USDA Natural Resources
Conservation Service

Ecological site R030XB135CA
Cobbly Loam 5-7" P.Z.

Last updated: 2/26/2025
Accessed: 05/21/2025

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 summits of erosional fan remnants. Elevations are 3300 to 3800 feet. Slopes range from 0 to 8 percent.

The soils that characterize this site are well drained and shallow to very shallow over a duripan. Surface textures are extremely gravelly loams and extremely cobbly loams. Subsurface textures are very cobbly loams.

Associated sites

R030XB019NV	**Eroded Fan Remnant Pavette 4-6 P.Z.** Limy 3-5
R030XB136CA	**Dry Wash** Dry Wash

Similar sites

R030XB074NV	**COBBLY LOAM 5-7 P.Z.** Cobbly Loam 5-7
R030XB140CA	**Shallow Hill 4-6" P.Z.** Limy Hill 5-7

Table 1. Dominant plant species

Tree	Not specified

Shrub	(1) *Ambrosia dumosa* (2) *Larrea tridentata*
Herbaceous	(1) *Achnatherum speciosum*

Physiographic features

This site occurs on summits of erosional fan remnants. Elevations are 3300 to 3800 feet. Slopes range from 0 to 8 percent.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant
Elevation	1,006–1,158 m
Slope	0–8%
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)	178 mm

Influencing water features

Soil features

The soils that characterize this site are well drained and shallow to very shallow over a duripan. They are formed in mixed alluvium. Surface textures are extremely gravelly loams and extremely cobbly loams. Subsurface textures are very cobbly loams. Available water capacity is very low and permeability is moderate. Wind erosion hazard is negligible due to surface coarse fragments. Crosgrain has an indurated duripan from 11 to 24 inches which

may impede root growth.

Representative Soil Map Units
114 Crosgrain complex, 0-8% slopes

Ecological dynamics

Please refer to group concept R030XB029NV to view the provisional STM.

The representative natural plant community is Mojave Creosotebush Scrub or White Bursage Series. This community is dominated by white bursage, creosotebush and spiny menodora. Potential vegetative composition is about 15% grasses, 10% forbs, and 75% shrubs.

As ecological condition deteriorates the opportunistic perennial species such as white bursage, desert trumpet and wirelettuce will increase. Perennial grasses will decrease. With continued disturbance, long-lived shrubs such as creosotebush, Nevada ephedra and spiny hopsage will also decrease. With a loss of perennial cover, non-native annual grasses and forbs such as red brome, schismus and red-stem filaree will invade this site. White burrobush is the primary perennial pioneer species.

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.

Revegetation of Disturbed Areas - Species indigenous to this site are recommended for any revegetation efforts.
Spiny hopsage is rated as having moderate potential for erosion control. White bursage and creosotebush are also valuable for erosion control and cover restoration. 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. White bursage and creosotebush possess limited sprouting ability, thus, can be killed by fire. White bursage, however, 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 - 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 historic site potential is characterized by widely spaced shrubs, 0.5 to 1 meter tall. White bursage, creosotebush and spiny menodora 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. 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 species of this group and no more than 15% in aggregate

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

Table 4. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	127	211	336
Grass/Grasslike	25	41	67
Forb	17	28	45
Total	**169**	**280**	**448**

Table 5. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	3-12%
Grass/grasslike foliar cover	0-1%
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%

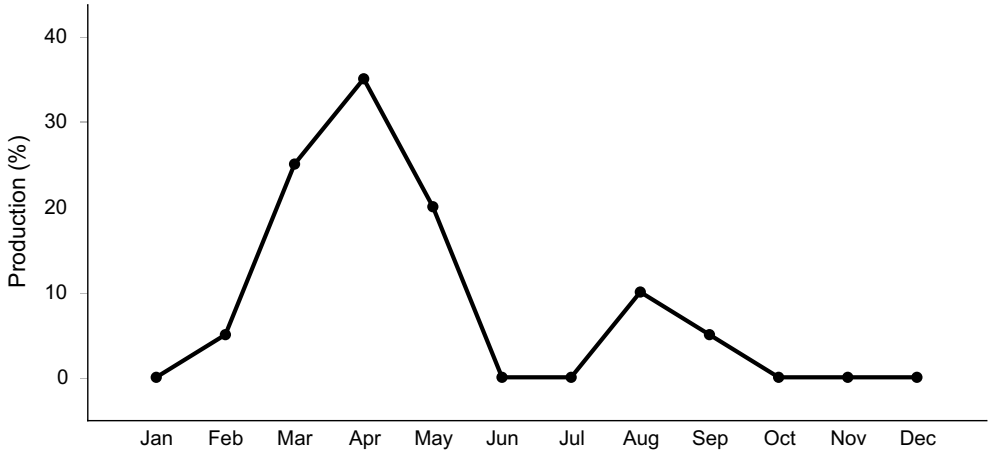

Figure 2. Plant community growth curve (percent production by month). CA3004, Burrobush XB. Growth starts in early spring, flowering and seed set occur by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush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

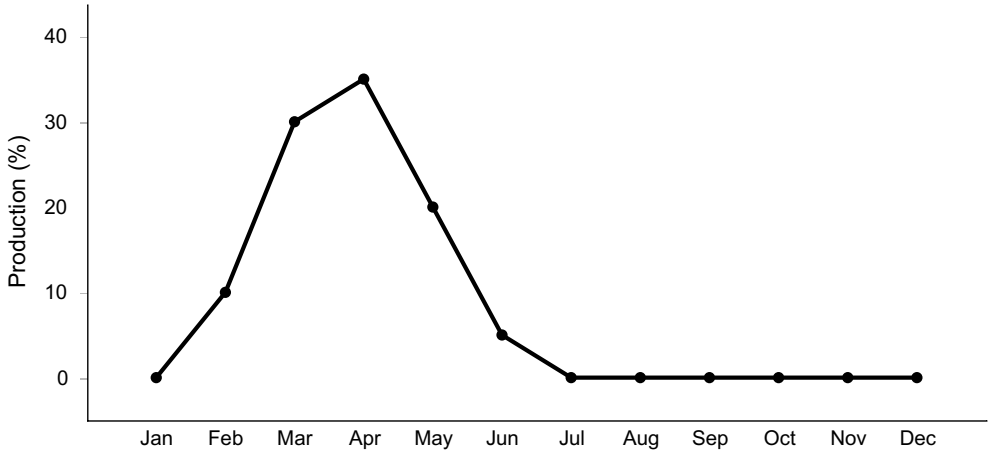

Figure 3. Plant community growth curve (percent production by month). CA3013, Spiny menodora. Growth starts in late winter. Flowering and seed set occur by June. Seeds remain on the shrubs for several months. Dormancy occurs during the hot summer months..

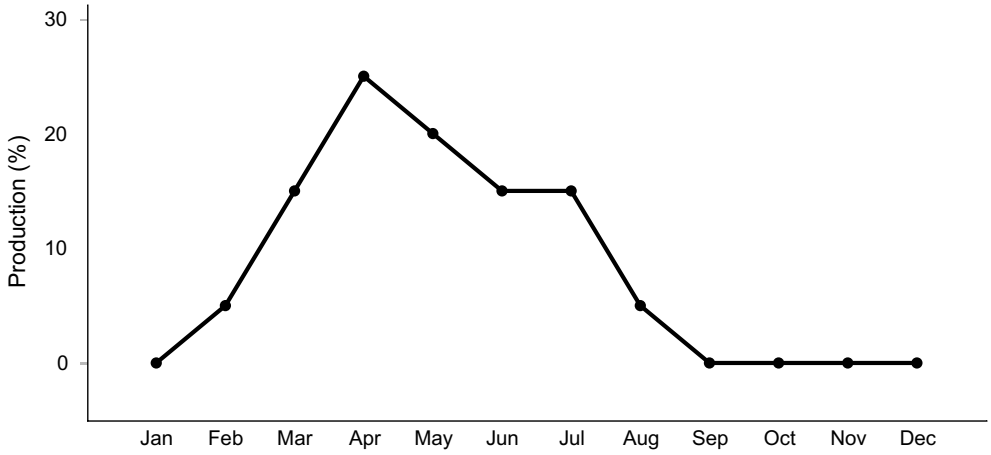

Figure 4. Plant community growth curve (percent production by month). CA3087, Desert needlegrass. Growth begins in mid-winter and continues through summer, setting seed in late summer..

Additional community tables

Animal community

This site provides habitat for small mammals such as antelope ground squirrels, desert woodrats, canyon mice and long-tailed pocket mice. Black-tailed jackrabbits and coyotes are also common.

Reptiles occurring on this site include lizards, such as the western whiptail and side-blotched lizard. Chuckwalla may be found in the associated rock outcrops. The extremely cobbly surface horizon and the depth to the duripan may be restrictive features to burrowing reptiles such as the desert tortoise.

Birds occurring on this site include: sage and black-throated sparrows, horned larks, rock wrens, greater roadrunners and common ravens.

This site has limited use for livestock grazing due to the extremely cobbly surface horizon and low productivity. White bursage is fair browse for cattle and horses, and fair to good browse for sheep. Nevada ephedra is considered fair to poor browse for cattle and sheep. Spiny hopsage is considered good to fair browse for sheep and fair to poor browse for cattle. The spines of spiny menodora keep it from being heavily utilized by livestock. 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 250

Hydrological functions

Runoff is medium. Hydrologic group C - soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. Hydrologic conditions: good - >70% ground cover (includes litter, grass and brush overstory); fair - 30 to 70% ground cover; poor <30% ground cover.

Soil Series: Crosgrain
Hydrologic Group:C

Hydrologic Conditions and Runoff Curves:
Good 79; Fair 81; Poor 85

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. Rest or protect sites from further disturbances.

Inventory data references

Sampling technique

_1_ NV-ECS-1
___ SCS-Range 417
_2_ Other

Type locality

Location 1: San Bernardino County, CA	
UTM zone	N
UTM northing	3911734
UTM easting	524688
General legal description	Nonsectionalized area of T15N R32E Approximately 7 miles northeast of Fort Irwin, CA UTM 11S 0524688e 3911734n (Datum=NAS-C) San Bernardino Co., CA

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:**

   _____

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:**