

**14570**

## **South-Central Interior/Upper Coastal Plain Wet Flatwoods**

BpS Model/Description Version: Aug. 2020

| <b>Modelers</b> |                                | <b>Reviewers</b> |  |
|-----------------|--------------------------------|------------------|--|
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|                 |                                |                  |  |
|                 |                                |                  |  |

### **Vegetation Type**

Woody Wetland

### **Map Zones**

47, 48

### **Geographic Range**

The primary range of this system is limited areas of the "Jackson Purchase" or "Jackson Plain" of KY and possibly related areas in adjacent western TN, as well as related broad, flat areas of the western Interior Low Plateau. It is assumed to cross the Ohio River into adjacent IN. It has been discerned from wetland modeling and confirmed by observation in the Moulton Valley of AL. The Map of the Jackson Purchase Region of KY with subdivisions (Davis 1923) shows The Barrens (BpS 4714270) and The Flatwoods (BpS 4714570 and 4713260) as map units (in Bryant and Held 2001).

### **Biophysical Site Description**

These flatwoods have long been recognized as the primary vegetation type of a distinctive subdivision within the Upper East Gulf Coastal Plain region (Davis 1923, Bryant and Martin 1988), as well as related areas of the western Interior Low Plateau. Within the "Jackson Plain" portion of the Upper East Gulf Coastal Plain, these flatwoods tend to be confined to relatively small areas near the eastern flank of the "Jackson Plain" region where the loess deposits thin out. Unlike drier Post Oak Flatwoods of these areas (which are typified by microtopographic variation), this system occupies broad flats underlain by fragipans. These fragipans impede the downward migration of water resulting in wet conditions for portions of the year. Fire is probably relatively infrequent in this system (M. Evans pers. comm.). In the Jackson Plain area the soils include Henry silt loam (Bryant 1999), Routon silt loam (Bryant and Held 2001) and Calloway silt loam (Bryant 1999, Karathanasis et al 2003). In the Pennyroyal Plain, this system occurs on upland flats and depressions with poor drainage, underlain by limestone; soils include Robertsville silt loam (Chester et al. 1995) and Henry silt loam (M. Evans pers. comm.).

### **Vegetation Description**

Stands are typically dominated by various combinations of oaks and other hardwoods, including *Quercus pagoda*, *Quercus stellata*, *Carya ovata*, *Prunus serotina*, *Diospyros virginiana*, *Ulmus alata*, *Ulmus americana*, *Quercus palustris* (Bryant 1999), *Quercus michauxii*, *Liquidambar styraciflua*, *Carya* spp., *Nyssa sylvatica*, and *Acer rubrum* (Chester et al. 1995). Most stands of this system have been severely altered or destroyed, and the characteristic herbs are poorly known. *Campsis radicans* may be found, along with *Carex* spp., including *Carex leptalea* and *Carex cherokeensis*. Other herbs may include *Leersia* spp. and *Cardamine bulbosa*. *Quercus*

*phellos* and/or *Quercus lyrata* may also be present in stands of this system in KY (M. Evans pers. comm. 2006). Some stands placed here are dominated by *Quercus falcata* (e.g. at Shiloh National Military Park), others (e.g. in the Moulton Valley of AL) by a combination of *Quercus phellos* and *Quercus nigra* (A. Schotz pers. comm. 2006).

### BpS Dominant and Indicator Species

| Symbol | Scientific Name            | Common Name      |
|--------|----------------------------|------------------|
| QUPA5  | <i>Quercus pagoda</i>      | Cherrybark oak   |
| QUST   | <i>Quercus stellata</i>    | Post oak         |
| ANGE   | <i>Andropogon gerardii</i> | Big bluestem     |
| CAOV2  | <i>Carya ovata</i>         | Shagbark hickory |
| CHASM  | <i>Chasmanthium</i>        | Woodoats         |
| CAREX  | <i>Carex</i>               | Sedge            |

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

### Disturbance Description

Most historic occurrences have been cleared, drained and tilled, and remaining sites are small and degraded. Fire was an important natural process in this system probably maintaining relatively open-canopied stands (M. Evans pers. comm.).

### Fire Frequency

| Severity         | Avg FI | Percent of All Fires | Min FI | Max FI |
|------------------|--------|----------------------|--------|--------|
| Replacement      | 190    | 4                    |        |        |
| Moderate (Mixed) | 118    | 7                    |        |        |
| Low (Surface)    | 9      | 89                   |        |        |
| 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

Listed by NatureServe (2006) as a large patch system. There is probably considerable variation in size among individual patches.

### Adjacency or Identification Concerns

Found in the wettest areas of flatwoods. May occur adjacent to South-Central Interior / Upper Coastal Plain Flatwoods or East Gulf Coastal Plain Jackson Plain Prairie and Barrens.

### Issues or Problems

Other Comments: Most stands of this system have been severely altered or destroyed. In western KY, NRCS has preliminary designated a number of privately owned lands as potential wetlands based on the presence of hydric soil indicators. These areas are intermittent wetlands with water tables present near the surface only during late winter and spring. Because of the seasonal nature of these wetlands and the concern about land use as directed by the National Food Security Act provisions (USDA-NRCS, 1996), many landowners have appealed these wetland determinations. The NRCS is in the process of conducting more intensive surveys of the soils, vegetation, and hydrology of the areas under appeal and in need of long-term monitoring data to justify the wetland determinations. (Karathansis et al 2003).

### Native Uncharacteristic Conditions

Many areas have been cleared for agriculture and tilled to improve drainage.

## Comments

### 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     | B     | B     | B     | B      |
| Tree                 | 10-25      | D                | D     | D     | D     | D     | D     | E     | E     | E     | E      |
| Tree                 | 25-50      | D                | D     | D     | D     | D     | D     | E     | E     | E     | E      |
| Tree                 | >50        | D                | D     | D     | D     | D     | D     | E     | E     | E     | E      |

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leaf form 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      13      Early Development 1 - All Structures**

#### Indicator Species

| Symbol | Scientific Name            | Common Name    | Canopy Position |
|--------|----------------------------|----------------|-----------------|
| QUST   | <i>Quercus stellata</i>    | Post oak       | Low-Mid         |
| QUPA5  | <i>Quercus pagoda</i>      | Cherrybark oak | Low-Mid         |
| ANGE   | <i>Andropogon gerardii</i> | Big bluestem   | Low-Mid         |
| CHASM  | <i>Chasmanthium</i>        | Woodoats       | Lower           |

#### Description

Regenerating stand of Post Oak (*Quercus stellata*) and Pagoda Oak or Cherrybark Oak (*Quercus pagoda*) and a lesser amount of Shagbark hickory (*Carya ovata*) with an herbaceous component of Big bluestem (*Andropogon gerardii*) and Woodoats (*Chasmanthium* spp.) and perhaps Sedges (*Carex* spp.). Trees are small, either young trees or stump sprouts.

#### Maximum Tree Size Class

Sapling >4.5ft; <5" DBH

**Class B      21      Mid Development 1 - Closed**

Indicator Species

| Symbol | Scientific Name | Common Name      | Canopy Position |
|--------|-----------------|------------------|-----------------|
| QUPA5  | Quercus pagoda  | Cherrybark oak   | Upper           |
| CAOV2  | Carya ovata     | Shagbark hickory | Upper           |
| CHASM  | Chasmanthium    | Woodoats         | Lower           |
| CAREX  | Carex           | Sedge            | Lower           |

Description

Young closed stand of Pagoda Oak or Cherrybark Oak (*Quercus pagoda*), Shagbark hickory (*Carya ovata*) and a lesser amount of Post Oak (*Quercus stellata*) with an herbaceous component of Woodoats (*Chasmanthium* spp.) and Sedges (*Carex* spp.). Trees are medium sized and the stand would be dense. Some ladder fuels may be present.

Maximum Tree Size Class

Medium 9-21"DBH

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|                |           |                                 |
|----------------|-----------|---------------------------------|
| <b>Class C</b> | <b>17</b> | <b>Mid Development 1 - Open</b> |
|----------------|-----------|---------------------------------|

Indicator Species

| Symbol | Scientific Name     | Common Name    | Canopy Position |
|--------|---------------------|----------------|-----------------|
| QUST   | Quercus stellata    | Post oak       | Upper           |
| QUPA5  | Quercus pagoda      | Cherrybark oak | Upper           |
| ANGE   | Andropogon gerardii | Big bluestem   | Lower           |
| CHASM  | Chasmanthium        | Woodoats       | Lower           |

Description

Woodland dominated by widely spaced Post Oak (*Quercus stellata*) and Pagoda Oak or Cherrybark Oak (*Quercus pagoda*) and a lesser amount of Shagbark hickory (*Carya ovata*) over an herbaceous understory of Big bluestem (*Andropogon gerardii*) and Woodoats (*Chasmanthium* spp.). Trees are medium sized.

Maximum Tree Size Class

Medium 9-21"DBH

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|                |           |                                  |
|----------------|-----------|----------------------------------|
| <b>Class D</b> | <b>28</b> | <b>Late Development 1 - Open</b> |
|----------------|-----------|----------------------------------|

Indicator Species

| Symbol | Scientific Name     | Common Name    | Canopy Position |
|--------|---------------------|----------------|-----------------|
| QUST   | Quercus stellata    | Post oak       | Upper           |
| QUPA5  | Quercus pagoda      | Cherrybark oak | Upper           |
| ANGE   | Andropogon gerardii | Big bluestem   | Lower           |
| CHASM  | Chasmanthium        | Woodoats       | Lower           |

Woodland dominated by widely spaced Post Oak (*Quercus stellata*) and Pagoda Oak or Cherrybark Oak (*Quercus pagoda*) and a lesser amount of Shagbark hickory (*Carya ovata*) over an herbaceous understory of Big bluestem (*Andropogon gerardii*) and Woodoats (*Chasmanthium* spp.). Trees are large, but being widely spaced and open grown, not as tall as those found in the closed forest.

Large 21-33" DBH

### Indicator Species

Description

Mature to old growth forest dominated by Pagoda Oak or Cherrybark Oak (*Quercus pagoda*) and Shagbark hickory (*Carya ovata*). The canopy is closed and relatively little light reaches the forest floor which has Sedges (*Carex* spp.) and Woodoats (*Chasmanthium* spp.). There may be downed logs and coarse woody debris on the forest floor.

Very Large >33" DBH

## Deterministic Transitions

## 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 |
|------------------------|-----------------------|---------------------|-------------------------|-----------------------|-----------------------------------------------------|------------------------------|
| Alternative Succession | Early1:ALL            | Mid1:CLS            | 1                       | 1                     | Yes                                                 | 13                           |
| Replacement Fire       | Early1:ALL            | Early1:ALL          | 0.005                   | 200                   | Yes                                                 | 0                            |

|                           |            |            |       |     |     |    |
|---------------------------|------------|------------|-------|-----|-----|----|
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.01  | 100 | Yes | 0  |
| Surface Fire              | Early1:ALL | Early1:ALL | 0.15  | 7   | No  | 0  |
| Alternative Succession    | Mid1:OPN   | Mid1:CLS   | 1     | 1   | Yes | 10 |
| Replacement Fire          | Mid1:OPN   | Early1:ALL | 0.007 | 143 | Yes | 0  |
| Surface Fire              | Mid1:OPN   | Mid1:OPN   | 0.15  | 7   | No  | 0  |
| Replacement Fire          | Mid1:CLS   | Early1:ALL | 0.005 | 200 | Yes | 0  |
| Insects or Disease        | Mid1:CLS   | Early1:ALL | 0.005 | 200 | Yes | 0  |
| Wind or Weather or Stress | Mid1:CLS   | Mid1:OPN   | 0.01  | 100 | Yes | 0  |
| Mixed Fire                | Mid1:CLS   | Mid1:OPN   | 0.02  | 50  | Yes | 0  |
| Surface Fire              | Mid1:CLS   | Mid1:CLS   | 0.07  | 14  | No  | 0  |
| Alternative Succession    | Late1:OPN  | Late1:CLS  | 1     | 1   | Yes | 15 |
| Insects or Disease        | Late1:OPN  | Late1:OPN  | 0.003 | 333 | No  | 0  |
| Replacement Fire          | Late1:OPN  | Early1:ALL | 0.005 | 200 | Yes | 0  |
| Wind or Weather or Stress | Late1:OPN  | Early1:ALL | 0.01  | 100 | Yes | 0  |
| Surface Fire              | Late1:OPN  | Late1:OPN  | 0.15  | 7   | No  | 0  |
| Replacement Fire          | Late1:CLS  | Early1:ALL | 0.005 | 200 | Yes | 0  |
| Insects or Disease        | Late1:CLS  | Late1:OPN  | 0.01  | 100 | Yes | 0  |
| Insects or Disease        | Late1:CLS  | Early1:ALL | 0.01  | 100 | Yes | 0  |
| Mixed Fire                | Late1:CLS  | Late1:OPN  | 0.02  | 50  | Yes | 0  |
| Surface Fire              | Late1:CLS  | Late1:CLS  | 0.07  | 14  | No  | 0  |

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