Ecological site R030XB125CA
Gravelly Slope 5-7" P.Z.

Last updated: 2/26/2025
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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 alluvial fans and fan aprons. Elevations are 3200 to 4800 feet. Slopes range from 2 to 15 percent.

Please refer to group concept R030XB192CA to view the provisional STM.

Associated sites

R030XB136CA	**Dry Wash** Dry Wash
R030XB143CA	**Shallow Granitic Loam 5-7" P.Z.** Shallow Granitic Loam 5-7

Similar sites

R030XB143CA	**Shallow Granitic Loam 5-7" P.Z.** Shallow Granitic Loam 5-7

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Larrea tridentata* (2) *Ambrosia dumosa*
Herbaceous	(1) *Achnatherum speciosum*

Physiographic features

This site occurs on alluvial fans and fan aprons. Elevations are 3200 to 4800 feet. Slopes range from 2 to 15 percent.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Fan apron
Elevation	3,200–4,800 ft
Slope	2–15%
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 100 degrees F). The average annual precipitation ranges from 4 to 7 inches with most falling as rain from November to March. Approximately 25% of the annual precipitation occurs from July to September as a result of summer convection storms. Mean annual air temperature is 61 to 66 degrees F. The average frost-free period is 240 to 300 days.

Table 3. Representative climatic features

Frost-free period (average)	300 days
Freeze-free period (average)	
Precipitation total (average)	7 in

Influencing water features

Soil features

The soils that characterize this site are very deep and well drained. They are formed in granitic alluvium. Surface textures are extremely gravelly coarse sandy loams and extremely gravelly sandy loams. Subsurface textures are very gravelly coarse sandy loams, very gravelly sandy loams and gravelly sandy loams. Available water capacity is low and permeability is moderately rapid. Wind erosion hazard is negligible due to surface coarse fragments. Effective rooting depth is 60 inches or more.

Representative Soil Map Units
171 Khyber-Venusite complex, 2-8% slopes
427 Uxo-Venusite association, 2-15% slopes

Ecological dynamics

Please refer to group concept R030XB192CA to view the provisional STM.

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. When fires do occur, the effect on the ecosystem may be extreme due to the harsh environment and the slow rate of recovery. White bursage and creosotebush possess limited sprouting ability, thus, can be killed by fire. White bursage, however, can rapidly re-establish from seed. Blackbrush is very susceptible to fire and does not resprout. It can be completely destroyed by moderate fires but mature plants may survive low intensity fires. Blackbrush is very slow to reinvade and reestablish after fire.

As ecological condition deteriorates, the perennial grasses decrease. The opportunistic species such as white bursage, Cooper goldenbush and desert trumpet increase. Non-native annual grasses and forbs, such as red brome, schismus and red-stem filaree are invaders on this site. Following a fire, blackbrush decreases or is removed from the community. Desert needlegrass and California buckwheat increase and dominate the site. White burrobush and Cooper goldenbush will also increase. Non-native annual grasses and forbs will invade this site. 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. Vehicle activity off of designated roads and tank trails are incompatible with desert tortoise recovery. Water developments would increase the species diversity of this site.

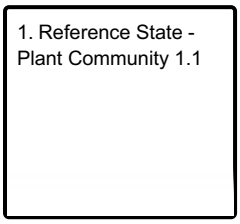
Species indigenous to this site are recommended for any revegetation efforts.
White bursage and California buckwheat are valuable for erosion control and cover restoration. Creosotebush may also be used to rehabilitate disturbed sites. Once established, creosotebush may improve sites for annual forbs and grasses. Blackbrush has medium erosion control potential, low establishment requirements and minimal long and

short-term revegetation potential. Desert needlegrass may be used for revegetation in areas of light disturbance, but it is susceptible to excessive trampling.

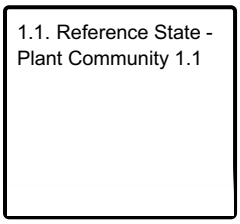
Transplanting seedlings is more effective than direct seeding. Planting in late fall or early spring allows for acclimation to summer conditions. Transplants that are dormant during the hot, dry season are best maintained that way rather than attempting to force them to break dormancy and undergo new 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 plants should be removed from around the transplanted shrubs to reduce competition for water. Protection from rodents is also recommended.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1
Reference State - Plant Community 1.1

Community 1.1
Reference State - Plant Community 1.1

The representative natural plant community is Mojave Creosotebush Scrub or Creosotebush Series. This community is dominated by creosotebush, white bursage, blackbrush and desert needlegrass. Potential vegetative composition is about 20% grasses, 10% forbs, and 70% shrubs. The historic site potential is characterized by widely spaced shrubs up to 2 meters tall. Creosotebush dominates this series. White bursage and blackbrush are common associates. Perennial forbs and grasses are common. Annual forbs and grasses are seasonally present. 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 3% of each shrub species of this group and no more than 15% in aggregate.

Forest understory. **Allow no more than 2% of each grass species of this group 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 2% of each forb species and no more than 8% in aggregate.

Other perennial forbs comprise 2 to 8% composition (air-dry weight)

Other annual forbs comprise trace to 10% composition (air-dry weight)

Table 4. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	140	245	350
Grass/Grasslike	40	70	100
Forb	20	35	50
Total	**200**	**350**	**500**

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	7-14%
Grass/grasslike foliar cover	2-4%
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%

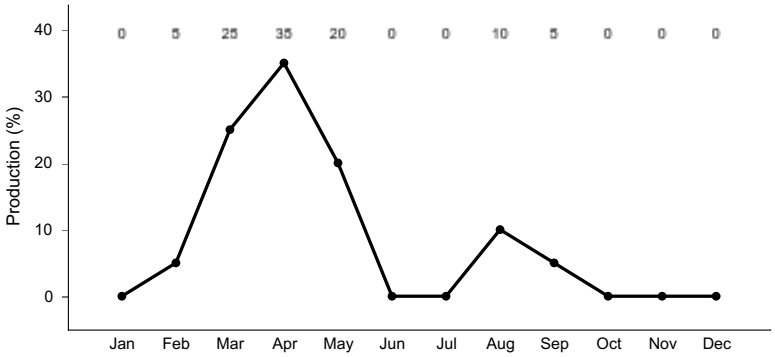


Figure 2. Plant community growth curve (percent production by month). CA3004, Burrobush XB. Growth starts in early spring, flowering and seed set occur by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush of new growth..

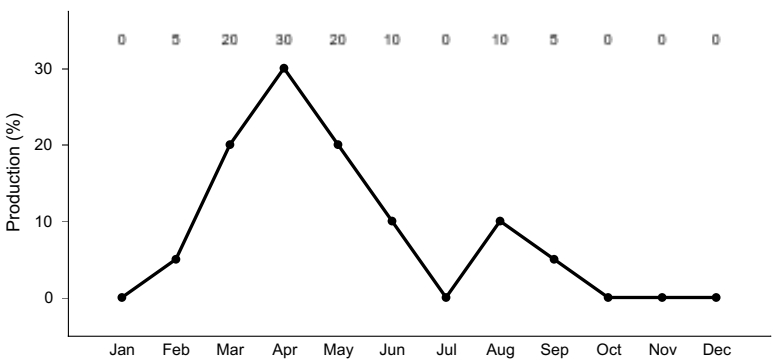


Figure 3. Plant community growth curve (percent production by month).

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..

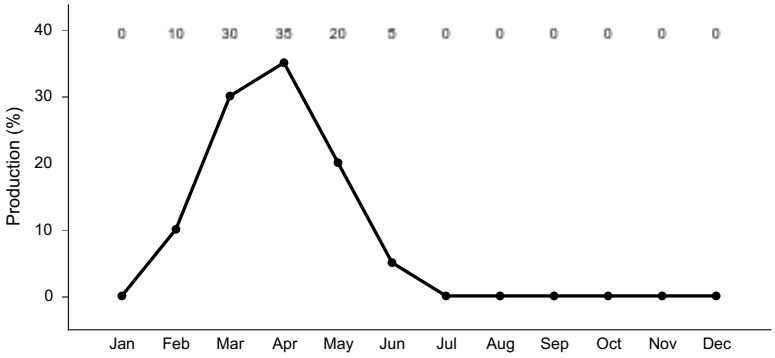


Figure 4. Plant community growth curve (percent production by month). CA3018, Blackbrush. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

Figure 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..

Additional community tables

Animal community

a. This site provides suitable habitat for small mammals such as antelope ground squirrels, Panamint and Merriam's kangaroo rats, pocket mice, and deer mice. Coyotes, black-tailed jackrabbits and feral burros are also common.

b. This site provides habitat for lizards such as the western whiptail, side-blotched lizard and zebra-tailed lizard. The soil provides suitable habitat for burrowing reptiles such as desert tortoise.

c. Birds common to this site include chukars, common ravens, greater roadrunners, black-throated and sage sparrows and horned larks.

(Brown and Nagy 1995; Brydolf 1996; Recht 1995)

Hydrological functions

Runoff is very low and low. Hydrologic group B - soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well drained to well drained soils with moderately fine to moderately coarse textures. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor <30% ground cover.

Soil Series: Uxo
Hydrologic Group: B

Hydrologic Conditions and Runoff Curves:
Good 68; Fair 72; Poor 77

Soil Series: Venusite
Hydrologic Group: B
Hydrologic Conditions and Runoff Curves:
Good 68; Fair 72; Poor 77

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

LIVESTOCK GRAZING:

a. Season of Use - Other Mgt. Considerations: White bursage is fair browse for cattle and horses, and fair to good browse for goats. Sheep also use this shrub, feeding primarily on new growth and seeds. White bursage is one of the major forage species of feral burros, especially in winter. Feral burros can eliminate this shrub through browsing and trampling. Creosotebush is unpalatable to livestock. Domestic sheep use creosotebush primarily for shade. Blackbrush is fair winter browse for sheep and cattle. It is better utilized by sheep and goats than cattle. 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.

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

Pounds/acre
air dry
Normal Years 350

2. GENERAL MANAGEMENT CONSIDERATIONS:

a. 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. Deep ripping heavily compacted soil facilitates water infiltration, seed germination, rapid root growth and improves overall plant survival and growth. Gully stabilization methods include straw bale checkdams, rock riprap, and sand bags.

Inventory data references

Sampling technique
___ NV-ECS-1
___ SCS-Range 417
_8_ Other

Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T16N R3E SSW1/4
UTM zone	N

UTM northing	3926688
UTM easting	535228
General legal description	SW1/4 Sec. 12, T16N R3E Approximately 4 miles west of Drinkwater Lake Drinkwater Lake Quadrangle UTM 11S 0535228e 3926688n (Datum=NAS-C) San Bernardino Co., CA

Other references

Brown, T.K. and K. A. Nagy with R.D. Nieuhaus, Inc. 1995. Final Report, Herpetological Surveys and Physiological Studies on the Western Portion of Fort Irwin NTC.

Brydolf, B. with R.D. Nieuhaus, Inc. 1996. Final Report, 1994 Avian Survey at the National Training Center, Fort Irwin, CA.

Recht, M.A. with R.D. Nieuhaus, Inc. 1995. Final Report, 1994 Small Mammal Surveys of Selected Sites at the National Training Center Fort Irwin, California.

Contributors

P. Novak-Echenique

Approval

Sarah Quistberg, 2/26/2025

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	05/10/2025
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:**

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):**

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:**

17. **Perennial plant reproductive capability:**