

Ecological site R030XA104AZ Granitic Hills 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.



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

AZ CRA 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. 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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Encelia farinosa</i> (2) <i>Larrea tridentata</i>
Herbaceous	Not specified

Physiographic features

This ecological site occurs as moderately steep to steep granitic hills and mountains. It occurs on all aspects.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Mountain
Flooding frequency	None
Ponding frequency	None
Elevation	500–3,000 ft
Slope	20–65%
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

Influencing water features

Soil features

Soils are very shallow to shallow. Textures are extremely gravelly sandy loam to very cobbly sandy loam with subsoil textures that are very gravelly sandy loam to extremely gravelly sandy loam. Parent material is granitic alluvium with a geological formation of granite. Available water capacity is very low; permeability is moderately rapid. Water erosion hazard is severe; wind erosion hazard is slight. Runoff is very rapid. Soils are non-saline, non-sodic with pH range of 8.0-8.2 (moderately alkaline). Soil moisture regime is typic aridic; temperature regime is hyperthermic. Landform and position are backslopes, shoulders and summits of hills and mountains. Rock outcrop is associated with this site. Depth to hard granite or gneiss ranges from 4 to 20 inches.

A typical soil profile is:

A-0 to 2 inches; extremely gravelly sandy loam

Bw-2 to 13 inches; very gravelly sandy loam

2R-13 inches; unweathered bedrock

This ecological site is correlated to map unit 627048, Goldroad Soil Series, in the Mohave County, AZ, Southern Part SSA and map unit 701103, Lithic Torriorthents, in the Grand Canyon Area, AZ, Parts of Coconino and Mohave County SSA.

Table 4. Representative soil features

Parent material	(1) Alluvium–granite
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Surface texture	(1) Very gravelly sandy loam (2) Very cobbly
Family particle size	(1) Loamy
Permeability class	Moderate to moderately rapid
Soil depth	4–20 in
Surface fragment cover ≤3"	25%
Surface fragment cover >3"	30%
Available water capacity (0–40in)	0.5–1 in
Calcium carbonate equivalent (0–40in)	1–10%
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)	25%
Subsurface fragment volume >3" (Depth not specified)	30%

Ecological dynamics

The plant communities found on an ecological site are naturally variable. Composition and production will vary with yearly conditions, location, aspect, and the natural variability of the soils. The historical climax plant community represents the natural potential plant communities found on relict or relatively undisturbed sites. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as grazing, fire, or drought.

Production data provided in this site description is standardized to air-dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

NRCS uses a Similarity Index to compare existing plant communities to the plant communities described here. Similarity Index is determined by comparing the production and composition of a plant community to the production and composition of a plant community described in this site description. To determine Similarity Index, compare the production (air-dry weight) of each species to that shown in the plant community description. For each species, count no more than the maximum amount shown for the species, and for each group, count no more than the maximum shown for the group. Divide the resulting total by the total normal year production shown in the plant community description. If rainfall has been significantly above or below normal, use the total production shown for above or below normal years. If field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of the year production before comparing it to the site description. The growth curve can be used as a guide for estimating production at the end of the summer growing season.

State and transition model



**State 1
Historic Climax Plant Community**

**Community 1.1
Historic Climax Plant Community**

The dominant aspect of the site is a sparse desert-shrub cover with annual grasses and forbs intermixed. Creosotebush, white brittlebush and white bursage are the major shrubs. This site is ephemeral range (grasses and forbs) for grazing. Because of steep rocky slopes, domestic livestock use is very difficult to achieve. The stocking rate will have to be determined each year based on growth from winter to spring moisture.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Shrub/Vine	162	175	188
Grass/Grasslike	38	31	50
Forb	25	44	38
Total	225	250	276

Figure 4. 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..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	7	30	32	13	7	3	5	2	1	0	0

Figure 5. Plant community growth curve (percent production by month). AZ3082, 30.27 3-6" p.z. creosotebush. Growth occurs mostly in the spring using stored winter moisture. Flowers and sets seed by July..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	20	40	20	20	0	0	0	0	0	0

Figure 6. Plant community growth curve (percent production by month). AZ3083, 30.27 3-6" p.z. white bursage. Growth begins in early spring. Dormancy occurs during the hot summer months. With sufficient summer/fall precipitation, some plants may break dormancy and produce a flush of growth. Flowers and sets seed by July..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	20	40	20	15	0	0	0	0	0	0

Figure 7. Plant community growth curve (percent production by month). AZ3084, 30.27 3-6" p.z. white brittlebush. Growth begins in the late winter and continues through mid spring, goes dormant during the summer heat. Flowers and sets seed by July..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	30	45	20	0	0	0	0	0	0	0

Figure 8. Plant community growth curve (percent production by month). AZ3086, 30.27 3-6" p.z. big galleta. Growth begins in the late winter and early spring, goes dormant in May through June, most growth occurs during the summer rainy season..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	10	20	10	0	0	15	40	5	0	0	0

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				0–8	
	Parish's threeawn	ARPUP5	<i>Aristida purpurea var. parishii</i>	0–8	–
2				2–12	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	2–12	–
3				0–5	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	0–5	–
4				0–5	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	0–5	–
5				0–5	
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0–5	–
6				2–5	
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	2–5	–
7				2–12	
	Grass, annual	2GA	<i>Grass, annual</i>	2–12	–
Forb					
8				2–12	
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	2–12	–
9				2–8	
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	2–8	–
10				2–12	
	Forb, perennial	2FP	<i>Forb, perennial</i>	2–12	–
11				2–12	
	Forb, annual	2FA	<i>Forb, annual</i>	2–12	–
Shrub/Vine					
12				38–50	
	brittlebush	ENFA	<i>Encelia farinosa</i>	38–50	–
13				50–75	
	creosote bush	LATR2	<i>Larrea tridentata</i>	50–75	–
14				38–50	
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	38–50	–
15				0–8	
	Nevada jointfir	EPNE	<i>Ephedra nevadensis</i>	0–8	–
16				0–5	
	white ratany	KRGR	<i>Krameria grayi</i>	0–5	–
17				0–5	
	sweetbush	BEJU	<i>Bebbia juncea</i>	0–5	–
18				0–2	
19				2–12	
	Shrub, other	2S	<i>Shrub, other</i>	2–12	–

Animal community

Wildlife found on this ecological site include lizards, snakes, ants, and blacktail jackrabbit.

Other information

With severe disturbance, white brittlebush and white bursage will increase; unwanted annuals will invade.

Type locality

Location 1: Mohave County, AZ	
Township/Range/Section	T29N R22W S32
General legal description	Willow Beach quad - 1 mile south of Willow Beach side of Jumbo Wash.

Contributors

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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	
Approved by	
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:**
