USGS-NPS VEGETATION MAPPING PROGRAM

Classification of the Vegetation of Congaree National Park

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1. VEGETATION SAMPLING AND CLASSIFICATION

Introduction

This report presents the results of the vegetation classification portion of the USGS-NPS BRD Vegetation Mapping Program at Congaree National Park. The major goal of this portion of the project was to classify and describe all plant communities found within the study area. In addition, vegetation data were used by the photointerpreter to determine relationships between signatures on aerial photos and vegetation types on the ground.

Sampling strategy and field methods are described for vegetation sampling. The vegetation classification, field key to the vegetation types, and descriptions of each type are also included.

Methods

The methods used for the sampling and analysis of vegetation data and the development of the classification generally followed the standards outlined in the Field Methods for Vegetation Mapping document produced for this project. This process began with the development of a provisional list of twenty-five vegetation types from the International Classification of Ecological Communities (ICEC; see Weakley *et al.* 1998) that were thought to have a high likelihood of being in the park based on an initial field visit on 13 - 14 June, 1996.

One hundred twenty-eight plots were sampled by two two-person field teams in July, August, and September of 1996. In a deviation from the methodology outlined in the Field Methods document, initial sample points were selected in order to have plots in each of the aerial photograph signature types. The gradsect approach was rejected because there appeared to be no potential for stratifying sampling of the park based on slope, aspect, elevation, soil or other natural features due to a lack of available information. Furthermore, because of isolation from roads and trails of many portions of the park, it was deemed not feasible to use a transect to establish plot locations. After sampling, plots were tentatively assigned to the ICEC at the alliance level and our goal was to have at least five plots in each of the twenty-five provisional vegetation types. Time limitations precluded the ability of the field teams to install ten plots in each of the expected vegetation types as recommended in the Field Methods document.

During field reconnaissance in mid-July 1996, it appeared that there could be a geographic segregation, possibly by drainage, within the Monument of the vegetation types at the NVCS association level so the methodology for establishing plots was modified. In an effort to ensure that the full range of vegetation was sampled, we stratified the Monument into six zones by drainages and made sure that each signature or vegetation type was sampled at least once in each zone in which it occurred. Plots were subjectively placed using two criteria: first, that the plot be as near the middle of the delineated polygon as feasible; and second, and more importantly, that the plot be located within a homogeneous, representative portion of the polygon. Where a complete 20x50 meter plot would not fit within the representative area, a smaller plot size was used. Number of plots and plot size varied by community and by number of aerial

photograph signatures assigned to a vegetation type. Generally, more widespread communities had more plots than rarer ones, and types represented by more than one photo signature had more plots than those with a monotypic signature.

The final vegetation classification and descriptions were produced using the plot data. (A copy of a completed datasheet is attached in Appendix B) The data were analyzed using an ordination technique, Detrended Correspondence Analysis (DCA), and a clustering algorithm, Unweighted Pair-Group Method Using Arithmetic Means (UPGMA). These clusters were used to derive the final classification units. Field experience and judgment were used while reviewing the fit of each plot within the cluster to which it was assigned. As a result, some plots were placed in clusters other than those to which they were initially assigned based on the quantitative data analyses.

Results

The classification of the vegetation at Congaree National Park resulted in twenty-two types being defined including twenty forests, one woodland, and one shrubland. Of the total types, twelve are newly described plant associations based on data from the field work, and one is a broadly defined upland successional forest. The percentage of new associations is not surprising given the lack of quantitative field data previously collected in the Congaree National Park specifically and in southeastern floodplain forests in general. Detailed descriptions of the new types may be found in following sections.

In classifying vegetation, we attempt to recognize distinctive assemblages of plant species that occur repeatedly in appropriate habitat conditions. These plant communities become the basic mapping units in preparing vegetation maps. The vegetation types described in this report do not always correspond to units on the final vegetation map. Three plant communities distinguishable on the ground could not be distinguished on aerial photographs because the occurrences used to describe the type either were too small to discern from surrounding vegetation types, or were too small to use for training. These three associations (*Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina* Forest, *Quercus michauxii / Carpinus caroliniana - Ilex opaca / Leucothoe racemosa* Forest, and *Quercus lyrata - Quercus laurifolia / Arundinaria gigantea* Forest) are coded on the vegetation map as the surrounding vegetation type.

Residual effects of severe disturbance further complicated both classification and mapping. The upland portions of the park were all cleared and converted to agriculture at some time in the past. Duration of cropping varied and degree of recovery toward a natural vegetation type is in part a function of the time since disturbance. One upland type is the Successional Pine - Mixed Hardwood Upland Forest, and occurrences of this type still exist in such a disturbed state that further classification of the type is not of value.

In addition, classification of one of the matrix communities of the lowland portion of the park proved difficult due to disturbance. We recognized two phases of the *Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina* Forest: the sweetgum phase, typical of the drier end of the community's habitat and the green ash phase, typical of the wetter end of the habitat. The data analysis does not support recognition of these phases at the

association level. However, field observations and perusal of the plot data indicate different affinities for these two types. The alliance into which the association is placed, the *Fraxinus pennsylvanica - Ulmus americana - Celtis (occidentalis, laevigata)* Temporarily Flooded Forest Alliance, contains vegetation of levees and alluvial flats dominated by some combination of the nominal species. The green ash phase fits this concept well. The sweetgum phase, however, bears affinities to the *Quercus (michauxii, pagoda, shumardii) - Liquidambar styraciflua* Forest Alliance and likely clustered in the data analysis outputs with the green ash phase due to an increase in the importance of *Celtis laevigata* and a decrease in the importance of oaks as a result of disturbance. Hurricane Hugo in 1989 seriously damaged 49% of trees in bottomland hardwood communities (Putz and Sharitz 1991) and the forest is still recovering. We suspect that this damage resulted in a decrease in oaks in formerly oak-dominated sites and an increase in the relatively more rapidly-growing *Celtis laevigata.* Both of these factors caused difficulties in defining the matrix bottomland communities. Future work may lead to clarification of this matter.

The classification of Congaree National Park follows. A field key, a list of plot assignments to types, and descriptions for each of the types are included in later sections of the report.

Conclusions

The vegetation of Congaree National Park was classified using the techniques established for the USGS-NPS Vegetation Mapping Program. Many of the vegetation types fit within existing associations in the ICEC, but several new types were described. The classification resulted in twenty-two types being defined including twenty forests, one woodland, and one shrubland.

Of the newly defined types, the woodland (*Pinus palustris – Pinus taeda / Schizachyrium scoparium* Woodland) and one of the forests (*Liquidambar styraciflua – Quercus (nigra, phellos) – Pinus taeda / Vaccinium elliottii – Myrica cerifera Forest)* resulted from severe anthropogenic disturbance and have not been previously described because they are not of conservation interest although they are common in the Atlantic Coastal Plain. Seven of the forests have scattered occurrences in large river systems of at least the Mid- and South-Atlantic Coastal Plains, but have not been previously described likely due to lack of inventory. These forests are: *Celtis laevigata – Liquidambar styraciflua – Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina* Forest, *Platanus occidentalis – Celtis laevigata – Fraxinus pennsylvanica / Lindera benzoin – Ilex decidua / Carex retroflexa* Forest, *Populus deltoindes / Acer negundo / Boehmeria cylindrica* Forest, *Liquidambar styraciflua – Quercus nigra – Quercus laurifolia / Arundinaria gigantea / Carex abscondita* Forest, *Salix nigra – Fraxinus pennsylvanica* Forest, *Quercus lyrata – Quercus laurifolia / (Arundinaria gigantea)* Forest, and *Taxodium distichum – Fraxinus pennsylvanica – Quercus laurifolia / Acer rubrum / Saururus cernuus* Forest. One of the forests, *Acer saccharinum / Leersia lenticularis – Commelina virginica* Forest, needs rank evaluation because it may be relatively uncommon since it occurs at the southeastern limit of the range of the dominant tree species (*Acer saccharinum).* Two of the newly described forests (*Liquidambar styraciflua – Quercus laurifolia / Magnolia virginiana / Carex folliculata* Forest and *Quercus michauxii / Carpinus caroliniana – Ilex opaca / Leucothoe racemosa* Forest) occur at floodplain edges on organic soils that form at the base of slopes that are kept constantly moist from seepage from adjacent uplands. These forests likely occur outside the Monument, but are rare throughout their range. Distribution of the *Fraxinus pennsylvanica / Leersia lenticularis – Carex*

lupulina Forest needs assessment. It was sampled in only one plot on the park and likely is not a common floodplain community.

Communication between the ecologists and the photointerpreters/mappers is vital for a successful project. One step that can help this is to begin fieldwork with aerial photos with preliminary vegetation polygons delineated. This helps the ecologists direct their sampling and the process of polygon delineation often generates questions relating to vegetation classification which the field team can investigate during vegetation sampling instead of after the field season.

References cited

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2. CLASSIFICATION OF THE CONGAREE NATIONAL PARK

I. FOREST. Trees with their crowns overlapping (generally forming 60-100% cover)
I.B. Deciduous forest. Deciduous tree species generally contribute >75% of the total tree cover
I.B.2. Cold-deciduous forest.
I.B.2.N. Natural/Semi-natural

I.B.2.N.a. Lowland or submontane cold-deciduous forest (e.g. broadleaf forests of the Midwest)

Fagus grandifolia - Quercus alba Forest Alliance

Fagus grandifolia - Quercus nigra Forest

Quercus nigra Forest Alliance

Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera Forest

I.B.2.N.d. Temporarily flooded cold-deciduous forest (e.g. alluvial bottomland hardwoods)

Acer saccharinum Temporarily Flooded Forest Alliance

Acer saccharinum / Leersia lenticularis - Commelina virginica Forest

Fraxinus pennsylvanica - Ulmus americana - Celtis (occidentalis, laevigata) Temporarily Flooded Forest Alliance

Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi Forest

Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina Forest

Platanus occidentalis - (Fraxinus pennsylvanica, Celtis laevigata, Acer saccharinum) Temporarily Flooded Forest Alliance

Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa Forest

Populus deltoides Temporarily Flooded Forest Alliance

Populus deltoides / Acer negundo / Boehmeria cylindrica Forest

Quercus (phellos, nigra, laurifolia) Temporarily Flooded Forest Alliance

Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita Forest

Salix nigra Temporarily Flooded Forest Alliance

Salix nigra - Fraxinus pennsylvanica Forest

I.B.2.N.e. Seasonally flooded cold-deciduous forest (e.g. deciduous larch forests in Alaska, peat forests)

Acer rubrum - *Fraxinus pennsylvanica* Seasonally Flooded Forest Alliance

Fraxinus pennsylvanica / Leersia lenticularis - *Carex lupulina* Forest

Planera aquatica Seasonally Flooded Forest Alliance

Planera aquatica Forest

Quercus lyrata - *(Carya aquatica)* Seasonally Flooded Forest Alliance

Quercus lyrata - *Quercus laurifolia / Arundinaria gigantea* Forest

Quercus phellos Seasonally Flooded Forest Alliance

Quercus phellos / Carex (intumescens, joorii) / Sphagnum lescurii Forest

Taxodium distichum - *Nyssa (aquatica, biflora, ogeche)* Seasonally Flooded Forest Alliance

Taxodium distichum - *Fraxinus pennsylvanica* - *Quercus laurifolia / Acer rubrum / Saururus cernuus* Forest

I.B.2.N.f. Semipermanently flooded cold-deciduous forest (e.g. cypress swamp)

Nyssa aquatica - *(Taxodium distichum)* Semipermanently Flooded Forest Alliance

Taxodium distichum - *Nyssa aquatica / Fraxinus caroliniana* Forest

Taxodium distichum - *Nyssa aquatica* - *Nyssa biflora / Fraxinus caroliniana / Itea virginica* Forest

I.B.2.N.g. Saturated cold-deciduous forest

Liquidambar styraciflua Saturated Forest Alliance

Liquidambar styraciflua - *Quercus laurifolia / Magnolia virginiana / Carex folliculata* Forest

Nyssa biflora - *Acer rubrum* - *(Liriodendron tulipifera)* Saturated Forest Alliance

Nyssa biflora - *(Acer rubrum) / Ilex opaca / Leucothoe axillaris / Carex atlantica* ssp. *capillacea* Forest

Quercus michauxii - *Quercus pagoda* Saturated Forest Alliance

Quercus michauxii / Carpinus caroliniana - *Ilex opaca / Leucothoe racemosa* Forest

I.C. Mixed evergreen-deciduous forest. Evergreen and deciduous species generally contribute 25-75% of total tree cover. (Includes semi-deciduous, semi-evergreen, mixed evergreen-deciduous xeromorphic, and mixed needle-leaved evergreen - cold-deciduous woody vegetation)
I.C.3. Mixed needle-leaved evergreen - cold-deciduous forest.
I.C.3.N. Natural/Semi-natural
I.C.3.N.a. Mixed needle-leaved evergreen - cold-deciduous forest

Successional Pine - Mixed Hardwood Upland Forest

II. WOODLAND. Open stands of trees with crowns not usually touching (generally forming 25-60% cover. Canopy tree cover (rarely) may be less than 25% in cases when the cover of each of the other lifeforms present (i.e. shrub, dwarf-shrub, herb, nonvascular) is less than 25% and tree cover exceeds the cover of the other lifeforms.
II.A. Evergreen woodland. Evergreen species generally contribute >75% of the total tree cover.
II.A.4. Temperate or subpolar needle-leaved evergreen woodland
II.A.4.N. Natural/Semi-natural

II.A.4.N.a. Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (e.g. pine, Western juniper)

Pinus palustris - Pinus (echinata, taeda) Woodland Alliance

Pinus palustris - Pinus taeda / Schizachyrium scoparium Woodland

III. SHRUBLAND (SCRUB). Shrubs generally greater than 0.5 m tall with individuals or clumps not touching to overlapping (generally forming >25% canopy cover -- tree cover generally <25%). Shrub cover (rarely) may be less than 25% in cases when the cover of each of the other lifeforms present (i.e. tree, dwarf-shrub, herb, nonvascular) is less than 25% and shrub cover exceeds the cover of the other lifeforms.
III.B. Deciduous shrubland (scrub). Deciduous species generally contribute to >75% of the total shrub cover
III.B.2. Cold-deciduous shrubland
III.B.2.N. Natural/Semi-natural

III.B.2.N.e. Seasonally flooded cold-deciduous shrubland (e.g. blueberry-azalea thickets)

Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Seasonally Flooded Vine-Shrubland Alliance

Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Seasonally Flooded Vine-Shrubland

3. FIELD KEY TO THE PLANT COMMUNITIES OF CONGAREE NATIONAL PARK

KEY TO KEYS

1 Communities of upland flats and slopes or upland depressional swamps ..... Key 1
1 Communities of seepage slopes and active floodplains 2

2 Communities of seepage slopes and levees ..... Key 2
2 Communities of sloughs, alluvial flats, and terraces ..... Key 3

Key 1 - Communities of upland flats and slopes or upland depressional swamps

1 Upland depressional swamp dominated by *Quercus phellos*, often with an emergent canopy of *Pinus taeda*
..... ***Quercus phellos / Carex (intumescens, joorii) / Sphagnum lescurii Forest***

1 Forests and woodlands of dry upland flats or dry-mesic to mesic slopes 2

2 *Pinus taeda* usually contributing less than 10 percent of canopy coverage 3
2 *Pinus taeda* contributing more than 10 percent of canopy coverage and usually more than 25 percent 4

3 Mesic slopes and flats dominated by *Fagus grandifolia* and *Quercus alba* (disturbed examples may have significant coverage by *Pinus taeda)*
..... ***Fagus grandifolia - Quercus alba* Forest**
3 *Fagus grandifolia* not dominant and usually lacking; dominance shared by *Liquidambar styraciflua* and bottomland species especially *Quercus nigra* and *Quercus phellos; Vaccinium elliottii* prominent in the understory
***Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera* Forest**

4 *Pinus taeda* strongly dominant in the canopy, understory and herbaceous layers a mixture of bottomland and upland species ..... Successional Pine - Mixed Hardwood Upland Forest
4 *Pinus taeda* not dominant, or codominant with *Pinus palustris*, herbaceous stratum dominated by *Schizachyrium scoparium* ..... ***Pinus palustris - Pinus taeda / Schizachyrium scoparium* Woodland**

Key 2 - Communities of seepage slopes and levees

1 Forests of floodplain edges; soils organic or with organic matter development; sites rarely flooded but constantly wet from seepage water 2
1 Forests of levees and riverfronts occurring on mineral soils 4

2 Forests on Dorovan muck; *Nyssa biflora* dominant in the canopy; *Carex atlantica* ssp. *capillacea* present in the herbaceous layer .....
***Nyssa biflora - (Acer rubrum) / Ilex opaca / Leucothoe axillaris / Carex atlantica* ssp. *capillacea* Forest**

2 Forests not on Dorovan muck, or *Nyssa biflora* not dominant.....3

3 Forests dominated by *Quercus michauxii* with *Pinus taeda* occasionally present; *Leucothoe racemosa* present in the shrub layer
..... ***Quercus michauxii / Carpinus caroliniana - Ilex opaca / Leucothoe racemosa*** **Forest**
3 Forests dominated by *Liquidambar styraciflua* and *Quercus laurifolia*
Liquidambar styraciflua - Quercus laurifolia / Magnolia virginiana / Carex folliculata **Forest**

4 Forests with *Celtis laevigata* lacking or not dominant 5
4 Forests with canopy or subcanopy dominated or codominated by *Celtis laevigata*.....7

5 Riverfront forests dominated by *Acer saccharinum*
.....***Acer saccharinum / Leersia lenticularis - Commelina virginica*** **Forest**
5 Riverfront and levee forests lacking *Acer saccharinum*.....6

6 Riverfront and levee forests dominated by *Salix nigra*, often with a scattered overstory of *Fraxinus pennsylvanica*
.....***Salix nigra - Fraxinus pennsylvanica*** **Forest**
6 Riverfront and levee forests dominated by *Populus deltoides*.....
..... ***Populus deltoides / Acer negundo / Boehmeria cylindrica*** **Forest**

7 Forests of seasonally flooded, wet sloughs strongly dominated by *Fraxinus pennsylvanica* with such wet site species as *Carya aquatica* and *Saururus cernuus* usually present, and very poorly developed shrub and herbaceous strata .....
..... ***Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina*** **Forest**
7 Forests of alluvial flats, levees, and terraces with more mixed canopy dominance, shrub and herbaceous strata well developed; temporarily flooded sites.....8

8 Forests of terraces and levees with *Platanus occidentalis* dominant or codominant
Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa **Forest**
8 *Platanus occidentalis* lacking, or present but not dominant or codominant.....9

9 Levees forests with typical levee species present including *Juglans nigra*, *Lindera benzoin*, and *Elymus virginicus*
Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi **Forest**
9 Forests of varied habitats (alluvial flats, terraces, occasionally on levees) lacking the species listed above, *Carpinus caroliniana* and *Ilex opaca* often present in the subcanopy .....
Celtis laevigata – Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea - Carex lupulina **Forest**

Key 3 - Communities of sloughs, alluvial flats, and terraces

1 Forests of sloughs, terraces, and alluvial flats 2
1 Vine-dominated vegetation, scattered emergent trees may be present
Vitis rotundifolia - Ampelopsis arborea - Campsis radicans **Seasonally Flooded Vine-Shrubland**

2 Short-statured slough forests of *Planera aquatica*, occasionally with a scattered emergent canopy of *Taxodium distichum, Nyssa aquatica*, and *Fraxinus pennsylvanica*
.....***Planera aquatica* Forest**
2 *Planera aquatica* absent, or present but not dominant in the canopy.....3

3 *Taxodium distichum* dominant or codominant or contributing at least 15 percent canopy coverage.....4
3 *Taxodium distichum* contributing less than 15 percent coverage or absent.....7

4 Semipermanently flooded slough forests dominated by *Taxodium distichum* and *Nyssa aquatica* over a subcanopy of *Fraxinus caroliniana*, few other canopy species present, *Nyssa biflora* usually absent, herbaceous layer very sparse and containing *Proserpinaca pectinata, Phanopyrum gymnocarpum, Saururus cernuus* and few other species
..... ***Taxodium distichum - Nyssa aquatica / Fraxinus caroliniana* Forest**
4 Forests not of semipermanently flooded sloughs, or *Nyssa biflora* or other species (including *Quercus laurifolia, Fraxinus pennsylvanica,* and *Quercus lyrata)* codominant in the canopy, or canopy and herbaceous layers more species rich .5

5 *Nyssa biflora* codominant with *Taxodium distichum* and *Nyssa aquatica*; forests associated with blackwater drainages (Tom's Creek and Cedar Creek), and not transitional zones
..... ***Taxodium distichum - Nyssa aquatica - Nyssa biflora / Fraxinus caroliniana / Itea virginica* Forest**
5 *Nyssa biflora* absent, or present but not dominant or codominant 6

6 *Quercus lyrata* dominant or codominant with *Quercus laurifolia, Sabal minor* and *Arundinaria gigantea* usually present in the shrub layer, *Carex joorii, Carex intumescens, Diodia virginiana, Gratiola virginica,* and *Justicia ovata* present in the well-developed herbaceous layer
***Quercus lyrata - Quercus laurifolia - Taxodium distichum / Saururus cernuus* Forest**
6 Forests dominated by *Taxodium distichum* and *Fraxinus pennsylvanica; Nyssa aquatica* absent or present but not dominant or codominant; *Acer rubrum* dominant in the subcanopy; *Itea virginica* and *Cephalanthus occidentalis* typical in the shrub layer
***Taxodium distichum - Fraxinus pennsylvanica - Quercus laurifolia / Acer rubrum / Saururus cernuus* Forest**

7 Forests of ridges dominated by *Liquidambar styraciflua, Quercus nigra,* and *Quercus laurifolia; Pinus taeda* occasionally codominant and contributing up to 60 percent coverage
***Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita* Forest**
7 Forests of alluvial flats or levees; *Pinus taeda* and *Quercus nigra* lacking; forests dominated by *Liquidambar styraciflua, Fraxinus pennsylvanica, Ulmus americana, Quercus laurifolia, Acer rubrum,* and *Celtis laevigata*; subcanopy dominated *by Carpinus caroliniana, Ilex decidua,* and *Asimina triloba*
***Fraxinus pennsylvanica - Ulmus americana - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina* Forest**

4. VEGETATION DESCRIPTIONS FOR CONGAREE NATIONAL PARK

Fagus grandifolia - Quercus nigra Forest

COMMON NAME American Beech - Water Oak Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Lowland or submontane cold-deciduous forest (I.B.2.N.a.)

ALLIANCE *Fagus grandifolia - Quercus alba* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE
Globally
Fagus grandifolia - Quercus nigra Forest is known currently from the Coastal Plain of North Carolina, South Carolina, and possibly Virginia.

Congaree National Park
This forest type occurs in the uplands of the northwestern portion of the park.

ENVIRONMENTAL DESCRIPTION
Globally
These forests occur on mesic slopes and upland flats.

Congaree National Park
Fagus grandifolia - Quercus nigra Forest occurs on middle to lower convex slopes.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Fagus grandifolia, Quercus nigra*
Tree subcanopy	*Ostrya virginiana, Carpinus caroliniana, Cornus florida*

Congaree National Park

Stratum	Species
Tree canopy	*Fagus grandifolia, Quercus nigra, Liquidambar styraciflua, Quercus michauxii, Quercus alba*
Tree subcanopy	*Ilex opaca*
Short shrub	*Rhododendron canescens*

DIAGNOSTIC SPECIES
Globally
Quercus nigra, Fagus grandifolia, Symplocos tinctoria, Callicarpa americana

Congaree National Park
Fagus grandifolia, Quercus nigra, Ilex opaca, Rhododendron canescens, Chasmanthium laxum var. *sessiliflorum*

VEGETATION DESCRIPTION
Globally
Mesic mixed hardwood forests dominated by *Fagus grandifolia* and *Quercus nigra* with limited *Quercus alba*. *Vaccinium* sp. and *Arundinaria gigantea* are important in the shrub layer. One example has a canopy dominated by *Fagus grandifolia, Liriodendron tulipifera,* and *Quercus nigra.* The understory is diverse and contains *Ostrya virginiana, Carpinus caroliniana,* and *Cornus florida. Symplocos tinctoria* and *Callicarpa americana* are common shrubs.

Congaree National Park
These closed canopy forests are dominated by *Fagus grandifolia, Liquidambar styraciflua, Quercus alba,* and *Quercus nigra* with a well-developed subcanopy of *Ilex opaca*. Other canopy species that may be present include *Nyssa sylvatica, Quercus laurifolia, Quercus michauxii, Quercus pagoda, Ulmus alata, Acer rubrum,* and *Liriodendron tulipifera*. *Pinus taeda* may also be present particularly in occurrences with a history of disturbance. Other species in the understory include *Carpinus caroliniana* and *Cornus florida.* The well-developed shrub layer contains a variety of species including *Euonymus americana, Rhododendron canescens, Vaccinium elliottii, Vaccinium pallidum, Gaylussacia dumosa, Gaylussacia frondosa, Symplocos tinctoria, Arundinaria gigantea, Asimina triloba, Callicarpa americana,* and others. The herbaceous layer ranges from sparse to moderately well-developed, and among the species that occur are *Osmunda cinnamomea, Polystichum acrostichoides, Mitchella repens, Chasmanthium laxum* var. *sessiliflorum, Malaxis unifolia, Arisaema triphyllum, Athyrium filix-femina* ssp. *asplenioides, Panicum boscii, Goodyera pubescens, Carex debilis, Carex abscondita,* and *Tipularia discolor*. The vine/liana stratum is sparse and can contain *Parthenocissus quinquefolia, Smilax bona-nox, Toxicodendron radicans, Bignonia capreolata,* and *Smilax hispida,* among others.

OTHER NOTEWORTHY SPECIES
The exotic species *Lonicera japonica* is present within the park in these forests.

CONSERVATION RANK G3

RANK JUSTIFICATION

DATABASE CODE CEGL007211

COMMENTS

REFERENCES

Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera Forest

COMMON NAME Sweetgum - (Water Oak, Willow Oak) - Loblolly Pine / Mayberry - Wax-myrtle Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Lowland or submontane cold-deciduous forest (I.B.2.N.a.)

ALLIANCE *Quercus nigra* Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE
Globally
Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment but likely includes the Atlantic Coastal Plain from Virginia to Georgia.

Congaree National Park
This forest type occurs in northern, upland portions of the park.

ENVIRONMENTAL DESCRIPTION
Globally
Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but likely are similar to those described below.

Congaree National Park
Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera Forest occurs on loamy sands and sandy loams on mesic slopes.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Pinus taeda, Liquidambar styraciflua, Quercus nigra, Quercus phellos*
Tree subcanopy	*Liquidambar styraciflua, Quercus nigra, Acer rubrum*
Shrub	*Vaccinium elliottii, Myrica cerifera*

DIAGNOSTIC SPECIES
Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Pinus taeda, Liquidambar styraciflua, Quercus nigra, Quercus phellos, Liquidambar styraciflua, Quercus nigra, Acer rubrum, Vaccinium elliottii, Myrica cerifera, Mitchella repens

VEGETATION DESCRIPTION
Globally
The globally description currently is the same as the park-specific description below.

Congaree National Park
This community type occurs on the Congaree National Park in two phases: one with an emergent canopy of large *Pinus taeda* trees, and the other without the emergent canopy. Coverage by *Pinus taeda* in the *Pinus taeda* phase ranges from ten to greater than sixty percent. The closed canopy is codominated by *Liquidambar styraciflua* with *Quercus* spp., especially *Quercus nigra* and *Quercus phellos,* and in one example by *Quercus pagoda. Nyssa sylvatica* is also typical in this stratum. The moderately well-developed subcanopy is dominated by canopy species with *Ilex decidua* var. *longipes, Sassafras albidum, Acer rubrum, Cornus florida, Prunus serotina, Vaccinium arboreum, Carpinus caroliniana,* and likely other species. The shrub stratum is often sparse and is primarily composed of canopy and subcanopy species. Occasionally a rather dense cover of *Myrica cerifera* may be present. Other species that may occur include *Euonymus americana, Rubus* sp., *Callicarpa americana, Vaccinium elliottii, Gaylussacia frondosa,* and *Gaylussacia dumosa.* The herbaceous layer ranges from moderate to fairly dense. Typical species include *Chasmanthium laxum* var. *sessiliflorum, Scleria triglomerata, Carex abscondita, Panicum boscii, Mitchella repens, Juncus coriaceus, Chimaphila maculata, Asplenium platyneuron, Malaxis uniflora,* and others. The vine/liana stratum is sparse to moderate, and species present include *Bignonia capreolata, Vitis rotundifolia, Smilax bona-nox, Smilax rotundifolia, Wisteria frutescens, Gelsemium sempervirens, Toxicodendron radicans, Ampelopsis arborea,* and others.

OTHER NOTEWORTHY SPECIES
The exotic *Lonicera japonica* is common in occurrences of this community.

CONSERVATION RANK GM

RANK JUSTIFICATION
This community contains a mixture of upland and lowland species that typically occur together in uplands following cessation of agriculture.

DATABASE CODE CEGL007726

COMMENTS

REFERENCES

Acer saccharinum / Leersia lenticularis - Commelina virginica Forest

COMMON NAME Silver Maple / Catchfly Cutgrass - Swamp Dayflower Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Temporarily flooded cold-deciduous forest (I.B.2.N.d.)

ALLIANCE *Acer saccharinum* Temporarily Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Acer saccharinum / Leersia lenticularis - Commelina virginica Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment.

Congaree National Park
This forest type occurs in the southern portion of the park between the levee and the Congaree River.

ENVIRONMENTAL DESCRIPTION
Globally
Acer saccharinum / Leersia lenticularis - Commelina virginica Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but likely are similar to those described below.

Congaree National Park
Acer saccharinum / Leersia lenticularis - Commelina virginica Forest occurs on relatively recently deposited sands between the levee and the Congaree River.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Acer saccharinum*
Tree subcanopy	*Acer negundo, Acer saccharinum*

DIAGNOSTIC SPECIES
Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Acer saccharinum (see "Comments" below)

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
The fairly open to mostly closed canopy and the subcanopy of this community are dominated by *Acer saccharinum*. Other species that are sparingly present in these strata are *Acer negundo, Celtis laevigata,* and *Fraxinus pennsylvanica.* The sparse shrub layer contains *Asimina triloba, Ilex decidua, Lindera benzoin,* and canopy species. The sparse herbaceous layer has a variety of herbaceous species that may be present; these species include *Leersia lenticularis, Acalypha rhomboidea, Senecio glabellus, Boehmeria cylindrica, Pilea pumila, Carex grayi, Impatiens capensis, Polygonum virginianum,* and others.

OTHER NOTEWORTHY SPECIES
The exotics *Ligustrum sinense* and *Microstegium vimineum* are present in occurrences of this community.

CONSERVATION RANK G3?

RANK JUSTIFICATION

DATABASE CODE CEGL007727

COMMENTS
Globally
Global rank needs reassessment following evaluation of more complete information on the global range of this community.

Congaree National Park
Acer saccharinum as the strong dominant in the canopy is diagnostic of this association.

REFERENCES

Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi Forest

COMMON NAME	Sugarberry - Green Ash - Box Elder - (Black Walnut) / Common Pawpaw / Gray's Sedge Forest
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
ALLIANCE	*Fraxinus pennsylvanica - Ulmus americana - Celtis (occidentalis, laevigata)* Temporarily Flooded Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	1
USFWS WETLAND SYSTEM	Palustrine

RANGE
Globally
Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi Forest occurs in the Atlantic Coastal Plain of North Carolina and South Carolina. It is likely in Virginia and Georgia. It has been documented in the floodplains of the Congaree River of South Carolina and the Roanoke River of North Carolina.

Congaree National Park
This forest type occurs in the southern portion of the park on levees of the Congaree River.

ENVIRONMENTAL DESCRIPTION
Globally
Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi Forest occurs on levees of brownwater rivers. Soils that support these forests are relatively fertile and loamy because of frequent flooding and resultant sediment deposition.

Congaree National Park
Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi Forest occurs on well-drained, relatively fertile levees of the Congaree River. These undergo frequent inundation of relatively shorter duration than areas behind the levee.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Acer negundo, Celtis laevigata, Fraxinus pennsylvanica, Liquidambar styraciflua, Ulmus americana*
Tall shrub	*Asimina triloba*
Herbaceous	*Arundinaria gigantea, Carex grayi, Carex louisianica*

Congaree National Park

Stratum	Species
Tree canopy	*Celtis laevigata, Juglans nigra, Acer negundo, Liquidambar styraciflua, Ulmus americana*
Tree subcanopy	*Acer negundo, Juglans nigra*
Tall shrub	*Asimina triloba*
Herbaceous	*Elymus virginicus*

DIAGNOSTIC SPECIES
Globally
Acer negundo, Celtis laevigata, Fraxinus pennsylvanica, Liquidambar styraciflua, Ulmus americana, Asimina triloba, Arundinaria gigantea, Carex grayi, Carex louisianica

Congaree National Park
Celtis laevigata, Juglans nigra, Acer negundo, Liquidambar styraciflua, Ulmus americana, Lindera benzoin, Elymus virginicus

VEGETATION DESCRIPTION
Globally
Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi Forest has been previously described from the Roanoke River, North Carolina, where it occurs in two more-or-less distinct phases. Both have closed canopies codominated by *Acer negundo, Celtis laevigata, Fraxinus pennsylvanica, Liquidambar styraciflua,* and *Ulmus americana*. Subcanopies range from dense to sparse and are dominated by *Asimina triloba*. The relative abundance and diversity of understory herbs are inversely related to the abundance of *Asimina triloba*; however, *Arundinaria gigantea* often has a higher abundance under *Asimina*. Vines are also common, and important species include *Toxicodendron radicans, Parthenocissus quinquefolia,* and *Smilax rotundifolia.*

Congaree National Park
The mostly closed canopy of this community is dominated by *Celtis laevigata, Juglans nigra, Acer negundo, Liquidambar styraciflua,* and *Ulmus americana.* These species are also important in the well-developed subcanopy. The Congaree occurrences differ from global occurrences by having a lesser amount of tree importance contributed by *Fraxinus pennsylvanica* and by having substantial amounts of *Juglans nigra*. A variety of other tree species are possible in these strata; these species include *Fraxinus pennsylvanica, Platanus occidentalis, Quercus laurifolia, Diospyros virginiana, Carya cordiformis, Quercus pagoda, Morus rubra,* and others. The shrub layer ranges from sparse to well-developed and is dominated by *Asimina triloba* with *Lindera benzoin, Ilex decidua*, and likely other species present as well. The moderately dense understory is dominated by *Elymus virginicus.* Other typical species include *Carex grayi, Carex retroflexa, Chasmanthium latifolium, Elephantopus carolinianus, Leersia lenticularis, Polygonum virginianum, Sanicula canadensis, Carex bromoides, Glyceria striata, Laportea canadensis,* and others. The vine stratum is moderate, and many species are possible. Among these are *Bignonia capreolata, Berchemia scandens, Parthenocissus quinquefolia, Smilax bona-nox, Smilax tamnoides, Vitis rotundifolia, Matalea carolinensis, Cocculus carolinus,* and *Vitis vulpina.*

OTHER NOTEWORTHY SPECIES
The exotics *Ligustrum sinense, Melia azedarach, Lonicera japonica,* and *Microstegium vimineum* are present in some occurrences of this community.

CONSERVATION RANK G3G5

RANK JUSTIFICATION This community type is globally relatively secure.

DATABASE CODE CEGL004740

COMMENTS

REFERENCES
Rice, S. K., and R. K. Peet. 1997. Vegetation of the Lower Roanoke River Floodplain. Unpublished report to The Nature Conservancy. 154 p.

Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina Forest

COMMON NAME	Sugarberry - Sweetgum - Diamondleaf Oak / American Hornbeam / Giant Cane / Hop Sedge Forest
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
ALLIANCE	*Fraxinus pennsylvanica - Ulmus americana - Celtis (occidentalis, laevigata)* Temporarily Flooded Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	1
USFWS WETLAND SYSTEM	Palustrine

RANGE
Globally
Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment.

Congaree National Park
This forest type occurs throughout the park but is perhaps more common on the northern portion.

ENVIRONMENTAL DESCRIPTION
Globally
Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but are similar to those described below.

Congaree National Park
Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina Forest occurs on somewhat poorly drained to moderately well-drained silty clay loam soils of alluvial flats. These are temporarily flooded sites with an annual probability of flooding of 100 percent but with the watertable below the soil surface throughout the growing season in most years.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Fraxinus pennsylvanica Quercus laurifolia, Liquidambar styraciflua, Ulmus americana, Celtis laevigata, Acer rubrum*

Tree subcanopy	*Carpinus caroliniana, Ilex decidua*
Shrub	*Arundinaria gigantea*
Herbaceous	*Carex lupulina, Boehmeria cylindrica*
Vine/liana	*Vitis rotundifolia, Smilax tamnoides*

DIAGNOSTIC SPECIES
Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Quercus laurifolia, Liquidambar styraciflua, Fraxinus pennsylvanica, Celtis laevigata, Acer rubrum, Ulmus americana, Carpinus caroliniana, Ilex decidua, Arundinaria gigantea, Carex lupulina, Boehmeria cylindrica

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
This community has well-developed canopy, subcanopy, shrub, vine/liana, and herbaceous strata. The canopy is dominated by various mixtures of *Liquidambar styraciflua, Fraxinus pennsylvanica, Ulmus americana, Quercus laurifolia, Acer rubrum,* and *Celtis laevigata.* The subcanopy is dominated by *Carpinus caroliniana, Ilex decidua,* and *Asimina triloba*. Other species that occur in these strata are *Populus deltoides, Quercus michauxii, Ulmus alata, Platanus occidentalis, Quercus lyrata, Quercus michauxii, Quercus pagoda, Gleditsia aquatica, Taxodium distichum, Acer negundo, Crataegus spathulata, Nyssa biflora, Nyssa aquatica, Carya aquatica, Populus heterophylla, Ilex opaca,* and others. The shrub layer usually contains a fairly dense cover of *Arundinaria gigantea,* but some occurrences may be lacking this. Other species present in the shrub layer are *Sabal minor, Euonymus americana,* and others. The herbaceous layer can be fairly lush and typically is dominated by *Carex lupulina, Justicia ovata,* and *Boehmeria cylindrica*. Other common species in the herbaceous layer include *Carex abscondita, Carex intumescens, Carex grayi, Carex retroflexa, Carex typhina, Commelina virginica, Onoclea sensibilis, Phanopyrum gymnocarpum, Saururus cernuus, Senecio glabellus, Asclepias perennis,* and *Leersia lenticularis*. *Berchemia scandens, Campsis radicans, Ampelopsis arborea, Toxicodendron radicans, Parthenocissus quinquefolia, Smilax tamnoides, Smilax bona-nox,* and *Bignonia capreolata* are all commonly occurring vines in this community.

This community occurs in two phases within the park - one (hereafter called the sweetgum phase) with somewhat higher importance by species more indicative of drier sites: *Liquidambar styraciflua, Quercus michauxii, Quercus pagoda, Carya ovata, Euonymus americana, Botrychium dissectum, Ilex opaca,* and *Mitchella repens.* The other phase (hereafter called the green ash phase) has somewhat higher importance by species of wetter sites including *Fraxinus pennsylvanica, Quercus laurifolia, Taxodium distichum, Nyssa aquatica, Carex typhina,* and *Gleditsia aquatica.* The sweetgum phase has affinities to the *Quercus (michauxii, pagoda, shumardii) - Liquidambar styraciflua* Forest Alliance and likely is related successionally to associations in that alliance but probably as a result of disturbance, oaks have decreased in importance while other species have increased, thereby blurring the boundaries. Discrimination of the phases may be difficult in the field. Further data collection may lead to these phases being recognized as different associations, but at this time data cannot support that level of recognition although the phases can be discriminated on aerial photography.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G4

RANK JUSTIFICATION

DATABASE CODE CEGL007736

COMMENTS
Congaree National Park

There is relatively more variation within occurrences of this community type, in both species composition and stratal density, than in most other community types on the Congaree National Park. Field plots assigned to the sweetgum phase are: - 1-03, 1-05, 1-07, 1-11, 1-14, 1-15, 1-17, 1-18, 1-29, 1-33, 1-35, 1-38, 1-56, 1-58, 2-04, 2-29, and 2-34. Field plots assigned to the green ash phase are: 1-13, 1-19, 1-20, 1-28, 2-11, 2-27, 2-39, 2-46, 2-47, 2-48, 1-04, 1-08, 1-10, 1-26, 1-31, 1-32, 1-37, 1-60, 2-02, 2-05, 2-10, 2-12, 2-20, 2-21, 2-25, 2-26, 2-35, and 2-42.

REFERENCES

Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa Forest

COMMON NAME	Sycamore - Sugarberry - Green Ash / Northern Spicebush - Possum-haw / Reflexed Sedge
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
ALLIANCE	*Platanus occidentalis - (Fraxinus pennsylvanica, Celtis laevigata, Acer saccharinum)* Temporarily Flooded Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	1
USFWS WETLAND SYSTEM	Palustrine

RANGE
Globally
Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment. Likely distribution includes at least the Atlantic Coastal Plain from Georgia to Virginia.

Congaree National Park
This forest type occurs in the southern portion of the park on terraces of the Congaree River.

ENVIRONMENTAL DESCRIPTION
Globally
Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but are similar to those described below.

Congaree National Park
Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa Forest occurs on terraces of the Congaree River. These are relatively more well-drained than the adjacent flats.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Platanus occidentalis, Celtis laevigata, Fraxinus pennsylvanica, Ulmus americana*
Tree subcanopy	*Acer negundo, Celtis laevigata*
Tall shrub	*Asimina triloba, Lindera benzoin*

DIAGNOSTIC SPECIES
Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Platanus occidentalis, Celtis laevigata, Acer negundo, Ulmus americana, Fraxinus pennsylvanica, Lindera benzoin, Carex grayi, Carex retroflexa

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
The mostly closed canopy of this community is dominated by *Platanus occidentalis, Celtis laevigata,* and *Fraxinus pennsylvanica.* These species, along with *Acer negundo,* are also important in the well developed subcanopy. Other tree species are possible in these strata; these include *Crataegus viridis, Juglans nigra, Acer saccharinum, Morus rubra, Ilex decidua, Ulmus americana, Planera aquatica, Quercus laurifolia, Liquidambar styraciflua, Carya aquatica,* and others. The shrub layer generally is sparse and is dominated by *Lindera benzoin, Ilex decidua, Asimina triloba,* and likely other species as well. The herbaceous layer is typically sparse, and constant species are *Boehmeria cylindrica, Carex grayi, Carex retroflexa,* and *Viola* spp. Other typical species include *Botrychium dissectum, Carex lupulina, Chasmanthium latifolium, Onoclea sensibilis, Pilea pumila, Polygonum hydropiperoides, Polygonum virginianum,* and others. The vine stratum is moderate, and many species are possible. Among these are *Bignonia capreolata, Parthenocissus quinquefolia, Smilax tamnoides, Vitis rotundifolia,* and *Toxicodendron radicans.*

OTHER NOTEWORTHY SPECIES
The exotics *Ligustrum sinense* and *Microstegium vimineum* are present in occurrences of this community.

CONSERVATION RANK	G3G5
RANK JUSTIFICATION	This community type is globally relatively secure.
DATABASE CODE	CEGL007730

COMMENTS

REFERENCES

Populus deltoides / Acer negundo / Boehmeria cylindrica Forest

COMMON NAME Cottonwood / Box Elder / False-nettle Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Temporarily flooded cold-deciduous forest (I.B.2.N.d.)

ALLIANCE *Populus deltoides* Temporarily Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Populus deltoides / Acer negundo / Boehmeria cylindrica Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment but likely includes the Atlantic Coastal Plain from Virginia to Georgia.

Congaree National Park
This forest type occurs in the southeastern portion of the park along the Congaree River.

ENVIRONMENTAL DESCRIPTION
Globally
Populus deltoides / Acer negundo / Boehmeria cylindrica Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but likely are similar to those described below.

Congaree National Park
Populus deltoides / Acer negundo / Boehmeria cylindrica Forest occurs on well-drained loamy soils of levees of the Congaree River.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Populus deltoides*
Tree subcanopy	*Acer negundo, Acer saccharinum*

DIAGNOSTIC SPECIES
Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Populus deltoides, Acer saccharinum, Acer negundo

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
The fairly open to mostly closed canopy of this community is dominated by *Populus deltoides*. The well-developed subcanopy is dominated by *Acer saccharinum* and *Acer negundo. Fraxinus pennsylvanica, Planera aquatica, Celtis laevigata, Ulmus americana,* and likely other species may be present in these strata as well. The shrub layer is very sparse and is composed of canopy and subcanopy species in addition to *Asimina triloba, Ilex decidua,* and likely other species. The sparse herbaceous layer is also low in species richness. Among the species that may be present are *Chasmanthium latifolium, Pilea pumila, Leersia lenticularis, Carex grayi, Elymus virginicus, Carex bromoides, Matelea carolinensis, Sanicula canadensis, Cryptotaenia canadensis, Boehmeria cylindrica, Erechtites hieraciifolia, Justicia ovata,* and others. Vine coverage is sparse as well, and among the species that may be present are *Toxicodendron radicans, Parthenocissus quinquefolia, Smilax tamnoides, Bignonia capreolata, Vitis rotundifolia,* and *Mikania scandens*.

OTHER NOTEWORTHY SPECIES
The exotics *Ligustrum sinense* and *Microstegium vimineum* are present in occurrences of this community.

CONSERVATION RANK	G3G5
RANK JUSTIFICATION	This community is apparently relatively globally secure.
DATABASE CODE	CEGL007731

COMMENTS
Congaree National Park
Populus deltoides as the strong dominant in the canopy is diagnostic of this association.

REFERENCES

Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita Forest

COMMON NAME	Sweetgum - Water Oak - Diamondleaf Oak / Giant Cane / Concealed Sedge Forest
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Temporarily flooded cold-deciduous forest (I.B.2.N.d.)
ALLIANCE	*Quercus (phellos, nigra, laurifolia)* Temporarily Flooded Forest Alliance
CLASSIFICATION CONFIDENCE LEVEL	1
USFWS WETLAND SYSTEM	Palustrine

RANGE
Globally
Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment but likely includes the Atlantic Coastal Plain from Virginia to Georgia.

Congaree National Park
This forest type occurs throughout the park.

ENVIRONMENTAL DESCRIPTION
Globally
Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but are similar to those described below.

Congaree National Park
Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita Forest occurs on somewhat poorly drained to moderately well-drained silt loam soils of ridges of the Congaree River floodplain. These are temporarily flooded sites with an annual probability of flooding of 100 percent but with the watertable well below the soil surface throughout the growing season in most years.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Pinus taeda, Liquidambar styraciflua, Ulmus alata, Quercus nigra, Quercus laurifolia, Acer rubrum, Ulmus americana, Quercus phellos*
Tree subcanopy	*Carpinus caroliniana, Ilex opaca*

Shrub	*Arundinaria gigantea, Asimina triloba*
Herbaceous	*Carex abscondita, Boehmeria cylindrica, Mitchella repens, Botrychium dissectum*
Vine / liana	*Toxicodendron radicans, Vitis rotundifolia, Parthenocissus quinquefolia, Bignonia capreolata*

DIAGNOSTIC SPECIES
Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Pinus taeda, Liquidambar styraciflua, Ulmus alata, Quercus nigra, Quercus laurifolia, Acer rubrum, Ulmus americana, Quercus phellos, Carpinus caroliniana, Ilex opaca, Arundinaria gigantea, Asimina triloba, Carex abscondita, Boehmeria cylindrica, Mitchella repens

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
This community type occurs on the Congaree National Park in two phases: one with an emergent canopy of large *Pinus taeda* trees, and the other without the emergent canopy. Coverage by *Pinus taeda* in the *Pinus taeda* phase ranges from ten to greater than sixty percent. The closed canopy is codominated by *Liquidambar styraciflua* with *Quercus* spp., especially *Quercus nigra* and *Quercus laurifolia,* and in one example by *Quercus phellos*. Other species typical in this stratum include *Ulmus alata, Ulmus americana, Fraxinus americana, Quercus pagoda, Quercus michauxii, Quercus shumardii,* and *Acer rubrum*. The well-developed subcanopy is dominated by *Carpinus caroliniana* and *Ilex opaca*. Canopy species are present in this stratum as well, as are *Nyssa biflora, Ilex decidua, Diospyros virginiana, Celtis laevigata, Carya ovata, Morus rubra,* and likely other species. *Arundinaria gigantea* and *Asminia triloba* dominate the shrub stratum. The herbaceous layer ranges from moderate to fairly dense. Typical species include *Carex abscondita, Boehmeria cylindrica, Mitchella repens, Botrychium dissectum, Carex intumescens, Carex lupulina, Carex retroflexa, Asplenium platyneuron, Carex alata, Carex debilis, Ruellia carolinensis, Elephantopus tomentosa, Leersia virginica, Panicum boscii, Lobelia cardinalis, Sabatia angularis,* and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK	G3G4
RANK JUSTIFICATION	This community type
DATABASE CODE	CEGL007732

COMMENTS
Congaree National Park
Occurrences of this community type were among those of which the structure and species composition were most affected by Hurricane Hugo which hit the Monument in September 1989. All of the plots placed within this classification unit had many snapped off trees and tip-up mounds.

REFERENCES

Salix nigra - Fraxinus pennsylvanica Forest

COMMON NAME Black Willow - Green Ash Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Temporarily flooded cold-deciduous forest (I.B.2.N.d.)

ALLIANCE *Salix nigra* Temporarily Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Salix nigra - Fraxinus pennsylvanica Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment but likely includes the Atlantic Coastal Plain from Georgia to Virginia.

Congaree National Park
This forest type is documented along the Congaree River.

ENVIRONMENTAL DESCRIPTION
Globally
Salix nigra - Fraxinus pennsylvanica Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description.

Congaree National Park
Salix nigra - Fraxinus pennsylvanica Forest occurs on moderately well-drained sandy clay loam soils on lower convex slopes of levees of the Congaree River. These sites are temporarily flooded with a high frequency of flooding that is of shorter duration than in lower areas farther from the river.

MOST ABUNDANT SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park

Stratum	Species
Tree canopy	*Salix nigra, Fraxinus pennsylvanica*

DIAGNOSTIC SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
Salix nigra as the canopy dominant is diagnostic of this community.
VEGETATION DESCRIPTION

Globally
Global description is the same as the Monument-specific description below

Congaree National Park
The mostly closed to closed canopy layer is strongly dominated by *Salix nigra*. Other typical species in the canopy include *Fraxinus pennsylvanica, Platanus occidentalis*, and likely others. The shrub layer is sparse, and species present include *Salix nigra, Taxodium distichum, Planera aquatica, Celtis laevigata, Platanus occidentalis, Acer rubrum, Liquidambar styraciflua, Acer negundo,* and likely others. The herbaceous stratum typically is sparse. Species present in the herbaceous layer include *Boehmeria cylindrica, Saururus cernuus*, and others. The vine layer is absent to very sparse.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G4

RANK JUSTIFICATION

DATABASE CODE CEGL007734

COMMENTS

REFERENCES

Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina Forest

COMMON NAME Green Ash / Catchfly Cutgrass - Hop Sedge Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Seasonally flooded cold-deciduous forest (I.B.2.N.e.)

ALLIANCE *Acer rubrum - Fraxinus pennsylvanica* Seasonally Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment.

Congaree National Park
This forest type occurs in the middle, southern portion of the park near the Congaree River.

ENVIRONMENTAL DESCRIPTION
Globally
Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but will be similar to the description below.

Congaree National Park
Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina Forest occurs on somewhat poorly drained to poorly drained silty clay loam soils in temporarily flooded sloughs.

MOST ABUNDANT SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park

Stratum	Species
Tree canopy	*Fraxinus pennsylvanica, Celtis laevigata*
Tree subcanopy	*Planera aquatica*
Herbaceous	*Leersia lenticularis, Boehmeria cylindrica, Carex lupulina*

DIAGNOSTIC SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
Fraxinus pennsylvanica, Celtis laevigata, Planera aquatica, Leersia lenticularis, Boehmeria cylindrica, Carex lupulina

VEGETATION DESCRIPTION
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
The mostly closed to closed canopy of this community is dominated by *Fraxinus pennsylvanica*. Other typical canopy species include *Ulmus americana, Acer negundo,* and *Carya aquatica*. The well-developed subcanopy may contain the same species as the canopy; additional species in this stratum include *Planera aquatica, Celtis laevigata, Ilex decidua, Ulmus alata, Crataegus phaenopyrum,* and *Diospyros virginiana*. The single occurrence on which this description is based had no shrub cover. The herbaceous layer was moderate and was dominated by *Leersia lenticularis, Boehmeria cylindrica,* and *Carex lupulina* with *Saururus cernuus* and *Polygonum setaceum*. The vine coverage is moderate, and species present include *Smilax hispida, Vitis rotundifolia, Campsis radicans, Toxicodendron radicans, Menispermum canadense,* and *Ampelopsis arborea*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G2G3

RANK JUSTIFICATION

DATABASE CODE CEGL007728

COMMENTS

REFERENCES

Planera aquatica Forest

COMMON NAME Planertree Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Seasonally flooded cold-deciduous forest (I.B.2.N.e.)

ALLIANCE *Planera aquatica* Seasonally Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Planera aquatica Forest is distributed throughout the southeastern Coastal Plain from North Carolina south to Georgia and possibly Florida; in the lower Gulf Coastal Plain from panhandle Florida west possibly to Texas; and in the Mississippi River Alluvial Plain north to Kentucky, southern Illinois, and southern Missouri.

Congaree National Park
This community occurs relatively close to the Congaree River, probably throughout the park.

ENVIRONMENTAL DESCRIPTION
Globally
Planera aquatica Forest occurs most commonly in backswamps and other quiet waters. At least some occurrences arise in backswamps and sloughs formerly dominated by *Taxodium distichum*, *Nyssa biflora*, *Fraxinus pennsylvanica*, and other bottomland species that, due to rapid siltation, experience severe hydrologic modification resulting in shifts in dominance.

Congaree National Park
This type occurs in the Monument in sloughs. Soils are seasonally flooded, and probability of annual flooding is 100 percent. At least one occurrence is within a slough that is experiencing rapid siltation and shifting species dominance as described above.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Planera aquatica*

Congaree National Park

Stratum	Species
Tree canopy	*Planera aquatica, Fraxinus pennsylvanica, Populus heterophylla*

DIAGNOSTIC SPECIES
Globally
Planera aquatica
Congaree National Park

Planera aquatica, Fraxinus pennsylvanica, Populus heterophylla

VEGETATION DESCRIPTION

Globally

These short-statured forests are dominated by *Planera aquatica*. They sometimes have an essentially monospecific canopy and a scattered, emergent canopy of *Taxodium ascendens, Taxodium distichum, Nyssa biflora, Populus heterophylla, Acer negundo, Fraxinus caroliniana, Liquidambar styraciflua, Platanus occidentalis, Carya aquatica,* and *Fraxinus pennsylvanica,* among others. The herbaceous layer in these forests is sparse and can include *Saururus cernuus, Boehmeria cylindrica, Berchemia scandens, Vitis rotundifolia,* and others.

Congaree National Park

Planera aquatica Forest is dominated by a canopy of *Planera aquatica* (60 to 100 percent coverage) with a scattered, emergent canopy *of Fraxinus pennsylvanica* and *Populus heterophylla* and a subcanopy of *Fraxinus caroliniana*. Other typical species of the canopy and subcanopy are *Carya aquatica, Celtis laevigata, Nyssa aquatica,* and *Platanus occidentalis*. The herbaceous and vine/liana strata are sparse, and common species include *Polygonum hydropiperoides, Pluchea camphorata, Senecio glabellus, Ampelopsis arborea, Campsis radicans, Toxicodendron radicans, Vitis rotundifolia,* and *Parthenocissus quinquefolia.*

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4?

RANK JUSTIFICATION *Planera aquatica* Forest is likely relatively common across its range, but additional rank evaluation is needed.

DATABASE CODE CEGL007394

COMMENTS

REFERENCES

Quercus lyrata - Quercus laurifolia / (Arundinaria gigantea) Forest

COMMON NAME Overcup Oak - Diamondleaf Oak / (Giant Cane) Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Seasonally flooded cold-deciduous forest (I.B.2.N.e.)

ALLIANCE *Quercus lyrata - (Carya aquatica)* Seasonally Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Current global distribution is the Atlantic Coastal Plain of North Carolina and South Carolina. Additional assessment is needed.

Congaree National Park
This community likely occurs throughout the lower portions of the park.

ENVIRONMENTAL DESCRIPTION
Globally
Quercus lyrata - Quercus laurifolia / (Arundinaria gigantea) Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description.

Congaree National Park
Quercus lyrata - Quercus laurifolia / (Arundinaria gigantea) Forest occurs in backswamps and on alluvial flats.

MOST ABUNDANT SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park

Stratum	Species
Tree canopy	*Quercus lyrata, Fraxinus pennsylvanica, Carya aquatica*
Tree subcanopy	*Quercus laurifolia, Acer rubrum, Fraxinus pennsylvanica, Planera aquatica*
Shrub	*Arundinaria gigantea, Sabal minor, Ilex decidua*
Herbaceous	*Carex lupulina, Boehmeria cylindrica, Commelina virginica, Justicia ovata*
Vine / liana	*Ampelopsis arborea, Smilax tamnoides*

DIAGNOSTIC SPECIES
Globally
Global diagnostic species are the same as the Monument-specific species below.

Congaree National Park

Quercus lyrata, Quercus laurifolia, Arundinaria gigantea

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
This forest has well-developed canopy, subcanopy, shrub, and herbaceous strata. The canopy is dominated by *Quercus lyrata* often in combination with *Quercus laurifolia*. Other species that may be present in the canopy include *Quercus phellos, Taxodium distichum, Planera aquatica, Liquidambar styraciflua, Ulmus americana, Fraxinus pennsylvanica, Carya aquatica, Populus heterophylla, Acer rubrum,* and others. Along with the canopy species, other species that may be present in the subcanopy are *Ulmus alata, Ilex decidua, Carpinus caroliniana,* and *Diospyros virginiana*. The shrub layer ranges from sparse to a moderate coverage by species of the canopy and subcanopy layers with *Sabal minor* and *Arundinaria gigantea*. Herbaceous coverage usually is well-developed, and dominant species include *Carex joorii, Carex intumescens, Carex lupulina, Boehmeria cylindrica, Justicia ovata, Saururus cernuus,* and *Leersia lenticularis*. Other herbaceous species that occur include *Commelina virginica, Lobelia cardinalis, Ludwigia palustris, Diodia virginiana, Gratiola virginica,* and others.

OTHER NOTEWORTHY SPECIES
The exotic herb *Ludwigia uruguayensis* is present in occurrences of this community.

CONSERVATION RANK G3G5

RANK JUSTIFICATION

DATABASE CODE CEGL007801

COMMENTS

REFERENCES

Quercus phellos / Carex (intumescens, joorii) / Sphagnum lescurii Forest

COMMON NAME Willow Oak / (Bladder Sedge, Cypress-swamp Sedge) Yellow Peatmoss Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Seasonally flooded cold-deciduous forest (I.B.2.N.e.)

ALLIANCE *Quercus phellos* Seasonally Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
This community is present in the Piedmont of Virginia, North Carolina, and South Carolina, and the inner Coastal Plain of South Carolina, and possibly of North Carolina and Virginia as well.

Congaree National Park
This forest type occurs in the uplands of the park.

ENVIRONMENTAL DESCRIPTION
Globally
These forests occur in upland depressions that have restricted water permeation due to a subsurface clay layer. Flooding persists well into the growing season most years, but the water level usually is below the soil surface by the end of the growing season.

Congaree National Park
Quercus phellos / Carex (intumescens, joorii) / Sphagnum lescurii Forest occurs in the northern portions of the park in isolated, upland, depressional wetlands.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Quercus phellos, Quercus lyrata, Liquidambar styraciflua*
Herbaceous	*Carex* spp.

Congaree National Park

Stratum	Species
Tree canopy	*Quercus phellos, Liquidambar styraciflua, Acer rubrum*
Herbaceous	*Chasmanthium laxum* var. *sessiliflorum*

DIAGNOSTIC SPECIES
Globally
Quercus phellos, Carex joorii, Carex intumescens, Sphagnum lescurrii
Congaree National Park

Quercus phellos, Liquidambar styraciflua, Acer rubrum, Ilex decidua, Chasmanthium laxum var. *sessiliflorum, Sphagnum* sp.

VEGETATION DESCRIPTION
Globally
These forests are usually dominated by an almost pure canopy of *Quercus phellos*, sometimes with some *Quercus lyrata, Quercus bicolor*, or *Liquidambar styraciflua*. *Pinus taeda, Ulmus alata, Quercus stellata*, and *Acer rubrum* var. *rubrum* also may be present. Occasionally there is an herb layer of *Carex* spp., *Juncus coriaceus*, and *Trachelospermum difforme*, among others; *Sphagnum lescurii* and *Climacium americanum* are important moss species.

Congaree National Park
The closed canopy of this community is dominated *by Quercus phellos* and *Liquidambar styraciflua* with an emergent canopy of *Pinus taeda* and a subcanopy of *Acer rubrum*. Other canopy and subcanopy species which may be present are *Ilex decidua, Nyssa biflora, Quercus nigra, Quercus pagoda, Quercus stellata, Carya alba, Diospyros virginiana, Ilex opaca, Magnolia virginiana, Quercus michauxii, Ulmus alata*, and others. The shrub layer is sparse and may contain *Vaccinium elliottii, Gaylussacia frondosa, Myrica cerifera*, canopy and subcanopy species, and possibly others. Herb and vine coverages are sparse to moderate, and species in these strata include *Chasmanthium laxum* var. *sessiliflorum, Carex joorii, Rhynchospora glomerata, Mitchella repens, Gelsemium sempervirens, Smilax hispida, Smilax bona-nox, Trachelospermum difforme, Ampelopsis arborea, Smilax tamnoides, Vitis rotundifolia, Toxicodendron radicans, Bignonia capreolata*, and likely others.

OTHER NOTEWORTHY SPECIES
The exotic *Lonicera japonica* is present in occurrences of this community.

CONSERVATION RANK G2G3

RANK JUSTIFICATION
Much of the habitat for this community has undergone drainage and conversion (see comments below).

DATABASE CODE CEGL007403

COMMENTS
Globally
Upland depression swamps provide important amphibian breeding habitat.

Congaree National Park
Two of the occurrences showed evidence of drainage of the sites. Upland depression swamps provide important amphibian breeding habitat.

REFERENCES

Taxodium distichum - Fraxinus pennsylvanica - Quercus laurifolia / Acer rubrum / Saururus cernuus Forest

COMMON NAME Bald-cypress - Green Ash - Diamondleaf Oak / Red Maple / Lizard's Tail Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Seasonally flooded cold-deciduous forest (I.B.2.N.e.)

ALLIANCE *Taxodium distichum - Nyssa (aquatica, biflora, ogeche)* Seasonally Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Taxodium distichum - Fraxinus pennsylvanica - Quercus laurifolia / Acer rubrum / Saururus cernuus Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment, but this community is also known from North Carolina.

Congaree National Park
This community occurs in relatively drier sloughs, as transitional areas between sloughs and bottomland hardwood forests, and on alluvial flats relatively close to the Congaree River, and particularly in the Cedar Creek drainage. This forest occurs along larger creeks and meanders of former creeks.

ENVIRONMENTAL DESCRIPTION
Globally
Taxodium distichum - Fraxinus pennsylvanica - Quercus laurifolia / Acer rubrum / Saururus cernuus Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description.

Congaree National Park
This type occurs in the Monument in sloughs and on alluvial flats on soils with a percentage of silt.

MOST ABUNDANT SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park

Stratum	Species
Tree canopy	*Taxodium distichum, Fraxinus pennsylvanica*
Subcanopy	*Acer rubrum*

DIAGNOSTIC SPECIES
Globally

Global diagnostic species are the same as the Monument-specific species below.

Congaree National Park
Taxodium distichum, Fraxinus pennsylvanica, Acer rubrum, Saururus cernuus, Quercus laurifolia, Pilea pumila, Asclepias perennis, Celtis laevigata, Liquidambar styraciflua

VEGETATION DESCRIPTION
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
Taxodium distichum - Fraxinus pennsylvanica - Quercus laurifolia / Acer rubrum / Saururus cernuus Forest is dominated by *Taxodium distichum* and *Fraxinus pennsylvanica*. *Quercus laurifolia, Quercus lyrata, Acer rubrum, Liquidambar styraciflua, Planera aquatica,* and *Fraxinus caroliniana* are usually present, as are other tree species of generally higher bottomland communities, including *Celtis laevigata, Ulmus americana, Platanus occidentalis,* and *Acer negundo.* The canopy is closed, and the subcanopy layer generally is well-developed. The shrub layer is sparse, and the herbaceous layer ranges from sparse to moderately dense depending upon duration of flooding. *Acer rubrum* is the strong dominant in the subcanopy with *Planera aquatica, Carpinus caroliniana, Ulmus alata, Ilex decidua,* and *Celtis laevigata* typical in this stratum as well. *Itea virginica* and *Cephalanthus occidentalis* are typical in the shrub layer. A variety of vines are possible within occurrences of this community. These include *Vitis rotundifolia, Vitis aestivalis, Bignonia capreolata, Campsis radicans, Berchemia scandens, Trachelospermum difforme,* and *Mikania scandens.* The most commonly occurring herbs are *Asclepias perennis, Boehmeria cylindrica, Pilea pumila, Saururus cernuus, Commelina virginica, Justicia ovata, Phanopyrum gymnocarpum, Carex lupulina, Leersia lenticularis, Ludwigia alternifolia,* and *Chasmanthium latifolium.*

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK	G3G4
RANK JUSTIFICATION	This community is relatively globally secure.
DATABASE CODE	CEGL007719

COMMENTS

REFERENCES

Taxodium distichum - Nyssa aquatica / Fraxinus caroliniana Forest

COMMON NAME	Bald-cypress - Water Tupelo / Water Ash Forest
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Semipermanently flooded cold-deciduous forest (I.B.2.N.f.)
ALLIANCE	*Nyssa aquatica - (Taxodium distichum)* Semipermanently Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
This community occurs on the lower Atlantic Coastal Plain from southeastern Virginia to southern Georgia, and possibly on the lower Gulf Coastal Plain from approximately Tallahassee to southeastern Texas, excluding the Mississippi River Alluvial Plain.

Congaree National Park
This community is common throughout the park.

ENVIRONMENTAL DESCRIPTION
Globally
This community occurs in oxbow lakes and ponds, on low, wet flats and sloughs, and in swales and backswamps. It occurs only on semipermanently flooded soils.

Congaree National Park
This community occurs throughout the park in sloughs and on alluvial flats.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Taxodium distichum, Nyssa aquatica, Fraxinus profunda, Populus heterophylla*
Subcanopy	*Fraxinus caroliniana, Planera aquatica*

Congaree National Park

Stratum	Species
Tree canopy	*Taxodium distichum, Nyssa aquatica*
Subcanopy	*Planera aquatica*

DIAGNOSTIC SPECIES
Globally
Taxodium distichum, Nyssa aquatica, Fraxinus profunda, Populus heterophylla, Phanopyrum gymnocarpum
Congaree National Park

Taxodium distichum, Nyssa aquatica, Planera aquatica, Phanopyrum gymnocarpum

VEGETATION DESCRIPTION

Globally

This community of brownwater rivers is characterized by a dense canopy composed almost exclusively of straight, tall individuals of *Taxodium distichum* and *Nyssa aquatica* with a sparse to moderate subcanopy and depauperate shrub and herb layers. Occasional individuals of several species (e.g. *Populus heterophylla, Salix nigra, Nyssa biflora, Fraxinus profunda, Carya aquatica*, *Quercus lyrata*) are possible in the canopy or subcanopy.

Congaree National Park

This community is dominated *by Taxodium distichum* and *Nyssa aquatica*. The subcanopy is dominated by *Planera aquatica,* with *Fraxinus caroliniana* and *Acer rubrum* common. Additional woody species which may occur are *Quercus lyrata, Quercus laurifolia, Populus heterophylla, Ulmus americana,* and others. The herbaceous layer is very sparse, and typical species include *Saururus cernuus, Proserpinaca pectinata, Asclepias perennis, Commelina virginica, Leersia lenticularis,* and *Phanopyrum gymnocarpum.* Some examples of this community are being degraded by rapid siltation. These occurrences will not have the typical species composition and may be difficult to identify. Often they will have large, dead canopy trees as well as species typical of levees such as *Platanus occidentalis, Celtis laevigata,* and *Acer negundo.*

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK	G5?
RANK JUSTIFICATION	This is a fairly common community type globally.
DATABASE CODE	CEGL007431

COMMENTS

REFERENCES

Taxodium distichum - Nyssa aquatica - Nyssa biflora / Fraxinus caroliniana / Itea virginica Forest

COMMON NAME	Bald-cypress - Water Tupelo - Swamp Tupelo / Water Ash / Virginia-willow Forest
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Semipermanently flooded cold-deciduous forest (I.B.2.N.f.)
ALLIANCE	*Nyssa aquatica - (Taxodium distichum)* Semipermanently Flooded Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Taxodium distichum - Nyssa aquatica - Nyssa biflora / Fraxinus caroliniana / Itea virginica Forest is common along small rivers that arise in the Atlantic Coastal Plain (blackwater rivers) from Virginia to northern Florida.

Congaree National Park
This community occurs on alluvial flats and in isolated sloughs associated with blackwater streams in the park.

ENVIRONMENTAL DESCRIPTION
Globally
This type covers examples along Coastal Plain streams in regions of fine-textured soils and examples in somewhat isolated basins of brownwater floodplains, where *Nyssa aquatica* and *Nyssa biflora* are both important components of the canopy. Soils are semipermanently flooded, and probability of annual flooding is 100 percent

Congaree National Park
This type occurs in the park on Chastain loam soils on alluvial flats and sloughs associated with Tom's Creek and Cedar Creek.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Taxodium distichum, Nyssa aquatica, Nyssa biflora*
Subcanopy	*Fraxinus caroliniana, Acer rubrum*

Congaree National Park

Stratum	Species
Tree canopy	*Taxodium distichum, Nyssa aquatica, Nyssa biflora*
Subcanopy	*Fraxinus caroliniana, Acer rubrum*
Herbaceous	*Phanopyrum gymnocarpum*

DIAGNOSTIC SPECIES
Globally
Taxodium distichum, Nyssa aquatica, Nyssa biflora, Itea virginica, Phanopyrum gymnocarpum

Congaree National Park
Taxodium distichum, Nyssa aquatica, Nyssa biflora, Fraxinus caroliniana, Phanopyrum gymnocarpum

VEGETATION DESCRIPTION
Globally
This type covers very wet forests that are flooded by river overbank flow for long periods and are dominated by combinations of *Nyssa aquatica, Nyssa biflora, Taxodium distichum,* and occasionally *Taxodium ascendens,* which account for at least 75 percent of the canopy cover. Other bottomland species often found in this community include *Acer rubrum, Liquidambar styraciflua,* and *Quercus laurifolia*. Shrubs and herbs are limited to tree bases and higher spots within occurrences.

Congaree National Park
This community is dominated *by Taxodium distichum, Nyssa biflora,* and *Nyssa aquatica*. The subcanopy is dominated by *Fraxinus caroliniana* and *Acer rubrum.* Additional woody species which commonly occur are *Quercus laurifolia, Liquidambar styraciflua, Ilex decidua,* and *Planera aquatica.* The shrub layer generally is open, and *Itea virginica* is common. The herbaceous layer is very sparse and limited to higher areas and tree bases. The dominant species in this stratum is *Phanopyrum gymnocarpum*; other typical species include *Boehmeria cylindrica, Saururus cernuus, Justicia ovata, Carex lupulina Hydrocotyle verticillata, Mikania scandens, Spiranthes cernua, Asclepias perennis, Commelina virginica, Leersia lenticularis,* and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G4

RANK JUSTIFICATION

DATABASE CODE CEGL007432

COMMENTS
Congaree National Park
Relatively the same overstory composition occurs in areas that are transitional from *Nyssa biflora*-dominated seeps to *Taxodium distichum - Nyssa aquatica / Fraxinus caroliniana* Forest. The types can be distinguished by their location.

REFERENCES

Liquidambar styraciflua - Quercus laurifolia / Magnolia virginiana / Carex folliculata Forest

COMMON NAME Sweetgum - Diamondleaf Oak / Sweetbay / Northern Long Sedge Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Saturated cold-deciduous forest (I.B.2.N.g.)

ALLIANCE *Liquidambar styraciflua* Saturated Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Liquidambar styraciflua - Quercus laurifolia / Magnolia virginiana / Carex folliculata Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment but likely includes the Atlantic Coastal Plain from North Carolina to Georgia.

Congaree National Park
This forest type occurs in the northwestern portion of the park southeast of the picnic area.

ENVIRONMENTAL DESCRIPTION
Globally
Liquidambar styraciflua - Quercus laurifolia / Magnolia virginiana / Carex folliculata Forest has been newly described based on data from the Congaree National Park. Global environmental conditions await description but are similar to those described below.

Congaree National Park
Liquidambar styraciflua - Quercus laurifolia / Magnolia virginiana / Carex folliculata Forest occurs on flat, low seepage areas. The soil is a very poorly drained clay loam with organic matter / peat development. It is nearly constantly saturated but rarely flooded.

MOST ABUNDANT SPECIES
Globally
The globally abundant species are currently the same as the park-specific species listed below.

Congaree National Park

Stratum	Species
Tree canopy	*Liquidambar styraciflua, Quercus laurifolia, Acer rubrum*
Tree subcanopy	*Liquidambar styraciflua, Quercus laurifolia, Magnolia virginiana, Acer rubrum*
Shrub	*Arundinaria gigantea, Magnolia virginiana, Ilex decidua, Alnus serrulata*
Herbaceous	*Carex folliculata, Carex debilis, Carex intumescens, Saururus cernuus, Panicum* sp.
Vine / liana	*Toxicodendron radicans, Vitis rotundifolia, Parthenocissus quinquefolia, Smilax laurifolia*

DIAGNOSTIC SPECIES

Globally
The globally diagnostic species are currently the same as the park-specific diagnostic species listed below.

Congaree National Park
Liquidambar styraciflua, Quercus laurifolia, Acer rubrum, Magnolia virginiana, Arundinaria gigantea, Carex folliculata, Carex intumescens

VEGETATION DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
This forest has well-developed canopy, subcanopy, shrub, herbaceous, and vine/liana strata. The canopy is dominated by *Liquidambar styraciflua, Quercus laurifolia,* and *Acer rubrum.* These species are dominant in the subcanopy along with *Magnolia virginiana* and *Carpinus caroliniana*. Other species that may be present in these strata include *Ulmus americana, Ulmus alata,* and *Salix nigra*. The shrub layer contains *Acer rubrum, Magnolia virginiana, Ilex decidua, Arundinaria gigantea,* and other species. Herbaceous dominants include *Saururus cernuus, Carex debilis, Carex intumescens, Carex folliculata, Panicum* sp., and *Hypericum* sp. Other herbaceous species of this community are *Asclepias perennis, Boehmeria cylindrica, Onoclea sensibilis, Viola affinis, Viola primulifolia, Commelina communis, Mitchella repens, Leersia lenticularis,* and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3?

RANK JUSTIFICATION

DATABASE CODE CEGL004631

COMMENTS

REFERENCES

Nyssa biflora - (Acer rubrum) / Ilex opaca / Leucothoe axillaris / Carex atlantica ssp. *capillacea* Forest

COMMON NAME	Swamp Blackgum - (Red Maple) / American Holly / Coastal Doghobble / Howe Sedge Forest
SYNONYM	
PHYSIOGNOMIC CLASS	Forest (I.)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N.)
FORMATION	Saturated cold-deciduous forest (I.B.2.N.g.)
ALLIANCE	*Nyssa biflora - Acer rubrum - (Liriodendron tulipifera)* Saturated Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
This community is currently known from big river floodplains in the Coastal Plain of South Carolina.

Congaree National Park
This community is found west of the Ranger Station along the Bluff Trail, near the end of Garrick Road within the park, and possibly other slope bases.

ENVIRONMENTAL DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
This community occurs in floodplain edges of brownwater floodplains, in situations that are very rarely flooded by alluvial waters, but which receive regular seepage from adjacent upland slopes. The hydrology is constantly saturated, and soils are acidic and organic. At Congaree, this community is associated almost exclusively with Dorovan muck soils.

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Tree canopy	*Nyssa biflora, Acer rubrum, Liquidambar styraciflua*
Subcanopy	*Ilex opaca, Acer rubrum, Liquidambar styraciflua*
Short shrub	*Leucothoe axillaris*
Herbaceous	*Carex atlantica* ssp. *capillacea, Carex bromoides* ssp. *bromoides, Woodwardia areolata, Saururus cernuus*
Nonvascular	*Sphagnum* sp.

Congaree National Park

Stratum	Species
Tree canopy	*Nyssa biflora, Acer rubrum, Liquidambar styraciflua, Quercus laurifolia*

Subcanopy	*Ilex opaca, Acer rubrum, Liquidambar styraciflua*
Short shrub	*Leucothoe axillaris*

DIAGNOSTIC SPECIES
Globally
The global concept currently is the same as the park-specific concept.

Congaree National Park
Macbridea caroliniana, Sphagnum sp., *Carex atlantica* ssp. *capillacea*

VEGETATION DESCRIPTION
Globally
The canopy is strongly dominated by *Nyssa biflora*, with some *Acer rubrum* and *Liquidambar styraciflua*. The subcanopy has abundant *Ilex opaca*, with *Acer rubrum* and *Liquidambar styraciflua*. The shrub layer is dominated by *Leucothoe axillaris*, with *Itea virginica, Clethra alnifolia, Persea palustris,* and *Arundinaria gigantea* also present. Woody vines such *as Decumaria barbara, Toxicodendron radicans,* and *Vitis* sp. are locally common. The herb layer is well-developed and is dominated by species such as *Carex atlantica* ssp. *capillacea, Carex bromoides* ssp. *bromoides,* and *Woodwardia areolata*. Other herbs include *Boehmeria cylindrica, Osmunda cinnamomea, Osmunda regalis* var. *spectabilis, Hydrocotyle verticillata* var. *verticillata,* and *Mitchella repens. Sphagnum* spp. have substantial cover.

Congaree National Park
Similar to above. Other tree species which may be present include *Quercus michauxii, Magnolia virginiana,* and *Liriodendron tulipifera*. Among the other herbaceous species which may be present are *Ludwigia palustris, Macbridea caroliniana, Carex leptalea,* and *Platanthera clavellata*.

OTHER NOTEWORTHY SPECIES The exotics *Lonicera japonica* and *Murdania keisak* may be present.

CONSERVATION RANK G2G3

RANK JUSTIFICATION The specialized habitat required for this community is scarce.

DATABASE CODE CEGL004427

COMMENTS
Globally
Few stands of this vegetation type have been studied, and rangewide information is limited.

REFERENCES

Quercus michauxii / Carpinus caroliniana - Ilex opaca / Leucothoe racemosa Forest

COMMON NAME Swamp Chestnut Oak / American Hornbeam - American Holly / Swamp Fetterbush Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B.)

PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N.)

FORMATION Saturated cold-deciduous forest (I.B.2.N.g.)

ALLIANCE *Quercus michauxii - Quercus pagoda* Saturated Forest Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Quercus michauxii / Carpinus caroliniana - Ilex opaca / Leucothoe racemosa Forest has been newly described based on data from the Congaree National Park. Global distribution needs assessment but likely includes the Atlantic Coastal Plain from Georgia to Virginia.

Congaree National Park
This community is documented from one plot in zone one and is possible on other slope bases.

ENVIRONMENTAL DESCRIPTION
Globally
The global description currently is the same as the park-specific description below.

Congaree National Park
This community occurs on floodplain edges of brownwater floodplains, in situations that are very rarely flooded by alluvial waters, but which receive regular seepage from adjacent upland slopes. The hydrology is constantly saturated, and soils are silty clay with organic matter present.

MOST ABUNDANT SPECIES
Globally
Global description is the same as the Monument-specific description below

Congaree National Park

Stratum	Species
Tree canopy	*Quercus michauxii, Liquidambar styraciflua*
Subcanopy	*Carpinus caroliniana*
Short shrub	*Leucothoe racemosa*
Herbaceous	*Chasmanthium laxum* var. *sessiliflorum*

DIAGNOSTIC SPECIES
Globally
The global concept currently is the same as the park-specific concept.

Congaree National Park
Quercus michauxii, Leucothoe racemosa, Magnolia virginiana, Smilax walteri, Osmunda cinnamomea

VEGETATION DESCRIPTION
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
Quercus michauxii / Carpinus caroliniana - Ilex opaca / Leucothoe racemosa Forest has a closed canopy and moderate to sparse subcanopy, shrub, herbaceous, and vine/liana strata. The canopy is dominated by *Quercus michauxii*. *Pinus taeda* and *Liquidambar styraciflua* are typical in the canopy. The subcanopy is dominated by *Carpinus caroliniana*. Other species that may occur in the canopy or subcanopy include *Nyssa biflora, Magnolia virginiana, Persea palustris, Quercus pagoda, Acer rubrum, Quercus laurifolia, Quercus nigra, Ulmus alata, Liriodendron tulipifera, Carya alba, Cornus foemina, Ilex decidua, Ilex opaca, Quercus phellos, Carya cordiformis,* and others. *Leucothoe racemosa* is the dominant and characteristic shrub species; other shrubs present can include *Ilex verticillata, Callicarpa americana, Viburnum dentatum, Rhododendron canescens*, and others. The herbaceous layer is sparse and is weakly dominated by *Chasmanthium laxum* var. *sessiliflorum*. Other species that are typical include *Carex bromoides, Osmunda cinnamomea, Pluchea camphorata, Carex scoparia,* and *Mitchella repens.*

OTHER NOTEWORTHY SPECIES The exotic *Lonicera japonica* may be present.

CONSERVATION RANK G2G3

RANK JUSTIFICATION The specialized habitat required for this community is scarce.

DATABASE CODE CEGL007737

COMMENTS
Globally
Few stands of this vegetation type have been studied, and rangewide information is limited.

REFERENCES

Successional Pine - Mixed Hardwood Upland Forest

COMMON NAME Successional Pine - Mixed Hardwood Upland Forest

SYNONYM

PHYSIOGNOMIC CLASS Forest (I.)

PHYSIOGNOMIC SUBCLASS Mixed evergreen-deciduous forest (I.C.)

PHYSIOGNOMIC GROUP Mixed needle-leaved evergreen - cold -deciduous forest (I.C.3.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.C.3.N.)

FORMATION Mixed needle-leaved evergreen - cold -deciduous forest (I.C.3.N.a.)

ALLIANCE No alliance yet developed

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Upland

RANGE
Globally
Successional Pine - Mixed Hardwood Upland Forest occurs throughout the southeastern United States.

Congaree National Park
This forest type occurs in various upland locations of the park.

ENVIRONMENTAL DESCRIPTION
Globally
Successional Pine - Mixed Hardwood Upland Forest occurs in disturbed habitats and most commonly develops following agriculture and timbering.

Congaree National Park
Successional Pine - Mixed Hardwood Upland Forest occurs in the uplands of the park on various soils on flatlands or moderate slopes.

MOST ABUNDANT SPECIES
Globally
Global type not yet developed.

Congaree National Park

Stratum	Species
Tree canopy	*Pinus taeda, Quercus nigra, Liquidambar styraciflua*
Tree subcanopy	various
Shrub	various, often *Vaccinium* spp. and *Gaylussacia* spp.
Herbaceous	various

DIAGNOSTIC SPECIES
Globally
Global type not yet developed.

Congaree National Park
Pinus taeda, Quercus nigra, Liquidambar styraciflua, Quercus alba, and *Nyssa sylvatica* in uplands.

VEGETATION DESCRIPTION

Globally

Global type not yet developed.

Congaree National Park

There is a relatively high level of variation in species composition within occurrences of this forest within the park. All occurrences are dominated by *Pinus taeda* and *Quercus nigra.* The successional relationships to other community types determines other species found in each occurrence. Some occurrences will have *Asimina triloba* and *Carpinus caroliniana* in the understory, with *Vaccinium elliottii* and *Callicarpa americana* in the shrub layer, and *Mitchella repens, Sanicula canadensis, Chimaphila maculata,* and others in the herbaceous layer. Other tree species in these examples include *Carya glabra, Quercus alba, Fagus grandifolia, Ilex opaca, Cornus florida,* and others. Drier occurrences will have, in addition to *Pinus taeda* and *Quercus nigra,* some combination of dry-site species that include *Quercus stellata, Nyssa sylvatica, Gaylussacia dumosa, Gaylussacia frondosa, Eupatorium rotundifolium,* and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK GM

RANK JUSTIFICATION

DATABASE CODE No database code will be assigned.

COMMENTS

Pinus palustris - Pinus taeda / Schizachyrium scoparium Woodland

COMMON NAME Longleaf Pine - Loblolly Pine / Little Bluestem Woodland

SYNONYM

PHYSIOGNOMIC CLASS Woodland (II.)

PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A.)

PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4.)

PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N.)

FORMATION (II.A.4.N.a.) Rounded-crowned temperate or subpolar needle-leaved evergreen woodland

ALLIANCE *Pinus palustris - Pinus (echinata, taeda)* Woodland Alliance

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Upland

RANGE
Globally
Pinus palustris - Pinus taeda / Schizachyrium scoparium Woodland has been newly described based on data from the Congaree National Park. Global distribution needs assessment but is likely in the Atlantic Coastal Plain from Virginia to Georgia.

Congaree National Park
This woodland type occurs at the end of Garrick Road in the northern portion of the park.

ENVIRONMENTAL DESCRIPTION
Globally
Pinus palustris - Pinus taeda / Schizachyrium scoparium Woodland has been newly described based on data from the Congaree National Park. Global environmental conditions await description but will be similar to the description below.

Congaree National Park
Pinus palustris - Pinus taeda / Schizachyrium scoparium Woodland occurs on upland flats on sandy loam soils. Both of the plots had recently burned before sampling.

MOST ABUNDANT SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park

Stratum	Species
Canopy	*Pinus taeda, Pinus palustris*
Shrub	*Diospyros virginiana, Quercus velutina, Gaylussacia frondosa, Myrica cerifera, Rhus copallina, Acer rubrum, Liquidambar styraciflua, Quercus nigra, Nyssa sylvatica*
Herbaceous	*Schizachyrium scoparium, Eupatorium rotundifolium, Chrysopsis mariana, Rhynchosia reniformis, Solidago rugosa, Solidago odora, Seymeria cassioides, Pityopsis graminifolia, Elephantopus tomentosa, Panicum dichotomum*

DIAGNOSTIC SPECIES
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
Pinus taeda, Pinus palustris, Schizachyrium scoparium

VEGETATION DESCRIPTION
Globally
Global description is the same as the Monument-specific description below.

Congaree National Park
Pinus palustris - Pinus taeda / Schizachyrium scoparium Woodland has an open to scattered to mostly closed canopy of *Pinus taeda* and/or *Pinus palustris,* a moderate to dense shrub layer dominated by dry-mesic tree species listed above, as well as more typical shrub species such as *Gaylussacia frondosa, Myrica cerifera, Viburnum dentatum, Rhus copallina,* and likely others. The herbaceous dominant is *Schizachyrium scoparium,* but other species typical of savannah vegetation are present including *Eupatorium rotundifolium, Chrysopsis mariana, Rhynchosia reniformis, Solidago rugosa, Solidago odora, Seymeria cassioides,* and *Pityopsis graminifolia.*

OTHER NOTEWORTHY SPECIES
A red-cockaded woodpecker was observed foraging in the woodland during sampling.

CONSERVATION RANK GM

RANK JUSTIFICATION
This vegetation type is the result of modification of natural vegetation; it is readily restorable by management and the restoration of ecological processes.

DATABASE CODE CEGL007738

COMMENTS
Globally

Congaree National Park
This woodland likely is maintained by fire. Attempts should be made to reconstruct a more natural fire frequency and periodicity. Canopy closure directly reflects fire frequency and periodicity, and some occurrences may have mostly closed canopies.

REFERENCES

Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Vine-Shrubland

COMMON NAME	Muscadine - Peppervine - Trumpetvine Vine-Shrubland
SYNONYM	
PHYSIOGNOMIC CLASS	Shrubland (III.)
PHYSIOGNOMIC SUBCLASS	Deciduous shrubland (III.B.)
PHYSIOGNOMIC GROUP	Cold-deciduous shrubland (III.B.2.)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (III.B.2.N.)
FORMATION	Seasonally flooded cold-deciduous shrubland (III.B.2.N.e.)
ALLIANCE	*Vitis rotundifolia - Ampelopsis arborea - Campsis radicans* Seasonally Flooded Vine-Shrubland Alliance

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Palustrine

RANGE
Globally
Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Vine-Shrubland potentially is widespread and occurs throughout the Atlantic and Gulf Coastal Plains and in the Mississippi River Alluvial Plain.

Congaree National Park
This shrubland type likely occurs throughout the park.

ENVIRONMENTAL DESCRIPTION
Globally
Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Vine-Shrubland develops following clearcut logging, blowdowns, and possibly other disturbance in wetlands.

Congaree National Park
Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Vine-Shrubland develops on seasonally and temporarily flooded sites where the canopy and subcanopy layers have been removed by disturbance. On the Monument, this disturbance is primarily wind, and many occurrences of this community likely date from Hurricane Hugo (September 1989).

MOST ABUNDANT SPECIES
Globally

Stratum	Species
Vine / liana	*Ampelopsis arborea, Campsis radicans, Toxicodendron radicans, Vitis rotundifolia*

Congaree National Park

Stratum	Species
Shrub	*Asimina triloba, Arundinaria gigantea, Ilex decidua, Ilex opaca, Sambucus canadensis, Rubus* sp.
Vine/liana	*Toxicodendron radicans, Vitis rotundifolia, Parthenocissus quinquefolia, Bignonia capreolata, Smilax rotundifolia, Berchemia scandens*

DIAGNOSTIC SPECIES
Globally
Toxicodendron radicans, Vitis rotundifolia, Parthenocissus quinquefolia, Bignonia capreolata, Smilax rotundifolia, Berchemia scandens

Congaree National Park
Toxicodendron radicans, Vitis rotundifolia, Parthenocissus quinquefolia, Bignonia capreolata, Smilax rotundifolia, Berchemia scandens

VEGETATION DESCRIPTION
Globally
Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Vine-Shrubland is vine-dominated vegetation dominated by the nominal species. Other species that may be present include *Polygonum* spp., *Cyperus* spp., *Toxicodendron radicans* ssp. *radicans, Salix* spp., and *Myrica cerifera.*

Congaree National Park
Vitis rotundifolia - Ampelopsis arborea - Campsis radicans Vine-Shrubland is vine-dominated vegetation dominated by the nominal species. Other species that are present in the vine/liana stratum include *Parthenocissus quinquefolia, Bignonia capreolata, Smilax rotundifolia, Berchemia scandens*, and likely others. There may exist a limited canopy *of Liquidambar styraciflua, Ulmus americana, Quercus* spp., *Celtis laevigata*, and others. Often the weight of the vine coverage will break the stems of woody species before they attain five meters in height. A limited shrub stratum that contains canopy species as well as *Arundinaria gigantea, Ilex decidua, Lindera benzoin*, and others may be present. *Carex abscondita, Arisaema dracontium, Eupatorium capillifolium, Boehmeria cylindrica, Cryptotaenia canadensis, Carex retroflexa, Carex lupulina*, and other species are present in the sparse herbaceous layer.

OTHER NOTEWORTHY SPECIES
The exotic vine *Lonicera japonica*, the exotic shrub *Ligustrum sinense*, and the exotic herb *Murdania keisak*, may be present in occurrences of this vine-shrubland.

CONSERVATION RANK GM

RANK JUSTIFICATION
This vegetation has been so severely modified by wind damage that it is not possible to rank it as a “natural” vegetation type. This vegetation likely is readily restorable by time or management.

DATABASE CODE CEGL004620

COMMENTS

REFERENCES

5. APPENDICES

Appendix A: Glossary of Terms for Vegetation Descriptions

GLOBAL NAME
Association name based on Latin names of dominant or characteristic plant species. The association (or plant association) is the finest level of the classification system. It is the level at which community inventory and conservation action are aimed.

COMMON NAME
Association common name; same as the GNAME, but with common names instead of scientific names for the species.

SYNONYM
A unique name by which the community may be more easily recognized or described.

PHYSIOGNOMIC CLASS
The second level of National Vegetation Classification System which is a vegetation structural classification adapted from UNESCO 1973 and Driscoll et al. 1984. This level is based on the structure of the vegetation. This is determined by the height and relative percentage of cover of the dominant life-forms: tree, shrub, dwarf-shrub, herbaceous and nonvascular.

PHYSIOGNOMIC SUBCLASS
The third level of National Vegetation Classification System. This level is determined by the predominant leaf phenology of classes defined by a tree, shrub or dwarf-shrub stratum, the persistence and growth form of herbaceous and nonvascular vegetation, and particle size of the substrate for sparse vegetation (e.g., consolidated rocks, gravel/cobble).

PHYSIOGNOMIC GROUP
The fourth level of National Vegetation Classification System. The group generally represents a grouping of vegetation units based on leaf characters, such as broad-leaf, needle-leaf, microphyllous, and xeromorphic. These units are identified and named with broadly defined macroclimatic types to provide a structural-geographic orientation, but the ecological climate terms do not define the groups *per se*.

PHYSIOGNOMIC SUBGROUP
The fifth level of National Vegetation Classification System represents a distinction between natural vegetation, including natural, semi-natural and some modified vegetation, and cultural vegetation (planted/cultivated).

FORMATION
The sixth level of National Vegetation Classification System; represents a grouping of community types that share a definite physiognomy or structure and broadly defined environmental factors, such as elevation and hydrologic regime.

ALLIANCE: Level of National Vegetation Classification System reflecting a physiognomically uniform group of plant associations sharing one or more diagnostic species (dominant, differential, indicator, or character), which (generally) are found in the uppermost stratum of the vegetation.

CLASSIFICATION CONFIDENCE LEVEL: the degree of confidence associated with the classification of the Element. This confidence is based on the quality and type of data used in the analysis as well as the extent to which the entire (or potential) range of the Element was considered
1 = STRONG
Classification based on recent field data. Information is based on Element Occurrences or other data based on occurrences that can be relocated. Classification considers information collected across the entire range or potential range of the Element. Classification may be based on quantitative or qualitative data

2 MODERATE
Classification is based on data that is of questionable quality, limited numbers of sample points, or data from a limited range.

3 WEAK
Classification is based on secondary or anecdotal information. Or a new type for which data have only been collected at a very small number of sites.

USFWS WETLAND SYSTEM:
USFWS Wetland Classification System, if applicable. (Cowardin, L.M., V. Carter, F.C. Golet, E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. United States Fish and Wildlife Service. Washington, DC.).

RANGE:
Globally
Description of the association's present range, including states of occurrence
XXXXX National Park
Description of where the community is found in the Park or environs.

ENVIRONMENTAL DESCRIPTION
Globally
Most important environmental determinants of the biological composition or structure of this association and/or its subtypes.
XXXXX National Park
Important environmental determinants of the biological composition or structure of this association within the Park or environs (if known).

MOST ABUNDANT SPECIES
Globally
Stratum Species
Most abundant species by stratum
XXXXX National Park
Stratum Species
Most abundant species by stratum, based on data and observations in the Park and environs.

DIAGNOSTIC SPECIES
Globally
Latin names of plant species not necessarily most abundant, but which are characteristic or diagnostic of the association when taken singly or in combination with other species.
XXXXX National Park
Characteristic species for the association in the Park and environs.

VEGETATION DESCRIPTION
Globally
Additional comments on vegetation attributes of the association including species richness, diversity, physiognomic structure, spatial distribution of vegetation, strata height, dominant life-forms, coverage of unvegetated substrate, and additional compositional comments.
XXXXX National Park
Vegetation description for the association as it is found in the Park and environs.

OTHER NOTEWORTHY SPECIES
High ranked species, animals, endemics, disjuncts, exotics that are found within occurrences of this association.

CONSERVATION RANK
Global Element rank which characterizes the relative rarity or endangerment of the association world-wide.

RANK JUSTIFICATION
Reason for assigning the Global Element Rank, such as number of occurrences, number of hectares, total area reduction from original, threats, degradation, etc.

DATABASECODE
Element Code from the National Community Database.

COMMENTS
Globally
Any other comments about this association not covered in the fields above such as landscape relationships, inclusion communities, etc.
XXXXX National Park
Any other comments about this association specific to the Park, including notes about possible problems in photointerpretation.

REFERENCES
Sources of information used to define or describe the association

Appendix B: Example Field Data Sheets for Congaree National Park

ZONE 1

Page 1 of 5

Congaree National Park Vegetation Inventory and Mapping Program

Field Forms

IDENTIFIERS/LOCATORS

Polygon Code F Plot Code Z-024

Provisional Community Name SWAMP TUPELO

Quad Name _____ Quad Code _____

Latitude _____ N Longitude _____ W GPS Error _____

GPS File# R0810ZOA

Survey Date 8/10/96 Surveyors Gaddy / Hu LP = 236

Directons to Plot 4M N OF O.P.

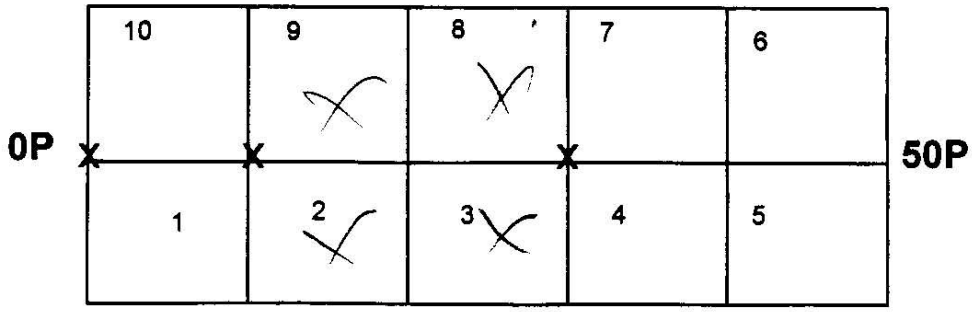
WALK CA. 4500' FROM END OF GARRICK RD TO OLD POPLAR. TAKE A 197° BEARING INTO SWAMP TUPELO BOG TO O.P.

Plot Length 50 Plot Width 20 Compass Direction from OP 60°

Film Roll # 3 Frame(s) 20-21 Location(s) OP Bearing(s) 60° Focal Length(s) 50mm

Plot Representativeness/Why Chosen

Plot Map: Fill in the template below, showing arrangememt of intensely sampled quadrats for shrubs and herbs (typically 2, 3, 8, 9). Place permanent marker at OP and indicate locations of other markers (typicaly at Xs).



Page 2 of 5

ENVIRONMENTAL DESCRIPTION 2-024

Elevation_____ Slope_____ Aspect_____

Topographic Position
- ___ summit, ridgetop
- ___ middle slope
- ___ flatlands
- ___ lower convex slope
- ___ upper convex slope
- X bottom, terrace

Landform
- ___ open water
- ___ alluvial flat
- ___ mesic slope
- X slough
- ___ levee
- ___ true upland
- X backswamp
- ___ ridge
- X seepage area
- ___ terrace

Surficial Geology
- ___ alluvial deposits
- X organic deposits
- ___ coastal plain sediments
- ___ (other-describe)

Hydrologic Regime (non-tidal)
- ___ permanently flooded
- X saturated
- ___ seasonally/temporarily saturated
- ___ semipermanently flooded
- ___ seasonally/temporarily flooded
- ___ intermittently flooded

Salinity
- X freshwater

Soil Taxon/Description

DOROVAN MUCK

Soil Texture
- ___ sand
- ___ clay loam
- ___ sandy loam
- ___ clay
- ___ loam
- X peat
- ___ silt loam
- X muck

Soil Drainage
- ___ rapidly drained
- ___ somewhat poorly drained
- X very poorly drained
- ___ well drained
- ___ poorly drained
- ___ moderately well drained

Miscellaneous

Threatened and endangered species, exotic species /

Natural and Anthropogenic Disturbance 1 ST. DEAD

Animal Use Evidence HOGS

Page 3 of 5

VEGETATION DESCRIPTION

2-024

Leaf Type
X Broad-leaved ____ Needle-leaved ____ Microphyllous
____ Graminoid ____ Forb ____ Pteridophyte

Leaf Phenology (of uppermost stratum having >10% cover)
Trees and Shrubs
____ Evergreen X Deciduous (cold-deciduous) ____ Mixed evergreen cold-deciduous
Herbs
____ Annual X Perennial

Cowardin System
____ Upland X Palustrine ____ Estuarine ____ Lacustrine ____ Riverine

Physiognomic Class
X Forest ____ Woodland ____ Sparse Woodland ____ Shrubland ____ Sparse shrubland
____ Dwarf Shrubland ____ Sparse Dwarf Shrubland ____ Herbaceous ____ Sparse Vascular Veg.

Cover classes: 1 (<10%), 2 (10-25%), 3 (25-60%), 4 (60-100%)

Strata	Height	Cover	Major Species (or Diagnostic)
T1 Emergent			
T2 Canopy	30M	4	NYSSA BIFLORA
T3 Sub-canopy	5-30M	3	MIXED
S1 Tall shrub	0.5-5M	4	MIXED
S2 Short shrub	<0.5M	2	LEUCOTHOE AXILLARIS LYONIA LUCIDA
H Herbaceous	<0.5M	2-3	MIXED
V Vine/liana	TO 20M?	2	TOXICODENDRON R. DECUMARA 3
N Non-vascular	<0.5M	1-2	SPHAGNUM SP.
E Epiphyte			

Congaree National Park Herbs Shrubs & Vines

Page 4 of 5

Team: 2 Plot: 024 Size: 50x20 Date: 8/10/96

Strata: Emergent >5m, Canopy >5m, Subcanopy >5m, Tall Shrub 0.5-5m, Short Shrub <.5m, Herbaceous, Vine, Epiphyte, Non-vascular

Cover Classes: 1: <1%, 2: 1-10%, 3: 10-25%, 4: 25-50%, 5: 50-75%, 6: 75-95%, 7: >95%

Species	C	Sp. Code	Subplot	√	Herbaceous Cover	√	Short Cover	√	Tall Cover	√	Vine Ground	Vine Aerial	dbh > 2.5
SPHAGNUM		SP.	✓	✓	4								
WOODAREO			✓	✓	2								
OSMUCINNA			✓	✓	3								
OSMUREGA			✓	✓	2								
SAURCERN			✓	✓	3								
VIOLPRIM			✓	✓	1								
POLYSETA			✓	✓	1								
HYPEVIRG			✓	✓	2								
LOBECLAV			✓	✓	1								
LUDWPALU			✓	✓	3								
CAREBROM			✓	✓	2								
CARELEPT			✓	✓	1								
LYONLUCI						✓	2	✓	2				
LEUCAXILL						✓	3	✓	5				
RUBUS SP.						✓	1						
LYONRACE								✓	2				
VACCCORY								✓	1				
MYRICERI						✓	1	✓	2				
VIBUNUDU						✓	1	✓	1				
MAGNVIRG						✓	1	✓	1				
ACERRUBR						✓	1						
TOXIRADI										✓	1	2	3,3
SMILLAUR										✓	1	2	
DECUBARB										✓	1		
SMILHISP										✓	1		
MIKASCAN								✓		✓	1		
(SP) LIVERWORT			✓	✓	2								

Congaree National Park Tree Data Sheet

Team members 2, Plot 024 Size 20X50, Date 8/10/96 page 5 of 5

1: <10%, 2: 10-25%, 3: 25-60%, 4: 60%+

COVER CLASS

Species	C	Spp Code	Sub-plot	Emergent	Canopy	Sub-canopy	<10cm	10-15cm	15-20cm	20-25cm	25-30cm	30-35cm	35-40cm	>40cm
NYSSBIFL					4									60 60 50 75
ACERRUBR						2								
LIQUSTYR						2								
ILEXOPAC						2								
PERSPALU						2								
QUERLAUR						1								
MAGNVIRG						1								
LIRITULI						2								
~~LYONRACE~~														
VACCCORY						1								
ALNUSERR						1								
MYRICERI						1								
QUERPHEL						1								

NYSSBIFL - 45, 65, 55, 45, 55

Appendix C: Plot Assignment to Vegetation Types Referenced by Database Code

CEGL007211 ***Fagus grandifolia - Quercus nigra* Forest**
Plots 1-45; 1-51; 2-17; 2-23; 2-37; 2-55; 2-56

CEGL007726 ***Liquidambar styraciflua - Quercus (nigra, phellos) - Pinus taeda / Vaccinium elliottii - Myrica cerifera* Forest**
Plots 1-64; 2-43; 2-53; 2-60

CEGL007727 ***Acer saccharinum / Leersia lenticularis - Commelina virginica* Forest**
Plot 1-54

CEGL004740 ***Celtis laevigata - Fraxinus pennsylvanica - Acer negundo - (Juglans nigra) / Asimina triloba / Carex grayi* Forest**
Plots 1-29; 1-39; 1-57

CEGL007728 ***Fraxinus pennsylvanica / Leersia lenticularis - Carex lupulina* Forest**
Plot 2-38

CEGL007736 ***Celtis laevigata - Liquidambar styraciflua - Quercus laurifolia / Carpinus caroliniana / Arundinaria gigantea / Carex lupulina* Forest**
Plots 1-03; 1-04; 1-05; 1-07; 1-08; 1-10; 1-11; 1-13; 1-14; 1-15; 1-17; 1-18; 1-19; 1-20; 1-26; 1-28; 1-29; 1-31; 1-32; 1-33; 1-35; 1-37; 1-38; 1-56; 1-58; 1-60; 2-02; 2-04; 2-05; 2-10; 2-11; 2-12; 2-20; 2-21; 2-25; 2-26; 2-27; 2-29; 2-34; 2-35; 2-39; 2-42; 2-46; 2-47; 2-48

CEGL007730 ***Platanus occidentalis - Celtis laevigata - Fraxinus pennsylvanica / Lindera benzoin - Ilex decidua / Carex retroflexa* Forest**
Plots 1-22; 1-23; 1-50; 1-52; 1-55

CEGL007731 ***Populus deltoides / Acer negundo / Boehmeria cylindrica* Forest**
Plots 1-61; 1-62

CEGL007732 ***Liquidambar styraciflua - Quercus nigra - Quercus laurifolia / Arundinaria gigantea / Carex abscondita* Forest**
Plots 1-02; 1-34; 1-40; 1-41; 1-42; 1-44; 2-07; 2-08; 2-13; 2-18; 2-32; 2-33; 2-36; 2-49

CEGL007734 ***Salix nigra - Fraxinus pennsylvanica* Forest**
Plot 1-12

CEGL007394 ***Planera aquatica* Forest**
Plots 1-49; 1-53

CEGL007801 ***Quercus lyrata - Quercus laurifolia / (Arundinaria gigantea)* Forest**
Plots 2-30; 2-31; 2-58

CEGL007403 ***Quercus phellos / Carex (intumescens, joorii) - Chasmanthium sessiliflorum / Sphagnum lescurii* Forest**
Plots 2-57; 2-59; 2-61

CEGL007719 ***Taxodium distichum - Fraxinus pennsylvanica - Quercus laurifolia / Acer rubrum / Saururus cernuus* Forest**
Plots 1-01; 1-16; 1-24; 1-25; 1-47

CEGL007432 ***Taxodium distichum - Nyssa aquatica - Nyssa biflora / Fraxinus caroliniana / Itea virginica* Forest**
Plots 2-01; 2-14; 2-19; 2-41

CEGL007431 ***Taxodium distichum - Nyssa aquatica / Fraxinus caroliniana* Forest**
Plots 1-06; 1-09; 1-27; 1-30; 1-46; 1-59; 2-06; 2-09; 2-28; 2-40; 2-50; 2-51

CEGL004631 ***Liquidambar styraciflua - Quercus laurifolia / Magnolia virginiana / Carex folliculata* Forest**
Plot 2-15

CEGL004427 ***Nyssa biflora - (Acer rubrum) / Ilex opaca / Leucothoe axillaris / Carex atlantica*** ssp***. capillacea* Forest**
Plots 1-36; 2-03; 2-24; 2-44; 2-45; 2-54

CEGL007737 ***Quercus michauxii / Carpinus caroliniana - Ilex opaca / Leucothoe racemosa* Forest**
Plot 1-63

CEGL007738 ***Pinus palustris - Pinus taeda / Schizachyrium scoparium* Woodland**
Plots 2-22; 2-62

CEGL004620 ***Vitis rotundifolia - Ampelopsis arborea - Campsis radicans* Vine-Shrubland**
Plot 1-21

Upland pine - mixed hardwood type
Plots 1-44; 2-52

* Plots 1-43 and 2-16 were not classified because plots were placed in wetland/upland transition zones and, therefore, do not represent community units.