

Ecological site group DX035X01AESG13

Grand Staircase-Sandy Grass & Shrub Lands-Soils are Sands

Last updated: 10/05/2022
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Key Characteristics

- Grand Staircase-Kaiparowits
- 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 ecological site is found on nearly level to gently rolling uplands to partially stabilized or stabilized dunes on plateaus, fans and abandoned stream terraces. The soils are deep to very deep to any plant root restricting layer. The texture of the soil throughout the profile is generally sandy loams to loamy coarse sand. The slope of the site is generally 1 to 10 percent, but may be as high as 15 percent. Elevations range from 5000 to 7900 ft.

Climate

Soil temperature and moisture regimes range from mesic, ustic aridic to mesic, aridic ustic.

Soil features

The soils associated with this ecological site are deep to very deep to any plant root restricting layer. The soil textures throughout the profile range from loamy fine sands to coarse sands. Where the site has been stable for long periods of time, there may be some accumulation of carbonates at moderate depths that can help the site retain more soil moisture within the root zone. The soil ranges from neutral to moderately alkaline (pH 6.6 to 8.4). The permeability is rapid to very rapid and the soil profile can capture both gentle winter rains and intense summer thunderstorms. The available water capacity is low. Wind erosion is a severe problem if the vegetative cover is lost.

Vegetation dynamics

This ecological site groups plant community is composed of mid and short grasses with a moderate percentage of forbs and shrubs. There is a mixture of both cool and warm season grasses and sub-shrubs.

Plant species most likely to invade or increase on this site when it deteriorates are sand sagebrush, big sagebrush, rabbitbrush, annuals, sandhill muhly, wooly groundsel, and snakeweed.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- DX035X03G618–Sandy Upland 13-17" p.z. Moderately Deep
- R035XC315AZ–Sandy Upland 10-14" p.z.
- R035XD412AZ–Sandy Upland 7-11" p.z.

- R035XF607AZ–Sandy Upland 13-17" p.z.
- R035XY115UT–Desert Sand (Sand Sagebrush)
- R035XY212UT–Semidesert Sand (Fourwing Saltbush)
- R035XY307UT–Upland Sand (Mountain Big Sagebrush)
- R035XY324UT–Upland Sand (Utah Juniper-Pinyon)

Correlated Map Unit Components

23436368, 22597001, 22597005, 22597009, 22601398, 22601028, 22601251, 22601803, 22601699, 22601800, 22601799, 22601836, 22601833, 22601277, 22601853, 22601686, 22601483, 22601266, 22601500, 22601281, 22601690, 22601688, 22601752, 22601754, 22601748, 22601493, 22601496, 22601267, 22601269, 22601696, 22601757, 22601071, 22600915, 22601068, 22601279, 22601065, 22601682, 22601272, 22601652, 22965363, 22965103, 22965723, 22965586, 22965379, 22965731, 22965396, 22965397, 22965402, 22965751, 22965403, 22965137, 22965608, 22965614, 22965758, 22965421, 22965417, 22965429, 22965432, 22965355, 22965360, 22965556, 22965560, 22965526, 22965287, 22965264, 22965702, 22965698, 22965465, 22965170, 22963445, 22963344, 22963343, 22963410

Stage

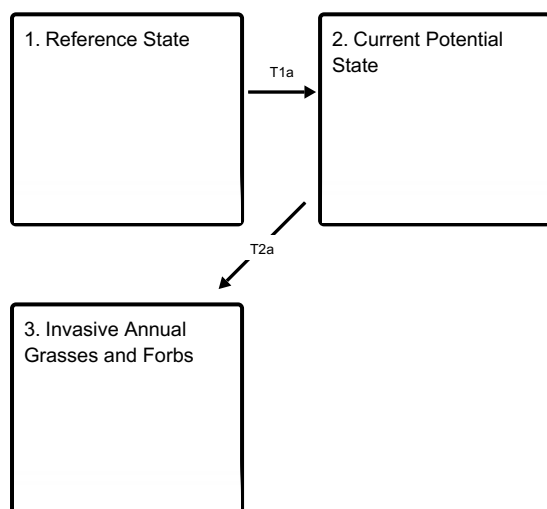
Provisional

Contributors

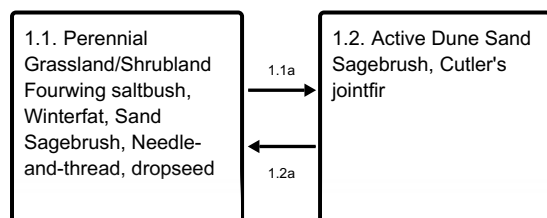
Victor Parslow, Keith Crossland
Curtis Talbot

State and transition model

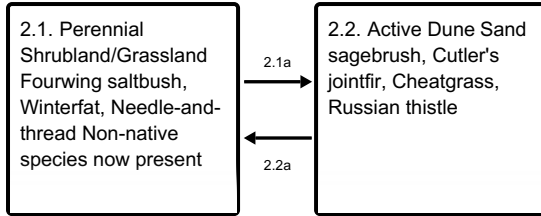
Ecosystem states



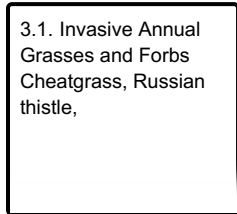
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1 Reference State

Native shrubs and an understory of perennial warm and cool season grasses form the dominant visual aspect.

Characteristics and indicators. The natural disturbance regime consisted of fairly infrequent fires ignited by both natural causes and Native Americans. It is estimated that the historic fire return interval was 35-100+ years depending on fine fuel accumulations (Howard, 2003).

Community 1.1

Perennial Grassland/Shrubland Fourwing saltbush, Winterfat, Sand Sagebrush, Needle-and-thread, dropseed

This plant community is characterized by both native shrubs and perennial warm and cool season grasses. Biological crusts are common (20-30% cover) and characterized by continuous moss and lichen pinnacles. Bare ground (10-20% cover) is minimal.

Community 1.2

Active Dune Sand Sagebrush, Cutler's jointfir

This plant community is characterized by dune vegetation. Sand sagebrush and Cutler's jointfir may dominate the shrub layer. Dominant perennial cool season grasses typically include Indian ricegrass and dominant perennial warm season grasses typically include sandhill muhly. This community is typically represented by small patches where localized surface disturbances have occurred within one of the other reference state plant communities. Bare ground (30-60% cover) is common, and biological crust (0-25%) cover is typically characterized as crustless to light cyanobacteria in the interspaces.

Pathway 1.1a

Community 1.1 to 1.2

This pathway occurs when events favor an increase in active dunes and common dune vegetation. Events could include any type of natural surface disturbance that would increase erosion and soil movement, such as prolonged rodent activity, a severe drought that reduces plant cover, excessive trampling by wildlife, etc.

Pathway 1.2a

Community 1.2 to 1.1

This pathway occurs as natural events such as time without surface disturbances favors the stabilization of the site and increased establishment of native shrubs and perennial warm and cool season grasses.

State 2

Current Potential State

This state is similar to the reference state except that non-native plants are now present in all plant community phases. The primary disturbance mechanisms can be natural or human induced. Events, such as improper livestock grazing, prolonged rodent activity, changes in historic fire regimes, OHV overuse, insect herbivory, or drought may influence this site. A shift in species composition will affect the nutrient cycling, soil-water relationships, hydrology, and soil stability.

Characteristics and indicators. A perennial cool and warm season grass understory with native shrubs forming the dominant visual aspect, when present. Non-native species are now present in all plant communities.

Community 2.1

Perennial Shrubland/Grassland Fourwing saltbush, Winterfat, Needle-and-thread Non-native species now present

This plant community is characterized by both native shrubs and perennial warm and cool season grasses. Biological crusts are variable (5-30% cover) and characterized by cyanobacteria and discontinuous moss and lichen pinnacles. Bare ground (10-40% cover) is variable.

Community 2.2

Active Dune Sand sagebrush, Cutler's jointfir, Cheatgrass, Russian thistle

This plant community is characterized by dune vegetation. Dominant perennial shrubs typically include Cutler's jointfir, sand buckwheat, resinbush, and purple sage. Dominant perennial cool season grasses typically include Indian ricegrass and dominant perennial warm season grasses include sandhill muhly. Commonly seen invasive plant species include cheatgrass, Russian thistle, annual Cryptantha, annual stickseed, and tansy mustard. Bare ground (30-60% cover) is common, and biological crust (0-25%) cover is typically characterized as crustless to light cyanobacteria in the interspaces.

Pathway 2.1a

Community 2.1 to 2.2

This pathway occurs when events favor an increase in active dunes and common dune vegetation. Events could include any type of natural surface disturbance that would increase erosion and soil movement, such as prolonged rodent activity, a severe drought that reduces plant cover, excessive trampling by wildlife or livestock, OHV overuse, etc.

Pathway 2.2a

Community 2.2 to 2.1

This pathway occurs as natural events such as time without disturbance favors the stabilization of the site and increased establishment of native shrubs and perennial warm and cool season grasses.

State 3

Invasive Annual Grasses and Forbs

This state is characterized by a near absence of native perennial vegetation. Broom snakeweed and sand sagebrush may be present to some degree, but the ecological dynamics are driven by cheatgrass and/or Russian thistle.

Community 3.1

Invasive Annual Grasses and Forbs Cheatgrass, Russian thistle,

This state is characterized by the dominance of invasive forbs/shrubs. These species may include, but are not limited to Russian thistle, cheatgrass, tansy mustard, broom snakeweed, annual stickseed, or annual Cryptantha. One or more invasive species has increased to a point where they influence or drive the disturbance regime and

nutrient cycle. Russian thistle and/or cheatgrass are the most likely of these species to establish and dominate.

Transition T1a

State 1 to 2

Introduction and establishment of non-native species

Transition T2a

State 2 to 3

This transition occurs when events favor the increased establishment and dominance of invasive plant species. Events include any type of surface disturbance, such as fire, improper domestic livestock grazing, OHV overuse, and drought. Once invasive species drive the ecological dynamics a threshold has been crossed.

Citations