USDA Natural Resources
Conservation Service

Ecological site R030XA114AZ
Sandy Loam Upland 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.

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 located on relatively flat plains and alluvial fans. Soils are deep, non-calcareous with sandy loam to loam textures.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Ambrosia dumosa*
Herbaceous	(1) *Pleuraphis rigida* (2) *Muhlenbergia porteri*

Physiographic features

This site occurs in a upland position. The plant community neither benefits significantly from run-in or runoff moisture. It can occur on all exposures, and usually occurs in recent alluvium on flood plains and low terraces.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Alluvial fan
Flooding frequency	None
Ponding frequency	None

Elevation	600–2,500 ft
Slope	0–3%
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

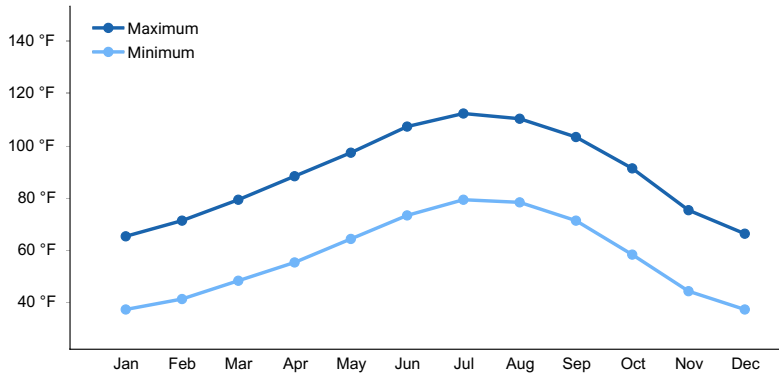


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

Soils are deep. Soils can absorb and hold all moisture the climate provides. Soluble salt accumulations are low; pH range is 7.9-8.4. With good vegetative cover, infiltration rates are high. Erosion is average; plant-soil moisture relationships are good. Gravel may occur throughout the soil, but is generally less than 35% of total soil volume.

Table 4. Representative soil features

Surface texture	(1) Gravelly fine sandy loam (2) Sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to rapid
Soil depth	60 in
Surface fragment cover <=3"	0–35%
Surface fragment cover >3"	0%

Soil reaction (1:1 water) (0-40in)	7.9–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–35%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

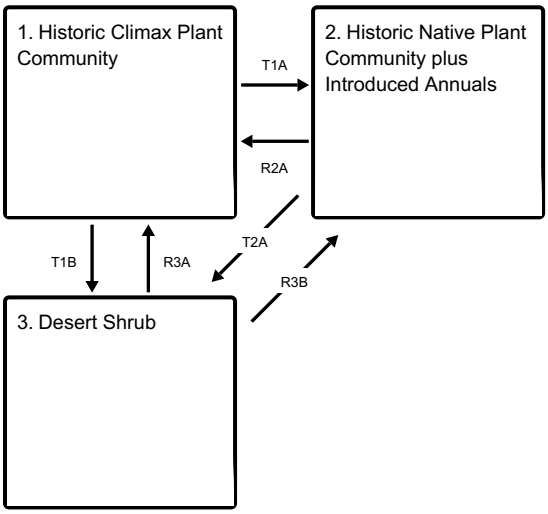
Sandy Loam Upland, 3"-6" p.z., ecological site is co-dominated by shrubs and perennial grasses. Trees are widely scattered. This site is favored by livestock and wildlife for it's gentle terrain and relative abundance of forage. Continuous heavy grazing will remove perennial grasses. Once introduced, non-native forbs and grasses flourish after rainfall.

This site is easily traversed by cows, calves and stocker cattle. It will be one of the first upland sites to respond to grazing management. Extra care must be taken to maintain a good vegetative cover for erosion control. Fencing and water developments are important on these areas to permit grazing management.

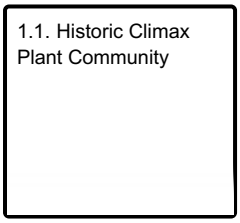
While this site doesn't provide all the elements for good wildlife habitat, the site is usually near the bottom sites or cultivated areas that provide feed, cover and water.

State and transition model

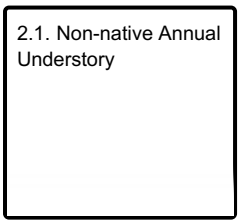
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities

3.1. Creosote and White Bursage

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

The plant community on this site is a mixture of desert shrubs and trees with an understory of perennial grasses. Winter and summer annual grasses are abundant in years with above average moisture in the respective season.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	120	180	220
Shrub/Vine	120	170	200
Forb	40	50	60
Total	**280**	**400**	**480**

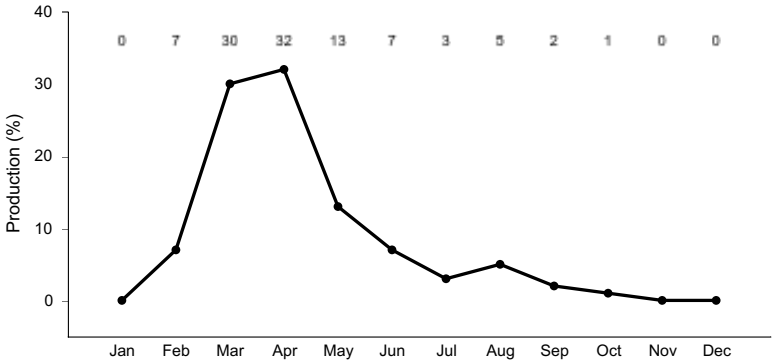


Figure 3. Plant community growth curve (percent production by month). AZ3011, 30.1 3-6" p.z. all sites. Growth begins in late winter, most growth occurs in the spring..

State 2
Historic Native Plant Community plus Introduced Annuals

Community 2.1
Non-native Annual 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.

State 3
Desert Shrub

Community 3.1
Creosote and White Bursage

This plant community is dominated by creosote and white bursage with mixed shrubs throughout. Annual forbs and grasses flourish after wet winters. Non-native annuals are present. Remnant perennial grasses may be found within the protection of shrub bases.

Transition T1A
State 1 to 2

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

Transition T1B
State 1 to 3

Long term yearlong livestock or burro grazing. Introduction of non-native annuals.

Restoration pathway R2A
State 2 to 1

None known.

Transition T2A
State 2 to 3

Long-term, yearlong grazing by livestock or burros.

Restoration pathway R3A
State 3 to 1

None known.

Restoration pathway R3B
State 3 to 2

Prescribed grazing/no grazing. Targeted range planting if perennial grass seed source depleted.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				60–120	
	big galleta	PLRI3	*Pleuraphis rigida*	60–120	–
2				20–40	
	bush muhly	MUPO2	*Muhlenbergia porteri*	20–40	–
3				20–40	
	sixweeks threeawn	ARAD	*Aristida adscensionis*	0–20	–
	needle grama	BOAR	*Bouteloua aristidoides*	0–20	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	0–20	–
	Rothrock's grama	BORO2	*Bouteloua rothrockii*	0–20	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	0–20	–
4				4–20	
	Santa Rita threeawn	ARCAG	*Aristida californica var. glabrata*	0–10	–

	purple threeawn	ARPU9	*Aristida purpurea*	0–10	–
	blue threeawn	ARPUN	*Aristida purpurea var. nealleyi*	0–10	–
	Parish's threeawn	ARPUP5	*Aristida purpurea var. parishii*	0–10	–
Forb					
5				20–40	
	pepperweed	LEPID	*Lepidium*	0–20	–
	evening primrose	OENOT	*Oenothera*	0–20	–
	desert Indianwheat	PLOV	*Plantago ovata*	0–20	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–20	–
6				4–20	
	scarlet spiderling	BOCO	*Boerhavia coccinea*	4–10	–
	cryptantha	CRYPT	*Cryptantha*	4–10	–
	Gordon's bladderpod	LEGO	*Lesquerella gordonii*	4–10	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	4–10	–
	Emory's globemallow	SPEM	*Sphaeralcea emoryi*	4–10	–
	woolly tidestromia	TILA2	*Tidestromia lanuginosa*	4–10	–
Shrub/Vine					
7				20–60	
	burrobush	AMDU2	*Ambrosia dumosa*	20–60	–
8				20–40	
	button brittlebush	ENFR	*Encelia frutescens*	20–40	–
9				4–20	
	creosote bush	LATR2	*Larrea tridentata*	4–20	–
10				20–40	
	whitethorn acacia	ACCO2	*Acacia constricta*	0–10	–
	catclaw acacia	ACGR	*Acacia greggii*	0–10	–
	fourwing saltbush	ATCA2	*Atriplex canescens*	0–10	–
	singlewhorl burrobrush	HYMO	*Hymenoclea monogyra*	0–10	–
	white ratany	KRGR	*Krameria grayi*	0–10	–
	desert-thorn	LYCIU	*Lycium*	0–10	–
	Mexican bladdersage	SAME	*Salazaria mexicana*	0–10	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	0–10	–
11				4–20	
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	0–5	–
	candy barrelcactus	FEWI	*Ferocactus wislizeni*	0–5	–
	ocotillo	FOSP2	*Fouquieria splendens*	0–5	–
Tree					
12				0–5	
	desert ironwood	OLTE	*Olneya tesota*	0–5	–
	yellow paloverde	PAMI5	*Parkinsonia microphylla*	0–5	–

Contributors

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Unknown

Approval

Kendra Moseley, 2/18/2025

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:**