Ecological site R030XA116AZ
Cobbly Limy Upland
3-6" p.z.
Deep

Last updated: 10/21/2024
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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.

MLRA notes

Major Land Resource Area (MLRA): 030X–Mojave Basin and Range

This unit occurs within the Basin and Range Province and is characterized by broad basins, valleys, and old lakebeds. Widely spaced mountains trending north to south occur throughout the area. Isolated, short mountain ranges are separated by an aggraded desert plain. The mountains are fault blocks that have been tilted up. Long alluvial fans coalesce with dry lakebeds between some of the ranges.

LRU notes

AZ LRU 30-1 – Lower Mohave Desert Elevations range from 400 to 2500 feet and precipitation averages 3 to 6 inches per year. Vegetation includes creosotebush, white bursage, Mormon tea, and brittlebush. The soil temperature regime is hyperthermic and the soil moisture regime is typic aridic.

Ecological site concept

This ecological site is found on uplands with deep, skeletal, calcareous soils. Cobble-sized fragments armor the soil surface and dominate the soil profile.

Associated sites

R030XA109AZ	**Limy Upland 3-6" p.z. Deep** Limy Upland, Deep, 3 to 6

Similar sites

R030XA109AZ	**Limy Upland 3-6" p.z. Deep** Limy Upland, Deep, 3 to 6

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Larrea tridentata* (2) *Encelia farinosa*

Herbaceous	Not specified

Physiographic features

This ecological site occurs in an upland position on summits and shoulders of fan terraces. The site is identifiable by the numerous stones and cobbles on the soil surface.

Table 2. Representative physiographic features

Landforms	(1) Fan (2) Terrace
Flooding frequency	None
Ponding frequency	None
Elevation	150 – 610 m
Slope	0 – 20 %
Aspect	Aspect is not a significant factor

Climatic features

The 30-1AZ Lower Mohave Desert Shrub land resource unit is characterized by a hot, dry climate. The average annual rainfall is 3 to 6 inches, but it can be extremely variable (e.g. from 0 to 11 inches). There can be long periods when little or no precipitation is received. Most of the precipitation for the year could arrive in just a couple of storms. The soil moisture regime is typic aridic and the soil temperature regime is hyperthermic. Winter precipitation from November through April occurs as gentle rains from storms coming out of the Pacific Ocean. Snow is very rare and only falls in the highest mountains. A seasonal drought occurs in May and June. Summer/fall precipitation from July through October comes from spotty, unreliable, and sometimes violent thunderstorms. The moisture originates in the Gulf of Mexico (and the Pacific Ocean in the fall) and flows into the state on the north end of the Mexican monsoon. Strong winds are common, especially during the spring.

Table 3 Representative climatic features

Frost-free period (average)	330 days
Freeze-free period (average)	370 days
Precipitation total (average)	150 mm

Influencing water features

Soil features

The soil of this ecological site is deep to very deep and is very cobbly throughout the soil profile. The soil surface ranges from very cobbly sandy loam to extremely cobbly sandy loam. The subsurface textures range from very gravelly sandy loam to very gravelly sand. The soil

is derived from parent material of mixed igneous and metamorphic alluvium. The available water holding capacity is low to moderate. The permeability of the soil is moderately rapid to rapid. Hazard of erosion by water: slight to moderate; wind: slight.

A typical soil profile is:
A-0 to 2 inches; extremely cobbly sandy loam
Bk-2 to 12 inches; gravelly sandy loam
Bkq-12 to 60 inches; extremely gravelly sany loam

This ecological site has been correlated to map unit 697060, Huevi very gravelly sandy loam, Mohave County, AZ, Central Part SSA.

Table 4. Representative soil features

Surface texture	(1) Very cobbly sandy loam (2) Extremely cobbly sandy loam
Family particle size	(1) Sandy
Drainage class	Well drained
Permeability class	Moderately rapid
Soil depth	150 cm
Surface fragment cover <=3"	50 – 60 %
Surface fragment cover >3"	70 – 100 %
Available water capacity (0-101.6cm)	12.7 – 25.4 cm
Calcium carbonate equivalent (0-101.6cm)	10 – 30 %
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)	70 – 80 %
Subsurface fragment volume >3" (Depth not specified)	0 – 20 %

Ecological dynamics

Cobbly Limy Upland, 3"-6" p.z., Deep, is a widely dispersed desert shrub community. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), the shift in total productivity with shift slightly toward seasonal herbaceous production following periods of rain. Livestock and wildlife use are limited on this site due low forage production and dispersed habitat. Dominant shrubs are creosote and white bursage. Assorted half-shrubs are widely scattered.

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				0-8	
	big galleta	PLRI3	*Pleuraphis rigida*	0-8	–
2				4-8	
	sixweeks fescue	VUOC	*Vulpia octoflora*	4-8	–
3				4-8	
	Grass, annual	2GA	*Grass, annual*	4-8	–
Forb					
4				4-20	
	desert Indianwheat	PLOV	*Plantago ovata*	4-20	–
5				39-78	
	Forb, annual	2FA	*Forb, annual*	39-78	–
6				4-8	
	devil's spineflower	CHRI	*Chorizanthe rigida*	4-8	–
Shrub/Vine					
7				157-196	
	creosote bush	LATR2	*Larrea tridentata*	157-191	–
8				20-39	
	white ratany	KRGR	*Krameria grayi*	20-39	–
9				39-78	
	brittlebush	ENFA	*Encelia farinosa*	39-78	–
10				0-8	
	burrobush	AMDU2	*Ambrosia dumosa*	0-8	–
11				0-11	
	Shrub, other	2S	*Shrub, other*	0-11	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)

Contributors

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Approval

Kendra Moseley, 10/21/2024

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)	
Contact for lead author	
Date	09/16/2026
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:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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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):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and 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):**

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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:

    Sub-dominant:

    Other:

    Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**