14800

Gulf and Atlantic Coastal Plain Swamp Systems

BpS Model/Description Version: Aug. 2020

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Milo Pyne | milo\_pyne@NatureServe.org | Chris Szell | cszell@tnc.org |
| Mike Schafale | michael.schafale@ncmail.net |  |  |
| Cecil Frost | cecil.frost@earthlink.net |  |  |

Vegetation Type

Woody Wetland

Map Zones

47

Geographic Range

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

MZ47 is at the edge of the range of this systems aggregate. Only one of the component systems is found in this map zone: CES203.554 East Gulf Coastal Plain Northern Seepage Swamp is found in the East Gulf Coastal Plain portions of western KY and TN, northern MI, northwestern and central AL, and southern IL (NatureServe 2007).

Biophysical Site Description

This system group consists of poorly drained, organic or mineral soil flats and basins of the Atlantic and Gulf Coastal Plain. The component system that occurs in MZ47 consists of forested wetlands in acidic, seepage-influenced habitats. These are mostly deciduous forests (and less commonly herbaceous communities) generally found at the base of slopes or other habitats where seepage flow is concentrated. Resulting moisture conditions are saturated or even inundated. (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 Florida 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 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*. Important wetland oaks thorough much of the range include *Quercus michauxii*, *Quercus pagoda*, *Quercus phellos*, and *Quercus laurifolia* (NatureServe 2006).

East Gulf Coastal Plain Northern Seepage Swamp is characterized by *Nyssa sylvatica*, *Nyssa biflora*, and *Acer rubrum*. It includes the following component associations: *Carex crinita* - *Osmunda* spp. / *Sphagnum* spp., herbaceous vegetation, *Acer rubrum* var. *trilobum* - *Nyssa sylvatica* / *Rhododendron canescens* - *Viburnum nudum* var. *nudum* / *Woodwardia areolata* forest, and *Nyssa biflora* - *Liquidambar styraciflua* / *Magnolia virginiana* / *Hamamelis virginiana* - *Viburnum nudum* forest, *Magnolia virginiana* - *Nyssa biflora* / *Oxydendrum arboreum* / *Viburnum nudum* var. *nudum* forest (NatureServe 2007).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| NYSY | *Nyssa sylvatica* | Blackgum |
| NYBI | *Nyssa biflora* | Swamp tupelo |
| ACRU | *Acer rubrum* | Red maple |
| FRCA3 | *Fraxinus caroliniana* | Carolina ash |
| FRPE | *Fraxinus pennsylvanica* | Green ash |
| LIST2 | *Liquidambar styraciflua* | Sweetgum |
| QUPH | *Quercus phellos* | Willow oak |
| MAVI2 | *Magnolia virginiana* | Sweetbay |

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) | 219 | 100 |  |  |
| All Fires | 219 | 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 Description

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 map zones outside of the southeast coastal plain.

Issues or Problems

Native Uncharacteristic Conditions

Comments

This model was created for the Southeast Coastal Plain MZ and adopted with only minor revision for MZ47 on the advice of Milo Pyne. Only minor revisions were made because it is assumed that this model will trickle into MZ47 from the true coastal plain zones, and thus does not warrant additional modeling.

Notes from SE model:

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 SE Coastal Plain map zones 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 VDDT 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. Other indicator species include (FRCA3) *Fraxinus caroliniana* (carolina ash); (BOCY) *Boehmeria cylindrical* (smallspike false nettle); (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

After a few years 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. Windthrow can set the system back. The indicator species listed also include 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 map zones 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.

Windthrow can set the system back.

*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. USA. Data current as of 06 October 2007.

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