

# Ecological site group DX035X01BESG04

## Circle Cliffs - Outcrops and Slopes - shallow soils

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### Key Characteristics

- Circle Cliffs
- Outcrops and Slopes
- Soils are shallow

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 structural benches, ledges, cuestas, plateaus, and mesas. Some sites receive extra moisture in the form of run off from adjacent rock outcrop. Other sites are associated with bedrock ledges on escarpments. Runoff ranges from low to very high. Slopes range from 2 to 80 percent and elevations range from 3900 to 6900 feet.

### Climate

The climate is characterized by hot summers, cool winters. Climate is often modified by local topographic conditions. For example, cliff faces can appreciably modify both precipitation and temperature patterns. March, April and July through October are the wettest months of the year with May, June and November through February being the driest. Approximately 65 to 70% of the precipitation occurs as rain from May through October. Much of the summer precipitation occurs as convection thunderstorms. Precipitation is extremely variable from month to month and from year to year but averages between 6-16 inches. Large fluctuations in daily temperatures are common. Windy conditions are common year round, but the winds are strongest and most frequent during the spring.

### Soil features

Soils in this group of ecological sites are typically very shallow or shallow and range in texture from sand to silty clay loam. Parent material includes colluvium, eolian deposits, slope alluvium and residuum from sandstone and interbedded sandstone, siltstone, and shale. Soils formed in eolian deposits on dipslopes, wide benches and mesa tops are sandy and often receive run-in moisture from surrounding expanses of sandstone. Soils formed in colluvium and residuum on scarp slopes of cuestas and escarpments on the sides of benches, mesas and plateaus tend to be so steep that much precipitation or run-in from the adjacent outcrops runs off downslope. Soil temperature regime is mesic and soil moisture regime is aridic or aridic ustic.

### Vegetation dynamics

The ecological sites in this group are characterized by a sparse canopy of shrubs at lower elevation and Utah juniper and two-needle pinyon with a shrub understory at higher elevations. The herbaceous understory is sparse and typically dominated by perennial grasses in the reference states. Forbs are often linked to precipitation events and seed sources. In degraded states invasive annuals often become established. Much of the surface in these sites is made up of rock; either in the form of outcrops, slickrock or rock fragment cover ranging in size from gravel to boulders.

Major influences on these sites appear to be climatic variations and insect damage. These are not preferred sites for grazing due to sparse forage, steep slopes, stones, and broken topography. Invasive annuals, such as cheatgrass, can exploit any unused resources that may be present in a given year.

## Major Land Resource Area

MLRA 035X  
Colorado Plateau

### Subclasses

- R035XB255AZ–Sandstone Rockland 6-10" p.z.
- R035XY019UT–Shallow Sand Rock Pocket (Utah Juniper/Two-Needle Pinyon)
- R035XY146UT–Desert Very Steep Stony Loam (Shadscale)
- R035XY240UT–Semidesert Steep Shallow Loam (Utah Juniper-Two-Needle Pinyon)
- R035XY325UT–Upland Very Steep Shallow Loam (Pinyon-Utah Juniper)

### Correlated Map Unit Components

22966935, 22966803, 22967001, 22967000, 22966999, 22966895, 22966739, 22966940, 22966819, 22966806, 22966783, 22966782, 22966845, 22966934, 22966864, 22967010, 22966814, 22966853, 22966807

### Stage

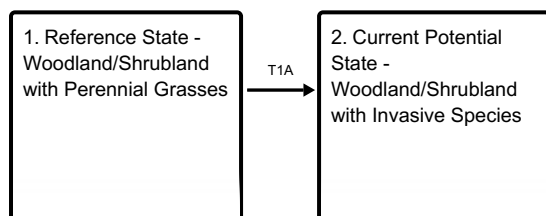
Provisional

### Contributors

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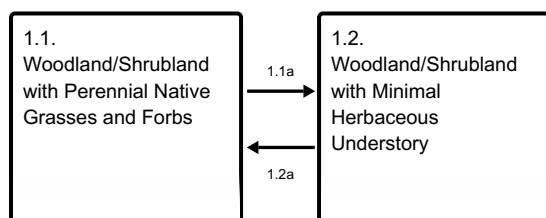
### State and transition model

#### Ecosystem states



**T1A** - D = Drought ILG = Improper livestock grazing IW= Establishment of non-native invasive species SD = Surface disturbances

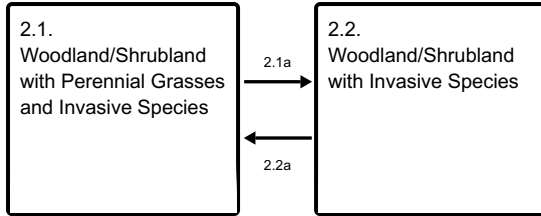
#### State 1 submodel, plant communities



**1.1a** - ILG = Improper Livestock Grazing D = Drought SD = Surface Disturbance

**1.2a** - PLG = Proper Livestock Grazing W = Wet Weather Periods T = Time

## State 2 submodel, plant communities



2.1a - ILG = Improper Livestock Grazing D = Drought SD = Surface Disturbance

2.2a - PLG = Proper Livestock Grazing W = Wet weather periods T = Time without disturbances

## State 1

### Reference State - Woodland/Shrubland with Perennial Grasses

The reference state is characterized by a sparse overstory of Utah juniper and two-needle pinyon, a native shrub layer which may contain shadscale, blackbrush, Bigelow's sagebrush, and jointfir, and a herbaceous layer dominated by native perennial grasses.

### Community 1.1

#### Woodland/Shrubland with Perennial Native Grasses and Forbs

This plant community phase is typically a shrubland with a diverse herbaceous understory. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Grass species commonly include Indian ricegrass, salina wildrye, James galleta and others. Surface rock fragments are prevalent as is bare ground.

### Community 1.2

#### Woodland/Shrubland with Minimal Herbaceous Understory

This plant community phase is typically a shrubland with a minimal herbaceous understory. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Grass species, when present, commonly include Indian ricegrass, salina wildrye, James galleta and others. Surface rock fragments are prevalent as is bare ground.

### Pathway 1.1a

#### Community 1.1 to 1.2

This phase occurs when prolonged drought reduces the percent of native perennial grasses present in the Reference State. Surface disturbances and/or season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, where they occur may accelerate this transition.

### Pathway 1.2a

#### Community 1.2 to 1.1

This community pathway occurs when a series of above average precipitation years allows for an increase in the perennial herbaceous species found on this site. Where grazing occurs, proper grazing management and its associated reduction of any surface disturbance present, can accelerate this transition.

## State 2

### Current Potential State - Woodland/Shrubland with Invasive Species

This state is very similar to the reference state, except that invasive grasses and/or forbs are present in all phases. The shift in species composition could affect nutrient cycling, hydrology and soil stability. At this time there is no

known way to effectively remove invasive plants once they have become established. Therefore, sites are often irreversibly altered from the reference state.

## **Community 2.1**

### **Woodland/Shrubland with Perennial Grasses and Invasive Species**

This plant community phase is typically a shrubland with a diverse herbaceous understory. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Native grass species commonly include Indian ricegrass, salina wildrye, James galleta and others. Invasive species, commonly cheatgrass, are established in the community. Surface rock fragments are prevalent as is bare ground.

## **Community 2.2**

### **Woodland/Shrubland with Invasive Species**

This plant community phase is typically a shrubland with an understory dominated by invasive species, typically cheatgrass. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Native grass species are only minimally present but James galleta is typically the most prevalent. Surface rock fragments are prevalent as is bare ground.

## **Pathway 2.1a**

### **Community 2.1 to 2.2**

This pathway occurs when prolonged drought reduces the percent of native perennial grasses present in the Reference State. Surface disturbances and/or season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, where they occur, may accelerate this transition. Invasive species may increase during periods of short term precipitation.

## **Pathway 2.2a**

### **Community 2.2 to 2.1**

This community phase occurs when a series of above average precipitation years allows for an increase in the perennial herbaceous species found on this site. Where grazing occurs, proper grazing management and its associated reduction of any surface disturbance present, can accelerate this transition.

## **Transition T1A**

### **State 1 to 2**

This transition occurs as any combination of season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, drought, and/or surface disturbance allow invasive species become established in the plant community. The most common invasive species is cheatgrass. Invasive species, however, have been known to invade intact perennial plant communities where no disturbance has occurred.

## **Citations**