

Ecological site R030XB091NV MOUNTAIN RIDGE

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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 mountain shoulders, crests, and summits on all aspects. Slopes range from 2 to 75 percent, but slope gradients of 15 to 50 percent are most typical. Elevations are 4500 to 6500 feet. The soil associated with this site are shallow to bedrock. There are high amounts of gravels, cobbles, stones, and boulders that cover the soil surface. Please refer to group concept R030XB151CA to view the provisional STM.

Associated sites

R030XB071NV	VOLCANIC SLOPE 7-9 P.Z.
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Similar sites

R030XB080NV	STONY LOAM 5-7 P.Z. PLRI3 dominant plant; MUPO2 minor spp
R030XB102NV	GRAVELLY LOAM 5-7 P.Z. AMDU2 codominant shrub
R030XB105NV	BOULDERY LIMESTONE SLOPE 5-7 P.Z. MOUT & SAMO3 major shrubs
R030XB044NV	COBBLY CLAYPAN 5-7 P.Z. AMDU2 dominant shrub; KRLA2 rare to absent
R030XB053NV	SHALLOW HILL 5-7 P. Z. AMDU2 codominant shrub
R030XB085NV	BASALTIC NORTH SLOPE 7-9 P.Z. PLRI3 minor spp.; ERFAP-KRLA2 codominant

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Krascheninnikovia lanata</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Achnatherum speciosum</i>

Physiographic features

This site occurs on mountain shoulders, crests, and summits on all aspects. Slopes range from 2 to 75 percent, but slope gradients of 15 to 50 percent are most typical. Elevations are 4500 to 6500 feet.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	1,370 – 1,980 m
Slope	0 – 80 %

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 54 to 63 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)	230 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site are shallow to bedrock. There are high amounts of gravels, cobbles, stones, and boulders that cover the soil surface.

Ecological dynamics

Please refer to group concept R030XB151CA to view the provisional STM.

As ecological condition deteriorates, perennial grasses and forbs decrease as shrub density increases. With severe disturbance such as

wildfire, snakeweed, Mojave buckwheat, threeawn and burrobrush significantly increase. Species likely to invade this site are annuals such as sixweeks grama and other annual grasses.

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. California ephedra will often survive fire because their foliage does not readily burn. 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. 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. Fires in spiny hopsage sites generally occur in late summer when plants are dormant, and sprouting generally does not occur until the following spring. Spiny hopsage is considered to be somewhat fire tolerant and often survives fires that kill sagebrush. Mature spiny hopsage generally sprout after being burned. Spiny hopsage is reported to be least susceptible to fire during summer dormancy. 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. 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.

State and transition model

Additional community tables

Table 4. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			77-303	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	26-101	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	26-101	–
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	26-101	–
2	Secondary Perennial Grasses			1-26	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	2-10	–
	threeawn	ARIST	<i>Aristida</i>	2-10	–
	black grama	BOER4	<i>Bouteloua eriopoda</i>	2-10	–
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	2-10	–
	slim tridens	TRMU	<i>Tridens muticus</i>	2-10	–
3	Annual Grasses			1-16	
Forb					
4	Perennial forbs			10-40	
5	Annual forbs			1-40	
Shrub/Vine					
6	Primary shrubs			57-219	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	26-76	–
	Eastern Mojave buckwheat	ERFAP	<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	10-40	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	10-26	–
	spiny menodora	MESP2	<i>Menodora spinescens</i>	1-26	–
	California jointfir	EPCA2	<i>Ephedra californica</i>	3-17	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	3-17	–

	mormon tea	EPVI	<i>Ephedra viridis</i>	3-17	–
7	Secondary shrubs			76-151	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	6-26	–
	sweetbush	BEJU	<i>Bebbia juncea</i>	6-26	–
	blackbrush	CORA	<i>Coleogyne ramosissima</i>	6-26	–
	Virgin River brittlebush	ENVI	<i>Encelia virginensis</i>	6-26	–
	Heermann's buckwheat	ERHE	<i>Eriogonum heermannii</i>	6-26	–
	water jacket	LYAN	<i>Lycium andersonii</i>	6-26	–
	desert almond	PRFA	<i>Prunus fasciculata</i>	6-26	–
	sage	SALVI	<i>Salvia</i>	6-26	–
	Parish's goldeneye	VIPA14	<i>Viguiera parishii</i>	6-26	–
	Mojave woodyaster	XYTO2	<i>Xylorhiza tortifolia</i>	6-26	–

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. 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). 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. California ephedra is important winter range browse for domestic cattle, sheep and goats. 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. Mojave buckwheat has a browse rating of fair to poor for cattle. Spiny hopsage as being browsed by livestock in the fall, winter, and spring. Spiny hopsage is used as forage to at least some extent by domestic sheep and goats. The large quantities of seeds produced are valuable for fattening domestic sheep. Spiny hopsage readily establishes and increases on overgrazed and denuded ranges. 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:** 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 California ephedra, especially in spring and late summer when new growth is available. 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. Spiny hopsage provides a palatable and nutritious food source for big game, particularly during late winter through spring. Elk will graze the stems of spiny menodora in the spring before the stems become woody and spiny. 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.

Other products

Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage. Some Native American peoples traditionally ground parched seeds of spiny hopsage to make pinole flour.

Other information

Big galleta's clumped growth form stabilizes blowing sand. Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling. Spiny hopsage has moderate potential for erosion control and low to high potential for long-term revegetation projects. It can improve forage, control wind erosion, and increase soil stability on gentle to moderate slopes. Spiny hopsage is suitable for highway plantings on dry sites in Nevada.

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T27S R64E S9
General legal description	Ireteba Peaks area south of Nelson, Eldorado Mountains, 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	09/15/2026
Approved by	
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:
