

# Ecological site group DX035X01BESG09

## Circle Cliffs - Saline Uplands and Flats - moderately deep and deeper soils

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### Key Characteristics

- Circle Cliffs
- Saline Uplands and Flats
- Soils are moderately deep or deeper

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

This group of ecological sites occur on alluvial fans, fan terraces, pediments, valley flats, hills, stream terraces, and structural benches at elevations between 3,700 and 6,800 feet. Slopes typically range from 2 to 15%, but can be as high as 50%. Flooding ranges from none to very rare and duration is very brief.

### Climate

The climate is characterized by hot summers and cool winters. Large fluctuations in daily temperatures are common. Approximately 65–70% of moisture occurs as rain from March through October. On the average, April, May, and June are the driest months and August, September, and October are the wettest months. Precipitation is extremely variable from month to month and from year to year but averages between 6-12 inches. Much of the precipitation occurs as convection thunderstorms.

### Soil features

The soils are moderately deep to very deep and well drained. Surface textures are loam, sandy loam, sandy clay loam, or silty clay loam. Rock fragments may or may not occur on the soil surface, ranging from 0 to 50 percent cover. Subsurface textures range from sandy loam to silty clay loam with 0 to more than 50 percent rock fragments. These soils formed in eolian deposits, alluvium, slope alluvium, or colluvium from sedimentary and igneous rocks. The soils are typically slightly saline. Available water-holding capacity ranges from 2 to 7 inches in the upper 40 inches of the soil. Soil moisture regime is typic aridic or ustic aridic and soil temperature regime is mesic.

### Vegetation dynamics

These sites plant species composition is generally dominated by James' galleta and shadscale. Torrey's tea, snakeweed, prickly pear and yellow rabbitbrush are common shrubs, and Indian ricegrass, blue grama, mesa dropseed, and sand dropseed are common grasses. Bud sagebrush is found the more gravelly and cobbly sites. Some sites closer to washes are dominated by alkali sacaton with varying proportions of greasewood and rubber rabbitbrush.

These ecological sites have been grazed by domestic livestock since they were first introduced into the area around 1860. The common season of use is winter. These sites are resistant in that use. However, improper grazing may stress the plants and allow nutrients to become available for invasive species to flourish; as may other modern disturbances such as recreation and OHV use.

There is no evidence that these sites historically burned on a regular basis due to very large and persistent gaps between plants. However, areas that have been invaded by annuals have increased fine fuel loads and may make

fire more prevalent. Cheatgrass, Russian thistle and halogeton have all been documented on these sites.

## Major Land Resource Area

MLRA 035X

Colorado Plateau

## Subclasses

- R035XY101UT–Desert Alkali Sandy Loam (Alkali Sacaton)
- R035XY109UT–Desert Loam (Shadscale)
- R035XY136UT–Desert Stony Loam (Shadscale-Bud Sagebrush)
- R035XY242UT–Semidesert Gravelly Loam (Shadscale)

## Correlated Map Unit Components

22966787, 22966908, 22966909, 22966759, 22966957, 22966956, 22966848, 22966873, 22966840, 22966877, 22967044, 22963633, 22963726, 22963649

## Stage

Provisional

## Contributors

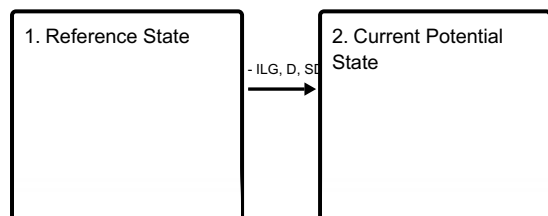
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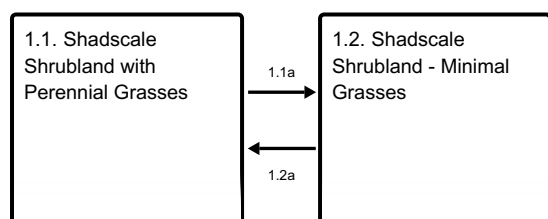
## State and transition model

### Ecosystem states



**T1.a - ILG, D, SD, IW** - ILG=Season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization. D=Drought SD= Surface Disturbance IW=Invasive Weed Source

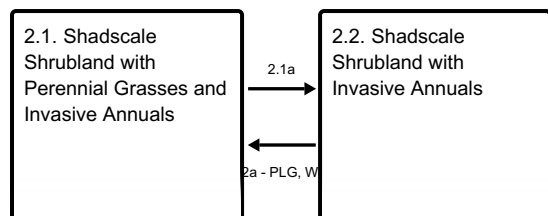
### State 1 submodel, plant communities



**1.1a** - D = Drought ILG = Improper livestock grazing SD = Surface disturbances

**1.2a** - PLG = Proper livestock grazing T = Time without disturbances W = Wet weather periods

## State 2 submodel, plant communities



**2.1a** - D = Drought ILG = Improper livestock grazing SD = Surface disturbances

**2.2a - PLG, W, T** - W=Wet Weather Periods T=Time PLG=Proper Livestock Grazing

## State 1 Reference State

The ecological sites in this group are typically dominated by shadscale and James galleta. Bud sagebrush, Indian ricegrass and sand dropseed may or may not be present in all areas.

### Dominant plant species

- shadscale saltbush (*Atriplex confertifolia*), shrub
- James' galleta (*Pleuraphis jamesii*), grass

## Community 1.1 Shadscale Shrubland with Perennial Grasses

This plant community phase is dominated by shadscale and perennial grasses. Grasses may include but are not limited to, Indian ricegrass and James galleta. James galleta is typically the dominant perennial grass species in this plant community phase. Other shrubs, perennial grasses, and forbs may or may not be present and cover is variable.

### Dominant plant species

- shadscale saltbush (*Atriplex confertifolia*), shrub
- James' galleta (*Pleuraphis jamesii*), grass

## Community 1.2 Shadscale Shrubland - Minimal Grasses

This plant community phase is dominated by shadscale and, in some places, bud sagebrush, where warm and cool season perennial grasses are minimally present. Grasses may include but are not limited to, Indian ricegrass and James galleta. James galleta is typically the dominant perennial grass species in this plant community phase. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable.

### Dominant plant species

- shadscale saltbush (*Atriplex confertifolia*), shrub
- James' galleta (*Pleuraphis jamesii*), grass

## Pathway 1.1a Community 1.1 to 1.2

This pathway occurs when climatic events, such as drought disfavor the establishment and persistence of perennial grasses. Season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization and/or surface disturbance may accelerate this transition.

## Pathway 1.2a Community 1.2 to 1.1

This pathway occurs when climatic events, such as years with normal to above average precipitation favor the establishment and persistence of perennial grasses. Carefully managed livestock grazing, where present can accelerate this transition.

## **State 2**

### **Current Potential State**

The current potential state is similar to state one, however there are invasive species established in the understory—cheatgrass and halogeton being the most common. The primary disturbance mechanism is climate fluctuations; however livestock grazing may influence the ecological dynamics of the site.

#### **Dominant plant species**

- shadscale saltbush (*Atriplex confertifolia*), shrub
- James' galleta (*Pleuraphis jamesii*), grass

## **Community 2.1**

### **Shadscale Shrubland with Perennial Grasses and Invasive Annuals**

This plant community phase is dominated by shadscale, usually with bud sagebrush, and perennial grasses. Grasses may include but are not limited to, Indian ricegrass and James galleta. James galleta is typically the dominant perennial grass species in this plant community phase. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. This plant community is very similar to plant community 1.1 in production and cover. The main difference is that invasive species are present in this phase.

#### **Dominant plant species**

- shadscale saltbush (*Atriplex confertifolia*), shrub
- James' galleta (*Pleuraphis jamesii*), grass
- cheatgrass (*Bromus tectorum*), grass

## **Community 2.2**

### **Shadscale Shrubland with Invasive Annuals**

This plant community phase is dominated by shadscale and, in some places, bud sagebrush, where warm and cool season perennial grasses are minimally present. Grasses may include but are not limited to, Indian ricegrass and James galleta. James galleta is typically the dominant perennial grass species in this plant community phase. Other perennial grasses, shrubs, and forbs may also be present and cover is variable. This plant community is very similar to plant community 1.2 in production and cover. The main difference is that invasive species are present in this phase.

#### **Dominant plant species**

- shadscale saltbush (*Atriplex confertifolia*), shrub
- James' galleta (*Pleuraphis jamesii*), grass
- cheatgrass (*Bromus tectorum*), grass

## **Pathway 2.1a**

### **Community 2.1 to 2.2**

This pathway occurs when climatic events, such as drought disfavor the establishment and persistence of perennial grasses. Season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization and/or surface disturbance may accelerate this transition.

## **Pathway 2.2a - PLG, W, T**

### **Community 2.2 to 2.1**

This pathway occurs when events, such as years with normal to above average precipitation favor the

establishment of perennial grasses, and when grazing regimes are used that promote the establishment and persistence of perennial grasses.

### **Transition T1.a - ILG, D, SD, IW State 1 to 2**

This transition occurs as invasive species become established in the plant community. Common invasive species include cheatgrass, halogeton, and Russian thistle. Disturbances that may accelerate this transition include season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, surface disturbance and extended drought. Invasive species such as cheatgrass have also been known to invade an intact perennial plant community where no disturbance has occurred. Short wet spells when annuals are germinating can significantly increase their annual production.

### **Citations**