

Ecological site group DX035X01CESG11

Mesas and Benches - Sandy Grasslands and Shrublands - sandy loam

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Key Characteristics

- Mesa and Benches
- Sandy Grasslands and Shrublands
- Soils are sandy loams

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 flat to rolling mesa tops, plateaus, fan terraces, broad valleys, benches, and alluvial fans.

Climate

The climate is characterized by hot summers and cool winters which can be slightly modified by local topographic conditions such as aspect. Large fluctuations in daily temperature are common. Approximately 70% of moisture occurs as convection thunderstorms. Precipitation is variable from month to month and from year to year, but averages range between 6 -12 inches annually. Snow packs are generally light and not persistent. (Utah Climate Summaries 2008).

Soil features

Soils are moderately deep to very deep, moderately to well developed, and well drained. Typically the dry surface is yellowish red to reddish brown to brown. Soils with calcic horizons at depth of less than 24 inches support blackbrush as the dominant shrub. Runoff is low due to flatter slopes and high permeability; soils occurring on slopes greater than 20% may have a moderate runoff potential. Soils on sites in the reference state generally have low wind and water erosion potential. 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. Biological soil crust cover varies by plant community phase, soil, aspect, elevation, etc. but is typically characterized as a weak crust, with light cyanobacteria and/or isolated moss clumps with no continuity or isolated pinnacles of lichen and moss with little continuity.

Vegetation dynamics

These sites typically occur on moderately deep to very deep soils that are moderately well developed. Sites are dominated by Fourwing saltbush in the shrub layer with Torrey mormontea commonly occurring. If the soil has a calcic horizon within 24 inches of the soil surface, blackbrush is the dominant shrub in the overstory. The herbaceous layer is composed of a mix of native perennial warm and cool season grasses, including Indian ricegrass, needle-and-thread, James galleta, and several dropseed species.

The introduction of domestic livestock and the use of fencing and reliable water sources have, in places, influenced the disturbance regime historically associated with this ecological site. In addition to influencing the sites natural fire regime, improperly managed livestock grazing (i.e., continuous season long grazing, heavy stocking rates, etc.) may cause native perennial grasses and shrubs to decrease while allowing invasive forbs, annual grasses and broom snakeweed to increase. Long term improper grazing may remove the native perennial grasses and shrubs from the system and create large bare interspaces which can increase erosion and provide opportunities for invasive plants to establish. Improper spring grazing can result in a decline of cool season grasses, while improper

summer/early fall grazing can result in a decline of warm season grasses.
Other disturbance mechanisms include climatic fluctuations and insect herbivory

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XY118UT–Desert Sandy Loam (Fourwing Saltbush)
- R035XY121UT–Desert Sandy Loam (Blackbrush)
- R035XY215UT–Semidesert Sandy Loam (4-Wing Saltbush)

Correlated Map Unit Components

22933985, 22934244, 22592288, 22592413, 22592519, 22592417, 22592522, 22592295, 22592563, 22592454, 22592340, 22592457, 22592691, 22592694, 22592698, 22592463, 22592574, 22592352, 22592353, 22592603, 22592736, 22592738, 22592741, 22592409, 22592411, 22592630, 22592515, 22592631, 22967053, 22966831, 22966770, 22966761, 22966902, 22967056, 22966973, 22966757, 22966981, 22933970, 22933835

Stage

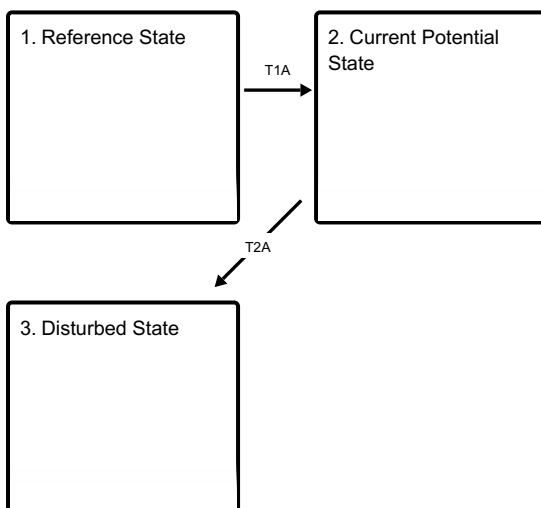
Provisional

Contributors

Vic Parslow
Keith Crossland
Harry Hosler
Jim Harrigan
Curtis Talbot

State and transition model

Ecosystem states



T1A - E = Establishment of non-native invasive species

T2A - D = Drought ILG = Improper livestock grazing SD = Surface disturbances

State 1 submodel, plant communities

1.1. Native Shrubland
with Perennial Grasses

State 2 submodel, plant communities

2.1. Native Shrubland -
Perennial Grasses -
Annual Invasives

State 3 submodel, plant communities

3.1. Eroded Phase.

State 1 Reference State

The reference state is generally dominated by shrubs, mainly blackbrush or fourwing saltbush; 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 Native Shrubland with Perennial Grasses

This community phase is characterized by a blackbrush or fourwing saltbush and winterfat shrub canopy, where perennial native herbaceous species 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

This community phase is characterized by a blackbrush or fourwing saltbush and winterfat shrub canopy, other perennial native species 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.

Community 2.1 Native Shrubland - Perennial Grasses - Annual Invasives

This community phase is characterized by a blackbrush or fourwing saltbush and winterfat shrub canopy, where

perennial native herbaceous species may or may not be present. Some invasive plants are present. Commonly seer 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.

State 3 Disturbed State

This phase of the ecological state is characterized as highly disturbed. Blackbrush or fourwing saltbush may or may not be present in the community. Where other shrubs are present, Cutler's and Torrey's jointfir, are common species. Perennial grasses and forbs are mostly missing. Pricklypear cactus, cheatgrass, red brome, and Russian thistle may be present. Utah juniper may be invading if a seed source is present. The appearance of many forbs is episodic in nature and is closely tied to precipitation events.

Community 3.1 Eroded Phase.

This community phase is highly variable. Native shrubs and grasses are significantly reduced or missing. Where shrubs are present, some blackbrush, fourwing saltbush, and Cutler's jointfir may occur along with invasive species such as pricklypear cactus, broom snakeweed, and rubber rabbitbrush. A few perennial grasses may also be present. Where perennial grasses are present, Indian ricegrass, needle-and-thread, James galleta, six weeks fescue, and dropseed species are most common with many occurring solely in the shrub canopy. Invasive species such as cheatgrass, red brome and Russian thistle may also be present. Cryptogamic crust, where present, may be holding the soil in place.

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.

Transition T2A State 2 to 3

This transition is from a mix of native shrubs and grasses along with invasive annual species found in community phase 2.1 to a state that is dominated by pricklypear cactus, broom snakeweed and/or a mix other non-native, invasive species. Events include season long continuous grazing providing little rest and recovery for perennial grasses during critical growing periods coupled with high utilization, prolonged drought, surface disturbances, etc. Once invasive species dominate the plant community a threshold has been crossed.

Citations