

Ecological site group DX035X01BESG10

Circle Cliffs - Shallow Shrublands and Woodlands - low elevation

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Key Characteristics

- Circle Cliffs
- Shallow Shrublands and Woodlands
- Low elevation, MAST > 54 degrees F.

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 is located on dissected pediments, escarpments, ledges, hillslopes on structural benches, benches, rolling ridges, dissected cuerdas, structural benches, mesas, hillslopes, and canyons. Runoff is variable and ranges from medium to very high. Slopes typically range from 1-30%, but in some areas, slopes are as steep as 60%. Elevations are generally 3700-6800 feet.

Climate

The climate is characterized by hot summers and cool to warm winters. Large fluctuations in daily temperatures are common. The mean annual air temperature ranges from 40 to 57 degrees Fahrenheit. Approximately 65–70% of precipitation 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. Much of the precipitation occurs as convection thunderstorms. Average annual precipitation is 5 to 12 inches. Snow packs are generally light and not persistent.

Soil features

The soils in these ecological sites are very shallow or shallow to bedrock and well drained to somewhat excessively well drained. They formed in eolian deposits over residuum from sandstone and interbedded sandstone and shale. Surface textures range from fine sands to fine sandy loams with 0 to 40 percent rock fragments, usually gravel or channers. Subsurface textures are generally similar but may include loams and sands. Typically, these soils are calcareous and nonsaline or slightly saline. Available water holding capacity is 0.5 to 3 inches due to restricted soil depth. In relatively undisturbed areas, a pinnacled biological soil crust is present, but may be discontinuous.

Vegetation dynamics

The dominant aspect of the plant communities on the ecological sites in this group is a blackbrush shrubland. A sparse overstory of Utah juniper and pinyon pine may be present in areas with more than 10 inches of annual precipitation. Herbaceous plants include a mix of cool and warm season perennial grasses and a few perennial forbs.

There is little evidence to indicate that these sites historically maintained a short burn frequency. Large gaps between plants (very discontinuous fuels) in relic areas indicate that these sites may have historically rarely burned. Blackbrush appears to act as a paleo-endemic species on some sites in this MLRA and may not be able to reestablish itself after significant disturbance. Disturbances that reduce the presence of blackbrush result in an opportunity for invasive annuals to enter into the system and may produce a fuel load for fire to become an ecological driver. Cheatgrass, red brome, and Russian thistle are most likely to invade these sites.

This ecological site group has been grazed by domestic livestock since they were first introduced into the area around 1860. It is highly resistant to grazing due to the unpalatable nature of blackbrush and lack of forage plants. Improper livestock grazing including, season long grazing and/or heavy stocking rates, may cause these sites to depart from the reference plant communities.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XY133UT–Desert Shallow Sandy Loam (Blackbrush)
- R035XY233UT–Semidesert Shallow Sandy Loam (Blackbrush)
- R035XY236UT–Semidesert Shallow Sandy Loam (Utah Juniper, Blackbrush)

Correlated Map Unit Components

22967032, 22966983, 22966931, 22966891, 22966906

Stage

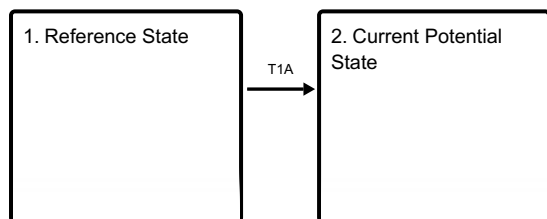
Provisional

Contributors

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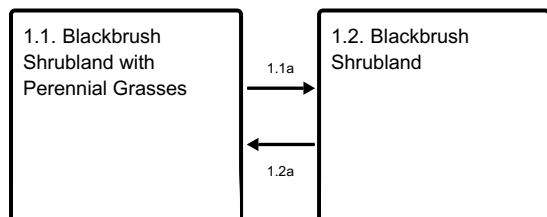
State and transition model

Ecosystem states



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

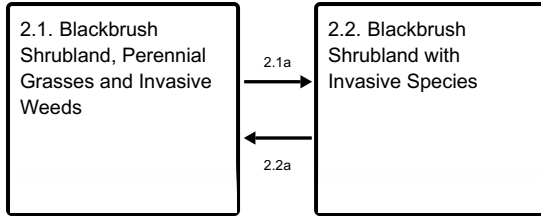
State 1 submodel, plant communities



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 = Proper livestock grazing T = Time without disturbances W = Wet weather periods

State 1

Reference State

The reference state is generally dominated by blackbrush, however depending on disturbance history, native grasses, forbs, or other shrubs may occupy significant composition in the plant community.

Characteristics and indicators. A community dominated by blackbrush where native perennial grasses and forbs may or may not be present.

Community 1.1

Blackbrush Shrubland with Perennial Grasses

This community phase is characterized by a shrub canopy dominated by blackbrush and Torrey's jointfir, perennial grasses are also present. Commonly occurring grasses include Indian ricegrass, James galleta, needle-and-thread, six weeks fescue, and dropseed species. Grasses make up 10 to 20 percent of the annual production.

Community 1.2

Blackbrush Shrubland

This community phase is characterized by a shrub canopy dominated by blackbrush and Torrey's jointfir, perennial grasses may also be present. Herbaceous vegetation makes up less than 10 percent of the annual production.

Pathway 1.1a

Community 1.1 to 1.2

This community pathway occurs when any combination of season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, drought or surface disturbance reduces the amount of herbaceous vegetation on the site.

Pathway 1.2a

Community 1.2 to 1.1

This community pathway occurs when proper livestock grazing, wet weather periods and time allow for the recovery of surface disturbance which increases the amount of perennial herbaceous vegetation on the site.

State 2

Current Potential State

The current potential state is similar to the reference state, however invasive species are now present in all community phases of the current potential state. This state is generally dominated by blackbrush and Torrey's jointfir, however, depending on disturbance history, native grasses, forbs, or other shrubs may also commonly occupy the site.

Characteristics and indicators. A community dominated by blackbrush where native perennial grasses and forbs may also be present. Invasive grasses and forbs are present.

Resilience management. Primary disturbance mechanisms include weather fluctuations, native herbivore grazing, domestic livestock grazing, and surface disturbances such as road and pipeline development and off road vehicle (OHV) use. The current potential state is still self sustaining; but can be losing resistance to change due to lower resistance to disturbances and lower resilience following disturbances. Where annual species such as cheatgrass is present, disturbances such as fire are more likely to occur.

Community 2.1

Blackbrush Shrubland, Perennial Grasses and Invasive Weeds

This community phase is characterized by a shrub canopy dominated by blackbrush and Torrey's jointfir, perennial grasses are also present. Commonly occurring grasses include Indian ricegrass, James galleta, needle-and-thread, six weeks fescue, and dropseed species. Non-native and/or invasive species are now present with cheatgrass being most common. Herbaceous species make up 20 to 30 percent of annual production.

Community 2.2

Blackbrush Shrubland with Invasive Species

This community phase is characterized by a shrub canopy dominated by blackbrush and Torrey's jointfir. Non-native, invasive species are now present on the site and may increase following wet weather periods. There is little perennial herbaceous cover in the shrub interspaces but annuals may be present. Perennial herbaceous species make up less than 10 percent of annual production. Invasive species account for 5 to 25 percent of annual production.

Pathway 2.1a

Community 2.1 to 2.2

This community pathway occurs when any combination of season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, drought or surface disturbance reduces the amount of perennial herbaceous vegetation on the site. Invasive annual species may increase following short term wet periods.

Pathway 2.2a

Community 2.2 to 2.1

This community pathway occurs when proper livestock grazing, wet weather periods and time allow for the recovery of surface disturbance which increases the amount of perennial herbaceous vegetation on the site. Non-native invasive species may also increase during this time.

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 may include any combination of improper livestock grazing, prolonged drought, and/or surface disturbances. However, invasive species such as cheatgrass have been known to invade intact perennial plant communities with little to no disturbances. Once invasive plants are found in the plant community a threshold has been crossed.

Citations