14550

East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Woody Wetland

Map Zones

46, 99

Geographic Range

This type lies in central AL and east MS in association with Blackbelt types.

According to NatureServe (2006) the complete and detailed range of this system is being developed and is not completely understood. Although there is agreement that this type occurs on broad upland flats in the East Gulf Coastal Plain of AL and MS, as well as western parts of the lower terraces of the East Gulf Coastal Plain ("Florida Parishes") in LA, and likely occurs in other parts of the region as well. It is also found in the Mississippi River Alluvial Plain of LA (P. Faulkner pers. comm.) (NatureServe 2006).

Biophysical Site Description

This BpS is situated on second and third terraces above larger drainages, as well as broad first terraces on smaller drainages. These terraces are often topographically flat. Clayey subsoils lead to the formation of permanent and semi-permanent wetlands. Mima mounds are also present in some situations. NatureServe (2006) notes that in the Alabama/Mississippi parts of this system's range, the ground surface displays an evident microtopography of alternating mounds and swales occurring in a tight local mosaic. These mounds are most likely "gilgai" (R. Wieland pers. comm.) resulting from vertic or shrink-swell properties of the Luinn soil series. Known examples display a range of moisture conditions from dry to wet. The wettest examples trap significant moisture from local rainfall events. These areas have ponded water for a minimum of several days at an interval and potentially for long periods of the year, especially when evapotranspiration is lowest.

Vegetation Description

The typical dominant overstory species is loblolly pine (*Pinus taeda*) with willow oak (*Quercus phellos*) in wetter flats and southern red oak (*Quercus falcata*) and post oak (*Quercus stellata*) on better drained surfaces.

Known examples of this system in the Alabama/Mississippi parts of its range include a mosaic of open forests dominated by *Pinus taeda* interspersed with patches of *Quercus phellos* and sometimes other tree species. The vegetation of this system supports a relatively low vascular plant diversity and thus may appear floristically similar to other pine-hardwood vegetation of the region (NatureServe 2006).

The dry portion of this vegetational mosaic is dominated by grassy ground cover (e.g., *Chasmanthium sessiliflorum*) with scattered emergent greenbriars (*Smilax* spp.) underneath a nearly pure *Pinus taeda* overstory. The historical composition of this type is unknown, but it seems likely that *Pinus taeda* was a natural and even dominant component of this system type, as it is in related systems in the West Gulf Coastal Plain (R. Evans pers. obs., T. Foti pers. comm.). Wetter areas are dominated by an overstory of *Quercus phellos* with an abundance of *Sabal minor* in the understory (NatureServe 2006).

NatureServe (2006) notes that in the western parts of the lower terraces of the East Gulf Coastal Plain ("Florida Parishes") of LA, the flatwoods vegetation tends to be dominated primarily by hardwoods in the most western portion, and a mixture of *Pinus glabra* and *Pinus taeda* in the intermediate portion to the east of this. In this "Louisiana Florida Parishes Spruce Pine Flatwoods Forest," stands contain *Pinus glabra*, *Quercus laurifolia*, *Quercus phellos*, *Quercus michauxii*, *Quercus nigra*, *Quercus pagoda*, *Quercus virginiana*, *Pinus taeda*, *Nyssa biflora*, *Nyssa sylvatica*, *Magnolia grandiflora*, *Salix nigra*, *Liquidambar styraciflua*, *Carya glabra*, *Acer rubrum*, and *Fraxinus pennsylvanica*. Understory trees and shrubs include *Crataegus opaca* and *Sabal minor* (which may often be very abundant or dominant), as well as *Arundinaria gigantea* ssp. *tecta*, *Cephalanthus occidentalis*, *Diospyros virginiana*, *Cornus foemina*, *Crataegus viridis*, *Ilex opaca* var. *opaca*, *Ilex decidua*, *Itea virginica*, *Morella cerifera* (=*Myrica cerifera*), *Sambucus canadensis*, *Styrax americanus*, and *Viburnum dentatum* (Smith 1996b).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PITA | *Pinus taeda* | Loblolly pine |
| QUPH | *Quercus phellos* | Willow oak |
| SMILA2 | *Smilax* | Greenbrier |
| CHSE2 | *Chasmanthium sessiliflorum* | Longleaf woodoats |
| SAMI8 | *Sabal minor* | Dwarf palmetto |
| PIGL2 | *Pinus glabra* | Spruce pine |
| QULA3 | *Quercus laurifolia* | Laurel oak |
| LIST2 | *Liquidambar styraciflua* | Sweetgum |

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

Disturbance Description

The specific role of fire in this system is unknown, however, low-intensity ground fires may have been ecologically important. Such fires could have originated in the surrounding East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest (CES203.506 or BpS 1372) (NatureServe 2006). If fire played a role, it would have been an infrequent event that was associated with drought.

Insect outbreaks (southern pine beetle), ice storm damage and wind throw primarily from thunderstorms and tornados are also important disturbance factors.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 78 | 9 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 8 | 91 |  |  |
| All Fires | 7 | 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

Large patches along creeks and rivers.

Adjacency or Identification Concerns

Varies from upland longleaf by presence of clay soil layer and higher water tables. Mostly restricted to terraces.

The historical composition of the dry portion of the vegetational mosaic is unknown, but it seems likely that *Pinus taeda* was a natural and even dominant component of this system, as it is in related systems in the West Gulf Coastal Plain (R. Evans pers. obs., T. Foti pers. comm.) (NatureServe 2006).

Adjacent ecological systems include the East Gulf Coastal Plain Interior Shortleaf Pine-Oak Forest (CES203.506 or BpS 1372) (NatureServe 2006).

Issues or Problems

Native Uncharacteristic Conditions

Past southern pine beetle insect outbreaks can cause a conversion to a stand dominated by oaks with tulip tree and sweetgum.

Comments

The model description for this BpS was begun utilizing R5GCPF and NatureServe’s ecological system description for CES203.557 -- East Gulf Coastal Plain Southern Loblolly-Hardwood Flatwoods. The VDDT model was begun utilizing R5GCPF from the Rapid Assessment.

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

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 18 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PITA | Pinus taeda | Loblolly pine | Upper |
| QUPH | Quercus phellos | Willow oak | Mid-Upper |
| LIST2 | Liquidambar styraciflua | Sweetgum | Upper |
| LITU | Liriodendron tulipifera | Tuliptree | Upper |

Description

All sites, post-fire grass regrowth, with numerous forbs, pine seedlings and hardwood sprouting. Rapid canopy closure dominated by loblolly, sweetgum, tuliptree, and oaks.

*Maximum Tree Size Class*  
Pole 5-9" DBH

Class B 24 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PITA | Pinus taeda | Loblolly pine | Upper |
| QUPH | Quercus phellos | Willow oak | Mid-Upper |
| QUFA | Quercus falcata | Southern red oak | Mid-Upper |
| LIST2 | Liquidambar styraciflua | Sweetgum | Mid-Upper |

Description

Dense, thick stands of loblolly pine intermixed with oaks and other hardwoods. Fuel loads moderate, with deep layers of needles on forest floor. Little herbaceous vegetation due to intense shading and thick layers of needles on forest floor.

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

Class C 7 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PITA | Pinus taeda | Loblolly pine | Upper |
| QUPH | Quercus phellos | Willow oak | Mid-Upper |
| QUFA | Quercus falcata | Southern red oak | Mid-Upper |
| LIST2 | Liquidambar styraciflua | Sweetgum | Mid-Upper |

Description

Two-layered open woodland (canopy and shrub/herbaceous) dominated by loblolly pine and oaks, with various hardwoods (oaks, red maple and black gum) present as shrubs or sprouts. Diverse ground layer composed of grasses and forbs. Ground layer becomes more diverse with as more sunlight reaches the ground layer.

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

Class D 12 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PITA | Pinus taeda | Loblolly pine | Upper |
| QUBI | Quercus bicolor | Swamp white oak | Mid-Upper |
| QUFA | Quercus falcata | Southern red oak | Upper |
| LITU | Liriodendron tulipifera | Tuliptree | Mid-Upper |

Description

Two-layered open woodland (canopy and herbaceous) dominated by loblolly pine and oaks, with various hardwoods (oaks, red maple and black gum) present as shrubs or sprouts. Very diverse ground layer composed of many species of grasses and forbs.

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

Class E 39 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PITA | Pinus taeda | Loblolly pine | Upper |
| QUBI | Quercus bicolor | Swamp white oak | Upper |
| QUFA | Quercus falcata | Southern red oak | Upper |
| LITU | Liriodendron tulipifera | Tuliptree | Mid-Upper |

Description

Dense, thick stands of mature oaks with remnant mature loblolly pine intermixed with oaks and other hardwoods. Vines, mid-canopy and shrub layer prominent. Little herbaceous vegetation due to intense shading and thick layers of needles and leaves on forest floor.

*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:OPN | 14 |
| Mid1:OPN | 15 | Late1:OPN | 40 |
| Mid1:CLS | 15 | Late1:CLS | 40 |
| Late1:OPN | 41 | Late1:OPN | 999 |
| Late1:CLS | 41 | 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** |
| Alternative Succession | Early1:ALL | Mid1:CLS | 1 | 1 | Yes | 13 |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.05 | 20 | Yes | 0 |
| Surface Fire | Early1:ALL | Early1:ALL | 0.1 | 10 | 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 | 0.1 | 10 | 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 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.2 | 5 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 1 | 1 | Yes | 20 |
| 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 | 0.1 | 10 | 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 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.1 | 10 | 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.

Smith, L.M. 1996b. The rare and sensitive natural wetland plant communities of interior Louisiana. Unpublished document. Louisiana Department of Wildlife and Fisheries, Louisiana Natural Heritage Program, Baton Rouge, LA. 38 pp.