

Ecological site R041XB219AZ **Gypsum Upland 8-12" 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.

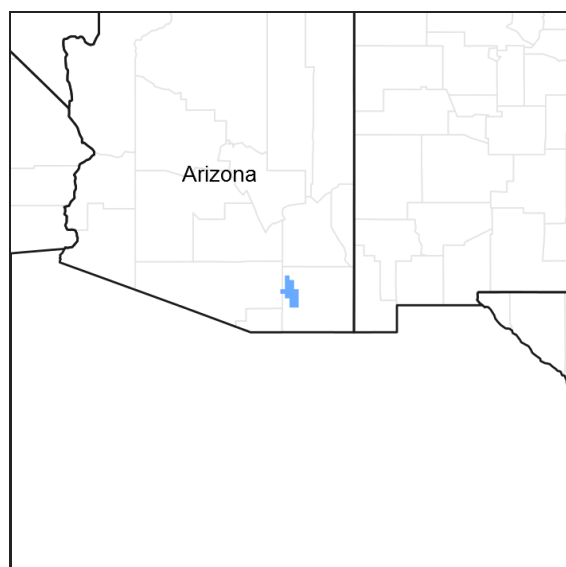


Figure 1. Mapped extent

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): 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 |
| R041XB206AZ | Limy Fan 8-12" p.z. |
| R041XB207AZ | Limy Slopes 8-12" p.z. |

Similar sites

| | |
|-------------|-------------------|
| R041XB201AZ | Breaks 8-12" p.z. |
|-------------|-------------------|

Table 1. Dominant plant species

| | |
|------------|--|
| Tree | Not specified |
| Shrub | (1) <i>larrea tridentata</i> (2) <i>acacia constricta</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 on fan terraces formed on relict lake bed sediments.

Table 2. Representative physiographic features

| | |
|--------------------|--------------------------------------|
| Landforms | (1) Alluvial flat (2) Fan remnant |
| Flooding frequency | None |
| Ponding frequency | None |
| Elevation | 792–1,219 m |
| Slope | 1–5% |
| 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

Soil features

These soils are well drained, variable in texture, stratified and high in soluble gypsum (5-30% by volume). They are moderately deep to deep and underlain by gypsum deposits in places. Coarse fragments in the soil profile are usually large gypsum crystals. These soils have formed in relict lacustrine deposits and may be slightly saline and sodic as well. They are not flooded.

Soil series mapped on this site include: SSA-666 Cochise county Northwest part MU's 14 Calcigypsid & Contention, 31 Ugyp, 32 Whitecliff; SSA-671 Cochise county Douglas-Tombstone part MU 35 Crystalgyp.

Table 4. Representative soil features

| | |
|--|--|
| Surface texture | (1) Silt loam (2) Fine sandy loam (3) Clay |
| Family particle size | (1) Loamy |
| Drainage class | Well drained |
| Permeability class | Moderate to slow |
| Soil depth | 152 cm |
| Surface fragment cover <=3" | 0–20% |
| Surface fragment cover >3" | 0–5% |
| Available water capacity (0-101.6cm) | 10.67–16.76 cm |
| Calcium carbonate equivalent (0-101.6cm) | 0–20% |
| Electrical conductivity (0-101.6cm) | 0–2 mmhos/cm |
| Sodium adsorption ratio (0-101.6cm) | 0–2 |
| Soil reaction (1:1 water) (0-101.6cm) | 7.4–8.4 |
| Subsurface fragment volume <=3" (Depth not specified) | 0–20% |
| Subsurface fragment volume >3" (Depth not specified) | 0–5% |

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 community found on relict or relatively undisturbed areas of this site. Other plant communities described here represent plant communities that are known to occur when the site is disturbed by factors such as fire, grazing and drought.

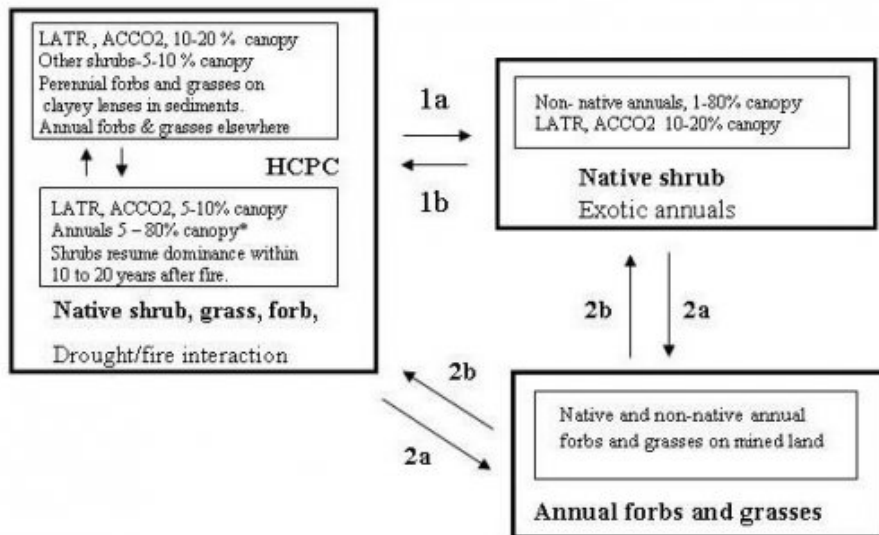
Production data provided in this site description is standardized to air dry weight at the end of the summer growing season. The plant communities described in this site description are based on near normal rainfall years.

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 described in the 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 amount shown for that 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 the field data is not collected at the end of the summer growing season, then the field data must be corrected to the end of 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.

The historic native state includes the native plant communities that occur on the site, including the historic climax plant community. This state includes other plant communities that naturally occupy the site following fire, drought, flooding, herbivores and other natural disturbances. The historic climax plant community represents the natural climax community that eventually reoccupies the site with proper management and a return to near normal conditions and/or equilibrium.

State and transition model

MLRA 41-2 (8-12"), Gyp Upland



*Native annuals dominant, may be patches of some non-natives

CHG – continuous heavy grazing
PGNG – proper grazing, no grazing
LATR – creosotebush, ACCO2–whitethorn

1a. Introduction of a seed source of non-natives. CHG, Possible competition of exotics with native species of forbs or grasses.
1b. Unknown
2a. Gypsum is strip mined and the resulting level areas become colonized by a mixture of native and non-native annual forbs and grasses.
2b. Unknown, possible seeding of shrubs like LATR and ACCO2

State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

This plant community is dominated by creosote bush with lesser amounts of other shrubs like whitethorn acacia. Annual grasses and forbs are an important part of the plant community. Cryptogams are very common on this site, often completely colonizing outcrops of gypsum. The site is extremely susceptible to soil piping and sheet, rill and gully erosion due to high concentrations of soluble gypsum in the surface soil.

Table 5. Annual production by plant type

| Plant Type | Low (Kg/Hectare) | Representative Value (Kg/Hectare) | High (Kg/Hectare) |
|-----------------|---------------------|--------------------------------------|----------------------|
| Shrub/Vine | 56 | 168 | 263 |
| Grass/Grasslike | 6 | 22 | 95 |
| Forb | 1 | 11 | 67 |
| Total | 63 | 201 | 425 |

Table 6. Soil surface cover

| | |
|------------------------------|------|
| Tree basal cover | 0% |
| Shrub/vine/liana basal cover | 1% |
| Grass/grasslike basal cover | 0-1% |
| Forb basal cover | 0-1% |
| Non-vascular plants | 0% |

| | |
|-----------------------------------|--------|
| Biological crusts | 25-50% |
| Litter | 5-25% |
| Surface fragments >0.25" and <=3" | 0-15% |
| Surface fragments >3" | 0-1% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 10-70% |

Table 7. Canopy structure (% cover)

| Height Above Ground (M) | Tree | Shrub/Vine | Grass/ Grasslike | Forb |
|-------------------------|------|------------|---------------------|-------|
| <0.15 | — | 0-1% | 0-10% | 0-10% |
| >0.15 <= 0.3 | — | 0-2% | 0-5% | 0-10% |
| >0.3 <= 0.6 | — | 5-10% | — | 0-5% |
| >0.6 <= 1.4 | — | 5-10% | — | — |
| >1.4 <= 4 | — | 0-2% | — | — |
| >4 <= 12 | — | — | — | — |
| >12 <= 24 | — | — | — | — |
| >24 <= 37 | — | — | — | — |
| >37 | — | — | — | — |

State 2

Shrubs, annuals

Community 2.1

Shrubs, annuals

This state occurs where the native shrub cover is still dominant but the herbaceous layer of the plant community is dominated by non-native annual forbs and grasses. These species can include filaree, red brome, mediterranean grass, Malta starthistle and Sahara mustard.

State 3

Annuals

Community 3.1

Annuals

This state occurs where strip mining for gypsum has left areas devoid of shrub cover. Native and non-native annual forbs and grasses dominate the plant community. Large chunks of gypsum crystal litter the surface. Cryptogams can quickly colonize areas of gypsum outcrop.

Transition T1A

State 1 to 2

Introduction of a seed source of non-natives, Continuous Heavy Grazing, possible competition of exotics with native species of forbs or grasses.

Transition T1B

State 1 to 3

Gypsum is strip mined and the resulting level areas become colonized by a mixture of native and non-native annual forbs and grasses.

Restoration pathway R2A

State 2 to 1

Unknown

Transition T2A

State 2 to 3

Gypsum is strip mined and the resulting level areas become colonized by a mixture of native and non-native annual forbs and grasses.

Restoration pathway R3A

State 3 to 1

Unknown

Restoration pathway R3B

State 3 to 2

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 | Dominant perennial grasses | | | 6–28 | |
| | bush muhly | MUPO2 | <i>Muhlenbergia porteri</i> | 6–17 | – |
| | whiplash pappusgrass | PAVA2 | <i>Pappophorum vaginatum</i> | 0–11 | – |
| | spike dropseed | SPCO4 | <i>Sporobolus contractus</i> | 0–11 | – |
| | false Rhodes grass | TRCR9 | <i>Trichloris crinita</i> | 0–11 | – |
| | Parish's threeawn | ARPUP5 | <i>Aristida purpurea</i> var. <i>parishii</i> | 0–11 | – |
| | big sacaton | SPWR2 | <i>Sporobolus wrightii</i> | 0–6 | – |
| | alkali sacaton | SPAI | <i>Sporobolus airoides</i> | 0–6 | – |
| 2 | Misc. perennial grasses | | | 0–11 | |
| | tobosagrass | PLMU3 | <i>Pleuraphis mutica</i> | 0–6 | – |
| | purple threeawn | ARPU9 | <i>Aristida purpurea</i> | 0–6 | – |
| | spidergrass | ARTE3 | <i>Aristida ternipes</i> | 0–6 | – |
| | spidergrass | ARTEG | <i>Aristida ternipes</i> var. <i>gentilis</i> | 0–6 | – |
| | low woollygrass | DAPU7 | <i>Dasyochloa pulchella</i> | 0–2 | – |
| | sand dropseed | SPCR | <i>Sporobolus cryptandrus</i> | 0–2 | – |
| | mesa dropseed | SPFL2 | <i>Sporobolus flexuosus</i> | 0–2 | – |
| | poverty threeawn | ARDI5 | <i>Aristida divaricata</i> | 0–2 | – |
| | Havard's threeawn | ARHA3 | <i>Aristida havardii</i> | 0–1 | – |
| | Arizona cottontop | DICA8 | <i>Digitaria californica</i> | 0–1 | – |
| | nineawn pappusgrass | ENDE | <i>Enneapogon desvauxii</i> | 0–1 | – |

| | | | | | |
|-------------|------------------------|--------|---|------|---|
| | plains bristlegrass | SEVU2 | <i>Setaria vulpiseta</i> | 0–1 | – |
| 3 | Annual grasses | | | 0–56 | |
| | needle grama | BOAR | <i>Bouteloua aristoides</i> | 0–22 | – |
| | sixweeks grama | BOBA2 | <i>Bouteloua barbata</i> | 0–22 | – |
| | Rothrock's grama | BORO2 | <i>Bouteloua rothrockii</i> | 0–11 | – |
| | sixweeks fescue | VUOC | <i>Vulpia octoflora</i> | 0–11 | – |
| | sixweeks threeawn | ARAD | <i>Aristida adscensionis</i> | 0–6 | – |
| | prairie threeawn | AROL | <i>Aristida oligantha</i> | 0–6 | – |
| | mucronate sprangletop | LEPAB | <i>Leptochloa panicea</i> ssp. <i>brachiata</i> | 0–6 | – |
| | delicate muhly | MUFR | <i>Muhlenbergia fragilis</i> | 0–2 | – |
| | littleseed muhly | MUMI | <i>Muhlenbergia microsperma</i> | 0–2 | – |
| | Bigelow's bluegrass | POBI | <i>Poa bigelovii</i> | 0–2 | – |
| | Arizona signalgrass | URAR | <i>Urochloa arizonica</i> | 0–2 | – |
| | Arizona brome | BRAR4 | <i>Bromus arizonicus</i> | 0–2 | – |
| | canyon cupgrass | ERLE7 | <i>Eriochloa lemmonii</i> | 0–2 | – |
| | desert lovegrass | ERPEM | <i>Eragrostis pectinacea</i> var. <i>miserrima</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> | 0–1 | – |
| Forb | | | | | |
| 4 | Perennial forbs | | | 1–11 | |
| | dwarf desertpeony | ACNA2 | <i>Acourtia nana</i> | 0–6 | – |
| | weakleaf bur ragweed | AMCO3 | <i>Ambrosia confertiflora</i> | 0–2 | – |
| | desert globemallow | SPAM2 | <i>Sphaeralcea ambigua</i> | 0–2 | – |
| | stinging serpent | CESI | <i>Cevallia sinuata</i> | 0–2 | – |
| | whitemargin sandmat | CHAL11 | <i>Chamaesyce albomarginata</i> | 0–1 | – |
| | desert trumpet | ERIN4 | <i>Eriogonum inflatum</i> | 0–1 | – |
| | San Pedro daisy | LAPO4 | <i>Lasianthaea podocephala</i> | 0–1 | – |
| | lacy tansyaster | MAPIP4 | <i>Machaeranthera pinnatifida</i> ssp. <i>pinnatifida</i> var. <i>pinnatifida</i> | 0–1 | – |
| | desert tobacco | NIOB | <i>Nicotiana obtusifolia</i> | 0–1 | – |
| | Coues' cassia | SECO10 | <i>Senna covesii</i> | 0–1 | – |
| | silverleaf nightshade | SOEL | <i>Solanum elaeagnifolium</i> | 0–1 | – |
| | brownplume wirelettuce | STPA4 | <i>Stephanomeria pauciflora</i> | 0–1 | – |
| | pricklyleaf dogweed | THAC | <i>Thymophylla acerosa</i> | 0–1 | – |
| | rue of the mountains | THTE2 | <i>Thamnosma texana</i> | 0–1 | – |
| | hairyseed bahia | BAAB | <i>Bahia absinthifolia</i> | 0–1 | – |
| | desert marigold | BAMU | <i>Baileya multiradiata</i> | 0–1 | – |
| | brownfoot | ACWR5 | <i>Acourtia wrightii</i> | 0–1 | – |
| | trailing windmills | ALIN | <i>Allionia incarnata</i> | 0–1 | – |
| 5 | Annual forbs | | | 0–56 | |
| | combseed | PECTO | <i>Pectocarya</i> | 0–11 | – |
| | manybristle chinchweed | PEPA2 | <i>Pectis papposa</i> | 0–11 | – |
| | desert Indianwheat | PLOV | <i>Plantago ovata</i> | 0–11 | – |
| | flat-topped buckwheat | ERDES | <i>Eriogonum deflexum</i> | 0–11 | – |

| | | | | | |
|--|-----------------------------|--------|--|------|---|
| | flatcrown buckwheat | ERDE0 | <i>Eriogonum deflexum</i> | 0-11 | - |
| | miniature woollystar | ERDI2 | <i>Eriastrum diffusum</i> | 0-11 | - |
| | Gordon's bladderpod | LEGO | <i>Lesquerella gordonii</i> | 0-6 | - |
| | shaggyfruit pepperweed | LELA | <i>Lepidium lasiocarpum</i> | 0-6 | - |
| | intermediate pepperweed | LEVIM | <i>Lepidium virginicum</i> var. <i>medium</i> | 0-6 | - |
| | coastal bird's-foot trefoil | LOSAB | <i>Lotus salsuginosus</i> var. <i>brevivexillus</i> | 0-6 | - |
| | Nuttall's povertyweed | MONU | <i>Monolepis nuttalliana</i> | 0-6 | - |
| | slender goldenweed | MAGR10 | <i>Machaeranthera gracilis</i> | 0-6 | - |
| | carelessweed | AMPA | <i>Amaranthus palmeri</i> | 0-6 | - |
| | bristly fiddleneck | AMTE3 | <i>Amsinckia tessellata</i> | 0-6 | - |
| | wheelscale saltbush | ATEL | <i>Atriplex elegans</i> | 0-6 | - |
| | Coulter's spiderling | BOCO2 | <i>Boerhavia coulteri</i> | 0-6 | - |
| | cryptantha | CRYPT | <i>Cryptantha</i> | 0-6 | - |
| | hairy prairie clover | DAMO | <i>Dalea mollis</i> | 0-2 | - |
| | American wild carrot | DAPU3 | <i>Daucus pusillus</i> | 0-2 | - |
| | western tansymustard | DEPI | <i>Descurainia pinnata</i> | 0-2 | - |
| | sorrel buckwheat | ERPO4 | <i>Eriogonum polycladon</i> | 0-2 | - |
| | Texas stork's bill | ERTE13 | <i>Erodium texanum</i> | 0-2 | - |
| | California poppy | ESCAM | <i>Eschscholzia californica</i> ssp. <i>mexicana</i> | 0-2 | - |
| | fringed redmaids | CACI2 | <i>Calandrinia ciliata</i> | 0-2 | - |
| | white tackstem | CAWR | <i>Calycoseris wrightii</i> | 0-2 | - |
| | brittle spineflower | CHBR | <i>Chorizanthe brevicornu</i> | 0-2 | - |
| | hyssopleaf sandmat | CHHY3 | <i>Chamaesyce hyssopifolia</i> | 0-2 | - |
| | Esteve's pincushion | CHST | <i>Chaenactis stevioides</i> | 0-2 | - |
| | tanseyleaf tansyaster | MATA2 | <i>Machaeranthera tanacetifolia</i> | 0-2 | - |
| | desert evening primrose | OEPR | <i>Oenothera primiveris</i> | 0-2 | - |
| | Florida pellitory | PAFL3 | <i>Parietaria floridana</i> | 0-2 | - |
| | green carpetweed | MOVE | <i>Mollugo verticillata</i> | 0-2 | - |
| | Coulter's lupine | LUSP2 | <i>Lupinus sparsiflorus</i> | 0-2 | - |
| | hairy desertsunflower | GECA2 | <i>Geraea canescens</i> | 0-2 | - |
| | star gilia | GIST | <i>Gilia stellata</i> | 0-2 | - |
| | Arizona poppy | KAGR | <i>Kallstroemia grandiflora</i> | 0-2 | - |
| | phacelia | PHACE | <i>Phacelia</i> | 0-2 | - |
| | woollyhead neststraw | STMI2 | <i>Stylocline micropoides</i> | 0-2 | - |
| | woolly tidestromia | TILA2 | <i>Tidestromia lanuginosa</i> | 0-2 | - |
| | Arizona popcornflower | PLAR | <i>Plagiobothrys arizonicus</i> | 0-1 | - |
| | doubleclaw | PRPA2 | <i>Proboscidea parviflora</i> | 0-1 | - |
| | New Mexico plumeseed | RANE | <i>Rafinesquia neomexicana</i> | 0-1 | - |
| | sleepy silene | SIAN2 | <i>Silene antirrhina</i> | 0-1 | - |
| | Coulter's globemallow | SPCO2 | <i>Sphaeralcea coulteri</i> | 0-1 | - |
| | common woolly sunflower | ERLA6 | <i>Eriophyllum lanatum</i> | 0-1 | - |

| | | | | | |
|-------------------|-----------------------------|-------|--|--------|---|
| | bristly nama | NAHI | <i>Nama hispidum</i> | 0–1 | – |
| | glandular threadplant | NEGL | <i>Nemacladus glanduliferus</i> | 0–1 | – |
| | exserted Indian paintbrush | CAEXE | <i>Castilleja exserta</i> ssp. <i>exserta</i> | 0–1 | – |
| | yellow tackstem | CAPA7 | <i>Calycoseris parryi</i> | 0–1 | – |
| | hoary bowlesia | BOIN3 | <i>Bowlesia incana</i> | 0–1 | – |
| | Mexican fireplant | EUHE4 | <i>Euphorbia heterophylla</i> | 0–1 | – |
| | milkvetch | ASTRA | <i>Astragalus</i> | 0–1 | – |
| Shrub/Vine | | | | | |
| 6 | Dominant shrub | | | 56–224 | |
| | creosote bush | LATR2 | <i>Larrea tridentata</i> | 56–224 | – |
| 7 | Miscellaneous shrubs | | | 0–17 | |
| | whitethorn acacia | ACCO2 | <i>Acacia constricta</i> | 0–11 | – |
| | catclaw acacia | ACGR | <i>Acacia greggii</i> | 0–1 | – |
| | fourwing saltbush | ATCA2 | <i>Atriplex canescens</i> | 0–1 | – |
| | cattle saltbush | ATPO | <i>Atriplex polycarpa</i> | 0–1 | – |
| | longleaf jointfir | EPTR | <i>Ephedra trifurca</i> | 0–1 | – |
| | American tarwort | FLCE | <i>Flourensia cernua</i> | 0–1 | – |
| | crown of thorns | KOSP | <i>Koeberlinia spinosa</i> | 0–1 | – |
| | water jacket | LYAN | <i>Lycium andersonii</i> | 0–1 | – |
| | pale desert-thorn | LYPA | <i>Lycium pallidum</i> | 0–1 | – |
| | mariola | PAIN2 | <i>Parthenium incanum</i> | 0–1 | – |
| | western honey mesquite | PRGLT | <i>Prosopis glandulosa</i> var. <i>torreyana</i> | 0–1 | – |
| | soaptree yucca | YUEL | <i>Yucca elata</i> | 0–1 | – |
| | lotebush | ZIOB | <i>Ziziphus obtusifolia</i> | 0–1 | – |
| 8 | Half shrubs | | | 0–11 | |
| | littleleaf ratany | KRER | <i>Krameria erecta</i> | 0–6 | – |
| | whitestem paperflower | PSCO2 | <i>Psilostrophe cooperi</i> | 0–2 | – |
| | desert zinnia | ZIAC | <i>Zinnia acerosa</i> | 0–2 | – |
| | broom snakeweed | GUSA2 | <i>Gutierrezia sarothrae</i> | 0–2 | – |
| | winterfat | KRLA2 | <i>Krascheninnikovia lanata</i> | 0–1 | – |
| | rayless goldenhead | ACSP | <i>Acamptopappus sphaerocephalus</i> | 0–1 | – |
| | burrobush | AMDU2 | <i>Ambrosia dumosa</i> | 0–1 | – |
| | threadleaf snakeweed | GUMI | <i>Gutierrezia microcephala</i> | 0–1 | – |
| 9 | Succulents | | | 0–11 | |
| | devil's cholla | GRKU | <i>Grusonia kunzei</i> | 0–3 | – |
| | tulip pricklypear | OPPH | <i>Opuntia phaeacantha</i> | 0–2 | – |
| | Christmas cactus | CYLE8 | <i>Cylindropuntia leptocaulis</i> | 0–2 | – |
| | walkingstick cactus | CYSP8 | <i>Cylindropuntia spinosior</i> | 0–1 | – |
| | Engelmann's hedgehog cactus | ECEN | <i>Echinocereus engelmannii</i> | 0–1 | – |
| | candy barrelcactus | FEWI | <i>Ferocactus wislizeni</i> | 0–1 | – |
| | buck-horn cholla | CYAC8 | <i>Cylindropuntia acanthocarpa</i> | 0–1 | – |
| | nightblooming cereus | PEGR3 | <i>Peniocereus greggii</i> | 0–1 | – |

| | | | | | |
|--|--------------|-------|----------------------------|-----|---|
| | cactus apple | OPEN3 | <i>Opuntia engelmannii</i> | 0–1 | – |
|--|--------------|-------|----------------------------|-----|---|

Animal community

This site offers little in the way of livestock forage. It does produce limited forage of annual grasses and forbs in wet winters. High amounts of soluble gypsum in runoff water that is collected in stock ponds may have a laxative effect on livestock.

Wildlife on the site is limited to small mammals and birds and their associated predators.

Hydrological functions

Medium to heavy textured soils make this a moderate producer of runoff. Soluble gypsum can lead to piping and rilling with heavy rainfall.

Recreational uses

Hunting, horseback riding, hiking, four wheeling.

Other products

Gypsum is mined in many areas for material used in making sheet rock.

Type locality

| | |
|--------------------------------|--------------------------|
| Location 1: Cochise County, AZ | |
| Township/Range/Section | T17S R20E S1 |
| General legal description | San Pedro Ranch estates. |

Contributors

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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) | |
| Contact for lead author | |
| Date | 05/20/2024 |
| 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:**

17. **Perennial plant reproductive capability:**
