Ecological site group DX035X01IESG11
Little Colorado River Basin-Loamy Soils moderately deep or deeper (slopes<15% and <35% rock fragments)

Last updated: 10/25/2022
Accessed: 04/19/2024

Key Characteristics

- Little Colorado River Basin
- Loamy
- Does not receive extra run-in moisture
- Moderately deep or deeper
- Slopes are less than 15% and upper part of soil has less than 35% rock fragments

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 ecological site occurs in an upland position as gently rolling plains, fans and terraces. Slopes generally range from 0% to 15% with occasional steeper slopes up to 30%.

This site neither benefits significantly from run-in nor experiences excessive loss of moisture from runoff.

Climate

50-60% of moisture falls as rain from July through September and is the most effective moisture for plant growth. The remaining moisture comes as snow during the winter.

Mean temperature for the hottest month (July) is 72 F; for the coldest month (January) is 32 F. Extreme temperatures of 105 F and -28F have been recorded. Long periods with little or no effective moisture are relatively common.

Cool season plants begin growth in early spring and mature by early summer. Warm season plants take advantage of summer rains and actively grow from July through September.

Soil features

Soils grouped in this site are moderately deep or deeper to any plant root restricting layers. The surface horizons have textures of very fine sandy loam to sandy clay loam with various amounts of gravel on the surface. The surface layers are about 2 to 8 inches thick. The subsurface horizons have textures ranging from clay to loam with coarse fragments ranging from 0 to 40% by volume. The substratum, which occurs at depths of 15 to 36 or more inches, ranges from clay loam to very gravelly sand and in some soils has a strong accumulation of lime. The soil reaction is neutral to moderately alkaline (pH 6.6 to 8.4). Soluble salt accumulations are low.

Vegetation dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The reference community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as grazing, fire, or drought.

Reference State
The reference state includes the reference community. The reference community is a perennial native grassland with warm season and cool season grasses and half-shrubs. Natural climatic variation can result in changes in the amount of and ratio of both individual plants and warm season versus cool season plants, particularly grasses.

The reference community consists primarily of warm season mid-grasses and short grasses with a mix of cool season grasses and half-shrubs. Dominant grasses include black grama, blue grama, squirreltail, indian ricegrass, galleta and sideoats grama. Dominant shrubs include winterfat and fourwing saltbush. Natural climatic variation result in changes in the amount of and ratio of both individual plants and warm season versus cool season plants, particularly grasses.

Major Land Resource Area

MLRA 035X
Colorado Plateau

Subclasses

- DX035X01I113–Loamy Upland 10-14" p.z.

Correlated Map Unit Components

22341066, 22341068, 22341071, 22341131, 22341133, 22341137, 22341139, 22341156, 22341600, 22341601, 22341644, 22341598, 22353858, 22353860, 22353956, 22354016, 22354017, 22354018, 22353347, 22353349, 22353365, 22353372, 22353373, 22353374, 22353375, 22353376, 22353368, 22353371, 22353382, 22353388, 22396791

Stage

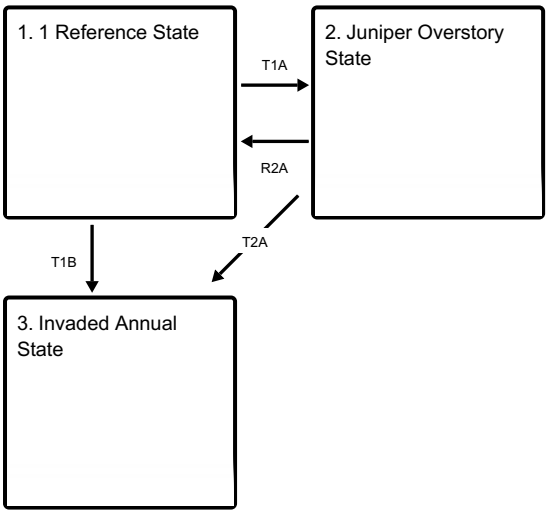
Provisional

Contributors

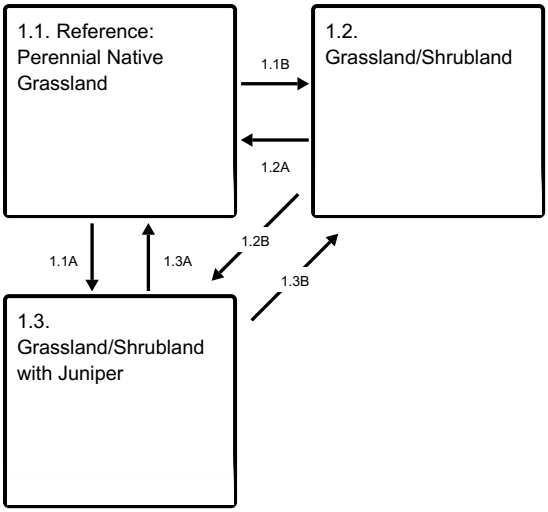
Curtis Talbot

State and transition model

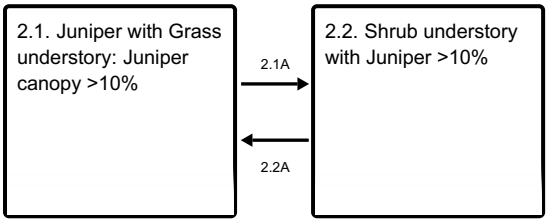
Ecosystem states



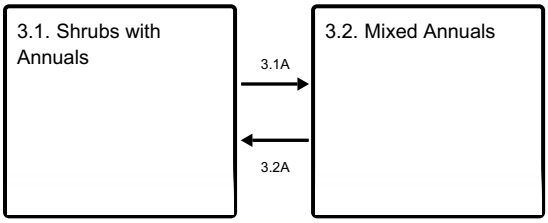
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
1 Reference State

The reference state includes the reference community. The reference community is a perennial native grassland with warm season and cool season grasses and half-shrubs. Natural climatic variation can result in changes in the amount of and ratio of both individual plants and warm season versus cool season plants, particularly grasses.

Community 1.1
Reference: Perennial Native Grassland

The reference state community is composed primarily of warm season mid-grasses and short grasses with a mix of cool season grasses and half-shrubs. Dominant grasses include black grama, blue grama, squirreltail, indian ricegrass, galleta and sideoats grama. Dominant shrubs include winterfat and fourwing saltbush. Natural climatic variation result in changes in the amount of and ratio of both individual plants and warm season versus cool season plants, particularly grasses.

Community 1.2
Grassland/Shrubland

The grassland/shrubland plant community is characterized by an increase of composite shrubs (Greene's rabbitbrush and snakeweed) and succulents (Mormon tea, Yucca and cholla) along with desirable shrub species, such as winterfat and fourwing saltbush. Dominate grasses include blue grama, galleta, sand dropseed and Indian ricegrass.

Community 1.3
Grassland/Shrubland with Juniper

This plant community is characterized by an increase of juniper and/or other woody species. The general aspect of the site is a grassland with scattered shrubs with widely scattered juniper with canopy less than 10 percent. The grass component is largely dominated by warm season grasses, such as blue grama, galleta, dropseeds and black grama with a mix of cool season grasses. The shrub component is a mix of snakeweed, rabbitbrush, Yucca, winterfat and fourwing saltbush. The dominate shrubs are mainly comprised of composites, Mormon tea, Yucca and fourwing saltbush.

Pathway 1.1B
Community 1.1 to 1.2

A decrease in palatable grass species due to repetitive defoliation and high utilization.

Pathway 1.1A
Community 1.1 to 1.3

Juniper encroachment due to lack of fire.

Pathway 1.2A
Community 1.2 to 1.1

An increase in palatable grass species due to management that allows for growth and reproduction.

Pathway 1.2B
Community 1.2 to 1.3

Pathway 1.3A
Community 1.3 to 1.1

Fire

Pathway 1.3B
Community 1.3 to 1.2

State 2
Juniper Overstory State

In this state the plant communities are characterized by a dominance of juniper and other woody species.The overstory canopy of juniper is typically over 10 percent and can range up to 25 percent. The understory is dominanted by either grasses and/or shrubs with increased forbs.

Community 2.1
Juniper with Grass understory: Juniper canopy >10%

This site is characterized by an increase of juniper canopy greater than 10% with a herbaceous understory dominated by warm season grasses with lesser amounts of forbs and shrubs. Grasses are comprised mostly of blue grama, galleta and dropseeds. Shrubs are mainly comprised of snakeweed, rabbitbrush, yucca and Mormon tea. A lack of fire, lack of grazing management and above normal winter precipitation result in an increase of juniper and cool season annual forbs. Non-native annuals may be present in minor amounts.

Community 2.2
Shrub understory with Juniper >10%

This site is characterized by an increase of juniper canopy greater than 10% with dominate shrubs mainly

comprised of snakeweed, rabbitbrush, Mormon tea and yucca. Grasses are comprised mostly of blue grama and galleta with an increase in forbs. A lack of fire, lack of grazing management and above normal winter precipitation results in an increase of juniper and cool season annual forbs. Non-native annuals may be present in minor amounts.

Pathway 2.1A
Community 2.1 to 2.2

An increase in shrubs due to excessive herbivory on grass species.

Pathway 2.2A
Community 2.2 to 2.1

Management to improve the composition of palatable grass species

State 3
Invaded Annual State

This state has a mix of forbs, shrubs and grasses, but can be degraded to a mixed annual plant community. Dominant shrubs are Greene's rabbitbrush and snakeweed with scattered cacti and yucca. Grasses are a mix of perennial warm season and annuals, while forbs are dominated by annual natives and exotics. Annual forb composition can range from 20 to 60 percent with a sharp decline in perennial herbacous composition.

Community 3.1
Shrubs with Annuals

This plant community is comprised mainly of native and non-native annuals with scattered shrubs and perennial grasses. Perennial grasses may not be present in this plant community. Annual forbs and grasses can make up to 55 percent of the plant community composition.

Community 3.2
Mixed Annuals

This site has a degraded plant community dominated by both native and non-native annuals. Annual grasses and forbs composition is over 35 percent of the total plant community. Common annuals include Russian thistle, false buffalo grass, cheatgrass, plantain, stickseed, scorpionweed, globemallows, buckwheats, nightshade and blazingstar. Perennial grasses and/or shrubs may or not be present.

Pathway 3.1A
Community 3.1 to 3.2

Further degredation often caused by persistent browsing of shrubs and high utilization of herbaceous species, especially during drought.

Pathway 3.2A
Community 3.2 to 3.1

Over time shrubs may gain a foot hold due to extensive root systems giving them a competitive advantage. A presence of a seed source is needed.

Transition T1A
State 1 to 2

Juniper has increased due to lack of fire/exclusion along with overgrazing and an available seed source for juniper.

Transition T1B

State 1 to 3

The loss of perennial palatable species due to excessive, repetitive, high utilization, especially during drought cycles. The site is characterized by bare ground and high erosion. A wet spring can lead to a flush of annuals.Once introduced species have invaded it is unlikely the site can be restored to reference.

Restoration pathway R2A
State 2 to 1

Prescribed fire or mechanical treatment on the juniper along with management of perennial grass species that allows for recovery.

Transition T2A
State 2 to 3

The loss of perennial palatable species due to excessive, repetitive, high utilization, especially during drought cycles. Also a slow decline to juniper due to drought. The site is characterized by bare ground and high erosion. A wet spring can lead to a flush of annuals.

Citations