

10750

Chihuahuan Mixed Salt Desert Scrub

BpS Model/Description Version: Aug. 2020

Modelers		Reviewers	
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Vegetation Type

Shrubland

Map Zone

25

Geographic Range

This site is primarily found in the floodplains of the Rio Grande and Pecos rivers, possibly also extending into the San Simon of southeastern Arizona. Also associated with saline playas. Reference conditions may be found on the lowland depression in the Tularosa Basin.

Biophysical Site Description

Annual average precipitation ranges from 8-13in. Wide fluctuations from year to year are common, ranging from a low of about 2in to a high of >20in. At least one-half of the annual precipitation comes in the form of rainfall during July, August, and September. Precipitation in the form of snow or sleet averages <4in annually. The average annual air temperature is about 61°F. Summer maximums usually exceed 100°F, and winter minimums can go below zero. The average frost-free season exceeds 200 days and extends from April 1 to November 1. Both the temperature regime and rainfall distribution favor warm-season perennial plants on this site. Spring moisture conditions are only occasionally adequate to cause significant growth during this period of the year. High winds from the west and southwest are common from March to June, which further tends to create poor soil moisture conditions in the springtime. Water tables are generally shallow but fluctuate within reach of deep-rooted plants and in most places are high enough that salts accumulate on the surface of the soil. The general aspect of this site is that of a wet, grassy meadow. This site is characterized by plants tolerant to saline or alkaline and to wet soil conditions. The topography is level to gently sloping with slopes up to 3%. The average slope is 1% or less. Elevations range from ~3,300-4,300ft above sea level. The soils of this site are alluvial. They have surface and sub-soil textures that generally are fine to moderately coarse-textured and are primarily found in the floodplains of the Rio Grande and Pecos rivers.

Vegetation Description

The historic plant community type of this site is dominated by alkali sacaton (*Sporobolus airoides*) and giant sacaton (*Sporobolus wrightii*). Inland saltgrass (*Distichlis spicata*) dominates secondarily, often in discrete patches. Sedges and rushes are common and screwbean mesquite (tornillo; *Prosopis pubescens*) may be an important woody species. On the banks of the Rio Grande River, this site probably existed in a broad-scale, shifting mosaic with cottonwoods (*Populus deltoides* var. *wislizeni*), mesquite stands (*Prosopis* spp.), and salty bottomland grasslands determined by changes in the river course. The grassland community is supported in

areas where the depth to the water table is shallow and where flooding and drainage may stabilize salinity levels.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
SPAI	<i>Sporobolus airoides</i>	Alkali sacaton
SPWR	<i>Sphaeralcea wrightii</i>	Wright's globemallow
DISP	<i>Distichlis spicata</i>	Inland saltgrass
PRPU	<i>Prosopis pubescens</i>	Screwbean mesquite
MURI	<i>Muhlenbergia richardsonis</i>	Mat muhly
ATCA	<i>Atriplex californica</i>	California saltbush

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

Disturbance Description

Grazing may reduce both giant and alkali sacaton and increase the proportional representation of saltgrass. As salinity increases due to reductions of flood frequency, flood volume, or changes to soils or water table depth, a critical value may be crossed such that giant sacaton cannot survive. Records of fire occurrence in sacaton grasslands are rare.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	706	53	7	100
Moderate (Mixed)	805	47		
Low (Surface)				
All Fires	376	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 vegetation type is limited to areas adjacent to riparian areas and playas.

Adjacency or Identification Concerns

Issues or Problems

Fire ecology studies at the population level are badly needed for fourwing saltbush. Historic fire regimes in desert shrublands are difficult to quantify. There is a question as to whether this is an uncharacteristic condition of ATCA shrublands. The disturbance reference to grazing crossing a critical value is assumed to be non-native grazing.

Native Uncharacteristic Conditions

Shrub cover >10% is uncommon.

Comments

Dave Anderson, WSMR, and Don Sylvester and Brandon Bestelmeyer. This model should apply to map zones 26 and 27. Keith Schulz was an additional reviewer of 251075.

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	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	C	C	C	C	C	C	C	C	C	C
Tree	5-10	C	C	C	C	C	C	C	C	C	C
Tree	10-25	C	C	C	C	C	C	C	C	C	C
Tree	25-50	C	C	C	C	C	C	C	C	C	C
Tree	>50	C	C	C	C	C	C	C	C	C	C

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 25 Early Development 1 - All Structures

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
SPAI	Sporobolus airoides	Alkali sacaton	All
SPWR	Sphaeralcea wrightii	Wright's globemallow	All
DISP	Distichlis spicata	Inland saltgrass	All

Description

Establishing plants, dominated by grasses, sedges, and rushes. Succeeds without disturbance.

Maximum Tree Size Class

None

Class B 34 Mid Development 1 - Open

Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
SPAI	Sporobolus airoides	Alkali sacaton	Lower
SPWR	Sphaeralcea wrightii	Wright's globemallow	Mid-Upper
DISP	Distichlis spicata	Inland saltgrass	Lower

PRPU	<i>Prosopis pubescens</i>	Screwbean mesquite	Upper
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Description

Shrubs and cottonwood becoming established and are the upper lifeform. Understory grasses, sedges, and rushes remain a major component. Remains in this class before succeeding without disturbance

Maximum Tree Size Class

None

Class C	41	Late Development 1 - Closed
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
SPAI	Sporobolus airoides	Alkali sacaton	Lower
DISP	Distichlis spicata	Inland saltgrass	Lower
PRPU	Prosopis pubescens	Screwbean mesquite	Mid-Upper
PODEW	Populus deltoides ssp. wislizeni	Rio grande cottonwood	Upper

Description

Cottonwood are established as the upper-layer canopy species. Flooding may maintain this class or may set it back to a previous class.

Maximum Tree Size Class

Medium 9-21" DBH

Model Parameters

Deterministic Transitions

From Class	Begins at (yr)	Succeeds to	After (years)
Early1:ALL	0	Mid1:OPN	9
Mid1:OPN	10	Late1:CLS	40
Late1:CLS	41	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	Early1:ALL	Early1:ALL	0.003	333	Yes	0
Wind or Weather or Stress	Early1:ALL	Early1:ALL	0.03	33	Yes	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.002	500	Yes	0
Wind or Weather or Stress	Mid1:OPN	Late1:CLS	0.03	33	Yes	0

Wind or Weather or Stress	Mid1:OPN	Early1:ALL	0.03	33	Yes	0
Mixed Fire	Late1:CLS	Mid1:OPN	0.003	333	Yes	0
Wind or Weather or Stress	Late1:CLS	Early1:ALL	0.03	33	Yes	0

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