14800

Gulf and Atlantic Coastal Plain Swamp Systems

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
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|  |  |  |  |

Vegetation Type

Woody Wetland

Map Zones

45, 98

Geographic Range

This BpS occurs from east TX to Virginia within the Coastal Plain and lower Piedmont and up the Mississippi River basin to southern IL.

Biophysical Site Description

The landscape includes sloughs and abandoned channels which are flooded most or all of a given year as well as backswamps and depressions within the flood plain which are frequently flooded and where soils remain saturated or with water table close to the surface much of the year.

Vegetation Description

The vegetation is generally closed canopy forests ranging from standing water to floodplain depressions. The canopy is normally dominated by cypress (*Taxodium* spp.) and tupelo (N*yssa aquatica*) under the wettest conditions and overcup oak (*Quercus lyrata*) or maple (*Acer* spp.) and ash (*Fraxinus* spp.) on the drier end.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| TADI2 | *Taxodium distichum* | Bald cypress |
| TAAS | *Taxodium ascendens* | Pond cypress |
| NYAQ2 | *Nyssa aquatica* | Water tupelo |
| QULY | *Quercus lyrata* | Overcup oak |
| ACRU | *Acer rubrum* | Red maple |
| FRPE | *Fraxinus pennsylvanica* | Green ash |
| SANI | *Salix nigra* | Black willow |

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

Disturbance Description

Weather, primarily wind and flooding, is the dominant disturbance agent in this type and includes wind damage from hurricanes and tornadoes as well as scouring, changing stream courses, and inundated young stands. Because of its moisture regime, fire is rare, occurring only during extreme drought conditions. In addition, replacement fire requires not only extended drought but accumulated fuel by drift or deep "duff" development (may be normally submerged). Insect outbreaks would occur infrequently in closed canopy states.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 993 | 41 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 681 | 59 |  |  |
| All Fires | 404 | 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

The landscape has adequate coverage to encompass natural variation. At either end of the spectrum, large swamps may cover millions of acres (Atchafalaya) while individual oxbows may be less than one hundred.

Adjacency or Identification Concerns

Issues or Problems

Contains long-lived species with very long fire return interval and, often, uncommon conditions required to complete life history.

Native Uncharacteristic Conditions

Comments

For MZs 45 and 98 this model was developed from the Rapid Assessment model R5OFPrf -- Southern Floodplain - Rare Fire by Bruce Davenport and Kevin Robertson and reviewed by Douglas Zollner and Maria Melnechuk. The model description was only slightly modified so no change in modelership was made. Douglas Zollner reviewed the model again for MZ45 and MZ98.

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 | A | A | A | A | A | A | A | A | A | A |
| Tree | 5-10 | C | C | C | C | C | C | C | B | B | B |
| Tree | 10-25 | C | C | C | C | C | C | C | B | B | B |
| Tree | 25-50 | C | C | C | C | C | C | C | D | D | D |
| Tree | >50 | C | C | C | C | C | C | C | D | D | D |

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 8 Early Development 1 - All Structures

DBH

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Upper |
| NYAQ2 | Nyssa aquatica | Water tupelo | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| FRPE | Fraxinus pennsylvanica | Green ash | Upper |

Description

Seedlings, saplings and some sprouts on drier sites, in openings created by flood scouring, changed stream courses, wind damage, or, infrequently, fire. Primarily composed of major overstory species with transient herbaceous plants and shrub, small trees and woody vines; the latter, woody group occurring more often on drier sites. Rare weather events and replacement fires occur.

*Maximum Tree Size Class*  
Sapling >4.5ft; <5" DBH

Class B 29 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Upper |
| NYAQ2 | Nyssa aquatica | Water tupelo | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| FRPE | Fraxinus pennsylvanica | Green ash | Upper |

Description

Class is dominated by young to early mature canopy species with a few obligate midstory species on less frequently flooded sites. Longer hydroperiod sites at least seasonally flooded and typically display a single, closed canopy layer. Surface fire maintains the class. Replacement events include rare insect/disease events, replacement fires and severe weather events.

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

Class C 19 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Upper |
| NYAQ2 | Nyssa aquatica | Water tupelo | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| FRPE | Fraxinus pennsylvanica | Green ash | Upper |

Description

Early to, more often, late mature open canopy in long-term flooded conditions. Created during wet periods that prevent replacement of mortality. Replacement events include rare insect/disease events, replacement fires, and severe weather events.

*Maximum Tree Size Class*  
Very Large >33" DBH

Class D 44 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| TADI2 | Taxodium distichum | Bald cypress | Upper |
| NYAQ2 | Nyssa aquatica | Water tupelo | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| FRPE | Fraxinus pennsylvanica | Green ash | Upper |

Description

Early to late mature closed canopy generally occurring as a single overstory layer, particularly on wetter sites. Drier sites will contain some midstory and young overstory species. Surface fire maintains this class. Replacement events include rare insect/disease events and replacement fires. Severe weather events can replace this class or more commonly will open the canopy.

*Maximum Tree Size Class*  
Very Large >33" DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 19 |
| Mid1:CLS | 20 | Late1:CLS | 99 |
| Late1:OPN | 100 | Late1:OPN | 999 |
| Late1:CLS | 100 | 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** |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Insects or Disease | Mid1:CLS | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.002 | 500 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Insects or Disease | Late1:OPN | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Insects or Disease | Late1:CLS | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.002 | 500 | No | 0 |
| Wind or Weather or Stress | Late1:CLS | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.003 | 333 | Yes | 0 |

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