

Ecological site R030XB089NV
STONY LOAM 7-9 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 sideslopes of hills and lower mountains. The site typically occurs on northerly aspects. Slopes range from 4 to 50 percent, but slope gradients of 8 to 30 percent are most typical. Elevations are 4000 to 4500 feet. The soil associated with this site have high amounts of stones, cobbles, and gravels on the surface.

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

Associated sites

R030XB060NV	GRANITIC NORTH SLOPE 5-7 P.Z.
R030XB069NV	BASALTIC HILL 5-7 P.Z.
R030XB081NV	BOULDERY SLOPE 5-7 P.Z.
R030XB085NV	BASALTIC NORTH SLOPE 7-9 P.Z.

Similar sites

R030XB043NV	CLAYPAN 5-7 P.Z. Less productive site; less than 35% surface rock fragments; 2-8% slopes
R030XB085NV	BASALTIC NORTH SLOPE 7-9 P.Z. PLRI3 minor spp.; ERFAP-KRLA2 codominant
R030XB053NV	SHALLOW HILL 5-7 P. Z. AMDU2 codominant shrub; less productive site
R030XB091NV	MOUNTAIN RIDGE Greater shrub diversity; occurs on mountain ridgeline
R030XB105NV	BOULDERY LIMESTONE SLOPE 5-7 P.Z. MUOT & SAMO3 major shrubs; occurs on soils from limestone PM
R030XB102NV	GRAVELLY LOAM 5-7 P.Z. AMDU2 codominant shrub; less productive site
R030XB080NV	STONY LOAM 5-7 P.Z. PLRI3 dominant plant; MUPO2 minor spp
R030XB044NV	COBBLY CLAYPAN 5-7 P.Z. AMDU2 dominant shrub; KRLA2 rare to absent

Table 1. Dominant plant species

Tree	Not specified
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Shrub	(1) <i>Krascheninnikovia lanata</i> (2) <i>Ephedra</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Muhlenbergia porteri</i>

Physiographic features

This site occurs on sideslopes of hills and lower mountains. The site typically occurs on northerly aspects. Slopes range from 4 to 50 percent, but slope gradients of 8 to 30 percent are most typical. Elevations are 4000 to 4500 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain
Elevation	4,000–4,500 ft
Slope	4–50%

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 7 to 9(10) inches with 50 percent of the total precipitation occurring as summer rainfall during the period July through September. Mean annual air temperature is 54 to 65 degrees F. The average growing season is about 140 to 210 days.

Table 3. Representative climatic features

Frost-free period (average)	210 days
Freeze-free period (average)	
Precipitation total (average)	9 in

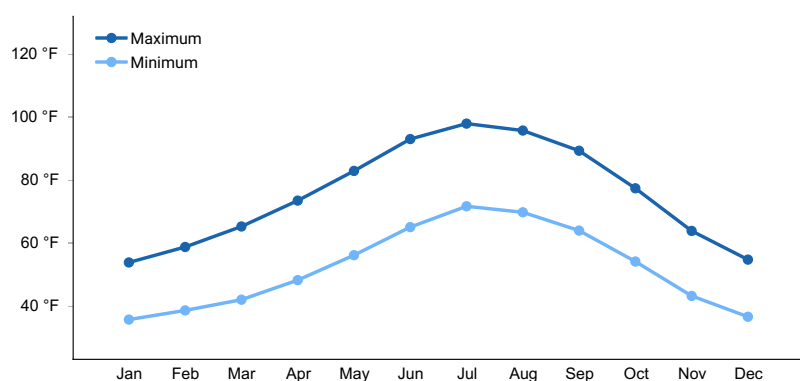


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site have high amounts of stones, cobbles, and gravels on the surface. Surface rock fragment cover is about 10 to 20 percent stones, 25 to 45 percent cobbles, and 30 to 45 percent gravels. A surface cover of gravels provides a stabilizing effect of surface erosion condition.

Ecological dynamics

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

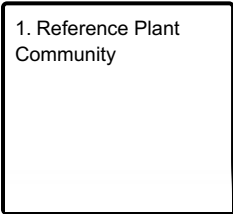
As ecological condition deteriorates, cool-season perennial grasses decrease. With severe disturbance such as wildfire, snakeweed, Mojave buckwheat, threeawn and burrobrush significantly increase.

Fire Ecology:

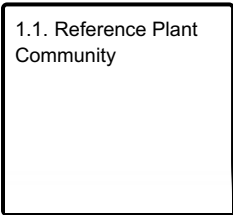
Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the perennating buds located several inches above the ground surface and thus kills the plant. In addition, severe fire usually destroys seed on the plant. Low-severity fire scorches or only partially consumes the aboveground portions of winterfat and thus does not cause high mortality. 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. Green ephedra generally sprouts vigorously from the roots or woody root crown after fire and rapidly produces aboveground biomass from surviving meristematic tissue. It is capable of reestablishing disturbed areas through seed. Green ephedra has been found in plant communities with a wide range of fire return intervals, and has been found in ecosystems following large, stand replacing fires as well as small, patchy, erratic fires. Green ephedra establishes early after fire but with relatively low occurrence compared to mid- and late successional stages. Fire typically destroys aboveground parts of Anderson wolfberry, but the degree of damage to the plant depends on fire severity. 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 bush muhly and big galleta. Winterfat and ephedra are important species associated with this site. Potential vegetative composition is about 75% grasses, 5% annual and perennial forbs and 20% shrubs. Approximate ground cover (basal and crown) is 30 to 40 percent.

Table 4. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	225	975	1200
Shrub/Vine	60	260	320
Forb	15	65	80
Total	300	1300	1600

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			806–1144	
	bush muhly	MUPO2	Muhlenbergia porteri	390–520	–
	big galleta	PLRI3	Pleuraphis rigida	390–520	–
	Indian ricegrass	ACHY	Achnatherum hymenoides	26–104	–
2	Secondary Perennial Grasses			26–65	
	desert needlegrass	ACSP12	Achnatherum speciosum	7–26	–
	threeawn	ARIST	Aristida	7–26	–
	slim tridens	TRMU	Tridens muticus	7–26	–
3	Annual Grasses			1–39	
Forb					
4	Perennial forbs			1–65	
	sego lily	CANU3	Calochortus nuttallii	7–26	–
	desert globemallow	SPAM2	Sphaeralcea ambigua	7–26	–
5	Annual forbs			1–104	
Shrub/Vine					
6	Primary shrubs			117–299	
	winterfat	KRLA2	Krascheninnikovia lanata	65–130	–
	water jacket	LYAN	Lycium andersonii	26–65	–
	Nevada jointfir	EPNE	Ephedra nevadensis	13–52	–
	mormon tea	EPVI	Ephedra viridis	13–52	–
7	Secondary shrubs			26–104	
	fourwing saltbush	ATCA2	Atriplex canescens	13–39	–
	Eastern Mojave buckwheat	ERFAP	Eriogonum fasciculatum var. polifolium	13–39	–
	spiny hopsage	GRSP	Grayia spinosa	13–39	–
	creosote bush	LATR2	Larrea tridentata	13–39	–
	pricklypear	OPUNT	Opuntia	13–39	–
	whitestem paperflower	PSCO2	Psilostrophe cooperi	13–39	–
	sage	SALVI	Salvia	13–39	–
	Mojave woodyaster	XYTO2	Xylorhiza tortifolia	13–39	–
	Joshua tree	YUBR	Yucca brevifolia	13–39	–

Animal community

Livestock Interpretations:

This site is suitable for livestock grazing. 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. 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. Green ephedra is an important browse species for big game and domestic livestock. It is heavily browsed by livestock and big game on winter range but only moderately or lightly browsed during other seasons. Green ephedra stems and twigs are nearly all within reach of grazing animals, and can serve as winter forage because they extend above the snow. 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. Green ephedra is also of importance to small mammals; the stem parts and sizeable seeds are favored by many small mammals. 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.

Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage. Native Americans used the fleshy berries of Anderson wolfberry either fresh or boiled and then dried them for later use.

Other information

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 S27
General legal description	Northerly-facing backslopes, north end of McCollough Range 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

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	05/12/2025
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:

17. **Perennial plant reproductive capability:**
