

Ecological site R030XA047NV BARREN FAN

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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, ballenas, and lake terraces. Slope gradients of 0 to 15 percent are typical. Elevations are 2000 to about 4200 feet. The soils associated with this site are very shallow to very deep, well to somewhat excessively drained, alluvium derived from mixed parent material. Within the surface top one-inch of soil there is a horizon high in sodium. Please refer to group concept R030XB006NV to view the provisional STM.

Similar sites

R030XA068NV	CALCAREOUS HILL 5-7 P.Z. MESP2 & LYAN major shrubs
R030XA056NV	LOAMY HILL 3-5 P.Z. AMDU2 important shrub
R030XA044NV	LOAMY HILL 5-7 P.Z. LYAN, Ephedra spp., & MESP2 major shrubs
R030XA002NV	LIMESTONE HILL 5-7 P.Z. Soils from limestone PM; LATR2 minor spp., if present
R030XA061NV	LOAMY 5-7 P.Z. LYAN, Ephedra spp., ARSP5, & MESP2 major shrubs
R030XA066NV	CALCAREOUS LOAM 5-7 P.Z. AMDU2-ATCO codominant
R030XA050NV	LOAMY 3-5 P.Z. More productive site

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Atriplex confertifolia</i> (2) <i>Larrea tridentata</i>
Herbaceous	Not specified

Physiographic features

This site occurs on fan remnants, ballenas, and lake terraces. Slope gradients of 0 to 15 percent are typical. Elevations are 2000 to about 4200 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Ballena (3) Lake terrace
Elevation	610 – 1,280 m
Slope	0 – 20 %
Aspect	Aspect is not a significant factor

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 3 to 5(7) inches. Mean annual air temperature is 58 to 76 degrees F. The average growing season is about 140 to 330 days.

Table 3 Representative climatic features

Frost-free period (average)	330 days
Freeze-free period (average)	
Precipitation total (average)	130 mm

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are very shallow to very deep, well to somewhat excessively drained, alluvium derived from mixed parent material. Within the surface top one-inch of soil there is a horizon high in sodium. This sodic layer inhibits germination of most

plant seeds. Surface disturbance that disrupts and mixes this layer with adjacent soil horizons enhances seed germination. Runoff is very high, available water capacity is very low to moderate, and water intake rates are very slow to moderately rapid. The soil series associated with this site include: Alko, Armpup, Bacho, Woda, Wodavar, Yermo, and Yurm.

Table 4. Representative soil features

Surface texture	(1) Very gravelly sandy loam (2) Gravelly sandy loam (3) Extremely gravelly fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Very slow to moderately rapid
Soil depth	10 – 210 cm
Surface fragment cover <=3"	50 – 70 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	2.54 – 15.49 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 60 %
Electrical conductivity (0-101.6cm)	0 – 30 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0 – 100
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 10

Subsurface fragment volume <=3" (Depth not specified)	10 – 70 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

Please refer to group concept R030XB006NV to view the provisional STM.

Species likely to be introduced are annual grasses and forbs such as Russian thistle and red brome.

Fire Ecology:

The mean fire return interval for shadscale communities range from 35 to 100 years. Shadscale communities are usually unaffected by fire because of low fuel loads, although a year of exceptionally heavy winter rains can generate fuels by producing a heavy stand of annual forbs and grasses. Increased presence of non-native annual grasses, such as cheatgrass, can alter fire regimes by increasing fire frequency under wet to near-normal summer moisture conditions. Fire kills many creosotebush. Creosotebush is poorly adapted to fire because of its limited sprouting ability. Creosotebush survives some fires that burn patchily or are of low severity. Shadscale is fire intolerant and it does not readily recover from fire, except for establishment through seed.

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	Perennial grasses			1-6	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0-3	—
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0-3	—
2	Annual Grasses			1-3	
Forb					
3	Perennial forbs			1-9	
4	Annual forbs			1-6	
Shrub/Vine					
5	Primary shrubs			28-50	
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	22-34	—
	creosote bush	LATR2	<i>Larrea tridentata</i>	6-17	—
6	Secondary shrubs			3-11	
	pricklypear	OPUNT	<i>Opuntia</i>	1-3	—
	sandpaper plant	PETAL	<i>Petalonyx</i>	1-3	—

Animal community

Livestock Interpretations: This site has limited value for livestock grazing, due to the low forage production. Shadscale provides good browse for domestic sheep and goats. Shadscale leaves and seeds are an important component of domestic sheep and cattle winter diets. Shadscale tends to be browse tolerant. Heavy grazing during the winter and/or spring reduces shadscale. Die-off can also occur during extended periods of high precipitation. Shadscale is tolerant of early spring light-intensity browsing. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. 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: Shadscale is a valuable browse species providing a source of palatable, nutritious forage for a wide variety of wildlife. The fruits and leaves are a food source for deer,

desert bighorn sheep and pronghorn antelope. Creosotebush is unpalatable to most browsing wildlife.

Hydrological functions

Runoff is very high. Permeability is very slow to moderately rapid.

Other products

Seeds of shadscale were used by Native Americans for bread and mush. Creosotebush has been highly valued for its medicinal properties by Native Americans. It has been used to treat at least 14 illnesses. Twigs and leaves may be boiled as tea, steamed, pounded into a powder, pressed into a poultice, or heated into an infusion.

Other information

Once established, creosotebush may improve sites for annuals that grow under its canopy by trapping fine soil, organic matter, and symbiont propagules. It may also increase water infiltration and storage.

Type locality

Location 1: Nye County, NV	
Township/Range/Section	T16S R54E S8
General legal description	About 1 mile south of USHighway 93 and about 15 miles west of Indian Springs, Nye County, Nevada. This site also occurs in Southwestern Nye 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

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Approval

Kendra Moseley, 2/18/2025

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)	P NOVAK-ECHENIQUE
Contact for lead author	State Rangeland Management Specialist

Date	07/20/2012
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

- 1. Number and extent of rills:** Rills are none to rare and may be expected in areas recently subject to intense summer rainfall and on steeper slopes.

- 2. Presence of water flow patterns:** Water flow patterns none to rare and may be expected in areas recently subject to intense summer rainfall and on steeper slopes.

- 3. Number and height of erosional pedestals or terracettes:** Pedestals and terracettes are none.

- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is variable (20-50%) depending on amount of surface rock fragments.

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

- 6. Extent of wind scoured, blowouts and/or depositional areas:** None

- 7. Amount of litter movement (describe size and distance expected to travel):** Litter typically remains in place. Fine litter (foliage from grasses and annual & perennial forbs) may move the distance of slope length during intense summer convection storms or rapid snowmelt events. Persistent litter (large woody material) will remain in place except during large rainfall events.

- 8. Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability values should be 1 to 3 on most soil textures and varies depending on canopy cover. (To be field tested.)

- 9. Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is typically medium to thick platy or single grained. Soil surface colors are light grays or yellowish browns and the soils have an ochric epipedon. Organic matter of the surface 2 to 3 inches is less than 1 percent.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Sparse shrub canopy and associated litter provide some protection from raindrop impact.
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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):** None. Subsurface duripans or calcic sub-surface horizons are not to be interpreted as compacted layers.
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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: salt-desert shrubs (shadscale)

Sub-dominant: evergreen shrubs > perennial forbs > cool-season, perennial bunchgrasses = annual forbs > annual grasses

Other: succulents, warm-season bunchgrasses

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 25% of total woody canopy.
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14. **Average percent litter cover (%) and depth (in):** Between plant interspaces and under canopy (trace to 10%) and depth (<¼-inch). Litter is concentrated under shrubs and generally stays in place.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**
For normal or average growing season ~50lbs/ac. Favorable years 75 lbs/ac and unfavorable years <25 lbs/ac
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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:** Red brome, red-stem filaree, mustards, and Mediterranean grass are potential invaders on this site.
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17. **Perennial plant reproductive capability:** All functional groups should reproduce in normal and above-normal rainfall years. Little to no growth or reproduction occurs in drought years.
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