Ecological site R030XA110AZ
Loamy Bottom 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 in bottom position and receives additional moisture from run-on. Surface soils of loam, fine sandy loam, or silt loam are 4 to 8 inches thick.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Pleuraphis rigida*

Physiographic features

This range site occurs in a bottom position. It benefits significantly from run-in moisture from adjacent areas and suffers from approximately the same loss from runoff. It occurs on all exposures on recent alluvial fans and drainage ways.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Drainageway
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Rare to occasional

Ponding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Ponding frequency	None to rare
Elevation	183–762 m
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)	152 mm

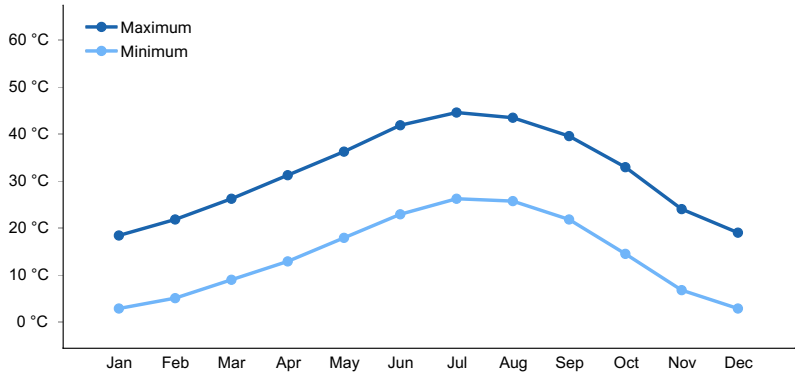


Figure 1. Monthly average minimum and maximum temperature

Influencing water features

Soil features

The soils characterizing this site are deep. Surface soil ranges from 4-8 inches deep with a texture of loam, fine sandy loam or silt loam. Soluble salt accumulations are low and pH ranges from 7.9-8.4. With good vegetative cover, infiltration rates are high. Stability against erosion processes is poor; plant-soil moisture relationships are moderate. Gravel may occur throughout the soil, but is generally less than 15% of the total soil volume.

A typical soil profile is:
Ap-0 to 13 inches; loam; slightly effervescent
C1-13 to 28 inches; sstratified very fine sandy loam; strongly effervescent
C2-28 to 60 inches; stratified very fine sandy loam; strongly effervescent

Table 4. Representative soil features

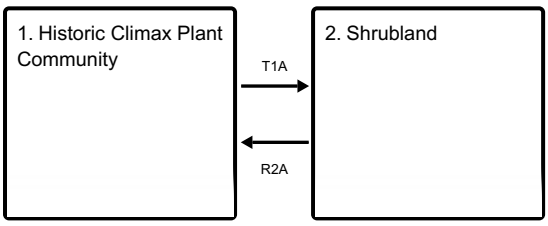
Surface texture	(1) Loam (2) Loamy fine sand (3) Loamy sand
Family particle size	(1) Loamy
Drainage class	Well drained to moderately well drained
Permeability class	Moderate to rapid
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Soil reaction (1:1 water) (0-101.6cm)	7.9–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

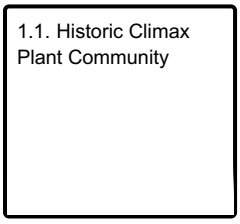
This site is located on large swales, flats in canyon bottoms, components of large desert plains, and loamy flood plains of drainage ways. It is open grassland with scattered trees and shrubs. In good winter precipitation years, spring wildflowers lend color to the areas. Yearlong livestock grazing will deplete the perennial grass community, allowing shrubs to increase in density and size.

State and transition model

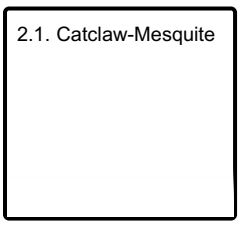
Ecosystem states



State 1 submodel, plant communities



State 2 submodel, plant communities



State 1
Historic Climax Plant Community

Community 1.1

Historic Climax Plant Community

The plant community is a mixture of perennial grasses and forbs, annual grasses and forbs, and scattered shrubs. This site is favored by livestock due to accessibility, longer grean period, and nearness to water. When plant cover is depleted, the site is very susceptible to sheet and gully erosion and woody plant increase, notabley mesquite and creosotebush. When gullied, much of the area once flooded in a loamy bottom no longer receives this extra moisture.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	280	375	392
Shrub/Vine	84	135	140
Forb	28	45	56
Total	**392**	**555**	**588**

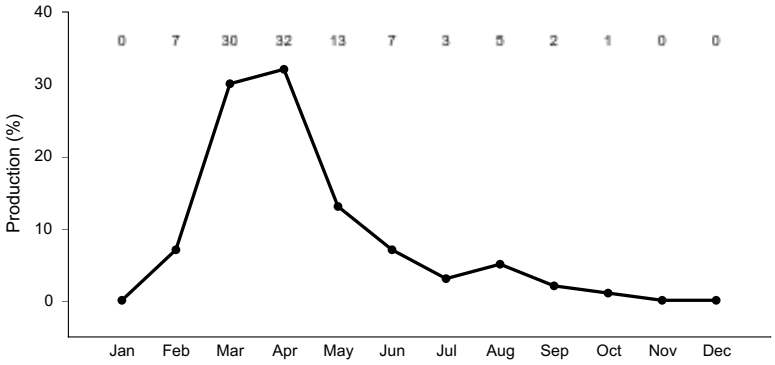


Figure 3. Plant community growth curve (percent production by month). AZ3011, 30.1 3-6" p.z. all sites. Growth begins in late winter, most growth occurs in the spring..

State 2
Shrubland

Community 2.1
Catclaw-Mesquite

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. Non-native annual grasses and forbs like; red brome, cheatgrass, kochia, tumble pigweed, russian thistle, tumble mustard, yellow starthistle, wild oats and filaree, can invade and dominate areas of the site with very low tobosa cover. Perennial forbs like russian knapweed and leafy spurge could invade and, perhaps, dominate this site. These species can, over time, reduce the seed-bank of native annual grasses and forbs.

Transition T1A
State 1 to 2

Long-term yearlong livestock grazing and introduction of non-native annual forb and grass seed.

Restoration pathway R2A
State 2 to 1

None known.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				196–280	
	big galleta	PLRI3	*Pleuraphis rigida*	196–280	–
2				6–56	
	bush muhly	MUPO2	*Muhlenbergia porteri*	6–56	–
3				6–56	
	threeawn	ARIST	*Aristida*	6–56	–
4	**Annual Grasses**			28–84	
	threeawn	ARIST	*Aristida*	6–28	–
	needle grama	BOAR	*Bouteloua aristidoides*	6–28	–
	sixweeks grama	BOBA2	*Bouteloua barbata*	6–28	–
	muhly	MUHLE	*Muhlenbergia*	6–28	–
	sixweeks fescue	VUOC	*Vulpia octoflora*	6–28	–
Forb					
5				28–56	
	Forb, annual	2FA	*Forb, annual*	0–28	–
	pepperweed	LEPID	*Lepidium*	0–28	–
	plantain	PLANT	*Plantago*	0–28	–
	desert globemallow	SPAM2	*Sphaeralcea ambigua*	0–28	–
	Coulter's globemallow	SPCO2	*Sphaeralcea coulteri*	0–28	–
Shrub/Vine					
6				28–112	
	whitethorn acacia	ACCO2	*Acacia constricta*	6–28	–
	catclaw acacia	ACGR	*Acacia greggii*	6–28	–
	crucifixion thorn	CAEM4	*Castela emoryi*	6–28	–
	desert-thorn	LYCIU	*Lycium*	6–28	–
	desert ironwood	OLTE	*Olneya tesota*	6–28	–
	honey mesquite	PRGL2	*Prosopis glandulosa*	6–28	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	6–28	–
7				6–28	
	Engelmann's hedgehog cactus	ECEN	*Echinocereus engelmannii*	0–11	–
	candy barrelcactus	FEWI	*Ferocactus wislizeni*	0–11	–
	cactus apple	OPEN3	*Opuntia engelmannii*	0–11	–

Contributors

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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	05/13/2025
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:

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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:**
