

Ecological site group DX035X01IESG06

Little Colorado River Basin-sandy soils-run in and streamflow moisture

Last updated: 10/12/2022
Accessed: 05/02/2024

Key Characteristics

- Little Colorado River Basin
- Sandy
- Receive extra run-in or stream flow

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 in a bottom position along perennial or seasonal streams which drain into the little Colorado River system. Eolian sands also accumulate along the stream and river corridors. Slopes are generally less than 2 percent but may be higher on bank slopes and in bedrock controlled sections.

Climate

The climate of the land resource unit is arid with warm summers and cool winters. This is one of the driest land resource units on the Colorado Plateau with an average annual precipitation ranging from 6 to 10 inches in lower elevations and the highest precipitation of 10 to 14 inches in higher elevations. It is also very erratic, often varying substantially from year to year. Less than half of the annual precipitation is received from October through early May. This precipitation comes as gentle rain or snow from frontal storms coming out of the Pacific Ocean. Snow is common from November through February. Generally no more than an inch or two of snow accumulates and usually melts within a day or two. The remaining precipitation, approximately 50 to 60 percent, is received from monsoon rains, July through September and can be spotty, unreliable and sometimes violent thunderstorms. The moisture for this precipitation originates in the Gulf of Mexico (and the Pacific Ocean in the fall) and flows into the area on the north end of the Mexican monsoon. Late May through late June is generally a dry period. The mean annual temperature ranges from 53 to 56 degrees Fahrenheit (F). The frost-free period (air temperature > 32 degrees F) ranges from 135 to 160 days (@ 50 percent probability). Strong winds are common, especially in the spring.

Soil features

The soils on this site are very deep (60+ inches) and moderately well drained to well drained. They are formed in eolian and alluvium from sandstone, limestone and shales. Surface textures are generally fine sand to loamy sand. Subsurface textures include stratified loamy fine sand, gravelly coarse sand and sand. There can be thin layers of loamy textures. Hazard of water erosion is none and hazard of wind erosion is severe.

Vegetation dynamics

This site has a plant community made up primarily of mid grasses, shrubs and Fremont cottonwood trees. Forbs are a minor component of the site.

Plant species most likely to invade or increase on this site when it deteriorates are cheat-grass, annual weeds, thread-leaf rubber rabbitbrush, tamarisk, Russian knapweed, camelthorn and Russian olive.

Major Land Resource Area

Subclasses

- F035XC332AZ–Sandy Bottom 10-14" (PODEW, SAEX), Perennial (Provisional)
- R035XB216AZ–Sandy Wash 6-10" p.z.
- R035XB273AZ–Sandy Bottom 6-10" p.z. Perennial

Correlated Map Unit Components

22353964, 22354014, 22396683, 22396684, 22396682, 22396689, 22396779, 22396732, 22484759

Stage

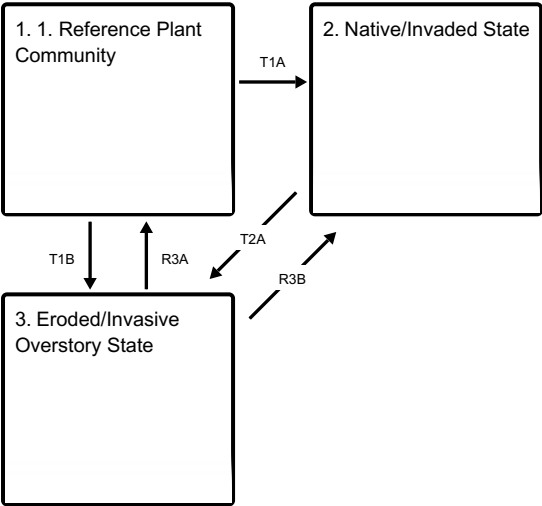
Provisional

Contributors

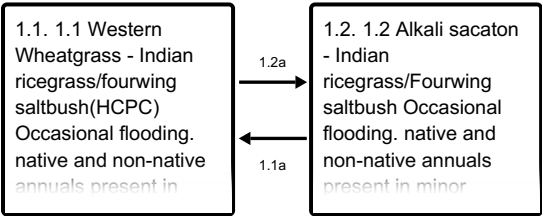
Curtis Talbot

State and transition model

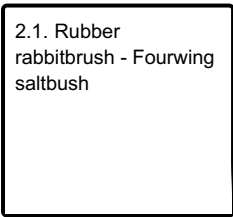
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Tamerisk/Rubber
rabbitbrush - Fourwing
saltbush

State 1

1. Reference Plant Community

State 1 Reference State The reference state includes the Historic Climax Plant Community and is a grassland dominated by perennial grasses, such as western wheatgrass, Indian ricegrass, alkali sacaton, squirreltail and galleta. Occasional over bank flooding and additional run-in moisture from adjacent uplands lends to high grass production. Shrubs can occur across the site along drainageways and areas of discontinuous channels. The occasional cottonwood may be present where a seep or a higher water table due to shallow bedrock depth occurs.

Community 1.1

1.1 Western Wheatgrass - Indian ricegrass/fourwing saltbush(HCPC) Occasional flooding. native and non-native annuals present in minor amounts

Community 1.1 Western wheatgrass - Indian ricegrass/ Fourwing saltbush (HCPC) Sandy Wash 6-10" p.z. Grassland This grassland dominated plant community has a mixture of both cool and warm season grasses, with scattered shrubs. Dominant grasses are western wheatgrass and Indian ricegrass with scattered alkali sacaton and squirreltail. Common shrubs that occur across the site along drainageways are fourwing saltbush, rubber rabbitbrush and Bigelow sagebrush. The occasional cottonwood may be present where a seep or a higher water table due to shallow bedrock depth occurs. Plant species most likely to invade or increase on this site when it deteriorates are salt cedar, rabbitbrush, and russian thistle. As erosion occurs, the benefits of over bank flooding are significantly reduced and results in a decline of grass cover and an increase in shrub species.

Community 1.2

1.2 Alkali sacaton - Indian ricegrass/Fourwing saltbush Occasional flooding. native and non-native annuals present in minor amounts

Community 1.2 Alkali sacaton-Indian ricegrass/ Fourwing saltbush-Rabbitbrush This site is a grassland community with an increase of shrub species. Dominant grasses in this plant community are alkali sacaton, Indian ricegrass and galleta. Western wheatgrass may or not be present. There is an increase of large shrubs like fourwing saltbush, rabbitbrush and scattered half shrubs. Non-native annuals are present, but do not alter the function and processes of this plant community phase. This site can result from drought, unmanaged grazing and a lack of fire or a combination of disturbances.

Pathway 1.2a

Community 1.1 to 1.2

Pathway 1.1a

Community 1.2 to 1.1

State 2

Native/Invaded State

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

Community 2.1

Rubber rabbitbrush - Fourwing saltbush

This plant community is a shrubland that includes rubber rabbitbrush and fourwing saltbush with sparse perennial

grasses. A loss of biotic integrity and hydrologic function thru the loss of perennial grass cover and incised channels. The site begins to dry and shrubs increase, especially deep rooted shrubs. Bare ground increases and allows for accelerated wind and water erosion, promoting deposition and sedimentation.

State 3

Eroded/Invasive Overstory State

This plant community is dominated by tamarisk and/or Russian olive as the overstory with an understory of shrubs and annuals with sparse perennial grasses.

Community 3.1

Tamarisk/Rubber rabbitbrush - Fourwing saltbush

Frequent flooding created deep channels and active gullies. Native and non-native annuals are present. This plant community is dominated by tamarisk and/or Russian olive as the overstory. The understory is dominated by shrubs such as rubber rabbitbrush and fourwing saltbush with only patches of perennial grasses. Native and non-native annuals are also present in the understory. Unmanaged grazing on site and on adjacent uplands produces increased surface runoff and sediments. Channelized flows accelerate channel scour, gully erosion and creates abandoned floodplains. Deep channels form and promote the establishment of exotic tree species thru seed sources from adjacent washes and rivers. The site has the potential to burn and promote further Tamarisk invasion.

Transition T1A

State 1 to 2

A loss of some resource health plus introduction of invasive species. Once introduced species have invaded it is not likely the site can return to reference.

Transition T1B

State 1 to 3

Loss of plant cover along with accelerated erosion. This state is caused by heavy disturbance along the channel such as changes in stream flow and width, drought, and unmanaged grazing.

Transition T2A

State 2 to 3

Increased bare ground and erosion.

Restoration pathway R3A

State 3 to 1

Improved soil stability and cover.

Restoration pathway R3B

State 3 to 2

Improved cover and soil stability.

Citations