

**11010**

## **Madrean Oriental Chaparral**

BpS Model/Description Version: Aug. 2020

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### **Vegetation Type**

Shrubland

### **Map Zone**

26

### **Model Splits or Lumps**

This Biophysical Setting (BpS) is lumped with 2611070.

### **Geographic Range**

This ecological system occurs in mountains across southeastern New Mexico (Guadalupe Mountains) and Trans-Pecos Texas (Chisos Mountains, Davis Mountains). It often dominates along the mid-elevation transition from the Chihuahuan Desert into the mountains (1700-2500m).

### **Biophysical Site Description**

It occurs on foothills, mountain slopes, and canyons in drier habitats below the encinal and pine woodlands and is often associated with more xeric and coarse-textured substrates such as limestone, basalt, or alluvium, especially in transition areas with more mesic woodlands.

### **Vegetation Description**

The moderate to dense shrub canopy includes many shrub oak species such as dwarf oak (*Quercus intricata*), Lacey oak (*Q. laceyi*), gray oak (*Q. grisea*), emory oak (*Q. emoryi*), Toumey oak (*Q. toumeyii*), and pungent oak (*Q. pungens* var. *pungens*); several widespread chaparral species such as desert ceanothus (*Ceanothus greggii*), Apache plume (*Fallugia paradoxa*), and Wright's silktassel (*Garrya wrightii*); species characteristic of this system such as Arizona madrone (*Arbutus arizonica*), Texas madrone (*A. xalapensis* = *A. texana*), Gregg's ash (*Fraxinus greggii*), stiff fendlerbush (*Fendlera rigida* = *F. linearis*), eggleaf silktassel (*Garrya ovata*), evergreen sumac (*Rhus virens* var. *choriophylla* = *R. choriophylla*); and endemics, canyon sage (*Salvia lycioides* = *Salvia ramosissima*), cedar sage (*S. roemeriana*), and mountain sage (*S. regla*).

### **BpS Dominant and Indicator Species**

| <b>Symbol</b> | <b>Scientific Name</b>   | <b>Common Name</b> |
|---------------|--------------------------|--------------------|
| QUGR3         | <i>Quercus grisea</i>    | Gray oak           |
| QUMO          | <i>Quercus mohriana</i>  | Mohr oak           |
| QUIN3         | <i>Quercus intricata</i> | Dwarf oak          |

|       |                    |                 |
|-------|--------------------|-----------------|
| RHVI3 | <i>Rhus virens</i> | Evergreen sumac |
|-------|--------------------|-----------------|

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

### Disturbance Description

The primary disturbance mechanism is low- to moderate-severity fire resulting in top-kill and rare mortality. Various oak species present respond to fire with vigorous sprouting from the root crown. Larger forms may survive low-intensity surface fire. Extended drought also contributes to disturbance. 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.

### Fire Frequency

| Severity         | Avg FI | Percent of All Fires | Min FI | Max FI |
|------------------|--------|----------------------|--------|--------|
| Replacement      | 40     | 40                   |        |        |
| Moderate (Mixed) |        |                      |        |        |
| Low (Surface)    | 27     | 60                   |        |        |
| All Fires        | 16     | 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

Scale ranges from 10s-1000s of acres.

### Adjacency or Identification Concerns

This BpS is characterized by >80% various oak species. This type merges with the mountain shrub BpS at lower elevations and intermingles with the deciduous woodland BpS at higher elevations and/or northern exposures. Colocated with 261127 (Inter-Mountain Basins Semi-Desert Shrub-Steppe) and with montane forests above.

### Issues or Problems

Gambel oak (*Q. gambelii*) community found in very small formation in the Davis Mountains and probably the Guadalupe Range. Oak-dominated vegetation may become more abundant after wildfires in areas previously dominated by ponderosa pine if there is insufficient pine regeneration. It is also possible that dense resprouting oaks can suppress pine regeneration.

### 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  | B  | B  | B  | B  | B  | B  | B  | B  |
| Shrub | 0.5-1.0 | A | A  | B  | B  | B  | B  | B  | B  | B  | B  |
| Shrub | 1.0-3.0 | A | A  | C  | C  | C  | C  | C  | C  | C  | C  |
| Shrub | >3.0    | A | A  | C  | C  | C  | C  | C  | C  | C  | C  |
| Tree  | 0-5     | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree  | 5-10    | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree  | 10-25   | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree  | 25-50   | C | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree  | >50     | C | UN | 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

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### Class A      10      Early Development 1 - All Structures

#### Indicator Species

| Symbol | Scientific Name | Common Name     | Canopy Position |
|--------|-----------------|-----------------|-----------------|
| QUGR3  | Quercus grisea  | Gray oak        | Upper           |
| QULA   | Quercus laceyi  | Lacey oak       | Upper           |
| RHVI3  | Rhus virens     | Evergreen sumac | Upper           |

#### Description

Post-replacement sprouts to approximately 0.5m high. Dense resprouting with high number of stems/acre. Abundant grass and forb cover. Upper layer lifeform is not dominant. This class should include shrubs of any height (<20% cover). Grass and forbs are the dominant cover.

#### Maximum Tree Size Class

None

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### Class B      30      Mid Development 1 - Open

#### Indicator Species

| Symbol | Scientific Name | Common Name     | Canopy Position |
|--------|-----------------|-----------------|-----------------|
| QUGR3  | Quercus grisea  | Gray oak        | Upper           |
| QULA   | Quercus laceyi  | Lacey oak       | Upper           |
| RHVI3  | Rhus virens     | Evergreen sumac | Upper           |

#### Description

Stem mortality due to competition with slight decrease in understory species due to shading.

Maximum Tree Size Class

None

**Class C**

**60**

**Late Development 1 - Open**

Indicator Species

| Symbol | Scientific Name | Common Name     | Canopy Position |
|--------|-----------------|-----------------|-----------------|
| QUGR3  | Quercus grisea  | Gray oak        | Upper           |
| QULA   | Quercus laceyi  | Lacey oak       | Upper           |
| RHVI3  | Rhus virens     | Evergreen sumac | Upper           |

Description

Nearly continuous canopy cover, 2 or more hectares in size with only occasional openings (Brown 1958).

Maximum Tree Size Class

None

**Model Parameters**

**Deterministic Transitions**

| From Class | Begins at (yr) | Succeeds to | After (years) |
|------------|----------------|-------------|---------------|
| Early1:ALL | 0              | Mid1:OPN    | 4             |
| Mid1:OPN   | 5              | Late1:OPN   | 20            |
| Late1:OPN  | 21             | Late1:OPN   | 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 |
|------------------|-----------------------|---------------------|-------------------------|-----------------------|-----------------------------------------------------|------------------------------|
| Replacement Fire | Early1:ALL            | Early1:ALL          | 0.02                    | 50                    | Yes                                                 | 0                            |
| Replacement Fire | Mid1:OPN              | Early1:ALL          | 0.025                   | 40                    | Yes                                                 | 0                            |
| Surface Fire     | Mid1:OPN              | Mid1:OPN            | 0.04                    | 25                    | No                                                  | 0                            |
| Replacement Fire | Late1:OPN             | Early1:ALL          | 0.025                   | 40                    | Yes                                                 | 0                            |
| Surface Fire     | Late1:OPN             | Late1:OPN           | 0.04                    | 25                    | No                                                  | 0                            |

**References**

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