11210

Apacherian-Chihuahuan Semi-Desert Grassland and Steppe

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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| None | None | None | None |
| None | None | None | None |

Vegetation Type

Steppe/Savanna

Map Zones

27

Geographic Range

Borderland of Arizona, New Mexico, Texas, northern Mexico. Extends from Sonoran Desert, to the Mogollon Rim and much of the northern Chihuahuan Desert. It is thought that this system only occurs in the far southeast corner of map zone (MZ)27.

Biophysical Site Description

See Ecological Site Description of Loamy Slope.

Gently sloping, on mesas, foothill slopes, piedmonts, narrow fingered draws and loamy broad swales 1,100-1,800m elevations. In Trans-Pecos Texas this grassland typically occurs on acidic igneous substrate, but may also occur on limestone and deep gravelly substrates. At lower elevations, grasslands of this type may be dominated by Chino grama (*Bouteloua ramosa*), and are known as chino grasslands. Chino grasslands are included here but are fairly limited in geographic extent and likely have a different fire regime. Higher elevations are dominated by other grama species. Also, in the Trans-Pecos it is unclear that this occupies the loamy swales described for MZ25.

This includes the diverse Apacherian Semi-Desert Grassland and Steppe vegetation of southeast Arizona and the piedmont and foothill grasslands of Chihuhuan Desert (including the chino grasslands of Trans-Pecos Texas).

Vegetation Description

Perennial grasses, herbs with shrubs as the upper life form. Perennial grass dominated with scattered shrubs. Perennial herbaceous cover values range from 16-25%. Bare ground can make up 50% of the ground cover, but in some situations bare ground may be minor. Bare ground patch sizes should be small, e.g., <0.5m in diameter.

Gramma grasses (*Bouteloua* spp) frequently dominate the herbaceous layer with *Bouteloua ramosa* occurring at lower elevations in some situations and *B. eriopoda* and *B. curtipendula* at higher elevations. Shrub component includes *Ephedra* spp, *Yucca* spp and sotol (*Dasylirion* spp).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| BOER4 | *Bouteloua eriopoda* | Black grama |
| BOGR2 | *Bouteloua gracilis* | Blue grama |
| BOCU | *Bouteloua curtipendula* | Sideoats grama |
| BORA4 | *Bouteloua ramosa* | Chino grama |
| MUPO2 | *Muhlenbergia porteri* | Bush muhly |
| LATR2 | *Larrea tridentata* | Creosote bush |
| DALE2 | *Dasylirion leiophyllum* | Green sotol |

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

Disturbance Description

One camp believes that fire has a major impact in these systems. There is another camp that believes that fire is less important in the control of woody species than maintenance of perennial grass cover in the systems. Historical fire data in this system is lacking. It is uncertain what role fire plays in maintaining these systems.

Moisture following fire has significant impact on plant response/recovery.

It is thought that only patchy replacement fire would occur in this system.

Please see MZ27 Biophysical Setting (BpS) 1133 for description of black grama fire effects.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 13 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 13 | 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

1,000-100,000 of ha

Adjacency or Identification Concerns

Natural Resources Conservation Service (NRCS) Ecological Site Descriptions are SD-2 Draw, Loamy and Gravelly Loam. Excludes SD-2 Limy which may be more similar in vegetation and disturbance dynamics to SD-2 Gravelly and to the MZ15 Grama Creosote BpS. The SD-2 Bottomland is also excluded from this BpS.

This system today might have been replaced by 1100 Chihuahuan Desert Scrub.

Many of the historical desert grassland and savanna areas have been converted through intensive grazing and other land uses, some to Apacherian Chihuahuan Mesquite Upland Scrub (CES302.733) (*Prosopis* spp-dominated).

Currently, in the Permain Basin much of this type is mesquite and creosote brushland.

This system might be difficult to distinguish from BpS 1503, the Tobosa and Loamy plains system and BpS 1100 Chihuahuan Mixed Desert Thorn Scrub.

This is a broadly defined ecological system that includes desert grasslands in souteast Arizona and Chihuahuan foothill and piedmont grasslands, but not the Chihuahuan loamy plains, or Sonoran-Chihuahuan Desert Bottomland and Swale Grasslands (mesic site tobosa flats and sacation alkali and wrights).

Issues or Problems

It may be useful to separate similar sites found in Arizona into their own BpS. In Texas this may also be too broadly defined with a broad elevational gradient and including savanna (*Q. emoryi*/ *Muhlenbergia emerslyi* woodland) at the higher elevations.

Native Uncharacteristic Conditions

Comments

This model for MZ27 was adapted from the model from the same BpS from MZ26 created by Bonnie Warnock, John Karges and Colin Shackelford. At the time of adaption, no review had been received for MZ26. Regional Lead (RL) for MZ27 made some quantitative changes to the model in disturbances: no mixed fire; therefore, modeler names changed, even though text created by MZ26 modelers.

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 | UN | UN | UN | UN | UN |
| Herb | 0.5-1.0 | A | A | B | B | B | UN | UN | UN | UN | UN |
| Herb | >1.0 | A | A | B | B | B | UN | UN | UN | UN | UN |
| Shrub | 0-0.5 | B | C | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | B | C | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | B | C | C | C | C | UN | UN | UN | UN | UN |
| Shrub | >3.0 | B | C | C | C | C | UN | UN | UN | UN | UN |
| Tree | 0-5 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | C | C | UN | UN | UN | 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 20 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOER4 | Bouteloua eriopoda | Black grama | Upper |
| BOGR2 | Bouteloua gracilis | Blue grama | Upper |
| BOCU | Bouteloua curtipendula | Sideoats grama | Upper |

Description

Grass and herbs (length predicated on moisture regime). Early succession post fire grass and herb community. This class encompasses the time period required to recover sufficient fuel loads to carry fire. Perennial bunch grasses, annual grass, and herb community. Upper layer of shrubs, canopy cover <5%.

*Maximum Tree Size Class*  
None

Class B 72 Mid Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOER4 | Bouteloua eriopoda | Black grama | Middle |
| BOGR2 | Bouteloua gracilis | Blue grama | Middle |
| BOCU | Bouteloua curtipendula | Sideoats grama | Middle |
| KOSP | Koeberlinia spinosa | Crown of thorns | Upper |

Description

Grass with some low shrubs. Perennial bunch grasses regenerated and young shrubs begin growing. Species are perennial bunch grasses and shrubs. Canopy cover of shrubs is 5-10%, 0-1m tall.

*Maximum Tree Size Class*  
None

Class C 8 Mid Development 2 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOER4 | Bouteloua eriopoda | Black grama | Middle |
| BOGR2 | Bouteloua gracilis | Blue grama | Middle |
| BOCU | Bouteloua curtipendula | Sideoats grama | Middle |
| KOSP | Koeberlinia spinosa | Crown of thorns | Upper |

Description

Shrubs continue to increase in size and/or number of individuals. Species are perennial bunch grasses and shrubs. Canopy cover of shrubs is 10-20%. (Shrub cover will be similar to species composition found in the Ecological System, Apacherian-Chihuahuan Mesquite Upland Scrub). Shrub species diversity increases. Perennial grass species dominate with 10-35% canopy cover; 1-2m height.

The wind/weather stress in this model is drought.

It is thought that this is the class that might result with lack of fire and that more would be present in this class currently vs historically.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:ALL | 5 |
| Mid1:ALL | 6 | Mid2:ALL | 50 |
| Mid2:ALL | 51 | Mid2:ALL | 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 | Mid1:ALL | Mid1:ALL | 0.033 | 30 | No | 0 |
| Replacement Fire | Mid1:ALL | Mid1:ALL | 0.05 | 20 | No | 0 |
| Replacement Fire | Mid1:ALL | Early1:ALL | 0.05 | 20 | Yes | 0 |
| Wind or Weather or Stress | Mid2:ALL | Mid2:ALL | 0.033 | 30 | No | 0 |
| Replacement Fire | Mid2:ALL | Early1:ALL | 0.05 | 20 | Yes | 0 |

References

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