15100

Northern Crowley's Ridge Sand Forest

BpS Model/Description Version: Aug. 2020

Update: 6/7/2018

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Roger Mangham | rmangham@tnc.org |  |  |
| Doug Zollner | dzollner@tnc.org |  |  |
| Maria Melnechuk | maria\_melnechuk@tnc.org |  |  |

Vegetation Type

Forest and Woodland

Map Zones

45

Model Splits or Lumps

None: Model split information was invalid so was removed. See the original BpS description for details.

Geographic Range

This system of dry upland forests is confined to narrow ridges, south and west facing aspects on Crowley's Ridge and Macon Ridge along the western margin of the lower Mississippi River. This system is more common on the northern portion of Crowley's Ridge.

Biophysical Site Description

This system is located on remnant loess-capped features rising from 30-60m (100-200ft) above the alluvial plain surface, to about 150m (50ft) above sea level. The amount of loess is reduced and the forests become much drier (shortleaf pine [*Pinus echinate*] and dry site oaks are prevalent). These are generally dry to dry-mesic forests that occupy narrow ridges, south and west facing aspects in a highly dissected landscape. In many cases, these slopes and ravines provide habitat for plant species that are rare or absent from other parts of the alluvial plain (e.g., tuliptree [*Liriodendron tulipifera*]).

Vegetation Description

A diverse open-canopy forest dominated by shortleaf pine and dry oaks including post oak, blackjack oak, black oak and southern red oak (*Quercus stellata*, *Q. marilandica*, *Q. velutina*, and *Q. falcata*) with a graminoid understory. Sassafras and sand hickory (*Sassafras albidum* and *Carya pallida*) form an open midstory.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PIEC2 | *Pinus echinata* | Shortleaf pine |
| QUMA3 | *Quercus marilandica* | Blackjack oak |
| QUVE | *Quercus velutina* | Black oak |
| QUFA | *Quercus falcata* | Southern red oak |
| SCHIZ4 | *Schizachyrium* | Little bluestem |

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

Disturbance Description

Frequent surface fire and less frequent mixed fire. Straight-line winds or microbursts may cause blow-downs on a scale of 1-100ac. Stand replacement fires happen very infrequently.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 138 | 4 |  |  |
| Moderate (Mixed) | 494 | 1 |  |  |
| Low (Surface) | 6 | 95 |  |  |
| All Fires | 5 | 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

Limited to two loess outcrops in the Mississippi River Alluvial Valley.

Adjacency or Identification Concerns

Mapping loess mesic slope forests would likely focus on specific topographic positions, narrow ridges, south and west facing aspects.

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 | C | B | B |
| Tree | 10-25 | D | D | D | D | D | D | D | D | E | E |
| 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 12 Early Development 1 - All Structures

DBH

Indicator Species

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

Description

Regenerating stands established after catastrophic disturbance, primarily wind and ice storms and fire following regional drought. Replacement and surface fires occur.

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

Class B 10 Mid Development 1 - Closed

Indicator Species

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

Description

Mid-seral closed overstory. Intense competition begins after canopy closure and lasts until trees are large enough to form, upon their death, canopy gaps that are not captured by lateral growth of neighboring trees. This released growing space is captured by tree and shrub regeneration. Replacement fire and Surface fire occurs. Blowdowns and drought also have a replacement effect.

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

Class C 31 Mid Development 1 - Open

Indicator Species

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

Description

Mid-seral open overstory. This open canopy woodland is dominated by shortleaf pine and dry oak with a graminoid understory. Frequent surface fire. Replacement fire is rare.

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

Class D 41 Late Development 1 - Open

Indicator Species

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

Description

Open canopy dry and dry-mesic woodland. Replacement fire is rare. Blowdowns and drought also have a replacement effect.

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

Class E 6 Late Development 1 - Closed

Indicator Species

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

Description

Closed canopy dry and dry-mesic forest. Blowdowns, drought and insects also have a thinning effect. Replacement fire is rare.

*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 | 13 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Surface Fire | Early1:ALL | Early1:ALL | 0.2 | 5 | No | 0 |
| Alternative Succession | Mid1:OPN | Mid1:CLS | 1 | 1 | Yes | 15 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.2 | 5 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.013 | 77 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.07 | 14 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 1 | 1 | Yes | 20 |
| Wind or Weather or Stress | Late1:OPN | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.2 | 5 | No | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.005 | 200 | Yes | 0 |
| Insects or Disease | Late1:CLS | Late1:OPN | 0.005 | 200 | Yes | 0 |
| Insects or Disease | Late1:CLS | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.013 | 77 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.07 | 14 | No | 0 |

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