USDA Natural Resources
Conservation Service

Ecological site R030XB144CA
Shallow Granitic 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 lower sideslopes of mountains. Elevations are 3800 to 5000 feet. Slopes range from 8 to 75 percent. The soils that characterize this site are well drained and shallow and very shallow. They are formed in granitic alluvium. Surface textures are extremely gravelly loams.

Please refer to group concept R030XB056NV 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

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) *Coleogyne ramosissima*
Herbaceous	(1) *Achnatherum speciosum*

Physiographic features

This site occurs on lower sideslopes of mountains. Elevations are 3800 to 5000 feet. Slopes range from 8 to 75 percent.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	1,158–1,524 m
Slope	8–75%
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 8 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 57 to 66 degrees F.

The average frost-free period is 200 to 300 days.

Table 3. Representative climatic features

Frost-free period (average)	300 days
Freeze-free period (average)	
Precipitation total (average)	203 mm

Influencing water features

Soil features

The soils that characterize this site are well drained and shallow and very shallow. They are formed in granitic alluvium. Surface textures are extremely gravelly loams. Subsurface textures are extremely gravelly loams and extremely gravelly clay loams. Available water capacity is very low and permeability is moderately slow. Wind erosion hazard is negligible due to surface rock fragments. Effective rooting depth is 10 to 16 inches to bedrock.

Representative_Soil Map Units
102 Mulespring-Newera-Haleburu association,
15-75% slopes
370 Juratrias-Mulespring-Newera complex, 8-

50% slopes

Ecological dynamics

Please refer to group concept R030XB056NV to view the provisional STM.

The historic site potential is characterized by low, often intricately branched shrubs, 0.5 to 1 meter 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. California buckwheat and white burrobush will increase. Non-native annual grasses and forbs, such as red brome, schismus and red-stem filaree are post-fire invaders on 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. Water developments would increase the species diversity of this site.

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. Spiny hopsage is rated as having moderate potential for erosion control. Creosotebush may also be used to rehabilitate disturbed sites. Once established, creosotebush may improve sites for annual forbs and grasses. Nevada ephedra forms dense, spreading colonies, which make it valuable for soil stabilization. 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.

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. Blackbrush, white bursage and creosotebush possess limited sprouting ability, thus, can be killed by high intensity fires. Blackbrush and creosotebush are very slow to reinvade burned areas. White bursage can rapidly re-establish from seed. Nevada ephedra, spiny hopsage and desert needlegrass are reported to resprout from the root crown after a fire damages aboveground vegetation.

State and transition model

Ecosystem states

1. Reference State

State 1 submodel, plant communities

1.1. Reference State

State 1
Reference State

Community 1.1
Reference State

The representative natural plant community is Blackbush Scrub or Black Bush Series. This community is dominated by blackbrush and desert needlegrass. Potential vegetative composition is about 15% grasses, 10% forbs, and 75% 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 5% of each species of this group, and no more than 20% in aggregate

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

Allow no more than 2% of each species of the forbs group, and no more than 10% in aggregate

Table 4. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	63	168	252
Grass/Grasslike	12	34	50
Forb	9	22	34
Total	**84**	**224**	**336**

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	4-11%
Grass/grasslike foliar cover	1-2%
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%

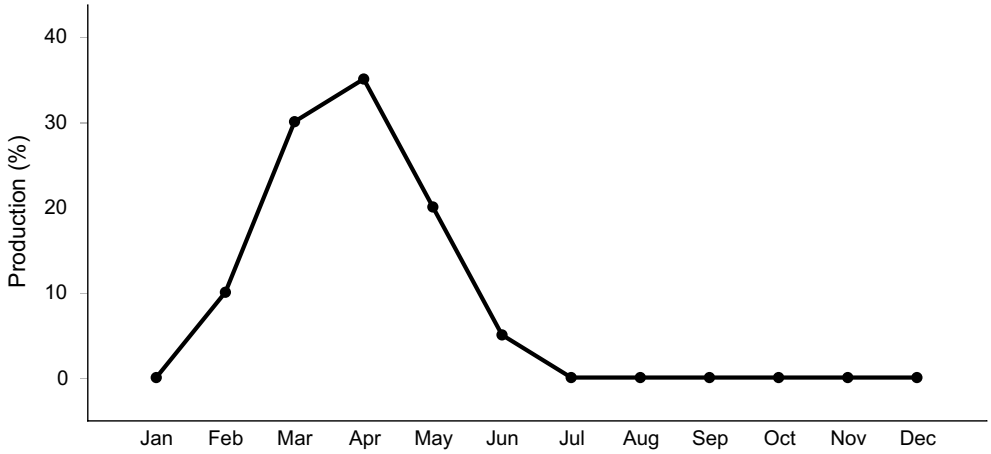

Figure 2. Plant community growth curve (percent production by month). CA3018, Blackbrush. Growth starts in late winter. Flowering and seed set

occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

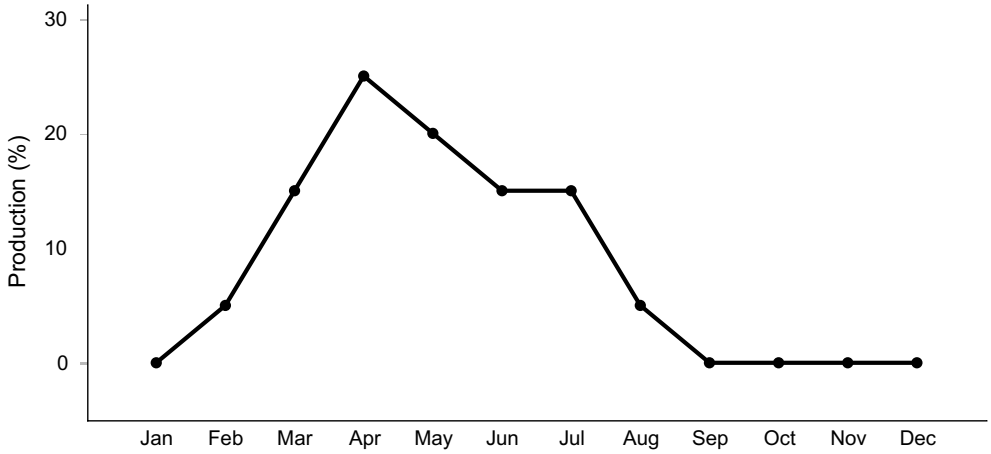

Figure 3. Plant community growth curve (percent production by month). CA3087, Desert needlegrass. Growth begins in mid-winter and continues through summer, setting seed in late summer..

Additional community tables

Animal community

This site provides habitat for small mammals such as antelope ground squirrels, Panamint kangaroo rats, long-tailed pocket mice, and deer mice. Black-tailed jackrabbits, coyotes and feral burros are also common.

This site provides habitat for lizards such as side-blotched lizard, western whiptail, desert night lizard and desert spiny lizard. The depth to bedrock is a restrictive feature for burrowing reptiles such as the desert tortoise.

Birds common to this site include black-throated and sage sparrows, greater roadrunners, Empidonax species, ruby-crowned kinglets, and blue-gray gnatcatchers.

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. Spiny hopsage is considered good to fair forage for sheep and goats, and fair to poor for cattle. Nevada ephedra is rated good to fair forage for goats and fair to poor for cattle and sheep. 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. Creosotebush is unpalatable to livestock. Domestic sheep use creosotebush primarily for shade. 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 200

Hydrological functions

Runoff is high. 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: Newera
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, the cryptogamic crust and the soil structure can result in soil compaction, reduced infiltration rates, accelerated erosion, soil blowing and barren areas. Rest or protect sites from further disturbance.

Inventory data references

Sampling technique

___ NV-ECS-1
___ SCS-Range 417
_2_ Other

Type locality

Location 1: San Bernardino County, CA	
UTM zone	N

UTM northing	3931490
UTM easting	542930
General legal description	Non-sectionalized area of T17N R4E Approximately 2 miles north of Drinkwater Lake East of Leach Lake Quadrangle UTM 11S 0542930e 3931490n (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

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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	05/21/2025
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:**
