

## **Ecological site R030XB151CA Shallow Gravelly Loam 5-7" P.Z.**

Last updated: 2/25/2025  
 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 sideslopes of mountains on all exposures. Elevations are 3195 to 4400 feet. Slopes range from 8 to 50 percent. The soils that characterize this site are shallow and very shallow and well drained. They are formed in residuum and colluvium from granitic sources.

This is a group concept and provisional STM that also covers R030XB091NV, R030XB162CA, R030XB189CA

### **Associated sites**

R030XB001NV	<b>LIMY HILL 5-7 P.Z.</b> Limy Hill 5-7
R030XB145CA	<b>Valley Wash</b> Valley Wash

### **Similar sites**

R030XB143CA	<b>Shallow Granitic Loam 5-7" P.Z.</b> Shallow Granitic Loam 5-7
R030XB029NV	<b>SHALLOW GRAVELLY LOAM 5-7 P.Z.</b> Shallow Gravelly Loam 5-7
R030XB144CA	<b>Shallow Granitic Slope 5-7" P.Z.</b> Shallow Granitic Slope 5-7

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	(1) <i>Coleogyne ramosissima</i> (2) <i>Menodora spinescens</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Achnatherum speciosum</i>

### **Physiographic features**

This site occurs on sideslopes of mountains on all exposures. Elevations are 3195 to 4400 feet. Slopes range from 8 to 50 percent.

**Table 2. Representative physiographic features**

Landforms	(1) Mountain slope
Elevation	3,195–4,400 ft
Slope	8–50%
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, somewhat dry summers (70 to 100 degrees F). The average annual precipitation ranges from 4 to 7 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 57 to 63 degrees F.

The average frost-free period is 180 to 240 days.

**Table 3. Representative climatic features**

Frost-free period (average)	240 days
Freeze-free period (average)	
Precipitation total (average)	7 in

## Influencing water features

### Soil features

The soils that characterize this site are shallow and very shallow and well drained. They are formed in residuum and colluvium from granitic sources. Surface textures are very gravelly loamy coarse sands, loamy coarse sands and loamy sands. Subsurface textures are very gravelly sandy loams, coarse sandy loams and sandy loams. Available water capacity is very low and permeability is moderately rapid. Wind erosion hazard is negligible due to surface rock fragments. Effective rooting depth is 8 to 20 inches to hard granitic bedrock.

Representative\_Soil Map Units

190 Lavabed-Dalvord association, 8-50% slopes

## Ecological dynamics

The historic site potential is characterized by low, often intricately branched shrubs, 0.5 to 2 meters tall, with an open or continuous canopy. This site is dominated by blackbrush. Perennial grasses and forbs are common. Annuals are seasonally present. Pockets of cryptogamic crust have developed between the surface rock fragments. This site is stable in this condition.

Blackbrush is a long-lived dominant on older, undisturbed geomorphic surfaces. Succession occurs at a very slow rate. Increasing in cover and density, this shrub becomes more dominant over time. Following a fire, blackbrush decreases or is removed from the community and California buckwheat and the perennial grasses will increase. Non-native species occurring on this site include red brome, *Bromus rubens*; red-stem filaree, *Erodium cicutarium*; and schismus, *Schismus* spp. Current knowledge indicates that the return of blackbrush may take many years.

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. Water is the main limitation on this site; thus, water developments would increase the species diversity.

Species indigenous to this site are recommended for any revegetation efforts.

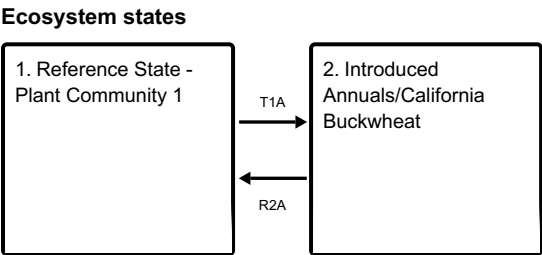
Blackbrush has medium erosion control potential, low establishment requirements and low long and short-term revegetation potential. Nevada ephedra forms dense, spreading colonies, which make it valuable for soil stabilization. Creosotebush may also be used to rehabilitate disturbed sites. Once established, creosotebush may

improve sites for annual forbs and grasses. Big galleta has moderate potential for erosion control and long-term revegetation and low potential for short-term revegetation projects. Big galleta is somewhat effective at holding blowing sand because of its isolated, clumped growth form. Desert needlegrass may be used for revegetation in areas of light disturbance, but it is susceptible to excessive trampling.

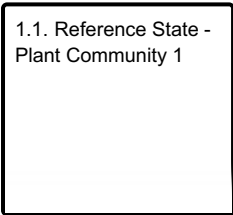
Transplants are more effective than direct seeding, although Nevada ephedra seedlings are very tolerant of drought and generally establish well following fall or winter seedings. Planting seedlings in late fall or early spring allows for acclimation to summer conditions. Transplants that are dormant during the hot, dry season are best maintained that way rather than attempting to force them to break dormancy and undergo new vegetative growth out of season. Supplemental irrigation is recommended for the first growing season, especially if winter rainfall has been sparse. Summer annuals and non-native species should be removed from around transplants to reduce competition for water. Protection from rodents is also recommended.

Desert communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. If non-native annual forbs and grasses are present, the intensity and frequency of fires will increase significantly. When fires do occur, the effect on the ecosystem may be extreme due to the harsh environment and the slow rate of recovery. Blackbrush and creosotebush possess limited sprouting ability, thus, can be killed by high intensity fires. Both species are very slow to reinvade burned areas. Nevada ephedra and desert needlegrass are reported to resprout from the root crown after fire damages aboveground vegetation. Fire damage to big galleta varies; depending on whether plants are dormant when burned. If plants are dry, damage may be severe because the live center may be burned out. Big galleta may resprout from rhizomes.

State and transition model



State 1 submodel, plant communities



State 1  
Reference State - Plant Community 1

Community 1.1  
Reference State - Plant Community 1

The representative natural plant community is Blackbush Scrub or Black Bush Series. This community is dominated by blackbrush, spiny menodora, big galleta and desert needlegrass. Potential vegetative composition is about 15% grasses, 15% forbs, and 70% 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.

Table 4. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	140	210	350
Grass/Grasslike	30	45	75
Forb	30	45	75
<b>Total</b>	<b>200</b>	<b>300</b>	<b>500</b>

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	14-25%
Grass/grasslike foliar cover	3-5%
Forb foliar cover	3-5%
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%

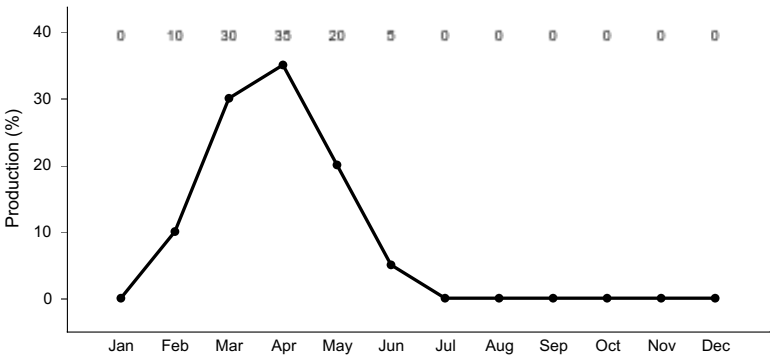


Figure 2. Plant community growth curve (percent production by month). CA3013, Spiny menodora. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

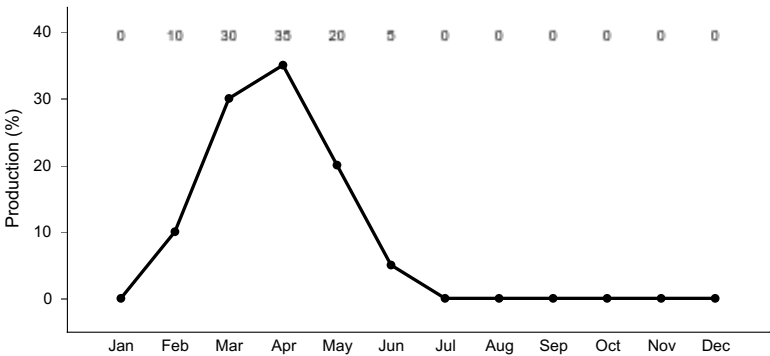
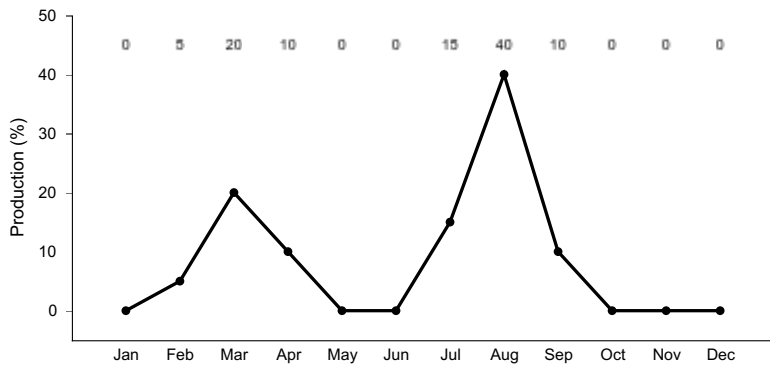
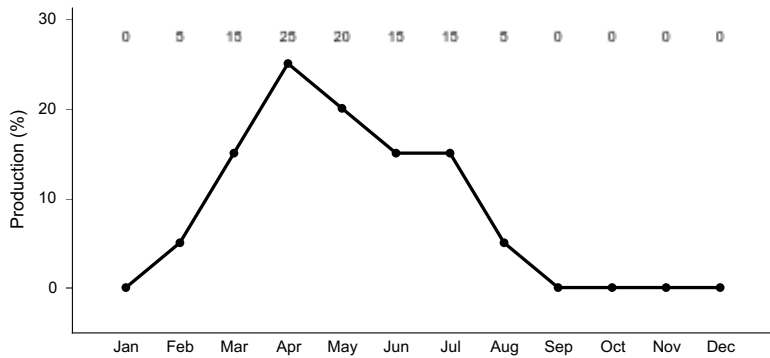


Figure 3. Plant community growth curve (percent production by month). CA3018, Blackbrush. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..



**Figure 4. Plant community growth curve (percent production by month). CA3024, Big galleta. Some green up in spring; dormant May and June; most growth occurs after summer rains..**



**Figure 5. Plant community growth curve (percent production by month). CA3087, Desert needlegrass. Growth begins in mid-winter and continues through summer, setting seed in late summer..**

## State 2

### Introduced Annuals/California Buckwheat

Non-native species occurring on this site include red brome, *Bromus rubens*; red-stem filaree, *Erodium cicutarium*; and schismus, *Schismus* spp.

## Transition T1A

### State 1 to 2

Fire will remove blackbrush. Excessive, repetitive grazing coupled with drought and fire will create a space for introduced annuals to invade.

## Restoration pathway R2A

### State 2 to 1

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.

## Additional community tables

### Animal community

Small mammals occurring on this site include white-tailed antelope squirrels, Botta's pocket gophers, little and long-tailed pocket mice, Merriam's kangaroo rats, cactus mice and southern grasshopper mice. Black-tailed jackrabbits, bobcats and coyotes also occur.

Reptiles occurring on this site include zebra-tailed lizards, long-nosed leopard lizards, desert spiny lizards, side-blotched lizards, desert night lizards and western whiptails. The depth to bedrock is a restrictive feature for burrowing reptiles such as the desert tortoise, although desert tortoises may occur in adjacent washes.

Songbirds common to this site include mourning doves, lesser nighthawks, ash-throated flycatchers, horned larks, verdins, cactus wrens, rock wrens, mountain bluebirds, loggerhead shrikes, house finches and several species of sparrows. Red-tailed hawks also occur.

#### LIVESTOCK GRAZING:

This site has limited use for livestock grazing due to low productivity and lack of stockwater. Blackbrush is fair winter browse for sheep and cattle. It is better utilized by sheep and goats than cattle. Nevada ephedra is rated good to fair forage for goats and fair to poor for cattle and sheep. The spines of spiny menodora keep it from being heavily utilized by livestock. Big galleta is highly palatable to cattle and horses. Desert needlegrass produces considerable basal foliage and is valuable forage while young. During favorable years, annual forbs and grasses provide additional forage on 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 300

### Hydrological functions

Runoff is medium. Hydrologic 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 water table, 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: Lavabed  
Hydrologic Group: D  
Hydrologic Conditions and Runoff Curves:  
Good 84; Fair 86; Poor 88

### Recreational uses

This site is highly valued for open space and those interested in desert ecology. Flowering wildflowers and shrubs 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 the soil crust and structure can result in soil compaction, reduced infiltration rates, accelerated erosion, soil blowing and barren areas. The frequency of flash flooding may also increase with increased surface runoff and loss of vegetative cover. Rest or protect sites from further disturbance.

### Inventory data references

Sampling technique

\_1\_ NV-ECS-1  
\_\_\_ SCS-Range 417  
\_3\_ Other

### Type locality

Location 1: San Bernardino County, CA
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Township/Range/Section	T7E R5E S30
UTM zone	N
UTM northing	3837015
UTM easting	546330
General legal description	NE1/4 Sec. 30, T7N R5E Approximately 18 miles southwest of Ludlow, CA Sunshine Peak Quadrangle UTM 11S 0546330e 3837015n (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

P. Novak-Echenique

## Approval

Sarah Quistberg, 2/25/2025

## 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):

- 
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):**
- 
14. **Average percent litter cover (%) and depth ( in):**
- 
15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
- 
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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