10750

Chihuahuan Mixed Salt Desert Scrub

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **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 pubsecens*) 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 deltiodes* 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 | *Sporobolus airoides* | Alkali sacaton |
| SPWR | *Sphaeralcea wrightii* | Wright's globemallow |
| DISP | *Distichlis spicata* | Inland saltgrass |
| PRPU | *Prosopis pubescens* | Screwbean mesquite |
| MURI | *Muhlenbergia richardsonis* | Mat muhly |
| ATCA | *Atriplex californica* | 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 | Prosopis pubescens | Screwbean mesquite | Upper |

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

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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