

## Ecological site R030XY133CA Sodic Sand 3-5" P.Z.

Last updated: 2/24/2025  
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.

### Ecological site concept

This site occurs on partially stabilized sand dunes and shrub-coppice dunes. Elevations are 595 to 1935 feet. Slopes range from 4 to 30 percent. They are formed in sandy eolian material blown from recent alluvium.

Please refer to group concept R030XD046CA to view the provisional STM.

### Associated sites

R030XY127CA	<b>Sodic Dune 3-5" P.Z.</b> Sodic Dune 3-5
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### Similar sites

R030XY127CA	<b>Sodic Dune 3-5" P.Z.</b> Sodic Dune 3-5
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Atriplex canescens</i> (2) <i>Larrea tridentata</i>
Herbaceous	Not specified

### Physiographic features

This site occurs on partially stabilized sand dunes and shrub-coppice dunes. Elevations are 595 to 1935 feet. Slopes range from 4 to 30 percent.

Table 2. Representative physiographic features

Landforms	(1) Dune
Elevation	595–1,935 ft
Slope	4–30%
Aspect	Aspect is not a significant factor

### Climatic features

. The climate on this site is arid characterized by warm, moist winters (30 to 60 degrees F) and hot, dry summers

(70 to 110 degrees F). The average annual precipitation ranges from 2 to 6 inches with most falling as rain from November to March. Approximately 30% of the annual precipitation occurs from July to September as a result of summer convection storms. Mean annual air temperature is 70 to 75 degrees F.

The average frost-free period is 300 to 360 days.

Table 3. Representative climatic features

Frost-free period (average)	360 days
Freeze-free period (average)	
Precipitation total (average)	6 in

Influencing water features

Soil features

The soils that characterize this site are very deep and somewhat excessively drained. They are formed in sandy eolian material blown from recent alluvium. Surface textures are sands and loamy fine sands. Subsurface textures are sands and fine sands. Available water capacity is low and permeability is rapid. Wind erosion hazard is very severe. Effective rooting depth is 60 inches or more. Water tables are greater than 60 inches.

Representative\_Soil Map Units  
151 Rositas sand, 4-30% slopes

Ecological dynamics

Please refer to group concept R030XD046CA to view the provisional STM.

The historic site potential is wind blown sand accumulations, which are stabilized or partially stabilized by shrubs, scattered low annuals and perennial grasses. The total cover increases as the dunes are progressively stabilized. This site is characterized by an open stand of shrubs dominated by *Atriplex canescens*, *A. polycarpa* and *Larrea tridentata*. Perennial grasses are sparse. Annuals are seasonally present. Dunes will retain water just below the surface allowing the perennial vegetation to survive long drought periods.

As ecological condition deteriorates the perennial grasses will decrease. Fourwing saltbush and creosotebush will increase. Non-native annual forbs and grasses such as Russian thistle and schismus will invade this site.

Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Close roads and trails no longer being used and revegetate using native species indigenous to this site. Off-road vehicle use may destroy small mammal burrows. Removal of non-native plant species and an appropriate monitoring program are also recommended.

Species indigenous to this site are recommended for any revegetation efforts. Fourwing saltbush has been widely used for rehabilitating sites in southern and northern desert shrublands. Seed may be broadcast or drill-seeded, but broadcasting often produces better results. Seeding success is generally sporadic. Seedlings, which tend to be more drought tolerant and less susceptible to predation, may be transplanted. Seedlings are generally transplanted during the early spring, since three weeks or more of good soil moisture are required for establishment. Creosotebush may also be used to rehabilitate disturbed sites. Once established, creosotebush may improve sites for annual forbs and grasses.

Fourwing saltbush is reportedly tolerant of fire. It is characterized by a low volatilization rate, which renders the plant somewhat fire-resistant. If burned, fourwing saltbush can resprout from the root crown or underground portions of the stem. This species can also reestablish some sites through an abundance of wind-dispersed seed from adjacent unburned sites. Creosotebush is very flammable and is poorly adapted to fire, due to its limited sprouting ability. Factors such as season of burning, fuel quantity, fire intensity and age of existing shrubs will affect the ability of creosotebush to resprouting.

## State and transition model

### Ecosystem states

1. Reference State - 1
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### State 1 submodel, plant communities

1.1. Reference State - 1
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## State 1 Reference State - 1

### Community 1.1 Reference State - 1

The representative natural plant community is Stabilized and Partially-Stabilized Desert Dunes or Fourwing Saltbush Series. Fourwing saltbush and creosotebush dominate this community. Potential vegetative composition is about 10% grasses, 10% forbs, and 80% shrubs. 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 3% of each species of this group and no more than 10% in aggregate

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

Allow no more than 2% of each species of the forbs group and no more than 5% in aggregate

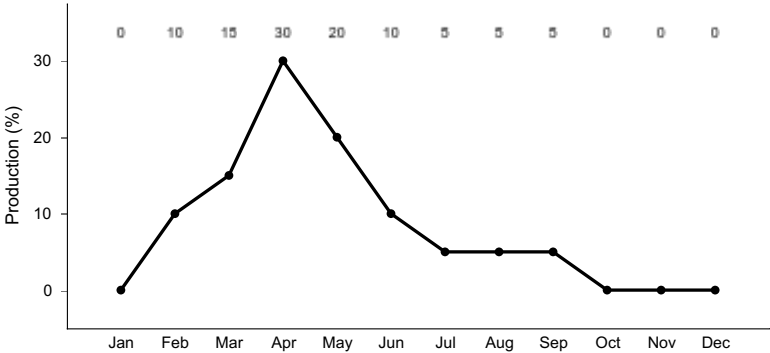
Table 4. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	240	400	560
Forb	30	50	70
Grass/Grasslike	30	50	70
<b>Total</b>	<b>300</b>	<b>500</b>	<b>700</b>

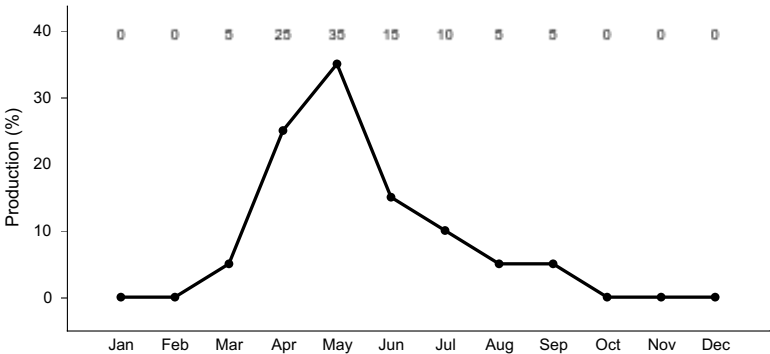
Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	4-12%
Grass/grasslike foliar cover	1-2%
Forb foliar cover	1-2%
Non-vascular plants	0%
Biological crusts	0%

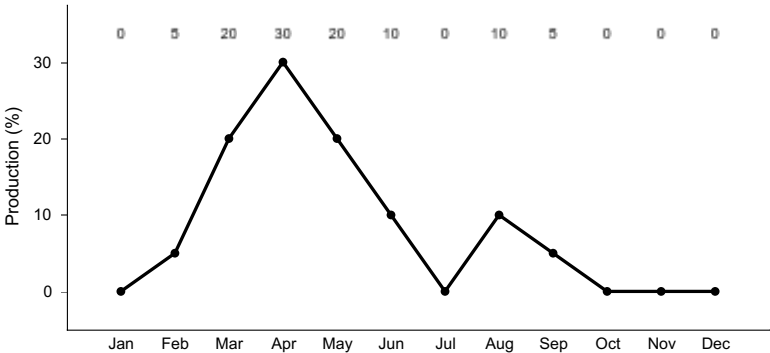
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%



**Figure 2. Plant community growth curve (percent production by month). CA3007, Allscale Saltbush. Growth begins in early spring; flowering and seed set occurs by October..**



**Figure 3. Plant community growth curve (percent production by month). CA3008, Fourwing saltbush. Growth begins in spring to early summer. Flowering occurs from May through September, and fruit ripens from October to December. Seed dispersal occurs from October through April. Seed may remain on the plants from one to two years..**



**Figure 4. Plant community growth curve (percent production by month). CA3015, Creosote bush XB. Growth starts in early spring with flowering and seed set occurring by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush of growth..**

Additional community tables

Animal community

This site provides habitat for small mammals such as round-tailed ground squirrels, desert kangaroo rats and southern grasshopper mice. Coyotes and black-tailed jackrabbits also occur. Fourwing saltbush is a preferred browse for rabbits and small mammals. The seeds are also readily eaten.

Reptiles common to this site include Mojave fringe-toed lizards, long-tailed brush lizards, western whiptails, side-blotched lizards and sidewinders. The sandy subsurface soil textures may be a restrictive feature for burrowing reptiles, such as the desert tortoise.

Birds common to this site include common ravens, loggerhead shrikes, horned larks, LeConte's thrasher, blue-gray gnatcatchers and several species of sparrows. Upland game birds and small nongame birds readily eat seeds of fourwing saltbush.

Season of Use- Other Mgt. Considerations: Allscale and fourwing saltbush are valuable browse for domestic livestock. Fourwing saltbush has fair to good forage value for domestic sheep and goats, and at least fair forage value for cattle.

Fourwing saltbush can withstand heavy grazing, however, overgrazing can eliminate allscale saltbush from this site.

General guide to initial stocking rate: Before making specific recommendations, an on-site evaluation must be made.

Pounds/acre  
air dry AUM/AC AC/AUM  
Normal Years 500

## Hydrological functions

Runoff is very low. Hydrologic soil group A - soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well drained to excessively drained sands or gravels. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor <30% ground cover.

Soil Series:Rositas  
Hydrologic Group:A  
Hydrologic Conditions and Runoff Curves:  
Good 49; Fair 55; Poor 63

## Recreational uses

This site is highly valued for open space and those interested in desert ecology. Flowering wildflowers may also attract visitors during the spring.

## Other information

Military Operations - Management for this site would be to protect it from excessive disturbance and maintain existing plant cover. Land clearing or other disturbances that destroy the vegetation and result in accelerated erosion, severe soil blowing, barren areas and the introduction of non-native plant species.

## Inventory data references

Sampling technique

\_2\_ NV-ECS-1  
\_1\_ SCS-Range 417

## Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T5N R10E S11
UTM zone	N
UTM northing	3822641
UTM easting	600697
General legal description	NE 1/4, Sec. 11, T5N R10E; Approximately 8 miles southwest of Amboy, CA Bagdad SW Quadrangle UTM 11S 0600697e 3822641n (Datum=NAS-C) San Bernardino Co., CA

## Other references

Cutler, P.L., P.R. Krausman, and D.J. Griffin. 1998. Draft Report: Wildlife inventory of the Marine Corps Air Ground Combat Center, Twentynine Palms, California. The University of Arizona, Tucson. U.S. Dept. of Defense Contract N68711-96-LT-60025.

## Contributors

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## Approval

Sarah Quistberg, 2/24/2025

## 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	Sarah Quistberg
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

### 1. Number and extent of rills:

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### 2. Presence of water flow patterns:

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

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

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

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

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

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

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

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

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

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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:

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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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