

**10910**

## **Sonoran Mid-Elevation Desert Scrub**

BpS Model/Description Version: Aug. 2020

| <b>Modelers</b> |                       | <b>Reviewers</b> |      |
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**Reviewer:** Tim Christiansen

### **Vegetation Type**

Shrubland

### **Map Zone**

25

### **Geographic Range**

The northern edge of the Sonoran Desert in an elevational band along the lower slopes of the Mogollon Rim/Central Highlands region. Also in the Bradshaw, Hualapai, and Superstition mountains, lower elevations of the Pinalenos, Whetstones, lower reaches of Reddington Pass (northeastern side of Catalinas), lower end of Mazatzals (western side), New River Mountains, Agua Fria, Superstition Mountains, and Four Peaks.

### **Biophysical Site Description**

Between 750-1,300m. Sites range from a narrow strip on steep slopes to very broad areas such as the Verde Valley. Climate is too dry for chaparral species to be abundant, and freezing temperatures during winter are too frequent and prolonged for many of the frost-sensitive species that are characteristic of Sonoran Paloverde-Mixed Cacti Desert Scrub. Substrates are generally rocky soils derived from parent materials such as limestone, granitic rocks, or rhyolite. Competition for moisture and nutrients helps to maintain wide plant spacing/distribution within this Biophysical Setting (BpS).

### **Vegetation Description**

The vegetation is typically composed of an open shrub layer of *Larrea tridentata*, *Ericameria linearifolia*, or *Eriogonum fasciculatum* with taller shrubs such as *Canotia holacantha*, *Fouqueria splendens* (limestone or granite), or *Simmondsia chinensis* (rhyolite). The herbaceous layer is generally sparse.

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

| <b>Symbol</b> | <b>Scientific Name</b>         | <b>Common Name</b>       |
|---------------|--------------------------------|--------------------------|
| ERFA2         | <i>Eriogonum fasciculatum</i>  | Eastern mojave buckwheat |
| ERLI6         | <i>Ericameria linearifolia</i> | Narrowleaf goldenbush    |
| ISTE2         | <i>Isocoma tenuisecta</i>      | Burroweed                |
| CAHO3         | <i>Canotia holacantha</i>      | Crucifixion thorn        |
| GUTIE         | <i>Gutierrezia</i>             | Snakeweed                |
| SICH          | <i>Simmondsia chinensis</i>    | Jojoba                   |

|       |                             |               |
|-------|-----------------------------|---------------|
| LATR2 | <i>Larrea tridentata</i>    | Creosote bush |
| FOSP2 | <i>Fouquieria splendens</i> | Ocotillo      |

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

### Disturbance Description

Fire is unusual in this BpS. Drought is a common occurrence in this BpS; occasionally long-term drought periods (10-15yr duration) will affect this BpS. Historical fire sizes within this BpS were quite small due to noncontinuous plant spacing. Wind-driven fire events may have created some larger-scale fires but not frequently.

### Fire Frequency

| Severity         | Avg FI | Percent of All Fires | Min FI | Max FI |
|------------------|--------|----------------------|--------|--------|
| Replacement      | 367    | 100                  |        |        |
| Moderate (Mixed) |        |                      |        |        |
| Low (Surface)    |        |                      |        |        |
| All Fires        | 367    | 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

Patch size of this BpS ranges from 50-75,000ha (from literature).

### Adjacency or Identification Concerns

Above Sonoran Paloverde-Mixed Cacti Desert Scrub (CES302.761) and below Mogollon Chaparral (CES302.741) in elevation.

Non-native, weedy annuals are present to dominant. Adjacent, upper-elevation BpS may influence fire behavior and/or frequency.

### Issues or Problems

Buffelgrass (*Cenchrus ciliaris*) invasion is prevalent, extending from lower elevations into the mid-elevation areas of this BpS; fountain grass (landscape ornamental) also showing up in scattered areas within this BpS. Red brome has significantly increased fire frequency and severity in this BpS.

A reviewer noted that higher densities of weedy annuals could be expected due to a change in weather and climate patterns.

### Native Uncharacteristic Conditions

### Comments

Tim Christiansen reviewed this BpS during the 2016 Model Review.

## Succession Classes

### Mapping Rules

|  |  |                  |
|--|--|------------------|
|  |  | Canopy Cover (%) |
|--|--|------------------|



|       |                      |               |       |
|-------|----------------------|---------------|-------|
| SICH  | Simmondsia chinensis | Jojoba        | Upper |
| LATR2 | Larrea tridentata    | Creosote bush | Upper |

### Description

Acacia may occur in patches. Sparse herbaceous layer, high percent of bare ground. *Larrea*, *Eriogonum*, *Simmondsia*, *Ericameria*, *Canotia* found throughout. Significant fire events are still very rare in this system. Native American burning played a role within or immediately adjacent to riparian zones, primarily to chase game for hunting purposes (Dobyns, H.F.).

### Maximum Tree Size Class

None

## **Model Parameters**

### **Deterministic Transitions**

| From Class | Begins at (yr) | Succeeds to | After (years) |
|------------|----------------|-------------|---------------|
| Early1:OPN | 0              | Late1:CLS   | 5             |
| Late1:CLS  | 6              | 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 |
|---------------------------|-----------------------|---------------------|-------------------------|-----------------------|-----------------------------------------------------|------------------------------|
| Wind or Weather or Stress | Early1:OPN            | Early1:OPN          | 0.02                    | 50                    | No                                                  | 0                            |
| Replacement Fire          | Late1:CLS             | Early1:OPN          | 0.004                   | 250                   | Yes                                                 | 0                            |
| Wind or Weather or Stress | Late1:CLS             | Early1:OPN          | 0.09                    | 11                    | Yes                                                 | 0                            |

## **References**

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