USDA Natural Resources
Conservation Service

Ecological site R030XC331AZ
Sandy Loam Slopes 10-13" p.z. Limy, Skeletal

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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.

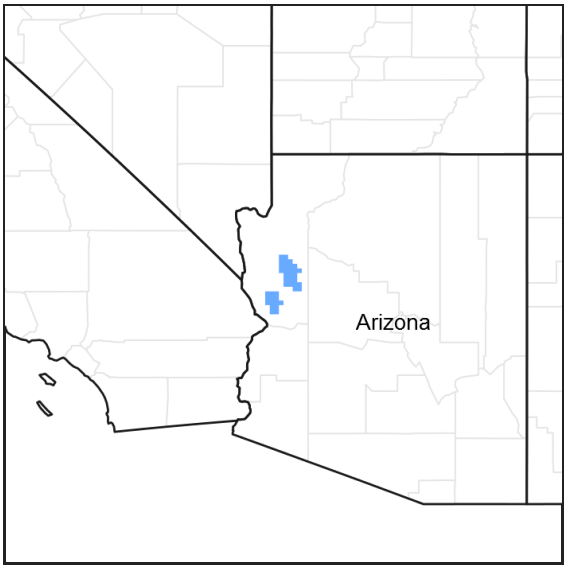


Figure 1. Mapped extent

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 30-3 – Upper Mohave Desert

Elevations range from 2800 to 4500 feet and precipitation averages 9 to 12 inches per year. Vegetation includes Joshua tree, blackbrush, creosotebush, ratany, bush muhly, big galleta, black grama, desert needlegrass, and Indian ricegrass. The soil temperature regime is thermic and the soil moisture regime is typic aridic.

Ecological site concept

This ecological site is located on steeply sloping (15%-65%) uplands. Soils are moderately deep to deep. Soil surface is armored with variously sourced cobble and stone.

Associated sites

R030XC313AZ	**Limy Upland 10-13" p.z. Deep**
R030XC318AZ	**Sandy Loam Upland 10-13" p.z. Limy, Skeletal**

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Achnatherum speciosum* (2) *Salazaria mexicana*
Herbaceous	(1) *Pleuraphis rigida* (2) *Bouteloua eriopoda*

Physiographic features

This ecological site is found in an upland position on shoulders, summits and sideslopes of fan terraces. It is found on all aspects.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan
Flooding frequency	None
Ponding frequency	None
Elevation	2,500–4,200 ft
Slope	15–50%
Aspect	Aspect is not a significant factor

Climatic features

The climate is arid and warm. Annual precipitation ranges from 10 to 13 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 46 to 76 degrees F. The average frost-free period ranges from 121 to 231 days.

Table 3. Representative climatic features

Frost-free period (average)	231 days
Freeze-free period (average)	269 days
Precipitation total (average)	13 in

Influencing water features

Soil features

The soil of this ecological site is deep to very deep with surface textures of very gravelly loamy sand and gravelly loamy sand. Subsoil textures are very gravelly sandy clay loam, very gravelly loam, very gravelly sandy loam, gravelly loamy sand, gravelly loam, gravelly sandy clay loam and gravelly sandy loam. The available water capacity is moderate. The soil's erosion hazard by water is severe and by wind is slight to moderate. Runoff from the soil is slow. The soil is non-sodic, non-saline with a pH of 7.0-8.4 (neutral to moderately alkaline). The soil temperature

regime is thermic and moisture regime is typic aridic. The soil surface contains 50-60% gravel. Lime content in the soil profile is 15-35% calcium carbonate equilavent.

A typical soil profile is:
A-0 to 2 inches; very gravelly sandy loam
Bw-2 to 60 inches; very gravelly sandy loam

The taxanomic classification of soils correlated to this ecological site include Loamy-skeletal, mixed, superactive, thermic Typic Haplocambids and Loamy-skeletal, mixed, superactive, thermic Typic Haplocalcids.

Soil mapping units correlated to this ecological site include 697030, Detrital soil, Mohave County, AZ, Central Part SSA, 627066, 627078 and 627084, Kinley and Nikel family soils, Mohave County, AZ, Southern Part SSA.

Table 4. Representative soil features

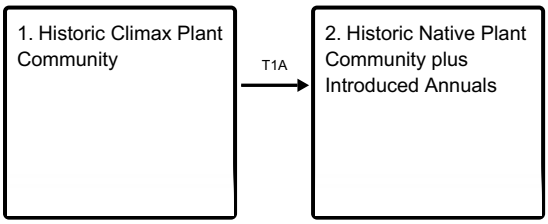
Surface texture	(1) Very gravelly loamy sand (2) Gravelly loamy sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	60 in
Surface fragment cover <=3"	45–70%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	2.5–5 in
Calcium carbonate equivalent (0-40in)	3–14%
Electrical conductivity (0-40in)	0–2 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)	45–70%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Sandy Loam Slopes, Limy, Skeletal, 10"-13" p.z., is a shrub dominated ecological site. Sparse perennial grasses and forbs are occasionally encountered. Annual forbs and grasses flourish following rainfall. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), they flourish following wet winters.

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

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The dominant aspect of this plant community is a desert grass-shrub mix. Major grasses are big galleta, black grama, indian ricegrass and bush muhly. Shrubs include Mexican bladdersage, winterfat, rayless goldenhead and range ratany.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	106	255	400
Grass/Grasslike	82	205	327
Forb	12	40	73
Total	**200**	**500**	**800**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	1-3%
Grass/grasslike foliar cover	0-2%
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	–	–	–	0-2%
>0.5 <= 1	–	–	4-6%	–
>1 <= 2	–	–	–	–
>2 <= 4.5	–	9-11%	–	–
>4.5 <= 13	–	–	–	–
>13 <= 40	–	–	–	–
>40 <= 80	–	–	–	–
>80 <= 120	–	–	–	–
>120	–	–	–	–

Figure 5. Plant community growth curve (percent production by month). AZ3024, 30.3 10-13" p.z. upland sites. Growth begins in the spring and continues through the summer..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	8	18	18	11	14	20	8	2	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 wild oat, 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.

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				50–100	
	big galleta	PLRI3	*Pleuraphis rigida*	50–100	–
2				25–50	
	black grama	BOER4	*Bouteloua eriopoda*	25–50	–
3				5–25	
	Indian ricegrass	ACHY	*Achnatherum hymenoides*	5–25	–
4				5–25	
	bush muhly	MUPO2	*Muhlenbergia porteri*	5–25	–
5				0–10	
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–10	–
6				0–15	

	low woollygrass	DAPU7	*Dasyochloa pulchella*	0–15	–
7				0–15	
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	0–15	–
8				5–25	
	Grass, perennial	2GP	*Grass, perennial*	5–25	–
Forb					
9				5–10	
	desert marigold	BAMU	*Baileya multiradiata*	5–10	–
10				5–10	
	desert trumpet	ERIN4	*Eriogonum inflatum*	5–10	–
11				5–15	
	Forb, perennial	2FP	*Forb, perennial*	5–15	–
	Grass, annual	2GA	*Grass, annual*	0–12	–
12				5–15	
	Forb, annual	2FA	*Forb, annual*	5–15	–
Shrub/Vine					
13				5–25	
	littleleaf ratany	KRER	*Krameria erecta*	5–25	–
14				5–25	
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	5–25	–
15				25–50	
	rayless goldenhead	ACSP	*Acamptopappus sphaerocephalus*	25–50	–
16				25–50	
	winterfat	KRLA2	*Krascheninnikovia lanata*	25–50	–
17				25–50	
	Mexican bladdersage	SAME	*Salazaria mexicana*	25–50	–
18				5–25	
	catclaw acacia	ACGR	*Acacia greggii*	5–25	–
19				0–15	
	whitestem paperflower	PSCO2	*Psilostrophe cooperi*	0–15	–
20				0–25	
	creosote bush	LATR2	*Larrea tridentata*	0–25	–
21				0–10	
	Nevada jointfir	EPNE	*Ephedra nevadensis*	0–10	–
22				0–10	
	banana yucca	YUBA	*Yucca baccata*	0–10	–
23				0–10	
	Eastern Mojave buckwheat	ERFAP	*Eriogonum fasciculatum var. polifolium*	0–10	–
24				0–5	
	buckhorn cholla	CYACA2	*Cylindropuntia acanthocarpa var. acanthocarpa*	0–5	–
25				0–10	
	beavertail pricklypear	OPBA2	*Opuntia basilaris*	0–10	–

26				5–25	
	Shrub, other	2S	*Shrub, other*	5–25	–

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	05/11/2025
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:**