10950

Apacherian-Chihuahuan Mesquite Upland Scrub

BpS Model/Description Version: Aug. 2020

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Mike Babler | mbabler@tnc.org | Guy McPherson | grm@Ag.Arizona.edu |
| Heather Schussman | hschussman@tnc.org | None | None |
| Dave Gori | dgori@tnc.org | None | None |

Vegetation Type

Shrubland

Map Zone

14

Model Splits or Lumps

This Biophysical Setting (BpS) is lumped with 141121.

Geographic Range

Borderland of Arizona, New Mexico, Texas, and northern Mexico. Extends from Sonoran Desert to the Mogollon Rim and much of the Chihuahuan Desert.

Biophysical Site Description

Gently sloping, on mesas, foothill slopes, and piedmonts, 1,100-1,800m elevations.

Vegetation Description

Annual and perennial grasses, herbs with shrubs as the upper lifeform. In Class D, shrubs are eliminating grasses.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| BOUTE | *Bouteloua* | Grama |
| LATR2 | *Larrea tridentata* | Creosote bush |
| MUPO2 | *Muhlenbergia porteri* | Bush muhly |
| PLMU3 | *Pleuraphis mutica* | tobosagrass |
| ARIST | *Aristida* | Threeawn |
| ISTE2 | *Isocoma tenuisecta* | Burroweed |
| ACACI | *Acacia* | Acacia |
| OPUNT | *Opuntia* | Pricklypear |

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

Disturbance Description

Fire has a major impact in desert grasslands. Fire controls the abundance of woody plants and maintains desert grasslands. In the absence of fire, woody plants may dominate. Dry lightning accompanies the monsoons in late June-July. Pre-1882 fires were extensive, up to 100s of square miles.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 10 | 80 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 40 | 20 |  |  |
| All Fires | 8 | 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

1,000-10,0000ha

Adjacency or Identification Concerns

NRCS Ecological Site Descriptions are gravelly, gravelly loam. Effects of dominance by Lehmann lovegrass and increased fuels need to be considered.

Issues or Problems

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

Native Uncharacteristic Conditions

Comments

Reviewer of 141121 suggested that the effects of Lehman lovegrass and increased fuel loads should have more consideration in adjacency discussion. Further, the reviewer suggested that this model would include 141095. He stated that 141095 is a small part of 141121. Original modelers had difficulty with these two models, so they are lumped in map zone (MZ) 14. Original model reviewed and modified in Las Cruces, 29 June 2005, to reflect conditions in MZ15. Adapted from FRCC Model DGRA3, Hann, 25 September 2003. This model is based on grass shrub community and does not address large tree savanna community. Note that MZ13 split this BpS into 2 BpSs.

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 | B | B | B | B | B | B | B |
| Herb | 0.5-1.0 | A | A | A | B | B | B | B | B | B | B |
| Herb | >1.0 | A | A | A | B | B | B | B | B | B | B |
| Shrub | 0-0.5 | B | C | D | D | D | D | D | D | D | D |
| Shrub | 0.5-1.0 | B | C | D | D | D | D | D | D | D | D |
| Shrub | 1.0-3.0 | B | C | D | D | D | D | D | D | D | D |
| Shrub | >3.0 | B | C | D | D | D | D | D | D | D | D |
| Tree | 0-5 | D | D | D | D | D | UN | UN | UN | UN | UN |
| Tree | 5-10 | D | D | D | D | D | UN | UN | UN | UN | UN |
| Tree | 10-25 | D | D | D | D | D | UN | UN | UN | UN | UN |
| Tree | 25-50 | D | D | D | D | D | UN | UN | UN | UN | UN |
| Tree | >50 | D | D | D | D | D | 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 21 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOUTE | Bouteloua | Grama | Upper |
| PLMU3 | Pleuraphis mutica | tobosagrass | Upper |
| ARIST | Aristida | Threeawn | Upper |

Description

Grass and herbs. Early succession post-fire grass and herb community. Perennial bunchgrasses, annual grass and herb community. Upper layer of shrubs, canopy cover <5%.

*Maximum Tree Size Class*  
No Data

Class B 64 Mid Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOUTE | Bouteloua | Grama | Low-Mid |
| PLMU3 | Pleuraphis mutica | tobosagrass | Low-Mid |
| ARIST | Aristida | Threeawn | Low-Mid |
| LATR2 | Larrea tridentata | Creosote bush | Upper |

Description

Grass with some low shrubs. Herbaceous species (BOUTE) may dominate with 35-50% canopy cover. Perennial bunchgrasses regenerate, and young shrubs begin growing. Species are perennial bunchgrasses and shrubs. Canopy cover of shrubs is 5-10%; height is 0-1m.

*Maximum Tree Size Class*  
No data

Class C 10 Mid Development 2 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| BOUTE | Bouteloua | Grama | Low-Mid |
| PLMU3 | Pleuraphis mutica | tobosagrass | Low-Mid |
| ARIST | Aristida | Threeawn | Low-Mid |
| LATR2 | Larrea tridentata | Creosote bush | Upper |

Description

Shrubs continue to increase in size and/or number of individuals. Species are perennial bunchgrasses and shrubs. Herbaceous species (BOUTE) may dominate with 10-35% canopy cover, less than .5m high. Shrub cover will be similar to species composition found in the Apacherian-Chihuahuan Mesquite Upland Scrub ecological system.

*Maximum Tree Size Class*  
No data

Class D 5 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PRGL2 | Prosopis glandulosa | Honey mesquite | Upper |
| PLMU3 | Pleuraphis mutica | tobosagrass | Lower |
| ARIST | Aristida | Threeawn | Lower |
| LATR2 | Larrea tridentata | Creosote bush | Upper |

Description

Shrubs with little to no perennial grass. Shrub cover is high enough to out-compete perennial grasses, resulting in low levels of fine fuel and increased erosion potential. Shrub cover will be similar to species composition found in the Apacherian-Chihuahuan Mesquite Upland Scrub ecological system.

*Maximum Tree Size Class*  
No data

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:ALL | 2 |
| Mid1:ALL | 3 | Mid2:ALL | 14 |
| Mid2:ALL | 15 | Late1:CLS | 21 |
| Late1:CLS | 22 | 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** |
| Surface Fire | Mid1:ALL | Mid1:ALL | 0.02 | 50 | No | 0 |
| Replacement Fire | Mid1:ALL | Early1:ALL | 0.14 | 7 | Yes | 0 |
| Surface Fire | Mid2:ALL | Mid1:ALL | 0.06 | 17 | Yes | 0 |
| Replacement Fire | Mid2:ALL | Early1:ALL | 0.12 | 8 | Yes | 0 |
| Surface Fire | Late1:CLS | Mid2:ALL | 0.12 | 8 | Yes | 0 |

References

Brown, J.K., J. Kapler-Smith, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-24-vol 2. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station. 257 pp.

Kuchler, A.W. 1964. Manual to accompany the map of potential vegetation of the conterminous United States. American Geographical Society. Spec. Publ. No. 36 Lib. Congress Cat. Card Num. 64-15417. 156 pp.

McClaran, M. P., T.R. VanDevender, eds.. 1995. The Desert Grassland. University of Arizona Press. Tucson.

McPherson, G.R. 1995. The Role of Fire in the Desert Grasslands Pages 130-151 in McClaran, M.P. and T.R. VanDevender, eds. The Desert Grassland. University of Arizona Press. Tucson.

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. Data current as of 10 February 2007.

Schmidt, K.M., J.P. Menakis, C.C. Hardy, W.J. Hann, D.L. Bunnell. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: USDA Forest Service, Rocky Mountain Research Station. 41 pp. + CD.

USDA Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: http://www.fs.fed.us/database/feis/.