

# Ecological site group DX035X01DESG06

## Henry Mtns-Sandy Grass & Shrub lands

Last updated: 09/01/2021  
Accessed: 05/02/2024

---

### Key Characteristics

- Henry Mountains
- Sandy Grasslands and Shrublands

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 site occurs on dunes, structural benches, plateaus, alluvial fans, mesas, sandsheets, and cuestas. Vegetated dunes are very common. Depending up on plant community and the presences or absence of disturbance (see the community phase section of this report), active dunes can become more prevalent. Runoff potential is very low to low.

### Climate

The climate is characterized by hot summers and cool winters, which can be slightly modified by local topographic conditions, such as aspect. Large fluctuations in daily temperature are common. Mean annual high temperatures range from 61-71 degrees Fahrenheit and mean annual low temperatures range from 33-43 degrees Fahrenheit. Approximately 70-75% of moisture occurs as rain from October-March as convection thunderstorms and snow. Precipitation is extremely variable from month to month and from year to year but averages between 7-12 inches. Snow packs are generally light and not persistent.

### Soil features

This sites soils are classified as moderately to very deep torripsamments and are excessively drained. The dry surface color is typically a reddish brown. Runoff is low or very low on flatter slopes, however, sites with slopes greater than 20% have a medium runoff potential. These soils have a high wind and water erosion potential and are subject to blowing and drifting even when the site is in the reference state. The soil temperature and moisture regimes are mesic and ustic aridic respectively. Surface and subsurface textures are generally fine sands, sands, and loamy sands. Soils are nonsaline and the water holding capacity is generally low. Surface and subsurface rock fragments are unusual. This site has been used in the following soil surveys and has been correlated to the following components:

### Vegetation dynamics

This ecological site occurs on moderately deep to very deep, poorly developed soils found on vegetated dunes, structural benches, plateaus, mesas, sandsheets, and cuestas in Major Land Resource Area (MLRA) 35-The Colorado Plateau. Fourwing saltbush or winterfat typically forms the dominant visual aspect. Small areas within this ecological site may be subject to blowing; these areas are sparsely vegetated with dune vegetation including species such as purple sage, resin bush, and sandhill muhly. Utah juniper (0-5% canopy cover) may be found invading these plant communities when the site is in close proximity to a juniper stand.

This site developed under Colorado Plateau climatic conditions and included natural influences of herbivory, fire, and climate. The natural disturbance regime consisted of fairly infrequent fires ignited by both natural causes and Native Americans. Fires are normally infrequent due to broken topography (i.e., large expanses exposed rock in the

landscape), the fact that warm season grasses are usually green during the thunderstorm season, and that few lightning strikes actually occur. This ecological site is commonly described as a desert grassland plant community. It is estimated that the historic fire return interval was 35-100+ years depending on fine fuel accumulations (Howard, 2003).

This ecological site has been grazed by domestic livestock since they were first introduced into the area. This livestock introduction, with its the use of fencing and the development of reliable water sources have influenced the disturbance regime historically associated with this ecological site. Fires would typically only carry on this site after several good moisture years created continuous fine fuels, however, the introduction of domestic livestock reduced these fine fuels, reducing fires periods. In addition to influencing this sites fire regime, improperly managed livestock grazing (i.e., continuous season long grazing, heavy stocking rates, etc.) can cause this site to depart for the reference plant community. When this occurs, native perennial grasses and shrubs will decrease while invasive forbs and annual grasses will increase. Continued improper domestic livestock grazing will likely remove the native perennial grasses and shrubs from the system and create large bare interspaces, which can increase erosion, active duning, and opportunities for invasive plants to establish.

## Major Land Resource Area

MLRA 035X  
Colorado Plateau

## Subclasses

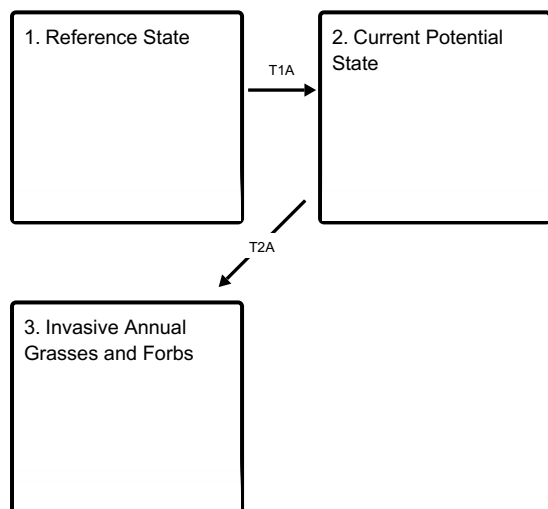
- R035XY212UT–Semidesert Sand (Fourwing Saltbush)

## Stage

Provisional

## State and transition model

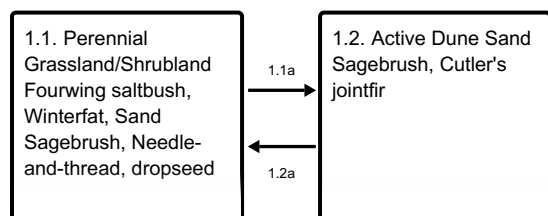
### Ecosystem states



**T1A** - E = Establishment of non-native invasive species

**T2A** - D = Drought ILG = Improper livestock grazing F = Fire SD = Surface disturbances

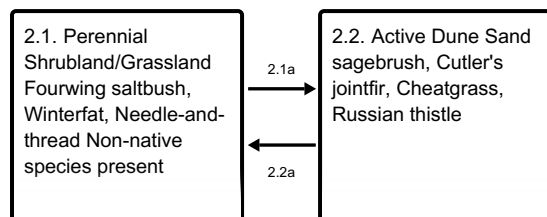
### State 1 submodel, plant communities



1.1a - D = Drought SD = Surface disturbances

1.2a - T = Time without disturbances W = Wet weather periods

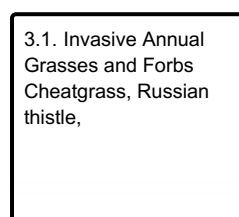
#### State 2 submodel, plant communities



2.1a - D = Drought SD = Surface disturbances

2.2a - T = Time without disturbances W = Wet weather periods

#### 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

#### 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.

### **Community 2.1**

#### **Perennial Shrubland/Grassland Fourwing saltbush, Winterfat, Needle-and-thread Non-native species 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**

Howard, J.L. 2003. *Atriplex canescens*.