15070

Ozark-Ouachita Shortleaf Pine-Bluestem Woodland

BpS Model/Description Version: Aug. 2020

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| **Modelers** |  | **Reviewers** |  |
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|  |  |  |  |

Vegetation Type

Forest and Woodland

Map Zones

44

Geographic Range

This biophysical setting (BpS) lies in the interior highlands and uplands of Arkansas, eastern Oklahoma, and southern Missouri. This BpS occurs in ECOMAP (Cleland et al. 2007) subsections M231A, 231G and M223A.

Biophysical Site Description

This BpS is common to the interior highlands and xeric upland sites to the south and west of the Mississippi River. In the highlands it occupies all but steep north slopes at all elevations. This vegetation type is found along sandstone ridges. Moisture regime is xeric to dry-mesic. This group also occurs on gently dissected upland cherty plains in MO (in addition to sandstone ridges). In the Missouri Ozarks, this type is primarily confined to gently to moderately sloping, upland plains and is distinguished from BpS 1367 in map zone (MZ)44, which occurs on more steeply dissected ridges and steep southwest facing slopes. In Missouri and Oklahoma this system occurs on gently dissected upland cherty plains and sandstone ridges. The center of distribution would be the northern and western Ouachita Mountains. In the Ouachitas, the system occurs on the northern Hogback Ridges excluding the Novaculite areas to the south.

Vegetation Description

This BpS represents woodlands of the Ouachita and Ozark Mountains region of Arkansas, adjacent Oklahoma and southern Missouri in which shortleaf pine (*Pinus echinata*) is the canopy dominant, and the understory is characterized by big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and other prairie elements. In the northern part of this geographic area shortleaf pine, xeric oaks and some hickory dominate the overstory with a high percentage of oak on steep north slopes and on post oak (*Quercus stellata*) flats. Associated species include post oak, blackjack oak (*Q. marilandica*), mockernut hickory (*Carya alba*) on drier sites, and to the west black hickory (*C. texana*). Pine is often emergent on upper slopes. Stand density increases with available moisture. Various bluestems (*Andropogon* spp.) often dominate the understory.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PIEC2 | *Pinus echinata* | Shortleaf pine |
| ANDRO2 | *Andropogon* | Bluestem |

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

Disturbance Description

This BpS has frequent surface fires. Replacement and mixed severity fires are infrequent. Stand replacement fires occurred mostly under extreme drought conditions during the growing season. Other disturbance factors that played a smaller role include ice storms, wind events, insect infestations and species competition for resources. Native ungulate grazing may have played a small role in replacement where buffalo and elk concentrated, but fire generally maintained systems. Drought and moist cycles play a strong role interacting with both fire and native grazing.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 100 | 2 |  |  |
| Moderate (Mixed) | 1226 |  |  |  |
| Low (Surface) | 2 | 98 |  |  |
| All Fires | 2 | 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

Topographically uniform areas can be relatively large (>1,000ac).

Adjacency or Identification Concerns

In the Ouachita Mountains the adjacent community would be oak dominated north slope forests. Outside the Ouachita Mountains the adjacent community would be oak-hickory-pine forest. This system is primarily confined to gently to moderately sloping, upland plains of prairie flora which also distinguishes this system from the shortleaf pin-oak woodland (BpS 1367) in MZ44.

Issues or Problems

Native Uncharacteristic Conditions

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 | C | B | B | B |
| Tree | 10-25 | D | D | D | D | D | D | D | E | E | E |
| Tree | 25-50 | D | D | D | D | D | D | D | E | E | E |
| Tree | >50 | D | D | D | D | D | D | D | E | 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 15 Early Development 1 - All Structures

DBH

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIEC2 | Pinus echinata | Shortleaf pine | Upper |
| ANDRO2 | Andropogon | Bluestem | Upper |
| SCSC | Schizachyrium scoparium | Little bluestem | Lower |

Description

Pine and oak reproduction. Herbaceous community dominated by bluestems and forbs. More persistent on shallow soils. Openings may be small to extensive and have scattered live trees.

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

Class B 3 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIEC2 | Pinus echinata | Shortleaf pine | Upper |

Description

Mid-seral with closed canopy shortleaf and loblolly pine (*P. taeda*) and pole-sized oak with little or no herbaceous understory.

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

Class C 37 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIEC2 | Pinus echinata | Shortleaf pine | Upper |
| ANDRO2 | Andropogon | Bluestem | Lower |
| SCSC | Schizachyrium scoparium | Little bluestem | Lower |

Description

Mid-seral open woodland/savanna pine and oak overstory with bluestem grasses and forbs. Shrub layer may be prevalent on some sites and dominated by various oak sprouts and a few shrub species. Prevalence highly dependent on time since burned.

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

Class D 43 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIEC2 | Pinus echinata | Shortleaf pine | Upper |
| ANDRO2 | Andropogon | Bluestem | Lower |

Description

Late-seral woodland/savanna pine and oak overstory with bluestem grasses and forbs. Shrub layer may be prevalent on some sites and dominated by various oak sprouts and a few shrub species. Prevalence highly dependent on time since burned. Shrub layer may be absent on other sites, particularly on shallow soils.

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

Class E 2 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIEC2 | Pinus echinata | Shortleaf pine | Upper |
| ANDRO2 | Andropogon | Bluestem | Lower |

Description

Late-seral, closed canopy pine-oak dominated overstory community. No herbaceous cover and few shrubs.

*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 | 59 |
| Mid1:CLS | 15 | Late1:CLS | 59 |
| Late1:OPN | 60 | Late1:OPN | 999 |
| Late1:CLS | 60 | 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 | 6 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Early1:ALL | Early1:ALL | 0.5 | 2 | No | 0 |
| Alternative Succession | Mid1:OPN | Mid1:CLS | 1 | 1 | Yes | 15 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.5 | 2 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Competition or Maintenance | Mid1:CLS | Mid1:CLS | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Insects or Disease | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.02 | 50 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.1 | 10 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 1 | 1 | Yes | 10 |
| Wind or Weather or Stress | Late1:OPN | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Competition or Maintenance | Late1:OPN | Late1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.5 | 2 | No | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.01 | 100 | Yes | 0 |
| Insects or Disease | Late1:CLS | Late1:OPN | 0.01 | 100 | Yes | 0 |
| Competition or Maintenance | Late1:CLS | Late1:CLS | 0.01 | 100 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.1 | 10 | No | 0 |

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