Ecological site group R017XY906CAESG
Non-Alkali San Joaquin Valley Desert

Last updated: 06/03/2024
Accessed: 07/17/2024

Key Characteristics

- Landform Not As Above
- Not As Above
- Site Is Not Sub-Irrigated
- MAP < 10"
- pH < 8.4

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

These site occur on alluvial fans of the San Joaquin Valley and the Tulare and Buena Vista Basins.

Climate

The average annual precipitation is 5 to 12 inches (125 to 305 millimeters) in the San Joaquin Valley. The Tulare Basin, at the southern end of this MLRA, typically receives less than 6 inches (150 millimeters) of rainfall per year. These sites receive less than 10 inches in an average year.

Summers are long, hot, and dry, and winters are cool and rainy. Most of the rainfall occurs as low- or moderate intensity, Pacific frontal storms from October to May. The average annual temperature is 59 to 67 degrees F (15 to 20 degrees C), decreasing from south to north. The freeze-free period averages 325 days and ranges from 280 to 365 days, decreasing in length with elevation and from south to north.

Soil features

These sites occurs on well drained soils with a variety of textures. The soil moisture regime is generally aridic with some xeric components and the soil temperature regime is thermic.

Vegetation dynamics

The dominant vegetation is cattle saltbush (*Atriplex polycarpa*) with a broad uniform spacing. During the spring if sufficient levels of moisture are available a variety of annual forbs and grasses will grow for short periods, the rest of the year >25% bare ground is common.

This site group is part of the Alkali Desert Scrub WHR type. WHR divides Alkali Desert Scrub into a xerophytic phase and a halophytic phase and this site falls into the xerophytic phase. The permanent water table is several meters below the soil surface and surface salts are able to leach below the root zone (Rowlands, 2003). Though, A polycarpa is capable of growing across a wide gradient of salinity (Mikhiel et al., 1992) and should not be used to identify the site.

Under pre-settlement conditions these sites were stable for very long periods of time and seldom changed structure or composition. The low density of the shrub canopy made landscape scale fires uncommon but when fire did occur it generally killed the shrubs involved (Twisselmann, 1956). This created areas of bare ground that would be occupied by annual forbs and grasses for short periods each year until saltbush eventually became reestablished.

Historically these sites were heavily grazed by sheep which forced many sites across a threshold. (Twisselmann, 1956) promoting the establishment of Russian thistle (Salsola iberica) and other invasive species.

Regional irrigation projects have led to agricultural conversion of much of this site within MLRA 17. According to the Central Valley Historic Mapping Project only about 25% of the San Joaquin Valley Desert remains with the majority having been converted to agriculture (Chico State GIC, 2003).

This site group also occurs in MLRA 15 most notably at Carrizo Plains National Monument.

References/Citations:

Mikhiel, G. S., Meyer, S. E., & Pendleton, R. L. 1992. Variation in germination response to temperature and salinity in shrubby Atriplex species. Journal of Arid Environments, 22(1), 39-49.

Rowlands, Peter. 2003. California Wildlife Habitat Relations System: Alkali Desert Scrub. Accessed at: Wildlife Habitats - California Wildlife Habitat Relationships System. [2023, December 12].

The Central Valley Historic Mapping Project. 2003. California State University, Chico Department of Geography and Planning and Geographic Information Center (GIC). http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/cmnt081712/sldmwa/csuc.

Twisselmann, E. C. 1956. Flora of the Temblor Range. University of San Francisco. The Wasmann Journal of Biology Vol. 14, No. 2.

Major Land Resource Area

MLRA 017X
Sacramento and San Joaquin Valleys

Subclasses

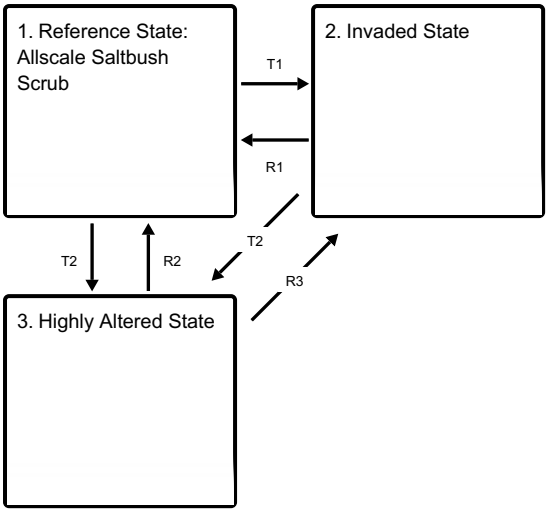
- R017XE041CA–Fine Loamy 8-10" P.Z.
- R017XE061CA–Loamy Fan Remnant 8-10" P.Z.
- R017XF071CA–LOAMY BOTTOMLAND
- R017XG043CA–Loamy 6-8" P.Z.
- R017XG047CA–ARID LOAMY
- R017XG049CA–ARID SANDY
- R017XY906CA–Non-Alkali San Joaquin Valley Desert

Stage

Provisional

State and transition model

Ecosystem states



T1 - Invasive Species

T2 - Urbanization/ Agricultural Conversion

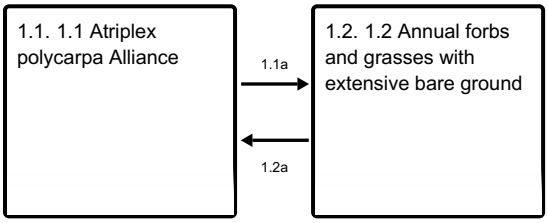
R1 - Invasive Species Management

T2 - Urbanization/ Agricultural Conversion

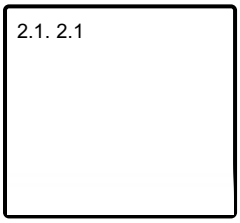
R2 - Extensive Restoration

R3 - Restoration without Weed Management

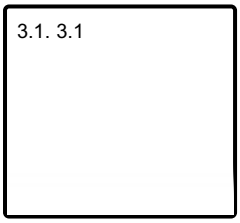
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
Reference State: Allscale Saltbush Scrub

The dominant vegetation is allscale saltbush (*Atriplex polycarpa*) with a broad uniform spacing. During the spring if sufficient levels of moisture are available a variety of annual forbs and grasses will grow for short periods, the rest of the year >25% bare ground is common

Dominant plant species

- cattle saltbush (*Atriplex polycarpa*), shrub

Community 1.1
1.1 Atriplex polycarpa Alliance

Uniformly spaced common or cattle saltbush, *Atriplex polycarpa*, is the principal vegetation with annual forbs and grasses between bushes for brief periods following spring rain.

Community 1.2
1.2 Annual forbs and grasses with extensive bare ground

Post fire it *Atriplex polycarpa* is slow to reestablish leaving the site dominated by annual forbs and grasses.

Pathway 1.1a
Community 1.1 to 1.2

This community pathway occurs due to fire and is fairly rare with a modeled fire return interval of 20-200 years

Pathway 1.2a
Community 1.2 to 1.1

This community pathway occurs over time without vegetation management. The seed bank must be reestablished by nearby plants and then suitable soil moisture conditions for recruitment must occur.

State 2
Invaded State

This state has varying levels of saltbush and high levels of invasive species.

Dominant plant species

- cattle saltbush (*Atriplex polycarpa*), shrub
- Russian thistle (*Salsola*), shrub

Community 2.1
2.1

This site is dominated by invasive annuals with drastically reduced cover of the natural vegetation.

State 3
Highly Altered State

This community phase represents all the varied land uses that significantly alter this ecological site. This is an extremely varied community phase that includes all types of alterations that so significantly alter the ecological site that it is permanently changed and no longer has typical or even representative ecological dynamics.

Community 3.1
3.1

This community phase represents all the varied land uses that significantly alter this ecological site.

Transition T1
State 1 to 2

This transition was caused by unsustainable levels of grazing and invasion by introduced annual species.

Transition T2
State 1 to 3

This transition is caused by significant human alterations that force this ecological site over a threshold and change the function and structure of this site in extensive ways.

Restoration pathway R1
State 2 to 1

This restoration pathway occurs only when significant time and money inputs are focused on returning ecological function and native seed source to the site.

Transition T2
State 2 to 3

This transition is caused by significant human alterations that force this ecological site over a threshold and change the function and structure of this site in extensive ways.

Restoration pathway R2
State 3 to 1

This restoration pathway occurs only when significant time and money inputs that would require constant maintenance and weed management and should be focused on areas that have not been permanently altered by urban developments.

Restoration pathway R3
State 3 to 2

This restoration pathway occurs only when significant time and money inputs are focused on restoring ecological function but weed management is unsuccessful.

Citations