

Ecological site group DX035X01AESG07

Grand Staircase-Saline Uplands & Flats-Sandy loam soils

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Key Characteristics

- Grand Staircase-Kaiparowits
- Saline Uplands and Flats
- 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 ecological site group is located on mountain slopes, mesa tops, benches, hillsides, ridges, alluvial fans, and cuerdas. Runoff is slow to moderate. Flooding and ponding are rare due to local landscape positions and the dry nature of the ecosystem. Slopes are generally low to moderate (0-30%) but can range up to 70%.

Climate

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

Soil features

This ecological site group occurs on shallow to moderately deep soils. The dry surface layer color is typically reddish or grayish and the surface soil textures range from sandy loams to very fine sandy loams which can include a stony or channery modifier. These soils are poorly developed, well drained, and have moderate water holding capacities. Erosion potential of soils on reference state sites typically depends on surface rock fragments. Sites with greater than 30% rock fragments have lower wind and water erosion potentials than sites with less than 30% surface rock fragments. Biological crust cover is characterized as crustless with the possible occurrence of light cyanobacteria and/or isolated lichen and moss pinnacles.

Vegetation dynamics

This plant community phase is dominated by shadscale and Torrey's jointfir, warm and cool season perennial grasses are present in varying amounts. Grasses may include but are not limited to, Indian ricegrass, James galleta, and sand dropseed. James galleta is typically the dominant species in this plant community phase. Desert trumpet is typically the dominant forb present. Other perennial grasses, shrubs, and forbs may also be present and cover is variable. Bare ground is (10-30%) and biological crusts (0-5%), when present, are characterized by light cyanobacteria in the interspaces, with an occasional moss or lichen pinnacle. Surface rock fragments (20-60%) are very prevalent and are characterized by gravels, cobbles, and/or channers.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XY130UT–Desert Shallow Sandy Loam (Shadscale)

- R035XY230UT–Semidesert Shallow Sandy Loam (Shadscale)

Correlated Map Unit Components

22601487, 22965215, 22965222, 22965219

Stage

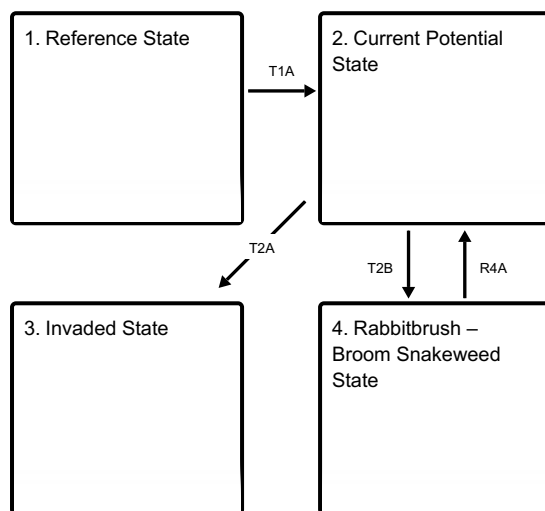
Provisional

Contributors

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State and transition model

Ecosystem states



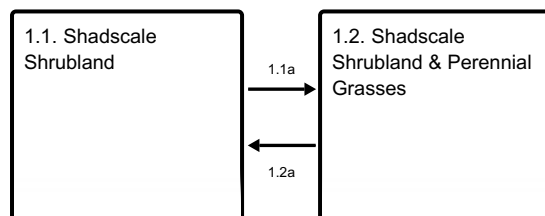
T1A - D = Drought ILG = Improper livestock grazing SD = Surface disturbances WS = Establishment of non-native invasive species

T2A - D = Drought F = Fire ILG = Improper livestock grazing

T2B - ILG = Improper livestock grazing SD = Surface disturbances

R4A - BC = Biological Control PLG = Proper livestock grazing T = Time without disturbances W = Wet weather periods

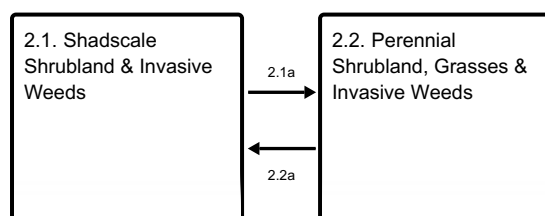
State 1 submodel, plant communities



1.1a - PLG = Proper livestock grazing T = Time without disturbances W = Wet weather periods

1.2a - D = Drought ILG = Improper livestock grazing SD = Surface disturbances

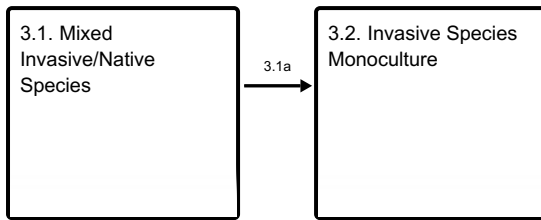
State 2 submodel, plant communities



2.1a - PLG = Proper livestock grazing T = Time without disturbances W = Wet weather periods

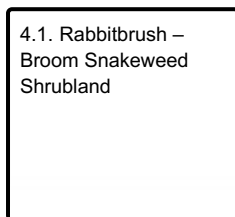
2.2a - D = Drought ILG = Improper livestock grazing SD = Surface disturbances

State 3 submodel, plant communities



3.1a - D = Drought F = Fire ILG = Improper livestock grazing

State 4 submodel, plant communities



State 1 Reference State

The ecological sites in this group are dominated by shadscale, Torrey's jointfir is also commonly present. Warm season grasses such as James' galleta are common on most sites. Cool season grasses, such as Indian ricegrass, are more prevalent in sites found on soils with more structural development.

Community 1.1 Shadscale Shrubland

This plant community phase is dominated by shadscale and Torrey's jointfir, warm and cool season perennial grasses are present in varying amounts. Grasses may include but are not limited to, Indian ricegrass, James galleta, and sand dropseed. James galleta is typically the dominant species in this plant community phase. Utah juniper may be present in areas of higher precipitation.

Community 1.2 Shadscale Shrubland & Perennial Grasses

This plant community phase is dominated by shadscale, Torrey's jointfir, and perennial grasses. Grasses may include, but are not limited to, Indian ricegrass, James galleta, and sand dropseed. James galleta is typically the dominant species in this plant community phase. Other perennial grasses may also be present depending on harshness of the soil conditions. Utah juniper may be present in areas of higher precipitation.

Pathway 1.1a Community 1.1 to 1.2

This pathway occurs on properly managed sites when positive weather events, such as years with normal to above average precipitation favor the establishment of perennial grasses.

Pathway 1.2a Community 1.2 to 1.1

This pathway occurs when drought coupled with season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization and/or other surface disturbance reduces

the percentage of perennial herbaceous vegetation growing on the site.

State 2

Current Potential State

This state is similar to state one, however there are now non-native invasive species established in the understory—cheatgrass and halogeton being the most common. The primary disturbance mechanism is weather fluctuation; however livestock grazing now may influence the ecological dynamics of the site. The current potential state has less ability resist change and less resilience following disturbances.

Community 2.1

Shadscale Shrubland & Invasive Weeds

This plant community phase is dominated by shadscale and Torrey's jointfir, warm and cool season perennial grasses are minimally present. Grasses may include but are not limited to, Indian ricegrass, James galleta, and sand dropseed. James galleta is typically the dominant species in this plant community phase. Utah juniper may be present in areas of higher precipitation. Cheatgrass is now present.

Community 2.2

Perennial Shrubland, Grasses & Invasive Weeds

This plant community phase is dominated by shadscale, Torrey's jointfir, and perennial grasses. Grasses may include Indian ricegrass, James galleta, and sand dropseed. James galleta is typically the dominant species in this plant community phase. Utah juniper may be present in areas of higher precipitation. Cheatgrass is now present. Other perennial or invasive grasses, shrubs, and forbs may also be present and cover is variable.

Pathway 2.1a

Community 2.1 to 2.2

This pathway occurs when events, such as years with normal to above average precipitation, and properly managed livestock grazing favor the establishment of perennial grasses.

Pathway 2.2a

Community 2.2 to 2.1

This pathway occurs when events, such as surface disturbance, drought and/or season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, decrease the amount of perennial grasses present on the site.

State 3

Invaded State

This state is dominated by invasive species—cheatgrass, halogeton, and Russian thistle being the most common. The primary disturbance mechanisms are fire, improper livestock grazing and drought. One or more invasive species has increased to a point where they influence or drive the disturbance regime and nutrient cycle.

Community 3.1

Mixed Invasive/Native Species

This plant community phase is characterized by a dominance of invasive species, with a minimal occurrence of shadscale, Torrey's jointfir, James galleta, and other native perennial grasses, shrubs, and forbs. Utah juniper may be present in areas of higher precipitation. Invasive species include cheatgrass, halogeton, and Russian thistle. Other grasses, forbs, or shrubs may also be present and cover is variable.

Community 3.2

Invasive Species Monoculture

This plant community phase is characterized by a monoculture of invasive species, which may include cheatgrass, halogeton, and Russian thistle. Evidence of dead shadscale and Torrey's jointfir can be found in this plant community phase.

Pathway 3.1a

Community 3.1 to 3.2

This pathway occurs when events such as drought and season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization further reduce the sites vigor. When this now at-risk community receives sufficient moisture for invasive annuals to flourish, fire can convert site to one dominated by cheatgrass and non-native forbs.

State 4

Rabbitbrush – Broom Snakeweed State

This state is dominated by rubber rabbitbrush and broom snakeweed, with minimal occurrence of shadscale, Torrey mormontea, galleta, and other native perennial shrubs, grasses, and forbs. The primary disturbance mechanisms are improper livestock grazing, weather fluctuations, and mining or other surface disturbances. Rubber rabbitbrush and broom snakeweed have increased to a point where they influence or drive the disturbance regime and nutrient cycle. These alterations can eventually create ecologically impoverished sites that are very difficult to restore to functionally diverse perennial herbaceous and woody communities.

Community 4.1

Rabbitbrush – Broom Snakeweed Shrubland

This plant community phase is characterized by a dominance of rubber rabbitbrush and broom snakeweed, where native grasses shrubs, grasses, and forbs may also be present.

Transition T1A

State 1 to 2

This transition occurs as non-native invasive species become established in the plant community. Common non-native invasive species include cheatgrass, halogeton, and Russian thistle. Disturbances that may accelerate this transition include season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, surface disturbance and/or extended drought. Invasive species such as cheatgrass have also been known to invade an intact perennial plant community, however, where no disturbance has occurred.

Transition T2A

State 2 to 3

This transition occurs as events favor the dominance of invasives species such as cheatgrass, Russian thistle, and halogeton. Events include drought and possibly fire; if fine fuel accumulation increases to a point where fire can carry through the current potential state. That fire could cause a transition into the invaded state.

Transition T2B

State 2 to 4

This transition occurs as events favor the increased dominance of rabbitbrush and broom snakeweed. Events typically include season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, mining or other large surface disturbance.

Restoration pathway R4A

State 4 to 2

This restoration pathway occurs as events favor the reestablishment of native grasses, shrubs, and forbs. Fall livestock grazing and insects may be used to control the establishment and dominance of rubber rabbitbrush;

however care must be taken to allow for the reestablishment of native perennial shrub, grass, and forb species, without an increase in broom snakeweed which is enhanced by grazing pressures. Time without surface disturbances and livestock grazing may allow for the reestablishment of native perennial shrubs and grasses without an increase in broom snakeweed; however, this may take many years to accomplish.

Citations