

Ecological site R030XB054NV SANDY 3-5 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 thick sand sheets that cover fan remnants. Slopes range from 8 to 30 percent. Elevations are 600 to 2000 feet. The soils associated with this site have a surface soil texture of fine or very fine sandy loam typically greater than 7 inches in depth to a soil textural change (i.e. loam) and/or a change in soil structure (i.e. single-grained to platy). Please refer to group concept R030XB054NV to view the provisional STM.

Associated sites

R030XB037NV	LIMY SAND 5-7 P.Z.
R030XB063NV	SANDHILL 5-7 P.Z.

Similar sites

R030XB004NV	SANDY 5-7 P.Z. more productive site; MESP2 and KRLA2 important species
R030XB121NV	SANDY PLAIN 3-5 P.Z. more productive site; on broad alluvial plains
R030XB063NV	SANDHILL 5-7 P.Z. PLRI3 & ACHY codominant; more productive site; occurs on sand dunes
R030XB039NV	LIMY FAN 5-7 P.Z. more productive site; MUPO2 important species
R030XB122NV	LIMY SAND 3-5 P.Z. less productive site

R030XB037NV	LIMY SAND 5-7 P.Z. less productive site
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Ambrosia dumosa</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Achnatherum hymenoides</i>

Physiographic features

This site occurs on thick sand sheets that cover fan remnants. Slopes range from 8 to 30 percent. Elevations are 600 to 2000 feet.

Table 2. Representative physiographic features

Landforms	(1) Sand sheet
Elevation	180 – 610 m
Slope	10 – 30 %
Aspect	Aspect is not a significant factor

Climatic features

The climate of the Mojave Desert has extreme fluctuations of daily temperatures, strong seasonal winds, and clear skies. The climate is arid and is characterized with cool, moist winters and hot, dry summers. Most of the rainfall falls between November and April. Summer convection storms from July to September may contribute up to 25 percent of the annual precipitation. Average annual precipitation is 3 to 5 to inches. Mean annual air temperature is 60 to 76 degrees F. The average growing season ranges from 210 to 360 days.

Table 3 Representative climatic features

Frost-free period (average)	360 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 have a surface soil texture of fine or very fine sandy loam typically greater than 7 inches in depth to a soil textural change (i.e. loam) and/or a change in soil structure (i.e. single-grained to platy). The soil surface has a cover of less than 15 percent of small, usually rounded, pebbles (1.2" diameter). Water intake rates are moderately rapid and available water capacity is very low. The soil series associated with this site include: Commski.

Table 4. Representative soil features

Surface texture	(1) Very gravelly loam (2) Extremely gravelly fine sandy loam (3) Extremely gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	180 – 210 cm
Surface fragment cover <=3"	50 – 70 %
Surface fragment cover >3"	0 – 10 %
Available water capacity (0-101.6cm)	5.08 – 5.33 cm
Calcium carbonate equivalent (0-101.6cm)	20 – 50 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	0 – 10
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 10

Subsurface fragment volume <=3" (Depth not specified)	50 – 70 %
Subsurface fragment volume >3" (Depth not specified)	0 – 10 %

Ecological dynamics

Please refer to group concept R030XB054NV to view the provisional STM.

As ecological condition deteriorates, Indian ricegrass and big galleta decrease. With continued site degradation, white bursage becomes dominant and creosotebush greatly increases. Introduced annual forbs and grasses readily invade this site.

Fire Ecology:

Fires in the Mojave Desert are infrequent and of low severity because production of annual and perennial herbs seldom provides a fuel load capable of sustaining fire. Fire generally kills white bursage. 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. Range ratany is top-killed by fire. Range ratany resprouts from the root crown after fire. White ratany is partially or completely top-killed by fire. White ratany resprouts from the root crown after fire. 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. Sand dropseed is usually killed or top killed by fire. Individual plants are badly damaged to completely killed by fire, with younger plants suffering less than older plants. Sand dropseed has the potential for postfire regeneration and seedling establishment as seeds within burned areas may remain viable. Mesa dropseed is damaged by fire.

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			282-572	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	235-437	—
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	34-101	—
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	4-11	—
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	4-11	—
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	4-11	—
2	Secondary Perennial Grasses			1-34	
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	3-13	—
3	Annual Grasses			1-20	
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	3-13	—
Forb					
4	Perennial forbs			13-34	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	3-13	—
5	Annual forbs			1-67	
Shrub/Vine					
6	Primary shrubs			69-242	
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	67-135	—
	creosote bush	LATR2	<i>Larrea tridentata</i>	7-54	—

	white ratany	KRGR	<i>Krameria grayi</i>	7-27	–
7	Secondary shrubs			34-135	
	rayless goldenhead	ACSP	<i>Acamptopappus sphaerocephalus</i>	7-34	–
	brittlebush	ENCEL	<i>Encelia</i>	7-34	–
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	7-34	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	7-34	–
	whitestem paperflower	PSCO2	<i>Psilostrophe cooperi</i>	7-34	–
	Fremont's dalea	PSFR	<i>Psoralea fremontii</i>	7-34	–
	Mojave yucca	YUSC2	<i>Yucca schidigera</i>	7-34	–

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. 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. Sand dropseed provides fair to good forage for livestock. Sand dropseed's value as livestock forage is regional and dependent upon season. If fall rains are adequate, sand dropseed may have a period of renewed growth, producing new shoots in old sheaths. The persistent green base throughout winter makes sand dropseed an important desert winter range plant. In general, sand dropseed provides fair winter forage for domestic sheep and is most preferred by cattle of dune rangelands. Cattle eat mesa dropseed all year long. Use is heaviest during the summer when the plant is actively growing. Mesa dropseed becomes unpalatable and low in nutrition at maturity. White bursage is of intermediate forage value. It is fair to good forage for horses and fair to poor for cattle and sheep. However, because there is often little other forage where white bursage grows, it is often highly valuable to browsing animals and is sensitive to browsing. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. Range ratany is an important forage species for all classes of livestock. Palatability of range ratany is rated fair to good for cattle and sheep. White ratany is important forage for all classes of livestock. White ratany decreases in response to grazing. Under heavy grazing pressure white ratany produces phenolic acids to reduce herbivory by reducing the palatability. 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: White bursage is an important browse species for wildlife. Creosotebush is unpalatable to most browsing wildlife. Range ratany is an important forage species for mule deer and bighorn sheep. Mule deer browse range ratany year-long with seasonal peaks. Mule deer peak use is from February to April and from August to October. Black-tailed jack rabbits rely almost exclusively on white ratany during the winter. 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. Sand dropseed provides poor forage for wildlife. Large mammals in general show little use of sand dropseed. Sand dropseed is not preferred by pronghorn, elk, and deer. Small mammals and birds utilize sand dropseed to a greater extent than large mammals. Pronghorns consume mesa dropseed. Mesa dropseed becomes unpalatable and low in nutrition at maturity.

Hydrological functions

Runoff is medium. Permeability is moderately rapid.

Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. Sand dropseed is an edible grass used by Native Americans. Native Americans used mesa dropseed seeds as food. White bursage is a host for sandfood, a parasitic plant. Sandfood was a valuable food supply for Native Americans. Creosotebush has been highly valued for its medicinal properties by Native Americans. Twigs and leaves may be boiled as tea, steamed, pounded into a powder, pressed into a poultice, or heated into an infusion.

Other information

Big galleta's clumped growth form stabilizes blowing sand. Sand dropseed is recommended as a component of grass seed mixtures for sandy and heavy to semi-sandy soils. Good results are seen reseeding dry low lands receiving less than 9 inches (230mm) of precipitation within rangelands of Nevada. Mesa dropseed stabilizes loose, sandy soils. White bursage may be used to revegetate disturbed sites in southwestern deserts. 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: Clark County, NV	
Township/Range/Section	T17S R68E S18
General legal description	Valley of Fire State Park, Clark County, Nevada. This site also occurs in southern Lincoln county.
Location 2: Clark County, NV	
Township/Range/Section	T14s R68e S19
General legal description	About 3 miles south of the Carp-Elgin Interchange off I15. Lower Mormon Mesa, 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/RS

Approval

Kendra Moseley, 3/11/2025

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	09/03/2026
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:
