

Ecological site R030XC018NV

SHALLOW GRAVELLY SLOPE 11-13 P.Z.

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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 fan remnants and ballenas. Slopes range from 4 to 75 percent, but slope gradients of 4 to 50 percent are most typical. Elevations range from 5350 to 6900 feet. The soils associated with this site are shallow to a cemented pan and are well drained. The soils have formed in alluvium from limestone. Please refer to group concept R030XC034NV to view the provisional STM.

Associated sites

R030XC007NV	SHALLOW GRAVELLY LOAM 7-9 P.Z. Occurs at lower elevations, soils have an aridic moisture regime.
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Similar sites

R030XC007NV	SHALLOW GRAVELLY LOAM 7-9 P.Z. Occurs at lower elevations, less shrub diversity, aridic soil moisture regime.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Coleogyne ramosissima</i>
Herbaceous	(1) <i>Achnatherum speciosum</i>

Physiographic features

This site occurs on fan remnants and ballenas. Slopes range from 4 to 75 percent, but slope gradients of 4 to 50 percent are most typical. Elevations range from 5350 to 6900 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Ballena
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Elevation	1,630 – 2,100 m
Slope	0 – 80 %
Aspect	Aspect is not a significant factor

Climatic features

The primary air masses affecting the Spring Mountains are cold maritime polar air from the Gulf of Alaska and warmer, moist maritime subtropical air from lower latitudes. Occasionally there are invasions of cold continental polar air from northern Canada or the Rocky Mountains. Precipitation in the area results primarily from the passage of cyclones with associated fronts during fall, winter and spring; from closed cyclones in late winter and spring; and from the flow of moist tropical air from the southeast to the southwest quadrant in the summer.

The mean annual precipitation is about 7 to 11 inches and mean annual air temperature is 51 to 56 degrees F., and the frost-free season is 130 to 180 days. There is no climate station near this site.

Table 3 Representative climatic features

Frost-free period (average)	180 days
Freeze-free period (average)	
Precipitation total (average)	280 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are shallow to a cemented pan and are well drained. The soils have formed in alluvium from limestone. Surface textures are medium to coarse textured. The soil surface is covered by approximately 40 percent gravels, 3 percent cobbles and 1 percent stones. Runoff is very high, and the potential for gully, sheet or rill erosion varies with slopes. Water holding capacity is very low. The soils are dry most of the year but are moist for short periods during the winter and early spring months and occasionally for a short intermittent period following summer convection storms. The soil moisture regime is aridic bordering on ustic. The soil temperature regime is mesic. Soil series associated with this site include Goodwater.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sandy loam (2) Very gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained

Permeability class	Moderately rapid
Soil depth	30 – 50 cm
Surface fragment cover <=3"	40 – 90 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	1.27 – 1.78 cm
Calcium carbonate equivalent (0-101.6cm)	40 – 70 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	40 – 50 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

Please refer to group concept R030XC034NV to view the provisional STM.

Where fire occurs it will remove the blackbrush community and a big sagebrush-manzanitia-ceanthous community typically replaces it for a protracted period. Purple threeawn will very often dominate the understory in this situation. Where management results in abusive grazing use by livestock and/or feral horses, cool-season perennial grasses decrease as blackbrush becomes more dominant. With severe disturbance, broom snakeweed, red brome, and cheatgrass invade this site.

Fire effects:

Historical fire return intervals for blackbrush communities appear to have been on the order of centuries, allowing late seral blackbrush stands to reestablish. Low amounts of fine fuels in interspaces probably limited fire spread to only extreme fire conditions, during which

high winds, low relative humidity, and low fuel moisture led to high intensity stand-replacing crown fires. Blackbrush stands are subject to fire, and fire will start and spread easily due to the dense, close spacing nature and resinous foliage of blackbrush. Blackbrush is slow to reestablish. It is generally removed from the site for 25 to 30 years.

Most perennial grasses have root crowns that can survive wildfire. 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.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			90-151	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	56-84	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	34-67	–
2	Secondary Perennial Grasses			1-34	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	3-13	–
	little Parish's needlegrass	ACPAD	<i>Achnatherum parishii</i> var. <i>depauperatum</i>	3-13	–
	purple threeawn	ARPU9	<i>Aristida purpurea</i>	3-13	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	3-13	–
Forb					
3	Primary Perennial Forbs			13-27	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	13-27	–
4	Secondary Perennial Forbs			1-34	
	milkvetch	ASTRA	<i>Astragalus</i>	3-13	–
	Indian paintbrush	CASTI2	<i>Castilleja</i>	3-13	–
	desert larkspur	DEPA	<i>Delphinium parishii</i>	3-13	–
	lobeleaf groundsel	PAMU11	<i>Packera multilobata</i>	3-13	–
	twinpod	PHYSA2	<i>Physaria</i>	3-13	–
	desert princesplume	STPI	<i>Stanleya pinnata</i>	3-13	–
	foothill deathcamas	ZIPA2	<i>Zigadenus paniculatus</i>	3-13	–
Shrub/Vine					
5	Primary Shrubs			330-504	
	blackbrush	CORA	<i>Coleogyne ramosissima</i>	269-336	–
	Stansbury cliffrose	PUST	<i>Purshia stansburiana</i>	34-101	–
	Joshua tree	YUBR	<i>Yucca brevifolia</i>	13-34	–
	mormon tea	EPVI	<i>Ephedra viridis</i>	13-34	–
6	Secondary Shrubs			27-67	
	pointleaf manzanita	ARPU5	<i>Arctostaphylos pungens</i>	7-13	–
	Mojave ceanothus	CEGRV	<i>Ceanothus greggii</i> var. <i>vestitus</i>	7-13	–
	Apache plume	FAPA	<i>Fallugia paradoxa</i>	7-13	–
	ashy silktassel	GAFL2	<i>Garrya flavescens</i>	7-13	–
	spiny greasebush	GLSPA	<i>Glossopetalon spinescens</i> var. <i>aridum</i>	7-13	–
	desert almond	PRFA	<i>Prunus fasciculata</i>	7-13	–
	banana yucca	YUBA	<i>Yucca baccata</i>	7-13	–
Tree					
7	Trees			7-34	

	Utah juniper	JUOS	<i>Juniperus osteosperma</i>	3-17	–
	singleleaf pinyon	PIMO	<i>Pinus monophylla</i>	3-17	–

Animal community

Wildlife Interpretations: This site has little forage value for mule deer. Various songbirds, rodents, reptiles and associated predators native to the area may use this site for cover and forage. Livestock Interpretations: This site is not suited to cattle or sheep grazing due to low forage value. Wild horses and burros may use this site year round if water is available. Grazing management should be keyed to desert needlegrass and blue grama production. 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. See NRCS National Range and Pasture Handbook.

Hydrological functions

Rills are not common but can occur on this site, especially following summer convective storms due to very shallow skeletal, loamy soils with low water holding capacity with 15 to 30 percent slope. Rills are more likely to appear on steeper slopes. Water flow Patterns are few and occur in interspaces between shrubs, not connected. Should be limited except following intense summer storms. Pedestals and/or Terracettes are few to none. High gravel cover limits pedestal development. Some terracettes found on sites with slopes. Gullies – Not common.

Recreational uses

This site is used for camping, hiking and hunting.

Other information

Blackbrush contributes to desert fertility by 1) protecting the soil against wind erosion through retarding the movement of soil and increasing the accumulation of fine soil particles around its base; 2) protecting understory vegetation from the effects of high temperatures, thereby helping to retain surface nitrogen and adding organic matter to the soil; and 3) serving as a nitrogen reservoir through the storage of nitrogen in roots, leaves, and stems. Desert needlegrass seeds are easily germinated and have potential for commercial use. Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling. There is one known plant species of concern associated with this ecological site in the Spring Mountain National Recreation Area (SMNRA).

Type locality

Location 1: Clark County, NV	
Township/Range/Section	T19 S. R57 E. S24 SW
UTM zone	N
UTM northing	4016198n
UTM easting	630896e
General legal description	Approximately 2 miles west of the USFS boundary line and .75 miles north of Highway 157, Kyle Canyon road, Clark County, Nevada.

Other references

Clokey, I. 1951. Flora of the Charleston Mountains, Clark County, Nevada. University of California Press, Berkeley and Los Angeles.

Glennie, G. and D. Johnson. 2002. Guide to Species of Concern in the Spring Mountains National Recreation Area, Clark and Nye Counties, Nevada. USFS, Las Vegas, NV.

Nachlinger, J. and G. Reese. 1996. Plant Community Classification of the Spring Mountains National Recreation Area, Clark and Nye Counties, Nevada. The Nature Conservancy. Reno, Nevada.

Contributors

TJ WOLFE

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)	TJ Wolfe
Contact for lead author	State Rangeland Management Specialist
Date	09/01/2004
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rill are not common but can occur on this site, especially following summer convective storms due to very shallow loamy-skeletal, soils with low water holding capacity with 15 to 30 percent slope.

2. **Presence of water flow patterns:** Water flow patterns are few and are found in interspaces between shrubs, not connected. Should be minimal except following intense summer storms.

3. **Number and height of erosional pedestals or terracettes:** Few to none. High gravel cover limits pedestal development. Some terracettes found on sites with slopes.

4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): Bare ground from 5 to 20 percent. Mostly covered by gravels and vegetation.

5. Number of gullies and erosion associated with gullies: None

6. Extent of wind scoured, blowouts and/or depositional areas: No wind-scoured or blow out areas due to high gravel cover.

7. Amount of litter movement (describe size and distance expected to travel): Fine litter, 1 inch or less in size, is expected to move distance of slope length during intense summer convection storms. Persistent litter (large woody material) will remain in place except during catastrophic events.

8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values): Soil surface is resistant due to high amounts of gravels and vegetation cover and litter. Stability values be 3-5 (needs to be field tested).

9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness): Surface structure is moderate medium subangular blocky. Soil surface colors are light and soils have an ochric epipedon. Organic matter is 0.25 to 0.75 percent in the A horizon.

10. Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff: Plant community composition is approximately 20 percent herbaceous and 80 percent shrubs production with 25 to 35 percent ground cover. Soils have moderate permeability.

11. Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site): None. Petrocalcic horizon occurs at 11 to 14 inches.

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: Evergreen shrubs> warm-season perennial bunchgrasses = cool-season perennial bunchgrasses. (By above ground production)

Sub-dominant: Associated shrubs/trees> perennial and annual forbs. (By above ground production)

Other:

Additional:

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence): Dead branches within individual shrubs are common and standing dead shrub canopy material may be as much as 30% of total woody

canopy; some of the mature bunchgrasses have dead centers.

14. Average percent litter cover (%) and depth (in): Between shrub interspaces.

15. Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):
For normal or average growing season (through mid-May), approximately 600 lbs/ac.

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: Broom snakeweed, red brome, and cheatgrass are invaders on this site. Utah juniper is an increaser on this site.

17. Perennial plant reproductive capability: All functional groups should reproduce in average (or normal) and above average growing season years.
