

# Ecological site group DX035X01HESG03

## Black Mesa-Navajo Mtn-Sandy uplands

Last updated: 10/12/2022  
Accessed: 04/19/2024

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### Key Characteristics

- Black Mesa Navajo Mountain
- Sandy soils
- Sandy uplands

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

Nearly level to gently rolling uplands to partially stabilized or stabilized dunes on plateaus, fans and abandoned stream terraces.

### Climate

Winter summer moisture ratios range from 70:30 to 60:40. Late spring is usually the driest period, and early fall moisture can be sporadic. Summer rains fall from June through September.

### 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.

### Vegetation dynamics

Mid and short grasses with a moderate percentage of forbs and shrubs. There is a mixture of both cool and warm season grasses and subshrubs.

### Major Land Resource Area

MLRA 035X  
Colorado Plateau

### Subclasses

- R035XA118AZ–Sandy Upland 10-14" p.z.
- R035XB206AZ–Sandy Upland 6-10" p.z. Warm
- R035XB217AZ–Sandy Upland 6-10" p.z.
- R035XB222AZ–Sandy Terrace 6-10" p.z.
- R035XB230AZ–Sandstone Upland 6-10" p.z. Very Shallow, Warm
- R035XC315AZ–Sandy Upland 10-14" p.z.
- R035XC373AZ–Sandy Upland 10-14" p.z. Warm
- R035XC377AZ–Sandy Slopes 10-14" p.z.
- R035XF607AZ–Sandy Upland 13-17" p.z.
- R035XY115UT–Desert Sand (Sand Sagebrush)
- R035XY212UT–Semidesert Sand (Fourwing Saltbush)

- R035XY324UT–Upland Sand (Utah Juniper-Pinyon)

## Correlated Map Unit Components

22397326, 22397325, 22397476, 22397478, 22397481, 22397529, 22397428, 22397489, 22397474, 22397504, 22601119, 22601556

## Stage

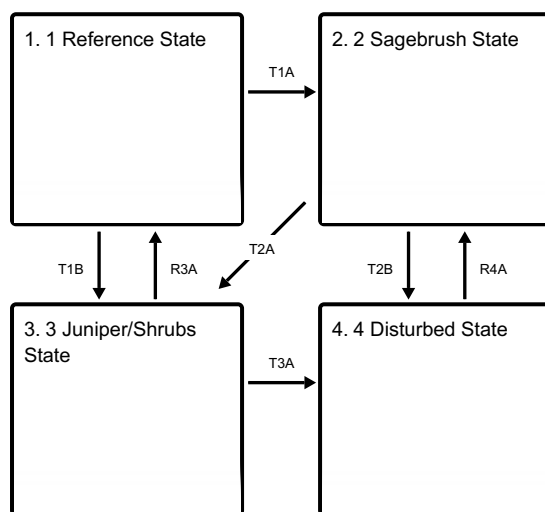
Provisional

## Contributors

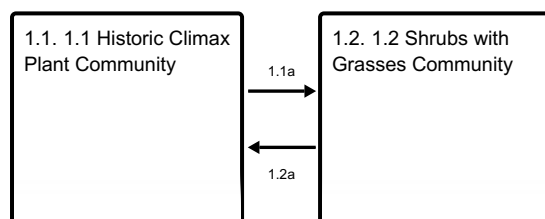
Vic Parslow, Keith Crossland, Jeff Fenton, Harry Hosler  
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## State and transition model

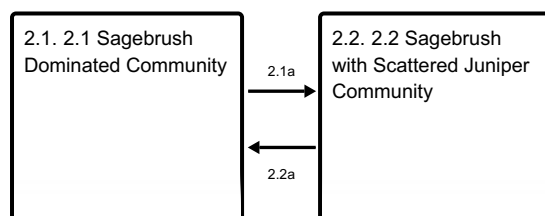
### Ecosystem states



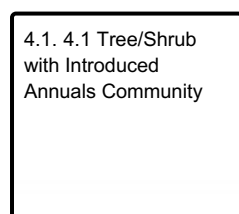
### State 1 submodel, plant communities



### State 2 submodel, plant communities



### State 4 submodel, plant communities



## **State 1**

### **1 Reference State**

#### **Community 1.1**

##### **1.1 Historic Climax Plant Community**

The historic climax 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 half-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.

#### **Community 1.2**

##### **1.2 Shrubs with Grasses Community**

This plant community is characterized by a mix of shrubs and grasses. There is a slight increase of large and half shrubs, decrease in perennial grasses, especially cool season grasses. Grasses in decline include black grama, needle and thread and Indian ricegrass.

#### **Pathway 1.1a**

##### **Community 1.1 to 1.2**

Unmanaged grazing, long term winter dominated precipitation, and/or drought that reduces perennial warm and cool season grasses

#### **Pathway 1.2a**

##### **Community 1.2 to 1.1**

Managed grazing, adequate precipitation

## **State 2**

### **2 Sagebrush State**

#### **Community 2.1**

##### **2.1 Sagebrush Dominated Community**

Sagebrush species such as big sagebrush and/or sand sagebrush. Other shrubs in moderate amounts include rabbitbrush species and snakeweed. In the understory is a mix of warm and cool season grasses dominated by blue grama, Indian ricegrass, squirreltail, and dropseeds.

#### **Community 2.2**

##### **2.2 Sagebrush with Scattered Juniper Community**

The dominant aspect of this site is a shrubland with a scattered overstory of junipers. Dominant shrubs include sagebrush, snakeweed, Bigelow rubber rabbitbrush and other native shrubs. The herbaceous understory is dominated by blue grama, needle and thread, sand dropseed, sandhill muhly and Indian ricegrass.

#### **Pathway 2.1a**

##### **Community 2.1 to 2.2**

Unmanaged grazing, summer drought, seed source for juniper

#### **Pathway 2.2a**

##### **Community 2.2 to 2.1**

Natural patchy fire, well managed grazing, and adequate precipitation

## **State 3**

### **3 Juniper/Shrubs State**

Juniper and occasional pinyon pine increases to dominate overstory with a shrub understory. Shrubs species include sagebrush, snakeweed, rabbitbrush, Cultler's mormon tea and antelope bitterbrush. There is also a increase of introduced annual forbs and grasses. Dominant grasses are sandhill muhly, blue grama, sand dropseed and Indian ricegrass.

## **State 4**

### **4 Disturbed State**

#### **Community 4.1**

##### **4.1 Tree/Shrub with Introduced Annuals Community**

The dominant aspect of the site is woody overstory of shrubs and trees with a herbaceous understory dominated by forbs. This site has a high degree of bare ground with active signs of soil erosion. Bare ground can reach as high as 85%, but in wet years can be as low as 35% with high forb production. Plant understory composition by weight for forbs and annual grasses can range from 25-45%, but can be as high as 80% during high precipitation events. Dominate grasses include sandhill muhly, dropseeds and Indian ricegrass. Dominate shrubs include Bigelow rubber rabbitbrush, Greene's rabbtibrush, sand sagebrush, frosted mint, antelope bitterbrush and sand buckwheat. Tree canopy can vary, but is dominated by juniper species.

#### **Transition T1A**

##### **State 1 to 2**

Loss of biotic integrity due to loss of perennial grasses and shrub encroachment, causing some loss of soil site stability and hydrologic function with more stability and infiltration under shrubs.

#### **Transition T1B**

##### **State 1 to 3**

Loss of biotic integrity due to loss of perennial grasses and juniper and shrub encroachment, causing some loss of soil site stability and hydrologic function.

#### **Transition T2A**

##### **State 2 to 3**

Further loss of biotic integrity with increasing juniper. Soil site stability and hydologic function at least moderately departed from the reference state due to changes in infiltration pattern.

#### **Transition T2B**

##### **State 2 to 4**

Drought, unmanaged grazing and/or fire removes the perennial herbaceous component of the plant community. Introduced annual grasses and forbs move into the plant community further reducing the biotic integrity of the site. Soil site stability is lost except around remaining trees and shrubs.

#### **Restoration pathway R3A**

##### **State 3 to 1**

Reduction of juniper and other woody shrubs that have encroached on the site. Seeding or planting where remaining seed source is inadequate. Well managed grazing before and after treatment.

#### **Transition T3A**

##### **State 3 to 4**

Drought, fire, and/or unmanaged grazing reduce the perennial herbaceous component and some of the shrubs

further reducing the biotic integrity of the site. Introduced annual grasses and forbs move into the plant community. Soil site stability and hydrologic function are at least moderately departed from the reference state.

## **Restoration pathway R4A**

### **State 4 to 2**

Reduction of junipers and shrub species that have encroached on the site. Seeding where there is not an adequate seed source of the desired species. Control of introduced grasses and forbs may be needed if they are significant on the site. Well managed grazing is required before and after treatment.

## **Citations**