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North American Warm Desert Riparian Systems

BpS Model/Description Version: Aug. 2020

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Vegetation Type

Woody Wetland

Map Zone

25

Geographic Range

Tularosa Basin, Jornada Basin, south of Interstate 10, northwest of Lordsburg, southeast New Mexico, and extending into southeast Arizona, in localized settings. Generally associated with flats, swales, and bottomlands.

Biophysical Site Description

Desert grassland with extensive clayey and alkaline bottomland plains and intermittently flooded swales.

Vegetation Description

Typically dominated by alkali or giant sacaton (*Sporobolus* spp.). Alkali sacaton is often associated with more alkaline and poorly drained areas, and giant sacaton with less alkaline and better drained areas. Other co-dominants are tobosa (*Pleuraphis muticus*) and vine mesquite (*Panicum obtusum*). In general, there is a <5% shrub component. This component, in the northern portions of this geographic area, consists of mesquite and occasionally creosote or fourwing saltbush. In the southern portions of this biophysical setting (BpS), the shrub component consists of fourwing saltbush, tarbush, mesquite, and creosote.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
SPAI	<i>Sporobolus airoides</i>	Alkali sacaton
SPWR2	<i>Sporobolus wrightii</i>	Big sacaton
PLMU3	<i>Pleuraphis mutica</i>	Tobosagrass
PAOB	<i>Panicum obtusum</i>	Vine mesquite

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

Disturbance Description

Periodic flooding occurs. Fire events were localized. Periodic drought can desiccate grasses, increasing fire probability or causing a conversion to other species such as burrograss (*Scleropogon brevifolius*) and tobosa (*Pleuraphis mutica*). Bare patches can increase with drought, enabling potential shrub invasion (mesquite, tarbush, and creosote).

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	225	100		
Moderate (Mixed)				
Low (Surface)				
All Fires	225	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

This type is concentrated in broad valley bottoms of southern New Mexico and southeast Arizona, and in localized and linear drainage settings and flats.

Adjacency or Identification Concerns

Land cover class does not have appropriate category to describe this BpS. This system (swales, flats, and bottomlands) does receive periodic flooding during the annual summer rains, but has no obligate riparian species present as a true wetland. The flats included also have overland flow and inundation, but soil does not stay saturated as long as lower bottomland sites. This BpS does not include floodplains containing alkali sacaton and saltgrass seen surrounding the Rio Grande River.

Issues or Problems

Information provided by team members most familiar with New Mexico. There is limited quantitative information for this system (anecdotal/professional experience).

Native Uncharacteristic Conditions

Comments

In this model, wind/weather/stress is used to represent flooding.

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	B	B	B	B	B	B	B	B
Herb	0.5-1.0	A	A	B	B	B	B	B	B	B	B
Herb	>1.0	A	A	B	B	B	B	B	B	B	B
Shrub	0-0.5	B	B	B	B	B	UN	UN	UN	UN	UN
Shrub	0.5-1.0	B	B	B	B	B	UN	UN	UN	UN	UN
Shrub	1.0-3.0	B	B	B	B	B	UN	UN	UN	UN	UN
Shrub	>3.0	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	0-5	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	5-10	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	10-25	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	25-50	B	B	B	B	B	UN	UN	UN	UN	UN
Tree	>50	B	B	B	B	B	UN	UN	UN	UN	UN

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 11 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
SPAI	Sporobolus airoides	Alkali sacaton	Lower
PLMU3	Pleuraphis mutica	Tobosagrass	Lower
PAOB	Panicum obtusum	Vine mesquite	Lower
SPWR2	Sporobolus wrightii	Big sacaton	Middle

Description

Early seral stage new growth in both species. Dominants determined by soil salinity and placement on landscape. (Alkali sacaton can tolerate higher salt levels and inundation by water.) This is based on the conjecture that it takes approximately 2yrs for the dominant grass species to attain maturity (this varies with annual precipitation).

Maximum Tree Size Class

None

Class B 89 Late Development 1 - Closed

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
SPAI	Sporobolus airoides	Alkali sacaton	Middle
PLMU3	Pleuraphis mutica	Tobosagrass	Low-Mid
PAOB	Panicum obtusum	Vine mesquite	Low-Mid
SPWR2	Sporobolus wrightii	Big sacaton	Mid-Upper

Description

As a mature stand, these grasses become decadent, which could increase probability of fire. Drought or native grazing could dry the site, which could allow tobosa to come into alkali sacaton/giant sacaton and become a co-dominant, or dominant depending on the severity of the drought. Drought can also increase bare ground patches that allow shrub encroachment (mesquite, creosote, and tarbush). Shrub component in this description is not a significant component.

Maximum Tree Size Class

None

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Late1:CLS	5
Late1:CLS	6	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
Replacement Fire	Late1:CLS	Early1:ALL	0.005	200	Yes	0
Wind or Weather or Stress	Late1:CLS	Early1:ALL	0.01	100	Yes	0
Optional 1	Late1:CLS	Early1:ALL	0.01	100	Yes	0

Optional Disturbances

Optional 1: Drought

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