Ecological site R030XB085NV
BASALTIC NORTH SLOPE 7-9 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 northerly exposures of mountain sideslopes. Slopes range from 15 to 75 percent, but slope gradients of 30 to 75 percent are most typical. Elevations are 4000 to 5000 feet. The soil associated with this site are shallow and derived from basaltic parent materials.

Please refer to group concept R030XB067NV to view the provisional STM.

Similar sites

R030XB069NV	**BASALTIC HILL 5-7 P.Z.** KRLA2-AMDU2 codominant
R030XB071NV	**VOLCANIC SLOPE 7-9 P.Z.** ERFAP dominant shrub; KRLA2 rare to absent
R030XB060NV	**GRANITIC NORTH SLOPE 5-7 P.Z.** PLRI3 dominant plant; KRLA2 minor species

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Krascheninnikovia lanata* (2) *Eriogonum fasciculatum*
Herbaceous	(1) *Muhlenbergia porteri* (2) *Achnatherum speciosum*

Physiographic features

This site occurs on northerly exposures of mountain sideslopes. Slopes range from 15 to 75 percent, but slope gradients of 30 to 75 percent are most typical. Elevations are 4000 to 5000 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	4,000–5,000 ft
Slope	15–75%

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 7 to 9 inches. Mean

annual air temperature is 57 to 63 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)	9 in

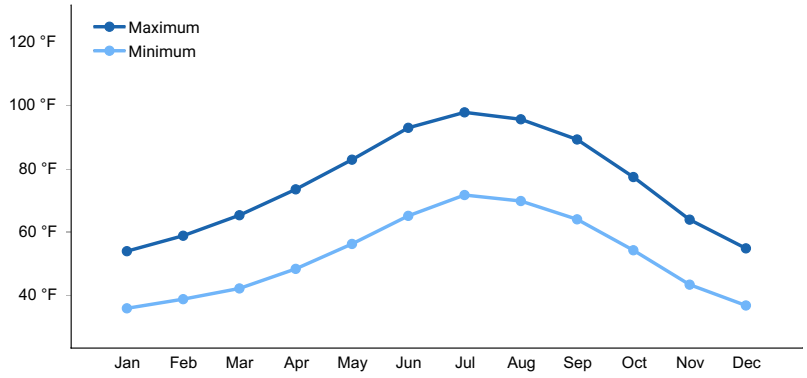


Figure 1. Monthly average minimum and maximum temperature

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 basaltic parent materials. There are very high amounts of rock fragments on the soil surface with 5 to 15 percent boulders, 15 to 25 percent stones, and 50 to 70 percent cobbles and gravels. Water intake rates are moderate, 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 R030XB067NV to view the provisional STM.

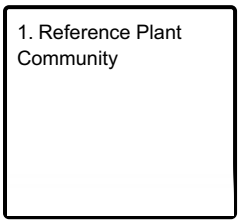
As ecological condition deteriorates, creosotebush, Mojave buckwheat, and yucca increase while big galleta, Indian ricegrass, desert needlegrass and bush muhly decrease. Species likely to invade this site are annuals such as red brome and filaree.

Fire Ecology:
Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface and thus kills the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the aboveground portions of winterfat and thus does not cause high mortality. 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. 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. Torrey’s ephedra has medium fire tolerance and is similar to Nevada ephedra. California ephedra will often survive fire because their foliage does not readily burn. Fire typically destroys aboveground parts of Anderson wolfberry, but the degree of damage to the plant depends on fire severity. Desert needlegrass has persistent dead leaf bases, which make it susceptible to burning. Fire removes the accumulation; a

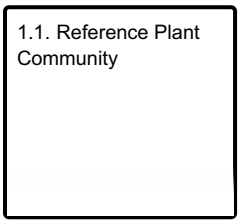
rapid, cool fire will not burn deep into the root crown and surviving tufts will resprout. Bush muhly regenerates following fire from soil-stored seed. Fire probably top-kills bush muhly. Burning causes at least short-term decline of bush muhly. Recovery time is thought to vary considerably and is probably dependent on postfire weather and competition. 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. Indian ricegrass can be killed by fire, depending on severity and season of burn. Indian ricegrass reestablishes on burned sites through seed dispersed from adjacent unburned areas.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1
Reference Plant Community

Community 1.1
Reference Plant Community

The reference plant community is dominated by winterfat, Mojave buckwheat, Ephedra spp., bush muhly and desert needlegrass. Anderson wolfberry is an important species. Ephedra dominates the visual aspect of the site. Potential vegetative composition is about 25% grasses, 10% annual and perennial forbs and 65% shrubs. Approximate ground cover (basal and crown) is 10 to 20 percent.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	293	390	455
Grass/Grasslike	112	150	175
Forb	45	60	70
Total	**450**	**600**	**700**

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Primary Perennial Grasses**			144–300	
	desert needlegrass	ACSP12	*Achnatherum speciosum*	60–120	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	60–120	–
	big galleta	PLRI3	*Pleuraphis rigida*	12–30	–
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	12–30	–
2	**Secondary Perennial Grasses**			12–30	
	threeawn	ARIST	*Aristida*	3–12	–
	James' galleta	PLJA	*Pleuraphis jamesii*	3–12	–
3	**Annual Grasses**			1–15	
Forb					
4	**Perennial forbs**			12–48	
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	3–18	–
5	**Annual forbs**			1–48	
Shrub/Vine					
6	**Primary shrubs**			174–360	
	Eastern Mojave buckwheat	ERFAP	*Eriogonum fasciculatum var. polifolium*	60–120	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	60–120	–
	water jacket	LYAN	*Lycium andersonii*	12–30	–
	Fremont's dalea	PSFR	*Psorothamnus fremontii*	12–30	–
	California jointfir	EPCA2	*Ephedra californica*	10–20	–
	Nevada jointfir	EPNE	*Ephedra nevadensis*	10–20	–
	Torrey's jointfir	EPTO	*Ephedra torreyana*	10–20	–
7	**Secondary shrubs**			12–60	
	fourwing saltbush	ATCA2	*Atriplex canescens*	6–18	–
	spearleaf brickellbush	BRAT	*Brickellia atractyloides*	6–18	–
	Virgin River brittlebush	ENVI	*Encelia virginensis*	6–18	–
	creosote bush	LATR2	*Larrea tridentata*	6–18	–
	Mojave woodyaster	XYTO2	*Xylorhiza tortifolia*	6–18	–
	Mojave yucca	YUSC2	*Yucca schidigera*	6–18	–

Animal community

Livestock Interpretations:
This site has limited value for livestock grazing, due to the low forage production, steep slopes and stony surfaces. Desert needlegrass produces considerable basal foliage and is good forage while young. Young desert needlegrass is palatable to all classes of livestock. Mature herbage is moderately grazed by horses and cattle but rarely grazed by sheep. 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). 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. Indian ricegrass is highly palatable to all classes of livestock in both green and cured condition. It supplies a source of green feed before most other native grasses have produced much new growth. Winterfat is an important forage plant for livestock in salt-desert shrub rangeland and subalkaline flats. Winterfat palatability is rated

as good for sheep, good to fair for horses, and fair for cattle. Abusive grazing practices have reduced or eliminated winterfat on some areas even though it is fairly resistant to browsing. Grazing season has more influence on winterfat than grazing intensity. Early winter grazing may actually be beneficial. Mojave buckwheat has a browse rating of fair to poor for cattle. 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. Torrey's ephedra is important winter forage for cattle and sheep. Torrey's ephedra is moderately palatable to all domestic livestock especially as winter browse. California ephedra is important winter range browse for domestic cattle, sheep and goats. Anderson wolfberry is sometimes used as forage by livestock and feral burros.

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:
Winterfat is an important forage plant for wildlife in salt-desert shrub rangeland and subalkaline flats. Animals that browse winterfat include mule deer, Rocky Mountain elk, desert bighorn sheep, and pronghorn antelope. 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. Torrey's ephedra is an important browse species for big game. Torrey's ephedra is moderately palatable to many big game species, especially as winter browse. Mule deer, bighorn sheep, and pronghorn browse California ephedra, especially in spring and late summer when new growth is available. Desert bighorn sheep and feral horses and burros will graze desert needlegrass. The palatability of bush muhly for wildlife species is rated fair to poor. Indian ricegrass is eaten by pronghorn in "moderate" amounts whenever available. In Nevada it is consumed by desert bighorns. A number of heteromyid rodents inhabiting desert rangelands show preference for seed of Indian ricegrass. Indian ricegrass is an important component of jackrabbit diets in spring and summer. In Nevada, Indian ricegrass may even dominate jackrabbit diets during the spring through early summer months. Indian ricegrass seed provides food for many species of birds. Doves, for example, eat large amounts of shattered Indian ricegrass seed lying on the ground.

Hydrological functions

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

Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use.

Other information

Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling. Big galleta's clumped growth form stabilizes blowing sand. Anderson wolfberry is also used as an ornamental valued chiefly for its showy red berries.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T23S R62E S16
General legal description	North-facing mountain backslopes on Black Mountain southeast of Henderson, 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

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	05/10/2025
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):**

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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:**
