

Ecological site R030XA058NV

LIMY 5-7 P.Z.

Last updated: 12/18/2024

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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 and fan remnants. Slopes range from 2 to 15 percent. Elevations are 2900 to 4500 feet.

Please refer to group concept R030XB005NV to view the provisional STM.

Associated sites

R030XA069NV	LIMY SAND 5-7 P.Z.
R030XA073NV	LIMY 3-5 PZ

Similar sites

R030XA073NV	LIMY 3-5 PZ Less productive site; LEFR2 major shrub
R030XA069NV	LIMY SAND 5-7 P.Z. ATCA2 & KRLA2 codominant shrubs; surface soil is sandy

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Larrea tridentata</i> (2) <i>Ambrosia dumosa</i>
Herbaceous	Not specified

Physiographic features

This site occurs on inset fans and fan remnants. Slopes range from 2 to 15 percent. Elevations are 2900 to 4500 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan remnant (2) Inset fan
Elevation	2,900–4,500 ft
Slope	2–15%
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 5 to 7 inches. Mean annual air temperature is 58 to 68 degrees F. The average growing season is about 160 to 260 days.

Table 3. Representative climatic features

Frost-free period (average)	260 days
Freeze-free period (average)	
Precipitation total (average)	7 in

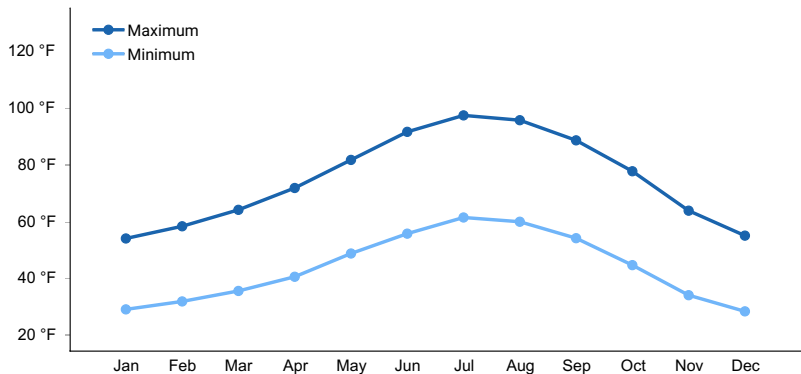


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

There are no influencing water features associated with this site.

Soil features

The soils associated with this site are moderately deep to very deep and well drained. Water intake rates are moderate to moderately rapid, available water capacity is very low, and runoff is very high depending on slope. The soil series associated with this site include: Commski and Lastchance.

Table 4. Representative soil features

Parent material	(1) Colluvium–limestone
Surface texture	(1) Very gravelly fine sandy loam (2) Extremely gravelly loam (3) Very gravelly loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	20–84 in
Surface fragment cover <=3"	60–80%
Surface fragment cover >3"	3–10%
Available water capacity (0-40in)	1.5–2.1 in
Calcium carbonate equivalent (0-40in)	5–50%
Electrical conductivity (0-40in)	0–4 mmhos/cm

Sodium adsorption ratio (0-40in)	1–13
Soil reaction (1:1 water) (0-40in)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	43–67%
Subsurface fragment volume >3" (Depth not specified)	3–5%

## Ecological dynamics

Please refer to group concept R030XB005NV to view the provisional STM.

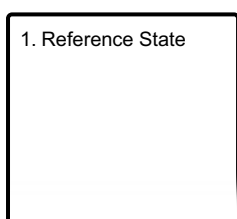
As ecological condition deteriorates, perennial grasses and forbs decrease as creosotebush and white bursage become more dominant. Introduced annual forbs and grasses readily invade this site.

### Fire Ecology:

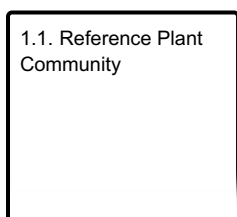
Fires in creosotebush scrub were an infrequent event in pre-settlement desert habitats, because fine fuels from winter annual plants were probably sparse, only occurring in large amounts during exceptionally wet winters. Fire generally kills white bursage. However, most white bursage plants burned because their canopies contained numerous small branches in proximity to herbaceous fuels. 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. 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. 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. 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.

## State and transition model

### Ecosystem states



### State 1 submodel, plant communities



## State 1 Reference State

## Community 1.1 Reference Plant Community

The reference plant community is dominated by white bursage and creosotebush. Desert needlegrass is an important species associated with this site but is typically restricted to micro-topographic positions that receive run-in moisture. Potential vegetative composition is about 20% perennial and annual grasses, 10% forbs and 70% shrubs. Approximate ground cover (basal and crown) is 4 to 8 percent.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	70	140	245
Grass/Grasslike	20	40	70
Forb	10	20	35
<b>Total</b>	<b>100</b>	<b>200</b>	<b>350</b>

## Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	Primary Perennial Grasses			8–30	
	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	4–20	—
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	4–10	
2	Perennial grasses			1–16	
	threeawn	ARIST	<i>Aristida</i>	1–6	—
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	1–6	—
	squirreltail	ELEL5	<i>Elymus elymoides</i>	1–6	—
3	Annual Grasses			1–30	
Forb					
4	Perennial forbs			4–16	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	1–4	—
5	Annual forbs			1–20	
	spineflower	CHOR12	<i>Chorizanthe</i>	1–4	—
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	1–4	—
Shrub/Vine					
6	Primary shrubs			65–140	
	creosote bush	LATR2	<i>Larrea tridentata</i>	40–60	—
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	20–50	—
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	1–10	—
7	Secondary shrubs			15–45	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	2–6	—
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	2–6	—
	burrobrush	HYSA	<i>Hymenoclea salsola</i>	2–6	—
	desert-thorn	LYCIU	<i>Lycium</i>	2–6	—
	spiny menodora	MESP2	<i>Menodora spinescens</i>	2–6	—
	pricklypear	OPUNT	<i>Opuntia</i>	2–6	—

## Animal community

#### Livestock Interpretations:

This site has limited value for livestock grazing, due to the low forage production. 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. 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. Creosotebush is unpalatable to livestock. Consumption of creosotebush may be fatal to sheep. 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. 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. 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.

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:

Creosotebush is unpalatable to most browsing wildlife. White bursage is an important browse species for wildlife. Range ratany is an important forage species for deer. Mule deer browse range ratany year-long with seasonal peaks. Mule deer peak use is from February to April and from August to October. 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. Desert bighorn sheep and feral horses and burros will graze desert needlegrass. 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.

### Hydrological functions

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

### Other products

Indian ricegrass was traditionally eaten by some Native Americans. The Paiutes used seed as a reserve food source. 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. White bursage is a host for sandfood, a parasitic plant. Sandfood was a valuable food supply for Native Americans. Some Native American tribes steeped the twigs of Nevada ephedra and drank the tea as a general beverage.

### Other information

Desert needlegrass may be used for groundcover in areas of light disturbance, but it is susceptible to excessive trampling. 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. White bursage may be used to revegetate disturbed sites in southwestern deserts.

### 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, 12/18/2024

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)	GK BRACKLEY
Contact for lead author	
Date	05/02/2013
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills are none to few in areas recently subject to intense summer rainfall and on steeper slopes.

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2. **Presence of water flow patterns:** Water flow patterns none to few in areas recently subject to intense summer rainfall and on steeper slopes. These are short (<1 m) and not connected.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals are rare with occurrence typically limited to areas within water flow patterns.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare Ground to 60%; surface rock fragments variable

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

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

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7. **Amount of litter movement (describe size and distance expected to travel):** Fine litter (foliage from grasses and annual & perennial forbs) expected to move 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.

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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 2 to 4 on most soil textures found on this site. Areas of this site occurring on soils that have a physical crust will probably have stability values less than 3. (To be field tested.)
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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Surface structure is typically fine to medium platy or prismatic. Soil surface colors are browns and soils are typified by an ochric epipedon. Organic matter of the surface 2 to 3 inches is less than 1 percent.
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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. Medium to fine textured surface soils have moderate to slow infiltration and medium runoff.
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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. Platy or massive sub-surface horizons, subsoil argillic horizons or hardpans shallow to the surface 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: Mojave Desert shrubs

Sub-dominant: Deep-rooted, cool-season, bunchgrasses = perennial forbs = annual forbs = shallow-rooted grasses.

Other:

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Dead branches within individual shrubs common and standing dead shrub canopy material may be as much as 35% of total woody canopy; mature bunchgrasses commonly ( $\pm 25\%$ ) have dead centers.
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14. **Average percent litter cover (%) and depth ( in):** Between plant interspaces 10-20% and depth ( $< \frac{1}{4}$ -inch)
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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  $\pm 200$  lbs/ac. Favorable years  $\pm 350$  lbs/ac and unfavorable years  $\pm 100$  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: Potential invaders include red brome, redstem filaree, annual mustards and Mediterranean grass.

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17. **Perennial plant reproductive capability:** All functional groups should reproduce in average and above average growing season year. Little growth or reproduction occurs in extreme drought or extended drought periods.
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