

Ecological site R030XA013CA

Clay Flat

Last updated: 10/21/2024

Accessed: 05/11/2025

General information

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.

Classification relationships

NDDDB/Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California - Desert Saltbush Scrub.; J.O. Sawyer and T. Keeler-Wolf. 1995. Manual of California Vegetation - Spinescale Series.

Ecological site concept

This site occurs on nearly level, eroded areas of alluvial plains. Elevations are 2270 to 2375 feet. Slopes range from 0 to 2 percent.

The soils that characterize this site are very deep and moderately well drained. They are formed in lacustrine sediments.

Associated sites

R030XA014CA	Clay Plain Clay Plain
R030XA025CA	Saline Bottom Saline Bottom
R030XA031CA	Sodic Dunes 5-7" P.Z. Sodic Dunes

Similar sites

R030XA014CA	Clay Plain Clay Plain - more productive site
R030XA024CA	Outwash Plain Outwash Plain - Allscale saltbush dominant species; more productive site.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on nearly level, eroded areas of alluvial plains. Elevations are 2270 to 2375 feet. Slopes range from 0 to 2 percent.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	Occasional
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	Occasional
Elevation	2,270–2,375 ft
Slope	0–2%
Aspect	Aspect is not a significant factor

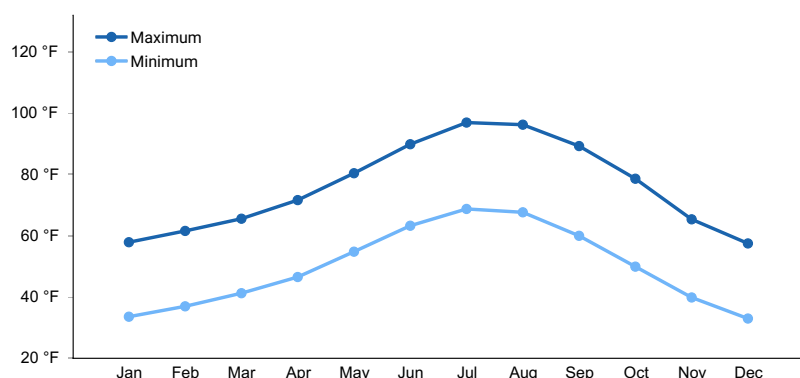
Climatic features

The climate on this site is characterized by cool, relatively dry winters (30 to 60 degrees F) and hot, dry summers (70 to 100 degrees F). The average annual precipitation ranges from 3 to 7 inches with most falling as rain from November to March. Mean annual air temperature is 60 to 64 degrees F.

The average frost-free period is 200 to 250 days.

Table 3. Representative climatic features

Frost-free period (average)	250 days
Freeze-free period (average)	223 days
Precipitation total (average)	6 in

**Figure 1. Monthly average minimum and maximum temperature**

Influencing water features

This site is subject to occasional flooding and ponding during very brief periods after rain storms from December through March and summer convection storms from July through September.

Soil features

The soils that characterize this site are very deep and moderately well drained. They are formed in lacustrine sediments. Surface textures are fine sandy loams, clay loams and loamy sands. Subsoils are clay loams, sandy clay loams and loams to 45 inches. The substratum to 60 inches is stratified loamy sand to fine sandy loam. These soils are saline and sodic. Available water capacity is moderate and the hazard of water erosion is slight. Wind erosion hazard is moderate. Effective rooting depth is 60 inches or more, but root growth may be impeded where a dense natric horizon exists. Water tables are greater than 60 inches. Up to 6 inches of ponding may occur for several days after heavy winter rains.

Soil Map Units

126 Leuhman complex, 0 to 2% slopes

127 Leuhman-Cajon-Leuhman, eroded, complex, 0-9% slopes

Table 4. Representative soil features

Surface texture	(1) Loamy sand (2) Fine sandy loam (3) Sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained
Permeability class	Very slow
Soil depth	60–120 in
Available water capacity (0-40in)	5–7 in
Calcium carbonate equivalent (0-40in)	1–5%
Electrical conductivity (0-40in)	0–32 mmhos/cm
Sodium adsorption ratio (0-40in)	5–50
Soil reaction (1:1 water) (0-40in)	8.2–9.3

Ecological dynamics

Please refer to grouped concept R030XA009CA Alkali Flat 5-7" p.z. to view STM.

This site is a very stable plant community so long as the site is undisturbed. Destructive impacts such as land clearing may reduce the cover of the chenopods, perennial grasses and the cryptogamic crust. With a loss of perennial cover and disturbance of the crust, non-native annual forbs and grasses such as red-stem filaree, red brome, cheatgrass and Schismus will invade this site. Wind erosion will most likely increase. Fire Effects - The foliage of the saltbushes appears to have fire-retarding qualities associated with the salt content of the leaves, although a severe fire can kill top growth.

State and transition model

Ecosystem states

1. Reference State - Plant Community 1.1

State 1 submodel, plant communities

1.1. Reference State - Plant Community 1.1

State 1

Reference State - Plant Community 1.1

Community 1.1

Reference State - Plant Community 1.1

This site is the historic climax plant community. This community is characterized by low, grayish microphyllous shrubs, 0.3 to 1 meter tall, with some succulent species. Stands are typically dominated by saltbush species. Potential vegetative composition is 10% grasses, 10% forbs and 80% shrubs. Perennial grasses include inland saltgrass, alkali bluegrass and bottlebrush squirreltail. Annual grasses and forbs are seasonally present. A moderately developed cryptogamic crust is common. This site is stable in this condition. The following table lists the major plant species and percentages by weight, air dry, of the total plant community that each contributes in an average production year. Fluctuations in species composition and relative production may change from year to year dependent upon abnormal precipitation or other climatic factors.

Forest overstory. **Allow no more than 2% of each shrub species and no more than 10% in aggregate

Other shrubs comprise 2 to 10% composition (air-dry weight)

Forest understory. **Allow no more than 2% of each grass species and no more than 5% in aggregate

Other perennial grasses comprise 2 to 5% composition (air-dry weight)

Other annual grasses comprise trace to 5% composition (air-dry weight)

**Allow no more than 1% of each forb species and no more than 2% in aggregate

Other perennial forbs comprise trace to 2% composition (air-dry weight)

Other annual forbs comprise trace to 2% composition (air-dry weight)

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	40	80	160
Forb	5	10	20
Grass/Grasslike	5	10	20
Total	50	100	200

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	4-8%
Grass/grasslike foliar cover	0-1%
Forb foliar cover	0-1%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%

Bare ground	0%
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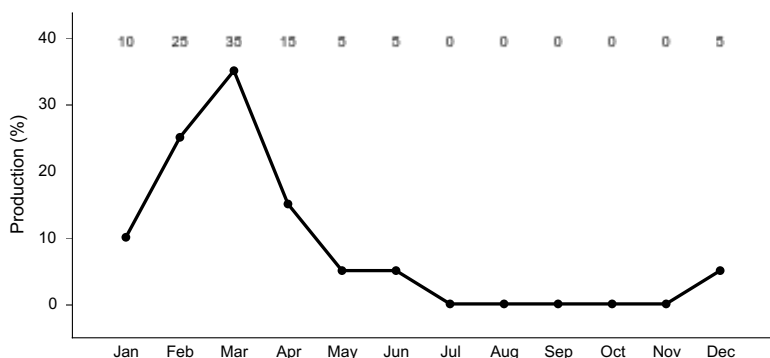


Figure 3. Plant community growth curve (percent production by month). CA3001, Spinescale. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

Additional community tables

Animal community

Wildlife Interpretations:

This site provides habitat for small mammals such as kangaroo rats and ground squirrels. Fur and game mammals include black-tailed jackrabbits, desert cottontails and coyotes. Ravens, raptors and various songbirds are common. Limitations for burrowing reptiles such as the desert tortoise, include occasional ponding, flooding and a dense natric horizon of the soil.

Wildlife Habitat:

Management for this site is to protect the soil structure and vegetative cover from excessive disturbance.

Grazing Interpretations:

This site has limited value for livestock grazing. Limitations include lack of stock water, very low productivity and the hazard of wind erosion with the disturbance of the cryptogamic crust.

General guide to initial stocking rate:

Before making specific recommendations, an on-site evaluation must be made.

Pounds/acre

air dry

Normal Years 100

Hydrological functions

Runoff is negligible or low. Permeability is very slow to slow. Hydrologic soil group D - soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high watertable, soils with a claypan or clay layer at or near the surface and shallow soils over nearly impervious material. Hydrologic conditions: good - >70% ground cover (includes litter, grass, and brush overstory); fair - 30 to 70% ground cover; poor - <30% ground cover.

Soil Series: Leuhman

Hydrologic group: D

Hydrologic Conditions and Runoff Curves

Good 84; Fair 86; Poor 88

Recreational uses

This site is valued for open space and is used by joggers, mountain bikers and other off-road enthusiasts. Off-road vehicles can easily damage the soil surface and vegetative cover, and should be restricted to existing roads and

trails.

Other information

Revegetation/Restoration: The saltbush species are suitable for revegetation. Transplants are more effective than direct seeding. Supplemental irrigation is recommended during the first growing season. Protection from rodents and removal of annuals is also recommended. Saltgrass is an excellent plant for wind or water erosion control. Rhizomes collected in the field and planted onto disturbed areas will resprout and spread.

Military Operations:

Vehicles should be limited to existing roads and trails. Park vehicles on roadways only and avoid areas that have ponded water. To reduce wind erosion, limit disturbance to the cryptogamic crust and clearing of vegetation. Native species indigenous to this site are recommended for any revegetation efforts.

Inventory data references

12 NV-ECS-1

___ SCS-Range 417

___ Other

Type locality

Location 1: Kern County, CA	
Township/Range/Section	T9N R10W S12
General legal description	North of Hospital Road, near South Base on Edwards Air Force Base, Kern Co., California

Other references

Hickman, J.C. (ed) 1995. The Jepson Manual - Higher Plants of California.

Contributors

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Approval

Kendra Moseley, 10/21/2024

Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	05/11/2025
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:**

2. **Presence of water flow patterns:**

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**
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14. **Average percent litter cover (%) and depth (in):**
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:**
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17. **Perennial plant reproductive capability:**
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