

Ecological site R035XC346AZ Shallow Sandy Loam 10-14" p.z.

Accessed: 04/19/2024

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.

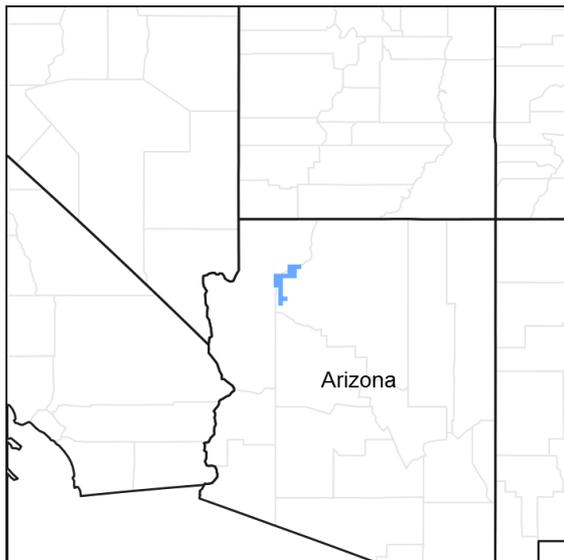


Figure 1. Mapped extent

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 35.3 – Colorado Plateau Sagebrush – Grasslands

Elevations range from 4500 to 6000 feet and precipitation averages 10 to 14 inches. Vegetation includes Wyoming big sagebrush, Utah juniper, Colorado pinyon - cliffrose, Mormon tea, fourwing saltbush, blackbrush Indian ricegrass, needle and thread, western wheatgrass Galleta, black grama, blue grama, and sand dropseed. The soil temperature regime is mesic and the soil moisture regime is ustic aridic. 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 osteosperma</i> (2) <i>Pinus monophylla</i> |
| Shrub | (1) <i>Coleogyne ramosissima</i> (2) <i>Quercus turbinella</i> |
| Herbaceous | (1) <i>Bouteloua eriopoda</i> |

Physiographic features

The dominant aspect of this site is a sparse stand of trees with shrubs and grasses. Site occurs on the "Esplanade" part of the Grand Canyon.

Table 2. Representative physiographic features

| | |
|--------------------|--|
| Landforms | (1) Mesa (2) Structural bench (3) Cuesta |
| Flooding duration | Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours) |
| Flooding frequency | None to rare |
| Ponding duration | Very brief (4 to 48 hours) |
| Ponding frequency | None to rare |
| Elevation | 4,000–4,600 ft |
| Slope | 2–15% |
| Aspect | Aspect is not a significant factor |

Climatic features

Winter summer moisture ratios range from 70:30 to 60:40. Late spring is usually the driest period, and early fall moisture can be sporadic. Summer rains fall from June through September; moisture originates in the Gulf of Mexico and creates convective, usually brief, intense thunderstorms. Cool season moisture from October through May tends to be frontal; it originates in the Pacific and the Gulf of California and falls in widespread storms with longer duration and lower intensity. Precipitation generally comes as snow from December through February. Accumulations above 12 inches are not common but can occur. Snow usually lasts for 3-4 days, but can persist much longer. Summer daytime temperatures are commonly 95 - 100 F and on occasion exceed 105 F. Winter air temperatures can regularly go below 10 F and have been recorded below - 20 F.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 168 days |
| Freeze-free period (average) | 193 days |
| Precipitation total (average) | 14 in |

Influencing water features

Soil features

Soils on this site consist of very shallow and shallow, well drained soils that formed in residuum, colluvium, and eolian material derived from sandstone and limestone. These soils are on cuestas, mesas, and structural benches. The soil moisture regime is Ustic Aridic and the temperature regime is Mesic.

Typical taxonomic units includes: SSA 699 Hualapai-Havasupai Area MU 38 Rizno.

Table 4. Representative soil features

| | |
|----------------------|--|
| Parent material | (1) Residuum–limestone and sandstone |
| Surface texture | (1) Fine sandy loam (2) Loamy fine sand |
| Family particle size | (1) Loamy |
| Drainage class | Well drained to somewhat excessively drained |

| | |
|---|------------------------------|
| Permeability class | Moderate to moderately rapid |
| Soil depth | 10–20 in |
| Surface fragment cover <=3" | 0–35% |
| Available water capacity (0-40in) | 0–2.5 in |
| Calcium carbonate equivalent (0-40in) | 5–15% |
| Electrical conductivity (0-40in) | 0–2 mmhos/cm |
| Sodium adsorption ratio (0-40in) | 0–5 |
| Soil reaction (1:1 water) (0-40in) | 7.3–8.4 |
| Subsurface fragment volume <=3" (Depth not specified) | 0–35% |

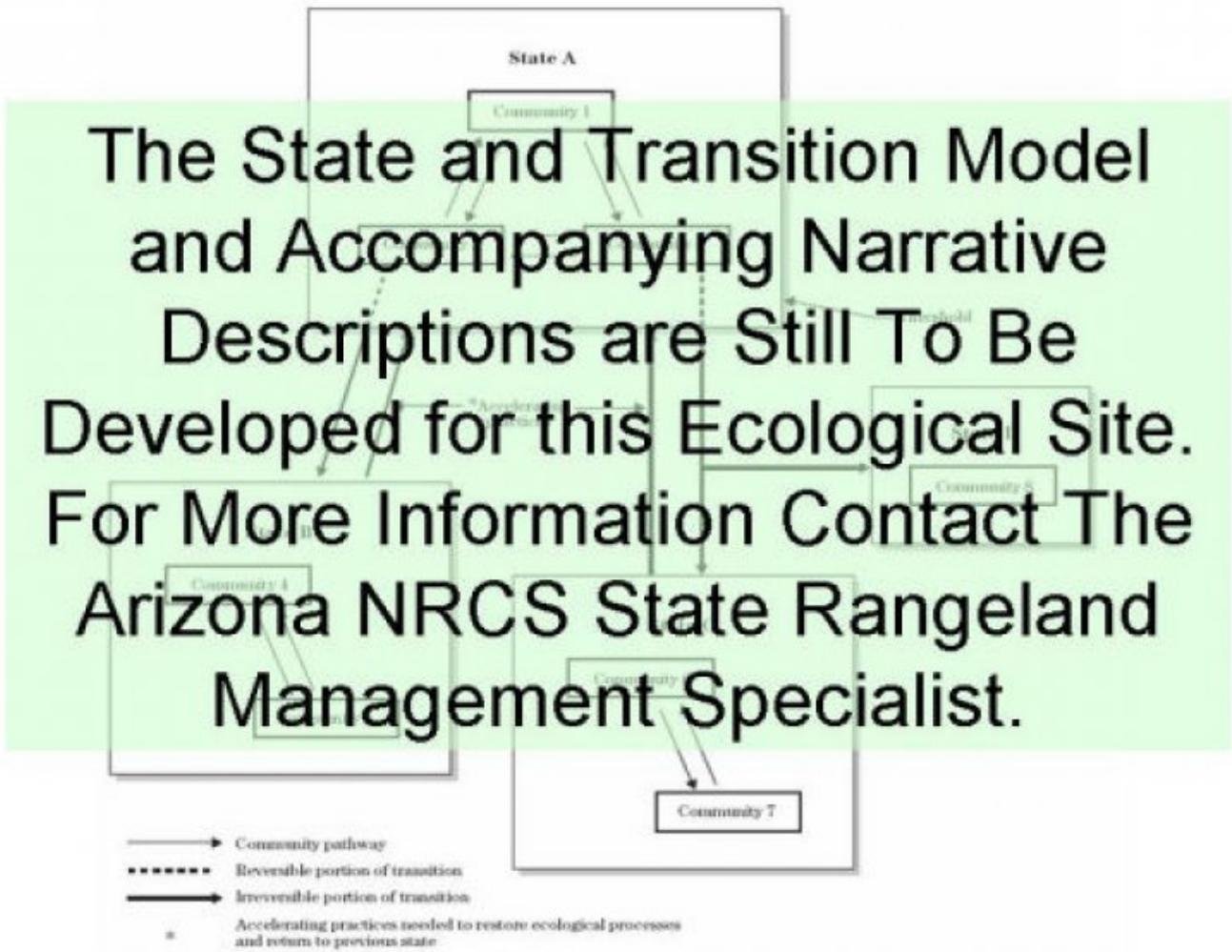
Ecological dynamics

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 stand of trees with shrubs and mid grasses. Utah juniper and singleleaf pinyon are the trees. Major shrubs are blackbrush, green mormontea and banana yucca. Dominant grasses include black grama, bottlebrush squirreltail and indian ricegrass.

Table 5. Annual production by plant type

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|---------------|--------------------------------|----------------|
| Shrub/Vine | 130 | 165 | 215 |
| Grass/Grasslike | 70 | 90 | 115 |
| Tree | 40 | 50 | 70 |
| Forb | 8 | 10 | 14 |
| Total | 248 | 315 | 414 |

Table 6. Ground cover

| | |
|-------------------------------|-------|
| Tree foliar cover | 0-10% |
| Shrub/vine/liana foliar cover | 5-15% |

| | |
|-----------------------------------|-------|
| Grass/grasslike foliar cover | 2-10% |
| Forb foliar cover | 0-1% |
| Non-vascular plants | 0% |
| Biological crusts | 0% |
| Litter | 0% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 0% |

Table 7. Canopy structure (% cover)

| Height Above Ground (Ft) | Tree | Shrub/Vine | Grass/ Grasslike | Forb |
|--------------------------|-------|------------|---------------------|------|
| <0.5 | – | – | – | 0-1% |
| >0.5 <= 1 | – | – | – | – |
| >1 <= 2 | – | – | 2-10% | – |
| >2 <= 4.5 | – | 5-15% | – | – |
| >4.5 <= 13 | 0-10% | – | – | – |
| >13 <= 40 | – | – | – | – |
| >40 <= 80 | – | – | – | – |
| >80 <= 120 | – | – | – | – |
| >120 | – | – | – | – |

Figure 5. Plant community growth curve (percent production by month). AZ3502, 35.1 10-14" p.z. black grama. Growth occurs mostly during the summer to early fall rainy season..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 0 | 0 | 0 | 5 | 15 | 30 | 30 | 15 | 5 | 0 | 0 |

Figure 6. Plant community growth curve (percent production by month). AZ3504, 35.3 10-14" p.z. bottlebrush squirreltail. Growth occurs in late winter, spring, and fall. Plants often remain green through the winter..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 5 | 15 | 35 | 25 | 10 | 0 | 0 | 5 | 5 | 0 | 0 |

Figure 7. Plant community growth curve (percent production by month). AZ3505, 35.3 10-14" p.z. Indian ricegrass. Growth begins in spring, with semi-dormancy occurring during July through August. Plants will green up again in the fall..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 0 | 10 | 20 | 25 | 20 | 5 | 5 | 10 | 5 | 0 | 0 |

Figure 8. Plant community growth curve (percent production by month). AZ3531, 35.3 10-14" p.z. all sites. Growth begins in the spring and continues through the summer..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 1 | 3 | 17 | 18 | 10 | 19 | 20 | 10 | 1 | 1 | 0 |

Figure 9. Plant community growth curve (percent production by month). AZ5105, Blackbrush. Cool season grower, shuts down quickly when it gets hot..

| Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 5 | 20 | 50 | 20 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |

Additional community tables

Table 8. Community 1.1 plant community composition

| Group | Common Name | Symbol | Scientific Name | Annual Production (Lb/Acre) | Foliar Cover (%) |
|------------------------|-----------------------------|--------|--|-----------------------------|------------------|
| Tree | | | | | |
| 0 | | | | 35–70 | |
| | Utah juniper | JUOS | <i>Juniperus osteosperma</i> | 18–35 | – |
| | singleleaf pinyon | PIMO | <i>Pinus monophylla</i> | 18–35 | – |
| Shrub/Vine | | | | | |
| 0 | | | | 160–175 | |
| | blackbrush | CORA | <i>Coleogyne ramosissima</i> | 53–88 | – |
| | mormon tea | EPVI | <i>Ephedra viridis</i> | 4–18 | – |
| | broom snakeweed | GUSA2 | <i>Gutierrezia sarothrae</i> | 4–18 | – |
| | Sonoran scrub oak | QUTU2 | <i>Quercus turbinella</i> | 4–18 | – |
| | banana yucca | YUBA | <i>Yucca baccata</i> | 4–18 | – |
| | Shrub (>.5m) | 2SHRUB | <i>Shrub (>.5m)</i> | 4–18 | – |
| | fourwing saltbush | ATCA2 | <i>Atriplex canescens</i> | 0–7 | – |
| | alderleaf mountain mahogany | CEMO2 | <i>Cercocarpus montanus</i> | 0–7 | – |
| Grass/Grasslike | | | | | |
| 0 | | | | 70–105 | |
| | black grama | BOER4 | <i>Bouteloua eriopoda</i> | 18–35 | – |
| | Grass, perennial | 2GP | <i>Grass, perennial</i> | 4–18 | – |
| | Indian ricegrass | ACHY | <i>Achnatherum hymenoides</i> | 4–18 | – |
| | squirreltail | ELELE | <i>Elymus elymoides</i> ssp. <i>elymoides</i> | 4–18 | – |
| | needle and thread | HECOC8 | <i>Hesperostipa comata</i> ssp. <i>comata</i> | 0–11 | – |
| | desert needlegrass | ACSP12 | <i>Achnatherum speciosum</i> | 0–11 | – |
| | blue grama | BOGR2 | <i>Bouteloua gracilis</i> | 0–7 | – |
| | James' galleta | PLJA | <i>Pleuraphis jamesii</i> | 0–7 | – |
| | big galleta | PLRI3 | <i>Pleuraphis rigida</i> | 0–7 | – |
| | Fendler's threeawn | ARPUF | <i>Aristida purpurea</i> var. <i>fendleriana</i> | 0–4 | – |
| Forb | | | | | |
| 0 | | | | 4–18 | |
| | Forb, perennial | 2FP | <i>Forb, perennial</i> | 4–11 | – |
| | Forb, annual | 2FA | <i>Forb, annual</i> | 0–7 | – |

Animal community

Site is favorable for grazing throughout most of the year except when snow cover restricts availability of forage. With continuous grazing use during winter and spring, the relatively scarce cool season mid grasses are replaced by turbinella oak, snakeweed and lower value forbs and grasses. Prescribed grazing systems can benefit this site by allowing rest periods for the cool season species.

The potential plant community produced by this site provides food for those species of wildlife that utilize grass as a major portion of their diet. When vegetative retrogression occurs, unpalatable shrubby species increase and some wildlife species may be benefit.

Major wildlife species include: Mule deer, Desert bighorn sheep, Pronghorn antelope, coyote, cottontail rabbit, snakes and lizards.

Recreational uses

Site is located on gently sloping plains and mesa tops which lend themselves to activities such as horseback riding, wildlife observation and hunting.

Winters are cold, however, relatively mild spring, fall and summer months are attractive to recreationists.

Activities include photography, hiking, rock collecting, and wildlife observation.

Type locality

| | |
|-------------------------------|---|
| Location 1: Mohave County, AZ | |
| General legal description | Center and Northeast part of Vulcans Throne Quad; Hualapai Indian Reservation, Arizona. |

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:**
