

15100

Northern Crowley's Ridge Sand Forest

BpS Model/Description Version: Aug. 2020

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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 echinata*] 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	<i>Pinus echinata</i>	Shortleaf pine
QUMA3	<i>Quercus marilandica</i>	Blackjack oak
QUVE	<i>Quercus velutina</i>	Black oak
QUFA	<i>Quercus falcata</i>	Southern red oak
SCHIZ4	<i>Schizachyrium</i>	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
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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
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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
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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
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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
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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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