

14570

South-Central Interior/Upper Coastal Plain Wet Flatwoods

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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Vegetation Type

Woody Wetland

Map Zones

49

Geographic Range

South Central Interior/Upper Coastal Plain Wet Flatwoods are of limited occurrence on poorly drained terrace flats in the Mississippi and Ohio River drainages (including associated tributaries). This BpS is known from AR, MO, IL and IN, with potential occurrences in KY and TN (NatureServe 2007). This BpS is replaced by 1510 (North-Central Interior Wet Flatwoods) north and east of this region on glacial till of Illinoisan and Wisconsinan age. In MZ49, this BpS occurred in the unglaciated landscapes of the southernmost portion of IL, including portions of the Interior Plateau (Northern Shawnee Hills and Southern Shawnee Hills) and Interior River Valleys and Hills (Wabash-Ohio Bottomlands, Middle Mississippi Alluvial Plain, and perhaps elsewhere) (Woods et al. 2006a).

Biophysical Site Description

South Central Interior/Upper Coastal Plain Wet Flatwoods is restricted to poorly drained, seasonally wet terrace flats associated with the Ohio and Mississippi River plains and tributaries (NatureServe 2007). Areas supporting flatwoods are characterized by a subsurface hardpan (typically an argillic horizon) that causes a shallowly perched water table (Taft et al. 1995, NatureServe 2007). The presence of argillic horizons on level terrain results in slow drainage and seasonal saturation and/or ponding in winter and spring, and significant desiccation in summer due to high evapotranspiration and the inability of subsurface moisture to penetrate the clay pan to primary rooting zones (Taft et al. 1995). Silt loam and silty clay loams are the commonest soil textures. Soils are deep, strongly acidic, and low in organic matter (NatureServe 2007). Surface layers are underlain by shale, sandstone, or limestone bedrock. In Indiana, this BpS is characteristic of the Southwestern Lowlands Level IV Ecoregion within the Interior River Lowland Level III Ecoregion (Homoya et al. 1985, Woods et al. 1998, Jacquart et al. 2002). Annual precipitation in the Indiana range of this BpS is 41-43 in; length of average growing season is 175-200+ days (Woods et al. 1998). In Illinois, this BpS occurs in the unglaciated southernmost portion of the state, corresponding to portions of the Interior Plateau (Northern Shawnee Hills and Southern Shawnee Hills) and Interior River Valleys and Hills (Wabash-Ohio Bottomlands, Middle Mississippi Alluvial Plain, and perhaps elsewhere) (Woods et al. 2006a). Annual precipitation in the Illinois range of this BpS averages 42-48 in; length of average growing season is 185-193 days (Woods et al. 2006a, 2006b).

Vegetation Description

Canopy structure is typically intermediate between savanna and closed forest, but may vary considerably from stand to stand based on natural disturbances and substrate characteristics. Pin oak (*Quercus palustris*) and cherrybark oak (*Q. pagoda*) are nearly always dominant. Canopy associates include American elm (*Ulmus americana*), ash (*Fraxinus* spp.), shagbark hickory (*Carya ovata*), sweetgum (*Liquidambar styraciflua*), Shumard's oak (*Quercus shumardii*), and post oak (*Q. stellata*) (Jacquart et al. 2002, NatureServe 2007). Red maple (*Acer rubrum*) is often present in the generally sparse subcanopy, sometimes associated with several other floodplain tree species. The shrub layer and ground layer can be dense in canopy gaps and where moisture conditions are ideal to patchy or absent under a closed canopy or where seasonal drought is a significant stressor. Characteristic shrubs include possumhaw (*Ilex decidua*) and green hawthorn (*Crataegus viridis*). Commonly occurring vines include poison ivy (*Toxicodendron radicans*) and trumpet creeper (*Campsis radicans*). Characteristic ground layer species include quillworts (*Isoetes* spp., including *I. melanopoda*), which are characteristic of seasonal pools, and Indian pink (*Spigelia marilandica*) (Jacquart et al. 2002, NatureServe 2007).

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
QUPA2	<i>Quercus palustris</i>	Pin oak
QUPA5	<i>Quercus pagoda</i>	Cherrybark oak
ULAM	<i>Ulmus americana</i>	American elm
FRAXI	<i>Fraxinus</i>	Ash
CAOV2	<i>Carya ovata</i>	Shagbark hickory
LIST2	<i>Liquidambar styraciflua</i>	Sweetgum
ACRU	<i>Acer rubrum</i>	Red maple

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

Disturbance Description

Subsurface fragipans inhibit drainage in winter and spring, creating a perched water table with localized ponding. In summer, evaporation from coarse-textured surface soils is high, and the fragipan inhibits water movement to the rooting zone from deeper subsurface layers, leading to desiccation (Taft et al. 1995). These seasonal hydrologic fluctuations are largely responsible for regulating the structure and species composition of wet flatwoods. Structural variation is regulated by the duration and depth of flooding, moisture availability, and soil physical properties (NatureServe 2007). Because occurrences are on abandoned terraces, long-term flooding and ponding is likely a rare occurrence.

Fire may have an important role in shaping flatwoods structure and species composition. Studies of upland flatwoods remnants suggest fire is associated with greater species richness and higher density of ground layer vegetation (for example, see Taft 2005). Many flatwoods remnants occurred in proximity to open savanna and prairie communities, and were likely impacted by fires that maintained those communities. Characteristics of flatwoods suggesting they were prone to frequent fires include seasonally dry conditions, level aspect, position in a relatively undissected landscape, open woodland character allowing wind movement, association with prairie and savanna, and a moderately flammable fuel load (Taft et al. 1995). In the absence of fire, shade-tolerant tree species may become established under the canopy. Density of woody stems of these species increase in the absence of fire, and ground layer diversity declines (Taft et

al. 1995). The degree and rapidity of invasion likely varies depending on soil texture and characteristics. The impacts of fire may differ between upland flatwoods types studied by Taft et al. (1995) and wet flatwoods described here. In the absence of data on the effects of fire on wet flatwoods, fire will be modeled with less frequency due to the generally wetter conditions of BpS 1457 (saturation, water depth, and/or duration of inundation) and its close association with rivers, which can act as firebreaks.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	93	11		
Moderate (Mixed)	120	9		
Low (Surface)	13	80		
All Fires	11	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

This BpS was a small patch system with restricted distribution.

Adjacency or Identification Concerns

Mapping should focus on the restricted distribution of this BpS on poorly drained terrace flats, primarily along the Mississippi and Ohio Rivers and their major tributaries. There are fewer than 20 occurrences rangewide at the present time (NatureServe 2007). Acquisition of maps of remaining occurrences from state heritage programs may be necessary to decipher the precise landscape position occupied by this BpS.

Issues or Problems

Native Uncharacteristic Conditions

Prevalence of shade-tolerant tree species not characteristic of the canopy may indicate fire suppression or other disturbance. Many occurrences have been degraded or destroyed through clearing and artificially severe flooding caused by river channelization.

Comments

None

Succession Classes

Mapping Rules

[illegible]

Tree	0-5	A	A	A	UN	UN	UN	UN	UN	UN	UN
Tree	5-10	A	A	A	UN	UN	UN	UN	UN	UN	UN
Tree	10-25	UN	UN	UN	B	B	B	B	C	C	C
Tree	25-50	UN	UN	UN	B	B	B	B	C	C	C
Tree	>50	UN	UN	UN	B	B	B	B	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 17 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
QUPA2	<i>Quercus palustris</i>	Pin oak	Upper
QUPA5	<i>Quercus pagoda</i>	Cherrybark oak	Upper
ILDE	<i>Ilex decidua</i>	Possumhaw	Middle
TORA2	<i>Toxicodendron radicans</i>	Eastern poison ivy	Lower

Description

Early successional stage following significant natural disturbance- typically a flood of relatively high severity or long duration, but also stand-replacing windthrow or fire. Shrub and vine cover likely increases significantly in these stands following the disturbance. Common shrubs include possumhaw (*Ilex decidua*) and green hawthorn (*Crataegus viridis*). Common vines include poison-ivy (*Toxicodendron radicans*). Most disturbances (with the possible exception of fire) leave scattered living canopy trees.

Maximum Tree Size Class

Pole 5-9" DBH

Class B 52 Mid Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
QUPA2	<i>Quercus palustris</i>	Pin oak	Upper
QUPA5	<i>Quercus pagoda</i>	Cherrybark oak	Upper
ULAM	<i>Ulmus americana</i>	American elm	Upper
ACRU	<i>Acer rubrum</i>	Red maple	Mid-Upper

Description

Flatwoods with partially open canopy, intermediate between savanna and closed canopy forest. Dominant trees are pin oak (*Quercus palustris*) and cherrybark oak (*Q. pagoda*), associated with

Maximum Tree Size Class
Medium 9-21"DBH

Indicator Species

Description

Maximum Tree Size Class
Large 21-33"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
Wind or Weather or Stress	Early1:ALL	Early1:ALL	0.003	333	No	0
Replacement Fire	Early1:ALL	Early1:ALL	0.05	20	Yes	0
Wind or Weather or Stress	Mid1:ALL	Early1:ALL	0.003	333	Yes	0
Replacement Fire	Mid1:ALL	Early1:ALL	0.003	333	Yes	0

Mixed Fire	Mid1:ALL	Mid1:ALL	0.01	100	No	0
Surface Fire	Mid1:ALL	Mid1:ALL	0.1	10	No	0
Wind or Weather or Stress	Late1:CLS	Early1:ALL	0.003	333	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.003	333	Yes	0
Mixed Fire	Late1:CLS	Mid1:ALL	0.01	100	Yes	0
Surface Fire	Late1:CLS	Late1:CLS	0.07	14	No	0

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