

Ecological site group DX035X01AESG06

Grand Staircase-Saline Hills & Badlands-Salts other than Gypsum

Last updated: 10/05/2022
Accessed: 05/02/2024

Key Characteristics

- Grand Staircase-Kaiparowits
- Saline Hills and Badlands
- Soil parent material is dominated by salts other than gypsum

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 ecological site group occurs on hillslopes on mesas and structural benches, knolls and eroding shale hills, pediments, alluvial fans, and lower terraces. Run off is high to very high. Slopes typically range from 2-30% but may occasionally range to 60%. Elevations are generally 3500-6000 ft.

Climate

Soil temperature and moisture regime ranges from mesic, typic aridic to mesic, aridic ustic.

Soil features

The ecological site group soils associated with this ecological site are fine-textured, moderately to very deep, and formed in alluvium and or residuum derived mainly from shale, and less commonly from sandstone, diorite, and sedimentary rock. Soils are well drained with very slow to slow permeability. Soils are sodium affected and alkaline, with pH commonly between 8.0 and 9.0. Surface rock fragments smaller than 3 inches in diameter range from 0 to 26 % cover, and larger fragments range from 0 to 3%. Surface textures are clay, fine sandy loam, gravelly clay loam, gravelly loam and sandy clay loam. Subsurface rock fragments smaller than 3 inches in diameter range from 0 to 60% by volume, and larger fragments range from 0 to 3%.

Vegetation dynamics

This community is characterized by a saltbush shrub canopy with perennial native grasses present in the herbaceous layer. Commonly occurring grasses include Indian ricegrass and James galleta. As grass cover increases, shrub interspaces are reduced. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XC306AZ–Clayey Upland 10-14" p.z.
- R035XY006UT–Alkali Fan (Valley Saltbush)
- R035XY124UT–Desert Shallow Clay (Mat Saltbush)

Correlated Map Unit Components

22340922, 22340991, 22340993, 22597048, 22597186, 22601252, 22601254, 22601674, 22965087, 22965259, 22965260

Stage

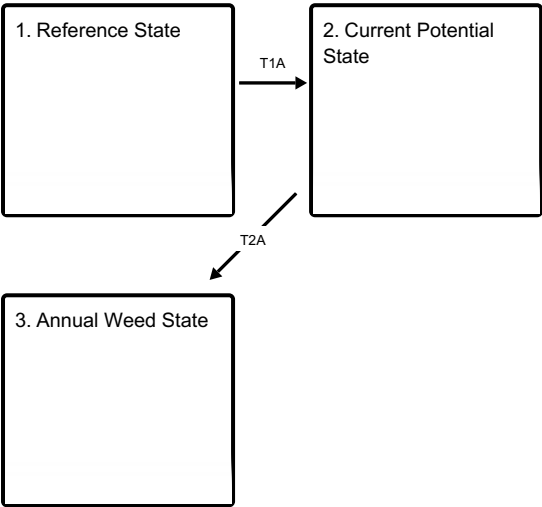
Provisional

Contributors

Victor Parslow, Keith Crossland
Curtis Talbot

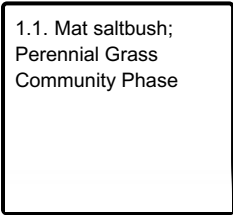
State and transition model

Ecosystem states

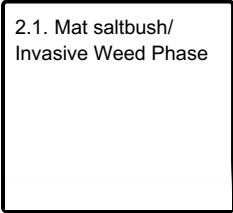


T1A - D = Drought E = Establishment of non-native invasive species HWB = Heavy wildlife browsing ILG = Improper livestock grazing
T2A - D = Drought HWB = Heavy wildlife browsing ILG = Improper livestock grazing F = Fire SD = Surface disturbances

State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Annual Weedy
Herbaceous Phase

State 1 Reference State

This state is typically composed of a shrub layer dominated mat saltbush with lesser amounts of perennial warm and cool grasses present. It is normally self sustaining and stable due to its high resistance to natural disturbances and high resilience following natural disturbances. Once invasive plants become established, return to the reference state may not be possible.

Characteristics and indicators. Reference State: Community phases influenced by native herbivore grazing, insect herbivory, and weather. Indicators: A sparse perennial cool and warm season grass understory with mat saltbush forming the dominant visual aspect.

Resilience management. Feedbacks: Extended drought and/or improper grazing that result in a reduction of native perennial plant vigor which may cause invasive species to become established in the understory, increased bare spaces, erosion, and soil loss. Properly managed grazing that maintains the perennial bunchgrass understory. At-risk Community Phase: All communities in this state are at risk when native plants are stressed and/or nutrients become available for invasive plants to establish. Trigger: Introduction and establishment of non-native invasive plants such as cheatgrass and Russian thistle.

Community 1.1 Mat saltbush; Perennial Grass Community Phase

This community is characterized by a mat saltbush shrub canopy with perennial native grasses present in the herbaceous layer. Commonly occurring grasses include Indian ricegrass and James galleta. As grass cover increases, shrub interspaces are reduced. Other perennial grasses, shrubs, and forbs may or may not be present and cover is variable. Bare ground is variable (40-70%) depending on the number of surface rock fragments which is also variable. Steep hillslopes are often dissected by rills and gullies.

State 2 Current Potential State

The current potential state is similar to the reference state except that invasive species are now present. It is generally dominated by mat saltbush, native perennial grasses and forbs may also be present. 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. Timing of these disturbances dictates the ecological dynamics that occur.

Characteristics and indicators. A site dominated by mat saltbush. James galleta, Indian ricegrass and sand dropseed may also be present. Non-native species are now present in the stand.

Resilience management. Feedbacks: Extended drought resulting in a reduction of native perennial plant vigor. Normal fluctuations in weather allowing for the maintenance of both shrubs and perennial grasses. At-risk Community Phase: This state is at risk when perennial plant cover is reduced and nutrients become available for invasive plants to flourish. Trigger: Spread of invasive plants to fill available niches.

Community 2.1 Mat saltbush/ Invasive Weed Phase

This community phase is characterized by a mat saltbush shrub canopy, where perennial native grasses are present. Invasive plants are also present. Commonly seen grasses include Indian ricegrass, James galleta, and

cheatgrass. Other grasses, shrubs, and forbs may or may not be present and cover is variable. Bare ground, rock fragments, and biological crust cover are very similar to community phase 1.1 in their variability and responses to each other.

State 3

Annual Weed State

The Annual Weed State is generally dominated by invasive annual plants such as cheatgrass, halogeton and Russian thistle. Mat saltbush may or may not be present.

Characteristics and indicators. Annual Weed State: Community phases maintained, in a self-sustaining manner, by invasive annual weed domination and/or occasional fire. Indicators: A site where ecological processes are driven by cheatgrass and/or other invasive annual forbs.

Resilience management. Feedbacks: A self sustaining disturbance regime of invasive annual weed domination and/or occasional fire.

Community 3.1

Annual Weedy Herbaceous Phase

This community phase is characterized by a reduction in mat saltbush and other shrubs, and an increase in invasive annuals. Common invasives include Russian thistle, halogeton, and cheatgrass. This state is the result of disturbances that reduce shrub canopy cover. Bare ground, rock fragments, and biological crust cover are very similar to community phase 1.1 in their variability and responses to each other.

Transition T1A

State 1 to 2

– This transition is from the reference state where only native perennial warm and cool season grasses occur to a state that also includes invasive species. Events may include combinations of conditions favorable for the establishment of invasive plant species, including season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, heavy wildlife browsing, prolonged drought, and surface disturbances. However, invasive species such as cheatgrass have been known to invade intact perennial plant communities with little to no disturbance.

Transition T2A

State 2 to 3

This transition is from a state dominated by perennial shrubs, grasses and invasive weeds to a state that is dominated by annual invasive species. Events include brush treatments, season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, coupled with prolonged drought, and surface disturbances that remove shrubs including off-road vehicle use, and road and pipeline development. Once brush is removed and invasive plants dominate, a threshold has been crossed.

Citations