

Ecological site R030XB108NV GRAVELLY INSET FAN 7-9 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 inset fans of upper piedmont slopes. Slopes range from 2 to over 15 percent, but slope gradients of 4 to 8 percent are most typical. Elevations are 3600 to 5000 feet. The soil associated with this site are very deep alluvium and well drained. Available water capacity is low. These soils typically have 35 percent rock fragments (by volume) within the soil profile.

Please refer to group concept R030XB108NV to view the provisional STM.

Associated sites

R029XY077NV	SHALLOW GRAVELLY LOAM 8-10 P.Z.
R030XB051NV	UPLAND WASH
R030XB075NV	GRAVELLY FAN 5-7 P.Z.
R030XB107NV	COARSE GRAVELLY LOAM 5-7 P.Z.
R030XB134NV	QUARTZITE OUTWASH

Similar sites

R030XB090NV	GRAVELLY FAN 7-9 P.Z. BOER4 major grass
R030XB014NV	SHALLOW GRAVELLY LOAM 7-9 P.Z. Less productive site; BOER4 major grass

R030XB107NV	COARSE GRAVELLY LOAM 5-7 P.Z. Less shrub diversity, less productive site
R030XB051NV	UPLAND WASH CORA minor spp., if present
R030XB057NV	SHALLOW GRANITIC LOAM 5-7 P.Z. soils derived from granitic parent materials
R030XB015NV	SHALLOW GRAVELLY SLOPE 7-9 P.Z. Less productive site; BOER4 major grass

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Coleogyne ramosissima</i>
Herbaceous	(1) <i>Pleuraphis rigida</i>

Physiographic features

This site occurs on inset fans of upper piedmont slopes. Slopes range from 2 to over 15 percent, but slope gradients of 4 to 8 percent are most typical. Elevations are 3600 to 5000 feet.

Table 2. Representative physiographic features

Landforms	(1) Inset fan
Elevation	1,097–1,524 m
Slope	2–15%

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 60 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)	229 mm

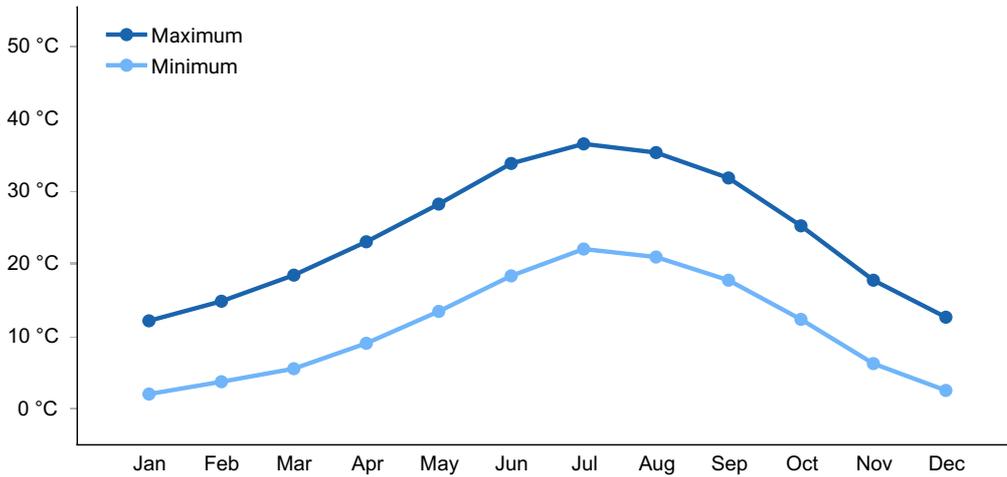


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soil associated with this site are very deep alluvium and well drained. Available water capacity is low. These soils typically have 35 percent rock fragments (by volume) within the soil profile. The soils have slow to medium runoff and moderately rapid permeability.

Table 4. Representative soil features

Drainage class	Well drained
Permeability class	Moderately rapid

Ecological dynamics

Please refer to group concept R030XB108NV to view the provisional STM.

As ecological condition deteriorates, perennial grasses and forbs decrease as woody species increase. Following wildfire, blackbrush is removed from the community as perennial grasses and shrubs such as Mojave deserttrue, white burrobrush, and spiny horsebrush increase. Introduced annual forbs and grasses readily invade this site.

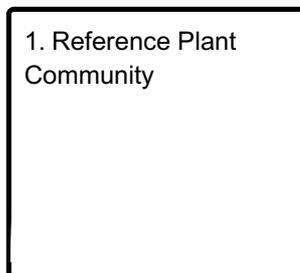
Fire Ecology:

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. Historical fire return intervals appear to have been on the order of centuries, allowing late seral blackbrush stands to reestablish. 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.

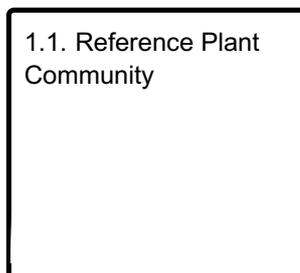
Fourwing saltbush is most common under regimes of infrequent fire and moderate browsing. Fire top-kills or kills fourwing saltbush, depending upon ecotype. Fourwing saltbush may sprout after top-kill. Winterfat is either killed or top-killed by fire, depending on fire severity. Severe fire can kill the 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. 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.

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 blackbrush. Winterfat, spiny hopsage,

fourwing saltbush, and spiny menodora are other important species associated with this site. Potential vegetative composition is about 15% grasses, 5% annual and perennial forbs and 80% shrubs. Approximate ground cover (basal and crown) is 30 to 40 percent.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	359	538	717
Grass/Grasslike	67	101	135
Forb	22	34	45
Total	448	673	897

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			27–135	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	13–67	–
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	13–67	–
2	Secondary Perennial Grasses			1–54	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	3–22	–
	threeawn	ARIST	<i>Aristida</i>	3–22	–
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	3–22	–
	squirreltail	ELEL5	<i>Elymus elymoides</i>	3–22	–
3	Annual Grasses			1–20	
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	3–22	–
Forb					
4	Perennial forbs			13–54	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	3–13	–
5	Annual forbs			1–34	
Shrub/Vine					
6	Primary shrubs			350–599	
	blackbrush	CORA	<i>Coleogyne ramosissima</i>	269–336	–

	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	13–54	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	13–54	–
	desertsenna	SEAR8	<i>Senna armata</i>	13–54	–
	Shockley's goldenhead	ACSH	<i>Acamptopappus shockleyi</i>	13–34	–
	spiny menodora	MESP2	<i>Menodora spinescens</i>	13–34	–
	spiny hopsage	GRSP	<i>Grayia spinosa</i>	13–34	–
7	Secondary shrubs			34–101	
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	7–22	–
	woolly fruit bur ragweed	AMER	<i>Ambrosia eriocentra</i>	7–22	–
	Virgin River brittlebush	ENVI	<i>Encelia virginensis</i>	7–22	–
	jointfir	EPHED	<i>Ephedra</i>	7–22	–
	Eastern Mojave buckwheat	ERFAP	<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	7–22	–
	burrobrush	HYSA	<i>Hymenoclea salsola</i>	7–22	–
	water jacket	LYAN	<i>Lycium andersonii</i>	7–22	–
	Fremont's dalea	PSFR	<i>Psoralea fremontii</i>	7–22	–
	Joshua tree	YUBR	<i>Yucca brevifolia</i>	7–22	–
	Mojave yucca	YUSC2	<i>Yucca schidigera</i>	7–22	–

Animal community

Livestock Interpretations:

This site is suitable for livestock grazing. 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. Blackbrush areas are economically important for winter grazing by domestic livestock, especially sheep. But it does provide poor forage during the spring, summer, and fall for domestic cattle, horses, and domestic sheep. Fourwing saltbush is 1 of the most palatable shrubs in the West. It provides nutritious forage for all classes of livestock. Fourwing saltbush is adapted to browsing, and may show compensatory growth after stem removal. Old crown wood can produce vigorous sprouts after new growth is browsed; however, plants decline when subjected to overuse. 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. 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. Sheep browse goldenhead when better forage is unavailable.

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:

Blackbrush areas are economically important for winter grazing primarily for several wildlife species. Mule deer and bighorn sheep generally use the blackbrush vegetation type in winter. Fourwing saltbush provides valuable habitat and year-round browse for wildlife. 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. 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.

Hydrological functions

The soils have slow to medium runoff and moderately rapid permeability.

Other products

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	T23S R58E S33
General legal description	About 5 miles northwest of Goodsprings, Goodsprings Valley, Clark County, Nevada. This site also occurs in southern Lincoln Counties.

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

BLS/LJL

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	03/13/2026
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:**
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17. **Perennial plant reproductive capability:**
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