples are common across large areas of the upland landscape which have been previously disturbed. Species found in stands attributable to this type may include a fairly diverse and varied composition. *Acer rubrum*, *Quercus* spp., and occasionally *Liquidambar styraciflua* may be common in some stands of this type. These successional forests often follow cropping, clearcut logging, or other severe disturbance, and are successional to mixed *Quercus* - *Carya* forests. The oaks in these stands will frequently be multi-stemmed, resulting from coppicing.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment:

Global Environment: These semi-natural upland deciduous forests are found primarily in areas which were once clearcuts, old fields, or were cleared by fire or other natural disturbances. These non-wetland forests are also found along mesic stream terraces.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation:

Global Vegetation: The canopy of this semi-natural upland association is dominated by *Liriodendron tulipifera*. A variety of other species may also be present, including *Acer rubrum*, *Quercus alba*, *Quercus falcata*, *Quercus nigra*, *Quercus velutina*, *Cornus florida*, *Carya* spp., and other species (NatureServe Ecology unpubl. data).

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Liriodendron tulipifera</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: GNA (ruderal) (19-Aug-2002). This forest represents early successional vegetation and is thus not of conservation concern. This is a successional vegetation type composed of native species. Its conservation value is limited, but mature examples could provide buffer for communities of greater conservation value.

CLASSIFICATION

Status: Standard

Classification Confidence: 3 - Weak

Shiloh National Military Park Comments:

Global Comments:

Global Similar Associations:

- *Liriodendron tulipifera* - *Acer negundo* Forest (CEGL007184)—a bottomland type.
- *Liriodendron tulipifera* - *Robinia pseudoacacia* Forest (CEGL007219)—with Appalachian distribution.
- *Liriodendron tulipifera* / (*Cercis canadensis*) / (*Lindera benzoin*) Forest (CEGL007220)—is generally found on calcareous soils.

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range:

Global Range: This association is known from the southern Cumberland Plateau, Piedmont, and Interior Low Plateau of the southeastern U.S. and may also occur in the Upper East Gulf Coastal Plain. It is known from Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, and possibly Virginia.

Nations: US

States/Provinces: AL, GA, KY, NC, NJ, SC, TN, VA?

USFS Ecoregions: 221Hc:CCC, 222Cg:CCC, 222D:CC, 222Eb:CCC, 222En:CCC, 222Eo:CCC, 231Aa:CCP, 231Ae:CCC, 231Bc:CCC, 231Cd:CCP, 231Dc:CCC

Federal Lands: DOD (Fort Benning); NPS (Blue Ridge Parkway?, Cowpens, Cumberland Gap, Fort Donelson, Guilford Courthouse, Kennesaw Mountain, Kings Mountain, Morristown, Natchez Trace, Ninety Six, Shiloh); USFS (Bankhead, Daniel Boone, Oconee?, Talladega)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: No plot.

Local Description Authors: C.W. Nordman

Global Description Authors: R.E. Evans/M. Pyne

References: Gallyoun et al. 1996, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

White Oak - Red Oak Dry-Mesic Acid Forest

Quercus alba - *Quercus rubra* - *Carya (alba, ovata)* / *Cornus florida* Acid Forest

White Oak - Northern Red Oak - (Mockernut Hickory, Shagbark Hickory) / Flowering Dogwood Acid Forest

Identifier: CEGL002067

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Quercus alba</i> - (<i>Quercus rubra</i> , <i>Carya</i> spp.) Forest Alliance (A.239)
Alliance (English name)	White Oak - (Northern Red Oak, Hickory species) Forest Alliance
Association	<i>Quercus alba</i> - <i>Quercus rubra</i> - <i>Carya (alba, ovata)</i> / <i>Cornus florida</i> Acid Forest
Association (English name)	White Oak - Northern Red Oak - (Mockernut Hickory, Shagbark Hickory) / Flowering Dogwood Acid Forest

Association (Common name) White Oak - Red Oak Dry-Mesic Acid Forest

Ecological System(s): Central Appalachian Alkaline Glade and Woodland (CES202.602)
 Northeastern Interior Dry-Mesic Oak Forest (CES202.592)
 Ozark-Ouachita Dry-Mesic Oak Forest (CES202.708)
 Southern Interior Low Plateau Dry Oak Forest (CES202.898)
 East Gulf Coastal Plain Northern Mesic Hardwood Slope Forest (CES203.477)

ELEMENT CONCEPT

Global Summary: This community is found in the Interior Highlands of the south-central United States to the Western Allegheny Plateau. Stands occur on gentle to moderately steep slopes of dissected hills and plains. Soils are well-drained, shallow to deep, often over sandstone, cherts, or cherty limestone. Stands are dominated by a closed-canopy deciduous tree layer. The dominants are *Quercus alba* and *Quercus rubra*. Typical associates include *Carya ovata*, *Carya alba*, *Carya ovalis*, *Nyssa sylvatica*, *Quercus falcata*, *Quercus velutina*, and *Pinus echinata* in parts of the range. The shrub and small-tree layer contains *Cornus florida*. *Parthenocissus quinquefolia* is a typical vine. The low-shrub layer may be dominated by *Vaccinium pallidum*. The herbaceous layer contains *Actaea racemosa* (= *Cimicifuga racemosa*), *Desmodium glutinosum*, *Desmodium nudiflorum*, *Galium pilosum*, and *Polystichum acrostichoides*.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This type occurs on mesic to dry-mesic northeastern slopes. Soils are mapped as Waynesboro very gravelly sandy loam. A short slope in a narrow ravine is the description for one plot (5-SE-1) location. The other plot (4-32) is southeast of the Indian Mounds.

Global Environment: Soils are well-drained, shallow to deep (40 to over 100 cm), often over sandstone, cherts, or cherty limestone (Nelson 1985).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Dominant trees include *Quercus alba*, *Carya glabra*, *Quercus rubra*, *Liriodendron tulipifera*, and *Nyssa sylvatica*. Subcanopy dominants include *Oxydendrum arboreum*, *Fagus grandifolia*, *Cornus florida*, and *Carpinus caroliniana*. The most abundant shrubs are *Carya alba*, *Oxydendrum arboreum*, and *Asimina triloba*. *Polystichum acrostichoides* is the most abundant herbaceous plant. Vines include *Parthenocissus quinquefolia*, *Toxicodendron radicans*, *Smilax glauca*, and *Vitis rotundifolia*.

Global Vegetation: Stands are dominated by a closed-canopy deciduous tree layer. The dominants are *Quercus alba* and *Quercus rubra*. Typical associates including *Carya ovata*, *Carya alba*, *Carya ovalis*, *Nyssa sylvatica*, *Quercus falcata*, *Quercus velutina*, and *Pinus echinata* in parts of the range. The shrub and small-tree layer contains *Cornus florida*. *Parthenocissus quinquefolia* is a typical vine. The low-shrub layer may be dominated by *Vaccinium pallidum*. The herbaceous layer contains *Actaea racemosa* (= *Cimicifuga racemosa*), *Desmodium glutinosum*, *Desmodium nudiflorum*, *Galium arkansanum*, *Galium pilosum*, and *Polystichum acrostichoides*, among others (Nelson 1985). Other herbaceous plants observed in Arkansas stands include *Symphotrichum anomalum*, *Hypericum hypericoides*, *Cunila origanoides*, and *Lonicera dioica*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G3 (24-Oct-2002). This community has a moderately restricted range, found primarily in the Interior Highlands of the south-central United States. Site factors are not particularly specific, but it may require a combination of thin acidic soils, occasional ground fires, and infrequent catastrophic fires to persist. Extensive clearing and use of oaks for lumber have contributed to the large decline in this forest type. Remaining parcels of this tract are subject to harvesting, but conversion is less likely. There are few areas where old forest (100- to 150-year-old stands) or old-growth forest (>150 years) conditions are present. Many stands have also been grazed in the past, resulting in ground and shrub layers that are simplified or prone to invasion by exotics. Stands may require low-intensity surface fires to maintain the quality of the ground layer, and these are often lacking.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This type may be difficult to distinguish from *Quercus alba* - *Quercus rubra* - *Quercus muehlenbergii* / *Cercis canadensis* Forest (CEGL002070), the alkaline equivalent, but more acidic species such as *Cornus florida*, *Nyssa sylvatica* and *Pinus echinata* may be present. Further characterization is needed.

Global Similar Associations:

- *Quercus (alba, rubra, velutina)* / *Cornus florida* / *Viburnum acerifolium* Forest (CEGL006336)
- *Quercus alba* - (*Quercus rubra*, *Acer saccharum*, *Fagus grandifolia*) / *Aesculus flava* Forest (CEGL007233)—of the Cumberlands and southern Ridge and Valley.
- *Quercus alba* - *Carya alba* - (*Quercus velutina*) / *Desmodium nudiflorum* - (*Carex picta*) Forest (CEGL007795)—of the Interior Low Plateau.
- *Quercus alba* - *Carya alba* / *Chasmanthium sessiliflorum* West Gulf Coastal Plain Forest (CEGL008413)
- *Quercus alba* - *Quercus rubra* - *Carya ovata* Glaciated Forest (CEGL002068)
- *Quercus alba* - *Quercus rubra* - *Quercus muehlenbergii* / *Cercis canadensis* Forest (CEGL002070)—is more circumneutral.
- *Quercus alba* / *Cornus florida* Unglaciated Forest (CEGL002066)
- *Quercus falcata* - *Quercus alba* - *Quercus stellata* - *Quercus velutina* Forest (CEGL005018)
- *Quercus velutina* - *Quercus alba* - *Carya (glabra, ovata)* Forest (CEGL002076)

Global Related Concepts:

- Dry-Mesic Acid (Chert, Igneous, Sandstone) forest (Nelson 1985) ?
- T1B4aIII. *Quercus rubra* - *Quercus* spp. (Foti et al. 1994) ?

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found southeast of the Indian Mounds and also down the ravine from Rogers Homestead. It presumably occurs elsewhere on Shiloh NMP.

Global Range: This community is found in the Interior Highlands of the south-central United States, ranging from Arkansas and Missouri eastward to Tennessee, Kentucky, and southern Ohio.

Nations: US

States/Provinces: AR, IL, IN, KY, MO, OH, TN, WV

USFS Ecoregions: 221Ea:CCC, 221Eb:CCC, 221Ec:CCC, 221Ed:CCC, 221Ee:CCC, 221Ef:CCC, 221Eg:CCC, 222Aa:CCC, 222Ab:CCC, 222Ac:CCC, 222Ad:CCC, 222Ae:CCC, 222Af:CCC, 222Ag:CCC, 222Ah:CCC, 222Aj:CCC, 222Ak:CCC, 222Am:CCC, 222Ao:CCC, 222Ap:CCC, 222Aq:CCP, 222Cg:CCC, 222Db:CCC, 222Dc:CCC, 222De:CCC, 222Df:CCC, 222Eg:CCP, 222Ei:CCC, 222Ek:CCC, 222Em:CCC, 222Fd:CCC, 222Fe:CCC, 222Ff:CCC, 231:C, 251Ce:CCC, M222Aa:PPP, M231A:CC

Federal Lands: NPS (Buffalo, Mammoth Cave, Natchez Trace, Shiloh); USFS (Ozark)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: : 1994 plots 4-32, 5-SE-1.

Local Description Authors: C.W. Nordman

Global Description Authors: D. Faber-Langendoen, mod. M. Pyne

References: Foti 1994b, Foti et al. 1994, Midwestern Ecology Working Group n.d., Nelson 1985, Parker 1989

Southern Red Oak - White Oak Mixed Oak Forest

Quercus falcata - *Quercus alba* - *Carya alba* / *Oxydendrum arboreum* / *Vaccinium stamineum* Forest

Southern Red Oak - White Oak - Mockernut Hickory / Sourwood / Deerberry Forest

Identifier: CEGL007244

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Quercus alba</i> - <i>Quercus (falcata, stellata)</i> Forest Alliance (A.241)

Alliance (English name)	White Oak - (Southern Red Oak, Post Oak) Forest Alliance
Association	<i>Quercus falcata</i> - <i>Quercus alba</i> - <i>Carya alba</i> / <i>Oxydendrum arboreum</i> / <i>Vaccinium stamineum</i> Forest
Association (English name)	Southern Red Oak - White Oak - Mockernut Hickory / Sourwood / Deerberry Forest
Association (Common name)	Southern Red Oak - White Oak Mixed Oak Forest

Ecological System(s): Allegheny-Cumberland Dry Oak Forest and Woodland (CES202.359)
 East Gulf Coastal Plain Northern Loess Plain Oak-Hickory Upland (CES203.482)
 Southern Interior Low Plateau Dry Oak Forest (CES202.898)
 Southern Piedmont Dry Oak-(Pine) Forest (CES202.339)
 East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)

ELEMENT CONCEPT

Global Summary: This southern red oak - white oak dry forest is found in the Piedmont of Georgia, South Carolina, North Carolina, and Virginia, and in the interior uplands and Cumberland Plateau of Kentucky and Tennessee. It has also been reported from the Upper East Gulf Coastal Plain of Mississippi, Tennessee and Georgia. It generally is a second-growth forest on low-fertility Ultisols. The vegetation is dominated by *Quercus* spp. and lesser amounts of *Carya* spp. The canopy is continuous, and several species of *Quercus* may be present or codominant (e.g., *Quercus falcata*, *Quercus alba*, *Quercus velutina*, *Quercus coccinea*, and *Quercus stellata*). 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*, *Liriodendron tulipifera*, *Oxydendrum arboreum*, *Liquidambar styraciflua*, *Ulmus alata*, *Cornus florida*, *Nyssa sylvatica*, *Juniperus virginiana* var. *virginiana*, and *Vaccinium arboreum*. The tall-shrub stratum may contain *Rhododendron canescens* and *Vaccinium arboreum*. The low-shrub stratum can be sparse to moderate and may be dominated by various ericaceous shrubs such as *Vaccinium pallidum*, *Vaccinium stamineum*, *Vaccinium fuscum*, and *Gaylussacia baccata*. *Smilax glauca* and *Vitis rotundifolia* are common vines. Herbaceous species that may be present include *Aristolochia serpentaria*, *Symphyotrichum dumosum* (= *Aster dumosus*), *Clitoria mariana*, *Desmodium nudiflorum*, *Euphorbia corollata*, *Galium circaeans*, *Chimaphila maculata*, *Polystichum acrostichoides*, *Asplenium platyneuron*, *Hexastylis arifolia*, *Coreopsis major*, *Solidago odora*, *Tephrosia virginiana*, *Potentilla simplex*, *Porteranthus stipulatus*, *Pteridium aquilinum*, *Lespedeza* spp., *Dichanthelium* spp., and *Hieracium venosum*.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This association occurs on a south-facing mesic moderate draw or concave slope (7%), on silt loam soil (SHIL.3). It also occurs on a gently sloping (3%) west-facing top of slope, on loam soil (SHIL.6) and on a flat to gentle slope with loam to clay loam soil (SHIL.23).

Global Environment: Stands are typically found on low fertility Ultisols in the Piedmont, the interior uplands, and the Cumberland Plateau. This community occurs on soils of relatively low fertility; suborders on which this community occurs include Hapludults and Paleudults. Stands are uneven-aged and tree replacement occurs in gaps; severe fires most likely destroy community occurrences although light fires probably are tolerated. In western Tennessee (Shiloh National Military Park) it occurs on silt loam and loam soils on moderate to gentle slopes and ridgetops.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh NMP (western Tennessee) this association was documented from 3 plots in 2002. The canopy is dominated by *Quercus alba*, *Quercus falcata*, *Quercus stellata*, *Ulmus alata*, and *Carya alba*. *Quercus muehlenbergii* is also present as a canopy species in one of the plots. Subcanopy dominants are *Liquidambar styraciflua*, *Ulmus alata*, *Nyssa sylvatica*, *Fraxinus americana*, and *Carya glabra*. Other subcanopy trees are *Quercus rubra*, *Quercus alba*, *Carya alba*, *Juniperus virginiana* var. *virginiana*, *Carya ovalis*, *Diospyros virginiana*, and *Fagus grandifolia*. The most abundant tall shrubs are *Carya alba*, *Quercus falcata*, *Ulmus alata*, and *Liquidambar styraciflua*. Other tall shrubs are *Carya ovalis*, *Sassafras albidum*, *Quercus alba*, *Nyssa sylvatica*, *Vaccinium arboreum*, *Vaccinium stamineum*, and less abundant *Quercus velutina*, *Quercus rubra*, *Fagus grandifolia*, *Fraxinus americana*, *Acer rubrum*, *Smilax rotundifolia*, and *Ilex opaca*. Short shrubs are diverse; *Quercus falcata*, *Vitis rotundifolia*, *Vaccinium stamineum*, and *Carya alba* are the most abundant. Other short shrubs are *Quercus velutina*, *Ulmus alata*, *Quercus alba*, *Nyssa sylvatica*, *Parthenocissus quinquefolia*, *Prunus serotina*, and *Sassafras albidum*. Short shrubs which are sparse include *Amelanchier arborea*, *Vaccinium arboreum*, *Juniperus virginiana* var. *virginiana*, *Diospyros virginiana*, *Hypericum hypericoides*, *Fraxinus americana*, *Smilax rotundifolia*, *Ilex opaca*, *Acer rubrum*, *Quercus phellos*, *Celtis occidentalis*, *Rubus argutus*, *Morus rubra*, *Smilax bona-nox*, *Ilex decidua*, *Toxicodendron radicans*, and *Carya ovalis*. In 1 of the 3 plots *Chasmanthium sessiliflorum* is the dominant herb; in the other plots there is no single dominant, and herbs are all sparse. Other herbs include *Dichanthelium boscii*, *Carex complanata*, *Dichanthelium laxiflorum*, *Danthonia spicata*, *Lespedeza repens*, *Lespedeza procumbens*, *Carex leavenworthii*, *Schizachyrium scoparium*, and present in trace amounts are *Carex swanii*, *Dichanthelium dichotomum* var. *dichotomum*, *Sericocarpus linifolius*, *Galium circaeans*, *Panicum anceps*, *Tridens flavus*, *Aristolochia serpentaria*, *Dichanthelium acuminatum* var. *acuminatum*, *Galium pilosum*, *Solidago rugosa*, *Erechtites hieraciifolia*, *Sanicula canadensis*, *Asplenium platyneuron*, *Acalypha rhomboidea*, *Mimosa microphylla* (= *Mimosa quadrivalvis* var. *angustata*), *Conyza canadensis*, and *Penstemon calycosus*.

Global Vegetation: The vegetation is dominated by *Quercus* spp. and lesser amounts of *Carya* spp. The canopy is continuous, and several species of *Quercus* may be present (e.g., *Quercus falcata*, *Quercus alba*, *Quercus velutina*, *Quercus coccinea*, and *Quercus stellata*). 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*, *Liriodendron tulipifera*, *Oxydendrum arboreum*, *Liquidambar styraciflua*, *Ulmus alata*, *Cornus florida*, *Nyssa sylvatica*, *Juniperus virginiana* var. *virginiana*, and *Vaccinium arboreum*. The tall-shrub stratum may contain *Rhododendron canescens* and *Vaccinium arboreum*. The low-shrub stratum is dominated by various ericaceous shrubs such as *Vaccinium pallidum*, *Vaccinium stamineum*, *Vaccinium fuscum*, and *Gaylussacia baccata*. *Smilax glauca* and *Vitis rotundifolia* are common vines. Herbaceous species that may be present include *Aristolochia serpentaria*, *Symphytotrichum dumosum* (= *Aster dumosus*), *Clitoria mariana*, *Desmodium nudiflorum*, *Euphorbia corollata*, *Galium circaezans*, *Chimaphila maculata*, *Polystichum acrostichoides*, *Asplenium platyneuron*, *Hexastylis arifolia*, *Coreopsis major*, *Solidago odora*, *Tephrosia virginiana*, *Potentilla simplex*, *Porteranthus stipulatus*, *Pteridium aquilinum*, *Lespedeza* spp., *Dichanthelium* spp., and *Hieracium venosum*.

At Shiloh (western Tennessee) this association is documented from 3 plots; the canopy is dominated by *Quercus alba*, *Quercus falcata*, *Quercus stellata*, *Ulmus alata*, and *Carya alba*. *Quercus muehlenbergii* is also present as a canopy species in one of the plots. Subcanopy dominants are *Liquidambar styraciflua*, *Ulmus alata*, *Nyssa sylvatica*, *Fraxinus americana*, and *Carya glabra*. Other subcanopy trees are *Quercus rubra*, *Quercus alba*, *Carya alba*, *Juniperus virginiana* var. *virginiana*, *Carya ovalis*, *Diospyros virginiana*, and *Fagus grandifolia*. The most abundant tall shrubs are *Carya alba*, *Quercus falcata*, *Ulmus alata*, and *Liquidambar styraciflua*. Other tall shrubs are *Carya ovalis*, *Sassafras albidum*, *Quercus alba*, *Nyssa sylvatica*, *Vaccinium arboreum*, *Vaccinium stamineum*, and less abundant *Quercus velutina*, *Quercus rubra*, *Fagus grandifolia*, *Fraxinus americana*, *Acer rubrum*, *Smilax rotundifolia*, and *Ilex opaca*. Short shrubs are diverse; *Quercus falcata*, *Vitis rotundifolia*, *Vaccinium stamineum*, and *Carya alba* are the most abundant. Other short shrubs are *Quercus velutina*, *Ulmus alata*, *Quercus alba*, *Nyssa sylvatica*, *Parthenocissus quinquefolia*, *Prunus serotina*, and *Sassafras albidum*. Short shrubs which are sparse include *Amelanchier arborea*, *Vaccinium arboreum*, *Juniperus virginiana* var. *virginiana*, *Diospyros virginiana*, *Hypericum hypericoides*, *Fraxinus americana*, *Smilax rotundifolia*, *Ilex opaca*, *Acer rubrum*, *Quercus phellos*, *Celtis occidentalis*, *Rubus argutus*, *Morus rubra*, *Smilax bona-nox*, *Ilex decidua*, *Toxicodendron radicans*, and *Carya ovalis*. In one of the plots *Chasmanthium sessiliflorum* is the dominant herb, in the other plots there is no single dominant and herbs are all sparse. Other herbs include *Dichanthelium boscii*, *Carex complanata*, *Dichanthelium laxiflorum*, *Danthonia spicata*, *Lespedeza repens*, *Lespedeza procumbens*, *Carex leavenworthii*, *Schizachyrium scoparium* and present a in trace amounts *Carex swanii*, *Dichanthelium dichotomum* var. *dichotomum*, *Sericocarpus linifolius*, *Galium circaezans*, *Panicum anceps*, *Tridens flavus*, *Aristolochia serpentaria*, *Dichanthelium acuminatum* var. *acuminatum*, *Galium pilosum*, *Solidago rugosa*, *Erechtites hieraciifolia*, *Sanicula canadensis*, *Asplenium platyneuron*, *Acalypha rhomboidea*, *Mimosa microphylla*, *Conyza canadensis*, and *Penstemon calycosus*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Carya alba</i> , <i>Quercus alba</i> , <i>Quercus coccinea</i> , <i>Quercus falcata</i> , <i>Quercus velutina</i>
Tree subcanopy	Broad-leaved deciduous tree	<i>Cornus florida</i> , <i>Oxydendrum arboreum</i>
Short shrub/sapling	Broad-leaved deciduous shrub	<i>Vaccinium pallidum</i> , <i>Vaccinium stamineum</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Amorpha schwerinii*, *Brickellia cordifolia*, *Corallorhiza wisteriana*, *Hexastylis lewisii*, *Monotropsis odorata*, *Nestronia umbellula*, *Onosmodium virginianum*, *Porteranthus stipulatus*, *Prunus umbellata*, *Rhus michauxii*, *Thermopsis mollis*, *Yucca filamentosa*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4G5 (15-Oct-2002). This is not a rare forest type, although most examples have been impacted by removal of the more valuable timber species (e.g., *Quercus alba*), and remaining ones on private land are highly vulnerable to canopy removal and conversion to other forest types or other land uses.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: The limits of the range of this type needs to be clarified in Kentucky.

Global Similar Associations:

- *Pinus echinata* - *Quercus alba* / *Vaccinium pallidum* / *Hexastylis arifolia* - *Chimaphila maculata* Forest (CEGL008427)—a related mixed type.
- *Quercus alba* - *Carya alba* / *Euonymus americana* / *Hexastylis arifolia* Forest (CEGL006227)—a more mesic type with range overlap in the southern Piedmont.
- *Quercus alba* - *Quercus (rubra, coccinea)* - *Carya (alba, glabra)* / *Vaccinium pallidum* Piedmont Dry-Mesic Forest (CEGL008475)—has a higher proportion of *Quercus alba* to other oak species.
- *Quercus alba* - *Quercus falcata* / *Vaccinium (arboreum, hirsutum, pallidum)* Forest (CEGL008567)—more eastern and montane in distribution.
- *Quercus falcata* - *Quercus alba* - *Quercus stellata* - *Quercus velutina* Forest (CEGL005018)

Global Related Concepts:

- Black Oak: 110 (Eyre 1980) B
- IA6i. Interior Upland Dry-Mesic Oak - Hickory Forest (Allard 1990) B
- Mesotrophic Forest (Rawinski 1992) ?
- Southern Red Oak, HR (Pyne 1994) B
- Submesic Broadleaf Deciduous Forest (Ambrose 1990a) B
- White Oak - Black Oak - Northern Red Oak: 52 (Eyre 1980) B
- White Oak - Mixed Hardwoods, HR (Pyne 1994) B White Oak - Mixed Oak - Hickory, HR (Pyne 1994) B
- White Oak: 53 (Eyre 1980) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is documented on the west side of the park from 2 plots and on the east side from 1 plot, but presumably it is found in uplands in other parts of the park.

Global Range: This southern red oak - white oak dry forest is found in the Piedmont of Georgia, South Carolina, North Carolina, and Virginia, and in the interior uplands and Cumberland Plateau of Kentucky and Tennessee. It has also been reported from the Upper East Gulf Coastal Plain of Mississippi, Tennessee and Georgia.

Nations: US

States/Provinces: AL, GA, KY, MS, NC, SC, TN, VA?

USFS Ecoregions: 221Hc:CCC, 222Cg:CCC, 222Eb:CCC, 231Ae:CCC

Federal Lands: DOD (Arnold, Fort Benning, Fort Gordon?); DOE (Oak Ridge); NPS (Blue Ridge Parkway?, Cowpens, Guilford Courthouse, Kings Mountain, Little River Canyon?, Natchez Trace, Ninety Six, Shiloh); USFS (Daniel Boone, Holly Springs?, Oconee, Sumter, Talladega, Uwharrie); USFWS (Eufaula)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.3, SHIL.6, SHIL.23, and 1994 plots 3-33, 6SH-22, 6SH-21, 3-31, 7NE-30, 6SH-19, 7SW-26, 3T-10, 3T-11.

Local Description Authors: C.W. Nordman

Global Description Authors: S. Landaal, mod. R.E. Evans

References: ALNHP 2002, Allard 1990, Ambrose 1990a, Evans 1991, Eyre 1980, Golden 1979, NatureServe Ecology - Southeastern U.S. unpubl. data, Oberholster 1993, Oosting 1942, Peet and Christensen 1980, Peet et al. unpubl. data 2002, Pyne 1994, Rawinski 1992, Schafale and Weakley 1990, Southeastern Ecology Working Group n.d.

Dry Acid Eastern Coastal Plain Oak - Hickory Forest

Quercus falcata - *Quercus stellata* - *Carya alba* / *Vaccinium* spp. Coastal Plain Forest

Southern Red Oak - Post Oak - Mockernut Hickory / Blueberry species Coastal Plain Forest

Identifier: CEGL007246

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Quercus falcata</i> Forest Alliance (A.243)

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on:

Alliance (English name)	Southern Red Oak Forest Alliance
Association	<i>Quercus falcata</i> - <i>Quercus stellata</i> - <i>Carya alba</i> / <i>Vaccinium</i> spp. Coastal Plain Forest
Association (English name)	Southern Red Oak - Post Oak - Mockernut Hickory / Blueberry species Coastal Plain Forest
Association (Common name)	Dry Acid Eastern Coastal Plain Oak - Hickory Forest

Ecological System(s): Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest (CES203.241)
 Southern Coastal Plain Dry Upland Hardwood Forest (CES203.560)
 East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)

ELEMENT CONCEPT

Global Summary: This forest occurs on dry, acidic soils in naturally fire-protected landscapes in the Atlantic Coastal Plain and portions of the lower East Gulf Coastal Plain and Upper East Gulf Coastal Plain. Examples are generally dominated by *Quercus falcata* and *Quercus stellata*, with less *Quercus alba*. In addition, *Carya alba* or *Carya pallida* may be a component. Pines (e.g., *Pinus echinata*, *Pinus palustris*, *Pinus taeda*) may be a significant component but are not dominant. Many examples have a well-developed subcanopy of *Cornus florida*. *Danthonia spicata* is the dominant herbaceous plant on some sites in Tennessee (Shiloh National Military Park).

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: At Shiloh NMP this association is found on silt loams in xeric conditions on flat areas on upland ridges and southwest-facing slopes.

Global Environment: Stands of this association are found on sandy Coastal Plain sites associated with natural firebreaks such as bluffs or somewhat isolated ridges. Their isolation from most natural fire events is generally due to the local landscape in which they occur and is not due to management factors. At Shiloh NMP (Tennessee) this association is found on silt loams in xeric conditions on flat areas on upland ridges and southwest-facing slopes.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: This association is documented in 5 plots at Shiloh NMP. One of these plots (SHIL.5) is in a monument area which is mowed and lacks any tall shrubs. The dominant canopy tree is *Quercus falcata* with *Carya alba*, *Quercus stellata*, and *Liquidambar styraciflua* also important or codominant in the canopy. *Pinus virginiana* and *Pinus echinata* can also be found in the canopy in some plots. The subcanopy can be dominated by *Quercus alba*, *Quercus falcata*, *Quercus stellata*, *Quercus marilandica*, or *Pinus virginiana*. Other subcanopy trees include *Carpinus caroliniana*, *Carya alba*, *Liquidambar styraciflua*, *Cornus florida*, *Nyssa sylvatica*, *Pinus echinata*, *Acer rubrum*, *Amelanchier arborea*, *Juniperus virginiana* var. *virginiana*, *Carya glabra*, *Pinus taeda*, *Carya pallida*, *Prunus serotina*, *Quercus rubra*, *Quercus velutina*, and *Ulmus alata*. Tall shrubs are absent from some plots, but where present *Vaccinium arboreum* and *Vaccinium stamineum* are the most abundant. *Nyssa sylvatica*, *Acer rubrum*, *Juniperus virginiana* var. *virginiana*, *Carya pallida*, *Quercus marilandica*, *Quercus velutina*, *Fagus grandifolia*, and *Liquidambar styraciflua* also can be present, and at sparse amounts of tall shrub cover are *Quercus rubra*, *Quercus coccinea*, *Cornus florida*, *Sassafras albidum*, *Diospyros virginiana*, *Amelanchier arborea*, *Ulmus alata*, and *Pinus virginiana*. Short shrubs tend to be quite sparse, but *Vaccinium arboreum* and *Vaccinium stamineum* are the most abundant. Other short shrubs are *Carpinus caroliniana*, *Ulmus alata*, *Hypericum hypericoides*, *Juniperus virginiana* var. *virginiana*, *Quercus nigra*, *Quercus velutina*, *Amelanchier arborea*, *Albizia julibrissin*, *Quercus phellos*, *Lonicera japonica*, *Malus pumila*, *Viburnum rufidulum*, *Quercus falcata*, *Vitis rotundifolia*, *Sassafras albidum*, *Liquidambar styraciflua*, *Carya alba*, *Hypericum hypericoides* ssp. *multicaule* (= *Hypericum stragulum*), *Diospyros virginiana*, *Carya glabra*, *Quercus rubra*, *Nyssa sylvatica*, *Quercus alba*, *Gleditsia triacanthos*, *Prunus serotina*, *Amelanchier arborea*, *Rosa carolina*, *Pinus taeda*, *Liriodendron tulipifera*, *Toxicodendron radicans*, *Quercus marilandica*, *Rhus copallinum*, *Smilax rotundifolia*, and *Smilax glauca*. *Danthonia spicata* is the most abundant herb in the plots where it is found. *Krigia dandelion* and *Schizachyrium scoparium* are also important. Herbs are otherwise sparse and include *Hieracium gronovii*, *Aureolaria pectinata*, *Lespedeza repens*, *Sericocarpus linifolius*, *Lespedeza virginica*, *Orbexilum pedunculatum*, *Dichanthelium dichotomum* var. *dichotomum*, *Dichanthelium depauperatum*, *Lespedeza procumbens*, *Andropogon gyrans*, *Coreopsis major*, *Viola X palmata*, *Mimosa microphylla* (= *Mimosa quadrivalvis* var. *angustata*), *Andropogon virginicus*, *Tephrosia virginiana*, *Solidago odora*, *Porteranthus stipulatus*, *Galactia volubilis*, *Tridens flavus*, *Mitchella repens*, *Liatris aspera*, *Dichanthelium laxiflorum*, *Galium pilosum*, *Eupatorium rotundifolium* var. *ovatum*, *Stylosanthes biflora*, *Lespedeza repens*, *Ruellia strepens*, *Elephantopus tomentosus*, *Kummerowia striata*, *Diodia teres*, *Chrysopsis mariana*, *Eremochloa ophiuroides*, and *Paspalum laeve*.

Global Vegetation: Stands of this association are generally dominated by *Quercus falcata* and *Quercus stellata*, with less *Quercus alba*. In addition, *Carya alba* or *Carya pallida* may be a component. Pines (e.g., *Pinus echinata*, *Pinus palustris*, *Pinus taeda*) may be a significant component but are not dominant (Schafale and Weakley 1990). Many examples have a well-developed subcanopy of *Cornus florida*. At Fort Benning, Georgia, some examples of this or related vegetation are present downslope from *Quercus laevis* woodlands and upslope from *Nyssa biflora* saturated forests. Stands contain *Quercus falcata*, *Quercus velutina*, *Quercus margarettiae*, *Quercus coccinea*, and *Carya pallida* with *Cornus florida* and a low-density shrub/herb stratum which may contain *Symplocos tinctoria* and *Vaccinium stamineum*. These are areas which would be dominated by *Pinus palustris* (within its range) under more frequent fire.

This association is documented in 5 plots at Shiloh. One of these plots (SHIL.5) is in a monument area that is mowed and lacks any tall shrubs. The dominant canopy tree is *Quercus falcata* with *Carya alba*, *Quercus stellata* and *Liquidambar styraciflua* also important or codominant in the canopy. *Pinus virginiana* and *Pinus echinata* can also be found in the canopy in some plots. The subcanopy can be dominated by *Quercus alba*, *Quercus falcata*, *Quercus stellata*, *Quercus marilandica*, or *Pinus virginiana*. Other subcanopy trees include *Carpinus caroliniana*, *Carya alba*, *Liquidambar styraciflua*, *Cornus florida*, *Nyssa sylvatica*, *Pinus echinata*, *Acer rubrum*, *Amelanchier arborea*, *Juniperus virginiana* var. *virginiana*, *Carya glabra*, *Pinus taeda*, *Carya pallida*, *Prunus serotina*, *Quercus rubra*, *Quercus velutina*, and *Ulmus alata*. Tall shrubs are absent from some plots, but where present *Vaccinium arboreum* and *Vaccinium stamineum* are the most abundant. *Nyssa sylvatica*, *Acer rubrum*, *Juniperus virginiana* var. *virginiana*, *Carya pallida*, *Quercus marilandica*, *Quercus velutina*, *Fagus grandifolia*, and *Liquidambar styraciflua* also can be present, and at sparse amounts of tall-shrub cover are *Quercus rubra*, *Quercus coccinea*, *Cornus florida*, *Sassafras albidum*, *Diospyros virginiana*, *Amelanchier arborea*, *Ulmus alata*, and *Pinus virginiana*. Short shrubs tend to be quite sparse, but *Vaccinium arboreum* and *Vaccinium stamineum* are the most abundant. Other short shrubs are *Carpinus caroliniana*, *Hypericum hypericoides*, *Albizia julibrissin*, *Lonicera japonica*, *Malus pumila*, *Viburnum rufidulum*, *Vitis rotundifolia*, *Sassafras albidum*, *Hypericum hypericoides* ssp. *multicaule*, *Diospyros virginiana*, *Gleditsia triacanthos*, *Prunus serotina*, *Rosa carolina*, *Pinus taeda*, *Toxicodendron radicans*, *Rhus copallinum*, *Smilax rotundifolia*, and *Smilax glauca*. *Danthonia spicata* is the most abundant herb in the plots where it is found. *Krigia dandelion* and *Schizachyrium scoparium* are also important. Herbs are otherwise sparse and include *Hieracium gronovii*, *Aureolaria pectinata*, *Lespedeza repens*, *Sericocarpus linifolius*, *Lespedeza virginica*, *Orbexilum pedunculatum*, *Dichanthelium dichotomum* var. *dichotomum*, *Dichanthelium depauperatum*, *Lespedeza procumbens*, *Andropogon gyrans*, *Coreopsis major*, *Viola X palmata*, *Mimosa microphylla*, *Andropogon virginicus*, *Tephrosia virginiana*, *Solidago odora*, *Porteranthus stipulatus*, *Galactia volubilis*, *Tridens flavus*, *Mitchella repens*, *Liatris aspera*, *Dichanthelium laxiflorum*, *Galium pilosum*, *Eupatorium rotundifolium* var. *ovatum*, *Stylosanthes biflora*, *Lespedeza repens*, *Ruellia strepens*, *Elephantopus tomentosus*, *Kummerowia striata*, *Diodia teres*, *Chrysopsis mariana*, *Eremochloa ophiuroides*, and *Paspalum laeve*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Brickellia cordifolia*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4? (19-Sep-2001).

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This association needs further clarification and expansion with subsequent range assessment. The concept and description are based on Schafale and Weakley 1990, and data are needed from other parts of the putative range.

Global Similar Associations:

- *Pinus taeda* - *Quercus falcata* - *Quercus alba* / *Chasmanthium sessiliflorum* - *Piptochaetium avenaceum* Forest [Provisional] (CEGL004091)
- *Quercus falcata* - *Quercus (coccinea, stellata)* / *Vaccinium (pallidum, stamineum)* Forest (CEGL007247)—of the interior.
- *Quercus falcata* - *Quercus stellata* - (*Pinus taeda*) West Gulf Coastal Plain Forest (CEGL008415)
- *Quercus stellata* - *Quercus falcata* / *Ostrya virginiana* Forest (CEGL004064)—a somewhat richer forest found in loessal regions of the Gulf Coastal Plain.

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: At Shiloh NMP this association is found on silt loams in xeric conditions on flat areas on upland ridges and southwest-facing slopes. It is widespread and common at Shiloh NMP, being documented from 5 plots in 2002 and 4 plots in 1994.

Global Range: This type ranges from the Atlantic Coastal Plain of North Carolina to the Upper East Gulf Coastal Plain of western Tennessee, but presumably occurs in other portions of the Coastal Plain south and west to eastern Louisiana.

Nations: US

States/Provinces: AL, GA, LA, MS, NC, SC, TN

USFS Ecoregions: 222Cg:CCC, 231B:CC, 232B:CC

Federal Lands: DOD (Fort Benning); NPS (Natchez Trace, Shiloh); USFS (Bienville, Conecuh?, De Soto, Holly Springs, Homochitto, Talladega, Tombigbee, Tuskegee)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.5, SHIL.12, SHIL.13, SHIL.17, SHIL.21, 1994 plots 6SH-9, 7SW-8, 7SW-7, 7SW-20.

Local Description Authors: C.W. Nordman

Global Description Authors: R.E. Evans, mod. C.W. Nordman

References: Schafale and Weakley 1990, Southeastern Ecology Working Group n.d.

Southern Red Oak Flatwoods Forest

Quercus falcata Flatwoods Forest

Southern Red Oak Flatwoods Forest

Identifier: CEG004412

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Quercus falcata</i> Forest Alliance (A.243)
Alliance (English name)	Southern Red Oak Forest Alliance
Association	<i>Quercus falcata</i> Flatwoods Forest
Association (English name)	Southern Red Oak Flatwoods Forest
Association (Common name)	Southern Red Oak Flatwoods Forest

Ecological System(s): North-Central Interior Wet Flatwoods (CES202.700)
South-Central Interior / Upper Coastal Plain Wet Flatwoods (CES203.480)

ELEMENT CONCEPT

Global Summary: This southern red oak flatwoods forest is found in parts of the Interior Low Plateau and adjacent areas of the Upper East Gulf Coastal Plain of the southern United States. Stands occur on somewhat poorly drained sites. The vegetation is dominated by *Quercus falcata*. It is perhaps marginally a wetland and is better drained than *Quercus phellos* flatwoods. The canopy may also contain some *Quercus alba* and *Quercus stellata*, and possibly *Carya alba*. The ground cover is predominantly leaf litter and most occurrences are thought to be fire-suppressed. At Shiloh National Military Park (Tennessee) *Chasmanthium laxum*, *Krigia dandelion*, and *Carex complanata* were the most abundant herbaceous plants. It is known historically from the Upper East Gulf Coastal Plain of western Kentucky (eastern Gulf Coastal Plain on tertiary terraces), western Tennessee, and northwestern Mississippi (the "flatwoods belt"), as well as the Shawnee Hills and the Knobs region of Kentucky.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: At Shiloh National Military Park this association occurs in an area which is very flat, called flatwoods. It had standing water after heavy rain (>5 inches during the prior 2 days). The site may have a fragipan or other impermeable soil horizon which allows water to stay for short periods at the surface of the soil and stand. Despite this, the site was described as mesic and not called a wetland. The surface soil was silt loam.

Global Environment: In Kentucky stands occur on broad flats underlain by fragipans that impeded drainage. Although these sites are wet, they are perhaps only marginally wetlands by many definitions. They occur in limited areas of the Jackson Purchase region of western Kentucky where loess deposits thin out near the eastern edge of the region. At Shiloh National Military Park (Tennessee) this association occurs in an area which is very flat, called flatwoods. It had standing water after heavy rain (>5 inches during the prior 2 days). The site may have a fragipan or other impermeable soil horizon which allows water to stay for short periods at the surface of the soil and stand. Despite this, the site was described as mesic and not called a wetland. The surface soil was silt loam.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: This association as documented at Shiloh National Military Park is a forest with the canopy completely dominated by *Quercus falcata*. Many of these trees are quite large. There are no other canopy trees in the plot

(SHIL.22). The subcanopy has a variety of trees, the most common being *Nyssa sylvatica*, *Liquidambar styraciflua*, and *Acer rubrum*. Also in the subcanopy (in order of abundance) are *Quercus stellata*, *Carya alba*, *Ulmus alata*, *Liriodendron tulipifera*, *Fraxinus pennsylvanica*, and *Prunus serotina*. The most abundant tall shrubs (including tree species) are *Acer rubrum*, *Liquidambar styraciflua*, then *Carya alba*, *Nyssa sylvatica*, and *Cornus florida*. Less common as tall shrubs are *Quercus falcata*, *Vaccinium arboreum*, *Ulmus alata*, *Carya glabra*, *Juniperus virginiana* var. *virginiana*, *Amelanchier arborea*, and *Quercus phellos*. The most abundant plant in the short-shrub layer is *Vitis rotundifolia*. Other plants are rather sparse as short shrubs; in order of abundance they are *Quercus falcata*, *Nyssa sylvatica*, *Vaccinium arboreum*, *Rubus argutus*, *Lonicera japonica*, *Vaccinium stamineum*, *Ulmus alata*, *Hypericum hypericoides*, *Amelanchier arborea*, *Rosa carolina*, *Parthenocissus quinquefolia*, *Quercus phellos*, *Toxicodendron radicans*, *Fraxinus pennsylvanica*, *Smilax rotundifolia*, *Rhus copallinum*, *Liriodendron tulipifera*, and *Carya glabra*. The open areas have the most herbaceous plant cover. The most abundant herbaceous plants are *Chasmanthium laxum* and (less abundant) *Krigia dandelion*, then *Carex complanata*, *Scutellaria integrifolia*, *Oxalis stricta*, *Potentilla simplex* (= var. *simplex*), *Danthonia spicata*, *Dichanthelium laxiflorum*, *Elephantopus carolinianus*, and *Dichanthelium dichotomum*. Herbaceous plants present at trace amounts are *Lactuca canadensis*, *Viola X palmata*, *Vernonia missurica*, *Eupatorium rotundifolium* var. *ovatum*, *Hypoxis hirsuta*, *Stachys latidens*, *Galium triflorum*, and *Schizachyrium scoparium*.

Global Vegetation: The vegetation is dominated by *Quercus falcata*. The canopy may also contain some *Quercus alba* and *Quercus stellata*, and possibly *Carya alba*. The ground cover is predominantly leaf litter, and most occurrences are thought to be fire-suppressed. This association as documented at Shiloh National Military Park is a forest with the canopy completely dominated by *Quercus falcata*. Many of these trees are quite large. There are no other canopy trees in the plot (SHIL.22). The subcanopy has a variety of trees, the most common being *Nyssa sylvatica*, *Liquidambar styraciflua*, and *Acer rubrum*. Also in the subcanopy (in order of abundance) are *Quercus stellata*, *Carya alba*, *Ulmus alata*, *Liriodendron tulipifera*, *Fraxinus pennsylvanica*, and *Prunus serotina*. The most abundant tall shrubs (including tree species) are *Acer rubrum*, *Liquidambar styraciflua*, then *Carya alba*, *Nyssa sylvatica*, and *Cornus florida*. Less common as tall shrubs are *Quercus falcata*, *Vaccinium arboreum*, *Ulmus alata*, *Carya glabra*, *Juniperus virginiana* var. *virginiana*, *Amelanchier arborea*, and *Quercus phellos*. The most abundant plant in the short-shrub layer is *Vitis rotundifolia*. Other plants are rather sparse as short shrubs; in order of abundance they are *Quercus falcata*, *Nyssa sylvatica*, *Vaccinium arboreum*, *Rubus argutus*, *Lonicera japonica*, *Vaccinium stamineum*, *Ulmus alata*, *Hypericum hypericoides*, *Amelanchier arborea*, *Rosa carolina*, *Parthenocissus quinquefolia*, *Quercus phellos*, *Toxicodendron radicans*, *Fraxinus pennsylvanica*, *Smilax rotundifolia*, *Rhus copallinum*, *Liriodendron tulipifera*, and *Carya glabra*. The open areas have the most herbaceous plant cover. The most abundant herbaceous plants are *Chasmanthium laxum* and (less abundant) *Krigia dandelion*, then *Carex complanata*, *Scutellaria integrifolia*, *Oxalis stricta*, *Potentilla simplex* (= var. *simplex*), *Danthonia spicata*, *Dichanthelium laxiflorum*, *Elephantopus carolinianus*, and *Dichanthelium dichotomum*. Herbaceous plants present at trace amounts are *Lactuca canadensis*, *Viola X palmata*, *Vernonia missurica*, *Eupatorium rotundifolium* var. *ovatum*, *Hypoxis hirsuta*, *Stachys latidens*, *Galium triflorum*, and *Schizachyrium scoparium*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G2? (30-Sep-2004). This is an unusual upland wetland community, never abundant in the landscape and severely impacted by agriculture and other intensive land uses. Even historically, it was known only from the Upper East Gulf Coastal Plain of western Kentucky, western Tennessee, and northwestern Mississippi (the "flatwoods belt"), and the Shawnee Hills and Knobs region of Kentucky. Most occurrences are small in size and lack any jurisdictional wetland protection. Most historic occurrences have been cleared, drained and tiled, and the few remaining sites are small and degraded. Fire suppression has also caused degradation of remaining examples.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments: The plot (SHIL.22) is a good example of this association; the data have been used to improve and add detail to the global description.

Global Comments: In Kentucky, historic occurrences have been cleared, drained and tiled, and remaining sites are small and degraded. Similar flatwoods vegetation occurs elsewhere in Kentucky but have temporarily flooded hydrology and different canopy dominants [see *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis (occidentalis, laevigata)* Temporarily Flooded Forest Alliance (A.286) and *Quercus palustris* - (*Quercus bicolor*) Seasonally Flooded Forest Alliance (A.329)]. This type is also better drained than *Quercus phellos* flatwoods. It is known historically from the Upper East Gulf Coastal Plain of western Kentucky (eastern Gulf Coastal Plain on tertiary terraces), western Tennessee, and northwestern Mississippi (the "flatwoods belt"), as well as the Shawnee Hills and the Knobs region of Kentucky. See the dissertation of Wharton (1945) for information on this association in the Knobs region.

Global Similar Associations:

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found in flattest area near the middle of Shiloh NMP.

Global Range: This southern red oak flatwoods forest is found in parts of the Interior Low Plateau of the United States, ranging from Kentucky and Tennessee into parts of Indiana and Mississippi.

Nations: US

States/Provinces: IN?, KY, MS, TN

USFS Ecoregions: 222Cb:CCC, 222Cc:CCP, 222Ce:CCP, 222Cg:CCC, 222Da:CCC, 222Eg:CCC

Federal Lands: NPS (Natchez Trace, Shiloh)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.22.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Pyne, J. Campbell and M. Evans, mod. C.W. Nordman

References: Southeastern Ecology Working Group n.d., Wharton 1945

Upper East Gulf Coastal Plain Chinquapin Oak - Mixed Oak-Hickory Forest

Quercus muehlenbergii - *Carya* spp. / *Ostrya virginiana* Upper East Gulf Coastal Plain Forest

Chinquapin Oak - Hickory species / Eastern Hop-hornbeam Upper East Gulf Coastal Plain Forest

Identifier: CEG003903

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Quercus muehlenbergii</i> - (<i>Acer saccharum</i>) Forest Alliance (A.1912)
Alliance (English name)	Chinquapin Oak - (Sugar Maple) Forest Alliance
Association	<i>Quercus muehlenbergii</i> - <i>Carya</i> spp. / <i>Ostrya virginiana</i> Upper East Gulf Coastal Plain Forest
Association (English name)	Chinquapin Oak - Hickory species / Eastern Hop-hornbeam Upper East Gulf Coastal Plain Forest
Association (Common name)	Upper East Gulf Coastal Plain Chinquapin Oak - Mixed Oak-Hickory Forest

Ecological System(s): East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)

ELEMENT CONCEPT

Global Summary: This dry-mesic to mesic chinquapin oak - mixed oak-hickory forest association is found in the Upper East Gulf Coastal Plain of Tennessee. It has been documented at Shiloh National Military Park (Hardin County, Tennessee). The canopy is dominated by a mixture of *Quercus muehlenbergii*, *Quercus alba*, and *Quercus velutina*, with *Fraxinus americana* and *Juglans nigra* in smaller amounts or in the understory. *Carya* spp. are prominent in the canopy and subcanopy, including *Carya ovata*, *Carya ovalis*, *Carya alba*, and *Carya glabra*. All the lower woody strata contain substantial *Ostrya virginiana*. The one stand sampled is near an ancient (Woodland Period) Native American mound complex very near the Tennessee River. The vegetation could be influenced by shells and shell fragments in the soil. The site could be a former shell midden, but this has not been investigated.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: Stands include dry-mesic to subxeric forests of gently sloping topography. The vegetation could be influenced by shells and shell fragments in the soil.

Global Environment: Stands include dry-mesic to subxeric forests of gently sloping topography. The vegetation could be influenced by shells and shell fragments in the soil.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: The vegetation is dominated by a mixture of *Quercus muehlenbergii*, *Quercus alba*, and *Quercus velutina*, with *Fraxinus americana* and *Juglans nigra* in smaller amounts or in the understory (NatureServe Ecology unpubl. data). *Carya* spp. are prominent in the canopy and subcanopy, including *Carya ovata*, *Carya ovalis*, *Carya alba*, and *Carya glabra*. All the lower woody strata contain substantial *Ostrya virginiana*. Other woody plants include *Ulmus alata*, *Staphylea trifolia*, *Viburnum rufidulum*, and *Morus rubra*. In the one stand sampled, *Acer barbatum* and/or *Acer saccharum* are apparently absent. The herbaceous layer includes some mesic forest species, including *Sanguinaria canadensis* and *Osmorhiza longistylis*, as well as several *Carex* species. Other herbaceous plants include *Acalypha rhomboidea*, *Polygonum virginianum*, *Chasmanthium sessiliflorum*, *Arisaema triphyllum*, *Ageratina altissima*, *Galium circaezans*, *Agrimonia gryposepala*, *Trachelospermum difforme*, *Asplenium platyneuron*, and *Galium triflorum*.

Global Vegetation: The vegetation is dominated by a mixture of *Quercus muehlenbergii*, *Quercus alba*, and *Quercus velutina*, with *Fraxinus americana* and *Juglans nigra* in smaller amounts or in the understory (NatureServe Ecology unpubl. data). *Carya* spp. are prominent in the canopy and subcanopy, including *Carya ovata*, *Carya ovalis*, *Carya alba*, and *Carya glabra*. All the lower woody strata contain substantial *Ostrya virginiana*. Other woody plants include *Ulmus alata*, *Staphylea trifolia*, *Viburnum rufidulum*, and *Morus rubra*. In the one stand sampled, *Acer barbatum* and/or *Acer saccharum* are apparently absent. The herbaceous layer includes some mesic forest species, including *Sanguinaria canadensis* and *Osmorhiza longistylis*, as well as several *Carex* species. Other herbaceous plants include *Acalypha rhomboidea*, *Polygonum virginianum*, *Chasmanthium sessiliflorum*, *Arisaema triphyllum*, *Ageratina altissima*, *Galium circaezans*, *Agrimonia gryposepala*, *Trachelospermum difforme*, *Asplenium platyneuron*, and *Galium triflorum*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G3 (25-Feb-2004). This oak-dominated forest association is known from the Upper East Gulf Coastal Plain of Tennessee and could be in adjacent Alabama and/or Mississippi. Its full range is not known; it is described from a small number of samples. It is apparently restricted to soils which are influenced by the presence of limestones or other basic substrates, including shell fragments from Native American mounds, on upper to mid slopes. Some examples are U.S. National Park Service lands. Most other high-quality examples have been eliminated or severely impacted by timber removal, grazing, soil erosion, and fire suppression. Other current threats include windthrow, microclimate modification from intensive silvicultural practices on adjacent uplands, forest type conversion, and herbicide use.

CLASSIFICATION

Status: Standard

Classification Confidence: 3 - Weak

Shiloh National Military Park Comments:

Global Comments: This type may be renamed as the data are fully integrated. It is based on few samples, and more information is needed on its complete range and its relationship to similar vegetation.

Global Similar Associations:

- *Acer saccharum* - *Quercus muehlenbergii* / *Cercis canadensis* Forest (CEGL006017)
- *Quercus pagoda* / *Ostrya virginiana* Forest (CEGL003871)—related upland forest dominated by *Quercus pagoda*.
- *Quercus shumardii* - *Quercus muehlenbergii* - *Acer* (*barbatum*, *leucoderme*, *saccharum*) / *Ostrya virginiana* Forest (CEGL008442)—of interior regions, with *Acer* spp. and *Quercus shumardii*.

Global Related Concepts:

- IA6j. Interior Calcareous Oak - Hickory Forest (Allard 1990) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found on a bluff of a ravine south of Dill Branch. The one stand sampled is near an ancient (Woodland Period) Native American mound complex very near the Tennessee River.

Global Range: This forest association is described from the Upper East Gulf Coastal Plain of Tennessee and could be in adjacent Alabama and/or Mississippi. More information is needed on the complete range of this type.

Nations: US

States/Provinces: AL?, MS?, TN

USFS Ecoregions: 222Cg:CCC, 231Be:???

Federal Lands: NPS (Shiloh)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.20.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Pyne, mod. C.W. Nordman

References: Allard 1990, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

Central Interior Upland Cherrybark Oak Forest

Quercus pagoda / *Ostrya virginiana* Forest

Cherrybark Oak / Eastern Hop-hornbeam Forest

Identifier: Cegl003871

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Lowland or submontane cold-deciduous forest (I.B.2.N.a.)
Alliance	<i>Quercus shumardii</i> - <i>Quercus pagoda</i> Forest Alliance (A.252)
Alliance (English name)	Shumard Oak - Cherrybark Oak Forest Alliance
Association	<i>Quercus pagoda</i> / <i>Ostrya virginiana</i> Forest
Association (English name)	Cherrybark Oak / Eastern Hop-hornbeam Forest
Association (Common name)	Central Interior Upland Cherrybark Oak Forest

Ecological System(s): East Gulf Coastal Plain Northern Dry Upland Hardwood Forest (CES203.483)

ELEMENT CONCEPT

Global Summary: This dry-mesic forest community is restricted to apparently calcareous-influenced or basic soils associated with high terraces and adjacent slopes in western Tennessee and possibly adjacent areas. These are upland stands with a significant, if not dominant, component of *Quercus pagoda*. A number of other hardwoods may also be present, such as *Quercus velutina*, *Liquidambar styraciflua*, *Carya ovalis*, *Liriodendron tulipifera*, *Quercus rubra*, and *Quercus imbricaria*. The subcanopy may be heavily dominated by *Ostrya virginiana* and may also contain *Ulmus alata*, *Juniperus virginiana*, *Fraxinus americana*, and *Acer rubrum*. These forests are on distinctly upland areas isolated from the river floodplains.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This association is found on dry-mesic loam soil on a gentle west-facing slope. There may be circumneutral conditions here and perhaps a clay subsoil.

Global Environment: These forests are on distinctly upland areas isolated from river floodplains, such as the Tennessee River (NatureServe Ecology unpubl. data).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Forest canopy is dominated by *Quercus pagoda*, and to a lesser extent *Quercus velutina*. *Liquidambar styraciflua* and *Fraxinus americana* are also present at low cover in the canopy. The subcanopy is dominated by *Liquidambar styraciflua* and *Ostrya virginiana* with *Ulmus alata*, *Juniperus virginiana* var. *virginiana*, *Acer rubrum*, *Prunus serotina*, and *Quercus rubra*. The dominant tall shrubs are *Ostrya virginiana*, *Ulmus alata*, and *Acer rubrum*. Other tall shrubs are *Juniperus virginiana* var. *virginiana*, *Carya alba*, *Vaccinium stamineum*, *Nyssa sylvatica*, *Quercus rubra*, and the exotic species

Albizia julibrissin. *Toxicodendron radicans* is the only vine present. Herbs are sparse; *Chasmanthium laxum* is the most common. Other herbs are *Carex albicans* var. *australis*, *Agrimonia rostellata*, *Botrychium biternatum*, *Sanicula canadensis*, *Danthonia spicata*, *Lespedeza procumbens*, and *Aristolochia serpentaria*.

Global Vegetation: This type was originally described based on stands dominated by *Quercus pagoda* that also contained *Quercus velutina* and *Liquidambar styraciflua*. Additional observations were added to this concept which, in addition to *Quercus pagoda*, had high cover of *Carya ovalis*, along with *Liriodendron tulipifera*, *Quercus rubra*, and *Quercus imbricaria* in the overstory (NatureServe Ecology unpubl. data). The subcanopy of some examples may be heavily dominated by *Ostrya virginiana* and also contain *Ulmus alata*, *Juniperus virginiana*, *Fraxinus americana*, and *Acer rubrum*. At Shiloh National Military Park (western Tennessee) the forest canopy is dominated by *Quercus pagoda* and to a lesser extent *Quercus velutina*. *Liquidambar styraciflua* and *Fraxinus americana* are also present at low cover in the canopy. The subcanopy is dominated by *Liquidambar styraciflua* and *Ostrya virginiana* with *Ulmus alata*, *Juniperus virginiana* var. *virginiana*, *Acer rubrum*, *Prunus serotina*, and *Quercus rubra*. The dominant tall shrubs are *Ostrya virginiana*, *Ulmus alata*, and *Acer rubrum*. Other tall shrubs are *Juniperus virginiana* var. *virginiana*, *Carya alba*, *Vaccinium stamineum*, *Nyssa sylvatica*, *Quercus rubra*, and the exotic plant *Albizia julibrissin*. *Toxicodendron radicans* is the only vine present. Herbs are sparse; *Chasmanthium laxum* is the most common. Other herbs are *Carex albicans* var. *australis*, *Agrimonia rostellata*, *Botrychium biternatum*, *Sanicula canadensis*, *Danthonia spicata*, *Lespedeza procumbens*, and *Aristolochia serpentaria*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G3? (25-Feb-2004). The full range of this type is not known; it is based on a small number of samples. The forest is apparently confined to the upper portions of the East Gulf Coastal Plain and also from the adjacent Interior Low Plateau in Tennessee. Distribution in the Interior Low Plateau in Tennessee is very limited, as indicated by the distribution of *Quercus pagoda* in the state (Chester et al. 1997). This type is found on sheltered slopes near large rivers (i.e., Cumberland and Tennessee) which have mesic conditions and a moderate microclimate. Known examples are rare. *Quercus pagoda* is a commercially valuable species (Krinnard 1990), so examples on unprotected private land are threatened by timbering. The question mark in the Global Rank is to indicate the lack of certainty about the distribution of the type, especially in the states of Alabama, Mississippi, and Kentucky. Additional information about the distribution and/or abundance of the type in these states will be helpful in revising the Global Rank.

CLASSIFICATION

Status: Standard

Classification Confidence: 3 - Weak

Shiloh National Military Park Comments:

Global Comments: This type may be renamed as the data are fully integrated. It is based on few samples, and more information is needed on its complete range and its relationship to similar vegetation.

Global Similar Associations:

- *Quercus muehlenbergii* - *Carya* spp. / *Ostrya virginiana* Upper East Gulf Coastal Plain Forest (CEGL003903)—related forest dominated by *Quercus muehlenbergii*.

Global Related Concepts:

- IA6j. Interior Calcareous Oak - Hickory Forest (Allard 1990) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is found on a slope of Glover Branch (a tributary of Owl Creek).

Global Range: This forest association is described from western Tennessee and could occur in adjacent Alabama, Kentucky and/or Mississippi. More information is needed on the complete range of this type.

Nations: US

States/Provinces: AL?, KY?, MS?, TN

USFS Ecoregions: 222Cg:CCC, 231Be:???

Federal Lands: NPS (Fort Donelson, Shiloh)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.11.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Pyne, mod. C.W. Nordman

References: Allard 1990, Chester et al. 1997, Krinard 1990, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

Box-elder Floodplain Forest

***Acer negundo* Forest**

Box-elder Forest

Identifier: CEGL005033

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Acer negundo</i> Temporarily Flooded Forest Alliance (A.278)
Alliance (English name)	Box-elder Temporarily Flooded Forest Alliance
Association	<i>Acer negundo</i> Forest
Association (English name)	Box-elder Forest
Association (Common name)	Box-elder Floodplain Forest

Ecological System(s):	Lower Mississippi River Bottomland and Floodplain Forest (CES203.512)
	Central Appalachian Floodplain (CES202.608)
	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
	South-Central Interior Large Floodplain (CES202.705)
	Atlantic Coastal Plain Large River Floodplain Forest (CES203.066)

ELEMENT CONCEPT

Global Summary: This box-elder floodplain forest is found on floodplains in the southern, eastern, and midwestern United States. Stands occur on large rivers in the active floodplain and on sandbars, and may form farther from the riverfront following disturbance. They are typically temporarily flooded in the spring. These early successional forests are dominated by *Acer negundo*. Other characteristic species include *Platanus occidentalis*, *Celtis laevigata*, *Acer rubrum*, *Liquidambar styraciflua*, *Acer saccharinum*, *Ulmus alata*, *Ulmus rubra*, *Carpinus caroliniana*, *Morus rubra*, and *Populus deltoides*. The shrub and herb layers range from sparse to relatively lush, and the vine component often is heavy. The range, dynamics, and variability of this type is complicated by the 'weedy' nature of *Acer negundo*. For example, disturbed stands in the *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis* (*occidentalis*, *laevigata*) Temporarily Flooded Forest Alliance (A.286) often become dominated by *Acer negundo*. In Kentucky, *Acer negundo* may also dominate in old fields, with *Dichanthelium clandestinum* and *Carex* spp. in the ground layer.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association is found at the mouth of Dill Branch near the Tennessee River at Shiloh NMP.

Global Environment: Stands occur on large rivers in the active floodplain and on sandbars, and may form farther from the riverfront following disturbance. They are typically temporarily flooded in the spring. In Kentucky, these forests may also occur in old fields.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: The stand sampled is dominated by *Acer negundo* with *Acer rubrum*, *Fraxinus americana*, and *Liquidambar styraciflua*. Subcanopy trees include *Carpinus caroliniana*, *Ulmus* sp., and *Acer negundo*. Shrubs include *Acer negundo*, *Carpinus caroliniana*, *Carya alba*, and *Ulmus* sp. Also present as short shrubs were *Arundinaria gigantea*, *Toxicodendron radicans*, *Smilax* sp., and *Parthenocissus quinquefolia*. *Boehmeria cylindrica* was an important herbaceous plant.

Global Vegetation: These early successional forests are dominated by *Acer negundo*. Other characteristic species include *Platanus occidentalis*, *Celtis laevigata*, *Acer rubrum*, *Liquidambar styraciflua*, *Acer saccharinum*, *Ulmus alata*, *Ulmus rubra*, *Carpinus caroliniana*, *Morus rubra*, and *Populus deltoides*. The shrub and herb layers range from sparse to relatively lush, and the vine

component often is heavy. The range, dynamics, and variability of this type are complicated by the 'weedy' nature of *Acer negundo*, e.g., in Kentucky, *Acer negundo* may be dominant in old fields, with *Dichanthelium clandestinum* and *Carex* spp. in the ground layer. Elsewhere in the Midwest, logged and grazed stands of *Fraxinus pennsylvanica* and *Ulmus americana* may be dominated by *Acer negundo*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G4G5 (28-Mar-2003). As currently defined this is a broad-ranging community type. However, the range, dynamics, and variability of this type is complicated by the "weedy" nature of *Acer negundo*. More information may be needed to clarify the extent to which this type represents purely natural vegetation. Some stands may develop following disturbance of other natural bottomland communities.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: The range, dynamics, and variability of this type is complicated by the 'weedy' nature of *Acer negundo*. For example, disturbed stands in the *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis (occidentalis, laevigata)* Temporarily Flooded Forest Alliance (A.286) often become dominated by *Acer negundo*. And in the upper Midwest *Acer negundo*-dominated stands are treated as part of the *Fraxinus pennsylvanica* - (*Ulmus americana*) / *Symphoricarpos occidentalis* Forest (CEGL002088). Thus, some consistency is needed in the application of this type across its range. In Arkansas, these forests can be pure *Acer negundo* or have *Acer rubrum* and *Platanus occidentalis* as associates (T. Foti pers. comm. 1999). Composition is variable. In central Kentucky, a simple strip of *Acer negundo* and *Platanus occidentalis*, plus *Ulmus americana*, etc., is common along all medium-sized streams, with almost no *Acer saccharinum* or *Populus deltoides* (J. Campbell pers. comm. 1999). This type occurs along the Arkansas River in Arkansas (D. Zollner pers. comm. 1999). In Missouri, stands would probably be combined with *Betula nigra* - *Platanus occidentalis* Forest (CEGL002086) (M. Leahy pers. comm. 1999). In Kentucky, this may be found at the Licking River impoundment (Cave Run Lake).

Global Similar Associations:

- *Acer negundo* - (*Platanus occidentalis*, *Populus deltoides*) Forest (CEGL004690)
- *Betula nigra* - *Platanus occidentalis* Forest (CEGL002086)
- *Fraxinus pennsylvanica* - (*Ulmus americana*) / *Symphoricarpos occidentalis* Forest (CEGL002088)
- *Fraxinus pennsylvanica* - *Ulmus americana* - (*Acer negundo*, *Tilia americana*) Northern Forest (CEGL002089)
- *Fraxinus pennsylvanica* - *Ulmus spp.* - *Celtis occidentalis* Forest (CEGL002014)

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found at Dill Branch near the Tennessee River. It may also be found along Owl Creek and in the bottomlands of the Tennessee River in the southeastern part of Shiloh NMP.

Global Range: This *Acer negundo* floodplain forest is found sporadically on floodplains in the southern, eastern, and midwestern United States, ranging from Maryland west to Iowa, south to Louisiana and possibly Texas, and east to Georgia.

Nations: US

States/Provinces: AL, AR, GA, IA, KY, LA, MD, MO, MS, OK, SC, TN, TX?, VA, WV

USFS Ecoregions: 221Ha:CC?, 221Hb:CCC, 221Hc:CC?, 221Hd:CC?, 221He:CC?, 221Ja:CP?, 221Jb:CP?, 221Jc:CP?, 222Ca:CC?, 222Cb:CC?, 222Cd:CC?, 222Ce:CC?, 222Cf:CC?, 222Cg:CCC, 222Ch:CC?, 222Ea:CCP, 222Eb:CCP, 222Ec:CCP, 222Ed:CCP, 222Ee:CCP, 222Ef:CCP, 222Eg:CCP, 222Eh:CCP, 222Ei:CCP, 222Ej:CCP, 222Ek:CCP, 222En:CCP, 222Eo:CCC, 222Fa:CP?, 222Fb:CP?, 222Fc:CP?, 222Fd:CP?, 222Ff:CP?, 231Ba:CCP, 231Bb:CCP, 231Bc:CCP, 231Bd:CCP, 231Be:CCP,

231Bf:CCP, 231Bg:CCP, 231Bh:CCP, 231Bi:CCP, 231Bj:CCP, 231Bk:CCP, 231Bl:CCP, 231Ca:CCP, 231Cb:CCP, 231Cc:CCP, 231Cd:CCC, 231Ce:CCP, 231Cf:CCP, 231Cg:CCP, 231Da:CCP, 231Db:CCP, 231Dc:CCP, 231Dd:CCP, 231De:CCP, 231Ea:CC?, 231Eb:CCP, 231Ec:CC?, 231Ed:CCP, 231Ee:CCP, 231Ef:CCP, 231Eg:CCP, 231Eh:CCP, 231Ei:CCP, 231Ej:CCP, 231Ek:CCP, 231El:CCP, 231Em:CCP, 231En:CCP, 231Fa:C??, 231Fb:C??, 231Ga:CCC, 231Gb:CCC, 231Gc:CCC, 234Aa:CCC, 234Ab:CCC, 234Ac:CCC, 234Ad:CCC, 234Ae:CCC, 234Af:CCC, 234Ag:CCC, 234Ah:CCC, 234Ai:CCC, 234Aj:CCC, 234Ak:CCC, 234Al:CCC, 234Am:CCC, 234An:CCC

Federal Lands: NPS (Mammoth Cave, Natchez Trace, Shiloh); USFS (Daniel Boone, St. Francis); USFWS (Little River)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plot 3-29.

Local Description Authors: C.W. Nordman

Global Description Authors:

References: Blair 1938, Campbell pers. comm., Fleming et al. 2001, Foti pers. comm., Hoagland 2000, Leahy pers. comm., Patterson and DeSelm 1989, Southeastern Ecology Working Group n.d., Zollner pers. comm.

River Birch Levee Forest

Betula nigra - *Platanus occidentalis* / *Alnus serrulata* / *Boehmeria cylindrica* Forest

River Birch - Sycamore / Smooth Alder / False Nettle Forest

Identifier: CEG007312

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Betula nigra</i> - (<i>Platanus occidentalis</i>) Temporarily Flooded Forest Alliance (A.280)
Alliance (English name)	River Birch - (Sycamore) Temporarily Flooded Forest Alliance
Association	<i>Betula nigra</i> - <i>Platanus occidentalis</i> / <i>Alnus serrulata</i> / <i>Boehmeria cylindrica</i> Forest
Association (English name)	River Birch - Sycamore / Smooth Alder / False Nettle Forest
Association (Common name)	River Birch Levee Forest

Ecological System(s):	Atlantic Coastal Plain Small Brownwater River Floodplain Forest (CES203.250)
	Atlantic Coastal Plain Brownwater Stream Floodplain Forest (CES203.248)
	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)
	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
	South-Central Interior Small Stream and Riparian (CES202.706)
	West Gulf Coastal Plain Large River Floodplain Forest (CES203.488)
	Red River Large Floodplain Forest (CES203.065)
	Atlantic Coastal Plain Large River Floodplain Forest (CES203.066)

ELEMENT CONCEPT

Global Summary: This riverfront forest, dominated by *Betula nigra* and *Platanus occidentalis*, occurs primarily on levees along small rivers and streams. It also is found along flowages of larger rivers ('artificial oxbows'). It ranges from Virginia to southern Georgia in the Piedmont and Coastal Plain (and into the southern and lower-elevation parts of the Southern Blue Ridge, excluding the highest elevations of the Mountains) and west to eastern Texas, and possibly the Cumberland Plateau of northern Alabama. 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.

Platanus occidentalis may be codominant, or at least prominent, with large individuals overtopping the *Betula*, which tends to have a greater number of stems, but *Platanus occidentalis* may be more conspicuous because of its larger size. Other canopy associates include *Liriodendron tulipifera*, *Liquidambar styraciflua*, *Acer rubrum*, *Acer negundo*, *Ulmus americana*, *Ulmus rubra*, *Celtis* spp., and *Quercus* spp. The subcanopy or tall-shrub strata may include *Cornus florida* and *Carpinus caroliniana*, along with *Acer rubrum*, *Ilex opaca*, *Ulmus alata*, *Prunus serotina*, and *Carya* spp. Shrubs and woody vines may include *Alnus serrulata*, *Euonymus americana*, *Parthenocissus quinquefolia*, *Smilax rotundifolia*, *Toxicodendron radicans*, and *Vitis rotundifolia*. Herbs may include *Boehmeria cylindrica*, *Polygonum virginianum*, *Rudbeckia laciniata*, *Sanicula* sp., *Symphyotrichum lateriflorum* (= *Aster lateriflorus*), *Thalictrum dioicum*, *Viola sororia*, *Polystichum acrostichoides*, *Woodwardia areolata*, *Botrychium dissectum*,

Botrychium virginianum, and *Impatiens capensis*. The exotics *Ligustrum sinense*, *Lonicera japonica*, *Microstegium vimineum*, and *Rosa multiflora* may spread into disturbed examples of this community.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This type is found along Shiloh Branch, a small stream.

Global Environment: *Betula nigra* requires soils near field capacity throughout the year but is relatively intolerant of flooding; *Platanus occidentalis* also is intolerant of flooding during the growing season and will die if the entire tree is inundated for more than two weeks. The absence of this community in the lower Mississippi River Alluvial Plain is attributed this intolerance, as is its most common location on levees of smaller rivers. The community usually is found on the natural levee of the watercourse and, therefore, is slightly elevated from the flats behind the levee. The community is more common along small streams and blackwater streams than along alluvial floodplains, mostly because of the higher sustained flow rates of these larger rivers. It also is found along flowages of larger rivers ("artificial oxbows") in southeast Kentucky. In the Upper East Gulf Coastal Plain (Shiloh National Military Park, Hardin County, Tennessee), this association occurs along small stream floodplains.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Stands are dominated by *Betula nigra*, *Liriodendron tulipifera*, and to a lesser extent *Platanus occidentalis*. The subcanopy has *Liriodendron tulipifera*, *Liquidambar styraciflua*, and *Cornus florida*. Tall shrubs (in order of dominance) are *Cornus florida*, *Acer rubrum*, *Prunus serotina*, and *Ulmus alata*. *Toxicodendron radicans* is a common low shrub. *Microstegium vimineum* is the dominant herbaceous plant.

Global Vegetation: *Betula nigra* contributes at least 50%, and often more, of the tree density of stands of this community. *Platanus occidentalis* may be codominant, or at least prominent, with large individuals overtopping the *Betula*, which tends to have a greater number of stems, but *Platanus occidentalis* may be more conspicuous because of its larger size. Other canopy associates include *Liriodendron tulipifera*, *Liquidambar styraciflua*, *Acer rubrum*, *Acer negundo*, *Ulmus americana*, *Ulmus rubra*, *Celtis* spp., and *Quercus* spp. *Pinus echinata*, *Pinus strobus*, or *Pinus virginiana* may be found in some montane or submontane examples. The subcanopy or tall-shrub strata may include *Cornus florida* and *Carpinus caroliniana*, along with *Acer rubrum*, *Ilex opaca*, *Ulmus alata*, *Prunus serotina*, and *Carya* spp. Shrubs and woody vines may include *Alnus serrulata*, *Euonymus americana*, *Parthenocissus quinquefolia*, *Smilax rotundifolia*, *Toxicodendron radicans*, and *Vitis rotundifolia*. Herbs may include *Boehmeria cylindrica*, *Polygonum virginianum*, *Rudbeckia laciniata*, *Sanicula* sp., *Symphytotrichum lateriflorum* (= *Aster lateriflorus*), *Thalictrum dioicum*, *Viola sororia*, *Polystichum acrostichoides*, *Woodwardia areolata*, *Botrychium dissectum*, *Botrychium virginianum*, and *Impatiens capensis*. The exotics *Ligustrum sinense*, *Lonicera japonica*, *Microstegium vimineum*, and *Rosa multiflora* 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.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Betula nigra</i> , <i>Liquidambar styraciflua</i> , <i>Liriodendron tulipifera</i> , <i>Platanus occidentalis</i>
Tree subcanopy	Broad-leaved deciduous tree	<i>Alnus serrulata</i> , <i>Carpinus caroliniana</i> , <i>Salix nigra</i>
Shrub/sapling (tall & short)	Vine/Liana	<i>Berchemia scandens</i> , <i>Campsis radicans</i> , <i>Toxicodendron radicans</i> , <i>Vitis riparia</i>
Tall shrub/sapling	Broad-leaved deciduous shrub	<i>Asimina parviflora</i>
Herb (field)	Forb	<i>Boehmeria cylindrica</i> , <i>Geranium maculatum</i> , <i>Impatiens capensis</i> , <i>Laportea canadensis</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G4G5 (19-Sep-2001). This is a widespread, variable, dynamic association. The principal threats to it come from hydrologic alterations, stands do not typically contain valuable timber species.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: 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. This includes the 'Sycamore - River Birch - Silver Maple' forests of the Pearl River in Louisiana mentioned by K. Ribbeck. Additional species from the shrub and herb strata need to be added to make more apparent the differences between this association and *Betula nigra* - *Platanus occidentalis* Forest (CEGL002086), which is a more northern forest. In Kentucky, this association (CEGL007312) would be found on the southern part of the Daniel Boone National Forest, in contrast to CEGL002086, which is more northern.

Global Similar Associations:

- *Betula nigra* - *Platanus occidentalis* Forest (CEGL002086)

Global Related Concepts:

- Brownwater Levee Forest (Birch-Sycamore Successional Phase) (Schafale 2000) ?
- Eutrophic Seasonally Flooded Forest (Rawinski 1992) ?
- IIA7b. River Birch - Sycamore Riverfront Forest (Allard 1990) B
- Mountain Stream Floodplain Forest (Ambrose 1990a) ?
- River Birch - Sycamore (72) (USFS 1988) ?
- River Birch - Sycamore Riverfront Forest (Oberholster 1993) B
- River Birch - Sycamore: 61 (Eyre 1980) ?
- River Birch-Sycamore Riverfront Forest (Pyne 1994) ?

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found along Shiloh Branch and probably occurs along other creeks at Shiloh NMP.

Global Range: This riverfront association ranges from Virginia to southern Georgia in the Piedmont and Coastal Plain (and into the southern and lower-elevation parts of the Southern Blue Ridge, excluding the highest elevations of the mountains) and west to eastern Texas, and possibly the Cumberland Plateau of northern Alabama.

Nations: US

States/Provinces: AL, GA, KY, LA, MS, NC, SC, TN, TX, VA

USFS Ecoregions: 221Hc:CCC, 222Cf:CCC, 222Cg:CCC, 222E:CC, 231Cd:CPP, 231E:CC, 231Ga:CCC, 231Gb:CCC, 231Gc:CCC, 232B:CC, 232C:CC, 232D:CC, 232F:CC, 234Aa:CCC, 234Ac:CCC, 234Ad:CCC, 234Af:CCC, 234Ag:CCC, 234Ai:CCC, 234Al:CCC, 234Am:CCC, 234An:CCC, 255:C, M221Cd:CCC, M221Dc:CCC, M231Aa:CCC, M231Ab:CCC, M231Ac:CCC, M231Ad:CCC

Federal Lands: DOD (Fort Benning); NPS (Blue Ridge Parkway, Natchez Trace, Shiloh); USFS (Bankhead?, Chattahoochee, Daniel Boone, Kisatchie, Sumter); USFWS (Little River)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plot 2A-6.

Local Description Authors: C.W. Nordman

Global Description Authors: S. Landaal

References: Allard 1990, Ambrose 1990a, Burns and Honkala 1990b, Campbell 1988, Campbell 1989a, Clark and Benforado 1981, Dickson and Segelquist 1978, Duever and Brinson 1984b, Evans 1991, Eyre 1980, FNAI 1992b, Faulkner and Patrick n.d., Fleming et al. 2001, Flinchum 1977, Gettman 1974, Hoagland 1997, Kartesz 1999, Klimas et al. 1981, McWilliams and Rosson 1990, NatureServe Ecology - Southeastern U.S. unpubl. data, Nelson 1986, Oberholster 1993, Palmer-Ball et al. 1988, Peet et al. unpubl. data 2002, Putnam 1951, Putnam et al. 1960, Pyne 1994, Rawinski 1992, Schafale 2000, Schafale and Weakley 1990, Smith 1996a, Southeastern Ecology Working Group n.d., USFS 1988, Wharton 1978, Wharton et al. 1982, Wieland 1994b, Wieland 2000b

East Gulf Coastal Plain Beech Floodplain Forest

Fagus grandifolia - *Carya* spp. / (*Acer negundo*, *Magnolia macrophylla*, *Tilia americana* var. *heterophylla*) Temporarily Flooded Forest

American Beech - Hickory species / (Box-elder, Bigleaf Magnolia, Appalachian Basswood) Temporarily Flooded Forest

Identifier: CEGL004745

NVC Classification

Physiognomic Class Forest (I)
Physiognomic Subclass Deciduous forest (I.B.)

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Printed from Biotics 13 Dec 2004 Subset: Shiloh National Military Park on:

Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Fagus grandifolia</i> Temporarily Flooded Forest Alliance (A.284)
Alliance (English name)	American Beech Temporarily Flooded Forest Alliance
Association	<i>Fagus grandifolia</i> - <i>Carya</i> spp. / (<i>Acer negundo</i> , <i>Magnolia macrophylla</i> , <i>Tilia americana</i> var. <i>heterophylla</i>) Temporarily Flooded Forest
Association (English name)	American Beech - Hickory species / (Box-elder, Bigleaf Magnolia, Appalachian Basswood)
Temporarily	Flooded Forest
Association (Common name)	East Gulf Coastal Plain Beech Floodplain Forest

Ecological System(s): East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)

ELEMENT CONCEPT

Global Summary: The canopy of stands of this floodplain forest of the East Gulf and Upper East Gulf coastal plains is strongly dominated by *Fagus grandifolia*. Other canopy trees include *Carya ovalis*, *Carya carolinae-septentrionalis*, and *Ulmus americana*. The subcanopy may contain *Acer negundo*, *Magnolia macrophylla*, and/or *Tilia americana* var. *heterophylla*, but any of these species may not be present in all examples, as their ranges rarely overlap. Stands would typically contain lower coverage of other hardwoods typical of upper floodplain terraces in this region, such as *Liquidambar styraciflua*, *Quercus michauxii*, *Quercus nigra*, and *Quercus shumardii*. Shrubs include *Halesia diptera*, *Ulmus alata*, *Arundinaria gigantea* (which may have high cover), *Sabal minor*, *Toxicodendron radicans*, *Bignonia capreolata*, *Parthenocissus quinquefolia*, and *Lindera benzoin*. Some herbs include *Trillium decipiens*, *Carex granularis*, *Arisaema dracontium*, *Arisaema triphyllum*, *Dioscorea quaternata*, *Maianthemum racemosum*, *Eupatorium fistulosum*, *Botrychium virginianum*, *Onoclea sensibilis*, *Pleopeltis polypodioides*, *Polystichum acrostichoides*, and *Geranium maculatum*.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association occurs on the small stream floodplain of Dill Branch.

Global Environment: This is a floodplain forest of the East Gulf and Upper East Gulf coastal plains.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Stands are dominated by *Carya* sp. with *Fagus grandifolia* and *Nyssa sylvatica* both subdominant. *Liquidambar styraciflua* is less abundant in the canopy. Subcanopy trees are *Carpinus caroliniana*, *Fagus grandifolia*, and in small amounts *Quercus michauxii* and *Fraxinus pennsylvanica*. *Asimina triloba*, *Carpinus caroliniana*, *Morus rubra*, and *Celtis laevigata* are common tall shrubs. Low shrubs include *Arundinaria gigantea*, *Toxicodendron radicans*, and *Smilax* sp. *Mitchella repens* is the most common herbaceous plant; others include *Boehmeria cylindrica*, *Chasmanthium latifolium*, *Aristolochia serpentaria*, and *Dioscorea villosa*.

Global Vegetation: This floodplain forest of the East Gulf and Upper East Gulf coastal plains is strongly dominated by *Fagus grandifolia*. Other canopy trees include *Carya ovalis*, *Carya carolinae-septentrionalis*, and *Ulmus americana*. The subcanopy of examples from Fort Benning, Georgia, contains *Acer negundo*, *Magnolia macrophylla*, and *Tilia americana* var. *heterophylla*, but any of these species may not be present in all examples, as their ranges rarely overlap. For example, *Tilia americana* var. *heterophylla* ranges south down the Chattahoochee River but is absent from parts of the putative range of this type to the east and west. Stands could contain lower coverage of other hardwoods typical of upper floodplain terraces in this region, such as *Liquidambar styraciflua*, *Quercus michauxii*, *Quercus nigra*, and *Quercus shumardii*. Although they may be present, *Liriodendron tulipifera* and *Betula nigra* are not characteristic of this community. Shrubs include *Halesia diptera*, *Ulmus alata*, *Arundinaria gigantea* (which may have high cover), *Sabal minor*, *Toxicodendron radicans*, *Bignonia capreolata*, *Parthenocissus quinquefolia*, and *Lindera benzoin*. Some herbs include *Trillium decipiens*, *Carex granularis*, *Arisaema dracontium*, *Arisaema triphyllum*, *Dioscorea quaternata*, *Maianthemum racemosum*, *Eupatorium fistulosum*, *Botrychium virginianum*, *Onoclea sensibilis*, *Pleopeltis polypodioides*, *Polystichum acrostichoides*, and *Geranium maculatum*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES**Shiloh National Military Park:****Global:** *Trillium decipiens***CONSERVATION STATUS RANK**

Global Rank & Reasons: G3G4 (19-Aug-2002). The full range of this association is poorly known, but appears to be rare. Its potential area of occurrence is in the East Gulf and Upper East Gulf coastal plains. Beech-dominated floodplains seem to be uncommon on the landscape and to exhibit strong regional floristic variation. Additional information is needed to clarify the taxonomy and conservation status of this community type.

CLASSIFICATION**Status:** Standard**Classification Confidence:** 3 - Weak**Shiloh National Military Park Comments:**

Global Comments: *Liriodendron tulipifera* and *Betula nigra* may be present in stands of this community, but they are not characteristic species.

Global Similar Associations:

- *Fagus grandifolia* - *Liquidambar styraciflua* - *Quercus (michauxii, nigra)* Forest (CEGL007866)—of the Atlantic Coastal Plain.
- *Fagus grandifolia* - *Quercus (laurifolia, nigra)* - *Pinus taeda* Forest (CEGL008574)—of the West Gulf Coastal Plain.

Global Related Concepts:**OTHER COMMENTS****Other Comments:****ELEMENT DISTRIBUTION**

Shiloh National Military Park Range: This association is found on a small stream floodplain of Dill Branch, at the intersection of the first stream from the northeast.

Global Range: These beech-dominated floodplain forests are found in the East Gulf and Upper East Gulf coastal plains.

Nations: US**States/Provinces:** AL?, GA, MS, TN**USFS Ecoregions:** 222Cg:CCC, 231Bc:PPP, 231Bd:PPP, 232Bq:CCC**Federal Lands:** DOD (Fort Benning); NPS (Shiloh)**ELEMENT SOURCES****Shiloh National Military Park Inventory Notes:**

Shiloh National Military Park Plots: 1994 plot 2C-3.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Pyne

References: NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

Southern Green Ash - Elm - Sugarberry Forest

Fraxinus pennsylvanica - *Ulmus americana* - *Celtis laevigata* / *Ilex decidua* Forest

Green Ash - American Elm - Sugarberry / Possum-haw Forest

Identifier: CEGL002427

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Fraxinus pennsylvanica</i> - <i>Ulmus americana</i> - <i>Celtis (occidentalis, laevigata)</i> Temporarily Flooded
(A.286)	Forest Alliance
Alliance (English name)	Green Ash - American Elm - (Northern Hackberry, Sugarberry) Temporarily Flooded Forest Alliance
Association	<i>Fraxinus pennsylvanica</i> - <i>Ulmus americana</i> - <i>Celtis laevigata</i> / <i>Ilex decidua</i> Forest
Association (English name)	Green Ash - American Elm - Sugarberry / Possum-haw Forest
Association (Common name)	Southern Green Ash - Elm - Sugarberry Forest

Ecological System(s): Lower Mississippi River Bottomland and Floodplain Forest (CES203.512)

Atlantic Coastal Plain Small Blackwater River Floodplain Forest (CES203.249)
 East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
 West Gulf Coastal Plain Large River Floodplain Forest (CES203.488)
 South-Central Interior Large Floodplain (CES202.705)
 Red River Large Floodplain Forest (CES203.065)

ELEMENT CONCEPT

Global Summary: This green ash - American elm - sugarberry community is found throughout the central and southern United States. Stands occur in floodplains of major rivers where water is absent for most of the growing season. Soils are moist alluvial clay or silt loams. *Ulmus americana* was once the most prominent member of this forest, but Dutch elm disease (*Ceratostomella ulmi*) and logging have eliminated many of the largest mature *Ulmus* spp. from most of the species natural range. *Fraxinus pennsylvanica* dominates on moist flats and shallow sloughs, while *Celtis laevigata* is most prevalent on new land or front sites. Other species commonly encountered include *Carya aquatica*, *Quercus lyrata*, *Liquidambar styraciflua*, and *Acer negundo*. The subcanopy is often dense and dominated by *Fraxinus pennsylvanica* which sprouts prolifically. Shrubs typical of this forest include *Cornus drummondii*, *Ilex decidua*, and *Crataegus* spp. The herbaceous layer is dense and diverse, dominated by *Galium* spp., *Viola* spp., *Carex* spp., *Leersia* spp., *Boehmeria cylindrica*, *Laportea canadensis*, *Pilea pumila*, *Impatiens capensis* (= *Impatiens biflora*), and *Impatiens pallida*. Vines most often encountered include *Toxicodendron radicans*, *Campsis radicans*, and *Parthenocissus quinquefolia*.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association is found in the floodplain in a bend of Owl Creek near an old bridge. This part is not impounded by beavers but probably floods seasonally (late spring) up to 1.5 m above ground. Soil is silt loam, temporarily flooded and somewhat poorly drained. There is mature forest but not old growth in this plot.

Global Environment: This community occurs in floodplains of major rivers, generally alluvial or brownwater rivers, on low ridges, flats, and sloughs; terrace flats and sloughs; and occasionally on new lands or fronts. In terms of hydrology, this is a Zone IV community (Wharton et al. 1982). Soils are clay or silt loams that are seasonally inundated or saturated for 1 or 2 months during the growing season, with a 50-100% annual frequency (Eyre 1980, Smith and Craig 1990). Alluvial deposition and nutrient input occurs, but less than in more frequently flooded forest types (Schafale and Weakley 1990).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: These are forests at Owl Creek dominated by *Ulmus americana* and to a lesser extent *Celtis laevigata*, with *Acer saccharinum* and *Fraxinus pennsylvanica* also in the canopy. The subcanopy is dominated by *Celtis laevigata*, *Acer saccharinum* and *Acer negundo*, with *Ulmus americana* and *Fraxinus pennsylvanica*. *Ilex decidua* is the only tall shrub. Vines dominate the short-shrub layer. *Toxicodendron radicans* is the dominant; also present are *Celtis laevigata*, *Campsis radicans*, *Brunnichia ovata*, and *Smilax tamnoides*. *Chasmanthium latifolium*, *Commelina virginica*, and *Laportea canadensis* are the most abundant herbs. Other herbs are *Physalis longifolia* var. *subglabrata*, *Dioscorea quaternata*, *Trachelospermum difforme*, *Viola* sp., *Carex grayi*, *Ruellia strepens*, *Leersia virginica*, *Boehmeria cylindrica*, *Ambrosia trifida*, *Saururus cernuus*, and *Pilea pumila*.

Global Vegetation: This community is a broadleaf deciduous floodplain forest which exhibits high canopy diversity and good herbaceous diversity (although lower herbaceous diversity than mesic floodplain forest). *Ulmus americana* was once the most prominent member of this forest, but Dutch elm disease (*Ceratostomella ulmi*) and logging have eliminated many of the largest mature *Ulmus* spp. from most of the species natural range (Collingwood and Brush 1984). *Fraxinus pennsylvanica* dominates on moist flats and shallow sloughs, while *Celtis laevigata* is most prevalent on new land or front sites. Other species commonly encountered include *Carya aquatica*, *Quercus lyrata*, *Liquidambar styraciflua*, and *Acer negundo*. The subcanopy is often dense and dominated by *Fraxinus pennsylvanica* which sprouts prolifically. *Fraxinus pennsylvanica*, however, is considered a pioneer species and does not maintain its canopy position under intense shading found in later successional stages (Voigt and Mohlenbrock 1964). Shrubs typical of this forest include *Cornus drummondii*, *Ilex decidua*, and *Crataegus* spp. The herbaceous layer is dense and diverse, dominated by *Galium* spp., *Viola* spp., *Carex* spp., *Leersia* spp., *Boehmeria cylindrica*, *Laportea canadensis*, *Pilea pumila*, *Impatiens capensis* (= *Impatiens biflora*), and *Impatiens pallida*. Vines most often encountered include *Toxicodendron radicans*, *Campsis radicans*, and *Parthenocissus quinquefolia* (TNC 1995a).

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Carya aquatica</i> , <i>Celtis laevigata</i> , <i>Fraxinus pennsylvanica</i> , <i>Quercus lyrata</i> , <i>Quercus nigra</i> , <i>Quercus phellos</i> , <i>Ulmus americana</i>
Tree subcanopy	Broad-leaved deciduous tree	<i>Celtis laevigata</i> , <i>Ulmus americana</i>
Shrub/sapling (tall & short)	Vine/Liana	<i>Campsis radicans</i> , <i>Parthenocissus quinquefolia</i> , <i>Toxicodendron radicans</i>

Tall shrub/sapling

Broad-leaved deciduous tree

Cornus drummondii, *Ilex decidua*

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Acris gryllus*, *Agkistrodon piscivorus*, *Aix sponsa*, *Ambystoma maculatum*, *Ardea alba*, *Ardea herodias*, *Buteo brachyurus*, *Buteo lineatus*, *Butorides virescens*, *Ceryle alcyon*, *Coccyzus americanus*, *Dendroica dominica*, *Didelphis virginiana*, *Egretta caerulea*, *Euphagus carolinus*, *Gallinago gallinago*, *Hyla avivoca*, *Hyla cinerea*, *Ictinia mississippiensis*, *Limenitis archippus*, *Limnodynastes swainsonii*, *Lontra canadensis*, *Macrochelys temminckii*, *Melanerpes carolinus*, *Melanerpes erythrocephalus*, *Mniotilta varia*, *Mustela vison*, *Mycteria americana*, *Myiarchus crinitus*, *Nycticorax nycticorax*, *Nymphalis antiopa*, *Odocoileus virginianus*, *Oryzomys palustris*, *Parula americana*, *Peromyscus gossypinus*, *Phalacrocorax auritus*, *Poliophtila caerulea*, *Procyon lotor*, *Pseudacris triseriata*, *Quercus texana*, *Quiscalus quiscula*, *Rana sphenoccephala*, *Reithrodontomys humilis*, *Scolopax minor*, *Setophaga ruticilla*, *Sigmodon hispidus*, *Sthenopis thule*, *Strix varia*, *Sylvilagus aquaticus*, *Sylvilagus palustris*, *Vermivora bachmanii*, *Vireo olivaceus*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4G5 (15-Aug-1997).

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: The Southeast Regional Office is in the process of describing the Mississippi River Alluvial Plain portion of this type, which includes southern Illinois, as a separate type.

Global Similar Associations:

- *Acer (rubrum, saccharinum)* - *Fraxinus* spp. - *Ulmus americana* Forest (CEGL005038)—is often non-floodplain.
- *Acer saccharinum* - *Celtis laevigata* - *Carya illinoensis* Forest (CEGL002431)
- *Fraxinus pennsylvanica* - *Ulmus* spp. - *Celtis occidentalis* Forest (CEGL002014)
- *Platanus occidentalis* - *Acer saccharinum* - *Juglans nigra* - *Ulmus rubra* Forest (CEGL007334)

Global Related Concepts:

- Brownwater Levee Forest (Medium Levee Subtype) (Schafale 2000) ?
- Eastern Broadleaf and Needleleaf Forests: 113: Southern Floodplain Forest (*Quercus-Nyssa-Taxodium*) (Kuchler 1964) B
- IIA6d. Sugarberry - American Elm - Green Ash Bottomland Forest (Allard 1990) B
- P1B3cIV9a. *Celtis laevigata* - *Fraxinus pennsylvanica* - *Ulmus americana* (Foti et al. 1994) ?
- Palustrine: Palustrine Forested Wetland (Cowardin et al. 1979) F
- Sugarberry - American Elm - Green Ash: 93 (Eyre 1980) B
- Terrestrial: Forest: Hardwood (TNC 1985) B
- UNESCO FORMATION CODE: I.B.3d (UNESCO 1973) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is found on the floodplain in a bend of Owl Creek near an old bridge. This part is not impounded by beavers.

Global Range: This green ash - American elm - sugarberry community is found throughout the central and southern United States on floodplains of major rivers from Texas, Oklahoma, Arkansas, north to southern Illinois and adjacent Indiana, east to Tennessee, and south to Louisiana. The range formerly included states of the Atlantic Coastal Plain, but now see *Fraxinus pennsylvanica* - *Ulmus americana* / *Carpinus caroliniana* / *Boehmeria cylindrica* Forest (CEGL007806).

Nations: US

States/Provinces: AR, IL, IN, KY, LA, MO, MS, OK, TN, TX?

USFS Ecoregions: 221D:CC, 222Cg:CCC, 222D:CP, 222E:CP, 231Ba:CPP, 231C:CP, 231D:CP, 231E:CC, 231G:C?, 232D:CP, 232F:CC, 234Aa:CCC, 234Ac:CCC, 234Ad:CCC, 234Ae:CCP, 234Af:CCC, 234Ag:CCC, 234Ah:CCC, 234Ai:CCC, 234Aj:CCC, 234Ak:CCC, 234Al:CCC, 234Am:CCC, 234An:CCC, M231A:CP

Federal Lands: DOE (Oak Ridge); NPS (Natchez Trace, Shiloh, Stones River); USFS (Angelina?, Bienville, Davy Crockett?, Delta, Kisatchie, Sabine NF?, Sam Houston?, St. Francis); USFWS (Hatchie, Lower Hatchie?, Reelfoot?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:**Shiloh National Military Park Plots:** SHIL.15, SHIL.19.**Local Description Authors:** C.W. Nordman**Global Description Authors:** M. Guetersloh, mod. M. Pyne and D. Faber-Langendoen**References:** Allard 1990, Collingwood and Brush 1984, Cowardin et al. 1979, Diamond 1993, Eyre 1980, Foti 1994b, Foti et al. 1994, Hoagland 1997, Hoagland 2000, Kuchler 1964, Nelson 1985, Penfound 1948, Penfound 1953, Rice and Penfound 1956, Rosson 1995, Schafale 2000, Schafale and Weakley 1990, Smith and Craig 1990, Southeastern Ecology Working Group n.d., TNC 1985, TNC 1995a, UNESCO 1973, Voigt and Mohlenbrock 1964, Wharton et al. 1982, White and Madany 1978**Successional Sweetgum Floodplain Forest*****Liquidambar styraciflua* - (*Liriodendron tulipifera*) Temporarily Flooded Forest****Sweetgum - (Tuliptree) Temporarily Flooded Forest****Identifier:** CEGLO07330**NVC Classification**

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Liquidambar styraciflua</i> - (<i>Liriodendron tulipifera</i> , <i>Acer rubrum</i>) Temporarily Flooded Forest (A.287) Alliance
Alliance (English name)	Sweetgum - (Tuliptree, Red Maple) Temporarily Flooded Forest Alliance
Association	<i>Liquidambar styraciflua</i> - (<i>Liriodendron tulipifera</i>) Temporarily Flooded Forest
Association (English name)	Sweetgum - (Tuliptree) Temporarily Flooded Forest
Association (Common name)	Successional Sweetgum Floodplain Forest

Ecological System(s): Atlantic Coastal Plain Small Brownwater River Floodplain Forest (CES203.250)
 East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)
 East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
 Southern Piedmont Small Floodplain and Riparian Forest (CES202.323)

ELEMENT CONCEPT

Global Summary: This association is dominated by *Liquidambar styraciflua*, but can be dominated by *Liriodendron tulipifera* in some cases, and occurs on heavily disturbed sites such as wetland old fields that have been recovering for the past 10-60 years. This is a successional community that develops following clearcutting or other disturbance along floodplains of major creeks and other temporarily flooded areas. As this community ages, it often begins to approach the composition of more natural *Liquidambar styraciflua* - *Liriodendron tulipifera* / *Lindera benzoin* / *Arisaema triphyllum* ssp. *triphyllum* Forest (CEGLO04418). This association is known from the Piedmont, Interior Low Plateau, Inner South Atlantic Coastal Plain, Upper East Gulf Coastal Plain, and possibly other provinces. *Acer rubrum* may be a major component of the canopy and subcanopy and may even partially dominate in some instances. In more mature examples, other canopy/subcanopy species which may occur to a lesser extent and often as scattered emergents are *Quercus alba*, *Quercus phellos*, *Quercus nigra*, *Nyssa sylvatica*, and *Cornus florida*. Stands in the Inner Coastal Plain of South Carolina typically contain *Persea palustris* and *Magnolia virginiana*. The shrub layer can contain *Carpinus caroliniana*, *Itea virginica*, *Vitis rotundifolia*, *Parthenocissus quinquefolia*, *Smilax rotundifolia*, and/or *Rubus* sp., in addition to canopy/subcanopy species. *Lonicera japonica* is often abundant in the understory. On disturbed sites, the shrub layer is often dominated by *Ligustrum sinense*, and the ground layer is typically solid *Microstegium vimineum* or a tangle of *Smilax rotundifolia* and *Rubus* sp. The herbaceous layer may include *Chasmanthium laxum*, *Carex* spp., *Boehmeria cylindrica*, and *Botrychium biternatum*, sometimes growing on hummocks in standing water.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine**Shiloh National Military Park Environment:** This type occurs along Shiloh Branch, in a small stream floodplain.**Global Environment:** This association occurs on disturbed sites such as wetland old fields. This is a successional community that develops following clearcutting or other disturbance along floodplains of major creeks and other temporarily flooded areas. These are productive stream terraces subject to occasional flooding (Jones et al. 1981b).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh NMP it occurs in a small stream floodplain. The canopy is dominated by *Liriodendron tulipifera*, with *Liquidambar styraciflua*, *Acer rubrum*, and *Quercus phellos*. *Acer rubrum*, *Liquidambar styraciflua*,

Liriodendron tulipifera, and *Cornus florida* are common subcanopy trees. Tall shrubs include *Ilex decidua*, *Lindera benzoin*, *Cornus florida*, *Acer rubrum*, and short shrubs and low vines include *Euonymus americana*, *Toxicodendron radicans*, *Lonicera japonica*, and *Parthenocissus quinquefolia*.

Global Vegetation: The canopy of this association is dominated by *Liquidambar styraciflua* but can be dominated by *Liriodendron tulipifera* in some cases. *Acer rubrum* may be a major component of the canopy and subcanopy and may even partially dominate in some instances (TNC 1998a). In more mature examples, other canopy/subcanopy species which may occur to a lesser extent and often as scattered emergents are *Quercus alba*, *Quercus phellos*, *Quercus nigra*, *Fraxinus americana*, *Carya* spp., *Nyssa sylvatica*, and *Cornus florida*. Stands in the Inner Coastal Plain of South Carolina typically contain *Persea palustris* and *Magnolia virginiana* (Jones et al. 1981b). The shrub layer contains *Carpinus caroliniana*, *Itea virginica*, *Vitis rotundifolia*, *Parthenocissus quinquefolia*, *Smilax rotundifolia*, and *Rubus* sp., in addition to canopy/subcanopy species. *Lonicera japonica* is often abundant in the understory. On disturbed sites, the shrub layer is often dominated by *Ligustrum sinense*, and the ground layer is typically solid *Microstegium vimineum* or a tangle of *Smilax rotundifolia* and *Rubus* sp. The herbaceous layer may include *Chasmanthium laxum*, *Carex* spp., *Boehmeria cylindrica*, and *Botrychium biternatum*, sometimes growing on hummocks in standing water. Various *Carex* species may be present.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Liquidambar styraciflua</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: GNA (ruderal) (8-Aug-2000). This is a successional community which develops following clearcutting or other disturbance along floodplains of major creeks and other temporarily flooded areas.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: At Arnold Air Force Base, this community is found primarily in the vicinity of Hunt Creek, Heron Pond, and Sinking Pond in areas that have experienced logging. Prior to logging, these areas would probably have had canopies dominated by *Quercus phellos* or *Quercus alba*, with the overall community structure being that of *Quercus alba* - *Carya (alba, ovata)* - *Liriodendron tulipifera* - (*Quercus phellos*) / *Cornus florida* Forest (CEGL007709) or possibly *Quercus phellos* - *Quercus alba* / *Vaccinium fuscatum* - (*Viburnum nudum*) / *Carex (barrattii, intumescens)* Forest (CEGL007364). The sweet gum-red maple-red bay community of Jones et al. 1981b (2 stands sampled) is included here.

Global Similar Associations:

- *Liquidambar styraciflua* - *Liriodendron tulipifera* / *Lindera benzoin* / *Arisaema triphyllum* ssp. *triphyllum* Forest (CEGL004418)—may be difficult to distinguish from older versions of this community; trees will be older, uneven-aged, and the herbaceous layer more diverse in this association.
- *Quercus alba* - *Carya (alba, ovata)* - *Liriodendron tulipifera* - (*Quercus phellos*) / *Cornus florida* Forest (CEGL007709)
- *Quercus phellos* - *Quercus alba* / *Vaccinium fuscatum* - (*Viburnum nudum*) / *Carex (barrattii, intumescens)* Forest (CEGL007364)

Global Related Concepts:

- Sweet gum-red maple-red bay community (Jones et al. 1981b) ?

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association occurs along Shiloh Branch, in a small stream floodplain. It also occurs elsewhere on Shiloh NMP in similar habitat.

Global Range: This association is known from the Piedmont, Interior Low Plateau, Inner South Atlantic Coastal Plain, and possibly other provinces.

Nations: US

States/Provinces: AL, GA?, KY, MS, NC, SC, TN

USFS Ecoregions: 221Hc:CCC, 222Cg:CCC, 222Eb:CCC, 231Aa:CCC, 231Cd:CCP, 231Cg:CCC, 231D:CC, 232Cg:CCC

Federal Lands: DOD (Arnold, Fort Benning?); DOE (Savannah River Site); NPS (Cowpens, Kings Mountain, Little River Canyon, Shiloh); USFS (Bankhead?, Daniel Boone, Oconee?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plots 2a-5, 5NW-31.

Local Description Authors: C.W. Nordman

Global Description Authors: mod. R. White

References: Jones et al. 1981b, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d., TNC 1998a

Sycamore - Silver Maple Calcareous Floodplain Forest

Platanus occidentalis - *Acer saccharinum* - *Juglans nigra* - *Ulmus rubra* Forest

Sycamore - Silver Maple - Black Walnut - Slippery Elm Forest

Identifier: CEG007334

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Platanus occidentalis</i> - (<i>Fraxinus pennsylvanica</i> , <i>Celtis laevigata</i> , <i>Acer saccharinum</i>) (A.288) Temporarily Flooded Forest Alliance
Alliance (English name)	Sycamore - (Green Ash, Sugarberry, Silver Maple) Temporarily Flooded Forest Alliance
Association	<i>Platanus occidentalis</i> - <i>Acer saccharinum</i> - <i>Juglans nigra</i> - <i>Ulmus rubra</i> Forest
Association (English name)	Sycamore - Silver Maple - Black Walnut - Slippery Elm Forest
Association (Common name)	Sycamore - Silver Maple Calcareous Floodplain Forest

Ecological System(s): Central Appalachian Floodplain (CES202.608)
South-Central Interior Large Floodplain (CES202.705)

ELEMENT CONCEPT

Global Summary: This sycamore - silver maple floodplain forest occurs along riverfronts in calcareous areas of the east-central United States. Stands are dominated by *Platanus occidentalis*, with a mixture of other species, including *Acer negundo*, *Acer saccharinum*, *Fraxinus americana*, *Fraxinus pennsylvanica*, *Juglans nigra*, *Ulmus americana*, and *Ulmus rubra*. Shrubs include *Asimina triloba* and *Lindera benzoin*. Vines may be abundant, including *Parthenocissus quinquefolia* and *Toxicodendron radicans*. Herbaceous species include *Arisaema triphyllum*, *Asarum canadense*, *Boehmeria cylindrica*, *Elymus virginicus*, *Pilea pumila*, *Polygonum virginianum*, and others.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association occurs in a small stream floodplain of Dill Branch, just upstream from Tennessee River.

Global Environment: This association occurs along riverfronts in calcareous areas, including forests along small streams (Weakley et al. 1998). The creation in 2000 of *Platanus occidentalis* - *Celtis laevigata* - *Liriodendron tulipifera* / *Lindera benzoin* - *Arundinaria gigantea* / *Amphicarpaea bracteata* Forest (CEGL008429) may dictate that the use of this type (CEGL007334), at least in their range of overlap, would be more appropriate for large rivers rather than "small streams."

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Stands are dominated by *Fraxinus pennsylvanica*, *Acer negundo*, and to a lesser extent *Platanus occidentalis* and *Acer saccharinum*. The subcanopy is dominated by *Ulmus rubra* and *Acer saccharinum*. Shrubs include *Celtis laevigata*, *Acer saccharinum*, *Ulmus alata*, *Acer rubrum*, and the low vines *Toxicodendron radicans*, *Campsis radicans*, and *Smilax rotundifolia*. *Boehmeria cylindrica* and *Leersia* sp. are the most abundant herbs.

Global Vegetation: Stands are dominated by *Platanus occidentalis*, with a mixture of other species, including *Acer negundo*, *Acer saccharinum*, *Fraxinus americana*, *Fraxinus pennsylvanica*, *Juglans nigra*, *Ulmus americana*, and *Ulmus rubra*. Shrubs include *Asimina triloba* and *Lindera benzoin*. Vines may be abundant, including *Parthenocissus quinquefolia* and *Toxicodendron radicans*.

Herbaceous species include *Arisaema triphyllum*, *Asarum canadense*, *Boehmeria cylindrica*, *Elymus virginicus*, *Pilea pumila*, *Polygonum virginianum*, and others (Van Kley et al. 1995, Weakley et al. 1998). *Acer saccharinum* may be a differential species in relation to some of the other associations in this alliance, as it is apparently absent from the southeastern Atlantic Coastal Plain and at the edge of its range in the southern Piedmont.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global: *Acer negundo*, *Acer saccharinum*, *Alliaria petiolata*, *Asimina triloba*, *Chaerophyllum procumbens*, *Fraxinus pennsylvanica*, *Mertensia virginica*, *Platanus occidentalis*, *Verbesina alternifolia*

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Erythronium albidum*, *Maianthemum stellatum*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4 (4-Jan-2001). This type is apparently somewhat restricted in habitat, but with a wide range, and not highly threatened. Timber removal will cause disruption, but permanent conversion to other forest types is less likely. This community, and other types of floodplain forests, are threatened by alteration of the hydroperiod by artificial impoundments or river diversion projects, or the disruption of the floodplain communities by forestry or agriculture.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This type could be in Illinois and Missouri. It is not well characterized yet and may be difficult to distinguish from other floodplain forests where *Platanus* is conspicuous without being dominant. For example, see *Acer saccharinum* - *Ulmus americana* - (*Populus deltoides*) Forest (CEGL002586), *Fraxinus pennsylvanica* - *Celtis* spp. - *Quercus* spp. - *Platanus occidentalis* Bottomland Forest (CEGL002410), *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis laevigata* / *Ilex decidua* Forest (CEGL002427), and *Fraxinus pennsylvanica* - *Ulmus* spp. - *Celtis occidentalis* Forest (CEGL002014). It is possible that CEGL002410 could be merged with this type, depending on level of dominance required for *Platanus*.

Global Similar Associations:

- *Acer saccharinum* - *Ulmus americana* - (*Populus deltoides*) Forest (CEGL002586)
- *Fraxinus pennsylvanica* - *Celtis* spp. - *Quercus* spp. - *Platanus occidentalis* Bottomland Forest (CEGL002410)
- *Fraxinus pennsylvanica* - *Ulmus americana* - *Celtis laevigata* / *Ilex decidua* Forest (CEGL002427)
- *Fraxinus pennsylvanica* - *Ulmus* spp. - *Celtis occidentalis* Forest (CEGL002014)
- *Platanus occidentalis* - *Celtis laevigata* - *Liriodendron tulipifera* / *Lindera benzoin* - *Arundinaria gigantea* / *Amphicarpaea bracteata* Forest (CEGL008429)—on small to medium-sized terraces of small streams.

Global Related Concepts:

- ELTP 61: *Platanus* / *Asarum*, Wet-mesic Bottomlands (Van Kley et al. 1995) =
- IIA6e. Southern Appalachian Alluvial Forest (Allard 1990) B
- Silver Maple - Sycamore Forest on Base-rich Alluvium (Palmer-Ball et al. 1988) =
- Sycamore-green ash floodplain forest (CAP pers. comm. 1998) ?

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found in a small stream floodplain of Dill Branch, just upstream from Tennessee River.

Global Range: This association occurs in river and large stream floodplains in calcareous areas of the east-central United States from Indiana and Kentucky and North Carolina, and possibly Ohio.

Nations: US

States/Provinces: IN, KY, OH, TN

USFS Ecoregions: 221Ec:CC, 221Ed:CCP, 221Ef:CCP, 221Eg:CCC, 221Ha:CCC, 221Hb:CCC, 221Hc:CCC, 221He:CCC, 222Cg:CCC, 222De:CCP, 222Eb:CCC, 222Em:CCP, 222En:CCC, 222Eo:CCC, 222Fa:CCC, 222Fb:CCC, 222Fc:CCC, 222Fd:CCC, 222Hb:CCC, 222Hf:CCC, 231Aa:CCP, 231Ae:CCP, 231Ak:CCP, 231Al:CCC, 231Ap:CCC, 232Ad:CCC

Federal Lands: NPS (Blue Ridge Parkway?, Mammoth Cave, Natchez Trace, Shiloh); USFS (Daniel Boone)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plot 2c-2.

Local Description Authors: C.W. Nordman

Global Description Authors: D. Faber-Langendoen, mod. K.D. Patterson

References: Allard 1990, CAP pers. comm. 1998, Palmer-Ball et al. 1988, Schafale and Weakley 1990, Southeastern Ecology Working Group n.d., Van Kley et al. 1995, Weakley et al. 1998

Gulf Coastal Plain Sycamore - Sweetgum Floodplain Forest

Platanus occidentalis - *Liquidambar styraciflua* - (*Ulmus americana*) / (*Crataegus viridis*) Forest

Sycamore - Sweetgum - (American Elm) / (Green Hawthorn) Forest

Identifier: CEGLO07335

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Platanus occidentalis</i> - (<i>Fraxinus pennsylvanica</i> , <i>Celtis laevigata</i> , <i>Acer saccharinum</i>) (A.288) Temporarily Flooded Forest Alliance
Alliance (English name)	Sycamore - (Green Ash, Sugarberry, Silver Maple) Temporarily Flooded Forest Alliance
Association	<i>Platanus occidentalis</i> - <i>Liquidambar styraciflua</i> - (<i>Ulmus americana</i>) / (<i>Crataegus viridis</i>) Forest
Association (English name)	Sycamore - Sweetgum - (American Elm) / (Green Hawthorn) Forest
Association (Common name)	Gulf Coastal Plain Sycamore - Sweetgum Floodplain Forest

Ecological System(s): East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)
East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
West Gulf Coastal Plain Large River Floodplain Forest (CES203.488)
Red River Large Floodplain Forest (CES203.065)

ELEMENT CONCEPT

Global Summary: This floodplain forest of the Upper East and West Gulf coastal plains has a canopy dominated by *Platanus occidentalis* and *Liquidambar styraciflua*. Examples may be found on stabilized natural levees, point bars and first bottoms of large streams and rivers. Depending upon location and previous disturbance history (including hydrologic regime), a number of other tree species may also be present in lesser amounts. These may include *Ulmus americana*, *Carya illinoensis*, *Nyssa biflora*, *Celtis laevigata*, *Populus deltoides*, *Quercus nigra*, *Salix nigra*, *Fraxinus pennsylvanica*, *Betula nigra*, *Acer negundo*, and *Carya aquatica*. Shrubs are sparse to moderately dense in this community with covers ranging from 10-40%. Species may include *Crataegus viridis*, *Ilex decidua*, *Lindera benzoin*, *Carpinus caroliniana*, and *Aesculus pavia* var. *pavia*. Characteristic herbs include *Elymus hystrix*, *Boehmeria cylindrica*, *Chasmanthium latifolium*, and *Viola* spp. Patches of *Arundinaria gigantea* can be common in this community.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: At Shiloh NMP this type occurs in the Owl Creek floodplain, a regularly flooded area. The soils are mapped as either Waverly silt loam or Collins silt loam.

Global Environment: This forest occurs on stabilized natural levees, point bars and first bottoms of small- to large-sized alluvial streams and rivers in the Gulf Coastal Plain from Texas as far eastward as Alabama and Georgia. Soils are seasonally/temporarily flooded. In much of its range this community is inundated or saturated typically for 1 or 2 months during the growing season with a frequency ranging from 51 to 100 years out of every 100. The inundation persists almost continuously during the winter and early spring (Wharton et al. 1982, Smith 1988).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh NMP this association is dominated by *Liquidambar styraciflua*, *Platanus occidentalis*, *Fraxinus pennsylvanica* with *Celtis laevigata*. The subcanopy is characterized by *Celtis laevigata*, *Acer negundo*, *Ulmus americana*, *Carpinus caroliniana*, and *Nyssa aquatica*. *Ilex decidua* and *Arundinaria gigantea* dominate the shrub strata. *Lindera benzoin*, *Asimina triloba*, and *Celtis laevigata* are also common shrubs. *Toxicodendron radicans* and *Campsis radicans* are common low vines (covering the ground). *Laportea canadensis* and *Onoclea sensibilis* are common herbaceous plants.

Global Vegetation: The canopy of stands of this association is dominated by *Platanus occidentalis* and *Liquidambar styraciflua*. The canopy cover ranges from 60-100%. Other canopy associates may include *Carya illinoensis*, *Nyssa biflora*, *Celtis laevigata*,

Populus deltoides, *Quercus nigra*, *Salix nigra*, *Fraxinus pennsylvanica*, *Betula nigra*, *Acer negundo*, and *Carya aquatica*. *Ulmus americana* may also be present in some examples and may have been an historically common component of this type. However, *Ulmus americana* is currently less abundant due to a vascular fungus (Dutch elm disease) that has severely reduced populations of this species (Harlow et al. 1991). Shrubs are sparse to moderately dense in this community with covers ranging from 10-40%. More floristic data are available (NatureServe Ecology unpubl. data), but more comprehensive data are needed.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Liquidambar styraciflua</i> , <i>Platanus occidentalis</i> , <i>Ulmus americana</i>
Short shrub/sapling	Broad-leaved deciduous tree	<i>Carpinus caroliniana</i> , <i>Ilex decidua</i> , <i>Lindera benzoin</i>
Short shrub/sapling	Broad-leaved deciduous shrub	<i>Aesculus pavia</i> , <i>Crataegus viridis</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global: *Arundinaria gigantea*, *Boehmeria cylindrica*, *Chasmanthium latifolium*, *Elymus hystrix*

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Amsonia ludoviciana*

CONSERVATION STATUS RANK

Global Rank & Reasons: G3G4 (25-Feb-2004). There is little data available to support a comprehensive evaluation of this forest association. It has a potentially large range from the West Gulf Coastal Plain across the Mississippi River to the Upper East Gulf Coastal Plain. However, intact flooding regimes of coastal plain rivers are necessary to perpetuate this type, and most such rivers within this type's range have been altered through dam construction and/or channelization. The extent to which this forest will continue to exist under altered flow regimes is unknown. More data are needed to determine the stability of this natural forest, as opposed to non-natural examples with similar species composition. Given these factors a rank of G3G4 has been assigned.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This association was originally defined to cover a very broad geographic range (from western Texas to the Coastal Plain of North Carolina and Virginia) and may need substantial revision. Its range has subsequently become more restricted (currently to the Upper East Gulf Coastal Plain, and the Upper West Gulf Coastal Plain and West Gulf Coastal Plain from Georgia and Alabama west to Texas).

Global Similar Associations:

Global Related Concepts:

- IIA7g. Sycamore - Sweetgum - American Elm Riverfront Forest (Allard 1990) B
- Sugarberry-Elm Series (Diamond 1993) B
- Sycamore - Pecan - American Elm (25) (USFS 1988) ?
- Sycamore - Sweet Gum - American Elm: 94 (Eyre 1980) ? Sycamore - Sweetgum American Elm Riverfront Forest (Oberholster 1993) ?

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found on Owl Creek floodplain.

Global Range: This community ranges across the Gulf Coastal Plain from Georgia to Texas, but is apparently absent from the Mississippi River Alluvial Plain (but possibly in the Red River Plain). It may occur as far north as western Tennessee.

Nations: US

States/Provinces: AL, GA, LA, MS, TN, TX

USFS Ecoregions: 222Cg:CCC, 231B:CC, 231Ef:CCC, 231Eg:CCP, 231Eh:CCC, 232F:CC, 234Ai:PPP

Federal Lands: DOD (Fort Benning); NPS (Shiloh); USFS (Angelina, Bienville, Davy Crockett, Holly Springs, Kisatchie, Sabine NF, Sam Houston, St. Francis?, Tombigbee?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plot 1B-13.

Local Description Authors: C.W. Nordman

Global Description Authors: J.E. Mohan, mod. K.D. Patterson and S. Landaal, mod. R.E. Evans

References: Allard 1990, Diamond 1993, Eyre 1980, Harlow et al. 1991, NatureServe Ecology - Southeastern U.S. unpubl. data, Oberholster 1993, Smith 1988c, Smith 1996a, Southeastern Ecology Working Group n.d., USFS 1988, Wharton et al. 1982, Wieland 1994b, Wieland 2000b

Sweetgum - Cherrybark Oak Floodplain Forest

Liquidambar styraciflua - *Quercus pagoda* - *Carya* spp. / *Carpinus caroliniana* / *Carex* spp. Forest

Sweetgum - Cherrybark Oak - Hickory species / Ironwood / Sedge species Forest

Identifier: CEG007353

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
Alliance	<i>Quercus (michauxii, pagoda, shumardii)</i> - <i>Liquidambar styraciflua</i> Temporarily Flooded Forest
(A.291)	
Alliance (English name)	Alliance
Alliance	(Swamp Chestnut Oak, Cherrybark Oak, Shumard Oak) - Sweetgum Temporarily Flooded Forest
Association	<i>Liquidambar styraciflua</i> - <i>Quercus pagoda</i> - <i>Carya</i> spp. / <i>Carpinus caroliniana</i> / <i>Carex</i> spp. Forest
Association (English name)	Sweetgum - Cherrybark Oak - Hickory species / Ironwood / Sedge species Forest
Association (Common name)	Sweetgum - Cherrybark Oak Floodplain Forest

Ecological System(s): East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)

ELEMENT CONCEPT

Global Summary: This bottomland hardwood forest is found on higher terraces of floodplains in the northern Upper East Gulf Coastal Plain and East Gulf Coastal Plain. The canopy of stands is dominated by *Liquidambar styraciflua*, *Quercus pagoda*, and *Carya* spp. (including *Carya ovata*, *Carya laciniosa*, *Carya ovalis*). Originally described from Shiloh National Park (Hardin County, Tennessee), where the understory may contain *Carpinus caroliniana*, *Fraxinus pennsylvanica*, *Ulmus americana*, *Carya alba*, *Carya ovalis*, and *Quercus nigra*. Portions of the stand may exhibit canopy dominance by *Liquidambar styraciflua* and *Carya* spp. with lower coverage by oaks. Shrubs include *Asimina triloba*, *Arundinaria gigantea* and *Ilex decidua*, along with smaller individuals of successional tree species such as *Acer negundo* and *Celtis laevigata*. Woody and herbaceous vines found here include *Bignonia capreolata*, *Vitis rotundifolia*, *Parthenocissus quinquefolia*, *Dioscorea villosa*, *Smilax bona-nox*, *Toxicodendron radicans*, *Amphicarpaea bracteata*, and *Passiflora lutea*. Herbs include *Arisaema dracontium*, *Arisaema triphyllum*, *Aristolochia serpentaria*, *Hymenocallis caroliniana* (= *Hymenocallis occidentalis*), *Ruellia* sp., *Laportea canadensis*, *Polygonum virginianum*, *Spigelia marilandica*, *Carex debilis*, *Carex grayi*, *Carex squarrosa*, *Carex tribuloides*, *Chasmanthium latifolium*, *Viola* spp., and *Commelina virginica*. Examples of this association which have sustained extensive recent disturbance will likely contain much *Smilax* sp. and *Rubus* sp. in the shrub layer. The exotics *Ligustrum sinense*, *Alliaria petiolata*, and *Microstegium vimineum* may be present in examples of this association.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This bottomland hardwood forest is found on higher terraces of floodplains. Soils on which this type is found (Shiloh NMP, Hardin County, Tennessee) include Collins and Waverly silt loams, at an elevation of about 115 m (380 feet).

Global Environment: This bottomland hardwood forest is found on higher terraces of floodplains. Soils on which this type is found (Shiloh National Park, Hardin County, Tennessee) include the Collins and the Waverly silt loams, at an elevation of about 115 m (380 feet). It is also found at about 12 m (40 feet) elevation in Monroe County, Alabama, on a high terrace of the Alabama River.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh NMP in the vicinity of Owl Creek this bottomland hardwood forest is dominated by *Liquidambar styraciflua*, *Quercus pagoda*, and *Carya ovata*. The understory contains *Carpinus caroliniana*, *Ulmus americana*, *Carya alba*, *Carya ovata*, *Carya glabra*, *Liquidambar styraciflua*, and *Quercus michauxii*. *Chasmanthium latifolium* and *Polygonum virginianum* are dominant herbs; there are many others also.

Global Vegetation: The canopy of stands of this bottomland hardwood forest is dominated by *Liquidambar styraciflua*, *Quercus pagoda*, and *Carya* spp. (including *Carya ovata*, *Carya laciniosa*, *Carya ovalis*). The understory may contain *Carpinus caroliniana*, *Fraxinus pennsylvanica*, *Ulmus americana*, *Carya alba*, *Carya ovalis*, and *Quercus nigra*. Portions of the stand may exhibit canopy dominance by *Liquidambar styraciflua* and *Carya* spp, with lower coverage by oaks. Shrubs include *Asimina triloba*, *Arundinaria gigantea* and *Ilex decidua*, along with smaller individuals of successional tree species such as *Acer negundo* and *Celtis laevigata*. Woody and herbaceous vines found here include *Bignonia capreolata*, *Vitis rotundifolia*, *Parthenocissus quinquefolia*, *Dioscorea villosa*, *Smilax bona-nox*, *Smilax rotundifolia*, *Menispermum canadense*, *Toxicodendron radicans*, *Amphicarpaea bracteata*, and *Passiflora lutea*. Herbs include *Arisaema dracontium*, *Arisaema triphyllum*, *Aristolochia serpentaria*, *Hymenocallis caroliniana* (= *Hymenocallis occidentalis*), *Ruellia* sp., *Leersia* sp., *Boehmeria cylindrica*, *Laportea canadensis*, *Polygonum virginianum*, *Spigelia marilandica*, *Carex debilis*, *Carex grayi*, *Carex squarrosa*, *Carex tribuloides*, *Chasmanthium latifolium*, *Viola* spp., and *Commelina virginica*. The exotics *Ligustrum sinense*, *Alliaria petiolata*, and *Microstegium vimineum* may be present in examples of this association.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G3G4 (5-Jan-2001). This bottomland forest is described from southern Tennessee and the East Gulf Coastal Plain of Alabama. It could occur in adjacent states (Arkansas, Mississippi). Its full range is not known, and a comparative assessment of its relationship to related types is not complete. It is not an inherently rare forest type, but is at least moderately widespread, and is presumed to be relatively common throughout its range, although its full range is not known. It is not restricted to any highly specific geologic substrates. It is poorly documented through EOs, and not much data are available on the specific condition of examples of this type. Some high-quality examples are protected on Shiloh National Military Park. Some stands have been impacted by removal of more valuable timber species (e.g., *Quercus pagoda*, *Carya* spp.) and loss of herbaceous species diversity from the disturbance effects of logging. In all probability, most examples which are not on public land have been repeatedly logged and their composition altered thereby. Remaining unprotected examples are threatened by timber removal, conversion to other managed forest types, and/or development into residential or commercial real estate. The exotics *Ligustrum sinense*, *Alliaria petiolata*, and *Microstegium vimineum* may be present in examples of this association. The Rank was formerly G3?. Changing it to G3G4 makes it evident that any uncertainty about the rank is in the G4 direction rather than the G2 direction.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: Based on plot data from Shiloh National Military Park, Tennessee, and Alabama River, McDuffie Landing. The full range of this type is not known, and a comparative assessment of its relationship to related types (e.g., CEG007354) is not complete. To the north, this type would conceptually blend into CEG002099, and to the south it would blend into CEG007354, but the precise range limits are not clear. However, this type occurs in areas which are not as floodprone as CEG007354.

Global Similar Associations:

- *Liquidambar styraciflua* - *Quercus michauxii* - *Carya laciniosa* / *Fagus grandifolia* - (*Aesculus flava*) Forest (CEG007702)—of the southern Interior Low Plateau of Tennessee.
- *Quercus michauxii* - *Quercus shumardii* - *Liquidambar styraciflua* / *Arundinaria gigantea* Forest (CEG002099)—of more northerly distribution.
- *Quercus nigra* - *Quercus pagoda* - *Carya myristiciformis* / *Cercis canadensis* Forest (CEG004770)—from the southern East Gulf Coastal Plain, possibly overlapping in range; consider merge.
- *Quercus pagoda* - *Quercus nigra* / *Halesia diptera* - *Ilex decidua* / *Chasmanthium sessiliflorum* - *Dicliptera brachiata* Forest (CEG007354)—from the southern East Gulf Coastal Plain, related and overlapping in range; occurs at a lower, more flood prone level, clarify differences.

Global Related Concepts:

OTHER COMMENTS**Other Comments:****ELEMENT DISTRIBUTION**

Shiloh National Military Park Range: This type is found on the floodplain of Owl Creek, on upper terraces.

Global Range: This bottomland association is described from the Upper East Gulf Coastal Plain of southern Tennessee and the East Gulf Coastal Plain of Alabama. It could occur in adjacent states (Arkansas, Mississippi), but its full range is not known.

Nations: US

States/Provinces: AL, AR?, MS, TN

USFS Ecoregions: 222Cc:CCP, 222Ce:CCP, 222Cf:CCP, 222Cg:CCC, 231Be:PPP, 231Bk:PPP, 232Bs:CCC

Federal Lands: DOD (Claiborne Lake); NPS (Natchez Trace, Shiloh); USFS (Holly Springs?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.16, 1994 plots 1B-12, 1B-17, 1B-18.

Local Description Authors: C.W. Nordman

Global Description Authors: D.J. Allard

References: Gallyoun et al. 1996, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

Water Tupelo Swamp Forest

Nyssa aquatica Forest

Water Tupelo Forest

Identifier: CEG002419

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Semipermanently flooded cold-deciduous forest (I.B.2.N.f.)
Alliance	<i>Nyssa aquatica</i> - (<i>Taxodium distichum</i>) Semipermanently Flooded Forest Alliance (A.345)
Alliance (English name)	Water Tupelo - (Bald-cypress) Semipermanently Flooded Forest Alliance
Association	<i>Nyssa aquatica</i> Forest
Association (English name)	Water Tupelo Forest
Association (Common name)	Water Tupelo Swamp Forest

Ecological System(s):	Lower Mississippi River Bottomland Depression (CES203.490)
	Southern Coastal Plain Blackwater River Floodplain Forest (CES203.493)
	Atlantic Coastal Plain Small Brownwater River Floodplain Forest (CES203.250)
	Atlantic Coastal Plain Brownwater Stream Floodplain Forest (CES203.248)
	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
	West Gulf Coastal Plain Large River Floodplain Forest (CES203.488)
	East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)
	Red River Large Floodplain Forest (CES203.065)
	Atlantic Coastal Plain Large River Floodplain Forest (CES203.066)

ELEMENT CONCEPT

Global Summary: This semipermanently flooded water tupelo swamp forest is found in the Coastal Plain from Virginia south to Florida, west to Texas, and north in the Mississippi delta region to Missouri, Illinois, and Kentucky. Stands occur on permanently saturated soils on low, wet flats and sloughs, swales and backswamps, and the association is more common on floodplains of brownwater, rather than blackwater, rivers. Both organic and mineral soils may be present. The vegetation is dominated by dense, and occasionally pure, stands of *Nyssa aquatica* but often in association with *Taxodium distichum* (never very abundant in this type), *Liquidambar styraciflua*, *Planera aquatica*, *Nyssa biflora*, *Gleditsia aquatica*, *Fraxinus profunda*, and *Cephalanthus occidentalis*. The herbaceous layer is conspicuously sparse, and density is wholly dependent upon the extent and duration of flooding. Where water is permanent, herbaceous plants rely on substrates found on rotting logs, stumps, terraces, and buttresses of trees. Subcanopy density and forest tree recruitment are poor due to fluctuating water levels.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association occurs on very poorly drained silt loam soils which are semipermanently flooded and impounded by beavers.

Global Environment: Stands of this association occur on permanently saturated soils on low, wet flats and sloughs, swales and backswamps, and the association is more common on floodplains of brownwater, rather than blackwater, rivers. Both organic and mineral soils may be present.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: Vegetation is open-canopied, due to beaver activity (both impounding and chewing of bark which has killed trees). Dominant canopy tree is *Nyssa aquatica*. *Salix nigra* is also present in the canopy. *Acer rubrum* is the only subcanopy tree. Shrubs are fairly dense; *Acer rubrum*, *Alnus serrulata*, *Cornus foemina*, and *Itea virginica* are the most important, along with *Nyssa aquatica*, *Cephalanthus occidentalis*, and *Salix nigra*. *Polygonum sagittatum*, *Leersia oryzoides*, *Microstegium vimineum*, *Impatiens capensis*, and *Polygonum punctatum* are the dominant herbaceous plants. Other herbs are *Scirpus cyperinus*, *Mikania scandens*, *Boehmeria cylindrica*, *Cicuta maculata*, *Apios americana*, *Triadenum walteri*, *Cinna arundinacea*, *Sagittaria australis* (= *Sagittaria longirostra*), *Erechtites hieraciifolia*, *Ludwigia decurrens*, *Peltandra virginica*, *Carex crinita*, *Commelina virginica*, *Bidens aristosa* (= *Bidens polylepis*), *Carex lupulina*, *Panicum dichotomiflorum*, *Bidens frondosa*, *Ceratophyllum demersum*, *Pilea pumila*, *Heteranthera reniformis*, *Saururus cernuus*, *Cuscuta gronovii*, *Gratiola virginiana*, *Ludwigia peploides* ssp. *glabrescens*, *Eclipta prostrata* (= *Eclipta alba*), *Galium tinctorium*, *Lobelia cardinalis*, and the exotic *Arthraxon hispidus*.

Global Vegetation: The vegetation is dominated by dense, and occasionally pure, stands of *Nyssa aquatica* but often in association with *Taxodium distichum* (never very abundant in this type), *Liquidambar styraciflua*, *Planera aquatica*, *Nyssa biflora*, *Gleditsia aquatica*, *Fraxinus profunda*, and *Cephalanthus occidentalis*. The herbaceous layer is conspicuously sparse, and density is wholly dependent upon the extent and duration of flooding. Where water is permanent, herbaceous plants rely on substrates found on rotting logs, stumps, terraces, and buttresses of trees. Some herbs which may be present at low densities on these elevated places include *Phanopyrum gymnocarpon*, *Pluchea camphorata*, *Boehmeria cylindrica*, *Rudbeckia laciniata*, *Sagittaria latifolia*, *Onoclea sensibilis*, *Triadenum walteri*, *Carex joorii*, *Carex glaucescens*, *Asclepias perennis*, *Saururus cernuus*, *Justicia ovata*, *Leersia lenticularis*, and others. Subcanopy density and forest tree recruitment are poor due to fluctuating water levels (TNC 1995a).

At Shiloh National Military Park (western Tennessee) this occurs with vegetation open-canopied, due to beaver activity (both impounding and chewing of bark which has killed trees). The dominant canopy tree is *Nyssa aquatica*. *Salix nigra* is also present in the canopy. *Acer rubrum* is the only subcanopy tree. Shrubs are fairly dense; *Acer rubrum*, *Alnus serrulata*, *Cornus foemina*, and *Itea virginica* are the most important, with *Nyssa aquatica*, *Cephalanthus occidentalis*, and *Salix nigra*. *Polygonum sagittatum*, *Leersia oryzoides*, *Microstegium vimineum*, *Impatiens capensis*, and *Polygonum punctatum* are the dominant herbaceous plants. Other herbs are *Scirpus cyperinus*, *Mikania scandens*, *Boehmeria cylindrica*, *Cicuta maculata*, *Apios americana*, *Triadenum walteri*, *Cinna arundinacea*, *Sagittaria latifolia* (= *Sagittaria longirostra*), *Erechtites hieraciifolia*, *Ludwigia decurrens*, *Peltandra virginica*, *Carex crinita*, *Commelina virginica*, *Bidens aristosa* (= *Bidens polylepis*), *Carex lupulina*, *Panicum dichotomiflorum*, *Bidens frondosa*, *Ceratophyllum demersum*, *Pilea pumila*, *Heteranthera reniformis*, *Saururus cernuus*, *Cuscuta gronovii*, *Gratiola virginiana*, *Ludwigia peploides* ssp. *glabrescens*, *Eclipta prostrata* (= *Eclipta alba*), *Galium tinctorium*, *Lobelia cardinalis*, and the exotic *Arthraxon hispidus*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Needle-leaved tree	<i>Taxodium distichum</i>
Tree canopy	Broad-leaved deciduous tree	<i>Nyssa aquatica</i>
Tree subcanopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> var. <i>drummondii</i> , <i>Fraxinus caroliniana</i> , <i>Planera aquatica</i>
Tall shrub/sapling	Broad-leaved deciduous tree	<i>Cephalanthus occidentalis</i>
Tall shrub/sapling	Broad-leaved deciduous shrub	<i>Forestiera acuminata</i> , <i>Rosa palustris</i>
Herb (field)	Fern	<i>Azolla mexicana</i>
Floating aquatic	Aquatic herb (floating & submergent)	<i>Lemna minor</i> , <i>Spirodela polyrrhiza</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Acris gryllus*, *Agkistrodon piscivorus*, *Aix sponsa*, *Ambystoma talpoideum*, *Amia calva*, *Anolis carolinensis*, *Aphredoderus sayanus*, *Ardea alba*, *Ardea herodias*, *Butorides*

virescens, *Carex decomposita*, *Castor canadensis*, *Chelydra serpentina*, *Egretta caerulea*, *Epiaeschna heros*, *Erythemis simplicicollis*, *Etheostoma fusiforme*, *Etheostoma gracile*, *Eurycea bislineata*, *Farancia erythrogramma*, *Gambusia affinis*, *Haliaeetus leucocephalus*, *Heteranthera multiflora*, *Hottonia inflata*, *Hyla avivoca*, *Hyla cinerea*, *Ilex amelancther*, *Kinosternon baurii*, *Kinosternon subrubrum*, *Libellula vibrans*, *Lontra canadensis*, *Lophodytes cucullatus*, *Melospiza georgiana*, *Mustela vison*, *Nerodia sipedon*, *Ondatra zibethicus*, *Parula americana*, *Procyon lotor*, *Protonotaria citrea*, *Pseudacris crucifer*, *Pseudacris triseriata*, *Rana clamitans*, *Rana palustris*, *Ranunculus laxicaulis*, *Regina rigida*, *Siren intermedia*, *Sternotherus odoratus*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4G5 (19-Sep-2001). Depending on how historic distribution and abundance are factored into the rank, the rank could be considerably higher, perhaps a G3G4. Many stands have been extensively cleared.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: More work needs to be done to understand development of this community where the ranges of *Nyssa aquatica* and *Taxodium distichum* overlap, to determine the differences between this and a *Nyssa aquatica*-dominated forest that develops following logging of *Taxodium distichum*, and to determine the extent of geographic variation. Where bald-cypress and water tupelo ranges overlap, little is known about conditions which select for either or both species. Selective removal of bald-cypress can shift dominance in mixed bald-cypress - water tupelo stands to favor water tupelo. Water tupelo seem to select transitional zones between permanent water and upland habitat and seldom occur as a dominant component of the canopy where inundation is semipermanent or permanent.

Global Similar Associations:

- *Nyssa aquatica* Tidal Forest (CEGL008561)
- *Taxodium distichum* - (*Nyssa aquatica*) / *Forestiera acuminata* - *Planera aquatica* Forest (CEGL002421)—may resemble *Nyssa aquatica* Forest in habitats where most bald-cypress have been removed by logging and a few very old trees remain.
- *Taxodium distichum* - *Nyssa aquatica* - *Acer rubrum* / *Itea virginica* Forest (CEGL007422)
- *Taxodium distichum* - *Nyssa biflora* / *Berchemia scandens* - *Toxicodendron radicans* / *Woodwardia areolata* Forest (CEGL004429)
- *Taxodium distichum* / *Lemna minor* Forest (CEGL002420)

Global Related Concepts:

- *Nyssa aquatica* - *Taxodium distichum* swamp (Robertson et al. 1984) =
- *Taxodium* - *Nyssa aquatica* / *Rosa palustris* community (Voigt and Mohlenbrock 1964) B
- Baldcypress-Water Tupelo Series (Diamond 1993) B
- Eastern Broadleaf and Needleleaf Forests: 113: Southern Floodplain Forest (*Quercus-Nyssa-Taxodium*) (Kuchler 1964) B
- IIA4d. Tupelo Swamp (Allard 1990) B
- P1B3dII3a. *Nyssa aquatica* (Foti et al. 1994) ?
- Palustrine *Nyssa* sp. Series CP (Pyne 1994) ?
- Palustrine: Forested Wetland: Riparian (TNC 1985) B
- Palustrine: Palustrine Forested Wetland (Cowardin et al. 1979) B
- Tupelo Swamp (Oberholster 1993) B
- UNESCO FORMATION CODE: I.B.3e (UNESCO 1973) B
- Water Tupelo - Swamp Tupelo: 103 (Eyre 1980) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type occurs in the area of Owl Creek bottomland which is flooded by beavers and is located in the northwestern part of Shiloh NMP.

Global Range: This water tupelo swamp forest is found on the lower Atlantic Coastal Plain from southeastern Virginia to southeastern Georgia, the Gulf Coastal Plain from about Tallahassee, Florida, west to southeastern Texas, and the Mississippi River Alluvial Plain to southern Illinois and southeastern Missouri.

The type occurs on permanently saturated soils on low, wet flats and sloughs, swales, and back swamps and is more common on floodplains of brownwater, rather than blackwater, rivers. The range of water tupelo swamps has been greatly reduced within the last 100-150 years by ditching and draining for agriculture and logging. Water tupelo swamps today occur in areas where topographic and hydrologic conditions discouraged these practices. The removal of bald-cypress may actually select for water tupelo in swamps where both species occur. Historically, water tupelo swamps reached their northernmost limits in extreme southern Illinois.

Nations: US

States/Provinces: AL:S2S3, AR, FL, GA, IL, KY, LA, MO, MS, NC, SC, TN, TX, VA

USFS Ecoregions: 222A:CC, 222Cg:CCC, 222D:CP, 231Bc:CCC, 231E:C?, 232B:CC, 232Cg:CCC, 232Ch:CC?, 232F:CC, 234Aa:CCC, 234Ac:CCC, 234Ad:CCC, 234Af:CCC, 234Ag:CCC, 234Ai:CCC, 234Al:CCC, 234Am:CCC, 234An:CCC

Federal Lands: DOD (Fort Benning?); DOE (Savannah River Site); NPS (Shiloh); USFS (Apalachicola?, Conecuh?, De Soto, Delta, Francis Marion, Kisatchie, Talladega); USFWS (Great Dismal Swamp?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.7.

Local Description Authors: C.W. Nordman

Global Description Authors: S. Landaal, mod. D. Faber-Langendoen, mod. R.E. Evans

References: Allard 1990, Ambrose 1990a, Applequist 1959, Burk 1977, Burns and Honkala 1990a, Burns and Honkala 1990b, Christensen 1988, Cowardin et al. 1979, Demaree 1932, Dennis 1988, Diamond 1993, Evans 1991, Ewel and Odum 1984b, Eyre 1980, Fleming et al. 2001, Foti 1994b, Foti et al. 1994, Klawitter 1962, Kuchler 1964, Mitsch and Gosselink 1993, NatureServe Ecology - Southeastern U.S. unpubl. data, Nelson 1986, Oberholster 1993, Peet et al. unpubl. data 2002, Penfound and Hall 1939, Pyne 1994, Radford and Martin 1975, Robertson et al. 1984, Schafale 2000, Schafale and Weakley 1990, Smith 1996a, Southeastern Ecology Working Group n.d., TNC 1985, TNC 1995a, UNESCO 1973, Voigt and Mohlenbrock 1964, Wharton 1989, Wharton et al. 1982, White and Anderson 1970, White and Madany 1978, Wieland 1994b, Wieland 2000b

Bald-cypress Swamp

Taxodium distichum / *Lemna minor* Forest

Bald-cypress / Lesser Duckweed Forest

Identifier: CEGL002420

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Semipermanently flooded cold-deciduous forest (I.B.2.N.f.)
Alliance	<i>Taxodium distichum</i> Semipermanently Flooded Forest Alliance (A.346)
Alliance (English name)	Bald-cypress Semipermanently Flooded Forest Alliance
Association	<i>Taxodium distichum</i> / <i>Lemna minor</i> Forest
Association (English name)	Bald-cypress / Lesser Duckweed Forest
Association (Common name)	Bald-cypress Swamp

Ecological System(s):	Lower Mississippi River Bottomland Depression (CES203.490)
	Southern Coastal Plain Blackwater River Floodplain Forest (CES203.493)
	West Gulf Coastal Plain Large River Floodplain Forest (CES203.488)
	West Gulf Coastal Plain Near Coast Large River Swamp (CES203.459)
	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
	Red River Large Floodplain Forest (CES203.065)
	Atlantic Coastal Plain Large River Floodplain Forest (CES203.066)

ELEMENT CONCEPT

Global Summary: This bald-cypress swamp is found in the Atlantic and Gulf coastal plains of the United States in a variety of ecological settings. Examples may occur in oxbow lakes and ponds, and along the banks of rivers and lakes in saturated or flooded soils. This type is characterized by a monospecific canopy of straight, tall individuals of *Taxodium distichum* above shallow to deep water (depths ranging from soil saturation to approximately 6 m) during all or most of the year. Flooding is seasonal, occurring during winter and spring. Stands have a sparse to moderate subcanopy and depauperate shrub and herb layers. The trunks of the canopy trees typically form swelled buttresses. Canopy cover is variable, from at or near 100% to less than 60% in some examples. More open examples of this type tend to occur in deeper water. In the deepest water situations scattered trees grow over an open water surface covered by floating and submersed aquatic plants. *Taxodium distichum* regeneration is absent in areas of permanent inundation, as seed germination does not occur in standing water. The subcanopy and herbaceous layers are dependent upon timing, duration, and depth of flooding. *Cephalanthus occidentalis* and *Rosa palustris* may be common shrubs in some examples of this community, while *Fraxinus caroliniana* (in its range) and *Acer rubrum* var. *drummondii* are common in the subcanopy. Shallow water emergents, floating-leaved aquatics, such as *Azolla caroliniana*, *Brasenia schreberi*, *Cabomba caroliniana*, *Hydrocotyle ranunculoides*, *Limnobia spongia*, *Spirodela punctata*, *Wolffia columbiana*, *Lemna* spp., *Nymphaea* spp., and submerged hydrophytes, such as *Ceratophyllum demersum*, *Egeria densa*, *Myriophyllum aquaticum*, and *Potamogeton nodosus*, are common in permanent water

zones throughout the range of *Taxodium distichum* swamps. This community is differentiated from other swamp forests by lacking *Nyssa* spp. as other than occasional individuals. This is the only community type currently defined outside Florida with *Taxodium distichum* as the sole dominant.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment:

Global Environment: This community occurs on a variety of inundated topographic habitats, including oxbow ponds, natural lakes, drowned floodplains, backwater sloughs, along river edges, and in various isolated depressions within the floodplain. It is more commonly associated with brownwater than blackwater rivers. Soil types on which it is found are very poorly drained. This included impounded water (e.g., abandoned millponds, beaver ponds) and other habitats with relatively stable water levels.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation:

Global Vegetation: The vegetation is characterized by a monospecific canopy of straight, tall individuals of *Taxodium distichum* with a sparse to moderate subcanopy and depauperate shrub and herb layers. Trees are generally very tall and straight with their trunks forming swelled buttresses. Canopy cover is extremely variable, from densely closed forests to sparse canopies. *Taxodium distichum* regeneration is absent in areas of permanent inundation, as seed germination does not occur in standing water. The subcanopy and herbaceous layers are dependent upon timing, duration, and depth of flooding. *Cephalanthus occidentalis* and *Rosa palustris* are common shrubs in this community, while *Fraxinus caroliniana* (in its range) and *Acer rubrum* var. *drummondii* are common in the subcanopy. A common vine is *Brunnichia ovata*. Shallow water emergents, floating-leaved aquatics, such as *Azolla caroliniana*, *Brasenia schreberi*, *Cabomba caroliniana*, *Limnobia spongia*, *Spirodela punctata*, *Wolffia columbiana*, *Lemna minor*, *Nymphaea* spp., and submerged hydrophytes, such as *Ceratophyllum demersum*, are common in permanent water zones throughout the range of this type. In the southern part of the range (e.g., southern Alabama) *Lemna minor* is replaced by *Lemna valdiviana*. Other important aquatic species may include *Ludwigia palustris*, *Ludwigia peploides*, and *Hydrolea uniflora*. The most open-canopied examples, in deeper water, may support dense colonies of *Nuphar lutea*, and often greater cover of *Nelumbo lutea*, *Cabomba caroliniana*, *Ceratophyllum demersum*, *Egeria densa*, and *Wolffia columbiana* (Van Kley and Hine 1998). Interestingly, cover of the epiphyte *Tillandsia usneoides* apparently peaks in more closed-canopied situations. Common herbaceous species from occurrences in southwestern Arkansas include *Bidens discoidea*, *Carex lupulina*, *Carex glaucescens*, *Echinodorus cordifolius*, *Heliotropium indicum*, *Leersia oryzoides*, *Limnobia spongia*, *Lycopus rubellus*, *Polygonum hydropiperoides*, *Proserpinaca palustris*, and *Saururus cernuus* (J. Campbell pers. comm. 1999, D. Zollner pers. comm. 1999, TNC 1995a).

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Needle-leaved tree	<i>Taxodium distichum</i>
Tree subcanopy	Broad-leaved deciduous tree	<i>Acer rubrum</i> , <i>Carya aquatica</i> , <i>Fraxinus caroliniana</i> , <i>Fraxinus profunda</i> , <i>Gleditsia aquatica</i> , <i>Nyssa biflora</i> , <i>Planera aquatica</i> , <i>Salix nigra</i>
Tall shrub/sapling	Broad-leaved deciduous tree	<i>Cephalanthus occidentalis</i>
Tall shrub/sapling	Broad-leaved deciduous shrub	<i>Forestiera acuminata</i>
Floating aquatic	Aquatic herb (floating & submergent)	<i>Lemna minor</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Acmaeodera pulchella*, *Acris gryllus*, *Agkistrodon piscivorus*, *Aix sponsa*, *Ambystoma talpoideum*, *Amia calva*, *Anolis carolinensis*, *Aphredoderus sayanus*, *Ardea alba*, *Ardea herodias*, *Butorides virescens*, *Carex decomposita*, *Carex oxylepis*, *Castor canadensis*, *Chelydra serpentina*, *Dichantherium commutatum*, *Dryopteris celsa*, *Egretta caerulea*, *Epiaeschna heros*, *Erythemis simplicicollis*, *Etheostoma fusiforme*, *Etheostoma gracile*, *Eurycea bislineata*, *Farancia erythrogramma*, *Gambusia affinis*, *Haliaeetus leucocephalus*, *Heteranthera multiflora*, *Hottonia inflata*, *Hyla avivoca*, *Hyla cinerea*, *Ilex amelanther*, *Iris fulva*, *Ischnura gemina*, *Isoparce cupressi*, *Kinosternon baurii*, *Kinosternon subrubrum*, *Libellula vibrans*, *Lontra canadensis*, *Lophodytes cucullatus*, *Melospiza georgiana*, *Mustela vison*, *Nerodia sipedon*, *Ondatra zibethicus*, *Pachydiplax longipennis*, *Parula americana*, *Phloeosinus taxodii*, *Physocnemum andreae*, *Procyon lotor*, *Protonotaria citrea*, *Pseudacris crucifer*, *Pseudacris triseriata*, *Rana clamitans*, *Rana palustris*, *Ranunculus laxicaulis*, *Regina rigida*, *Siren intermedia*, *Sternotherus odoratus*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4G5 (19-Sep-2001).

CLASSIFICATION

Status: Standard

Classification Confidence: 1 - Strong

Shiloh National Military Park Comments:

Global Comments: This is the only community type currently defined outside Florida with *Taxodium distichum* as the sole dominant. Stands are possible in suitable habitat anywhere within the range of *Taxodium distichum*; however, it is more commonly recognized outside of, or near the edge of, the range of *Nyssa aquatica* which otherwise is frequently codominant with *Taxodium distichum*. Classification can become difficult where excessive logging has removed most of the mature bald-cypress. Logging, and possibly alteration of hydrologic regimes, may create an unnaturally open canopy more typical of woodland communities. Water tupelo regeneration is prevalent at these disturbed sites, often replacing bald-cypress as the dominant plant species. Unless canopy composition is severely altered, this criterion is currently used to establish species dominance. Where logging causes classification difficulties, adjacent undisturbed occurrences may be used to ascertain pre-disturbance dominance.

Global Similar Associations:

- *Nyssa aquatica* Forest (CEGL002419)—lacks bald-cypress as a significant contributor to canopy dominance.
- *Taxodium distichum* - (*Nyssa aquatica*) / *Forestiera acuminata* - *Planera aquatica* Forest (CEGL002421)—has similar hydrologic characteristics but differs by exhibiting a canopy codominated by bald-cypress and water tupelo.
- *Taxodium distichum* - *Nyssa aquatica* - *Acer rubrum* / *Itea virginica* Forest (CEGL007422)
- *Taxodium distichum* - *Nyssa aquatica* / *Fraxinus caroliniana* Forest (CEGL007431)—a brownwater Atlantic Coastal Plain seasonally flooded type of flowing rivers.
- *Taxodium distichum* - *Populus heterophylla* Forest (CEGL005201)
- *Taxodium distichum* - *Taxodium ascendens* / *Panicum hemitomon* - *Sclerolepis uniflora* Woodland (CEGL004465)
- *Taxodium distichum* - *Taxodium ascendens* / *Panicum hemitomon* Woodland (CEGL004466)
- *Taxodium distichum* / *Boehmeria cylindrica* / *Ceratophyllum muricatum* Maritime Swamp Forest (CEGL004079)
- *Taxodium distichum* / *Cephalanthus occidentalis* / *Juncus repens* Woodland (CEGL004653)
- *Taxodium distichum* / *Planera aquatica* - *Forestiera acuminata* Lakeshore Woodland (CEGL007909)
- *Taxodium distichum* East Gulf Coastal Plain Pondshore Woodland (CEGL004046)
- *Taxodium distichum* West Gulf Coastal Plain Lakeshore Woodland (CEGL008497)

Global Related Concepts:

- *Taxodium* - *Nyssa aquatica* / *Rosa palustris* community (Voigt and Mohlenbrock 1964) B
- *Taxodium distichum* - *Nyssa aquatica* swamp (Robertson et al. 1984) B
- Bald Cypress Swamp (Oberholster 1993) B
- Baldcypress / *Ceratophyllum* Semi-Permanently Flooded Swamps (Turner et al. 1999) ?
- Baldcypress-Water Tupelo Series (Diamond 1993) B
- Baldcypress: 101 (Eyre 1980) B
- Closed-canopy Cypress Swamps & Open (Deep Water) Cypress Swamps (TNC 1995a) ?
- Eastern Broadleaf and Needleleaf Forests: 113: Southern Floodplain Forest (*Quercus-Nyssa-Taxodium*) (Kuchler 1964) B
- IIA4a. Bald Cypress Swamp (Allard 1990) B
- Mesotrophic Semipermanently Flooded Forest (Rawinski 1992) B
- P1B3dI1a. *Taxodium distichum* (Foti et al. 1994) ?
- Palustrine *Taxodium distichum* Series CP, MAP (Pyne 1994) ?
- Palustrine: Forested Wetland: Riparian (TNC 1985) B
- Palustrine: Palustrine Forested Wetland (Cowardin et al. 1979) B
- UNESCO FORMATION CODE: I.B.3e (UNESCO 1973) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range:

Global Range: This bald-cypress swamp is found in the Atlantic and Gulf coastal plains of the United States. Stands are possible in suitable habitat anywhere within the range of *Taxodium distichum*, i.e., the lower Atlantic Coastal Plain from Virginia to southern Florida, the lower Gulf Coastal Plain to southeastern Texas, and the Mississippi River Alluvial Plain to southern Illinois. However, it is more commonly recognized outside of, or near the edge of, the range of *Nyssa aquatica* which otherwise is frequently codominant with *Taxodium distichum*. Such areas include southwestern Arkansas and northwestern Louisiana, southeastern Oklahoma, eastern Mississippi and adjacent Alabama, southern Indiana, peninsular Florida, northeastern Virginia, eastern Maryland and Delaware.

Bald-cypress occurs over a wide area and reaches its best development in Florida. Bald-cypress swamps occur from southern Florida, along the Gulf Coast to eastern Texas, north into Arkansas and Tennessee, up the Mississippi Valley into southern Illinois and

Indiana, and as far north as Delaware along the East Coast. Historically, bald-cypress swamps reached their northernmost limits at the northern boundary of the Gulf Coastal Plains Division in southern Illinois. Remnant bald-cypress swamps still occur in extreme southern Illinois; the most significant occurrences are found in the Cache River Basin. Hydrologic alteration resulting from ditching, draining, and logging has severely reduced the number and size of bald-cypress swamps within their historic range.

Nations: US

States/Provinces: AL, AR, FL, GA, IL, IN, KY, LA, MO, MS, NC, OK, SC, TN, TX?, VA?

USFS Ecoregions: 222A:CC, 222Cg:CC?, 222D:CP, 222G:CC, 231B:CC, 231E:CP, 231Fa:CCC, 232B:CC, 232C:CC, 232Fa:CCC, 234Aa:CCC, 234Ac:CCC, 234Ad:CCC, 234Af:CCC, 234Ag:CCC, 234Ai:CCC, 234Al:CCC, 234Am:CCC, 234An:CCC

Federal Lands: DOE (Savannah River Site); NPS (Chickasaw NRA, Natchez Trace, Shiloh?); USFS (Angelina, Apalachicola, Conecuh, Davy Crockett, De Soto, Delta, Holly Springs?, Homochitto?, Kisatchie, Ocala, Osceola, Sabine NF, Sam Houston, St. Francis?, Tombigbee?); USFWS (Chickasaw NWR, Reelfoot)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: No plot.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Guetersloh, mod. S. Landaal and D. Faber-Langendoen

References: Allard 1990, Ambrose 1990a, Applequist 1959, Blair and Hubbell 1938, Bruner 1931, Burdant et al. 1977, Burns and Honkala 1990a, Campbell pers. comm., Christensen 1988, Cowardin et al. 1979, Dennis 1988, Diamond 1993, Duck and Fletcher 1945, Evans 1991, Ewel and Odum 1984b, Eyre 1980, FNAI 1992a, Faircloth 1971, Foti 1994b, Foti et al. 1994, Hoagland 1997, Hoagland 2000, Hoagland et al. 1996, Illinois Nature Preserve Commission 1973, Klawitter 1962, Kuchler 1964, Little 1980b, Martin et al. 1993, Mitsch and Gosselink 1986, NatureServe Ecology - Southeastern U.S. unpubl. data, Nelson 1986, Oberholster 1993, Osborn 1941, Penfound and Hall 1939, Pyne 1994, Radford and Martin 1975, Rawinski 1992, Rice 1963, Robertson et al. 1984, Schafale and Weakley 1990, Smith 1996a, Southeastern Ecology Working Group n.d., TNC 1985, TNC 1995a, Turner et al. 1999, UNESCO 1973, Van Kley and Hine 1998, Voigt and Mohlenbrock 1964, Wharton 1989, Wharton et al. 1982, White and Anderson 1970, White and Madany 1978, Wieland 1994b, Wieland 2000b, Zollner pers. comm.

Interior Forested Acid Seep

Acer rubrum var. *trilobum* - *Nyssa sylvatica* / *Rhododendron canescens* - *Viburnum nudum* var.

nudum / *Woodwardia areolata* Forest

Carolina Red Maple - Blackgum / Wild Azalea - Southern Wild Raisin / Netted Chainfern Forest

Identifier: CEG004425

NVC Classification

Physiognomic Class	Forest (I)
Physiognomic Subclass	Deciduous forest (I.B.)
Physiognomic Group	Cold-deciduous forest (I.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous forest (I.B.2.N.)
Formation	Saturated cold-deciduous forest (I.B.2.N.g.)
Alliance	<i>Acer rubrum</i> - <i>Nyssa sylvatica</i> Saturated Forest Alliance (A.348)
Alliance (English name)	Red Maple - Blackgum Saturated Forest Alliance
Association	<i>Acer rubrum</i> var. <i>trilobum</i> - <i>Nyssa sylvatica</i> / <i>Rhododendron canescens</i> - <i>Viburnum nudum</i> var. <i>nudum</i> / <i>Woodwardia areolata</i> Forest
Association (English name)	Carolina Red Maple - Blackgum / Wild Azalea - Southern Wild Raisin / Netted Chainfern Forest
Association (Common name)	Interior Forested Acid Seep

Ecological System(s): South-Central Interior Small Stream and Riparian (CES202.706)
East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)

ELEMENT CONCEPT

Global Summary: This forested acid seep occurs at the base of steep to moderate slopes where water percolates out through Cretaceous or Pennsylvanian sands and gravels. Stands are known primarily from the northern part of the Upper Coastal Plain of Kentucky and Tennessee, but it is also reported from Kentucky's Shawnee Hills. Soils are deep, and often gravelly or sandy. Common or characteristic trees include *Acer rubrum*, *Betula nigra*, *Liquidambar styraciflua*, *Fagus grandifolia*, *Nyssa sylvatica*, and *Quercus pagoda*. Small trees and shrubs characteristic of the seeps include *Styrax americanus*, *Rhododendron canescens*, *Ilex opaca*, *Carpinus caroliniana*, *Photinia* spp. (= *Aronia* spp.), *Cornus foemina*, *Itea virginica*, *Viburnum nudum* var. *nudum*, and *Vaccinium* spp. (including *Vaccinium fuscum*). The ground cover consists of herbaceous species such as *Osmunda cinnamomea*, *Osmunda regalis* var. *spectabilis*, *Woodwardia areolata*, *Thelypteris palustris* var. *pubescens*, *Carex* spp., *Juncus* spp., *Rhynchospora capitellata*,

Rhynchospora globularis, *Saururus cernuus*, *Bartonia virginica*, and many others. Some Tennessee examples contain *Magnolia virginiana*, which is rare in that state. This vegetation occurs at the heads of small streams or on the margins of their floodplains at the upland / wetland interface. Examples from the Shawnee Hills of Kentucky (subsections 222Dc, 222Dg) are reported to be somewhat depauperate, lacking *Rhododendron canescens* and *Viburnum nudum*.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association occurs in a wet floodplain adjacent to a creek. Seepage from adjacent hillside maintains a moderately saturated condition, which is reflected in the flora. Apparently a former dam site, there was an apparent "millrace" and ditch along the bottom of the bluff. This ditch should be blocked at the far (downstream) end to allow the area to become more saturated.

Global Environment: This forested acid seep occurs at the base of steep to moderate slopes where water percolates out through Cretaceous or Pennsylvanian sands and gravels. Stands are known primarily from the northern part of the Upper Coastal Plain of Kentucky and Tennessee, but it is also reported from Kentucky's Shawnee Hills. Soils are deep, and often gravelly or sandy. This vegetation occurs at the heads of small streams or on the margins of their floodplains at the upland / wetland interface. Examples from the Shawnee Hills of Kentucky (subsections 222Dc, 222Dg) are reported to be somewhat depauperate. At Shiloh National Military Park (western Tennessee) this association occurs in a wet floodplain adjacent to a creek. Seepage from adjacent hillside maintains a moderately saturated condition, which is reflected in the flora.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: At Shiloh NMP the canopy was dominated by *Nyssa sylvatica* with *Liquidambar styraciflua*, *Liriodendron tulipifera*, and *Quercus pagoda* also important. *Quercus alba* also occurs in the canopy. The subcanopy is dominated by *Fagus grandifolia*, *Oxydendrum arboreum*, and *Carpinus caroliniana* with *Acer rubrum* and *Carya alba*. The tall shrubs had 20% total cover. In order of abundance, they were *Rhododendron canescens*, *Oxydendrum arboreum*, *Fagus grandifolia*, and *Vaccinium fuscum*. Short shrubs were sparse. In order of abundance, they were *Quercus alba*, *Smilax rotundifolia*, *Decumaria barbara*, *Smilax glauca*, *Vitis rotundifolia*, *Sassafras albidum*, *Diospyros virginiana*, *Prunus serotina*, *Carya alba*, and the invasive exotic plants *Ligustrum sinense* and *Lonicera japonica*. The herbaceous layer was completely dominated by *Thelypteris noveboracensis*. Other common herbaceous plants were *Uvularia sessilifolia*, *Chasmanthium sessiliflorum*, *Athyrium filix-femina* ssp. *asplenoides*, *Polygonum virginianum*, *Woodwardia areolata*, *Osmunda regalis*, *Leersia virginica*, *Carex debilis*, *Osmunda cinnamomea*, and *Maianthemum racemosum*. Present only at trace amounts were *Arisaema triphyllum*, *Bartonia paniculata*, *Carex tribuloides*, *Carex lurida*, *Dichanthelium dichotomum* var. *dichotomum*, *Solidago rugosa*, *Boehmeria cylindrica*, *Platanthera clavellata*, *Lycopus rubellus*, and the invasive exotic grass *Microstegium vimineum*.

Global Vegetation: Common or characteristic trees in stands of this type include *Acer rubrum*, *Betula nigra*, *Liquidambar styraciflua*, *Fagus grandifolia*, *Nyssa sylvatica*, and *Quercus pagoda*. Small trees and shrubs characteristic of the seeps include *Styrax americanus*, *Rhododendron canescens*, *Ilex opaca*, *Carpinus caroliniana*, *Photinia* spp. (= *Aronia* spp.), *Cornus foemina*, *Itea virginica*, *Viburnum nudum* var. *nudum*, and *Vaccinium* spp. (including *Vaccinium fuscum*). The ground cover consists of herbaceous species such as *Osmunda cinnamomea*, *Osmunda regalis* var. *spectabilis*, *Woodwardia areolata*, *Thelypteris palustris* var. *pubescens*, *Carex* spp., *Juncus* spp., *Rhynchospora capitellata*, *Rhynchospora globularis*, *Saururus cernuus*, *Bartonia virginica*, and many others. Some Tennessee examples contain *Magnolia virginiana*, which is rare in that state. Examples from the Shawnee Hills of Kentucky (subsections 222Dc, 222Dg) are reported to be somewhat depauperate, lacking *Rhododendron canescens* and *Viburnum nudum*.

At Shiloh National Military Park (western Tennessee) the canopy was dominated by *Nyssa sylvatica* with *Liquidambar styraciflua*, *Liriodendron tulipifera*, and *Quercus pagoda* also important. *Quercus alba* also occurs in the canopy. The subcanopy is dominated by *Fagus grandifolia*, *Oxydendrum arboreum*, and *Carpinus caroliniana* with *Acer rubrum* and *Carya alba*. The tall shrubs had 20% total cover. In order of abundance, they were *Rhododendron canescens*, *Oxydendrum arboreum*, *Fagus grandifolia*, and *Vaccinium fuscum*. Short shrubs were sparse. In order of abundance, they were *Quercus alba*, *Smilax rotundifolia*, *Decumaria barbara*, *Smilax glauca*, *Vitis rotundifolia*, *Sassafras albidum*, *Diospyros virginiana*, *Prunus serotina*, *Carya alba*, and the invasive exotic plants *Ligustrum sinense* and *Lonicera japonica*. The herbaceous layer was completely dominated by *Thelypteris noveboracensis*. Other common herbaceous plants were *Uvularia sessilifolia*, *Chasmanthium sessiliflorum*, *Athyrium filix-femina* ssp. *asplenoides*, *Polygonum virginianum*, *Woodwardia areolata*, *Osmunda regalis*, *Leersia virginica*, *Carex debilis*, *Osmunda cinnamomea*, and *Maianthemum racemosum*. Present only at trace amounts were *Arisaema triphyllum*, *Bartonia paniculata*, *Carex tribuloides*, *Carex lurida*, *Dichanthelium dichotomum* var. *dichotomum*, *Solidago rugosa*, *Boehmeria cylindrica*, *Platanthera clavellata*, *Lycopus rubellus*, and the invasive exotic grass *Microstegium vimineum*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

Stratum

Lifeform

Species

Global

Stratum

Lifeform

Species

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G2G3 (16-Dec-1999). This community is restricted in its geographic distribution and occurs in a very specific land type and environment. This vegetation occurs at the heads of small streams or on the margins of their floodplains at the interface between upland and wetland. As far as is known, it is limited to the northern part of the Upper East Gulf Coastal Plain of Kentucky and Tennessee and the adjacent Shawnee Hills of Kentucky. These communities are very limited in extent and are threatened by siltation resulting from upslope timber removal. Adjacent upland development would alter the supply of groundwater and would impact the distinctive hydrology of this community.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This seep vegetation is distinct from the more Appalachian type, *Acer rubrum* var. *trilobum* - *Nyssa sylvatica* / *Osmunda cinnamomea* - *Chasmanthium laxum* - *Carex intumescens* / *Sphagnum lescurii* Forest (CEGL007443), which occurs on streamhead swales on broad ridges where a perched water table is present. These communities are very limited in extent and are threatened by siltation resulting from upslope timber removal.

Global Similar Associations:

- *Acer rubrum* var. *trilobum* - *Nyssa sylvatica* / *Osmunda cinnamomea* - *Chasmanthium laxum* - *Carex intumescens* / *Sphagnum lescurii* Forest (CEGL007443)—a more Appalachian type.
- *Nyssa biflora* - *Liquidambar styraciflua* / *Magnolia virginiana* / *Hamamelis virginiana* - *Viburnum nudum* Forest (CEGL008477)—from the southern part of the Upper East Gulf Coastal Plain, with more evergreen shrub dominance.

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type occurs in the seepage-saturated floodplain of West Branch, just east of TN Highway 22. It may occur elsewhere on Shiloh NMP in similar saturated small creek floodplains.

Global Range: This forested acid seep occurs in the southeastern United States. It is apparently restricted to the Upper East Gulf Coastal Plain of Kentucky and Tennessee and the adjacent Shawnee Hills of Kentucky.

Nations: US

States/Provinces: IL?, KY, TN

USFS Ecoregions: 222Ca:CC?, 222Cb:CCC, 222Ce:CCC, 222Cg:CCC, 222Dc:CCP, 222Dg:CCP, 222Eg:C??. 222G:CC

Federal Lands: NPS (Natchez Trace, Shiloh)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.2.

Local Description Authors: C.W. Nordman

Global Description Authors: mod. C.W. Nordman

References: Evans 1991, Funk 1975, Funk and Fuller 1978, Southeastern Ecology Working Group n.d.

Southern Buttonbush Pond

Cephalanthus occidentalis / *Carex* spp. - *Lemna* spp. Southern Shrubland

Buttonbush / Sedge species - Duckweed species Southern Shrubland

Identifier: CEGL002191

NVC Classification

Physiognomic Class

Shrubland (III)

Physiognomic Subclass	Deciduous shrubland (III.B.)
Physiognomic Group	Cold-deciduous shrubland (III.B.2.)
Physiognomic Subgroup	Natural/Semi-natural cold-deciduous shrubland (III.B.2.N.)
Formation	Semipermanently flooded cold-deciduous shrubland (III.B.2.N.f.)
Alliance	<i>Cephalanthus occidentalis</i> Semipermanently Flooded Shrubland Alliance (A.1011)
Alliance (English name)	Buttonbush Semipermanently Flooded Shrubland Alliance
Association	<i>Cephalanthus occidentalis</i> / <i>Carex</i> spp. - <i>Lemna</i> spp. Southern Shrubland
Association (English name)	Buttonbush / Sedge species - Duckweed species Southern Shrubland
Association (Common name)	Southern Buttonbush Pond

Ecological System(s):	East Gulf Coastal Plain Large River Floodplain Forest (CES203.489)
	Central Appalachian Floodplain (CES202.608)
	North-Central Interior Floodplain (CES202.694)
	South-Central Interior Large Floodplain (CES202.705)
	Atlantic Coastal Plain Large River Floodplain Forest (CES203.066)

ELEMENT CONCEPT

Global Summary: This buttonbush shrubland occurs widely throughout the southeastern United States. Stands occupy shallow water depressions, oxbow ponds, beaver ponds, and backwater sloughs of stream and river floodplains. It also occurs in upland pond depressions. Inundation is usually continuous throughout the year, but these sites can become dry in mid or late summer or during periods of prolonged drought. In floodplain situations, soils are deep (1 m or more) consisting of peat or muck over alluvial parent material. *Cephalanthus occidentalis* comprises nearly 90% of the shrub layer in waters 1-2 m deep. Other shrubs commonly encountered may include *Cornus* sp. (*Cornus foemina* (= *Cornus stricta*) to the south and *Cornus sericea* (= *Cornus stolonifera*) to the north) and *Salix* spp. Sedges are the dominant herbaceous species present, although *Hibiscus* spp. can also form dense stands in shallower water. *Lemna* spp. are also common plants in this natural community. *Populus heterophylla* and *Nyssa aquatica* may also occur within their range. Floristic characteristics that distinguish this type from more northern types are needed. This may occur as a long-persistent successional stage. This community can result from natural or artificial disturbance of hydrology.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association occurs at the edge of a beaver-killed area close to Owl Creek in the northwestern corner of Shiloh NMP. This is in an area with 1-1.5 feet of standing water.

Global Environment: Stands occupy shallow water depressions, oxbow ponds, upland pond depressions, beaver ponds, and backwater sloughs of stream and river floodplains. Inundation is usually continuous throughout the year, but these sites can become dry in mid or late summer or during periods of prolonged drought. In floodplain situations, soils are deep (one meter or more) consisting of peat or muck over alluvial parent material (Nelson 1985, Lauver et al. 1999). Key environmental factors which favor the establishment and maintenance of this community include nearly continuous inundation from 1-2 m in depth (Voigt and Mohlenbrock 1964).

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: In the Upper East Gulf Coastal Plain at Shiloh NMP the association is dominated by *Cephalanthus occidentalis*, with *Triadenum walteri*, *Salix nigra*, and *Campsis radicans*. Some associated herbs include *Leersia oryzoides*, *Polygonum* spp., *Bidens* sp., *Ludwigia* sp., and *Saururus cernuus*.

Global Vegetation: *Cephalanthus occidentalis* comprises nearly 90% of the shrub layer in waters 1-2 m deep (Voigt and Mohlenbrock 1964). Other shrubs commonly encountered include *Cornus* sp. (*Cornus foemina* (= *Cornus stricta*) to the south and *Cornus sericea* (= *Cornus stolonifera*) to the north) and *Salix* spp. Sedges are the dominant herbaceous species present, although *Hibiscus* spp. can also form dense stands in shallower water. *Lemna* spp. are also common plants in this natural community. *Populus heterophylla* and *Nyssa aquatica* may also occur within their range (TNC 1995a). In the Columbia Bottomlands of Texas, common associates include *Salix nigra*, *Forestiera acuminata*, *Echinodorus berteroi* (= *Echinodorus rostrata*), *Sagittaria* sp. and floating aquatics such as *Pistia stratiotes*, *Limnobium spongia*, *Azolla caroliniana* and *Spirodela polyrrhiza*. In the Upper East Gulf Coastal Plain, some associated herbs (e.g., at Shiloh National Military Park) include *Leersia oryzoides*, *Polygonum* spp., and *Saururus cernuus*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Global		
<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
Tree canopy	Broad-leaved deciduous tree	<i>Nyssa aquatica</i> , <i>Populus heterophylla</i>
Tall shrub/sapling	Broad-leaved deciduous tree	<i>Cephalanthus occidentalis</i>

CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global: *Agkistrodon piscivorus*, *Aix sponsa*, *Anas rubripes*, *Ardea herodias*, *Castor canadensis*, *Coccyzus americanus*, *Dendroica petechia*, *Dumetella carolinensis*, *Geothlypis trichas*, *Hybognathus hayi*, *Leitneria floridana*, *Lontra canadensis*, *Lophodytes cucullatus*, *Mustela vison*, *Ondatra zibethicus*, *Orconectes lancifer*, *Procyon lotor*, *Pseudacris crucifer*, *Pseudacris streckeri*, *Rana palustris*, *Rana pipiens*, *Seiurus motacilla*, *Seiurus noveboracensis*

CONSERVATION STATUS RANK

Global Rank & Reasons: G4 (3-Oct-1996). This type is widespread with many occurrences suspected across its range. However, many sites have also been drained for conversion to cropland. A number of remaining examples of this community are protected, but even these can be threatened by accelerated siltation resulting from excessive soil erosion and channelization in adjacent areas.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: This community can be highly dynamic from one season to the next, and species composition and density are wholly dependent on water regime (Niering 1985). Primary identifying characteristics include the near absence of trees and dominance of buttonbush (at least 25% coverage). Floristic characteristics that distinguish this type from more northern types are needed. Stands of buttonbush with widely scattered *Taxodium* (<10%?, <20% cover?) should be placed in this type.

Global Similar Associations:

- *Cephalanthus occidentalis* - (*Leucothoe racemosa*) / *Carex joorii* Shrubland (CEGL004075)
- *Cephalanthus occidentalis* - *Decodon verticillatus* Shrubland (CEGL006069)
- *Cephalanthus occidentalis* / *Carex* spp. Northern Shrubland (CEGL002190)
- *Cephalanthus occidentalis* / *Hibiscus moscheutos* ssp. *moscheutos* Depression Pond Shrubland (CEGL004742)
- *Taxodium distichum* - (*Nyssa aquatica*) / *Forestiera acuminata* - *Planera aquatica* Forest (CEGL002421)

Global Related Concepts:

- Buttonbush Series (Diamond 1993) =
- Eastern Broadleaf and Needleleaf Forests: 113: Southern Floodplain Forest (*Quercus-Nyssa-Taxodium*) (Kuchler 1964) B
- Palustrine: Palustrine Scrub Shrub Wetland (Cowardin et al. 1979) F
- Palustrine: Scrub-Shrub Wetland: Riparian (TNC 1985) B
- UNESCO FORMATION CODE: III.B.3c (UNESCO 1973) B

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is found at the edge of a beaver-killed area close to Owl Creek in the northwestern corner of Shiloh NMP. This is in an area with 1-1.5 feet of standing water.

Global Range: This buttonbush shrubland type occurs widely throughout the southeastern United States, ranging from southern Ohio west to Kansas, south to Texas and east to North Carolina.

Nations: US

States/Provinces: AL, AR, GA, IL, IN, KS, KY, LA, MO, MS?, NC, OH?, OK, SC, TN, TX:S4

USFS Ecoregions: 221E:CC, 221Ha:CCC, 221Hb:CCC, 221Hc:CCC, 221He:CCC, 222Ab:CCC, 222Ad:CCC, 222Ag:CCC, 222Ah:CCC, 222Am:CCC, 222An:CCC, 222Aq:CCC, 222Cg:CCC, 222D:CC, 222Eb:CCC, 222Ej:CCP, 222En:CCC, 222Eo:CCC, 222F:CP, 222G:CC, 231A:CP, 231Cd:CCP, 231Ce:CCC, 231Ga:CCC, 231Gb:CCC, 231Gc:CCC, 234A:CC, 255Db:CCC, M221Cd:CCC, M222Aa:CCC, M222Ab:CCC, M231Aa:CCC, M231Ab:CCC, M231Ac:CCC, M231Ad:CCC

Federal Lands: DOD (Fort Benning); NPS (Shiloh); USFS (Angelina, Bankhead?, Daniel Boone, Davy Crockett, Ouachita, Ozark, Sabine NF, Sam Houston?); USFWS (Reelfoot, San Bernard)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plot 1B-15.

Local Description Authors: C.W. Nordman

Global Description Authors: M. Guetersloh, mod. D. Faber-Langendoen

References: Benyus 1989, Blair 1938, Cowardin et al. 1979, Dennis 1988, Diamond 1993, Duck and Fletcher 1945, Duncan and Duncan 1988, Evans 1991, Ewel and Odum 1984b, Faircloth 1971, Fehrenbacher et al. 1982, Hoagland 2000, Illinois Nature Preserve Commission 1973, Kuchler 1964, Lauver et al. 1999, McCoy 1958, Mitsch and Gosselink 1993, Mohlenbrock 1959, Nelson 1985,

Niering 1985, Roe 1998, Schafale and Weakley 1990, Smith 1996a, Southeastern Ecology Working Group n.d., TNC 1985, TNC 1995a, UNESCO 1973, Voigt and Mohlenbrock 1964, Wharton 1989, White and Anderson 1970, White and Madany 1978

Successional Broomsedge Vegetation

Andropogon virginicus var. *virginicus* Herbaceous Vegetation

Common Broom-sedge Herbaceous Vegetation

Identifier: CEG004044

NVC Classification

Physiognomic Class	Herbaceous Vegetation (V)
Physiognomic Subclass	Perennial graminoid vegetation (V.A.)
Physiognomic Group	Temperate or subpolar grassland (V.A.5.)
Physiognomic Subgroup	Natural/Semi-natural temperate or subpolar grassland (V.A.5.N.)
Formation	Medium-tall sod temperate or subpolar grassland (V.A.5.N.c.)
Alliance	<i>Andropogon virginicus</i> Herbaceous Alliance (A.1208)
Alliance (English name)	Common Broomsedge Herbaceous Alliance
Association	<i>Andropogon virginicus</i> var. <i>virginicus</i> Herbaceous Vegetation
Association (English name)	Common Broom-sedge Herbaceous Vegetation
Association (Common name)	Successional Broomsedge Vegetation

Ecological System(s): East Gulf Coastal Plain Jackson Prairie and Woodland (CES203.555)
Texas-Louisiana Coastal Prairie (CES203.550)

ELEMENT CONCEPT

Global Summary: This association includes herbaceous-dominated vegetation that has been anthropogenically altered and/or maintained, especially on old fields, and pastures. Examples support predominately native species, one of the most dominant or characteristic species being *Andropogon virginicus* var. *virginicus*. This is a very common and wide-ranging association and can be quite variable in terms of species composition. Additional components are other perennial grasses and herbaceous species, most with pioneer or weedy tendencies, the exact composition of which will vary with geography, management history, and habitat.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System:

Shiloh National Military Park Environment: This association occurs on old fields or hayfields at Shiloh NMP, on well-drained loam soil.

Global Environment: This vegetation typically occurs on old fields, pastures, and rocky sites. It will persist indefinitely under a regular mowing regime, e.g., in powerline corridors.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: The plot at Shiloh NMP was a mowed field of mostly native species, dominated by *Andropogon virginicus* var. *virginicus*. *Paspalum setaceum* and *Tridens flavus* were codominant (with less cover). Other herbaceous plants with high cover values were *Setaria parviflora* (= *Setaria geniculata*), *Diodia teres*, *Schizachyrium scoparium*, and less commonly *Packera anonyma*, *Sorghum halepense*, and *Cyperus retrorsus*. At less than 1% cover were *Polypremum procumbens*, *Oxalis stricta*, *Eragrostis spectabilis*, *Salvia lyrata*, *Solanum carolinense*, *Digitaria sanguinalis*, *Panicum anceps*, *Croton willdenowii* (= *Crotonopsis elliptica*), *Trifolium pratense*, *Kummerowia striata*, *Coreopsis pubescens*, *Plantago lanceolata*, and *Mecardonia acuminata*. At only a trace amount of cover were *Conyza canadensis*, *Acalypha virginica*, *Solidago* sp., *Erigeron annuus*, *Sida spinosa*, *Hypericum drummondii*, *Polygala verticillata*, *Eupatorium capillifolium*, *Passiflora incarnata*, and *Asclepias amplexicaulis*.

Global Vegetation: Stands of this community are dominated by *Andropogon virginicus* var. *virginicus*. Associated species vary with geography and habitat and include typical pioneer species. Other species with high cover values in plot samples attributed to this type include *Tridens flavus*, *Setaria parviflora* (= *Setaria geniculata*), *Eragrostis spectabilis*, and *Panicum anceps* (NatureServe Ecology unpubl. data). On the eastern Highland Rim of Tennessee (Arnold Air Force Base), associated species include *Andropogon virginicus*, *Diodia teres*, *Aristida dichotoma*, *Aristida oligantha*, *Packera anonyma* (= *Senecio anonymus*), *Paspalum laeve*, *Lespedeza virginica*, and *Plantago virginica*. *Rubus argutus* and *Smilax* spp. may be locally abundant but are not dominant. In clearcuts, *Schizachyrium scoparium*, *Danthonia spicata*, and *Dichanthelium* spp. are also common, as are occasional *Quercus* spp. and *Rubus argutus*.

The plot at Shiloh National Military Park (western Tennessee) was a mowed field of mostly native species, dominated by *Andropogon virginicus* var. *virginicus*. *Paspalum setaceum* and *Tridens flavus* were codominant (with less cover). Other herbaceous plants with high cover values were *Setaria parviflora* (= *Setaria geniculata*), *Diodia teres*, *Schizachyrium scoparium*, and less common were *Packera anonyma*, *Sorghum halepense*, and *Cyperus retrorsus*. At less than 1% cover were *Polypremum procumbens*, *Oxalis stricta*,

Eragrostis spectabilis, *Salvia lyrata*, *Solanum carolinense*, *Digitaria sanguinalis*, *Panicum anceps*, *Croton willdenowii* (= *Crotonopsis elliptica*), *Trifolium pratense*, *Kummerowia striata*, *Coreopsis pubescens*, *Plantago lanceolata*, and *Mecardonia acuminata*. At only a trace amount of cover were *Conyza canadensis*, *Acalypha virginica*, *Solidago* sp., *Erigeron annuus*, *Sida spinosa*, *Hypericum drummondii*, *Polygala verticillata*, *Eupatorium capillifolium*, *Passiflora incarnata*, and *Asclepias amplexicaulis*.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: GNA (ruderal) (8-Aug-2000). This is a ruderal community and represents vegetation resulting from succession following anthropogenic disturbance of an area. It is not a conservation priority for its own sake and does not receive a conservation rank.

CLASSIFICATION

Status: Standard

Classification Confidence: 1 - Strong

Shiloh National Military Park Comments:

Global Comments:

Global Similar Associations:

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is found throughout Shiloh NMP in open fields which may be mowed and generally have been cultivated in the past.

Global Range: This community is possibly found throughout the southeastern United States.

Nations: US

States/Provinces: AL, AR, GA, IL, IN, KY, LA, MO?, MS, NC, OK, SC, TN, TX, VA

USFS Ecoregions: 222Ab:CCC, 222Ag:CCC, 222Ah:CCC, 222An:CCC, 222Cg:CCC, 231Aa:CCC, 231Fa:CCP, 231Fb:CCC, 231Ga:CCC, 231Gb:CCC, 231Gc:CCC, 232B:CC, 232F:CC, 255Da:CCC, 255Dc:CCC, M221Aa:CCC, M221Ab:CCC, M221Ba:C??, M221Bd:C??, M221Ca:CPP, M221Cb:CPP, M221Cc:CPP, M221Ce:CPP, M221Da:CCC, M221Db:CCC, M221Dc:CCP, M221Dd:CCP, M222Aa:CCC, M222Ab:CCC, M231Aa:CCC, M231Ab:CCC, M231Ac:CCC, M231Ad:CCC

Federal Lands: DOD (Arnold, Fort Benning, Fort Gordon); NPS (Cowpens, Fort Donelson, Kings Mountain, Little River Canyon?, Mammoth Cave, Ninety Six, Shiloh, Stones River); USFS (Cherokee, George Washington, Jefferson, Oconee?, Ouachita?, Ozark?, Talladega?, Tuskegee?); USFWS (Anahuac, Big Boggy?, Brazoria)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: SHIL.1.

Local Description Authors: C.W. Nordman

Global Description Authors: A.S. Weakley, mod. C.W. Nordman

References: Fleming and Coulling 2001, Hoagland 2000, NatureServe Ecology - Southeastern U.S. unpubl. data, Penfound 1953, Southeastern Ecology Working Group n.d., TNC 1998a, Tarr et al. 1980

Cultivated Meadow

Lolium (arundinaceum, pratense) Herbaceous Vegetation

(Tall Fescue, Meadow Fescue) Herbaceous Vegetation

Identifier: CEG004048

NVC Classification

Physiognomic Class	Herbaceous Vegetation (V)
Physiognomic Subclass	Perennial graminoid vegetation (V.A.)
Physiognomic Group	Temperate or subpolar grassland (V.A.5.)
Physiognomic Subgroup	Natural/Semi-natural temperate or subpolar grassland (V.A.5.N.)
Formation	Medium-tall sod temperate or subpolar grassland (V.A.5.N.c.)
Alliance	<i>Lolium (arundinaceum, pratense)</i> Herbaceous Alliance (A.1213)
Alliance (English name)	(Tall Fescue, Meadow Fescue) Herbaceous Alliance
Association	<i>Lolium (arundinaceum, pratense)</i> Herbaceous Vegetation
Association (English name)	(Tall Fescue, Meadow Fescue) Herbaceous Vegetation
Association (Common name)	Cultivated Meadow

Ecological System(s): Exotic-dominated Community (CES203.287)

ELEMENT CONCEPT

Global Summary: This association includes grassland pastures and hayfields, more-or-less cultural, though sometimes no longer actively maintained. The dominant species in this type are the European "tall or meadow fescues" of uncertain and controversial generic placement. These communities are sometimes nearly monospecific but can also be very diverse and contain many native species of grasses, sedges, and forbs. This vegetation is currently defined for the 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.

ENVIRONMENTAL DESCRIPTION**USFWS Wetland System:**

Shiloh National Military Park Environment: This association occurs on old fields or hayfields at Shiloh NMP, on well-drained loam soil.

Global Environment: This association includes grassland pastures and hayfields, more-or-less cultural, though sometimes no longer actively maintained.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: The dominant species in this association are the European "tall or meadow fescues" of uncertain and controversial generic placement. Although traditionally treated as *Festuca pratensis* (= *Festuca elatior*) and *Festuca arundinacea*, these two closely related species are now usually treated as either *Lolium pratense* and *Lolium arundinaceum* (Kartesz 1999) or as *Schedonorus pratensis* and *Schedonorus arundinaceus*. These communities are sometimes nearly monospecific but can also be very diverse and contain many native species of grasses, sedges, and forbs.

Global Vegetation: The dominant species in this association are the European "tall or meadow fescues" of uncertain and controversial generic placement. Although traditionally treated as *Festuca pratensis* (= *Festuca elatior*) and *Festuca arundinacea*, these two closely related species are now usually treated as either *Lolium pratense* and *Lolium arundinaceum* (Kartesz 1999) or as *Schedonorus pratensis* and *Schedonorus arundinaceus*. These communities are sometimes nearly monospecific but can also be very diverse and contain many native species of grasses, sedges, and forbs. In the Black Belt region of Alabama and Mississippi, it is commonly found in mixture with *Paspalum dilatatum* (dallisgrass) (Bransby n.d.). The exotics *Lespedeza cuneata* and *Bromus tectorum* may be present in stands.

MOST ABUNDANT SPECIES**Shiloh National Military Park**

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES**Shiloh National Military Park:****Global:****OTHER NOTEWORTHY SPECIES****Shiloh National Military Park:****Global:****CONSERVATION STATUS RANK**

Global Rank & Reasons: GNA (invasive) (5-Jan-2000). This vegetation is dominated by an exotic species, is of anthropogenic origin, and is thus not a conservation priority.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: *Lolium pratense* and *Lolium arundinaceum* are two closely related species which were traditionally treated as *Festuca pratensis* (= *Festuca elatior*) and *Festuca arundinacea*, and could alternately be treated as *Schedonorus pratensis* and *Schedonorus arundinaceus*. Conversion to Kartesz (1999) standard has necessitated the shift to the *Lolium* names from *Festuca*.

Global Similar Associations:

- *Dactylis glomerata* - *Rumex acetosella* Herbaceous Vegetation (CEGL006107)

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This association is found throughout Shiloh NMP in open fields which may be mowed and generally are maintained or have been cultivated in the past.

Global Range: This association is possible throughout much of the eastern United States and southern Canada.

Nations: CA?, US

States/Provinces: AL, AR, GA, KY, MO, MS, NB?, NC, NS?, OK, QC?, SC, TN, VA, WV

USFS Ecoregions: 221:C, 222E:CC, 231Ae:CCC, M221Dc:CCC, M221Dd:CCC, M222Ab:CCC, M231A:CC

Federal Lands: NPS (Blue Ridge Parkway, Buffalo, Carl Sandburg Home, Cowpens, Cumberland Gap, Great Smoky Mountains, Guilford Courthouse, Kings Mountain, Mammoth Cave, Ninety Six, Shiloh, Stones River); USFS (Cherokee, Ouachita, Ozark)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: No plots.

Local Description Authors: C.W. Nordman

Global Description Authors: A.S. Weakley

References: Bransby n.d., Heath et al. 1973, Hoagland 2000, Kartesz 1999, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

Smartweed - Cutgrass Beaver Pond

***Polygonum (hydropiperoides, punctatum)* - *Leersia (lenticularis, virginica)* Herbaceous Vegetation**

(Swamp Smartweed, Dotted Smartweed) - (Catchfly Cutgrass, White Cutgrass) Herbaceous Vegetation

Identifier: CEGL004290

NVC Classification

Physiognomic Class	Herbaceous Vegetation (V)
Physiognomic Subclass	Perennial forb vegetation (V.B.)
Physiognomic Group	Temperate or subpolar perennial forb vegetation (V.B.2.)
Physiognomic Subgroup	Natural/Semi-natural temperate or subpolar perennial forb vegetation (V.B.2.N.)
Formation	Seasonally flooded temperate perennial forb vegetation (V.B.2.N.h.)
Alliance	<i>Polygonum</i> spp. (section <i>Persicaria</i>) Seasonally Flooded Herbaceous Alliance (A.1881)
Alliance (English name)	Smartweed species Seasonally Flooded Herbaceous Alliance
Association	<i>Polygonum (hydropiperoides, punctatum)</i> - <i>Leersia (lenticularis, virginica)</i> Herbaceous Vegetation
Association (English name)	(Swamp Smartweed, Dotted Smartweed) - (Catchfly Cutgrass, White Cutgrass) Herbaceous Vegetation
Association (Common name)	Smartweed - Cutgrass Beaver Pond

Ecological System(s): East Gulf Coastal Plain Small Stream and River Floodplain Forest (CES203.559)
East Gulf Coastal Plain Northern Depression Pondshore (CES203.558)
South-Central Interior Small Stream and Riparian (CES202.706)

ELEMENT CONCEPT

Global Summary: This association incorporates vegetation of beaver ponds and other semipermanent impoundments in the Piedmont, South Atlantic Coastal Plain, Upper East Gulf Coastal Plain, scattered localities in the Blue Ridge, and possibly other adjacent provinces. Stands of this vegetation are dominated by some combination of *Polygonum punctatum*, *Polygonum hydropiperoides*, *Leersia lenticularis*, and/or *Leersia virginica*. Other herbaceous species present include *Saururus cernuus*,

Proserpinaca sp., *Bidens aristosa* (= *Bidens polylepis*), and *Xanthium strumarium*. Scattered individuals of *Cephalanthus occidentalis* and *Acer saccharinum* may be present. A Piedmont North Carolina example contains *Impatiens capensis*, *Boehmeria cylindrica*, and the exotic *Murdannia keisak*.

ENVIRONMENTAL DESCRIPTION

USFWS Wetland System: Palustrine

Shiloh National Military Park Environment: This association is found in a bottomland area flooded by beavers (Owl Creek), in which the canopy is sparse and most trees have been killed by beavers.

Global Environment: This association incorporates vegetation of beaver ponds and other semipermanent impoundments.

VEGETATION DESCRIPTION

Shiloh National Military Park Vegetation: The scattered vines *Campsis radicans* and *Smilax rotundifolia* and tall shrubs of *Cephalanthus occidentalis* and *Acer saccharinum* are present over the dominant herbaceous cover of *Polygonum* sp. Other important herbaceous plants are *Leersia* sp., *Xanthium strumarium*, *Bidens aristosa* (= *Bidens polylepis*), and *Saururus cernuus*.

Global Vegetation: Stands of this vegetation are dominated by some combination of *Polygonum punctatum*, *Polygonum hydropiperoides*, *Leersia lenticularis*, and/or *Leersia virginica*. Other herbaceous species which may be present include *Polygonum densiflorum*, *Saururus cernuus*, *Proserpinaca* sp., *Sparganium americanum*, *Typha latifolia*, *Scirpus cyperinus*, *Lobelia cardinalis*, *Onoclea sensibilis*, *Penthorum sedoides*, *Boehmeria cylindrica*, *Sambucus canadensis*, *Bidens aristosa* (= *Bidens polylepis*), and *Xanthium strumarium*. Scattered individuals of *Cephalanthus occidentalis* and *Acer saccharinum* 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* rather than *Polygonum*. The combination of *Polygonum punctatum* - *Leersia virginica* was first noted, but the combination of *Polygonum hydropiperoides* and *Leersia lenticularis* has also been observed in the Oconee National Forest.

MOST ABUNDANT SPECIES

Shiloh National Military Park

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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Global

<u>Stratum</u>	<u>Lifeform</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

Shiloh National Military Park:

Global:

OTHER NOTEWORTHY SPECIES

Shiloh National Military Park:

Global:

CONSERVATION STATUS RANK

Global Rank & Reasons: G4? (21-Dec-2000). This association is found in the Coastal Plain and Interior from Tennessee and Alabama to the Carolinas. The full extent of its distribution is not known. This is not a rare community type, but it is threatened by filling of wetlands.

CLASSIFICATION

Status: Standard

Classification Confidence: 2 - Moderate

Shiloh National Military Park Comments:

Global Comments: Documented from a beaver pond in the floodplain of Owl Creek, Shiloh National Battlefield, Tennessee, on soils of the Collins silt loam; also from documented on Bailey Island in the ACE Basin (C. Aulbach-Smith pers. comm.). Also seen in the Bankhead National Forest, Alabama, and the Oconee National Forest, Georgia.

Global Similar Associations:

Global Related Concepts:

OTHER COMMENTS

Other Comments:

ELEMENT DISTRIBUTION

Shiloh National Military Park Range: This type is found in a bottomland area flooded by beavers (Owl Creek).

Global Range: This association is found in the Coastal Plain and Interior from Tennessee and Alabama to the Carolinas. The full extent of its distribution is not known.

Nations: US

States/Provinces: AL, GA, NC, NJ, SC, TN

USFS Ecoregions: 221Ha:CCC, 221Hb:CCC, 221Hc:CCC, 221Hd:CC?, 221He:CCC, 222Ce:CCP, 222Cf:CCP, 222Cg:CCC, 222Eb:CCC, 222Eg:CCP, 222Ej:CCC, 222En:CCC, 222Eo:CCC, 231Aa:CCC, 231Ae:CCP, 231Af:CCP, 231Ao:CCC, 231Bc:CC?, 231Bd:CC?, 231Be:CC?, 231Cd:CCC, 232Bl:CCC, M221Cd:CCC

Federal Lands: DOD (Fort Benning); NPS (Great Smoky Mountains, Morristown, Shiloh); USFS (Bankhead, Daniel Boone?, Oconee, Talladega?)

ELEMENT SOURCES

Shiloh National Military Park Inventory Notes:

Shiloh National Military Park Plots: 1994 plot 1B-16 is the type plot for this type.

Local Description Authors: C.W. Nordman

Global Description Authors:

References: Aulbach-Smith pers. comm., Gallyoun et al. 1996, NatureServe Ecology - Southeastern U.S. unpubl. data, Southeastern Ecology Working Group n.d.

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