11040

Mogollon Chaparral

BpS Model/Description Version: Aug. 2020

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Mike Babler | mbabler@tnc.org | Linda Wadleigh | lwadleigh@fs.fed.us |
| None | None | None | None |
| None | None | None | None |

Vegetation Type

Shrubland

Map Zone

15

Geographic Range

This ecological system occurs across central Arizona (Mogollon Rim), western New Mexico, and southern Utah and Nevada.

Biophysical Site Description

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

Vegetation Description

Moderate to dense shrub canopy includes species such as *Quercus turbinella*, *Quercus toumeyi*, *Cercocarpus montanus*, *Canotia holacantha*, *Ceanothus greggii*, *Forestiera pubescens* (= *Forestiera neomexicana*), *Garrya wrightii*. *Juniperus deppeana*, *Purshia stansburiana*, *Rhus ovata*, *Rhus trilobata*,and *Arctostaphylos pungens*, with *Arctostaphylos pringlei* at higher elevations.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| QUTU2 | *Quercus turbinella* | Sonoran scrub oak |
| QUTO2 | *Quercus toumeyi* | Toumey oak |
| CEMO2 | *Cercocarpus montanus* | Alderleaf mountain mahogany |
| CAHO3 | *Canotia holacantha* | Crucifixion thorn |
| CEGR | *Ceanothus greggii* | Desert ceanothus |
| FOPU2 | *Forestiera pubescens* | Stretchberry |
| GAWR3 | *Garrya wrightii* | Wright's silktassel |
| RHOV | *Rhus ovata* | Sugar sumac |

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

Disturbance Description

Most chaparral species are fire adapted, resprouting vigorously after burning or producing fire-resistant seeds. Stands occurring within montane woodlands are seral and a result of recent fires. Replacement fire is the dominant disturbance. Disturbance extent is dependent upon patch size, fuel continuity, and weather.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 81 | 96 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 2188 | 4 |  |  |
| All Fires | 78 | 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

Stand size can vary from tens to thousands of acres. Size of the mosaic composition is unknown.

Adjacency or Identification Concerns

Issues or Problems

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 | B | B | C | C | C | C | C | C | C |
| Shrub | 0.5-1.0 | A | B | B | C | C | C | C | C | C | C |
| Shrub | 1.0-3.0 | A | B | B | C | C | C | C | C | C | C |
| Shrub | >3.0 | A | B | B | D | D | D | D | D | D | D |
| Tree | 0-5 | D | D | D | D | D | D | D | D | 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 3 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| CEGR | Ceanothus greggii | Desert ceanothus | Upper |

Description

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

*Maximum Tree Size Class*  
No Data

Class B 6 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| CEGR | Ceanothus greggii | Desert ceanothus | Upper |

Description

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

*Maximum Tree Size Class*  
No data

Class C 18 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| CEGR | Ceanothus greggii | Desert ceanothus | Upper |

Description

Late-seral, mixed-shrub dense canopy community with scant, if any, herbaceous community.

*Maximum Tree Size Class*  
No data

Class D 73 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| QUTU2 | Quercus turbinella | Sonoran scrub oak | Upper |
| QUTO2 | Quercus toumeyi | Toumey oak | Upper |
| CEGR | Ceanothus greggii | Desert ceanothus | Upper |

Description

Decadent shrubs with no understory.

*Maximum Tree Size Class*  
No data

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 2 |
| Mid1:OPN | 2 | Mid1:CLS | 6 |
| Mid1:CLS | 7 | Late1:CLS | 20 |
| Late1:CLS | 21 | 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:OPN | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:OPN | 0.002 | 500 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.017 | 59 | Yes | 0 |

References

Anderson, H.E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. Gen. Tech. Rep. INT-122. Ogden, UT: USDA Forest Service, Intermountain Forest and Range Experiment Station. 22 pp.

Arno, S.F. 2000. Fire in western forest ecosystems. Pages 97-120 in: J.K. Brown and J. Kapler-Smith, eds. Wildland fire in ecosystems: Effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station. 257 pp.

Barbour, M.G. and W.D. Billings. 1988, North American Terrestrial Vegetation 2nd edition. By the press syndicate of the University of Cambridge. 203-254.

Brown, D.E. 1994. Biotic Communities of the American Southwest - United States and Mexico, in Desert Plants vol. 4, nos. 1-4, 1982, by the Boyce Thompson Southwestern Arboretum.

Brown, J.K. and J Kapler-Smith, eds. 2000. Wildland fire in ecosystems: Effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station. 257 pp.

Cable, D.R. 1957. Recovery of chaparral following burning and seeding in central Arizona. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station research note RM-28.

Carmichael, R.S., O.D. Knipe, C.P. Pose and W.W. Brady. 1978. Arizona chaparral: plant associations and ecology. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station Research Paper RM-202.

Eyre, F H., ed. 1980. Forest cover types of the United States and Canada. Washington, DC: Society of American Foresters. 148 pp.

Hardy, C.C., K.M. Schmidt, J.P. Menakis and R.N. Samson. 2001. Spatial data for national fire planning and fuel management. Int. J. Wildland Fire. 10(3&4): 353-372.

Kuchler, A.W. 1964. Potential Natural Vegetation of the Conterminous United States. American Geographic Society. Special Publication No. 36. 116 pp.

NatureServe. 2004. International Ecological Classification Standard: Terrestrial Ecological Classifications. Terrestrial ecological systems of the Southwestern US: DRAFT legend for LANDFIRE project. NatureServe Central Databases. Arlington, VA. Data current as of 12 October 2004.

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

Pase, C.P and D.E. Brown. 1994. Interior chaparral. In: Brown, David E., ed. Biotic Communities Southwestern United States and Northwestern Mexico. 95-99.

Schmidt, K.M, J.P. Menakis, C.C. Hardy, W.J. Hann and D.L. Bunnell, David L. 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/ [Accessed: 1/30/03].