

# **Ecological site group DX035X01BESG14**

## **Circle Cliffs - Sandy Grasslands and Shrublands - mid-elevation, ustic shrublands and woodlands**

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### **Key Characteristics**

- Circle Cliffs
- Sandy Grasslands and Shrublands
- Mid-elevation, MAST <54 degrees F.
- Ustic shrublands and woodlands on hills, mountains, and high benches

Provisional. A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.

### **Physiography**

These sites usually occur on sand sheets, stabilized dunes, and climbing dunes that occur on structural benches, plateaus, buttes, or valley floors. They can also be found on dunes, alluvial flats and drainageways. Slopes usually range from 0-15% but can be up to 50% on dunes and other steep landforms. Elevations range from 5200 to 7900 ft.

### **Climate**

The climate of this site is characterized by warm summers and cold winters. Average annual precipitation ranges from 10 to 16 inches. June is typically the driest month, as well as April and May. About 35% of the precipitation occurs as cool-season moisture from January to March, while 40% of the moisture occurs as convective thunderstorms from July through October. Large fluctuations in daily temperature are common, and precipitation varies greatly from month to month and from year to year.

### **Soil features**

These soils are typically deep or very deep sands with very few rock fragments on the soil surface and throughout the profile. They formed in eolian deposits, alluvium and/or slope alluvium derived from sandstone. They are somewhat excessively drained with rapid permeability. They can be calcareous or non-calcareous, depending on the parent material. Available water holding capacity ranges from 1.9 to 3.3 inches of water in the upper 40 inches of soil. The soil moisture regime is aridic ustic and the soil temperature regime is mesic.

### **Vegetation dynamics**

These sites characteristically have a woody overstory of shrubs or trees. Mountain big sagebrush is commonly present either as the overstory of the site or as a major component of the shrub understory under two-needle pinyon and Utah juniper. It has been suggested the mountain big sagebrush dominated sites are slightly more moist than the pinyon-Utah juniper dominated sites.

Fire is an important aspect of mountain big sagebrush dominated ecological sites. Fire intervals are historically 15-20 years. Shrub vegetation is able to reestablish from seed dispersal from the adjacent non burned sagebrush stands; however the process is relatively slow. Fire also decreases the extent of Utah juniper/pinyon pine invasions, which allows the historic plant community to maintain integrity. When the plant community is burned shrubs will decrease, while perennial and annual grasses increase. The perennial shrubs associated with this site are able to recover at a faster rate than the invading trees. When the site is degraded by the presence of invasive annuals, the

fire return interval is shortened due to increased flashy fuels. The shortened fire return interval is often sufficient to suppress the native plant community.

## Major Land Resource Area

MLRA 035X

Colorado Plateau

## Subclasses

- R035XY307UT–Upland Sand (Mountain Big Sagebrush)
- R035XY324UT–Upland Sand (Utah Juniper-Pinyon)

## Correlated Map Unit Components

22484444, 22966762, 22967021, 22966865

## Stage

Provisional

## Contributors

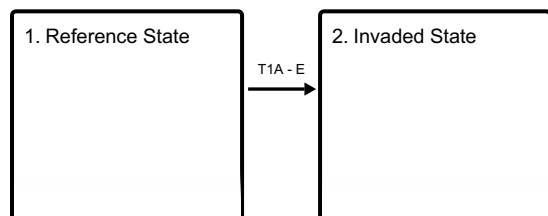
Vic Parslow

Keith Crossland

Curtis Talbot

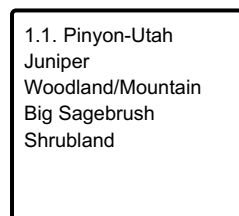
## State and transition model

### Ecosystem states

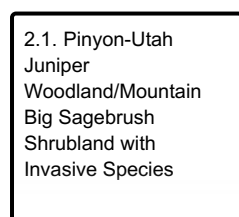


**T1A - E - E** = Establishment of non-native invasive species

### State 1 submodel, plant communities



### State 2 submodel, plant communities



## State 1

## **Reference State**

The reference state is generally dominated by two-needle pinyon, Utah Juniper, perennial grasses and mountain big sagebrush. The reference state is self-sustaining and resistant to change due to high resistance to natural disturbances and high resilience following natural disturbances. When natural disturbances occur, the rate of recovery is variable due to disturbance intensity. Once invasive plants establish, return to the reference state may not be possible.

## **Community 1.1**

### **Pinyon-Utah Juniper Woodland/Mountain Big Sagebrush Shrubland**

The reference state plant community is characterized by a diverse mixture of grasses, forbs, shrubs and trees. Two-needle pinyon and Utah juniper dominate the tree canopy, when present, with mountain big sagebrush, Gambel oak, manzanita, Mormon tea, prickly pear, and various other shrub species common. Grasses are diverse and often include sandhill muhly, blue grama, Indian ricegrass, needleandthread, mesa dropseed, bluegrass, muttongrass, sand dropseed, and squirreltail.

## **State 2**

### **Invaded State**

This state is functionally and structurally similar to state 1, however it allows for the presence of non-native species. As a result of the establishment of non-native species, the resilience of this state is less than the reference state.

## **Community 2.1**

### **Pinyon-Utah Juniper Woodland/Mountain Big Sagebrush Shrubland with Invasive Species**

This community is similar to community 1.1 in structure and function. Non-native invasive species, particularly cheatgrass, are present on the site, but not dominant.

## **Transition T1A - E**

### **State 1 to 2**

This transition occurs with the establishment of non-native invasive species, such as cheatgrass. Although disturbances such as roads, recreation, and grazing may facilitate the establishment of non-native species, they may establish on this site in the absence of major soil disturbances.

## **Citations**