

Ecological site group DX035X01CESG03

Mesas and Benches - Outcrops and Slopes

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Key Characteristics

- Mesa and Benches
- Outcrops and Slopes

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 escarpments and hillslopes associated with structural benches, ledges on escarpments, dissected structural benches, side slope canyons, canyon walls, and scarp slopes on cuestas. Run off is very high. Slopes typically range from 15-80%, and elevations are generally 4800-6900ft.

Climate

The climate is characterized by hot summers and cool to warm winters. Large fluctuations in daily temperatures are common. Mean annual high temperatures range from 60-70 degrees Fahrenheit and mean annual low temperatures range from 32-40 degrees Fahrenheit. Approximately 70-75% occurs as rain from March through October. On the average, February, May, and June are the driest months and July through October are the wettest months. Precipitation is extremely variable from month to month and from year to year but averages between 9-12 inches. Much of the summer precipitation occurs as convection thunderstorms.

Soil features

The soils are very shallow (rarely moderately deep) and are well drained. Typically, the dry surface color ranges from dark brown to yellowish red. The soil temperature and moisture regimes are mesic and ustic aridic respectively. Surface textures are generally sandy loams but can range to very fine sandy loams, silt loams, loams, and fine sandy loams. Subsurface textures are generally loamy sands, cobbly loams, channery loams, or gravelly sandy loams. Soils are nonsaline to slightly saline.

Vegetation dynamics

This group developed under Colorado Plateau ecological conditions, and the natural influences of herbivory and climate. Species composition is generally dominated by a sparse layer of Utah juniper and two-needle pinyon. Bigelow sagebrush, mormon tea and blackbrush are common shrub species. Perennial herbaceous species occurrence is highly variable with Indian ricegrass, Salina wildrye and desert needlegrass found most often. There is no evidence to indicate that this group historically maintained a short burn cycle. Drought and insect damage appear to be the main driving factors in many pinyon/juniper communities. Betancourt et al. (1993), noted that pinyon and juniper woodlands in the southwest appear to be more susceptible to large die-offs during droughts, than at other locations. If a severe drought persists, two-needle pinyon being more susceptible to drought and insect damage than Utah juniper, appear to die out first, while the Utah juniper may survive. This event could allow for an increase in shrubs and herbaceous species during periods when wetter years return.

Major Land Resource Area

MLRA 035X

Subclasses

- R035XY240UT–Semidesert Steep Shallow Loam (Utah Juniper-Two-Needle Pinyon)

Correlated Map Unit Components

22857819, 22933935, 22934192, 22934083, 22933987, 22933989, 22934259, 22934015, 22934014

Stage

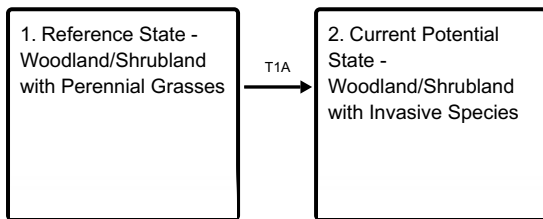
Provisional

Contributors

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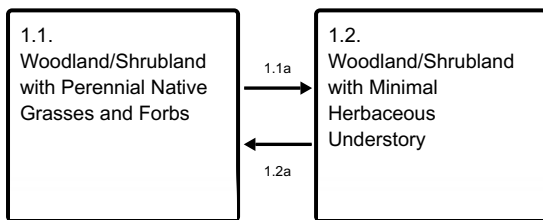
State and transition model

Ecosystem states



T1A - ILG = Improper Livestock Grazing D = Drought SD = Surface Disturbance IW = Invasive Weed Source

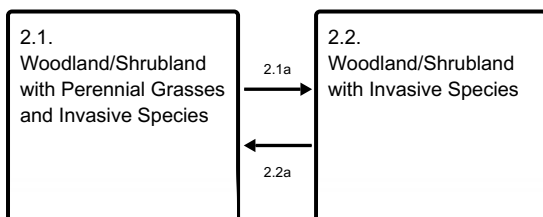
State 1 submodel, plant communities



1.1a - ILG = Improper Livestock Grazing D = Drought SD = Surface Disturbance

1.2a - PLG = Proper Livestock Grazing W = Wet Weather Periods T = Time

State 2 submodel, plant communities



2.1a - ILG = Improper Livestock Grazing D = Drought SD = Surface Disturbance

2.2a - PLG = Proper Livestock Grazing W = Wet Weather Periods T = Time

State 1

Reference State - Woodland/Shrubland with Perennial Grasses

The reference state is characterized by a sparse overstory of Utah juniper and two-needle pinyon, a native shrub layer which may contain shadscale, blackbrush, Bigelow's sagebrush, and jointfir, and a herbaceous layer dominated by native perennial grasses.

Community 1.1

Woodland/Shrubland with Perennial Native Grasses and Forbs

This plant community phase is typically a shrubland with a diverse herbaceous understory. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Grass species commonly include Indian ricegrass, salina wildrye, James galleta and others. Surface rock fragments are prevalent as is bare ground.

Community 1.2

Woodland/Shrubland with Minimal Herbaceous Understory

This plant community phase is typically a shrubland with a minimal herbaceous understory. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Grass species, when present, commonly include Indian ricegrass, salina wildrye, James galleta and others. Surface rock fragments are prevalent as is bare ground.

Pathway 1.1a

Community 1.1 to 1.2

This community pathway occurs when prolonged drought reduces the percent of native perennial grasses present in the Reference State. Surface disturbances and/or season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, where they occur may accelerate this transition.

Pathway 1.2a

Community 1.2 to 1.1

This community pathway occurs when a series of above average precipitation years allows for an increase in the perennial herbaceous species found on this site. Where grazing occurs, proper grazing management and its associated reduction of any surface disturbance present, can accelerate this transition

State 2

Current Potential State - Woodland/Shrubland with Invasive Species

This state is very similar to the reference state, except that invasive grasses and/or forbs are present in all phases. The shift in species composition could affect nutrient cycling, hydrology and soil stability. At this time there is no known way to effectively remove invasive plants once they have become established. Therefore, sites are often irreversibly altered from the reference state.

Community 2.1

Woodland/Shrubland with Perennial Grasses and Invasive Species

This plant community phase is typically a shrubland with a diverse herbaceous understory. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Native grass species commonly include Indian ricegrass, salina wildrye, James galleta and others. Invasive species, commonly cheatgrass, are established in the community. Surface rock fragments are prevalent as is bare ground.

Community 2.2

Woodland/Shrubland with Invasive Species

This plant community phase is typically a shrubland with an understory dominated by invasive species, typically cheatgrass. In more moist sites a sparse overstory of Utah juniper and two-needle pinyon may be present. Shrubs species commonly include shadscale, Bigelow sagebrush, blackbrush, Torrey's jointfir, green jointfir, and cliffrose. Native grass species are only minimally present but James galleta is typically the most prevalent. Surface rock fragments are prevalent as is bare ground.

Pathway 2.1a

Community 2.1 to 2.2

This pathway occurs when prolonged drought reduces the percent of native perennial grasses present in the Reference State. Surface disturbances and/or season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, where they occur, may accelerate this transition. Invasive species may increase during periods of short term precipitation.

Pathway 2.2a

Community 2.2 to 2.1

This community phase occurs when a series of above average precipitation years allows for an increase in the perennial herbaceous species found on this site. Where grazing occurs, proper grazing management and its associated reduction of any surface disturbance present, can accelerate this transition.

Transition T1A

State 1 to 2

This transition occurs as any combination of season long grazing providing little rest and recovery for preferred grazed plants during critical growing periods coupled with high utilization, drought, and/or surface disturbance allow invasive species become established in the plant community. The most common invasive species is cheatgrass. Invasive species, however, have been known to invade intact perennial plant communities where no disturbance has occurred.

Citations

Betancourt, J.L., E.A. Pierson, K.A. Rylander, J.A. Fairchild-Parks, and J.S. Dean. 1993. Influence of history and climate on New Mexico pinon-juniper woodlands.. Pages 42–62 in and , editors. Managing pinon-juniper ecosystems for sustainability and social needs. USDA Forest Service Technical Report RM-236..