

14320

Lower Mississippi Alluvial Plain Grand Prairie

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Modelers		Reviewers	
Tom Foti	Tom@naturalheritage.com		
Douglas Zollner	dzollner@tnc.org		

Vegetation Type

Herbaceous

Map Zones

45

Geographic Range

This system of prairies and woodlands occurs on the oldest land surfaces in the Mississippi River Alluvial Valley and the highest land surface in the river deposited portions of the ecoregion (ECOMAP subsection 234Eb, Cleland et al. 2007).

Biophysical Site Description

The grand prairie occupies a very flat region up to 20 miles wide and 60 miles long bounded by present day rivers, especially the Arkansas and White, which are much lower in elevation than the Grand Prairie terrace. This terrace is covered with thin soils that are poorly drained, acidic and loamy near the surface, and are only very slowly permeable to moisture due to a subsoil of tightly packed clay. The surface soils are likely silts and silty clays. Although productive, these soils are droughty due to the impervious clay subsoils. The "prairie mounds," are domes that rise up to 3ft high and 35-50ft wide. The combination of droughty soils, very flat topography, and the lack of major stream corridors in the region create conditions suitable to the ignition and spread of fires.

Vegetation Description

Typical examples of grand prairie vegetation are dominated by switchgrass and big bluestem (*Panicum virgatum* and *Andropogon gerardii*). The vegetation includes both wet and dry prairies as well as "slashes" dominated by green ash and hawthorn (*Fraxinus pennsylvanica* and *Crataegus* spp.). Conspicuous perennial forbs include sunflowers, goldenrod, blazing star, prairie clover, violet and pussytoes (*Helianthus*, *Solidago*, *Liatris*, *Dalea*, *Viola*, and *Antennaria*). Shrubs that are important include rose, willow, sweetleaf and sumac (*Rosa* spp., *Salix*, *Symphoricarpos*, and *Rhus*). Much of the grand prairie was a mixture of tallgrass prairie and open oak savanna.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
ANGE	<i>Andropogon gerardii</i>	Big bluestem
PAVI2	<i>Panicum virgatum</i>	Switchgrass
SONU2	<i>Sorghastrum nutans</i>	Indiangrass

QUST	<i>Quercus stellata</i>	Post oak
SPPE	<i>Spartina pectinata</i>	Prairie cordgrass

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

Disturbance Description

The region is characterized by frequent surface fires, both lightning and anthropogenic in origin (Higgins 1986). Mixed fires occurred frequently in this biophysical setting. Natural fires were possible during the dormant season through spring and during the late-growing season dependent on the availability of dry fine fuels sufficient to carry a fire. Prior to extirpation of bison, the fire return interval was estimated to have been from 1-3yrs based on observation of travelers through the region (Gregg 1844, Olmstead 1855). Historic accounts from later in the 1800's often depict very large landscape scale burns where an entire landscape was described as burning (Irving 1935, Jackson 1965).

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement				
Moderate (Mixed)	3	99		
Low (Surface)	316	1		
All Fires	3	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 patch - roughly 400,000ac.

Adjacency or Identification Concerns

Less than 1000 scattered acres remain of this system today, therefore, the subsection should be used for mapping historic range.

Issues or Problems

Native Uncharacteristic Conditions

Today almost all the few uncultivated remnants are dominated by broom sedge (*Andropogon virginicus*) and splitbeard bluestem (*A. ternarius*).

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	B	B	B	B	B	B

Shrub	0.5-1.0	A	A	A	A	B	B	B	B	B	B
Shrub	1.0-3.0	A	A	A	A	B	B	B	B	B	B
Shrub	>3.0	A	A	A	A	B	B	B	B	B	B
Tree	0-5	A	A	A	A	B	B	B	D	D	D
Tree	5-10	B	B	B	B	B	B	B	D	D	D
Tree	10-25	C	C	C	C	C	C	C	D	D	D
Tree	25-50	C	C	C	C	C	C	C	D	D	D
Tree	>50	C	C	C	C	C	C	C	D	D	D

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leaf form 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 77 Early Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
ANGE	Andropogon gerardii	Big bluestem	Upper
SCSC	Schizachyrium scoparium	Little bluestem	Mid-Upper
DALEA	Dalea	Prairie clover	Mid-Upper
QUERC	Quercus	Oak	Lower

Description

Dominant prairie community type. Tall grass is the dominant lifeform with scattered trees. This system has persistent regular mixed fire. Eventually, sparse savanna conditions occur and are dominated by post oak and blackjack oak (*Quercus stellata* and *Quercus marilandica*). Though large areas will remain treeless due to the frequent fire and edaphic factors.

Maximum Tree Size Class

Pole 5-9" DBH

Class B 7 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
QUERC	Quercus	Oak	Upper
ANGE	Andropogon gerardii	Big bluestem	Mid-Upper
SCSC	Schizachyrium scoparium	Little bluestem	Mid-Upper
SONU2	Sorghastrum nutans	Indiangrass	Lower

Description

Maximum Tree Size Class
Pole 5-9" DBH

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:OPN	0	Mid1:OPN	120
Mid1:OPN	121	Late1:OPN	150
Late1:OPN	151	Late1:OPN	999
Late1:CLS	151	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
Wind or Weather or Stress	Early1:OPN	Early1:OPN	0.0125	80	Yes	0
Mixed Fire	Early1:OPN	Early1:OPN	0.33	3	No	0
Wind or Weather or Stress	Mid1:OPN	Early1:OPN	0.0125	80	Yes	0
Mixed Fire	Mid1:OPN	Mid1:OPN	0.3	3	No	0
Alternative Succession	Late1:OPN	Late1:CLS	1	1	Yes	12
Wind or Weather or Stress	Late1:OPN	Early1:OPN	0.0125	80	Yes	0
Mixed Fire	Late1:OPN	Late1:OPN	0.3	3	No	0
Wind or Weather or Stress	Late1:CLS	Early1:OPN	0.0125	80	Yes	0
Mixed Fire	Late1:CLS	Late1:OPN	0.03	33	Yes	0
Surface Fire	Late1:CLS	Late1:CLS	0.2	5	No	0

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