

Ecological site group DX035X01EESG07

Green River Desert - Sandy Grasslands and Shrublands - low elevation

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Key Characteristics

- Green River Desert
- Sandy Grasslands and Shrublands
- Soils are Sands

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 site occurs on pediments, structural benches, cuevas, valleys, basins, dunes, hillslopes, mesas, ridges, alluvial fans, fan terraces, and plateaus. Elevations range from 3,800 to 7,300 feet. Run off is low and can be influenced by site micro-topography. Slopes typically range from 1-12% but it have been mapped on slopes up to 30%.

Climate

The climate is characterized by hot summers and cool to warm winters, which can be slightly modified by local topographic conditions, such as aspect. Large fluctuations in daily temperatures are common. Average annual precipitation is 5 to 11 inches. Approximately 77 percent occurs as rain from March through October. On the average, February, May, and June are the driest months and August, September, and October are the wettest months. Soil temperatures are in the mesic regime with mean annual soil temperatures ranging from about 54 to 57 degrees F. Precipitation is extremely variable from month to month and from year to year. Much of the summer precipitation occurs as convection thunderstorms.

Soil features

The soils in this group range from moderately deep to very deep are moderately to well developed, they are well drained. They formed in eolian and alluvium deposits derived mainly from sandstone parent materials. Soils are in the coarse-loamy textural family and typically have a calcic horizon occurring at less than 24 inches. Runoff is typically slow but can be higher on some soils, permeability is moderate to rapid. Soils on the sites in the reference state generally have moderate wind and water erosion potential. Coppice mounding is common. The soil temperature and moisture regimes are mesic and ustic aridic respectively.

Surface and subsurface textures are generally sandy loams, sands, and loamy sands. Soils are nonsaline and the water holding capacity is moderate (2 to 3 inches). Surface rock fragments are rare, however where they do occur, they may show evidence of calcium carbonate deposits (small whiteish nodules and coatings).

Biological crust cover is characterized as weak, with light cyanobacteria and/or isolated moss clumps present with no continuity, or isolated pinnacles of lichen and moss with little continuity. In disturbed areas, rodent activity, water flow patterns, and blowout areas are more common.

Vegetation dynamics

These sites occur on the moderately deep to very deep, moderately developed soils. Plant species composition is generally dominated by blackbrush, however, native grasses and forbs are also commonly present.

An important natural disturbance regime consisted of infrequent fires that were likely ignited by both natural causes and Native Americans. When fire starts in this blackbrush community, it can spread easily when the right conditions are present due to the dense, close spaced nature of blackbrush. There are typically few forbs or grasses to provide fine fuels needed to carry fire in these communities, but it is still able to burn during extreme conditions such as high temperature, high wind velocity, and low relative humidity. Fire is more common in moister years when annual production of grasses or forbs is highest. Blackbrush communities have the highest cover of any desert shrub community, and fires typically result in stand replacement. Though historical documentation of fire return intervals are lacking, the historical fire regime is estimated to be from 35-100+ years.

Another natural disturbance mechanism consists of fluctuating weather which can influence soil/water/vegetation relationships. This fluctuation can facilitate the sites transition into different plant communities phases or cause the transition from one ecological state to another, depending on severity and duration.

These ecological sites have been grazed by domestic livestock since they were first introduced into the area, however, it is highly resistant to grazing due to the unpalatable nature of blackbrush. Therefore they have only minimally influenced the historic disturbance regime associated with this site. Improperly managed livestock grazing (continuous season long grazing, heavy stocking rates, etc.) over long periods of time however, may cause this site to depart from the reference plant community. When this occurs, native perennial grasses may decrease, allowing blackbrush increase in density often forming pure stands. Improper livestock grazing may also increase the chance of invasion by cheatgrass and invasive annual forbs however these species rarely increase to a point where they dominate in blackbrush communities.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XY121UT–Desert Sandy Loam (Blackbrush)
- R035XY218UT–Semidesert Sandy Loam (Blackbrush)

Stage

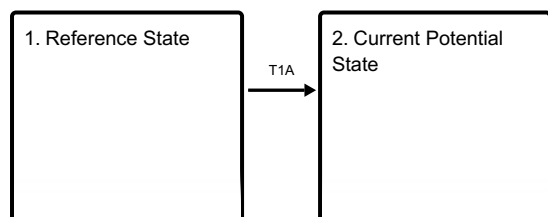
Provisional

Contributors

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State and transition model

Ecosystem states



T1A - E = Establishment of non-native invasive species

State 1 submodel, plant communities

1.1. Blackbrush
Shrubland -
Blackbrush, Torrey's
Jointfir, Indian
Ricegrass, Galleta

State 2 submodel, plant communities

2.1. Blackbrush
Shrubland with
Invasive Species -
Blackbrush, Torrey's
Jointfir, Indian
Ricegrass, Galleta,
Cheatgrass

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. Primary disturbance mechanisms include climate fluctuations and native herbivore grazing. Timing of these natural disturbances dictates the ecological dynamics that occur. The reference state is self sustaining and resistant to change due to high resistance to natural disturbances and high resilience following natural disturbances. Once invasive plants establish, return to the reference state may not be possible.

Community 1.1 Blackbrush Shrubland - Blackbrush, Torrey's Jointfir, Indian Ricegrass, Galleta

This community phase is characterized by a blackbrush shrub canopy, where perennial native may or may not be present. Commonly seen grasses include Indian ricegrass, galleta, needleandthread, six weeks fescue, and dropseeds, with many occurring solely in the shrub canopy. As grass cover increases, shrub interspaces are filled. Other perennial grasses, shrubs, and forbs may or may not be present and cover is 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 blackbrush. Primary disturbance mechanisms include climate 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 is losing resistance to change due to lower resistance to disturbances and lower resilience following disturbances, and new drastic disturbances such as fire being more likely to occur.

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

Community 2.1 Blackbrush Shrubland with Invasive Species - Blackbrush, Torrey's Jointfir, Indian Ricegrass, Galleta, Cheatgrass

This community phase is characterized by a blackbrush shrub canopy, where perennial native may or may not be present. Some invasive plants are present. Commonly seen grasses include Indian ricegrass, galleta, needleandthread, six weeks fescue, and dropseeds, with many occurring solely in the shrub canopy. As grass cover increases, shrub interspaces are filled. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. Bare ground is variable depending on biological crust cover, which is also variable and surface rock fragments.

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 some invasive species. Events may include season long continuous grazing of perennial grasses, prolonged drought, and surface disturbances, etc. 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

. Fire Effects Information System. <http://www.fs.fed.us/database/feis/>.