14800

Gulf and Atlantic Coastal Plain Swamp Systems

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Woody Wetland

Map Zones

46, 56, 58, 60, 64, 65, 66

Geographic Range

This system group occurs along the Gulf and Atlantic Coastal Plain from MA to TX, extending up the Mississippi River to the southernmost part of IL (NatureServe 2006).

The geographic range of three aggregate systems that compose this BpS for the southeast Coastal Plain are indicated below:

• CES203.240 -- Atlantic Coastal Plain Southern Tidal Wooded Swamp -- is found from southeastern VA southward to northern FL along the Atlantic Coast (NatureServe 2006).

• CES203.384 -- Southern Coastal Plain Nonriverine Basin Swamp -- occurs in the East Gulf Coastal Plain of AL, FL, GA, MS and SC (NatureServe 2006).

• CES203.501 -- Southern Coastal Plain Hydric Hammock -- occurs in FL, GA and rarely in southern AL (NatureServe 2006).

Biophysical Site Description

This system group consists of poorly drained, organic or mineral soil flats and basins of the Atlantic and Gulf Coastal Plain. These areas are saturated by rainfall and seasonal high water table. Most are not associated with river floodplains, although one component system is a tidal swamp. (NatureServe 2006).

• CES203.240 -- Atlantic Coastal Plain Southern Tidal Wooded Swamp -- Occurs in lower reaches of river floodplains and along estuary shorelines, in places regularly or irregularly flooded by lunar or wind tides. The water has little salt content, due to distance from the ocean and/or strong freshwater input. Soils may be mineral or organic. Soils are generally permanently saturated even when the tide is low. The transition to flood dominance rather than tidal dominance of hydrology may be very gradual. This system is distinguished from adjacent system by the combination of tidal flooding and tree-dominated vegetation (NatureServe 2006).

• CES203.501 -- Southern Coastal Plain Hydric Hammock -- This system occupies flat lowlands along the southern and outermost portions of the Coastal Plain of the southeastern United States, usually over limestone substrates. In FL examples of this system are often found adjacent to the floodplain of spring-fed rivers with relatively constant flows. In some areas, such as the Big Bend region, they occupy large areas of broad, shallow, mucky or seepy wetlands but generally do not receive overbank flooding (A. Johnson pers. comm.). In AL, this system is apparently confined to floodplains of the Mobile-Tensaw (A. Schotz pers. comm.), where examples are topographically higher than the surrounding floodplains (NatureServe 2006).

• CES203.384 -- Southern Coastal Plain Nonriverine Basin Swamp -- This system occupies large, seasonally inundated basins with peaty substrates. These basins are nonriverine and do not receive overbank flooding (NatureServe 2006).

Vegetation Description

Dominant tree species vary with geography. South of VA, *Taxodium distichum* and *Nyssa* spp. are the most characteristic trees in many of these swamps. In the North Atlantic coastal plain, *Chamaecyparis thyoides*, *Acer rubrum*, *Liquidambar styraciflua*, *Nyssa sylvatica*, *Quercus phellos*, and *Fraxinus pennsylvanica* are characteristic dominants. Tidal wooded swamps from VA to FL are dominated by *Taxodium*, *Nyssa*, or *Fraxinus*. In the Mississippi River Valley, along with *Taxodium distichum* and *Nyssa* spp., characteristic trees include *Acer rubrum*, *Carya aquatica*, *Fraxinus profunda*, *Gleditsia aquatica*, *Planera aquatica*, *Quercus lyrata*, *Quercus palustris*, and *Salix nigra*. At the southern edge of this group's range, hydric hammocks in northern to central FL are characterized by *Chamaecyparis thyoides* and *Sabal palmetto*. Important wetland oaks thorough much of the range include *Quercus michauxii*, *Quercus pagoda*, *Quercus phellos*, and *Quercus laurifolia* (NatureServe 2006).

Emergent *Pinus elliottii* may also be present in Southern Coastal Plain Nonriverine Basin Swamp examples which also include characteristic shrubs like *Cliftonia monophylla*, *Cyrilla racemiflora*, *Lyonia lucida*, and *Smilax laurifolia* (NatureServe 2006).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| TADI2 | *Taxodium distichum* | Bald cypress |
| NYBI | *Nyssa biflora* | Swamp tupelo |
| FRPE | *Fraxinus pennsylvanica* | Green ash |
| FRCA3 | *Fraxinus caroliniana* | Carolina ash |
| ACRU | *Acer rubrum* | Red maple |
| LIST2 | *Liquidambar styraciflua* | Sweetgum |
| QUPH | *Quercus phellos* | Willow oak |
| SAPA | *Sabal palmetto* | Cabbage palmetto |

Species names are from the NRCS PLANTS database. Check species codes at http://plants.usda.gov.

Disturbance Description

Natural fire is not frequent in these systems, but may sometimes be important in determining the boundary or margins of this BpS (NatureServe 2006).

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement |  |  |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 221 | 100 |  |  |
| All Fires | 221 | 100 |  |  |

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Considerations

None

Adjacency or Identification Concerns

Standard Ecological Systems that are covered within this BpS as indicated by NatureServe (2006):

• Atlantic Coastal Plain Northern Basin Peat Swamp (CES203.522)

• Atlantic Coastal Plain Northern Basin Swamp and Wet Hardwood Forest (CES203.520)

• Atlantic Coastal Plain Southern Tidal Wooded Swamp (CES203.240)

• East Gulf Coastal Plain Northern Seepage Swamp (CES203.554)

• Mississippi River Bottomland Depression (CES203.490)

• Southern Coastal Plain Hydric Hammock (CES203.501)

• Southern Coastal Plain Nonriverine Basin Swamp (CES203.384)

• West Gulf Coastal Plain Nonriverine Wet Hardwood Flatwoods (CES203.548)

Note that for purposes of the development of the model description and VDDT model, systems relevant to the Southeast Coastal Plain (CES203.240, CES203.501, CES203.384) were only included. This model should be reviewed by mapzones outside of the southeast coastal plain.

CES203.240 -- Atlantic Coastal Plain Southern Tidal Wooded Swamp -- In most rivers, this system grades upstream to floodplain systems and downstream to fresh or salt marsh systems. In the Embayed Region of North Carolina and Virginia, it often grades to Atlantic Coastal Plain Nonriverine Swamp and Wet Hardwood Forest (CES203.304) inland within peat-filled drowned river valleys (NatureServe 2006).

CES203.384 -- Southern Coastal Plain Nonriverine Basin Swamp -- Southern Coastal Plain Hydric Hammock (CES203.501) may occur upslope from CES203.384. However, examples of CES203.384 differ from Southern Coastal Plain Hydric Hammock (CES203.501) by the absence of oaks (especially swamp laurel oak and live oak) and other less flood-tolerant species such as sweetgum (A. Johnson pers. comm.). In addition, this type is found in basins with peaty substrates as opposed to limestone-influenced substrates (NatureServe 2006).

Issues or Problems

Current Conditions

Comments

These aggregated BpS types that are built upon multiple ecological systems are going to require numerous revisions from appropriate model zones. This model is described and the VDDT model developed largely with the Southeast Coastal Plain mapzones in mind (46, 55, 56 and 58). The descriptive information was built largely from NatureServe (2006) descriptions for the BpS as an aggregate (CES203.636) and also borrowing information from NatureServe systems CES 203.240 - Atlantic Coastal Plain Southern Tidal Wooded Swamp, CES203.501 - Southern coastal Plain Hydric Hammock, and CES 203.384 - Southern Coastal Plain Nonriverine Basin Swamp. The model was built and reviewed at a meeting held in Durham, NC on 01/23/2007.

Succession Classes

**Mapping Rules**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Upper Layer Lifeform** | **Height (m)** | **Canopy Cover (%)** | | | | | | | | | |
| **0-10** | **11-20** | **21-30** | **31-40** | **41 - 50** | **51-60** | **61-70** | **71-80** | **81-90** | **91-100** |
| Herb | 0-0.5 | A | A | A | A | A | A | A | A | A | A |
| Herb | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Herb | >1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0-0.5 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | >3.0 | A | A | A | A | A | A | A | A | A | A |
| Tree | 0-5 | B | B | B | B | B | B | B | B | B | B |
| Tree | 5-10 | B | B | B | B | B | B | B | B | B | B |
| Tree | 10-25 | C | C | C | C | C | C | C | C | C | C |
| Tree | 25-50 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

Class A 9 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Mid-Upper |
| SMILA2 | Smilax | Greenbrier | Lower |
| SACE | Saururus cernuus | Lizard's tail | Lower |
| COVI3 | Commelina virginica | Virginia dayflower | Lower |

Description

This is a canopy gap stage, dominated by herbs and young tree seedlings. Saplings of the canopy species already present and could be five meters after 10yrs. Other indicator species include (FRCA3) *Fraxinus caroliniana* (carolina ash); (BOCY) *Boehmeria cylindrical* (smallspike false nettle); and (POLYG4) *Polygonum* (knotweed).

*Maximum Tree Size Class*  
None

Class B 17 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Upper |
| NYBI | Nyssa biflora | Swamp tupelo | Mid-Upper |
| QUPH | Quercus phellos | Willow oak | Mid-Upper |
| ACRU | Acer rubrum | Red maple | Mid-Upper |

Description

Following the tree gap phase, trees and shrubs begin to dominate. Fire at this stage would only play a role at the margins/edges of the system. The indicator species listed also includes multiple *Quercus* spp., *Ligustrum amurense*, *Fraxinus pennsylvanica*, and *Fraxinus caroliniana*. If trying to capture the indicator species at this stage, just too broad a list for the coastal plain itself let alone trying to describe beyond the four mapzones within the southeast coastal plain.

*Maximum Tree Size Class*  
Medium 9-21"DBH

Class C 74 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Upper |
| NYBI | Nyssa biflora | Swamp tupelo | Mid-Upper |
| QUPH | Quercus phellos | Willow oak | Mid-Upper |
| ACRU | Acer rubrum | Red maple | Mid-Upper |

Description

More distinct stratification of canopy with *Taxodium distichum* emergent over a layer of *Nyssa biflora* or *N. aquatica*; and *Acer rubrum* (in wetter versions of this aggregated system). This stage simply has larger trees. Smaller trees under the red maple include *Fraxinus caroliniana* and shrubs like *Itea virginica* and *Leucothoe racimosa*. Herbs like lizard’s tail are also included.

*Maximum Tree Size Class*  
Large 21-33" DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 10 |
| Mid1:CLS | 11 | Late1:CLS | 30 |
| Late1:CLS | 31 | Late1:CLS | 999 |

Probabilistic Transitions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Disturbance Type** | **Disturbance occurs In** | **Moves vegetation to** | **Disturbance Probability** | **Return Interval (yrs)** | **Reset Age to New Class Start Age After Disturbance?** | **Years Since Last Disturbance** |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.005 | 200 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.005 | 200 | No | 0 |
| Wind or Weather or Stress | Late1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |

References

NatureServe. 2006. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

Southeastern Ecology Working Group of NatureServe. No date. International Ecological Classification Standard: International Vegetation Classification. Terrestrial Vegetation. NatureServe, Durham, NC.