

Ecological site group DX035X01BESG11

Circle Cliffs - Shallow Shrublands and Woodlands - mid-elevation

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Key Characteristics

- Circle Cliffs
- Shallow Shrublands and Woodlands
- Mid-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

The ecological sites of this group occur in colluvium, slope alluvium and eolian deposits on hillslopes, mountain slopes, mesas, structural benches, cuevas, pediments, and ridges. Runoff is high to very high due to shallow soil depth and is often influenced by micro-topography. Typically slopes range from 2 to 40 percent but range up to 70 percent. Elevations range from 4900 to 8000 feet.

Climate

The climate is characterized by hot summers and cool winters. Large fluctuations in daily temperatures are common. Approximately 70-75% of precipitation occurs as rain or snow from March through October. On the average, February, May, and June are the driest months and July through October are the wettest months. Precipitation is extremely variable from month to month and from year to year but averages between 8 and 16 inches per year. Much of the summer precipitation occurs as convection thunderstorms. Snow packs when present are generally light and not persistent.

Soil features

The soils on these sites are shallow and well drained to somewhat excessively well drained and formed in a variety of parent material dominantly colluvium, slope alluvium, and eolian deposits. Bedrock is typically sandstone or interbedded sandstone and shale but includes other sedimentary and igneous rocks. The soils are usually young and relatively undeveloped. Rock fragment content varies from relatively free of fragments in eolian soils to very gravelly and cobbly in soils derived from slope alluvium and colluvium. Surface fragments similarly range from few fragments to as much as 75 percent cover. Biological crust cover is often a weak crust, with light cyanobacteria and/or isolated moss clumps with no continuity but may be stronger in areas with favorable soil texture and chemistry. The soils are generally nonsaline to slightly saline and nonsodic. Water holding capacity is low (0.5 to 3 inches). The soil moisture regime is ustic aridic or aridic ustic and the soil temperature regime is mesic.

Vegetation dynamics

The dominant visual aspect of the sites in this group is an overstory of Utah juniper and two-needle pinyon. Shrubs, native perennial grasses and forb production is variable.

Drought and insects appear to be the main driving factors in many of the Pinyon/Juniper communities of Utah. Betancourt et al. (1993), noted that Pinyon and Juniper woodlands in the southwest appear to be more susceptible to large die offs during droughts, than in other locations. As severe droughts persist, the Pinyon trees, being more susceptible to drought and insects, seem to die out, while the Utah juniper trees survive.

There is little evidence to indicate that these sites historically maintained a short burn frequency. However, due to modern disturbances such as brush treatments, invasive species, and OHV use, the resilience of the plant communities may be at risk. Disturbances that reduce the presence of perennial grasses 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.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XY220UT–Semidesert Shallow Loam (Torrey's Jointfir)
- R035XY221UT–Semidesert Shallow Loam (Utah Juniper-Pinyon)
- R035XY222UT–Semidesert Shallow Loam (Utah Juniper- James Galleta)
- R035XY225UT–Semidesert Shallow Sand (Cutler's Jointfir)
- R035XY227UT–Semidesert Shallow Sand (Utah Juniper-Pinyon)
- R035XY234UT–Semidesert Shallow Shale (Utah Juniper-Pinyon)
- R035XY235UT–Semidesert Very Shallow Gravelly Loam (Utah Juniper)
- R035XY314UT–Upland Shallow Sand (Pinyon-Utah Juniper)
- R035XY315UT–Upland Shallow Loam (Pinyon-Utah Juniper) AWC <3
- R035XY325UT–Upland Very Steep Shallow Loam (Pinyon-Utah Juniper)

Correlated Map Unit Components

22934191, 22934194, 22479990, 22479926, 22596917, 22596920, 22597200, 22597204, 22597026, 22597479, 22597484, 22597482, 22966752, 22966832, 22966733, 22966883, 22966882, 22966881, 22966944, 22966945, 22966800, 22967003, 22966878, 22967006, 22967005, 22966896, 22966926, 22966974, 22967023, 22966855, 22967015, 22966824, 22966798, 22966727, 22966726, 22966992, 22966747, 22966834, 22966777, 22966779, 22967012, 22966916, 22966853, 22966947, 22966809, 22965722

Stage

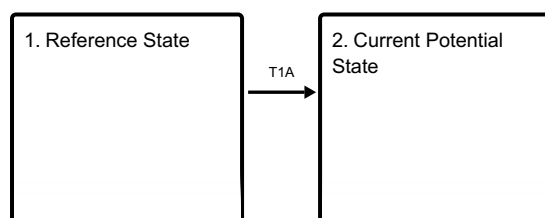
Provisional

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State and transition model

Ecosystem states



T1A - E = Establishment of non-native invasive plant species SD = Surface disturbance ILG = Improper livestock grazing

State 1 submodel, plant communities

1.1. 1.1 Utah Juniper, two-needle pinyon, native shrubs, forbs, and perennial grasses.

State 2 submodel, plant communities

2.1. Utah juniper, two-needle pinyon, native shrub, forbs, and grasses with non-native species present.

State 1 Reference State

This state typically consists of a tree layer of Utah juniper and two-needle pinyon, a shrub layer of native shrubs, and a herbaceous understory dominated by perennial native grasses. In sandy and gypsum-affected areas the dominant aspect is a jointfir shrubland with scattered trees.

Community 1.1 1.1 Utah Juniper, two-needle pinyon, native shrubs, forbs, and perennial grasses.

This community phase is characterized by a twoneedle pinyon and Utah juniper upper canopy. In the lower canopy, commonly seen grasses include Indian ricegrass and galleta. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. Cutler jointfir dominates the sandy areas and Torrey jointfir dominates the gypsum-affected areas. Bare ground is variable depending on surface rock cover, which is also variable.

State 2 Current Potential State

The current potential state is similar to the reference state; however invasive species are present. This state is generally dominated by Utah juniper and twoneedle pinyon, however depending on disturbance history, native grasses, forbs, or other shrubs may dominate the site. Primary disturbance mechanisms include insect herbivory, domestic livestock grazing, and surface disturbances such as road and pipeline development and off road vehicle (OHV) use.

Community 2.1 Utah juniper, two-needle pinyon, native shrub, forbs, and grasses with non-native species present.

This community phase is characterized by a twoneedle pinyon and Utah juniper upper canopy. In the lower canopy, commonly seen grasses include Indian ricegrass and galleta. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. Cutler jointfir dominates the sandy areas and Torrey jointfir dominates the gypsum-affected areas. Bare ground is variable depending on surface rock cover, which is also variable. Non-native annuals, such as cheatgrass, may be present but are rarely dominant.

Transition T1A State 1 to 2

This transition occurs when non-native invasive species, particularly cheatgrass, establish on the site. Surface disturbances and season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization may contribute to this process.

Citations