

Ecological site R030XB211AZ

Limy Fan 6-9" p.z.

Last updated: 10/21/2024
Accessed: 05/21/2025

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.

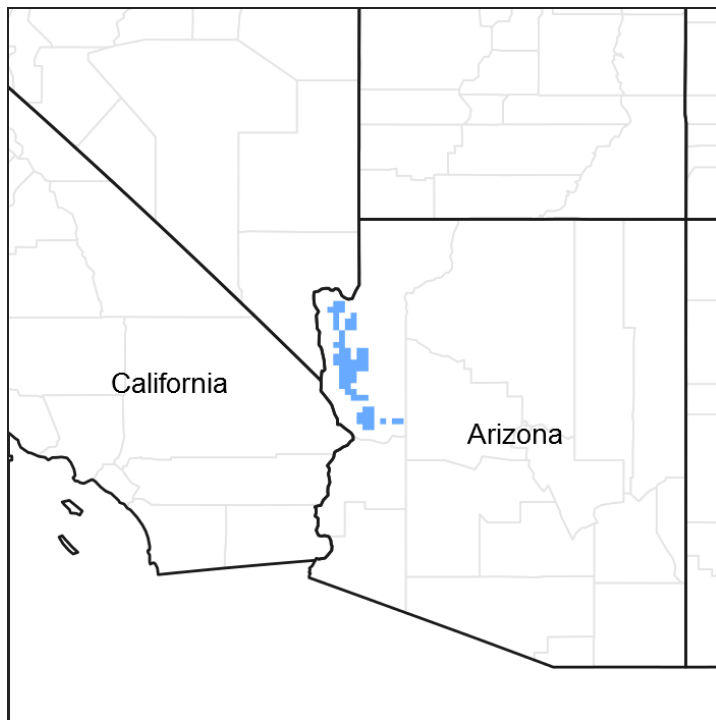


Figure 1. Mapped extent

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 30-2 – Middle Mohave Desert

Elevations range from 1500 to 3200 feet and precipitation averages 6 to 9 inches per year. Vegetation includes creosotebush, white bursage, yucca, prickly pear and cholla species, Mormon tea, flattop buckwheat, ratany, winterfat, bush muhly, threeawns, and big galleta. The soil temperature regime is thermic and the soil moisture regime is typic aridic.

Ecological site concept

This ecological site is located on gently sloping uplands. Soils are deep, non-skeletal, calcareous sandy loams.

Associated sites

R030XB212AZ	Limy Slopes 6-9" p.z.
R030XB227AZ	Clay Loam Upland 6-9" p.z.

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 ecological site is found in an upland position on fan terraces.

Table 2. Representative physiographic features

Landforms	(1) Fan (2) Terrace
Flooding frequency	None
Ponding frequency	None
Elevation	579–884 m
Slope	1–15%

Aspect	Aspect is not a significant factor
--------	------------------------------------

Climatic features

The climate is arid and warm. Annual precipitation ranges from 6 to 9 inches. About 65 percent of the rainfall comes from October through May as gentle rain from Pacific storms which may last for a couple of days. The rest of the rainfall comes during the summer monsoon season from July through September as spotty, brief, intense thunderstorms. Snow rarely falls, and only remains on the ground a few hours at most. Annual air temperature ranges from 59 to 70 degrees F. The average frost-free period ranges from 156 to 259 days.

Table 3. Representative climatic features

Frost-free period (average)	259 days
Freeze-free period (average)	290 days
Precipitation total (average)	229 mm

Influencing water features

Soil features

The soil of this ecological site is deep to very deep. Soil surface textures include gravelly fine sandy loam, gravelly sandy loam, gravelly clay loam, very cobbly loam and very gravelly loam. The soil subsoil textures include gravelly sandy clay loam, gravelly sandy loam, sandy clay loam and gravelly loamy sand. The soil parent material is mixed fan alluvium. The available water capacity of the soil is moderate to high. The soil's erosion hazard is slight to moderate for wind and water. The soil is non-sodic, non-saline with a pH range of 7.2-8.6 (neutral to strongly alkaline). The soil moisture regime is typic aridic and the soil temperature regime is thermic. Calcium carbonate equivalent content is 15-30% throughout the soil profile.

- A typical soil profile is:
- A-0 to 2 inches; gravelly sandy loam
 - Bw-2 to 24 inches; sandy loam
 - Btw-24 to 38 inches; sandy clay loam
 - Bk-38 to 60 inches; gravelly coarse sandy loam

The soil taxinomic classification is Fine-loamy, mixed, superactive, thermic Typic Calciargids.

This ecological site has been correlated to map units 627067, 627083 and 627089, Kinley

and Poachie soils in the Mohave County, AZ, Southern Part SSA and map unit 701087, Meadview soil in the Grand Canyon, AZ, Parts of Coconino and Mohave Counties SSA.

Table 4. Representative soil features

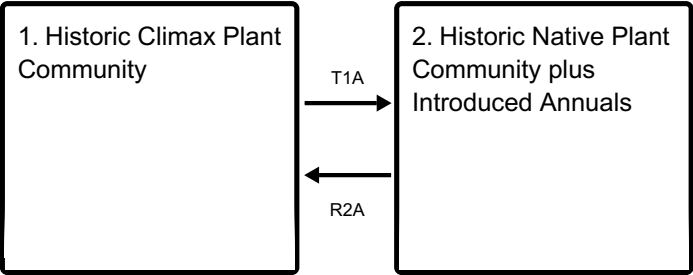
Surface texture	(1) Fine gravelly sandy loam (2) Gravelly loam (3) Very cobbly clay loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderate
Soil depth	152 cm
Surface fragment cover ≤3"	20–45%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	12.7–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	1–40%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume ≤3" (Depth not specified)	0–20%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

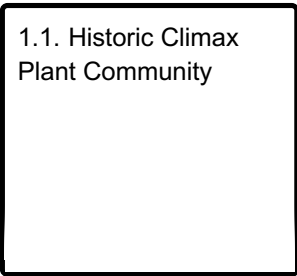
Limy Fan, 6"-9" p.z., is a dispersed desert shrub dominated ecological site. Perennial grasses and forbs are present in natural depressions. Annual forbs and grasses flourish following rainfall. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), the shift 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

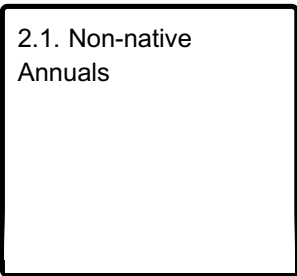
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The dominant aspect of this ecological site is a desert shrub with a sparse stand of grasses and forbs. Creosotebush and white bursage are the major shrubs. Josua tree and Nevada Mormon tea are noticeable due to their size. With severe disturbance, creosotebush and white bursage will increase. Introduced annual forbs and grasses, such as red brome and filaree will invade.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	80	196	291
Grass/Grasslike	19	45	78
Forb	12	34	59
Tree	1	6	19
Total	112	281	447

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 (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	—	—	—	0-2%
>0.15 <= 0.3	—	—	0-2%	—
>0.3 <= 0.6	—	—	—	—
>0.6 <= 1.4	—	8-12%	—	—
>1.4 <= 4	0-2%	—	—	—
>4 <= 12	—	—	—	—
>12 <= 24	—	—	—	—
>24 <= 37	—	—	—	—
>37	—	—	—	—

Figure 5. Plant community growth curve (percent production by month). AZ3022, 30.2 6-9" p.z. upland sites. Growth begins in the late winter, most growth occurs in the spring..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	19	33	18	7	7	11	3	0	0	0

Figure 6. Plant community growth curve (percent production by month). AZ3074, 30.23, 6-9 p.z., Nevada Mormon Tea. Growth primarily in spring and early summer months..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	15	25	20	15	15	10	0	0	0	0

State 2

Historic Native Plant Community plus Introduced Annuals

Community 2.1

Non-native Annuals

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

Introduction of non-native annual forb and grass seed.

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 (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				2–13	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	2–13	–
2				0–6	

	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0–6	–
3				17–36	
	Grass, annual	2GA	<i>Grass, annual</i>	17–36	–
4				0–6	
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–6	–
Forb					
5				2–9	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	2–9	–
6				0–9	
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–9	–
7				13–43	
	Forb, annual	2FA	<i>Forb, annual</i>	13–43	–
	Forb, annual	2FA	<i>Forb, annual</i>	3–16	–
Shrub/Vine					
8				84–99	
	creosote bush	LATR2	<i>Larrea tridentata</i>	84–99	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–3	–
9				56–84	
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	56–84	–
10				2–9	
	water jacket	LYAN	<i>Lycium andersonii</i>	2–9	–
11				0–9	
	littleleaf ratany	KRER	<i>Krameria erecta</i>	0–9	–
12				0–6	
	Mojave yucca	YUSC2	<i>Yucca schidigera</i>	0–6	–
13				0–13	
	rayless goldenhead	ACSP	<i>Acamptopappus sphaerocephalus</i>	0–13	–
14				2–13	
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	2–13	–
15				0–2	
	Eastern Mojave buckwheat	ERFAP	<i>Eriogonum fasciculatum</i> var. <i>polifolium</i>	0–2	–
16				0–2	

	ocotillo	FOSP2	<i>Fouquieria splendens</i>	0–2	–
17				2–13	
	Shrub, other	2S	<i>Shrub, other</i>	2–13	–
Tree					
18				2–13	
	Joshua tree	YUBR	<i>Yucca brevifolia</i>	2–13	–

Contributors

Harmon Hodgkinson
 Harmon S. Hodgkinson
 Larry D. Ellicott

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	05/21/2025
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):**
-
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:**
-