15060

West Gulf Coastal Plain Nonriverine Wet Hardwood Flatwoods

BpS Model/Description Version: Aug. 2020

Update: 6/7/2018

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|  |  |  |  |

Vegetation Type

Woody Wetland

Map Zones

37, 44

Geographic Range

This system occurs in portions of Arkansas, Louisiana, Texas, Oklahoma (map zones [MZ]s 37, 44, 45, and 98)

Biophysical Site Description

This system represents predominately wet hardwood flatwoods of the West Gulf Coastal Plain. Examples may be somewhat more common in the inland portions of the region but are also found in the outer coastal plain as well. These areas are usually found on Pleistocene high terraces along rivers that do not have overbank flooding. Soils are fine-textured and hardpans may be present in the subsurface. The limited permeability of these soils contributes to perched water tables during fairly substantial portions of the year (when precipitation is greatest and evapotranspiration is lowest). Saturation occurs not from overbank flooding but typically whenever precipitation events occur. The local landscape is often a complex of ridges and swales, usually occurring in close proximity.

Vegetation Description

There is vegetation variability related to soil texture and moisture and disturbance history. Most examples support hardwood forests or swamps, which are often heavily oak-dominated. Important species are tolerant of inundation. They include willow oak (*Quercus phellos*) and laurel oak (*Q. laurifolia*) with sparse coverage of wetland herbs such as southern waxy sedge (*Carex glaucoudia*). Some swales support unusual pockets of Carolina ash (*Fraxinus caroliniana*) and hawthorns (*Crataegus* spp.).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| QUPH | *Quercus phellos* | Willow oak |
| QULA3 | *Quercus laurifolia* | Laurel oak |
| QULY | *Quercus lyrata* | Overcup oak |
| QUNI | *Quercus nigra* | Water oak |
| CAHY3 | *Carex hyalinolepis* | Shoreline sedge |
| SANI | *Salix nigra* | Black willow |
| CEOC2 | *Cephalanthus occidentalis* | Common buttonbush |

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

Disturbance Description

The primary disturbances are flooding (beaver-caused) and windthrow. Low-intensity fires would occur when adjacent systems burned. Mixed and surface fire are both low intensity. However since dominant tree species are so fire sensitive, fires can cause root-death and open the canopy. Rare replacement fire would also occur following a prolonged drought.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 310 | 9 |  |  |
| Moderate (Mixed) | 130 | 21 |  |  |
| Low (Surface) | 38 | 70 |  |  |
| All Fires | 27 | 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

Small or large patch.

Adjacency or Identification Concerns

Spatially related to West Gulf Coastal Plain Dry Pine-Hardwood Flatwoods (CES203.278) and West Gulf Coastal Plain Herbaceous Flatwoods Pond (CES203.547)

Issues or Problems

Native Uncharacteristic Conditions

Comments

This model was adopted for MZ44 without changes from MZ37 because the main distribution of this system is not in MZ44. No changes were made to the description, the model, or modelership. For MZ37, this model was reviewed by Gypsy Gooding (Gypsy\_Gooding@fws.gov). No review was obtained for MZ44.

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

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 3 Early Development 1 - All Structures

DBH

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUPH | Quercus phellos | Willow oak | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| QULA3 | Quercus laurifolia | Laurel oak | Upper |
| CAHY3 | Carex hyalinolepis | Shoreline sedge | Lower |

Description

Surface fire maintains this class. Buttonbush (*Cephalanthus occidentalis*), swamp privet (*Forestiera* spp.), sweetgum (*Liquidambar styraciflua*), delta post oak (*Q. similis*), water oak (*Quercus nigra*), willow oak, laurel oak, overcup oak (*Quercus lyrata*), and palmetto (*Sabal minor*) are found in the southern part of the zone and grade out to the north into several wetland herbaceous species. The predominant fuel source is river sedge (*Carex hy*).

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

Class B 15 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUPH | Quercus phellos | Willow oak | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| QULA3 | Quercus laurifolia | Laurel oak | Upper |

Description

Mixed fire maintains this class but shifts the canopy to the open end of the range. The canopy will fill in quickly. Herbaceous cover declines and the understory is dominated by leaf litter.

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

Class C 51 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUPH | Quercus phellos | Willow oak | Upper |
| QULY | Quercus lyrata | Overcup oak | Upper |
| QULA3 | Quercus laurifolia | Laurel oak | Upper |

Description

Surface fire maintains this class. Replacement fire rarely occurs. Mixed fire and wind or ice events open the canopy. Palmetto will develop in this class in portions of the range.

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

Class D 31 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QULY | Quercus lyrata | Overcup oak | Upper |
| QULA3 | Quercus laurifolia | Laurel oak | Upper |
| CAHY3 | Carex hyalinolepis | Shoreline sedge | Lower |

Description

As this class matures and declines, the canopy opens and sedges return to the understory. River sedge again provides the fuel source to carry a fire. Surface fire and mixed fire maintain this class.

*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 | 65 |
| Late1:CLS | 66 | Late1:CLS | 999 |
| Late1:OPN | 66 | Late1:OPN | 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** |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Early1:ALL | Early1:ALL | 0.04 | 25 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.003 | 333 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:CLS | 0.007 | 143 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.003 | 333 | Yes | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.01 | 100 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 0.02 | 50 | Yes | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.04 | 25 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.003 | 333 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.007 | 143 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.007 | 143 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.025 | 40 | No | 0 |

References

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

NatureServe. 2006. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 18 July 2006.