Ecological site group DX035X04DESG03
Canyon Seboyeta LRU Subset - Loamy Subgroup

Last updated: 11/02/2022
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Key Characteristics

- Canon Seboyeta. This LRU subset drains eastward toward the Acoma Valley, and is confined to Cretaceous sedimentary parent materials. It is bounded to the west by the Mt. Taylor Volcanic field, to the north by a watershed divide, and to the east and south by a break between Cretaceous and Jurassic strata.
- Sites that occur on "upland", water-shedding landforms. Elevated terraces are included in this group.
- Soils lack both significant salinity and sodicity.
- Sites with soils that have particle size classes of loamy, fine loamy, or coarser.

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

Sites occur on shale landscapes, upland positions that are well-drained.

Soil features

Soils have loamy textures throughout, and do not have salts in the profile that would significantly affect the plant community dynamics.

Vegetation dynamics

The following sites have been used to characterize concepts observed in this LRU subset subgroup but are not correlated to MLRA 35.
-Shallow Loam R036XAB014NM - (this site is not currently entered into EDIT. Consider abandoning unless hardcopy can be produced).

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- DX035X03A112–Loamy
- DX035X03A131–Foothills
- DX035X03E001–Loamy
- DX035X03E006–Shallow

Correlated Map Unit Components

22980119, 22980320, 23187094, 23436265

Stage

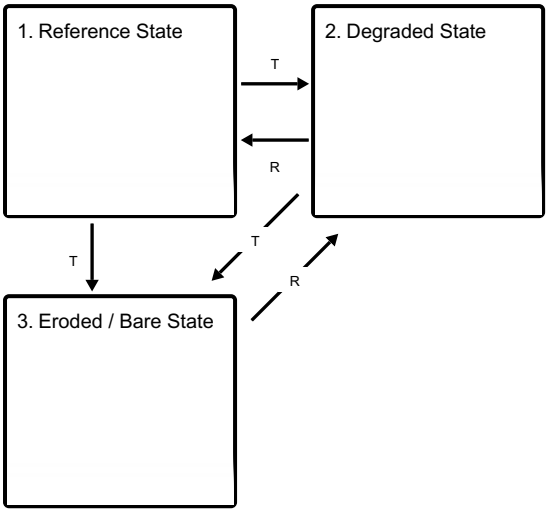
Provisional

Contributors

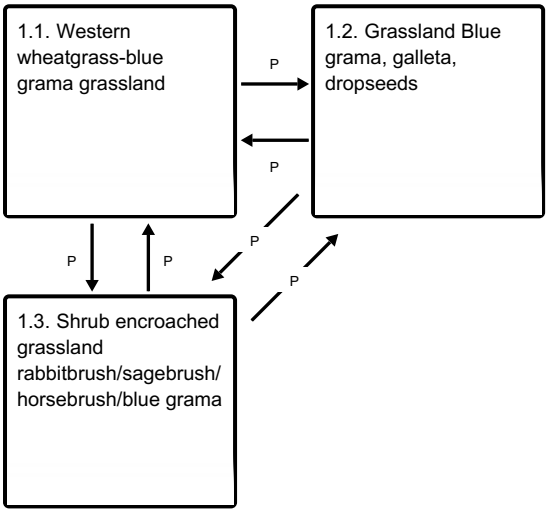
Curtis Talbot

State and transition model

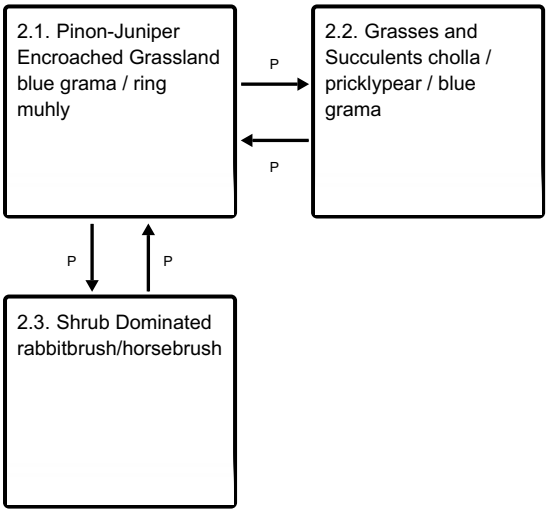
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Bare State annuals and shrubs

State 1
Reference State

Community 1.1
Western wheatgrass-blue grama grassland

Grassland: Blue grama, Indian ricegrass, and western wheatgrass are the primary grass species of the historic plant community. Other grasses that appear in significant amounts include spike muhly, bottlebrush squirreltail, New Mexico feathergrass, needle and thread, sideoats grama and galleta. Fourwing saltbush and winterfat are characteristic shrubs. Diagnosis: Grass and litter cover is evenly distributed with few large bare areas present. Shrubs are a minor component averaging six percent or less canopy cover. Evidence of erosion is minimal.

Dominant plant species

- fourwing saltbush (*Atriplex canescens*), shrub
- winterfat (*Krascheninnikovia arborescens*), shrub
- blue grama (*Bouteloua gracilis*), grass
- Indian ricegrass (*Achnatherum hymenoides*), grass
- western wheatgrass (*Pascopyrum smithii*), grass
- spike muhly (*Muhlenbergia wrightii*), grass
- squirreltail (*Elymus elymoides*), grass
- New Mexico feathergrass (*Hesperostipa neomexicana*), grass

Community 1.2
Grassland Blue grama, galleta, dropseeds

An increase of blue grama, galleta, dropseeds, ring muhly, and threeawns. On heavier textured soils a community dominated by blue grama with galleta and ring muhly as sub-dominants may result. On lighter textured soils, dropseeds and threeawns may be sub-dominant to blue grama.

Dominant plant species

- blue grama (*Bouteloua gracilis*), grass
- James' galleta (*Pleuraphis jamesii*), grass
- dropseed (*Sporobolus*), grass
- ring muhly (*Muhlenbergia torreyi*), grass
- threeawn (*Aristida*), grass

Community 1.3
Shrub encroached grassland rabbitbrush/sagebrush/horsebrush/blue grama

Continuous grazing reduces fuels for fire leads to shrub encroachment. Selective grazing leads to reduced diversity of forage species.

Dominant plant species

- rubber rabbitbrush (*Ericameria nauseosa*), shrub
- big sagebrush (*Artemisia tridentata*), shrub
- horsebrush (*Tetradymia*), shrub
- blue grama (*Bouteloua gracilis*), grass

Pathway P
Community 1.1 to 1.2

Continuous heavy grazing typically causes a decrease in western wheatgrass, sideoats grama, spike muhly, winterfat, and fourwing saltbush. This is followed by an increase of blue grama, galleta, dropseeds, ring muhly, and threeawns. On heavier textured soils a community dominated by blue grama with galleta and ring muhly as sub-dominants may result. On lighter textured soils, dropseeds and threeawns may be sub-dominant to blue grama.

Pathway P
Community 1.1 to 1.3

Continuous heavy grazing typically causes a decrease in western wheatgrass, sideoats grama, spike muhly, winterfat, and fourwing saltbush. This is followed by an increase of blue grama, galleta, dropseeds, ring muhly, and threeawns. Reduction in fues reduces fire requency, allowing woody plants to gain a foothold. On heavier textured soils a community dominated by blue grama with galleta and ring muhly as sub-dominants may result. On lighter textured soils, dropseeds and threeawns may be sub-dominant to blue grama.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Pathway P
Community 1.2 to 1.1

Deferred grazing and favorable precipitation can restore fuels. Prescribed grazing can regain competitive advantage of herbaceous.

Conservation practices

Prescribed Grazing
Grazing Management Plan
Grazing Management Plan - Written
Grazing Management Plan - Applied

Pathway P
Community 1.2 to 1.3

Continuous grazing, loss of fuels for fire, loss of species diversity due to selective grazing.

Pathway P
Community 1.3 to 1.1

Brush control is necessary to reduce the competitive influence of shrubs and facilitate grass recovery. Prescribed fire may be useful in restoring grass dominance, provided adequate fine fuels remain to effectively carry fire. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover. Deferred grazing and favorable precipitation can restore fuels. Prescribed grazing can regain competitive advantage of herbaceous.

Pathway P
Community 1.3 to 1.2

Deferred grazing and favorable precipitation can restore fuels. Prescribed grazing can regain competitive advantage of herbaceous.

State 2
Degraded State

Community 2.1
Pinon-Juniper Encroached Grassland blue grama / ring muhly

Piñon/Juniper-Invaded: This state is characterized by the presence of piñon or juniper and decreased cover and production of grasses. Grass cover decreases as piñon/juniper canopy increases. Blue grama is the dominant grass, usually with ring muhly, galleta, threeawns, and dropseeds as sub-dominants. Diagnosis: Piñon and or juniper are present. Blue grama is the dominant grass. Grass cover is variable ranging from fairly uniform to patchy with large bare areas present. Evidence of erosion such as elongated waterflow patterns, pedestalling of plants, and rills may be common.

Dominant plant species

- oneseed juniper (*Juniperus monosperma*), tree
- twoneedle pinyon (*Pinus edulis*), tree
- blue grama (*Bouteloua gracilis*), grass
- ring muhly (*Muhlenbergia torreyi*), grass
- James' galleta (*Pleuraphis jamesii*), grass
- threeawn (*Aristida*), grass
- dropseed (*Sporobolus*), grass

Community 2.2
Grasses and Succulents cholla / pricklypear / blue grama

Grass/Succulent-Mix: This state is characterized by an increase in cholla and pricklypear. Increased densities of cholla or pricklypear is recognized as a management concern, but their impact on grass production is unclear. Light to medium cholla or prickly pear infestation do not seem to greatly reduce grass production, however it restricts grazing access and interferes with livestock movement and handling. Blue grama is typically the dominant grass. Threeawns, galleta, ring muhly, and dropseeds are subordinates. Diagnosis: Cholla and prickly pear are found at increased densities. Grass cover is variable ranging from fairly uniform to patchy with frequent areas of bare ground present. Blue grama is the dominant grass.

Dominant plant species

- tree cholla (*Cylindropuntia imbricata*), shrub
- plains pricklypear (*Opuntia polyacantha*), shrub
- blue grama (*Bouteloua gracilis*), grass
- threeawn (*Aristida*), grass
- James' galleta (*Pleuraphis jamesii*), grass
- ring muhly (*Muhlenbergia torreyi*), grass
- dropseed (*Sporobolus*), grass

Community 2.3
Shrub Dominated rabbitbrush/horsebrush

Shrub-Dominated: The state is characterized by the predominance of shrubs, especially rabbitbrush and or horsebrush. Rabbitbrush is favored on soils with finer textured (heavy clay loam and clay) sub-surface horizons. The grass component is typically a low-vigor blue grama dominated community with ring muhly, threeawns, and dropseeds occurring as subordinates. Diagnosis: Rabbitbrush, and/or horsebrush are the dominant shrubs. Blue grama is the dominant grass and cool season grasses are sparse or absent. Grass cover is patchy to sparse with large interconnected bare areas present. Evidence of erosion such as pedestals, terracettes, and rills may be common.

Dominant plant species

- rubber rabbitbrush (*Ericameria nauseosa*), shrub
- horsebrush (*Tetradymia*), shrub

- blue grama (*Bouteloua gracilis*), grass
- ring muhly (*Muhlenbergia torreyi*), grass
- threeawn (*Aristida*), grass
- dropseed (*Sporobolus*), grass

Pathway P
Community 2.1 to 2.2

Transition to Grass/Succulent-Mix Decreased available soil moisture due to drought and overgrazing may initiate this transition. During severe drought perennial grass cover can decline significantly, leaving resources available for use by more drought tolerant succulents. Cholla and pricklypear are both adapted to and favored by limited soil moisture due to the ability of their shallow, wide spreading root systems to absorb and store water. Wildlife and livestock may act as dispersal agents for succulents. Fruits and seeds may be spread by wildlife species that feed on succulents. Wildlife and livestock can dislodge and transport sprouting stems and pads of cholla and pricklypear. It has been reported that succulent densities may be higher on areas historically grazed by high numbers of sheep. If fire historically played a part in suppressing seedlings of succulents on this site, then reduced fire frequency may favor the increase of succulents. Key indicators of approach to transition: *Increase in the size and number of bare patches. *Increase in amount of succulent seedlings.

Pathway P
Community 2.1 to 2.3

Transition to Shrub-Dominated Loss of herbaceous cover due to overgrazing and/or extended drought and the associated decreased resource competition by grasses may facilitate the transition to the Shrub-Dominated state. Key indicators of approach to transition: * Decreased grass and litter cover. * Increased bare patch size. * Increased rabbitbrush or horsebrush seedlings.

Pathway P
Community 2.2 to 2.1

Transition back to Grassland Fire is and effective means of controlling cholla and prickly pear if adequate grass cover remains to carry fire. Cholla greater than two feet tall or pricklypear with a large amount of pads (>15-20) are harder to kill. Chemical control is effective in controlling prickly pear and cholla; apply when growth starts in May. Hand grubbing is also effective if cholla or pricklypear is severed 2-4 inches below ground and care is taken not to let broken joints or pads take root. Stacking and burning piles and grubbing during winter or drought help keeps broken joints and pads from rooting. Prescribed grazing will help ensure proper forage utilization and sustain grass cover.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Pathway P
Community 2.3 to 2.1

Transition back to Grassland Brush control will be necessary to remove shrubs and eliminate competition for resources necessary for grass establishment or reproduction. Seeding may be necessary on those sites where desired grass species are absent or limited. Prescribed grazing will help ensure adequate time is elapsed before grazing is allowed, and proper forage utilization following seeding establishment

Conservation practices

Prescribed Grazing

State 3
Eroded / Bare State

Bare State: Extensive bare areas, minimal grass cover, physical soil crusts, and erosion characterize this state. Physical crusts may be more pervasive on silt loam soils. Grass cover is extremely sparse, consisting of small isolated patches or individual plants. A few widely scattered shrubs or succulents may be present. Diagnosis: Bare ground is dominant and grasses cover is very sparse. Physical soil crusts are widespread.

Community 3.1
Bare State annuals and shrubs

Continuous grazing or heavy use and traffic leads to loss of grass community. High bare ground leads to erosion. Annuals and shrubs dominate the plant community.

Transition T
State 1 to 2

Transition to Piñon/Juniper-Invaded: Loss of grass cover, the associated decreased competition by grasses, seed dispersal, and lack of fire are believed to facilitate the encroachment of piñon/juniper. Loss of herbaceous cover due to overgrazing and drought can provide competition free areas for piñon/juniper seedling establishment, and afford a competitive advantage to established woody species. Dispersal of piñon and juniper seed by wildlife and livestock may contribute to the probability of piñon/juniper invasion. Sites in close proximity to established piñon/juniper woodlands might also be at greater risk of invasion. Historically, periodic fire may have helped to suppress piñon/juniper by killing seedlings and some established trees, and by increasing the susceptibility in others to damage by insects, disease, and drought. Key indicators of approach to transition: * Decrease in western wheatgrass, sideoats grama, and winterfat. * Increase in amount and patch size of bare ground. * Presence of piñon/juniper seedlings.

Transition T
State 1 to 3

Transition to Bare State Continuous heavy grazing, or other repeated disturbance that severely depletes grass cover could initiate this transition. The loss of grass and litter cover causes a decrease in organic matter, soil aggregate stability, and infiltration. This further promotes the formation of physical soil crusts, impedes seedling establishment, and increases runoff and erosion. Brush control without successful recovery of grasses may result in a Bare state. Key indicators of approach to transition: * Continued reduction in grass cover. * Reduced aggregate stability in bare areas * Increased soil surface sealing and increased evidence of erosion.

Restoration pathway R
State 2 to 1

Transition back to Grassland: Brush control is necessary to reduce the competitive influence of piñon/juniper and facilitate grass recovery. Prescribed fire may be useful in restoring grass dominance, provided adequate fine fuels remain to effectively carry fire. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Prescribed Grazing
Grazing Management Plan
Grazing Management Plan - Written
Grazing Management Plan - Applied

Transition T
State 2 to 3

Transition to Bare State Brush control without successful recovery of grasses may result in a Bare state. Continuous heavy grazing, or other repeated disturbance that severely depletes grass cover could initiate this transition. The loss of grass and litter cover causes a decrease in organic matter, soil aggregate stability, and infiltration. This further promotes the formation of physical soil crusts, impedes seedling establishment, and increases runoff and erosion. Key indicators of approach to transition: * Continued reduction in grass cover. * Reduced aggregate stability in bare areas * Increased soil surface sealing and increased evidence of erosion.

Restoration pathway R
State 3 to 2

Transition back to Grassland Seeding will be necessary to reestablish grasses. The use of livestock or mechanical means may be useful in breaking up physical soil crusts and improving infiltration prior to seeding. Prescribed grazing will help to ensure adequate rest and proper forage utilization following seeding. The degree to which this site is capable of recovery depends on the extent of degradation to the soil resources and adequate rainfall necessary to establish and maintain grasses.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing
Grazing Management Plan
Grazing Management Plan - Written
Grazing Management Plan - Applied

Citations