10930

Southern Colorado Plateau Sand Shrubland

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 Zones

13, 15, 16, 23, 24, 28

Geographic Range

This system occurs in sandy plains and mesas on the southcentral Colorado Plateau in northeastern Arizona extending into southern and central Utah. It may also occur on portions of the Colorado Plateau in New Mexico and Colorado.

Biophysical Site Description

This Biophysical Setting (BpS) occurs on windswept mesas, broad basins, and plains at low to moderate elevations (1,300-1,800m). It occurs on stabilized sandsheet and shallow to moderately deep sandy soils. May be on small hummocks or small coppice dunes.

Vegetation Description

A semi-arid open shrublands, dominated by short shrubs (10-30% cover). Includes a sparse graminoid layer. *Ephedra viridis* (Green ephedra) is often dominant and regenerates from seed and by sprouting from the roots and woody crown. Seed production is erratic under natural conditions, with an abundant seed crop occurring very infrequently. Green ephedra has also been identified as a resprouting species following disturbance. *Coleogyne ramosissima* (blackbrush) seldom occurs in this BpS.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| EPVI | *Ephedra viridis* | Mormon tea |
| EPCU | *Ephedra cutleri* | Cutler's jointfir |
| EPTO | *Ephedra torreyana* | Torrey's jointfir |
| ARFI2 | *Artemisia filifolia* | Sand sagebrush |
| POIN3 | *Poliomintha incana* | Frosted mint |
| ACHY | *Achnatherum hymenoides* | Indian ricegrass |
| BOGR2 | *Bouteloua gracilis* | Blue grama |
| HECO26 | *Hesperostipa comata* | Needle and thread |

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

Disturbance Description

Wind may be the dominant disturbance. Fire is likely not a major factor due to limited fuels in the BpS. Green ephedra has been found in plant communities with a wide range of fire return intervals and has been found in ecosystems following large, stand-replacing fires as well as small, patchy, erratic fires.

Fire regimes in similar plant associations include: saltbush-greasewood, *Atriplex confertifolia* -- *Sarcobatus vermiculatus* with mean fire intervals (MFIs) of <35yrs to <100yrs; Blackbrush, *Coleogyne ramosissima* with MFIs of <35yrs to <100yrs; and Creosotebush, *Larrea tridentata* with MFIs of <35yrs to <100yrs.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 221 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 221 | 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

Patches may be large.

Adjacency or Identification Concerns

*Coleogyne ramoisissima* (blackbrush) is not present in this BpS. If blackbrush is present, one of the following BpSs would be more appropriate: 1078 -- Colorado Plateau Blackbrush-Mormon Tea Shrubland; or 1082 -- Mojave Mid-Elevation Desert Scrub.

Higher vegetation cover and less prominent geomorphic features distinguish this system from Inter-Mountain Basins Active and Stabilized Dune (CES302.775).

Issues or Problems

Information on this BpS, including fire information, is lacking. The impacts of long-term domestic animal grazing in this BpS are difficult to determine. A two-box model may be appropriate.

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 | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | A | B | C | C | C | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | A | B | C | C | C | UN | UN | UN | UN | UN |
| Shrub | >3.0 | A | B | C | C | C | UN | UN | UN | UN | UN |
| 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**

Class A 23 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| EPVI | Ephedra viridis | Mormon tea | Upper |
| EPCU | Ephedra cutleri | Cutler's jointfir | None |
| ARFI2 | Artemisia filifolia | Sand sagebrush | None |

Description

Blowout and disturbed sites with very low cover, primarily consisting of *Ephedra viridis*.

*Maximum Tree Size Class*  
None

Class B 76 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| EPVI | Ephedra viridis | Mormon tea | Upper |
| EPCU | Ephedra cutleri | Cutler's jointfir | None |
| ARFI2 | Artemisia filifolia | Sand sagebrush | None |

Description

Canopy is dominated by *Ephedra viridis*. Grass and graminoid presence is highly influenced by seasonal moisture. *Ephedra viridis* and *E. cutleri* may develop a matty growth form.

*Maximum Tree Size Class*  
No data

Class C 1 Late Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| EPVI | Ephedra viridis | Mormon tea | Upper |
| EPCU | Ephedra cutleri | Cutler's jointfir | None |
| ARFI | Ariocarpus fissuratus | Chautle livingrock | None |

Description

Canopy cover limits potential grasses and graminoid plant growth. *Ephedra viridis* and *E. cutleri* assume matty growth form.

*Maximum Tree Size Class*  
No data

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 19 |
| Mid1:OPN | 20 | Late1:ALL | 319 |
| Late1:ALL | 320 | Late1:ALL | 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 | 0.003 | 333 | Yes | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Wind or Weather or Stress | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Late1:ALL | Early1:ALL | 0.005 | 200 | Yes | 0 |
| Wind or Weather or Stress | Late1:ALL | Early1:ALL | 0.01 | 100 | Yes | 0 |

References

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