

# Ecological site group DX035X01AESG02

## Grand Staircase-Bottoms & Flats-run in

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### Key Characteristics

- Grand Staircase-Kaiparowits
- Bottoms and Flats
- Extra water is from run-in or local water table

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 group receives extra run-in water due to its landscape position on flood plains, stream terraces, narrow valleys, and valley flats. Run off is low due to gentle slopes and highly permeable soils. The elevation ranges from 3800 to 6500 ft. This group usually does not have a seasonally high water table, but in some areas spring water table can be within 42 inches of the soil surface.

### Climate

The climate is characterized by hot, dry summers and cool winters. Average annual precipitation ranges from 6.5 to 10 inches. Approximately 65% of the total precipitation occurs from July to October, mostly in the form of convection thunderstorms. May and June are typically the driest months during the growing season. Large fluctuations in daily temperatures are common. Summer temperatures are in the 90's and winter temperatures are in the 20's and 30's.

### Soil features

The soils are deep to very deep and well drained to somewhat excessively well drained. Surface and subsurface textures can range from clay loams to sandy loams. There are typically few rock fragments on the soil surface and throughout the profile, but sometimes gravel lenses are present. These soils are usually formed in alluvium derived from sandstone parent materials. The soil temperature regime is mesic and the soil moisture regime is aridic (sometimes ustic aridic). Soils are nonsaline to slightly saline.

### Vegetation dynamics

This group is historically dominated by shrubs and a diverse perennial grass understory dominated by Indian ricegrass, James's Galleta, *Sporobolus* spp, and/or needle-and-thread. The historic fire return interval is presumed to be about 35-100 years (Howard 2003). Fourwing saltbush, Greasewood, Basin Big Sagebrush and native grasses would have resprouted within one year following fire and maintained dominance of the site. There is no evidence that prolonged drought would dramatically alter the species composition of the site in reference condition, although production is expected to be lower. Inundation, persistent heavy browsing, and/or insect herbivory would have resulted in reduced fourwing saltbush and a grass-dominated plant community.

Today this group often burns less frequently due to fire suppression efforts and reduced fine fuel loads resulting from livestock grazing. In addition, excessive livestock grazing during the spring and summer can cause native grasses and forbs to lose vigor or disappear from the community completely.

Invasive plant species, particularly cheatgrass, Russian thistle, and annual mustards, can establish on the site given a seed source and germination sites in disturbed soil. These invasive annuals require little or no disturbance to establish, although disturbances often provide germination sites and/or seed sources that accelerate invasion.

When the ecological processes are altered due to improper grazing, prolonged drought, altered fire regime, invasive species dominance, and/or other disturbances, alternative states can occur that differ from the historic reference state in both plant community structure and ecological function.

## Major Land Resource Area

MLRA 035X  
Colorado Plateau

## Subclasses

- R035XB216AZ–Sandy Wash 6-10" p.z.
- R035XD418AZ–Clay Loam Bottom 7-11" p.z.
- R035XY003UT–Alkali Bottom (Greasewood)
- R035XY010UT–Semiwet Fresh Meadow
- R035XY011UT–Loamy Bottom (Basin Big Sagebrush)
- R035XY015UT–Sandy Bottom
- R035XY016UT–Moist Sand (Ponderosa Pine)

## Correlated Map Unit Components

22601699, 22601854, 22601373, 22601749, 22601256, 22601879, 22965132, 22965610, 22965430, 22965677, 22965554, 22965276, 22965275, 22965272, 22965553, 22965282, 22965280, 22965686, 22965685, 22965689, 22965174, 22963395, 22963397

## Stage

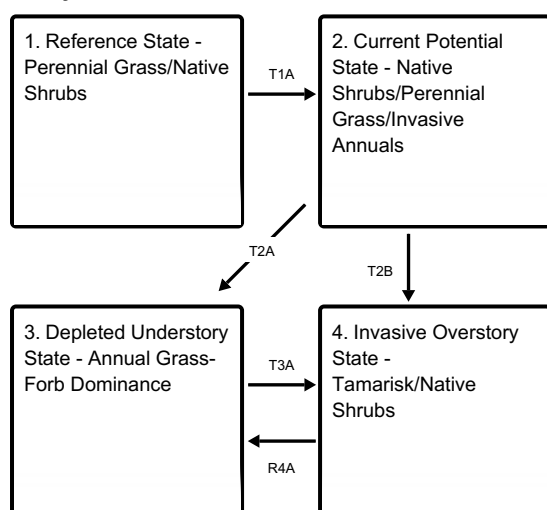
Provisional

## Contributors

Curtis Talbot

## State and transition model

### Ecosystem states



## State 1

### Reference State - Perennial Grass/Native Shrubs

This state is typically dominated by deep-rooted perennial warm and cool season grasses and grass-like plants and native shrubs; species dependent on soil texture, drainage, and salinity/sodicity. Typical shrubs are fourwing saltbush, basin big sagebrush, and black greasewood. Grass and grass-like species include Indian ricegrass, galleta, alkali sacaton, dropseed species and some sedges.

## **State 2**

### **Current Potential State - Native Shrubs/Perennial Grass/Invasive Annuals**

This state is similar to the reference state in composition and ecological function, but allows for non-native species to be present.

## **State 3**

### **Depleted Understory State - Annual Grass-Forb Dominance**

The depleted understory state occurs when perennial grasses have been lost from the understory. Perennial forbs may also be reduced. Interspaces may be sparsely vegetated or dominated by Russian thistle or other annual invasive species.

## **State 4**

### **Invasive Overstory State - Tamarisk/Native Shrubs**

This state may occur on low stream terraces or when major disruptions to the channel hydrology occur. The stream provides a corridor for tamarisk invasion which spreads throughout the bottom, eventually dominating the site.

## **Transition T1A**

### **State 1 to 2**

Establishment and persistence of non-native species results in a transition from the reference state.

## **Transition T2A**

### **State 2 to 3**

This transition occurs when perennial grasses are reduced by improper grazing to the point that they can no longer self-propagate. Few remnant plants may still persist under shrubs, but re-establishment and dominance by perennial grasses will not occur following a fire, or with the removal of livestock grazing.

## **Transition T2B**

### **State 2 to 4**

This transition occurs on low stream terraces. The stream provides a corridor for tamarisk invasion, which spreads to low terraces dominated by native shrubs. Disturbances to the hydrology of the stream channel or the adjacent uplands causing increased erosion and gullyng may accelerate this process.

## **Transition T3A**

### **State 3 to 4**

This transition occurs on low stream terraces. The stream provides a corridor for tamarisk invasion, which spreads to low terraces dominated by native shrubs. Disturbances to the hydrology of the stream channel or the adjacent uplands causing increased erosion and gullyng may accelerate this process.

## **Restoration pathway R4A**

### **State 4 to 3**

This community pathway may occur with tamarisk control efforts, either mechanical or biological.

## **Citations**