11000

Chihuahuan Mixed Desert and Thornscrub

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

Shrubland

Map Zone

15

Geographic Range

Shrublands of typically saline basins in the Chihuahuan Desert.

Biophysical Site Description

This system occurs in basins, plains, and into the foothills in the Chihuahuan Desert. Substrates are generally fine-texture saline soils. Does not do well in poorly aeriated soils. Stands of *Acacia constricta*-, *Acacia neovernicosa*-,or *Acacia greggii*-dominated thornscrub are included in this system and limestone substrates appear important for at least these species.

Vegetation Description

This widespread Chihuahuan Desert land cover type is composed of two ecological systems: the Chihuahuan Creosotebush Xeric Basin Desert Scrub (CES302.731) and the Chihuahuan Mixed Desert and Thornscrub (CES302.734 ). This cover type includes xeric creosotebush basins and plains, and the mixed desert scrub in the foothill transition zone above, sometimes extending up to the lower montane woodlands. Vegetation is characterized by *Larrea tridentata* alone or mixed with thornscrub and other desert scrub such as *Agave lechuguilla*, *Aloysia wrightii*, *Fouquieria splendens*, *Dasylirion leiophyllum*, *Flourensia cernua*, *Leucophyllum minus*, *Mimosa aculeaticarpa var. biuncifera*, *Mortonia scabrella* (= *Mortonia sempervirens* ssp. *scabrella*), *Opuntia engelmannii*, *Parthenium incanum*, *Prosopis glandulosa*,and *Tiquilia greggii.* Stands of *Acacia constricta*-, *Acacia neovernicosa*-, or *Acacia greggii*-dominated thornscrub are included in this system and limestone substrates appear important for at least these species. Grasses such as *Dasyochloa pulchella*, *Bouteloua curtipendula*, *Bouteloua eriopoda*, *Bouteloua ramosa*, *Muhlenbergia porteri*,and *Pleuraphis mutica* may be common, but generally have lower cover than shrubs.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| LATR2 | *Larrea tridentata* | Creosotebush |
| ATCA | *Atriplex californica* | California saltbush |
| PAIN | *Parapholis incurva* | Curved sicklegrass |
| ALTR2 | *Allium tribracteatum* | Threebract onion |
| FLCE | *Flourensia cernua* | American tarwort |
| FLOUR | *Flourensia* | Tarwort |
| ACNE | *Acalypha neomexicana* | New Mexico copperleaf |
| ACCO | *Acacia confusa* | Small Philippine acacia |

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

Disturbance Description

Most desert fires are infrequent and of low severity. *Larrea tirdentata* is poorly adapted to fire. It may sprout if the roots are not killed during fire. Standing biomass, deadwood, and leaf litter can fuel desert fires following rainy seasons. Historical fire regimes in desert shrublands are difficult to quantify, but fires were historically rare except under unusual circumstances.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 569 | 59 |  |  |
| Moderate (Mixed) | 804 | 41 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 333 | 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

1,000-1,000,000ac

Adjacency or Identification Concerns

Issues or Problems

Fire ecology studies at the population level are badly needed for fourwing saltbush. Historical fire regimes in desert shrublands are difficult to quantify.

Native Uncharacteristic Conditions

Comments

Model is based on the Rapid Assessment model R2CRBU by Sandy Gregory ([s50grego@nv.blm.gov](mailto:s50grego@nv.blm.gov)).

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 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0.5-1.0 | B | B | B | B | B | B | B | B | B | B |
| Shrub | 1.0-3.0 | B | B | B | B | B | B | B | B | B | B |
| Shrub | >3.0 | B | B | B | B | B | B | B | B | B | B |
| 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 15 Early Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| LATR2 | Larrea tridentata | Creosotebush | Upper |
| ATCA2 | Atriplex canescens | Fourwing saltbush | Upper |

Description

Characterized by low shrub cover (typically 5-10%). In the historical condition in which invasive annual grasses are absent, the fire return interval (FRI) is virtually nonexistent except for areas near the base of mountains experiencing locally higher rainfall and fine fuel buildup from native annuals.

*Maximum Tree Size Class*  
No Data

Class B 85 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| LATR2 | Larrea tridentata | Creosotebush | Upper |
| ATCA2 | Atriplex canescens | Fourwing saltbush | Upper |

Description

Typically >10% shrub cover and <10% grass and forb cover; associated with more productive soils. *Larrea tridentata* characteristically dominates shrub layer. *Acacia* spp. may dominate locally in patches. Few fine fuels are associated with this community; therefore, the FRIs for replacement fire and mixed-severity fire are long.

*Maximum Tree Size Class*  
No data

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Late1:CLS | 99 |
| Late1:CLS | 100 | Late1:CLS | 599 |

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:OPN | Early1:OPN | 0.0033 | 303 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:CLS | 0.0015 | 667 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:OPN | 0.0015 | 667 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:CLS | 0.013 | 77 | No | 0 |

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