

Ecological site R035XG711AZ Loamy Upland 14-18" 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.

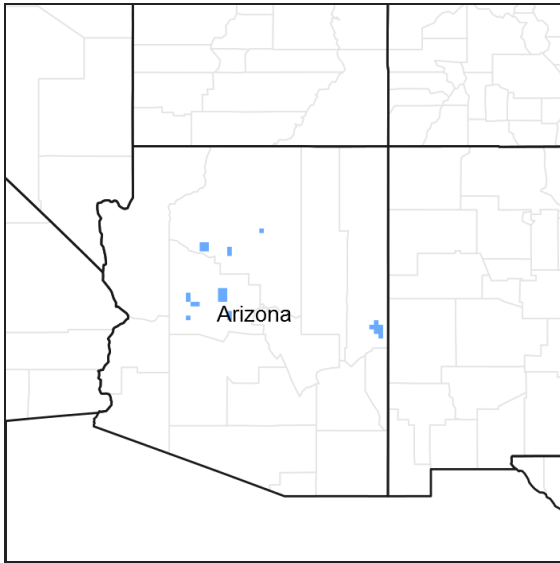


Figure 1. Mapped extent

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): 035X–Colorado Plateau

AZ CRA 35.7 – Colorado Plateau Woodland – Grassland

Elevations range from 5000 to 7000 feet and precipitation averages 14 to 18 inches per year. Vegetation includes one-seed juniper, Colorado pinyon, Stansbury cliffrose, Apache plume, four-wing saltbush, green Mormon tea, needle and thread, sideoats grama, blue grama, black grama, galleta, bottlebrush squirreltail, and muttongrass. The soil temperature regime is mesic and the soil moisture regime is aridic ustic. This unit occurs within the Colorado Plateau Physiographic Province and is characterized by a sequence of flat to gently dipping sedimentary rocks eroded into plateaus, valleys and deep canyons. Sedimentary rock classes dominate the plateau with volcanic fields occurring for the most part near its margin.

Table 1. Dominant plant species

Tree	(1) <i>Juniperus monosperma</i> (2) <i>Pinus edulis</i>
Shrub	(1) <i>Krascheninnikovia lanata</i> (2) <i>Atriplex canescens</i>

Herbaceous	(1) <i>Bouteloua gracilis</i> (2) <i>Hesperostipa comata</i>
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Physiographic features

This site occurs in an upland position as gently rolling plains. It neither benefits significantly from run-in nor experiences excessive loss of moisture from run-off.

Table 2. Representative physiographic features

Landforms	(1) Alluvial fan (2) Ridge (3) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	1,676–2,134 m
Slope	0–15%
Aspect	Aspect is not a significant factor

Climatic features

The climate of the land resource unit is semiarid with warm summers and cool winters. The mean annual precipitation ranges from 14 to 18 inches, but is very erratic, often varying substantially from year to year. The majority of the precipitation is received from October through April. This precipitation comes as gentle rain or snow from frontal storms coming out of the Pacific Ocean. Snow is common from November through February. Generally no more than a few inches of snow accumulates, melting within a few days, but may last a week or more. The remaining precipitation, approximately 40 percent, is received from July through September as spotty, unreliable and sometimes violent thunderstorms. The moisture for this precipitation originates in the Gulf of Mexico (and the Pacific Ocean in the fall) and flows into the area on the north end of the Mexican monsoon. Late May through late June is generally a dry period. The mean annual temperature ranges from 46 to 52 degrees Fahrenheit (F). The frost-free period (air temperature > 32 degrees F) ranges from 108 to 151 days (@ 50 percent probability). Strong winds are common, especially in the spring.

Table 3. Representative climatic features

Frost-free period (average)	151 days
Freeze-free period (average)	170 days
Precipitation total (average)	457 mm

Influencing water features

Soil features

The soils which are grouped together in this range site have the following characteristics. These soils are moderately deep over fractured basalt bedrock and loose cobblestone. The surface soil is gravelly loam and gravelly silt loam, 1 to 3 inches thick. The subsurface horizons have textures of gravelly loam and gravelly clay loam. Permeability of the soils is moderate. These soils can absorb and hold most of the moisture the climate supplies. Soluble salts are low. The soil reaction is moderately alkaline (pH 7.8-8.4). Under proper management, these soils have high infiltration rates and little or no erosion occurs.

A typical mapunit is;

SSA-707 Little Colorado River Area MU 9 Arabrab.

Table 4. Representative soil features

Surface texture	(1) Gravelly loam (2) Gravelly silt loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate
Soil depth	152–173 cm
Available water capacity (0-101.6cm)	21.39–24.64 cm
Calcium carbonate equivalent (0-101.6cm)	0–1%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.6–8.2
Subsurface fragment volume ≤3" (Depth not specified)	30–50%
Subsurface fragment volume >3" (Depth not specified)	0–10%

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**

This range site has a plant community with a tree overstory of pinyon and juniper and an understory of mid and short grasses, forbs and a moderate percentage of shrubs. In the original plant community, there is a mixture of both cool and warm season grasses. Plant species most likely to invade or increase when the site deteriorates are broom snakeweed, woolly groundsel, cacti and annuals. With lack of natural fire, trees will tend to dominate the plant community. Continuous use during the winter and spring period will decrease cool season grasses, which are replaced by lower forage value grasses and shrubs.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	401	–	510
Shrub/Vine	146	–	219
Tree	44	–	183
Forb	8	–	37
Total	599	–	949

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				0–22	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	0–22	–
2				9–22	
	squirreltail	ELELE	<i>Elymus elymoides ssp. elymoides</i>	9–22	–
3				36–146	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	36–146	–
4				7–36	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	7–36	–
5				146–219	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	146–219	–
6				36–73	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	36–73	–
7				7–36	
	threeawn	ARIST	<i>Aristida</i>	7–36	–
	ring muhly	MUTO2	<i>Muhlenbergia torreyi</i>	7–36	–
8				7–36	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	7–36	–
Forb					
9				7–36	
	Forb, annual	2FA	<i>Forb, annual</i>	7–36	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	7–36	–
	buckwheat	ERIOG	<i>Eriogonum</i>	7–36	–
	globemallow	SPHAE	<i>Sphaeralcea</i>	7–36	–
Shrub/Vine					
10				7–36	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	7–36	–
11				7–36	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	7–36	–
12				7–36	
	jointfir	EPHED	<i>Ephedra</i>	7–36	–
13				7–36	
	Mexican cliffrose	PUME	<i>Purshia mexicana</i>	7–36	–
14				7–22	
	Bigelow sage	ARBI3	<i>Artemisia bigelovii</i>	7–22	–
15				7–36	
	pricklypear	OPUNT	<i>Opuntia</i>	7–36	–
	yucca	YUCCA	<i>Yucca</i>	7–36	–
16				7–36	
	rabbitbrush	CHRY9	<i>Chrysothamnus</i>	7–36	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	7–36	–
	pale desert-thorn	LYPA	<i>Lyceum pallidum</i>	7–36	–

	plant description	ETIC	<i>Lyallium panicum</i>	1-30	-
Tree					
17				36-146	
	oneseed juniper	JUMO	<i>Juniperus monosperma</i>	36-146	-
18				7-36	
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	7-36	-

Animal community

This site is favorable for grazing throughout most of the year except when snow cover restricts availability of forage. Planned grazing systems adapt well on this site. The site will respond relatively fast to good management. This site is susceptible to erosion, particularly overgrazed areas, old roads and concentration areas.

This site has excellent diversity in the plant community. As retrogression occurs, brushy species increase in the plant community until it becomes shrub dominated. Brush management practices should be designed to maximize edge effect and to maintain escape corridors along ridges and drainageways.

Recreational uses

This site occurs on gentle rolling plains and is characterized by an aspect of trees with an understory of shrubs and grasses. The site experiences hot summers and cold winters. High winds are common during winter and spring months. Major activities on the site include hunting, horseback riding and hiking.

Other products

Pinyon-juniper wood products

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)	Karlynn Huling
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Date	05/15/2006
Approved by	S. Cassady
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:**
