

Ecological site group DX035X01GESG15

Chinle Valley Loamy Shallow Benches, Terraces, and Mesas

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Key Characteristics

- Chinle Valley
- Loamy
- Upland
- Shallow
- Benches, mesas

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 occurs in an upland position on plateaus, mesas or buttes. It is on gently sloping to rolling plains and slopes that are generally 1 - 15% and occasionally up to 30%. It does not benefit from run-in moisture from adjacent areas nor does it suffer from excessive loss of moisture from runoff.

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; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture from October through May tends to be frontal; it originates in the Pacific and the Gulf of California and falls in widespread storms with longer duration and lower intensity. Precipitation generally comes as snow from December through February. Accumulations above 12 inches are not common but can occur. Snow usually lasts for 3-4 days, but can persist much longer. Summer daytime temperatures are commonly 95 - 100 F and on occasion exceed 105 F. Winter air temperatures can regularly go below 10 F and have been recorded below - 20 F.

About 50% of annual precipitation is received as rain from July to September with the least amounts falling during May and June. Most of the moisture that comes from November to February comes as snow. High winds are common during the winter and spring.

Soil features

Soils on this site are very shallow and shallow (5 - 20 inches deep) to bedrock. Soils may have thin eolian deposits or sheet alluvium, but always over residuum derived dominantly from shale and sandstone. The surface textures range from loamy sand to loam about 1 - 4 inches thick. The surface may be covered with up to 20-30% gravels or channers. The subsurface horizon has textures of sandy loam or loam and contains less than 35% gravel by volume. Shallow depth to bedrock restricts the root growth and moisture. The soil has very low available water capacity. Available water capacity is moderate. Water erosion potential is moderate; soil erosion potential is high. Soils are mildly to moderately alkaline (pH 7.4-8.4).

Vegetation dynamics

An ecological site is not a precise assemblage of species for which the proportions are the same from place to place or from year to year. In all plant communities, variability is apparent in productivity and occurrence of individual species. Spatial boundaries of the communities; however, can be recognized by characteristic patterns of species

composition, association, and community structure. The historic climax plant community for this ecological site has been described by sampling relict or relatively undisturbed sites and/or reviewing historic records. The historic climax plant community is the plant community that evolved over time with the soil forming process and long term changes in climatic conditions of the area. It is the plant community that was best adapted to the unique combination of environmental factors associated with the site.

Natural disturbances, such as drought, fire, grazing of native fauna, and insects, are inherent in the development and maintenance of these plant communities. The effects of these disturbances are part of the range of characteristics of the ecological site. Fluctuations in plant community structure and function caused by the effects of natural disturbances help establish the boundaries and characteristics of an ecological site. They are accounted for as part of the range of characteristics of the ecological site. Recognizable plant community phases are identified in the reference state of the ecological site. Some sites may have a small range of variation, while others have a large range. Some plant community phases may exist for long periods of time, while others may only occur for a couple of years after a disturbance.

Deterioration of the plant community, hydrology, or soil site stability on an ecological site can result in crossing a threshold or potentially irreversible boundary to another state, or equilibrium. This can occur as a result of the loss of soil surface through erosion, the loss of the stability of the site due to disturbances that cause active erosion on the site, increases in the amounts and/or patterns or runoff from rainstorms, changes in availability of surface and subsurface water, significant changes in plant structural and functional types, or the introduction of non-native species. When these thresholds are crossed, the potential of the ecological site to return to the historic climax plant community can be lost, or restoration will require significant inputs. There may be multiple states possible for an ecological site, determined by the type and or severity of disturbance.

The known states and transition pathways for this ecological site are described in the state and transition model. Within each state, there may be one or more known plant community phases. These community phases describe the different plant community that can be recognized and mapped across this ecological site. The state and transition model is intended to help land users recognize the current plant community on the ecological site, and the management options for improving the plant community to the desired plant community.

Plant production information in this site description is standardized to the annual production on an air-dry weight basis in near normal rainfall years.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XB215AZ–Sandstone/Shale Upland 6-10" p.z.
- R035XB249AZ–Mudstone/Sandstone Upland 6-10" p.z. Limy, Channery
- R035XC318AZ–Silty Shallow 10-14" p.z.
- R035XC337AZ–Sandstone/Shale Upland 10-14" p.z.
- R035XY122UT–Desert Shallow Loam (Shadscale)
- R035XY221UT–Semidesert Shallow Loam (Utah Juniper-Pinyon)

Correlated Map Unit Components

22397324, 22397535, 22397471, 22397339, 22397328, 22397344, 22999685

Stage

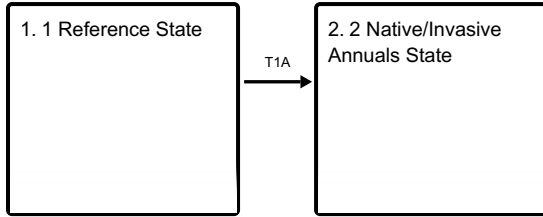
Provisional

Contributors

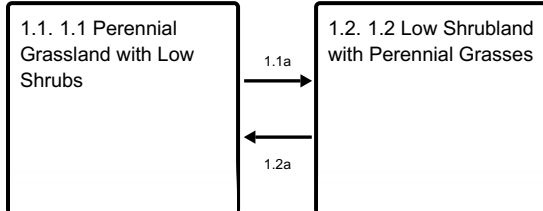
Curtis Talbot

State and transition model

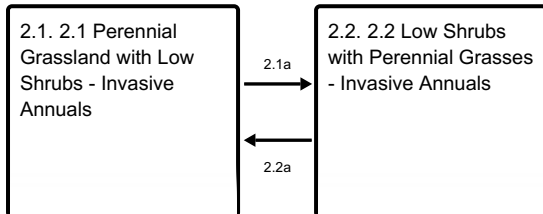
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1

1 Reference State

The reference state and the reference (climax) plant community has been determined by study of relict areas or areas protected from excessive disturbances. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures and historical accounts have also been used. This reference state is characterized as a native mid and short grassland dominated by black grama and galleta with shrubs like Bigelow sagebrush and shadscale saltbush. Sites dominated by sandstone will show a slight dominance of Bigelow sagebrush and sites dominated by shale will show a slight dominance of shadscale. Plant species most likely to invade or increase on this site when it deteriorates are broom snakeweed, Russian thistle and cacti. Unmanaged grazing during the winter and spring periods will decrease the cool season grasses, which are replaced by lower forage value grasses and shrubs.

Community 1.1

1.1 Perennial Grassland with Low Shrubs

This site has a plant community made up primarily of short and mid grasses with a moderate amount of shrubs. The plant community has a mixture of both cool and warm season plants.

Community 1.2

1.2 Low Shrubland with Perennial Grasses

This plant community is characterized by an increase of shrubs with a decrease in perennial grasses.

Pathway 1.1a

Community 1.1 to 1.2

Unmanaged grazing, drought

Pathway 1.2a

Community 1.2 to 1.1

Prescribed grazing, favorable climate/moisture.

State 2

2 Native/Invasive Annuals State

This plant community state closely resembles the reference state plant community, but introduced annuals, such as cheatgrass and Russian thistle are present in amounts up to 15% composition.

Community 2.1

2.1 Perennial Grassland with Low Shrubs - Invasive Annuals

This site has a plant community made up primarily of short and mid grasses with a moderate amount of shrubs and introduced annuals. Annuals such as cheatgrass and Russian thistle are present in minor amounts, 1-15% composition.

Community 2.2

2.2 Low Shrubs with Perennial Grasses - Invasive Annuals

This plant community is characterized by an increase of shrubs with a decrease in perennial grasses. Introduced annuals, such as cheatgrass and Russian thistle can make up to 15% composition.

Pathway 2.1a

Community 2.1 to 2.2

Unmanaged grazing, drought.

Pathway 2.2a

Community 2.2 to 2.1

Prescribed grazing, favorable climate/moisture.

Transition T1A

State 1 to 2

Introduction of non-native annuals species creates an irreversible change in the plant community.

Citations