USDA Natural Resources
Conservation Service

Ecological site R040XC315AZ
Saline Bottom 3"-7" p.z.

Accessed: 05/13/2025

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.

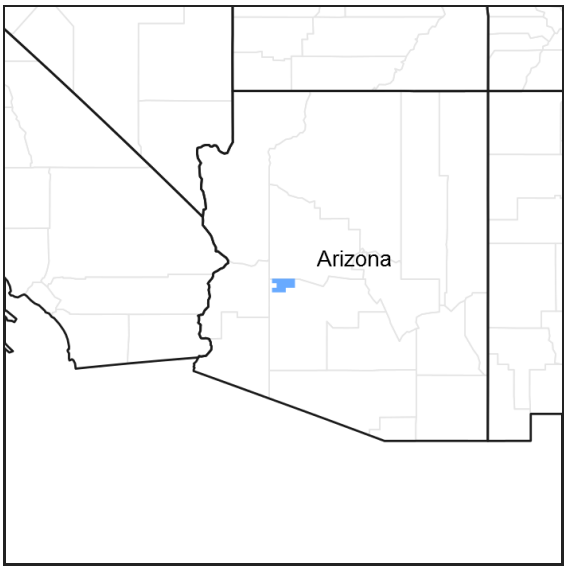


Figure 1. Mapped extent

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	Not specified
Shrub	(1) *Prosopis glandulosa* (2) *Tamarix chinensis*
Herbaceous	(1) *Distichlis spicata*

Physiographic features

This range site occurs in a bottom position. It benefits significantly from run-in moisture and occurs as bottoms and floodplains where the water table is at or near the soil surface.

Table 2. Representative physiographic features

Landforms	(1) Flood plain
Elevation	30–183 m
Slope	0–1%
Water table depth	25–76 cm

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 that are grouped together in this range site are deep, with a water table depth of 10-30 inches. Plant roots are restricted to the upper boundary of the water table. Surface soil texture is highly stratified ranging from silt loam to clay. Underlying layers have moderate to slow permeability, but can hold all the moisture climate brings. Soluble salt accumulations are extremely high. pH ranges from 7.9-8.4. With good vegetative cover, infiltration rates are moderate. Stability against erosion processes is good. Plant-soil moisture relationships are very poor due to the extremely high soluble salt content that restricts available soil moisture to the plant. Percent coarse fragment is less than 15% of the total soil volume.

Soils mapped on this site include: in SSA-649 Yuma-Wellton area MU Salorthids, nearly level-27.

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Clay (3) Silty clay loam
Family particle size	(1) Clayey
Drainage class	Poorly drained
Permeability class	Very slow to moderate
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	22.86–28.96 cm
Calcium carbonate equivalent (0-101.6cm)	1–10%
Electrical conductivity (0-101.6cm)	4–16 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	13–30
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

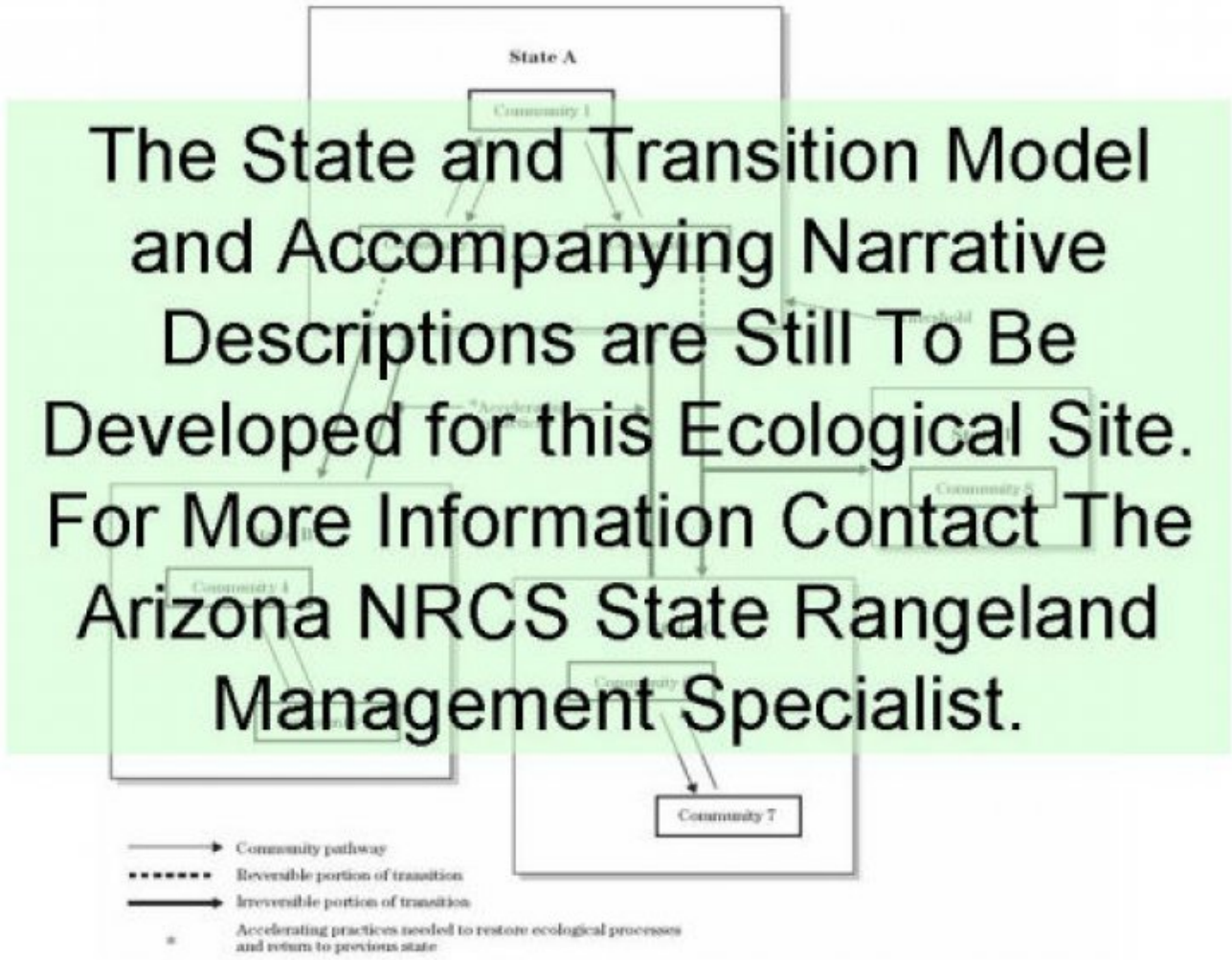
Ecological dynamics

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



The State and Transition Model and Accompanying Narrative Descriptions are Still To Be Developed for this Ecological Site. For More Information Contact The Arizona NRCS State Rangeland Management Specialist.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

This range site has a plant community made up almost exclusively of shrubs and trees that have high salinity tolerances. The plant community is highly variable because of the functuating water table. Mesquite may dominate the site when the water table is below 4 feet deep. Major man-made alterations along the Colorado River have greatly changed the climax plant community. The plant community that occured along the free-flowing river was altered by the construction of irrigation, storage,flood control, and hydro-electric producing dams. Large areas of the site have been further altered by irrigation of the site or adjacent sites which has changed the water table depths and salt accumulations within the soils. These major changes in the physical properties of the soils has allowed the dramatic increases of salt tolerant plants or the invasion of naturalized salt tolerant plants. Range condition cannot be determined on this site because of the tremendous variability in kinds and amounts of vegetation, inconsistent water table depths and salt accumulations.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	1597	1640	1681
Grass/Grasslike	–	26	50
Forb	–	17	34
Total	**1597**	**1683**	**1765**

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 Perennial Grass**			0–50	
	saltgrass	DISP	*Distichlis spicata*	0–50	–
Forb					
2	**Annual Forbs**			0–34	
	honey mesquite	PRGL2	*Prosopis glandulosa*	168–1345	–
	Forb, annual	2FA	*Forb, annual*	0–34	–
Shrub/Vine					
3				168–1177	
	iodinebush	ALOC2	*Allenrolfea occidentalis*	0–673	–
	arrowweed	PLSE	*Pluchea sericea*	168–504	–
5	**Mesquites**			168–1345	
	honey mesquite	PRGL2	*Prosopis glandulosa*	168–1345	–
	screwbean mesquite	PRPU	*Prosopis pubescens*	0–17	–

Animal community

To a large extent, this site is inaccessible to livestock due to the high density of shrubby and woody plants. When the water table is at or near the surface, the site can be hazardous to lifestock that can be immobilized in the mud. The majoriuty of the site provides little forage except mesquite beans, which are seasonable available.

The site is very limited except as cover for wildlife. Dense thickets of saltcedar and mesquite offer good protection.

Recreational uses

The site is located on bottoms and floodplains of rivers and major river tributaries. It generally consists of a dense jungle of woody vegetation which provides a striking contrast to the surrounding desert. Very few days in the fall, winter or spring are too uncomfortable to enjoy outdoor activities. In Jun-Aug, however, afternoon heat restricts activity. Activities suited to this site are birdwatching and waterfowl hunting.

Type locality

Location 1: Yuma County, AZ

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:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):**

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14. **Average percent litter cover (%) and depth (in):**

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):**

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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:**

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17. **Perennial plant reproductive capability:**
