

Ecological site R040XC307AZ

Limy Fan, Sandy 3"-7" p.z.

Accessed: 05/18/2024

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): 040X–Sonoran Basin and Range

AZ 40.3 – Colorado Sonoran Desert

Elevations range from 300 to 1200 feet and precipitation averages 3 to 7 inches per year. Vegetation includes creosotebush, white bursage, brittlebush, Mormon tea, teddybear cholla, elephant tree, smoke tree, ocotillo, and big galleta. The soil temperature regime is hyperthermic and the soil moisture regime is typic aridic. This unit occurs within the Basin and Range Physiographic Province and is characterized by numerous mountain ranges that rise abruptly from broad, plain-like valleys and basins. Igneous and metamorphic rock classes dominate the mountain ranges and sediments filling the basins represent combinations of fluvial, lacustrine, colluvial and alluvial deposits.

Table 1. Dominant plant species

Tree	(1) <i>Parkinsonia microphylla</i>
Shrub	(1) <i>Ambrosia dumosa</i> (2) <i>Larrea tridentata</i> var. <i>tridentata</i>
Herbaceous	(1) <i>Pleuraphis rigida</i> (2) <i>Muhlenbergia porteri</i>

Physiographic features

This site occurs as nearly level to gently sloping fan terraces.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan
Elevation	23–305 m
Slope	1–3%

Climatic features

Precipitation in this common resource area ranges from 3-7 inches yearly. Despite historical averages in rainfall amounts, as one moves from east to west in this resource area rains become more unpredictable and variable with Coefficients of Variation of annual rainfall equal to 44% at Gila Bend and 65% at Mohawk. Winter-Summer rainfall ratios are 40-60%. Summer rains fall July-September, originate in the Gulf of Mexico and are convective, usually brief intense thunderstorms. Summer thunderstorms usually form over the mountains in the afternoon and spread to the valleys and plains in the evening. The intensity of this precipitation is moderate to heavy, but rarely lasts more than half an hour. Many times these storms produce little more than gusty winds and light showers. Cool season moisture tends to be frontal, originate in the Pacific and Gulf of California and falls in widespread storms with long

duration and low intensity. Snow is very rare and falls normally only in the higher mountains.

Mean temperatures for the hottest month (Jul) is 93 F; the coldest month (Jan) is 53 F. Extreme temperatures of 125 F and 10 F have been recorded. Long periods with little or no effective moisture occur frequently.

The winter-spring precipitation is the most dependable on the site. Perennial grasses, though classed as warm season growers, grow actively year-round when moisture is available. Shrubs and trees generally respond to seasonal moisture. The two rainy periods bring about their respective production of either winter or summer annual grasses and forbs.

Table 3. Representative climatic features

Frost-free period (average)	363 days
Freeze-free period (average)	0 days
Precipitation total (average)	178 mm

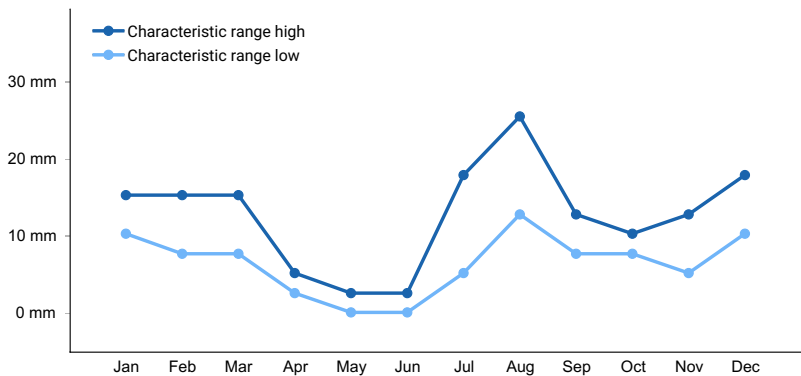


Figure 1. Monthly precipitation range

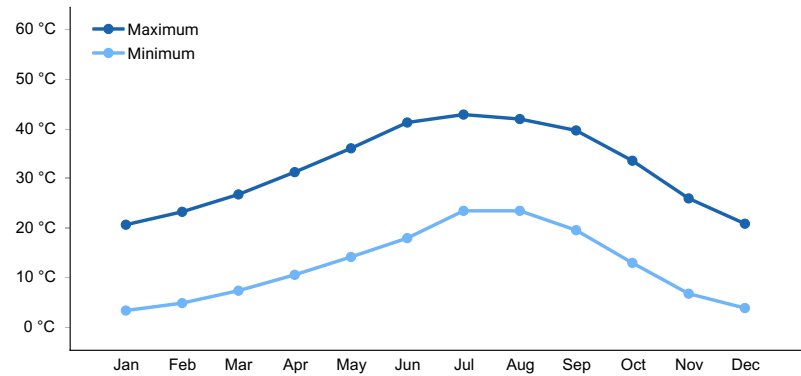


Figure 2. Monthly average minimum and maximum temperature

Influencing water features

Soil features

These are deep soils. They are calcareous throughout. They may either be sandy throughout, or coarse loamy with a surface cap of sand or loamy sand. Plant soil-moisture relationships are fair.

Soils mapped on this site include: in SSA-627 Southern Mohave county MU Superstition-108; SSA-649 Yuma-Wellton area MU's Superstition-28, Wellton-33 & 34, Dateland-34; SSA-653 Gila Bend-Ajo area MU's Coolidge LFS-11 & Denure LFS-57; SSA-656 Colorado River Indian Reservation MU Superstition-28 & 29.

Table 4. Representative soil features

Surface texture	(1) Sand (2) Loam (3) Loamy fine sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to very rapid
Soil depth	152 cm
Surface fragment cover ≤3"	0–3%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	10.67–18.29 cm
Calcium carbonate equivalent (0-101.6cm)	3–10%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	7.9–8.4
Subsurface fragment volume ≤3" (Depth not specified)	0–10%
Subsurface fragment volume >3" (Depth not specified)	0%

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 fire, grazing, 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 amount shown for each group. Divide the resulting total by the total normal year production shown in the plant community description. If the 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 potential plant community is a mixture of desert shrubs with an understory of perennial grasses and forbs. Winter and summer annual grasses and forbs are abundant in years with above-average moisture in their respective seasons. Continued grazing during the various growing seasons results in a decline in perennial grasses and an increase in creosotebush. The sandy surface of these soils is subject to severe wind erosion as the perennial plant cover is depleted.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	280	323	364
Grass/Grasslike	168	196	224
Forb	28	41	56
Tree	6	11	17
Total	482	571	661

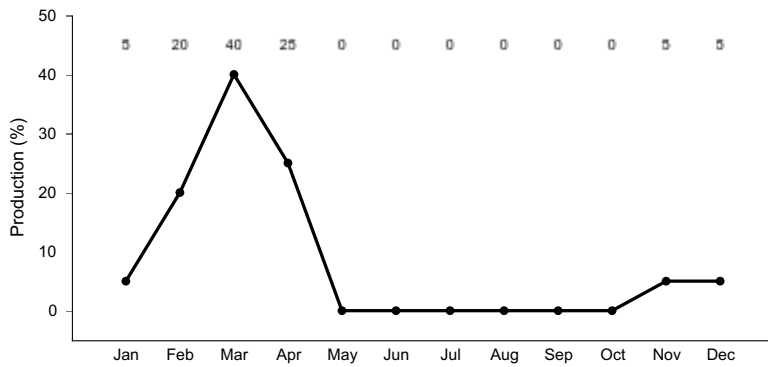


Figure 4. Plant community growth curve (percent production by month).
AZ4041, 40.3 3-7" p.z. all sites. Most growth occurs in the winter to early spring, plants are dormant May through October..

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	Dominant Grass			140–168	
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	140–168	–
2	Misc. Perennial Grasses			17–28	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	6–11	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	2–6	–
	California threeawn	ARCA9	<i>Aristida californica</i>	2–6	–
	threeawn	ARIST	<i>Aristida</i>	2–6	–
3	Annual Grasses			6–28	
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0–11	–
	littleseed muhly	MUMI	<i>Muhlenbergia microsperma</i>	0–6	–
	Bigelow's bluegrass	POBI	<i>Poa bigelovii</i>	0–3	–
	sixweeks threeawn	ARAD	<i>Aristida adscensionis</i>	0–3	–
	needle grama	BOAR	<i>Bouteloua aristidoides</i>	0–3	–
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	0–3	–
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	0–1	–
Forb					
4	Misc. Forbs			28–56	
	Texas pipewort	ERTE8	<i>Eriocaulon texense</i>	1–6	–
	Thomas' buckwheat	ERTH	<i>Eriogonum thomasii</i>	0–1	–
	spurge	EUPHO	<i>Euphorbia</i>	0–1	–
	hairy desertsunflower	GECA2	<i>Geraea canescens</i>	0–1	–
	desert lily	HEUN2	<i>Hesperocallis undulata</i>	0–1	–
	Arizona poppy	KAGR	<i>Kallstroemia grandiflora</i>	0–1	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	0–1	–
	shaggyfruit pepperweed	LELA	<i>Lepidium lasiocarpum</i>	0–1	–
	Bigelow's linanthus	LIBI2	<i>Linanthus bigelovii</i>	0–1	–
	foothill deervetch	LOHU2	<i>Lotus humistratus</i>	0–1	–
	strigose bird's-foot trefoil	LOSTT	<i>Lotus strigosus</i> var. <i>tomentellus</i>	0–1	–

	Coulter's lupine	LUSP2	<i>Lupinus sparsiflorus</i>	0-1	-
	California desertdandelion	MACA6	<i>Malacothrix californica</i>	0-1	-
	blazingstar	MENTZ	<i>Mentzelia</i>	0-1	-
	bristly nama	NAHI	<i>Nama hispidum</i>	0-1	-
	glandular threadplant	NEGL	<i>Nemacladus glanduliferus</i>	0-1	-
	evening primrose	OENOT	<i>Oenothera</i>	0-1	-
	desert evening primrose	OEPR	<i>Oenothera primiveris</i>	0-1	-
	lineleaf whitepuff	OLLI	<i>Oligomeris linifolia</i>	0-1	-
	combseed	PECTO	<i>Pectocarya</i>	0-1	-
	manybristle chinchweed	PEPA2	<i>Pectis papposa</i>	0-1	-
	phacelia	PHACE	<i>Phacelia</i>	0-1	-
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	0-1	-
	desert unicorn-plant	PRAL4	<i>Proboscidea althaeifolia</i>	0-1	-
	New Mexico plumeseed	RANE	<i>Rafinesquia neomexicana</i>	0-1	-
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	0-1	-
	Coulter's globemallow	SPCO2	<i>Sphaeralcea coulteri</i>	0-1	-
	small wirelettuce	STEX	<i>Stephanomeria exigua</i>	0-1	-
	longbeak streptanthella	STLO4	<i>Streptanthella longirostris</i>	0-1	-
	woolly tidestromia	TILA2	<i>Tidestromia lanuginosa</i>	0-1	-
	carelessweed	AMPA	<i>Amaranthus palmeri</i>	0-1	-
	bristly fiddleneck	AMTE3	<i>Amsinckia tessellata</i>	0-1	-
	New Mexico silverbush	ARNE2	<i>Argythamnia neomexicana</i>	0-1	-
	milkvetch	ASTRA	<i>Astragalus</i>	0-1	-
	desert marigold	BAMU	<i>Baileya multiradiata</i>	0-1	-
	Spanish needles	BIBI7	<i>Bidens bipinnata</i>	0-1	-
	spiderling	BOERH2	<i>Boerhavia</i>	0-1	-
	yellow tackstem	CAPA7	<i>Calycoseris parryi</i>	0-1	-
	white tackstem	CAWR	<i>Calycoseris wrightii</i>	0-1	-
	brittle spineflower	CHBR	<i>Chorizanthe brevicornu</i>	0-1	-
	devil's spineflower	CHRI	<i>Chorizanthe rigida</i>	0-1	-
	Esteve's pincushion	CHST	<i>Chaenactis stevioides</i>	0-1	-
	cryptantha	CRYPT	<i>Cryptantha</i>	0-1	-
	hairy prairie clover	DAMO	<i>Dalea mollis</i>	0-1	-
	western tansymustard	DEPI	<i>Descurainia pinnata</i>	0-1	-
	California shieldpod	DICA7	<i>Dithyrea californica</i>	0-1	-
	flatcrown buckwheat	ERDE6	<i>Eriogonum deflexum</i>	0-1	-
	miniature woollystar	ERDI2	<i>Eriastrum diffusum</i>	0-1	-
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0-1	-
	common woolly sunflower	ERLA6	<i>Eriophyllum lanatum</i>	0-1	-
	kidneyleaf buckwheat	ERRE3	<i>Eriogonum reniforme</i>	0-1	-
	desert sand verbena	ABVI	<i>Abronia villosa</i>	0-1	-
	onyxflower	ACCO3	<i>Achyronychia cooperi</i>	0-1	-

	common fiddleneck	AMMEI2	<i>Amsinckia menziesii</i> var. <i>intermedia</i>	0–1	–
Shrub/Vine					
5	Dominant Shrubs			224–308	
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	168–224	–
	creosote bush	LATRT	<i>Larrea tridentata</i> var. <i>tridentata</i>	56–84	–
6	Misc. Shrubs			17–28	
	creosote bush	LATR2	<i>Larrea tridentata</i>	56–84	–
	white ratany	KRGR	<i>Krameria grayi</i>	2–11	–
	whitestem paperflower	PSCO2	<i>Psilostrophe cooperi</i>	1–3	–
	triangle bur ragweed	AMDE4	<i>Ambrosia deltoidea</i>	1–3	–
	cattle saltbush	ATPO	<i>Atriplex polycarpa</i>	1–3	–
	button brittlebush	ENFR	<i>Encelia frutescens</i>	1–3	–
	littleleaf ratany	KRER	<i>Krameria erecta</i>	1–3	–
7	Other Shrubs			6–11	
	California croton	CRCA5	<i>Croton californicus</i>	0–2	–
	longleaf jointfir	EPTR	<i>Ephedra trifurca</i>	0–1	–
	ocotillo	FOSP2	<i>Fouquieria splendens</i>	0–1	–
	crown of thorns	KOSP	<i>Koeberlinia spinosa</i>	0–1	–
	water jacket	LYAN	<i>Lycium andersonii</i>	0–1	–
	desert ironwood	OLTE	<i>Olneya tesota</i>	0–1	–
	crucifixion thorn	CAEM4	<i>Castela emoryi</i>	0–1	–
8	Succulents			17–28	
	branched pencil cholla	CYRA9	<i>Cylindropuntia ramosissima</i>	2–6	–
	Wiggins' cholla	CYEC3	<i>Cylindropuntia echinocarpa</i>	2–4	–
	devil cholla	GREM	<i>Grusonia emoryi</i>	1–4	–
	beavertail pricklypear	OPBA2	<i>Opuntia basilaris</i>	1–3	–
	Christmas cactus	CYLE8	<i>Cylindropuntia leptocaulis</i>	1–3	–
	saguaro	CAGI10	<i>Carnegiea gigantea</i>	1–3	–
	buckhorn cholla	CYACA2	<i>Cylindropuntia acanthocarpa</i> var. <i>acanthocarpa</i>	1–3	–
	Arizona pencil cholla	CYAR14	<i>Cylindropuntia arbuscula</i>	1–2	–
	nightblooming cereus	PEGRG	<i>Peniocereus greggii</i> var. <i>greggii</i>	1–2	–
	Graham's nipple cactus	MAGR9	<i>Mammillaria grahamii</i>	1–2	–
	Engelmann's hedgehog cactus	ECEN	<i>Echinocereus engelmannii</i>	1–2	–
	Johnson's fishhook cactus	ECJO3	<i>Echinomastus johnsonii</i>	1–2	–
	candy barrelcactus	FEWI	<i>Ferocactus wislizeni</i>	1–2	–
Tree					
9	Trees			6–17	
	blue paloverde	PAFL6	<i>Parkinsonia florida</i>	6–11	–
	yellow paloverde	PAMI5	<i>Parkinsonia microphylla</i>	6–11	–

Animal community

This site is usable for all classes of livestock. In areas where the site is not associated with sandy bottoms,

summertime use by any livestock is not practical, due to lack of shady travel routes. The site produces year-round browse and grass for livestock. Water developments and fencing may be needed to permit grazing control.

Natural waters do not exist on the site. Water developments are very important to all wildlife species on the site. The sandy surfaces make this site home to a variety of burrowing birds, mammals and reptiles.

Recreational uses

This site is located on large, nearly-level fan terraces. It has an abundance of wildflowers following both good winter and summer rainy seasons. The mixture of grasses, trees and shrubs enhances the aesthetics of these areas. Very few days in the fall, winter, or spring are too uncomfortable to enjoy outdoor activities. Jun-Aug afternoons, however, restrict activity. Horseback riding, wildlife observation, hunting, hiking, photography, camping and picnicking are activities suited to this site.

Type locality

Location 1: Maricopa County, AZ	
Township/Range/Section	T7N R19W S36
General legal description	La Posa Plain, Nine Mile Ranch
Location 2: Maricopa County, AZ	
Township/Range/Section	T8N R17W S34
General legal description	La Posa Plain, Nine Mile Ranch

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:**
