

# Ecological site group DX035X01BESG15

## Circle Cliffs - Finer Shrublands

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### Key Characteristics

- Circle Cliffs
- Loamy Shrublands

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

The ecological sites of this group occur on structural benches, fan piedmonts, mesas, hillslopes and alluvial flats. Elevation ranges from 5,000 to 8,000 feet. Slopes are 1 to 30 percent. Runoff ranges from low to very high.

### Climate

The climate is characterized by hot summers and cool winters. Large fluctuations in daily temperature are common. Average annual temperature is about 48 to 52 degrees Fahrenheit. Average annual precipitation is 9 to 17 inches. Approximately 75 percent occurs as rain or snow from March through October. On the average, February, May, and June are the driest months and August, September, and October are the wettest months. Much of the summer precipitation occurs as convection thunder storms.

### Soil features

The soils, characteristic of this group, are moderately deep to very deep and formed in alluvium and eolian deposits derived mainly from sandstone and shale; some igneous alluvium may also be present. These soils are typically well drained. Soil surface texture ranges from loamy fine sand to loam. Surface rock fragments, if present, are typically less than 35 percent. Subsurface textures range from fine sandy loam to clay, and average less than 35 percent rock fragments in the particle-size control section. These soils are typically well developed and have an argillic, cambic, and/or a calcic horizon. Available water-holding capacity is 6 to 9 inches in the upper 40 inches of the soil profile. Soil moisture regime is ustic aridic or aridic ustic and the soil temperature regime is mesic.

### Vegetation dynamics

The dominant visual aspect of the ecological sites in this group, in the reference state, is a big sagebrush dominated shrubland. An open overstory of Utah juniper and two-needle pinyon may be present in some areas. The herbaceous understory is variable in composition, but commonly occurring plants are Indian ricegrass, James' galleta, muttongrass, needleandthread, blue grama, and Sandberg bluegrass. Biological soil crust cover is variable, ranging from light and discontinuous to high depending on site specific conditions.

The natural disturbance regime includes infrequent stand-clearing fire, light grazing by native wildlife, and fluctuating climate with significant dry and wet periods and accompanying drought-related pathogen attacks. Prehistoric Anasazi use, including land-clearing and agriculture, may have impacted some areas. The current interpretive state is also impacted by livestock grazing, invasive annual grasses that may increase fire severity and frequency, land-clearing and logging, and off-road vehicle use.

As ecological condition deteriorates due to overgrazing or other prolonged disturbance, needleandthread, muttongrass, Indian ricegrass, and winterfat decrease while big sagebrush, blue grama, low rabbitbrush, broom

snakeweed, and pricklypear increase. When the potential natural plant community is burned, big sagebrush can be temporarily eliminated and muttongrass and needleandthread may decrease while low rabbitbrush, snakeweed, pricklypear, galleta, and blue grama may increase. Utah juniper, pinyon, and cheatgrass are most likely to invade these sites.

Major Land Resource Area

MLRA 035X  
Colorado Plateau

Subclasses

- R035XY209UT–Semidesert Loam (Wyoming Big Sagebrush)
- R035XY216UT–Semidesert Sandy Loam (Wyoming Big Sagebrush)
- R035XY308UT–Upland Loam (Mountain Big Sagebrush)

Correlated Map Unit Components

22934159, 22934163, 22933914, 22479923, 22484441, 22597050, 22597351, 22597202, 22597012, 22597288, 22597146, 22597290, 22597149, 22597478, 22966897, 22966898, 22966900, 22966921, 22966937, 22967007, 22966735, 22967049, 22966732, 22966827, 22966879, 22966925, 22966923

Stage

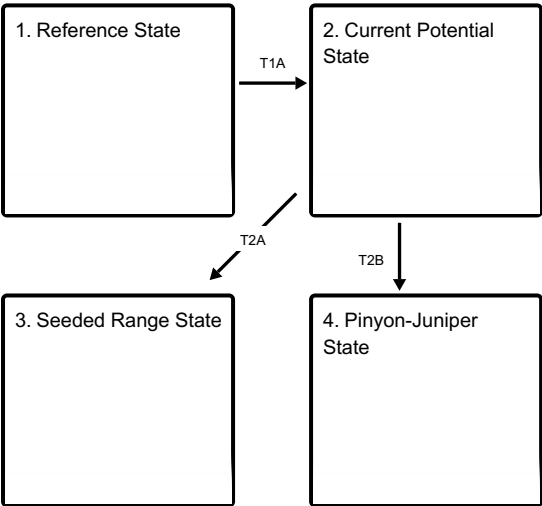
Provisional

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State and transition model

Ecosystem states



**T1A** - D = Drought E = Establishment of non-native invasive species ILG = Improper livestock grazing SD = Surface disturbances  
**T2A** - RS = Range Seeding W = Wet weather periods  
**T2B** - T = Time without natural fire

#### State 1 submodel, plant communities

1.1. Big Sagebrush/Perennial Grasses

#### State 2 submodel, plant communities

2.1. Big Sagebrush/Perennial Grasses with invasive species.

#### State 3 submodel, plant communities

3.1. Perennial Grass Seeding

#### State 4 submodel, plant communities

4.1. Pinyon-Utah Juniper Dominance  
Utah juniper and two-needle pinyon dominate the plant community.

### State 1 Reference State

The reference state is generally a big sagebrush state with fluctuations from a big sagebrush shrubland to a grassland and a shrubland/grassland community.

#### Community 1.1 Big Sagebrush/Perennial Grasses

This community is characterized by a mixture of perennial shrubs and grasses. In this phase, big sagebrush is co-dominant with perennial grasses. Commonly seen grasses include Indian ricegrass, James' galleta and sandberg bluegrass. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. Bare ground is variable depending on the amount of biological crusts. The proportion of shrubs and herbaceous vegetation varies with drought, fire, and surface disturbance.

### State 2 Current Potential State

The current potential state is similar to the reference state, however invasive species are present in all community phases. This state is generally a big sagebrush state with fluctuations from a big sagebrush shrubland to a grassland, shrubland/grassland, or a juniper encroached shrubland community. Invasive plants are present. Primary disturbance mechanisms include climate fluctuations, fire, native herbivore grazing, domestic livestock grazing and surface disturbances such as road and pipeline development and off road vehicle (OHV) use.

## **Community 2.1**

### **Big Sagebrush/Perennial Grasses with invasive species.**

This community is generally a mixture of perennial shrubs and grasses. Typically big sagebrush is the dominant shrub and commonly seen grasses include Indian ricegrass, James' galleta and sandberg bluegrass. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. Invasive species are present. Bare ground is variable depending on the amount of biological crusts. If an area does not burn for a longer than normal period or time, Utah juniper and two-needle pinyon may encroach on the area.

## **State 3**

### **Seeded Range State**

This state is the result of a successful rangeland seeding during years of average or above average precipitation during the growing season. Russian wildrye and crested wheatgrass are documented to establish on this group, and native species begin to re-establish naturally on the site 10-30 years after seeding.

## **Community 3.1**

### **Perennial Grass Seeding**

This phase is dominated by Russian wildrye, crested wheatgrass, and/or other non-native perennial grass species.

## **State 4**

### **Pinyon-Juniper State**

This state occurs when perennial grasses become too sparse to produce and bank sufficient seed to become dominant after fire or other disturbance. Shrubs also decrease and may be unable to return following disturbance.

## **Community 4.1**

### **Pinyon-Utah Juniper Dominance Utah juniper and two-needle pinyon dominate the plant community.**

This phase is dominated by Utah juniper and two-needle pinyon. Shrubs and grasses may or may not be present depending on the degree of dominance by tree species. This usually occurs when fire suppression extends well beyond the natural fire return interval (over 100 years).

## **Transition T1A**

### **State 1 to 2**

This transition is from the native perennial warm and cool season grass understory in the reference state to a state that contains invasive species. Events can include establishment of invasive plant species, intense continuous grazing of perennial grasses, prolonged drought, and/or surface disturbances, etc. However, invasive species such as cheatgrass have been known to invade intact perennial plant communities with little to no disturbance. Once invasive species are found in the plant community a threshold has been crossed.

## **Transition T2A**

### **State 2 to 3**

This transition occurs when a successful range seeding (during average or above-average precipitation years during the growing season) results in the establishment, dominance, and persistence of non-native perennial grasses.

## **Transition T2B**

### **State 2 to 4**

This transition occurs when fire suppression extends well beyond the natural fire return interval (over 100 years), resulting in dominance by Utah juniper and two-needle pinyon.

Citations