

Ecological site R040XC306AZ
Limy Fan 3"-7" 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): 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>Larrea tridentata</i> var. <i>tridentata</i> (2) <i>Ambrosia dumosa</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 and old stream terraces no longer flooded.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Fan (3) Stream terrace
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

Influencing water features

Soil features

Soils deep loamy, calcareous to the surface and, droughty with only fair plant-soil moisture relationships.

Soils mapped on this site include: in SSA-645 Aguila-Carefree area MU's Gilman (unflooded)-56, 59, Denure-59, Rillito-71, 102 & 117, Tremant-114 & 119; SSA-649 Yuma-Wellton area MU's Antho (unflooded)-1 & 2, Dateland-5 & 6, India-13, Ripley-24, Superstition-29 & Tremant-11 & 31; SSA-653 Gila Bend-Ajo area MU's Cavelt-19, Coolidge-8, Coolidge GrVFSL-11, Denure GrFSL-17 & 18, Denure-19, Mohall FSL-44, Mohall L-45, Mohall CL-47, Tremant GrFSL-59, Tucson L-50, Wellton-32, Wellton L-64, Wellton LFS-65 & Wellton GrVFSL-65; SSA-656 Colorado River Indian Reservation MU Antho-3.

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Sandy loam (3) Fine sandy loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately slow to moderately rapid
Soil depth	152 cm
Surface fragment cover <=3"	0–15%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	21.34–27.43 cm
Calcium carbonate equivalent (0-101.6cm)	3–25%
Electrical conductivity (0-101.6cm)	0–2 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)	0–15%
Subsurface fragment volume >3" (Depth not specified)	0%

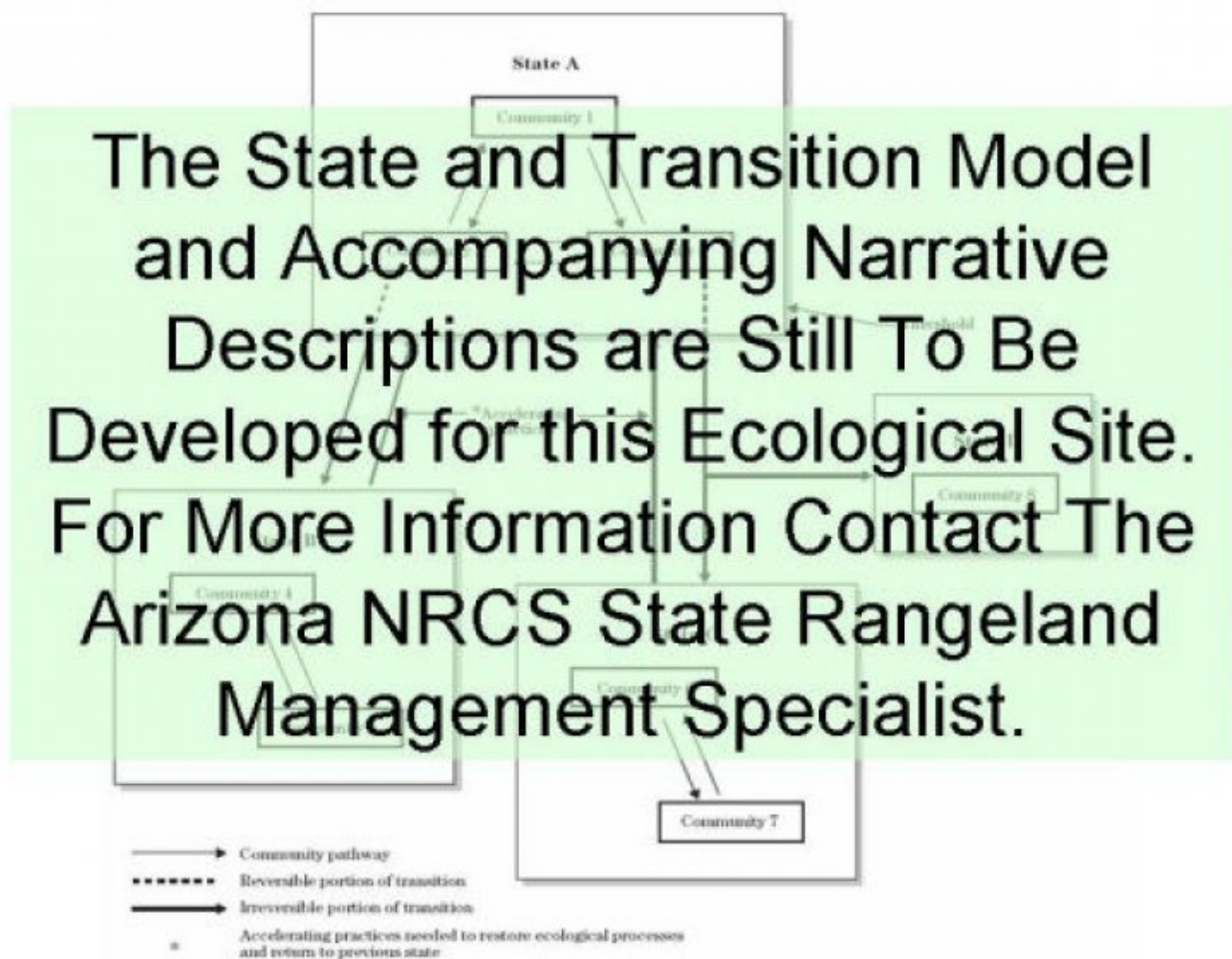
Ecological dynamics

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 dominated by creosotebush. Winter and summer annual grasses and forbs are abundant in years with above-average moisture in their respective seasons. Continued overgrazing results in creosotebush becoming dominant. When the understory cover is depleted, sheet and rill erosion increases on the site. In advanced stages, gullies are common.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	168	202	235
Forb	50	67	84
Grass/Grasslike	50	67	84
Tree	6	11	17
Total	274	347	420

Figure 5. 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..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
5	20	40	25	0	0	0	0	0	0	5	5

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	Perennial Grasses			17–34	
	threeawn	ARIST	<i>Aristida</i>	3–7	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	3–7	–
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	3–7	–
2	Annual Grasses			34–50	
	sixweeks threeawn	ARAD	<i>Aristida adscensionis</i>	7–10	–
	needle grama	BOAR	<i>Bouteloua aristidoides</i>	7–10	–
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	7–10	–
	littleseed muhly	MUMI	<i>Muhlenbergia microsperma</i>	7–10	–
	Bigelow's bluegrass	POBI	<i>Poa bigelovii</i>	7–10	–
	Texas fluffgrass	TRTE2	<i>Tridens texanus</i>	7–10	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	7–10	–
Forb					
3	Misc. Forbs			50–67	
	bristly fiddleneck	AMTE3	<i>Amsinckia tessellata</i>	0–1	–
	brittle spineflower	CHBR	<i>Chorizanthe brevicornu</i>	0–1	–
	devil's spineflower	CHRI	<i>Chorizanthe rigida</i>	0–1	–
	cryptantha	CRYPT	<i>Cryptantha</i>	0–1	–
	hairy prairie clover	DAMO	<i>Dalea mollis</i>	0–1	–
	flatcrown buckwheat	ERDE6	<i>Eriogonum deflexum</i>	0–1	–
	woollystar	ERIAS	<i>Eriastrum</i>	0–1	–
	spurge	EUPHO	<i>Euphorbia</i>	0–1	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	0–1	–
	pepperweed	LEPID	<i>Lepidium</i>	0–1	–
	trefoil	LOTUS	<i>Lotus</i>	0–1	–
	bristly nama	NAHI	<i>Nama hispidum</i>	0–1	–
	glandular threadplant	NEGL	<i>Nemacladus glanduliferus</i>	0–1	–
	combseed	PECTO	<i>Pectocarya</i>	0–1	–
	phacelia	PHACE	<i>Phacelia</i>	0–1	–
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	0–1	–
	sleepy silene	SIAN2	<i>Silene antirrhina</i>	0–1	–
	desert globemallow	SPAM2	<i>Sphaeralcea ambigua</i>	0–1	–
	Coulter's globemallow	SPCO2	<i>Sphaeralcea coulteri</i>	0–1	–
4	Other Forbs			3–17	
	brownfoot	ACWR5	<i>Acourtia wrightii</i>	0–1	–
	carelessweed	AMPA	<i>Amaranthus palmeri</i>	0–1	–

	variegated	AMV1	<i>Amorcanthus parryi</i>	0–1	–
	milkvetch	ASTRA	<i>Astragalus</i>	0–1	–
	desert marigold	BAMU	<i>Baileya multiradiata</i>	0–1	–
	spiderling	BOERH2	<i>Boerhavia</i>	0–1	–
	yellow tackstem	CAPA7	<i>Calycoseris parryi</i>	0–1	–
	western tansymustard	DEPI	<i>Descurainia pinnata</i>	0–1	–
	desert trumpet	ERIN4	<i>Eriogonum inflatum</i>	0–1	–
	buckwheat	ERIOG	<i>Eriogonum</i>	0–1	–
	little deserttrumpet	ERTR8	<i>Eriogonum trichopes</i>	0–1	–
	desert lily	HEUN2	<i>Hesperocallis undulata</i>	0–1	–
	Arizona poppy	KAGR	<i>Kallstroemia grandiflora</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	–
	glandular threadplant	NEGL	<i>Nemacladus glanduliferus</i>	0–1	–
	desert tobacco	NIOB	<i>Nicotiana obtusifolia</i>	0–1	–
	evening primrose	OENOT	<i>Oenothera</i>	0–1	–
Shrub/Vine					
5	Dominant Shrubs			135–202	
	creosote bush	LATR2	<i>Larrea tridentata</i>	101–135	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	50–67	–
6	Misc. Shrubs			17–34	
	littleleaf ratany	KRER	<i>Krameria erecta</i>	10–20	–
	white ratany	KRGR	<i>Krameria grayi</i>	10–20	–
	desert-thorn	LYCIU	<i>Lycium</i>	10–20	–
	desert ironwood	OLTE	<i>Olneya tesota</i>	10–20	–
	triangle bur ragweed	AMDE4	<i>Ambrosia deltoidea</i>	6–11	–
7	Succulents			3–17	
	saguaro	CAGI10	<i>Carnegiea gigantea</i>	0–1	–
	Wiggins' cholla	CYEC3	<i>Cylindropuntia echinocarpa</i>	0–1	–
	jumping cholla	CYFUF	<i>Cylindropuntia fulgida</i> var. <i>fulgida</i>	0–1	–
	Christmas cactus	CYLE8	<i>Cylindropuntia leptocaulis</i>	0–1	–
	branched pencil cholla	CYRA9	<i>Cylindropuntia ramosissima</i>	0–1	–
	Engelmann's hedgehog cactus	ECEN	<i>Echinocereus engelmannii</i>	0–1	–
	candy barrelcactus	FEWI	<i>Ferocactus wislizeni</i>	0–1	–
	nightblooming cereus	PEGRG	<i>Peniocereus greggii</i> var. <i>greggii</i>	0–1	–
Tree					
8	Tree			6–17	
	yellow paloverde	PAMI5	<i>Parkinsonia microphylla</i>	6–17	–

Animal community

The only factor limiting use of this site is distance to water. The site is more suited for use by stocker cattle in the spring as this is the time forage is available. Water developments are important to permit grazing management.

Lack of water and poor cover limit the value of this site as habitat. It is home to a variety of burrowing mammals, and mainly a forage area for larger mammals and bird species.

Recreational uses

This site is located on fan terraces and old stream terraces. The site is usually a monotonous landscape of creosotebush, but has an abundance of desert wildflowers following good winter rainy seasons. Very few days in the fall, winter or spring are too uncomfortable to enjoy outdoor activities. Jun-Aug, however, are restricted by afternoon heat. 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	T3N R7E S19
General legal description	Typical pedon of Rillito GrL is about 1,000 feet East and 1,450 feet South of the North West corner of Section 19, T 3 N, R 7 E.

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:**
-