USDA Natural Resources Conservation Service

Ecological site R042BE063NM
Gyp Upland, Cool Desert Grassland

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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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site usually occurs on alluvial fans, basins, valley floors, adjacent terraces or bajadas. They formed in loamy, calcareous, and gypsiferous sediments. Slopes range from 1 to 15 percent, but average 6 to 7 percent. Elevations range from 4,500 to 5,500 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Basin floor (3) Hill
Flooding frequency	None
Ponding frequency	None
Elevation	1,372–1,676 m

Slope	1–12%
Ponding depth	193 cm
Water table depth	193 cm
Aspect	Aspect is not a significant factor

Climatic features

This site has an arid climate with distinct seasonal temperature variations and large annual and diurnal temperature changes characteristic of a continental climate.
Precipitation averages 8 to 10 inches annually. Deviations of 4 inches or more from the average are quite common. Fifty percent of the precipitation is received from July to November, which is the predominant growing season of native plants. Summer precipitation is characterized by high-intensity, short-duration rainstorms. Winter precipitation averages less than one-half inch per month, usually in the form of rain. There are occasional snowstorms of short duration.
Temperatures vary from a mean monthly average of 77 F in July to 34 F in January, with a maximum of 104 F and a minimum of -10 F. The average last killing frost in spring is April 15, and the average first killing frost in fall is October 28. Frost-free season averages 185 days. Temperatures are conducive to native grass and forb growth from March through November.
Spring winds of 15 to 40 miles per hour are common from February to June. These winds increase transpiration rates of native plants and rapidly dry the surface soil. Small soil particles are often displaced by the wind near the soil surface. This results in structural damage to native plants, especially young seedlings.

Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F, respectively.

Table 3. Representative climatic features

Frost-free period (average)	165 days
Freeze-free period (average)	213 days
Precipitation total (average)	254 mm

Influencing water features

This site is not influenced by water from a wetland or stream.

Soil features

The soils are deep and well drained. Surface texture are loamy very fine sand, loamy sand, sandy loam or loam. The underlying material is a dense layers of soft or cemented gypsum material and gypsiferous earth at depths less than 8 inches may occur. The gypsum amounts range from 50 to 70 percent with 7 to 30 percent carbonates. These soils are droughty.

Areas of gypsum materials commonly outcrop to the surface as inclusions of raw gypsumland, which are void of vegetation and not part of the ecological site. In the lower part of the profile the semi indurated gypsum and caliche.

Minimum and maximum values listed below represent the characteristic soi for this site.

Characteristic soils:
Yesum
Campana
Saido

Table 4. Representative soil features

Surface texture	(1) Gypsiferous loam (2) Gypsiferous fine sandy loam (3) Gypsiferous loamy sand
Family particle size	(1) Loamy
Drainage class	Well drained to excessively drained
Permeability class	Moderately slow to moderately rapid
Soil depth	25–152 cm
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	0–10.16 cm
Calcium carbonate equivalent (0-101.6cm)	15–30%
Electrical conductivity (0-101.6cm)	4–8 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	2–4
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	2–20%

Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The plant, soil, air, water relationship is poor. The site has a droughty appearance because of the soils inability to support a dense stand of vegetation. If unprotected by plant cover or organic residue, the soil becomes easily wind blown and water eroded.

State and transition model

Ecosystem states

1. Historic Climax Plant Community

State 1 submodel, plant communities

1.1. Historic Climax Plant Community

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

This is a mixed grassland-shrub site with occasional scrub one-seed juniper trees scattered throughout the site. Forbs such as coldenia and cryptantha comprise an important part of the site. Other grasses that could appear on this site include: threeawn spp., needle-and-thread, New Mexico feathergrass, ring muhly, mat muhly, sandhill muhly, burrograss, fluffgrass, and Tridens spp. Other woody plants include: cliff fendlerbrush, cactus spp., rabbitbrush, broom dalea, sand sagebrush, and wolfberry. Other forbs include: threadleaf groundsel, globemallow, trailing four o'clock, bladderpod, and pricklyleaf dogweed.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	314	510	706
Forb	90	146	202
Shrub/Vine	45	73	101
Total	**449**	**729**	**1009**

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	16%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	10%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	62%

Figure 5. Plant community growth curve (percent production by month). NM2321, R042XA063NM-Gyp Upland-Warm Season Plant-HCPC. SD-1 HCPC Warm Season Plant Community.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0

Figure 6. Plant community growth curve (percent production by month). NM2322, R042XA063NM-Gyp Upland-Cool Season Plant HCPC. SD-1 Loamy HCPC Cool Season Plant Community.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	5	20	15	5	5	5	5	10	15	15	0

Additional community tables

Table 7. Community 1.1 plant community composition

				Annual	Foliar

Group	Common Name	Symbol	Scientific Name	Production (Kg/Hectare)	Cover (%)
Grass/Grasslike					
1	**Warm Season**			183–256	
	alkali sacaton	SPAI	*Sporobolus airoides*	183–256	–
2	**Warm Season**			73–146	
	black grama	BOER4	*Bouteloua eriopoda*	73–146	–
	bush muhly	MUPO2	*Muhlenbergia porteri*	73–146	–
3	**Warm Season**			37–73	
	gypsum grama	BOBR	*Bouteloua breviseta*	37–73	–
	blue grama	BOGR2	*Bouteloua gracilis*	37–73	–
4	**Warm Season**			37–73	
	James' galleta	PLJA	*Pleuraphis jamesii*	37–73	–
5	**Warm Season**			22–52	
	spike dropseed	SPCO4	*Sporobolus contractus*	22–52	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	22–52	–
	gyp dropseed	SPNE	*Sporobolus nealleyi*	22–52	–
6	**Warm Season**			22–52	
	Graminoid (grass or grass-like)	2GRAM	*Graminoid (grass or grass-like)*	22–52	–
Shrub/Vine					
7	**Shrub**			22–52	
	fourwing saltbush	ATCA2	*Atriplex canescens*	22–52	–
8	**Shrub**			8–22	
	mormon tea	EPVI	*Ephedra viridis*	8–22	–
9	**Shrub**			8–22	
	winterfat	KRLA2	*Krascheninnikovia lanata*	8–22	–
10	**Shrub**			8–22	
	Bigelow sage	ARBI3	*Artemisia bigelovii*	8–22	–
	curved sicklegrass	PAIN	*Parapholis incurva*	8–22	–
11	**Shrub**			8–37	
	yucca	YUCCA	*Yucca*	8–37	–
12	**Shrub**			8–37	
	Forb (herbaceous, not grass nor grass-like)	2FORB	*Forb (herbaceous, not grass nor grass-like)*	8–37	–

Forb					
13	**Forb**			37–73	
	cryptantha	CRYPT	*Cryptantha*	37–73	–
	buckwheat	ERIOG	*Eriogonum*	37–73	–
	dwarf mentzelia	MEPU3	*Mentzelia pumila*	37–73	–
	woody crinklemat	TICAC	*Tiquilia canescens var. canescens*	37–73	–
	hairy crinklemat	TIHI	*Tiquilia hispidissima*	37–73	–
14	**Forb**			37–73	
	Forb (herbaceous, not grass nor grass-like)	2FORB	*Forb (herbaceous, not grass nor grass-like)*	37–73	–

Animal community

This ecological site provides habitats which support a resident animal community that is characterized by coyote, black-tailed jackrabbit, desert cottontail, white-tailed antelope squirrel, Botta’s pocket gopher, banner-tailed kangaroo rat, southern plains woodrat, burrowing owl, scaled quail, meadowlark, and brown towhee.
These sites may be utilized by wintering flocks of chipping, rufous-crowned, and black-chinned sparrows.
Note: No animal community narrative exists within old range site decription.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series Hydrologic Group
Yesum b
Campana b
Saido b

Recreational uses

This site has limited potential for recreational use.

Wood products

This site has no potential for wood products.

Other products

This site is well suited for year-long grazing use by cattle, sheep, horses, antelope, deer, and burros.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index-----Ac/AUM
100 - 76----------3.2 – 4.2
75 – 51----------4.1 – 6.4
50 – 26----------6.3 – 12.7
25 – 0----------12.7 +

Other references

Other References:
Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Area 42, of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Valencia, Socorro and Bernalillo.

Characteristic Soils Are:

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:**