USDA Natural Resources
Conservation Service

Ecological site R030XA105AZ
Limy Fan 3-6" 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.

Figure 1. Mapped extent

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

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, calcareous soils. that are sandy loam to loam in texture throughout and non-skeletal.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Larrea tridentata* (2) *Ambrosia dumosa*
Herbaceous	Not specified

Physiographic features

This ecological site is located in an upland position on summits and shoulders of stream terraces and fan terraces.

Table 2. Representative physiographic features

Landforms	(1) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	500–1,200 ft
Slope	1–7%
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)	325 days
Freeze-free period (average)	365 days
Precipitation total (average)	6 in

Influencing water features

Soil features

The soil of this ecological site is deep. Surface textures are very gravelly loam and very gravelly loamy sand. Subsoil texture is sandy loam, gravelly sand and loamy sand. Parent material is stream alluvium and eolian sand. Geologic formation is varied. Available water capacity is moderate. Water erosion hazard is low to moderate; wind erosion hazard is low to high. Runoff is slow. Soils are non-saline, non-sodic with a mildly to moderately alkaline pH of 7.4-8.2. Soil moisture regime is typic Aridic; soil temerature is hyperthermic.

A typical soil profile is:
A-0 to 2 inches; gravelly loam
Bk1-2 to 8 inches; gravelly sandy loam
Bk2-8 to 29 inches; sand loam
Bk3-29 to 41 inches; sandy loam

2Bk4-41 to 60 inches; gravelly sand

Soils correlated to this ecological site include map unit 627039, Coolidge and Denure families, Mohave County, AZ, Southern Part SSA.

Table 4. Representative soil features

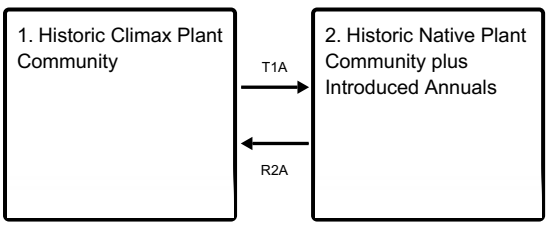
Surface texture	(1) Very gravelly loam (2) Loamy sand
Family particle size	(1) Sandy
Drainage class	Well drained
Permeability class	Moderate to moderately rapid
Soil depth	60 in
Surface fragment cover <=3"	0–20%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	4.2–7.8 in
Calcium carbonate equivalent (0-40in)	2–30%
Electrical conductivity (0-40in)	0 mmhos/cm
Sodium adsorption ratio (0-40in)	0
Soil reaction (1:1 water) (0-40in)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	20–45%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Limy Fan, 3"-6" p.z., is a dispersed desert shrub dominated ecological site. Perennial grasses and forbs are present in natural depressions. Annual forbs and grasses flourish following rainfall. 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. Dominant shrubs are creosote and white bursage. Assorted half-shrubs are widely scattered.

State and transition model

Ecosystem states



State 1 submodel, plant communities

1.1. Historic Climax Plant Community

State 2 submodel, plant communities

2.1. Non-native Annuals Understory

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The dominant aspect of this site is a misture of desert shrubs with some grasses and forbs. Major shrubs include creosotebush, white bursage, and white ratany. Annual grasses and forbs are abundant during good moisture years.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	105	115	128
Grass/Grasslike	22	25	30
Forb	8	10	15
Total	**135**	**150**	**173**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0-2%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	0%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	0%

Table 7. Canopy structure (% cover)

Height Above Ground (Ft)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.5	–	–	–	1-3%
>0.5 <= 1	–	–	0-2%	–
>1 <= 2	–	4-6%	–	–
>2 <= 4.5	–	–	–	–
>4.5 <= 13	–	–	–	–
>13 <= 40	–	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Figure 4. Plant community growth curve (percent production by month). AZ3011, 30.1 3-6" p.z. all sites. Growth begins in late winter, most growth occurs in the spring..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	7	30	32	13	7	3	5	2	1	0	0

Figure 5. Plant community growth curve (percent production by month). AZ3083, 30.27 3-6" p.z. white bursage. Growth begins in early spring. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some plants may break dormancy and produce a flush of growth. Flowers and sets seed by July..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	20	40	20	15	0	0	0	0	0	0

Figure 6. Plant community growth curve (percent production by month). AZ3085, 30.27 3-6" p.z. white ratany. Most growth occurs in the spring. Flowers and sets seed by July..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	20	35	20	20	0	0	0	0	0	0

Figure 7. Plant community growth curve (percent production by month). AZ3282, 30.28 10-13" p.z. creosotebush. Growth occurs mostly in the spring using stored winter moisture. Flowers and sets seed by July..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	10	20	50	20	0	0	0	0	0	0

State 2
Historic Native Plant Community plus Introduced Annuals

Community 2.1
Non-native Annuals Understory

This plant community resembles the historic native plant community, but exotic annuals have been introduced. Non-native species include red brome, Mediterranean grass (Schismus spp.), and filaree. The flourish of non-native annuals that occurs following rainfalls may preclude native annuals.

Transition T1A
State 1 to 2

Wind or mechanical transport of non-native seed or propagules.

Restoration pathway R2A
State 2 to 1

None known.

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				0–8	
	big galleta	PLRI3	*Pleuraphis rigida*	0–8	–
2				2–3	
	low woollygrass	DAPU7	*Dasyochloa pulchella*	2–3	–
3				2–4	
	sixweeks grama	BOBA2	*Bouteloua barbata*	2–4	–
4				2–4	
	sixweeks fescue	VUOC	*Vulpia octoflora*	2–4	–
5				2–4	
	needle grama	BOAR	*Bouteloua aristidoides*	2–4	–
6				2–4	
	sixweeks threeawn	ARAD	*Aristida adscensionis*	2–4	–
Forb					
7				2–4	
	desert Indianwheat	PLOV	*Plantago ovata*	2–4	–
8				2–3	
	desert lily	HEUN2	*Hesperocallis undulata*	2–3	–
9				0–2	
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	0–2	–
10				2–8	
	Forb, annual	2FA	*Forb, annual*	2–8	–
Shrub/Vine					
11				60–68	
	creosote bush	LATR2	*Larrea tridentata*	60–68	–
12				30–38	
	burrobush	AMDU2	*Ambrosia dumosa*	30–38	–
13				15–22	
	white ratany	KRGR	*Krameria grayi*	15–22	–
14				0–3	
	pricklypear	OPUNT	*Opuntia*	0–3	–
15				0–8	
	Shrub, other	2S	*Shrub, other*	0–8	–

Other information

Because of the low density of plants and the lack of desirable species for grazing, it is hard to measure degredation.

If for some reason shrubs are removed from the site, only annual grasses and forbs will remain.

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	05/10/2025
Approved by	Kendra Moseley
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):**

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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:**