11040

Mogollon Chaparral

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
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Vegetation Type

Shrubland

Map Zones

23, 24

Geographic Range

Central and northern Arizona and central New Mexico. Some patches associated with Sky Islands of southern Arizona and New Mexico.

Biophysical Site Description

Occurs across central Arizona (Mogollon Rim) and western New Mexico. It dominates along the mid-elevation transition from the Mojave, Sonoran, and northern Chihuahuan deserts into mountains (1,000-2,200m). It occurs along foothills, mountain slopes, and canyons in drier habitats below the encinal and *Pinus ponderosa* woodlands. Stands are often associated with xeric, coarse-texture substrates such as limestone, basalt, or alluvium, especially in transition areas with more mesic woodlands (NatureServe 2004).

Vegetation Description

*Quercus turbinella* is the dominant species. *Ceanothus greggii*, *Cercocarpus montanus*, and *Arctostaphylos pungens* are also present.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| QUTO2 | *Quercus toumeyi* | Toumey oak |
| QUTU2 | *Quercus turbinella* | Sonoran scrub oak |
| CEMO2 | *Cercocarpus montanus* | Alderleaf mountain mahogany |
| CAHO3 | *Canotia holacantha* | Crucifixion thorn |
| ARPR | *Arctostaphylos pringlei* | Pringle manzanita |

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

Disturbance Description

Species are fire adapted and resprout vigorously after fire. Competition for resources may occur at mature growth stages. Monsoonal moisture gives herbaceous perennials an advantage over annuals. Drought affects this biophysical setting and increases the likelihood of a fire disturbance event.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 47 | 89 | 25 | 100 |
| Moderate (Mixed) | 367 | 11 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 41 | 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

Replacement fire is the dominant disturbance. Disturbance extent depends on patch size, fuel continuity, and weather. Stand size can vary from tens to thousands of acres. Size of the mosaic composition is unknown.

Adjacency or Identification Concerns

Stands occurring in montane woodlands are seral and the result of recent fire.

When conditions are favorable to burning, this fuel type can carry fire from low-elevation grass and shrubland up into higher woodlands and montane forests. It has been noted that the increase of “brush” and woody species is due to the suppression of fire.

Issues or Problems

Literature on stand mosaic composition was unavailable. The coarse-scale landscape percentage was retained.

“Arizona” chaparral is described here. The less known “Coahuilan” chaparral of Mexico, southern New Mexico, and Texas is not captured in this description.

Native Uncharacteristic Conditions

Comments

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 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | C | C | B | B | B | B | B | B | B | B |
| Shrub | >3.0 | D | D | E | E | E | E | E | E | E | E |
| Tree | 0-5 | E | E | E | E | E | E | E | E | UN | UN |
| Tree | 5-10 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | 10-25 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | 25-50 | E | E | E | E | E | UN | UN | UN | UN | UN |
| Tree | >50 | E | E | E | E | E | 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 24 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTO2 | Quercus toumeyi | Toumey oak | All |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | All |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain mahogany | All |
| CAHO3 | Canotia holacantha | Crucifixion thorn | All |

Description

Post-fire community of grasses, forbs, and sprouting shrubs. Regrowth of basal sprouters may also be present. Several species establish from soil-stored seeds after fire.

*Maximum Tree Size Class*  
None

Class B 47 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain mahogany | Upper |
| CAHO3 | Canotia holacantha | Crucifixion thorn | Upper |

Description

Mid-seral, dense canopy cover, mixed-shrub stands with depauperate understory.

*Maximum Tree Size Class*  
None

Class C 5 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain mahogany | Upper |
| CAHO3 | Canotia holacantha | Crucifixion thorn | Upper |

Description

Mid-seral, open, mixed-shrub community with perennial grasses and forbs in interspaces between shrubs.

*Maximum Tree Size Class*  
None

Class D 3 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain mahogany | Upper |
| CAHO3 | Canotia holacantha | Crucifixion thorn | Upper |

Description

Late-seral, open, mixed-shrub community with herbaceous understory.

*Maximum Tree Size Class*  
None

Class E 21 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| CEMO2 | Cercocarpus montanus | Alderleaf mountain mahogany | Upper |
| CAHO3 | Canotia holacantha | Crucifixion thorn | Upper |

Description

Late-seral, closed, mixed-shrub community with significant vegetative buildup.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 15 |
| Mid1:OPN | 12 | Mid1:CLS | 21 |
| Mid1:CLS | 16 | Late1:CLS | 59 |
| Late1:OPN | 35 | Late1:CLS | 59 |
| Late1:CLS | 60 | 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** |
| Competition or Maintenance | Early1:ALL | Early1:ALL | 0.001 | 1000 | No | 0 |
| Alternative Succession | Early1:ALL | Mid1:OPN | 0.015 | 67 | Yes | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.0222 | 45 | Yes | 0 |
| Wind or Weather or Stress | Mid1:OPN | Mid1:OPN | 0.001 | 1000 | No | 0 |
| Alternative Succession | Mid1:OPN | Late1:OPN | 0.001 | 1000 | Yes | 0 |
| Competition or Maintenance | Mid1:OPN | Mid1:OPN | 0.005 | 200 | No | 0 |
| Mixed Fire | Mid1:OPN | Mid1:OPN | 0.01 | 100 | No | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.012 | 83 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.0042 | 238 | Yes | 0 |
| Competition or Maintenance | Mid1:CLS | Mid1:CLS | 0.02 | 50 | No | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.02 | 50 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Late1:OPN | 0.001 | 1000 | No | 0 |
| Mixed Fire | Late1:OPN | Late1:OPN | 0.0022 | 455 | No | 0 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.02 | 50 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.001 | 1000 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.005 | 200 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:CLS | 0.005 | 200 | No | 0 |
| Competition or Maintenance | Late1:CLS | Late1:CLS | 0.01 | 100 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.025 | 40 | Yes | 0 |

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