

Ecological site R030XC315AZ Sandy Loam Upland 10-13" p.z. Fine, Gravelly

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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.

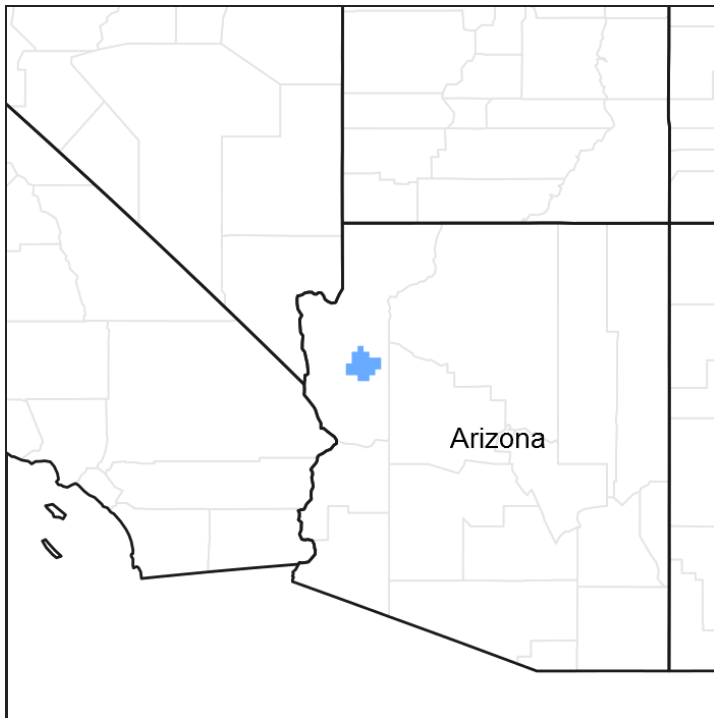


Figure 1. Mapped extent

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 gently sloping uplands. Soils are non-calcareous, moderately deep to deep. Textures range from gravelly loamy sand to gravelly loamy sand.

Associated sites

R030XC315AZ	Sandy Loam Upland 10-13" p.z. Fine, Gravelly
R030XC331AZ	Sandy Loam Slopes 10-13" p.z. Limy, Skeletal
R030XC334AZ	Clay Loam Upland 10-13" p.z.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Bouteloua eriopoda</i> (2) <i>Pleuraphis rigida</i>

Physiographic features

This ecological site is found in an upland position on ridges, shoulders and sideslopes of fan terraces.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan
Flooding frequency	None
Ponding frequency	None

Elevation	1,006–1,219 m
Slope	2–15%
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)	330 mm

Influencing water features

Soil features

The soil of this ecological site is deep with a surface texture of gravelly loamy sand. Subsoil textures are sandy clay loam, sandy clay, gravelly sandy clay and gravelly loamy sand. The available water capacity is high. The soil's erosion hazard from water is high and from wind is moderate. Runoff from the soil is slow. The soil is non-saline, non-sodic with pH of 7.0-7.6 (neutral to mildly alkaline). The soil moisture regime is typic aridic and temperature regime is thermic.

A typical soil profile is:

A-0 to 4 inches; gravelly loamy sand

BA-4 to 10 inches; gravelly sandy loam

2Bt1-10 to 26 inches; gravelly sandy clay

2Bt2-26 to 40 inches; gravelly sandy clay loam

3Bkn-40 to 60 inches; very gravelly sand

The taxonomic classification of the soil is Fine, mixed, superactive, thermic Typic Haplargids.

This ecological site has been correlated to map unit 627130, Whitehouse family soil, Mohave County, AZ, SSA.

Table 4. Representative soil features

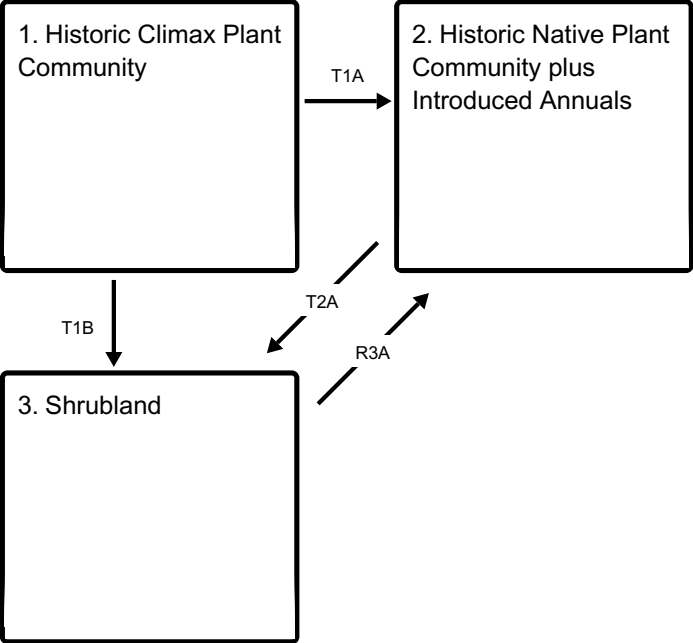
Surface texture	(1) Gravelly sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow
Soil depth	152 cm
Surface fragment cover <=3"	20–45%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	12.7–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0–1%
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)	20–45%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

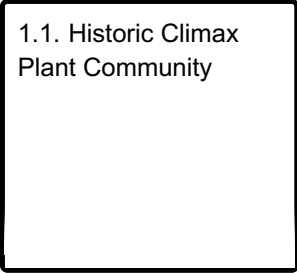
Sandy Loam Upland, Fine, Gravelly, 10"-13" p.z., is a shrub-grassland ecological site. Shrubs are well-dispersed across the site. Annual forbs and grasses flourish following rainfall. Natural disturbances are rare. After introduction of non-native annuals (forbs and/or grasses), the shift in total productivity is shift increased seasonal herbaceous production following periods of rain. Continuous, yearlong, livestock grazing will remove the perennial grass dominance.

State and transition model

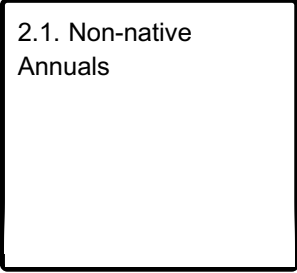
Ecosystem states



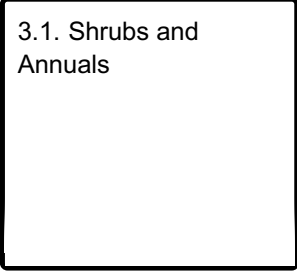
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
Historic Climax Plant Community

Community 1.1

Historic Climax Plant Community

The dominant aspect of this plant community is a desert shrub-grass mix. Major grasses include black grama, big galleta and bush muhly. Dominant shrubs in about equal amounts are range ratany (*Krameria erecta*), Anderson wolfberry (*Lycium Andersonii*), rayless goldenhead, broom snakeweed, banana yucca and turpentinebush. Scattered Utah Juniper can occur on the site.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	66	213	528
Shrub/Vine	37	129	335
Forb	8	34	96
Tree	1	17	49
Total	112	393	1008

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	1-3%
Grass/grasslike foliar cover	1-3%
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	—	—	—	1-3%
>0.15 <= 0.3	—	—	4-6%	—
>0.3 <= 0.6	—	—	—	—
>0.6 <= 1.4	—	9-11%	—	—
>1.4 <= 4	0-1%	—	—	—
>4 <= 12	—	—	—	—
>12 <= 24	—	—	—	—
>24 <= 37	—	—	—	—
>37	—	—	—	—

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.

State 3

Shrubland

Community 3.1

Shrubs and Annuals

Perennial grass canopy cover is reduced and largely absent. Shrub density and cover has increased. Native and non-native annual forbs and grasses dominate the plant community following rainfall. Remnant perennial grasses will not be able to re-colonize; removal of grazing pressure will allow existing perennial grasses to regain vigor.

Transition T1A

State 1 to 2

Introduction of non-native annual forb and grass seed.

Transition T1B

State 1 to 3

Yearlong continuous livestock grazing. Introduction of non-native annual forb and grass seed.

Transition T2A

State 2 to 3

Yearlong continuous livestock grazing.

Restoration pathway R3A

State 3 to 2

Prescribed grazing/no grazing. Range seeding may accelerate establishment of perennial grasses and desirable shrubs.

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				39–78	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	39–78	—
2				39–78	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	39–78	—
3				4–20	
	Parish's threeawn	ARPUP5	<i>Aristida purpurea</i> var. <i>parishii</i>	4–20	—
4				4–20	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	4–20	—
5				0–8	
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0–8	—
6				0–8	

	desert needlegrass	ACSP12	<i>Achnatherum speciosum</i>	0–8	–
7				4–20	
	Grass, perennial	2GP	<i>Grass, perennial</i>	4–20	–
Forb					
8				4–11	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	4–11	–
9				8–16	
	Forb, perennial	2FP	<i>Forb, perennial</i>	8–16	–
10				4–11	
	Forb, annual	2FA	<i>Forb, annual</i>	4–11	–
Shrub/Vine					
11				4–20	
	littleleaf ratany	KRER	<i>Krameria erecta</i>	4–20	–
12				4–20	
	water jacket	LYAN	<i>Lycium andersonii</i>	4–20	–
13				4–20	
	rayless goldenhead	ACSP	<i>Acamptopappus sphaerocephalus</i>	4–20	–
14				4–20	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	4–20	–
15				4–20	
	banana yucca	YUBA	<i>Yucca baccata</i>	4–20	–
16				4–20	
	turpentine bush	ERLA12	<i>Ericameria laricifolia</i>	4–20	–
17				0–8	
	buckhorn cholla	CYACM	<i>Cylindropuntia acanthocarpa var. major</i>	0–8	–
18				4–11	
	crucifixion thorn	CAHO3	<i>Canotia holacantha</i>	4–11	–
19				4–20	

	Shrub, other	2S	<i>Shrub, other</i>	4–20	–
Tree					
20				4–20	
	Utah juniper	JUOS	<i>Juniperus osteosperma</i>	4–20	–

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	05/20/2025
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:**
-