USDA Natural Resources
Conservation Service

Ecological site R030XB153CA
Loamy Hill 5-7" P.Z.

Last updated: 2/25/2025
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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 sideslopes of mountains on all exposures. Elevations are 2935 to 4400 feet. Slopes range from 8 to 30 percent. The soils that characterize this site are very shallow and shallow and well drained. They are formed in colluvium and residuum from mainly volcanic sources.

Please refer to group concept R030XB130CA to view the provisional STM.

Similar sites

R030XB122CA	**Calcareous Loam 3-5" P.Z.** Calcareous Loam 3-5
R030XB121CA	**Calcareous Hill 5-7" P.Z.** Calcareous Hill 5-7

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Atriplex confertifolia* (2) *Ambrosia dumosa*
Herbaceous	(1) *Pleuraphis rigida*

Physiographic features

This site occurs on sideslopes of mountains on all exposures. Elevations are 2935 to 4400 feet. Slopes range from 8 to 30 percent.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	895–1,341 m
Slope	8–30%
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 3 to 6 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 64 degrees F.

The average frost-free period is 235 to 300 days.

Table 3. Representative climatic features

Frost-free period (average)	300 days
Freeze-free period (average)	
Precipitation total (average)	152 mm

Influencing water features

Soil features

The soils that characterize this site are very shallow and shallow and well drained. They are formed in colluvium and residuum from mainly volcanic sources. Surface textures are extremely gravelly sandy loams. Subsurface textures are very gravelly 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 0 to 8 inches to slightly fractured unweathered bedrock.

Representative_Soil Map Units
403 Haleburu-Upspring complex, 8-50% slopes

Ecological dynamics

Please refer to group concept R030XB130CA to view the provisional STM.

The historic site potential is characterized by low, intricately branched, often spiny shrubs, 0.3 to 0.6 meters tall, with a continuous, intermittent or open canopy dominated by *Atriplex confertifolia*. Perennial grasses and forbs are common. Annuals are seasonally present. The composition of the annual vegetation differs from year to year, depending on the time and amount of rainfall. This site is stable in this condition.

Successive years of above-average precipitation may result in considerable die-off of many species of native shrubs, especially shadscale. With shadscale die-off, short-lived perennials such as desert trumpet and wirelettuce will initially increase. White bursage, a long-lived opportunistic species will also initially increase. With a loss of perennial cover, non-native annual grasses and forbs such as red brome, schismus and filaree will readily invade this site. White burrobush is a perennial invader on this site.

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. Water developments would increase the species diversity of this site.

Species indigenous to this site are recommended for any revegetation efforts.
Shadscale and white bursage are effective shrubs for revegetation of disturbed sites. 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. 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. Saltbush species, such as shadscale, are generally resistant to fire because of a low volatilization rate. White bursage possesses limited sprouting ability but can rapidly re-establish from seed. 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. Desert needlegrass has persistent dead leaf

bases, which make it susceptible to burning. A rapid, cool fire may top-kill desert needlegrass but may not burn deep into the root crown, allowing for resprouting.

State and transition model

Ecosystem states

1. Reference State - Plant Community 1

State 1 submodel, plant communities

1.1. Reference State - Plant Community 1

State 1
Reference State - Plant Community 1

Community 1.1
Reference State - Plant Community 1

The representative natural plant community is Shadscale Scrub or Shadscale Series. Shadscale, white bursage and big galleta dominate this community. 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 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 3% of each species of the forb 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	43	127	211
Grass/Grasslike	8	25	41
Forb	6	17	28
Total	**57**	**169**	**280**

Table 5. Ground cover

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

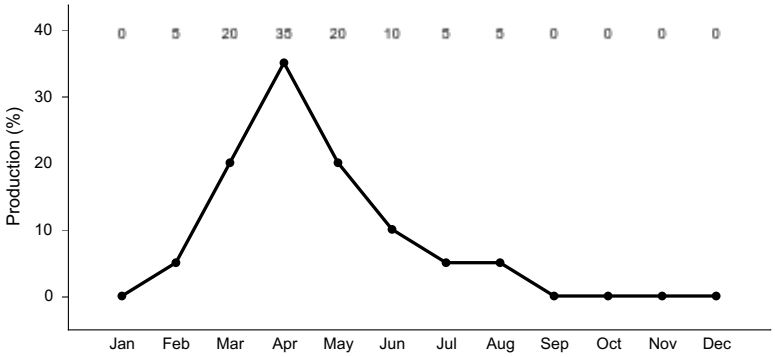

Figure 2. Plant community growth curve (percent production by month). CA3003, Shadscale. Growth starts in early spring. Flowering and seed set occur by July. Seeds stay on the shrub for several months. Dormancy occurs during the hot summer months..

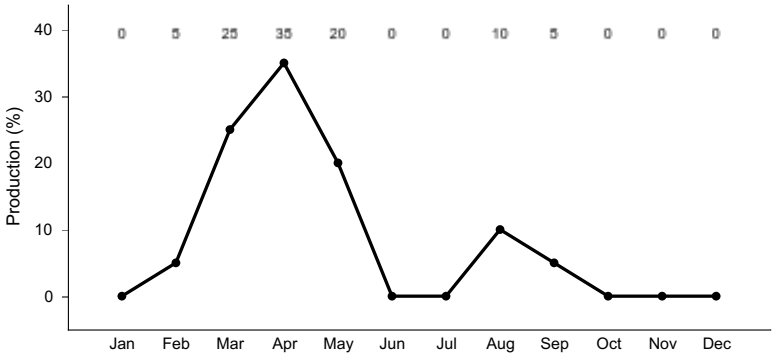

Figure 3. Plant community growth curve (percent production by month). CA3004, Burrobush XB. Growth starts in early spring, flowering and seed set occur by July. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some vegetation may break dormancy and produce a flush of new growth..

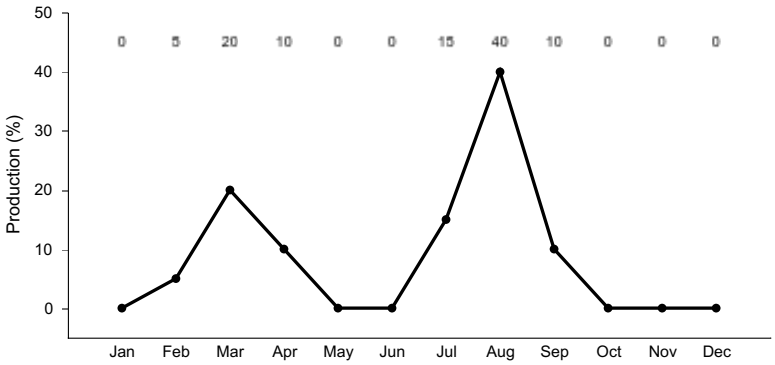

Figure 4. Plant community growth curve (percent production by month). CA3024, Big galleta. Some green up in spring; dormant May and June; most growth occurs after summer rains..

Additional community tables

Animal community

This site provides habitat for mammals such as Merriam's kangaroo rats, desert woodrats, long-tailed pocket mice, black-tailed jackrabbits and coyotes. Desert bighorn sheep may also occur.

This site provides habitat for reptiles such as side-blotched lizards, western whiptails and chuckwallas.

Birds common to this site include horned larks, common ravens, loggerhead shrikes, black-throated sparrows and raptors.

LIVESTOCK GRAZING:
This site has limited value for livestock grazing due to the steep slopes, low productivity and lack of stock water. Shadscale is considered valuable browse for cattle and sheep. Shadscale is often eaten during the early spring before spines mature. The seeds are also readily eaten by livestock. 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. During favorable years, perennial and annual forbs and grasses provide additional forage.

Before making specific recommendations, an on-site evaluation must be made.

Pounds/acre
air dry AUM/AC AC/AUM
Normal Years 150

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:Upspring
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.

Inventory data references

Sampling technique

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

Type locality

Location 1: San Bernardino County, CA	
Township/Range/Section	T5N R7E S5
UTM zone	N
UTM northing	3823720
UTM easting	567038
General legal description	NE1/4 Sec. 5, T5N R7E Approximately 13 miles southwest of Ludlow, CA Lavic SE Quadrangle UTM 11S 0567038e 3823720n (Datum=NAS-C) San Bernardino Co., CA

Other references

Cutler, P.L. and D.J. Griffin 1998. Personal communication, September 1998.

Contributors

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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	05/12/2025
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:**
