Ecological site R030XB123CA
Granitic Hill 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 rock pediments and sideslopes of low hills and mountains on all exposures. Elevations are 2400 to 4000 feet. Slopes range from 2 to 50 percent, but slopes of 15 to 30 percent are most typical. The soils that characterize this site are somewhat excessively drained and shallow to very shallow. They are formed in granitic residuum.

Please refer to group concept R030XB140CA to view the provisional STM.

Associated sites

R029XY179CA	**SHALLOW GRANITIC SLOPE 5-8 P.Z.** Shallow Granitic Slope 5-8
R030XB140CA	**Shallow Hill 4-6" P.Z.** Limy Hill 5-7

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ambrosia dumosa* (2) *Eriogonum fasciculatum*
Herbaceous	(1) *Achnatherum speciosum*

Physiographic features

This site occurs on rock pediments and sideslopes of low hills and mountains on all exposures. Elevations are 2400 to 4000 feet. Slopes range from 2 to 50 percent, but slopes of 15 to 30 percent are most typical.

Table 2. Representative physiographic features

Landforms	(1) Pediment (2) Mountain slope
Elevation	732–1,219 m
Slope	2–50%
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, 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)	

Influencing water features

Soil features

The soils that characterize this site are somewhat excessively drained and shallow to very shallow. They are formed in granitic residuum. Surface textures are extremely gravelly sandy loams and very gravelly coarse sandy loams. Subsurface textures are very gravelly sandy loams and very gravelly coarse sandy loams. Available water capacity is very low and permeability is moderately rapid and rapid. Wind erosion hazard is negligible to slight. Effective rooting depth is 0 to 19 inches to bedrock.

Representative Soil Map Units
121 Dalvord association, 8-50% slopes
122 Dalvord-Etinarg association, 15-50% slopes
250 Cajon-Paintrocks-Langwell association, 2-8% slopes
256 Rock Outcrop-Paintrocks complex, 15 to 50% slopes
257 Paintrocks-Rock Outcrop complex, 15 to 50% slopes

Ecological dynamics

Please refer to group concept R030XB140CA to view the provisional STM.

As ecological condition deteriorates California buckwheat and the opportunistic perennials such as Acton encelia, white bursage, Cooper goldenbush, desert trumpet and wirelettuce will increase. The perennial grasses will decrease. Invaders on this site include red brome, schismus, and red-stem filaree. White burrobush is the primary perennial pioneer species.

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. California buckwheat can also quickly re-establish from seed. Range ratany and desert needlegrass resprout from the root crown after fire damages aboveground vegetation.

Revegetation of Disturbed Areas - Species indigenous to this site are recommended for any revegetation efforts.

California buckwheat is used extensively for erosion control and revegetation. White bursage and creosotebush are also valuable for erosion control and cover restoration. Nevada ephedra forms dense, spreading colonies, which make it valuable for soil stabilization. Range ratany's root system is shallow and spreads horizontally and radially. This may be effective in controlling soil loss. 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.

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 developments would increase the species diversity of this site.

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

The representative natural plant community is Mojave Creosotebush Scrub or White Bursage Series. This community is dominated by white bursage, California buckwheat 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, 0.5 to 1 meters tall. White bursage and California buckwheat form the most characteristic association. Perennial grasses and forbs are common. The composition and abundance of annual vegetation differs from year to year, depending on the time and amount of precipitation. Pockets of cryptogamic crust have developed between the surface rock fragments. 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 5% of each species of the shrub group, and no more than 15% in aggregate.**

Other shrubs comprise 5 to 15% composition (air-dry weight)

Forest understory. **Allow no more than 2% of each species of the grasses group and no more than 8% in aggregate.**

Other Perennial grasses comprise 2 to 8% composition (air-dry weight)

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

Allow no more than 3% of each species of the forb group and no more than 10% in aggregate.

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

Other annual forbs comprise a trace to 15% composition (air-dry weight)

Table 4. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	78	196	314
Grass/Grasslike	22	56	90
Forb	11	28	45
Total	**111**	**280**	**449**

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%

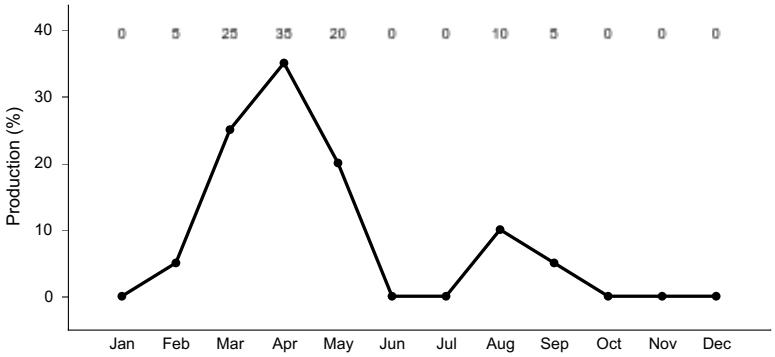

Figure 2. Plant community growth curve (percent production by month). CA3004, Burrobush XB. Growth starts in early spring, flowering and seed set occur by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush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

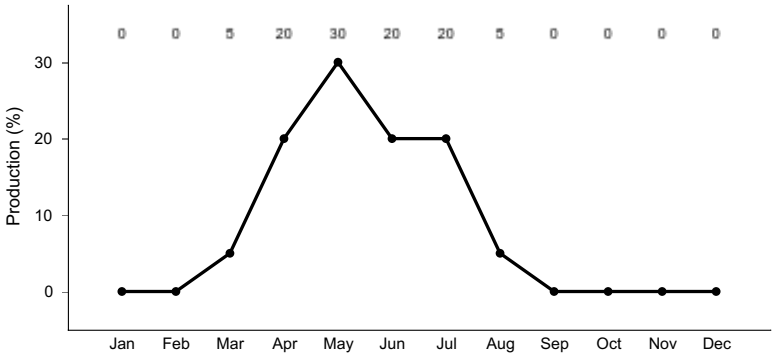

Figure 3. Plant community growth curve (percent production by month). CA3014, California buckwheat. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

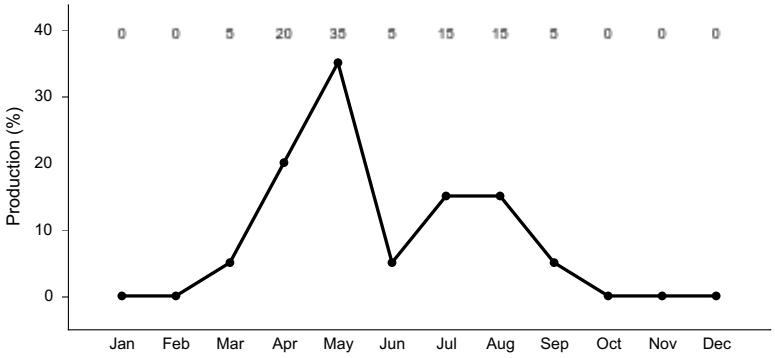

Figure 4. Plant community growth curve (percent production by month). CA3041, Range rhatany. Growth begins in spring and continues through summer. A drop in production may occur in arly summer before summer rains come, after which point growth resumes..

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

This site provides habitat for mammals such as the Panamint and Merriam's kangaroo rats, desert woodrats, canyon and deer mice, black-tailed jackrabbits, coyotes and feral burros.

This site provides habitat for lizards such as the western whiptail, zebra-tailed lizard, desert collared lizard, chuckwalla and desert spiny lizard. Several species of snakes may also occur on this site. The depth to bedrock is a restrictive feature for burrowing reptiles such as desert tortoise.

Birds occurring on this site include black-throated and sage sparrows, common ravens, rock wrens and several species of warblers.

Hydrological functions

Runoff is low and 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: Dalvord
Hydrologic group: D
Hydrologic Conditions and Runoff Curves:

Good: 84; Fair: 86; Poor: 88

Soil Series: Paintrocks
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 -
The steep rocky slopes restrict extensive vehicle and foot traffic. 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 cryptogamic crust and soil structure can result in soil compaction, reduced infiltration rates, accelerated erosion, soil blowing and barren areas. Rest or protect sites from further disturbance.

Other Mgt. Considerations-
This site has limited use for livestock grazing due to the steep rocky slopes and low productivity. California buckwheat is considered fair to poor browse for cattle and sheep, and fair for goats. White bursage is fair browse for cattle and horses, and fair to good browse for sheep. 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. Range ratany is rated fair to good for cattle and sheep. 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/acres air dry
Normal years: 250
AUM/AC:
AC/AUM:

Inventory data references

Sampling technique

_8_ NV-ECS-1
_3_ SCS-Range 417
_9_ Other

Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T16N R4E S15
UTM zone	N
UTM northing	3925625
UTM easting	542177
General legal description	SE1/4 Sec. 15 T16N R4E One and one-quarter miles south of Drinkwater Lake Drinkwater Lake Quadrangle UTM 11S 0542177e 3925625n (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	05/13/2025
Approved by	Sarah Quistberg
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):**

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:**
