

Ecological site R041XB212AZ Saline Upland 8-12" p.z.

Last updated: 7/28/2020
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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.

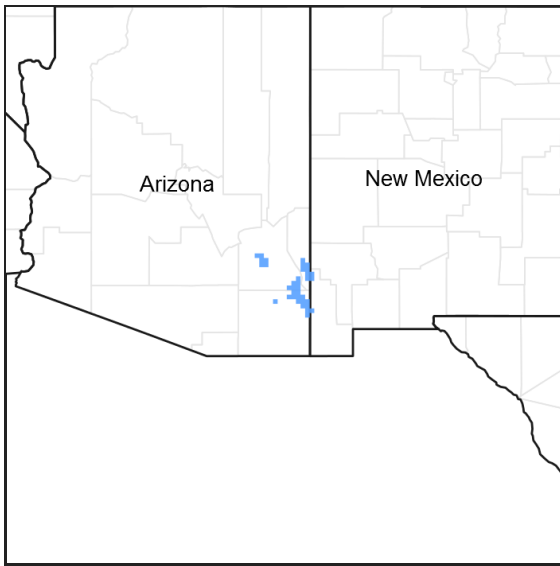


Figure 1. Mapped extent

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): 041X–Madrean Archipelago

AZ 41.2 – Chihuahuan – Sonoran Desert Shrubs

Elevations range from 2600 to 4000 feet and precipitation ranges from 8 to 12 inches per year. Vegetation includes mesquite, palo verde, catclaw acacia, soap tree yucca, creosote bush, whitethorn, staghorn cholla, desert saltbush, Mormon tea, burroweed, snakeweed, tobosa, black grama, threeawns, bush muhly, dropseed, and burrograss. The soil temperature regime is thermic 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.

Associated sites

F041XB221AZ	Loamy Bottom 8-12" p.z. woodland
F041XB222AZ	Saline Bottom 8-12" p.z. woodland
R041XB206AZ	Limy Fan 8-12" p.z.

R041XB209AZ	Loamy Swale 8-12" p.z.
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Similar sites

R040XB212AZ	Loamy Slopes 7"-10" p.z.
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Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>atriplex polycarpa</i>
Herbaceous	Not specified

Physiographic features

This site occurs in the lowest elevations of the Madrean Basin and Range province in southeastern Arizona. It occurs as nearly level to gently sloping fan terraces, stream terraces and alluvial fans.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat (2) Stream terrace (3) Fan piedmont
Flooding frequency	None
Ponding frequency	None
Elevation	792–1,219 m
Slope	0–5%
Aspect	Aspect is not a significant factor

Climatic features

Precipitation ranges from 8-12 inches annually. More than half falls during July-Sep in brief, but often heavy, thunderstorms. The rest of the moisture comes as light rain or snow that falls slowly for a day or more, but rarely lasts more than a day. May and June are normally the driest months. Humidity is generally very low.

Temperatures are mild throughout most of the year. Freezing temperatures are common at night Dec-Feb; brief 0 F may be observed some nights. During June, July & August, some days may exceed 100 F.

In years of average or greater winter precipitation, annual grasses and forbs occur abundantly in the interspaces.

Table 3. Representative climatic features

Frost-free period (average)	240 days
Freeze-free period (average)	
Precipitation total (average)	

Influencing water features

There are no water features associated with this site.

Soil features

These are deep, well drained, saline and sodic soils. They are sandy to loamy with a surface cap of loamy fine sand to sandy loam. The plant-soil moisture relationships are poor to fair. These soils take water readily, but water

available for plant growth is limited by the saline, sodic conditions.

Soil series mapped to date on this site include: SSA-662 Safford area MU TgA Gila & Glendale; SSA-663 Gila-Duncan area MU 16 Gila; SSA-664 San Simon area MU's 7 Gothard, 28 & 29 Hondale.

Table 4. Representative soil features

Surface texture	(1) Sandy loam (2) Fine sandy loam (3) Silt loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to moderate
Soil depth	152 cm
Available water capacity (0-101.6cm)	9.14–15.75 cm
Calcium carbonate equivalent (0-101.6cm)	1–10%
Electrical conductivity (0-101.6cm)	4–30 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	6–60
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4

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

MLRA 41-2 (8-12''), Saline Upland

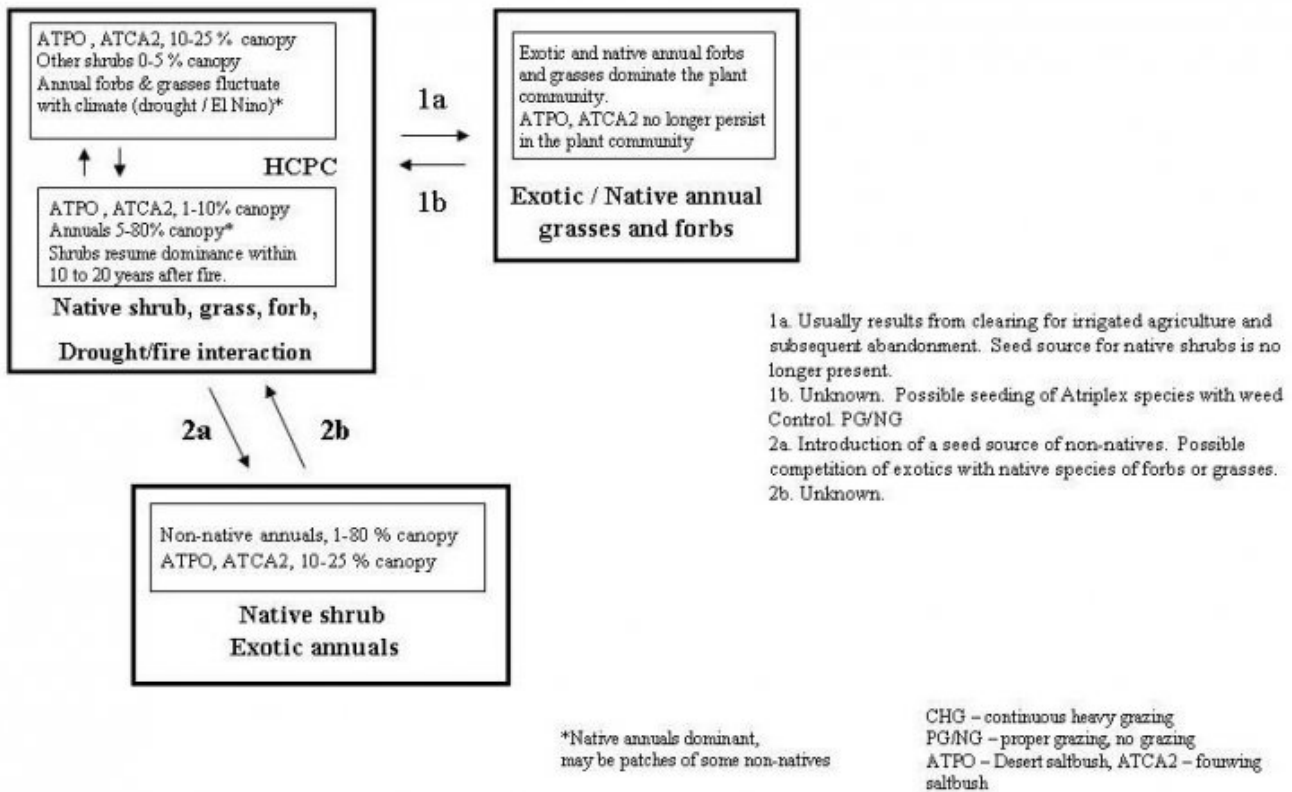


Figure 4. State and Transition, Saline Upland 8-12'' p.z.

State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

The native plant community on this site is dominated by salt tolerant shrubs. Winter and summer annual forbs and grasses are well represented on this site. Perennial grasses and forbs are present in trace amounts in the potential vegetative community. With severe disturbance (such as repeated fire or heavy, continuous grazing) the saltbush species are replaced by annual grasses and forbs. Loss of shrub cover can result in accelerated water and wind erosion. Atriplex species are very sensitive to summer fires on this site.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	168	224	353
Grass/Grasslike	—	22	174
Forb	—	17	112
Total	168	263	639

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	1%
Grass/grasslike basal cover	0-2%

Forb basal cover	0-2%
Non-vascular plants	0%
Biological crusts	1-20%
Litter	5-50%
Surface fragments >0.25" and <=3"	0-15%
Surface fragments >3"	0-3%
Bedrock	0%
Water	0%
Bare ground	15-95%

Table 7. Canopy structure (% cover)

Height Above Ground (M)	Tree	Shrub/Vine	Grass/ Grasslike	Forb
<0.15	–	0-1%	0-20%	0-20%
>0.15 <= 0.3	–	0-1%	0-15%	0-10%
>0.3 <= 0.6	–	5-10%	–	0-5%
>0.6 <= 1.4	–	5-10%	–	–
>1.4 <= 4	–	–	–	–
>4 <= 12	–	–	–	–
>12 <= 24	–	–	–	–
>24 <= 37	–	–	–	–
>37	–	–	–	–

State 2 Annuals

Community 2.1 Annuals

This state usually occurs where the site has been cleared for cultivation and irrigation with subsequent abandonment. Native and non-native annual forbs and grasses dominate the plant community. Exotic annual species include tumbleweed, filaree, mediterranean grass, London rocket, malva weed, foxtail barley, red brome and Sahara mustard.

State 3 Shrubs, exotic annuals

Community 3.1 Shrubs, exotic annuals

This state occurs where the native saltbush cover is still intact but the herbaceous layer is dominated by non-native annual forbs and grasses. Exotic annuals include mediterranean grass, tumbleweed, filaree, red brome and London rocket. Exotic annuals can reduce the diversity of native species and may influence their ability to maintain themselves in the soil seed bank.

Transition T1A State 1 to 2

Usually results from clearing for irrigated agriculture and subsequent abandonment. Seed source for native shrubs is no longer present.

Transition T1B

State 1 to 3

Introduction of a seed source of non-natives. Possible competition of exotics with native species of forbs or grasses.

Restoration pathway R2A

State 2 to 1

Unknown

Restoration pathway R

State 3 to 1

Unknown

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	Perennial grasses			0–6	
	false Rhodes grass	TRCR9	<i>Trichloris crinita</i>	0–6	–
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	0–2	–
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	0–1	–
	Parish's threeawn	ARPUP5	<i>Aristida purpurea</i> var. <i>parishii</i>	0–1	–
	spidergrass	ARTE3	<i>Aristida ternipes</i>	0–1	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	0–1	–
	big galleta	PLRI3	<i>Pleuraphis rigida</i>	0–1	–
2	Annual grasses			0–56	
	needle grama	BOAR	<i>Bouteloua aristidoides</i>	0–22	–
	sixweeks grama	BOBA2	<i>Bouteloua barbata</i>	0–22	–
	Rothrock's grama	BORO2	<i>Bouteloua rothrockii</i>	0–22	–
	feather fingergrass	CHVI4	<i>Chloris virgata</i>	0–22	–
	mucronate sprangletop	LEPAB	<i>Leptochloa panicea</i> ssp. <i>brachiata</i>	0–11	–
	Bigelow's bluegrass	POBI	<i>Poa bigelovii</i>	0–6	–
	sixweeks threeawn	ARAD	<i>Aristida adscensionis</i>	0–6	–
	prairie threeawn	AROL	<i>Aristida oligantha</i>	0–6	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0–6	–
	Arizona brome	BRAR4	<i>Bromus arizonicus</i>	0–2	–
	Arizona signalgrass	URAR	<i>Urochloa arizonica</i>	0–2	–
	witchgrass	PACA6	<i>Panicum capillare</i>	0–2	–
	tapertip cupgrass	ERACA	<i>Eriochloa acuminata</i> var. <i>acuminata</i>	0–2	–
	tufted lovegrass	ERPEP2	<i>Eragrostis pectinacea</i> var. <i>pectinacea</i>	0–2	–
	Mexican sprangletop	LEFUU	<i>Leptochloa fusca</i> ssp. <i>uninervia</i>	0–2	–
Forb					

3	Annual forbs			0–112	
	desert Indianwheat	PLOV	<i>Plantago ovata</i>	0–28	–
	Coulter's spiderling	BOCO2	<i>Boerhavia coulteri</i>	0–28	–
	wheelscale saltbush	ATEL	<i>Atriplex elegans</i>	0–22	–
	wheelscale saltbush	ATELF	<i>Atriplex elegans var. fasciculata</i>	0–22	–
	Coulter's globemallow	SPCO2	<i>Sphaeralcea coulteri</i>	0–22	–
	woolly tidentromia	TILA2	<i>Tidentromia lanuginosa</i>	0–11	–
	combseed	PECTO	<i>Pectocarya</i>	0–11	–
	Nuttall's povertyweed	MONU	<i>Monolepis nuttalliana</i>	0–11	–
	Gordon's bladderpod	LEGO	<i>Lesquerella gordonii</i>	0–11	–
	shaggyfruit pepperweed	LELA	<i>Lepidium lasiocarpum</i>	0–6	–
	intermediate pepperweed	LEVIM	<i>Lepidium virginicum var. medium</i>	0–6	–
	manybristle chinchweed	PEPA2	<i>Pectis papposa</i>	0–6	–
	phacelia	PHACE	<i>Phacelia</i>	0–6	–
	common fiddleneck	AMMEI2	<i>Amsinckia menziesii var. intermedia</i>	0–6	–
	slender goldenweed	MAGR10	<i>Machaeranthera gracilis</i>	0–2	–
	tansyleaf tansyaster	MATA2	<i>Machaeranthera tanacetifolia</i>	0–2	–
	New Mexico plumeseed	RANE	<i>Rafinesquia neomexicana</i>	0–2	–
	canaigre dock	RUHY	<i>Rumex hymenosepalus</i>	0–2	–
	sleepy silene	SIAN2	<i>Silene antirrhina</i>	0–2	–
	aridland goosefoot	CHDE	<i>Chenopodium desiccatum</i>	0–2	–
	miniature woollystar	ERDI2	<i>Eriastrum diffusum</i>	0–2	–
	Texas stork's bill	ERTE13	<i>Erodium texanum</i>	0–2	–
	weakleaf bur ragweed	AMCO3	<i>Ambrosia confertiflora</i>	0–2	–
	fringed amaranth	AMFI	<i>Amaranthus fimbriatus</i>	0–2	–
	fringed redmaids	CACI2	<i>Calandrinia ciliata</i>	0–2	–
	yellow tackstem	CAPA7	<i>Calycoseris parryi</i>	0–2	–
	white tackstem	CAWR	<i>Calycoseris wrightii</i>	0–2	–
	whitemargin sandmat	CHAL11	<i>Chamaesyce albomarginata</i>	0–1	–
	cryptantha	CRYPT	<i>Cryptantha</i>	0–1	–
	American wild carrot	DAPU3	<i>Daucus pusillus</i>	0–1	–
	coastal bird's-foot trefoil	LOSA	<i>Lotus salsuginosus</i>	0–1	–
	Coulter's lupine	LUSP2	<i>Lupinus sparsiflorus</i>	0–1	–
	bristly nama	NAHI	<i>Nama hispidum</i>	0–1	–
	desert evening primrose	OEPR	<i>Oenothera primiveris</i>	0–1	–
Shrub/Vine					
4	Dominant shrub			168–280	
	cattle saltbush	ATPO	<i>Atriplex polycarpa</i>	168–280	–
5	Miscellaneous shrubs			0–45	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	0–11	–
	mound saltbush	ATOB	<i>Atriplex obovata</i>	0–11	–
	creosote bush	LATR2	<i>Larrea tridentata</i>	0–11	–
	water jacket	LYAN	<i>Lycium andersonii</i>	0–11	–

	western honey mesquite	PRGLT	<i>Prosopis glandulosa var. torreyana</i>	0–11	–
	lotebush	ZIOB	<i>Ziziphus obtusifolia</i>	0–1	–
	pale desert-thorn	LYPA	<i>Lycium pallidum</i>	0–1	–
6	Half shrubs			0–17	
	Griffiths' saltbush	ATGR2	<i>Atriplex griffithsii</i>	0–11	–
	seepweed	SUAED	<i>Suaeda</i>	0–6	–
	burrobush	AMDU2	<i>Ambrosia dumosa</i>	0–6	–
	shadscale saltbush	ATCO	<i>Atriplex confertifolia</i>	0–6	–
7	Succulents			0–11	
	Christmas cactus	CYLE8	<i>Cylindropuntia leptocaulis</i>	0–6	–
	devil's cholla	GRKU	<i>Grusonia kunzei</i>	0–6	–
	Engelmann's hedgehog cactus	ECEN	<i>Echinocereus engelmannii</i>	0–1	–
	candy barrelcactus	FEWI	<i>Ferocactus wislizeni</i>	0–1	–

Animal community

This site produces forage for year-round use by livestock. Salt desert shrub species will provide adequate protein throughout the year, however, energy will usually be lacking from Jun-Jan (except when summer rains are sufficient to produce a crop of summer annual grasses and forbs). Spring is the main season for plant growth and production of annual species. Proper use of the shrub species should be no more than 50% of the spring production of twigs and leaves. Water developments are very important to both livestock and wildlife on the site.

Lack of natural water and poor cover limits the value of this site as wildlife habitat. The site is mainly home to small desert animals and a forage area for birds.

Hydrological functions

These soils are medium textured and poor producers of runoff.

Recreational uses

Hunting, horseback riding, hiking, four wheeling.

Contributors

Dan Robinett
Larry D. Ellicott

Approval

Scott Woodall, 7/28/2020

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)	
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Contact for lead author	
Date	05/05/2024
Approved by	Scott Woodall
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:**
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17. **Perennial plant reproductive capability:**
-