Ecological site group DX035X01GESG13
Chinle Valley Loamy Washes and Bottoms

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Key Characteristics

- Chinle Valley
- Loamy
- Washes and bottoms

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 on floodplains along ephemeral streams on floodplains, alluvial fans and low stream terraces. Therefore, it benefits from run-in moisture from adjacent areas. Slopes range from 0 to 5 percent. Elevations range from 5,000 to 6,000 feet.

Climate

Mean annual precipitation varies from 5 to 14 inches with about 60% of it coming as rain from April through October. May and June are the driest months. Most of the precipitation from November through March comes as snow. High-velocity winds are common in late winter and early spring.

Mean temperatures for the hottest month, July, are about 83 degrees F. The coldest month is January, when the mean temperature is about 27 degrees F. Extreme temperatures of 104 and -17 degrees F have been recorded. The frost-free period ranges from 140 to 160 days.

The cool-season plants start growth in March and end with plant maturity and seed dissemination about mid-June. Warm-season plants grow from June through September, taking advantage of the moisture and warmth from tropical air out of the Gulf of Mexico. About 40 percent of the total precipitation is received during these summer months. The other 60 percent, received from fall through spring, influences cool-season plants.

Soil features

The soils are deep to very deep and well drained. They are formed in stratified flow deposited alluvium derived from sandstone and shale. Surface textures are frequently loam. The subsoil has textures of silty clay loam, fine sandy loam, silt loam, and very fine sandy loam. Soil moisture is typic aridic or ustic aridic. Permeability is moderately slow. Available water holding capacity is high. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is severe. The soils are mildly to strongly alkaline (pH 7.4-9.0), nonsaline (EC 0-2), and low sodicity (SAR 5-13).

Vegetation dynamics

This ecological group has a plant community made up primarily of shortgrasses, midgrasses, shrubs, and a relatively small amount of forbs. In the reference plant community there is a mixture of cool-season and warm-season grasses.

Plant species most likely to invade or increase on this site when it deteriorates are black greasewood, annual sunflower, cocklebur, goldenweed, Russian thistle, and threadleaf rubber rabbitbrush. Continuous livestock grazing

during winter and spring decreases the cool-season grasses and increases lower forage value grasses and shrubs.

The reference plant community has been determined by study of relict areas or areas protected from excessive grazing. Trends in plant communities going from heavily grazed areas to lightly grazed areas, seasonal use pastures, and historical accounts have also been used.

This group can have a somewhat variable plant community because of the nature and composition of the soils. Frequent deposition of different material types by water and wind processes, and the lack of dependability of available water, will affect the plant community. Areas with frequent flooding will have low-salt tolerant vegetation; however, areas with less-frequent or absent flooding will possibly have a salt-tolerant plant community. Areas that have a stable and pedogenically active soil will have the ability to sustain grasses and native shrubs and trees; areas with recent deposition and little to no pedogenesis will have pioneer species, subject to change from year to year or even season to season.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- R035XB018NM–Loamy Bottom 6-10"
- R035XB209AZ–Loamy Wash 6-10" p.z.
- R035XB269AZ–Loamy Bottom 6-10" p.z. Perennial
- R035XC312AZ–Loamy Wash 10-14" p.z.
- R035XY011UT–Loamy Bottom (Basin Big Sagebrush)

Correlated Map Unit Components

22397511, 22397400, 22397228, 23000002, 22999498, 22598193, 22598196, 22598335, 22597907, 22598220, 22598389, 22601118

Stage

Provisional

Contributors

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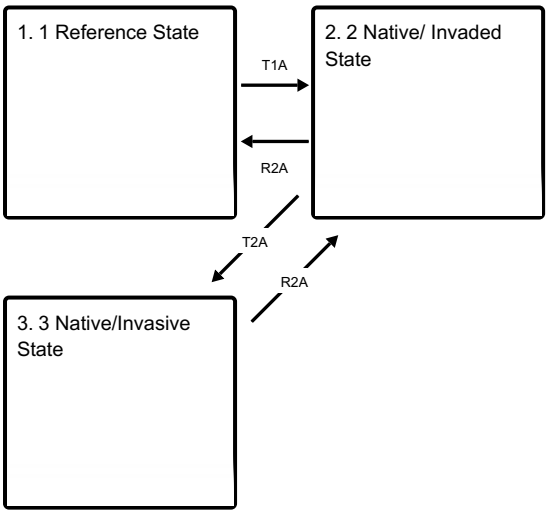
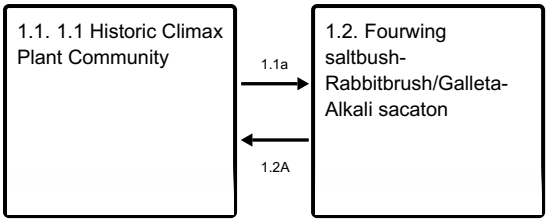
State and transition model

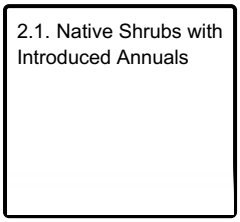
Ecosystem states



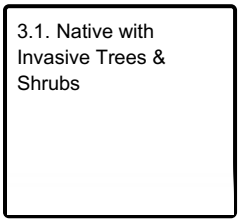
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
1 Reference State

Original pre-settlement plant community with cool and warm season grasses dominating with scattered four-wing saltbush and other native shrubs and forbs

Community 1.1
1.1 Historic Climax Plant Community

Plant community on this site is primarily made up of mid and short grasses and shrubs with a relatively small percentage of forbs. In the plant community there is a mixture of cool and warm season grasses. Dominate species include western wheatgrass, blue grama, alkali sacaton and fourwing saltbush. Plant species most likely to invade or increase on this site when it deteriorates are broom snakeweed, rabbit brush, russian thistle and annuals. Continuous grazing during the winter and spring periods will decrease the cool season grasses, which are replaced by warm season, lower forage value grasses and shrubs.

Community 1.2
Fourwing saltbush-Rabbitbrush/Galleta-Alkali sacaton

This plant community is the result of prolonged drought and unmanaged grazing. This creates a plant community shift to a shrub-grass mix with a decrease of cool season grasses with a increase of shrubs. The site rarely benefits from overbank flooding with occasional run-in moisture from adjacent uplands. There may be trace amounts of non-native annuals, but they do not alter the function and processes of this platn community phase.

Pathway 1.1a
Community 1.1 to 1.2

Unmanaged grazing, drought, removal of natural fire.

Pathway 1.2A
Community 1.2 to 1.1

Managed grazing, reintroduction of fire to remove shrubs, return to natural flood regime, improved climatic

conditions/precipitation.

State 2
2 Native/ Invaded State

This plant communty is a shrubland with sparse perennial grasses and an increase in native and non-native annuals.

Community 2.1
Native Shrubs with Introduced Annuals

This plant communty is shrub dominated by rubber rabbitbrush, snakeweed, and fourwing saltbush. Sites adjacent to saline-sodic uplands will occasionally have scattered greasewood or shadscale. There is a sparse understory of perennial grasses and forbs. Annuals, both native and non-natives are well established and are present in moderate amounts and have largely replace the perennials. A loss of biotic integrity and hydrologic function thru the loss of perennial grass cover and incised channels allows for the site to dry. This results in an increase of shrubs.

State 3
3 Native/Invasive State

This site is dominated by an overstory of tamarisk with an understory of primarily annuals and few native shrubs and perennial grasses. Some sites may have a understory invaded by camelthorn or Russian knapweed.

Community 3.1
Native with Invasive Trees & Shrubs

This plant community contains an canopy of invasive species like tamarisk and/or camelthorn. Native shrubs and grasses are present in small patches. Native shrubs and grasses are being replaced by native and non-native annual species, such as Russian thistle, in the understory.

Transition T1A
State 1 to 2

Increase in invasives native shrubs and annuals due to various factors including decline of perennial cool and warm season grasses from year-round grazing and decreased site stability; changes also be due to decrease in flooding frequency and intensity due to drought and/or water diversion and channel changes. This reduces the benefit of overland flow that promotes productive grasslands.

Restoration pathway R2A
State 2 to 1

Managed grazing/No grazing, woody species control, invasive weed control, range seeding.

Transition T2A
State 2 to 3

Unmanaged grazing, persistent drought, increase in invasive woody species, channelized flows accelerate channel scour, gully erosion and create deep channels that promote the establishment of invasive woody species thru seed sources and frequent flooding.

Restoration pathway R2A
State 3 to 2

Managed grazing/no grazing, woody species control, invasive weed control, range seeding.

Citations