14680

Atlantic Coastal Plain Streamhead Seepage Swamp-Pocosin-Baygall

BpS Model/Description Version: Aug. 2020

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| **Modelers** |  | **Reviewers** |  |
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Vegetation Type

Woody Wetland

Map Zones

60

Geographic Range

This system encompasses seepage-fed wetlands in dissected Coastal Plain landscapes, from southeastern VA to northeastern FL. Primarily in the Fall-line Sandhills region of the Atlantic Coastal Plain; rarely in dissected terrain in the Outer Coastal Plain (NatureServe, 2006).

Biophysical Site Description

This system occurs in dissected Coastal Plain terrain on sites saturated by seepage of shallow groundwater. Seasonal to permanent saturation combined with fire of only moderate to low frequency and woody vegetation are the unifying characteristics of this system. A stream is often present draining the site, but it is small, and overbank flooding is a negligible influence. Most examples are in bottoms of shallow to steep ravines, but some are on sideslopes or flats at the base of slopes. Most examples are in sandy areas overlying impermeable clays, where rapid soil drainage in the surrounding landscape supplies the seepage. Soils within the system itself are generally mucky sands or clay, or deeper organic soils (NatureServe, 2006).

Vegetation Description

Vegetation is dominated by woody plants. An open to closed tree canopy is usually present, and consists of a mixture of acid-tolerant wetland trees such as *Nyssa biflora*, *Acer rubrum*, *Pinus serotina*, *Magnolia virginiana*, *Liriodendron tulipifera*, and *Chamaecyparis thyoides*. Understory small trees or tall shrubs often include *Symplocos tinctorial* and *Persea palustris*. There is generally a dense shrub layer that is dominated by species shared with pocosins or baygalls, such as *Cyrilla racemiflora*, *Leucothoe axillaris*, *Lyonia lucida*, *Clethra alnifolia*, *Ilex coriacea*, *I. glabra*, and *Arundinaria gigantea* ssp. *tecta*, but includes some species of other saturated wetlands such as *Toxicodendron vernix*, *Morella caroliniensis*, and *Viburnum nudum*. *Smilax laurifolia* may be abundant. The herb layer, if well-developed at all, generally consists of large wetland ferns, such as *Osmunda cinnamomea*, *Osmunda regalis*, *Woodwardia virginica*, and *Woodwardia areolata*, and *Carex* spp. (such as *C. lonchocarpa*, *C. atlantica*, *C. venusta*, *C. collinsii*). Laterally, in the ecotone between the streamhead community and the drier upland, is a narrow to broad zone of low-moderate shrubs and herbs dominated by *Ilex glabra*, *Lyonia ligustrina*, *Gaylussacia frondosa*, *Amelanchier obovata*, and *Vaccinium tenellum*, with species of *Rhexia*, *Polygala*, *Ctenium*, *Calamovilfa*, *Chasmanthium*, *Sarracenia*, *Rhynchospora*, and others. (NatureServe, 2006).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PISE | *Pinus serotina* | Pond pine |
| NYBI | *Nyssa biflora* | Swamp tupelo |
| MAVI2 | *Magnolia virginiana* | Sweetbay |
| CHTH2 | *Chamaecyparis thyoides* | Atlantic white cedar |
| LYLU3 | *Lyonia lucida* | Fetterbush lyonia |
| ARGIT8 | *Arundinaria gigantea ssp. tecta* | Switchcane |

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

Disturbance Description

Fire generally would spread into this BpS from adjacent more fire prone landscapes. These fires can ignite and burn the shrub layer and then the canopy, resulting in mixed or replacement fires and change of classes. Surface fires are generally more common, but do not cause change of class. This system occurs in landscapes that had frequent fire under natural conditions, but the wetness sometimes limited fire spread, creating a less frequent fire-return interval. This scenario is true downstream, but the head-end and ecotones of these communities usually burn with the same frequency as surrounding pinelands, usually creating a permanent low shrub/herb zone. Natural fire intensity varies among associations, with some readily producing intense fire when they burn, while others probably experience only low-intensity fires because of low flammability. In extreme cases, such as annual burns or hyper-annual burns, the community may be transformed into a dense canebrake with scattered pond pines. (NatureServe, 2006). There is generally less frequent fire where this BpS occurs in Southeastern Virginia than on the coastal plain in the Carolinas and GA.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 97 | 8 |  |  |
| Moderate (Mixed) | 27 | 30 |  |  |
| Low (Surface) | 13 | 62 |  |  |
| All Fires | 8 | 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 fires that burn through this habitat generally originate in adjacent upland (i.e. longleaf pine dominated) ecological systems and spread through this habitat. These fires may only burn patches <10ac in this riparian corridor, but will burn 100s or 1,000s of acres of uplands (in the pre-European settlement landscape).

Adjacency or Identification Concerns

Adjacent Ecological Systems:

•Atlantic Coastal Plain Blackwater Stream Floodplain Forest (CES203.247)

•Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland (CES203.254)

•Atlantic Coastal Plain Sandhill Seep (CES203.253)

Most frequently associated with Atlantic Coastal Plain Fall-line Sandhills Longleaf Pine Woodland (CES203.254) in the northern part of the range. This ecological system is potentially associated with a variety of upland systems in the southern part of the range. Many examples will grade downstream to small or large floodplain systems (NatureServe 2006).

Issues or Problems

This BpS or ecological system represents many different associations, with different dominant species.

Native Uncharacteristic Conditions

Comments

Suggested reviewers-Margit Bucher (TNC NCFO), Michael Schafale (NC NHP) and Bruce Sorrie (NC NHP).

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 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Herb | 0.5-1.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Herb | >1.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| 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 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 0-5 | C | C | C | C | C | C | B | B | B | B |
| Tree | 5-10 | C | C | C | C | C | C | B | B | B | B |
| Tree | 10-25 | D | D | D | D | D | D | E | E | E | E |
| 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 8 Early Development 1 - All Structures

DBH

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| LYLU3 | Lyonia lucida | Fetterbush lyonia | Low-Mid |
| ARGIT8 | Arundinaria gigantea ssp. tecta | Switchcane | Low-Mid |
| PISE | Pinus serotina | Pond pine | Low-Mid |

Description

This is representative of tree dominated areas just burned in replacement fire or areas reburned in mixed fire. Mixed fires occur, resulting in no transitions.

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

Class B 16 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PISE | Pinus serotina | Pond pine | Mid-Upper |
| MAVI2 | Magnolia virginiana | Sweetbay | Mid-Upper |
| NYBI | Nyssa biflora | Swamp tupelo | Mid-Upper |

Description

Medium to dense young stands which are successional after replacement fire. These stands may be dominated by pond pine (*Pinus serotina*) or by hardwoods such as Swamp Black Gum (*Nyssa biflora*) or Sweetbay Magnolia (*Magnolia virginiana*).

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

Class C 13 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PISE | Pinus serotina | Pond pine | Mid-Upper |
| MAVI2 | Magnolia virginiana | Sweetbay | Mid-Upper |

Description

Open young stands which have been thinned by mixed fire. These stands can also result from rare wind/weather/stress of dense old stands.

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

Class D 52 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PISE | Pinus serotina | Pond pine | Upper |
| MAVI2 | Magnolia virginiana | Sweetbay | Upper |

Description

Open older stands which have been thinned by mixed fire. Typically dominated by Pond Pine (*Pinus serotina*) which releases the seeds from its cones after high intensity fire (i.e. replacement or mixed fire with crown scorch).

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

Class E 11 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| NYBI | Nyssa biflora | Swamp tupelo | Upper |
| MAVI2 | Magnolia virginiana | Sweetbay | Upper |

Description

Closed older stands which have not burned much, but may burn with surface fire and not change class. Rare wind/weather/stress of these dense old stands will open them up.

*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 | 8 |
| Mid1:OPN | 9 | Late1:OPN | 34 |
| Mid1:CLS | 9 | Late1:CLS | 34 |
| Late1:OPN | 35 | Late1:OPN | 999 |
| Late1:CLS | 35 | 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** |
| Mixed Fire | Early1:ALL | Early1:ALL | 0.0285 | 35 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.0111 | 90 | Yes | 0 |
| Mixed Fire | Mid1:OPN | Mid1:OPN | 0.04 | 25 | No | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.1 | 10 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.0111 | 90 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.03 | 33 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.04 | 25 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 1 | 1 | Yes | 25 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.0111 | 90 | Yes | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.04 | 25 | No | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.1 | 10 | No | 0 |
| Wind or Weather or Stress | Late1:CLS | Mid1:OPN | 0.007 | 143 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.0111 | 90 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.0285 | 35 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.03 | 33 | No | 0 |

References

Comer, P., D. Faber-Langendoen, R. Evans, S. Gawler, C. Josse, G. Kittel, S. Menard, M. Pyne, M. Reid, K. Schulz, K. Snow and J. Teague. 2003. Ecological systems of the United States: A working classification of U.S. terrestrial systems. NatureServe, Arlington, VA.

FNAI [Florida Natural Areas Inventory]. 1990. Guide to the natural communities of Florida. Florida Natural Areas Inventory and Florida Department of Natural Resources, Tallahassee. 111 pp.

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.