USDA Natural Resources
Conservation Service

Ecological site R030XB087NV
GRANITIC SLOPE 5-7 P.Z.

Last updated: 3/10/2025
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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 hill sideslopes and footslopes. This site occurs on northerly aspects at the lower elevations of its range. Slopes range from 2 to over 50 percent, but slope gradients of 2 to 30 percent are typical. Elevations are 3000 to 4500 feet. The soil associated with this site are shallow and derived from granitic parent material.

Please refer to group concept R030XA036CA to view the provisional STM.

Associated sites

R030XB062NV	**GRANITIC SLOPE 3-5 P.Z.**
R030XB070NV	**VOLCANIC HILL 5-7 P.Z.**
R030XB077NV	**STEEP SOUTH SLOPE**

Similar sites

R030XB062NV	**GRANITIC SLOPE 3-5 P.Z.** Less productive site
R030XB060NV	**GRANITIC NORTH SLOPE 5-7 P.Z.** ERFAP dominant shrub
R030XB018NV	**GRANITIC LOAM 3-5 P.Z.** VIDE2 dominant shrub; less productive site
R030XB007NV	**GRANITIC LOAM 5-7 P.Z.** Less productive site; occurs on fan piedmonts

R030XB008NV	**SHALLOW GRANITIC HILL 5-7 P.Z.** ERFAP dominant shrub

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ambrosia dumosa* (2) *Senna armata*
Herbaceous	(1) *Pleuraphis rigida*

Physiographic features

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Table 2. Representative physiographic features

Landforms	(1) Hill
Elevation	914–1,372 m
Slope	2–50%

Climatic features

The climate is hot and arid, with mild winters and very hot summers. Precipitation is greatest in the winter with a lesser secondary peak in summer, typical of the Mojave Desert. Average annual precipitation is 5 to 7 inches. Mean annual air temperature is 56 to 65 degrees F. The average growing season is about 180 to 240 days.

Table 3. Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	
Precipitation total (average)	178 mm

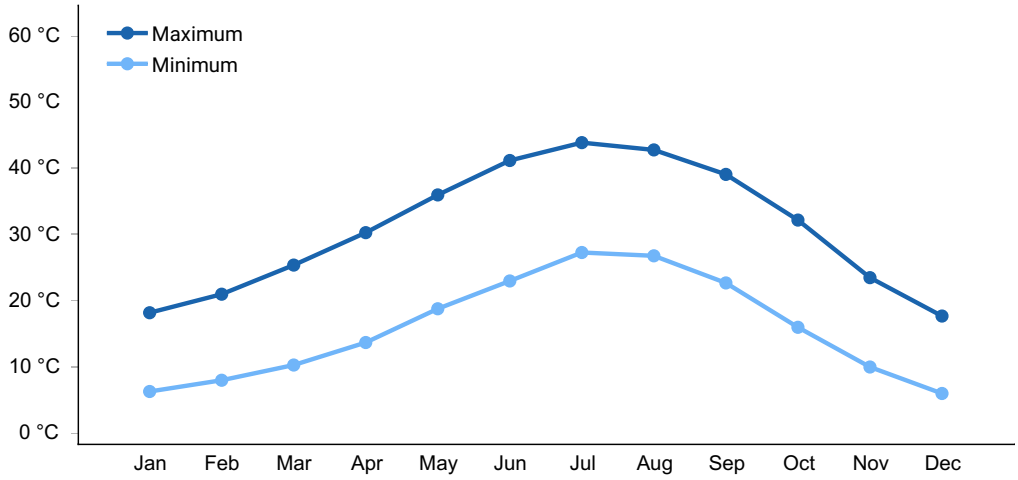

Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site are shallow and derived from granitic parent material. Water intake rates are moderately rapid, available water capacity is low, runoff is medium to rapid and soils are well drained.

Table 4. Representative soil features

Drainage class	Well drained

Ecological dynamics

Please refer to group concept R030XA036CA to view the provisional STM.

As ecological condition deteriorates, creosotebush increases as perennial grasses decrease. Following wildfire, snakeweed, Mojave buckwheat, and ephedra greatly increase. Species likely to invade this site are annual forbs and grasses.

Fire Ecology:
Fires in the Mojave desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. Fire generally kills white bursage. However, most white bursage plants burned because their canopies contained numerous small branches in proximity to herbaceous fuels. Range ratany is top-killed by fire. Range ratany resprouts from the root crown after fire. Nevada ephedra is top-killed by fire. Underground regenerative structures commonly survive when aboveground vegetation is consumed by fire. Nevada ephedra generally sprouts after fire damages aboveground vegetation and may increase in plant cover. Fires in creosotebush scrub

were an infrequent event in pre-settlement desert habitats, because fine fuels from winter annual plants were probably sparse, only occurring in large amounts during exceptionally wet winters. Fire kills many creosotebush. Creosotebush is poorly adapted to fire because of its limited sprouting ability. Creosotebush survives some fires that burn patchily or are of low severity. Mojave buckwheat is vulnerable to hot fires. Resprout success is low and most regeneration is from seeds. Frequent fires deplete the seed bank, making populations vulnerable to extinction. Spiny menodora often survives fire because its foliage does not readily burn. Fire most likely top-kills big galleta. Big galleta sprouts from rhizomes following fire. Damage to big galleta from fire varies, depending on whether big galleta is dormant when burned. If big galleta is dry, damage may be severe. However, when plants are green, fire will tend to be less severe and damage may be minimal, with big galleta recovering quickly. Bush muhly regenerates following fire from soil-stored seed. Fire probably top-kills bush muhly. Burning causes at least short-term decline of bush muhly. Recovery time is thought to vary considerably and is probably dependent on postfire weather and competition.

State and transition model

Ecosystem states

1. Reference Plant Community

State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by white bursage, big galleta, and desertsenna. Other important species are range ratany, Nevada ephedra, Mojave buckwheat, and creosotebush. Potential vegetative composition is about 35% grasses, 10% annual and perennial forbs and 55% shrubs. Approximate ground cover (basal and crown) is 10 to 20 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	185	308	432
Grass/Grasslike	118	196	275
Forb	34	56	78
Total	**337**	**560**	**785**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses**			95–168	
	big galleta	PLRI3	*Pleuraphis rigida*	84–140	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	11–28	–
2	**Secondary Perennial Grasses**			11–45	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	3–17	–
	threeawn	ARIST	*Aristida*	3–17	–
	low woollygrass	DAPU7	*Dasyochloa pulchella*	3–17	–
Forb					
3	**Perennial forbs**			11–28	
	milkvetch	ASTRA	*Astragalus*	3–17	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	3–17	–
4	**Annual forbs**			1–84	
Shrub/Vine					
5	**Primary shrubs**			130–370	
	burrobush	AMDU2	*Ambrosia dumosa*	56–112	–
	desertsenna	SEAR8	*Senna armata*	28–84	–
	spiny menodora	MESP2	*Menodora spinescens*	1–45	–
	creosote bush	LATR2	*Larrea tridentata*	11–28	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	11–28	–
	Eastern Mojave buckwheat	ERFAP	*Eriogonum fasciculatum var. polifolium*	11–28	–
6	**Secondary shrubs**			11–45	
	dyssodia	DYSSO	*Dyssodia*	6–17	–
	Virgin River brittlebush	ENVI	*Encelia virginensis*	6–17	–
	beavertail pricklypear	OPBA2	*Opuntia basilaris*	6–17	–
	Mojave woodyaster	XYTO2	*Xylorhiza tortifolia*	6–17	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing, due to the low forage production, steep slopes and stony surfaces. Big galleta is considered a valuable forage plant for cattle and domestic sheep. Its coarse, rigid culms make it relatively resistant to heavy grazing and trampling. Bush muhly is readily eaten by livestock throughout the year when available; however, it is usually not abundant enough to provide much forage. It is grazed heavily in winter when other species become scarce. Because of its branching habit, it is extremely susceptible to heavy grazing. Bush muhly is damaged when continuously grazed to a stubble height of less than 4 inches (10 cm). White bursage is of intermediate forage value. It is fair to good forage for horses and fair to poor for cattle and sheep. However, because there is often little other forage where white bursage grows, it is often highly valuable to browsing animals and is sensitive to browsing. Range ratany is an important forage species for all classes of livestock. Palatability of range ratany is rated fair to good for cattle and sheep. Nevada ephedra is important winter range browse for domestic cattle, sheep and goats. Nevada ephedra is usually grazed heavily and seems to be perfectly safe for grazing livestock since it induces neither toxicity in ewes or cows, nor congenital deformities in lambs. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. Mojave buckwheat has a browse rating of fair to poor for cattle. Cattle will graze the stems of spiny menodora in the spring before the stems become woody and spiny. Spiny menodora has lower palatability than the other shrubs but is consumed during early spring before spines mature.

Stocking rates vary over time depending upon season of use, climate variations, site, and previous and current management goals. A safe starting stocking rate is an estimated stocking rate that is fine tuned by the client by adaptive management through the year and from year to year.

Wildlife Interpretations:
White bursage is an important browse species for wildlife. Range ratany is an important forage species for deer. Mule deer browse range ratany year-long with seasonal peaks. Mule deer peak use is from February to April and from August to October. Mule deer, bighorn sheep, and pronghorn browse Nevada ephedra, especially in spring and late summer when new growth is available. Mountain quail eat Ephedra seeds. Creosotebush is unpalatable to most browsing wildlife. Elk will graze the stems of spiny menodora in the spring before the stems become woody and spiny. The palatability of bush muhly for wildlife species is rated fair to poor.

Hydrological functions

Water intake rates are moderately rapid, available water capacity is low, runoff is medium to rapid and soils are well drained.

Other products

White bursage is a host for sandfood, a parasitic plant. Sandfood was a valuable food supply for Native Americans. The Papago Indians used an infusion of range ratany twigs externally for treating sore eyes and internally for dysentery. The roots provided them with a red dye for wool and other materials. The dye was also used as an ink. Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage. Creosotebush has been highly valued for its medicinal properties by Native Americans. It has been used to treat at least 14 illnesses. Twigs and leaves may be boiled as tea, steamed, pounded into a powder, pressed into a poultice, or heated into an infusion.

Other information

Big galleta's clumped growth form stabilizes blowing sand. White bursage may be used to revegetate disturbed sites in southwestern deserts. Once established, creosotebush may improve sites for annuals that grow under its canopy by trapping fine soil, organic matter, and symbiont propagules. It may also increase water infiltration and storage.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T26S R64E S19
General legal description	South end of Eldorado Mountains, east side of Eldorado Valley, Clark County, Nevada.

Other references

Fire Effects Information System (Online; http://www.fs.fed.us/database/feis/plants/).

USDA-NRCS Plants Database (Online; http://www.plants.usda.gov).

Contributors

GKB

Approval

Kendra Moseley, 3/10/2025

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:**
