

Ecological site R042BB013NM

Gyp Hills, Desert Shrub

Accessed: 05/10/2025

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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on knolls, mesas, hills, escarpments and breaks between higher and lower plains or terraces, and canyon sides between deep desert drainageways. Slopes range from sloping to very steep. Direction of slope varies, the northern exposures having cooler and more moist soils, and the southern exposures having hotter and drier soils in general. Elevations range from 3,800 to 5,200 feet.

Table 2. Representative physiographic features

Landforms	(1) Hill (2) Canyon
Ponding frequency	None
Elevation	3,800–5,200 ft
Slope	10–45%
Water table depth	0 in

Climatic features

The frost-free season ranges from 183 to 205 days between early April and late October. The optimum growing season of the major native warm season plants coincides with the summer rains during June, July, August, and September. However, plants can make some growth at any time during the frost free period when moisture is available and minimum daily temperatures stay above 51 degrees F. Re-vegetation on this site will be limited to plants which can take advantage of moisture at the time it falls, since the soil profiles have large amounts of available water for short periods of time of tome and then rapidly dry. The majority of precipitation comes in the form of high intensity, short duration thunderstorms. Little or no available moisture can be stored in the soil profiles of this site. Strong winds from the southwest blow during January through June, which accelerate soil drying within the plant root zone and further discourage cool season plant growth or occupancy of the site.

Table 3. Representative climatic features

Frost-free period (average)	205 days
Freeze-free period (average)	227 days
Precipitation total (average)	12 in

Influencing water features

This site is not influenced by water from wetlands or streams.

Soil features

The soils of this site are very shallow. Surface textures are loam, fine sandy loam, and gravelly loam. Underlying material is a moderate to hard layer of cemented gypsum material or gypsum rock. The depth of the soils is less than 8 inches. The soil material is alluvium over gypsum and contains 50 to 80 percent gypsum.

Minimum and maximum values listed below represent the characteristic soil(s) for this site.

Characteristic soils:

None listed in NASIS at this time.

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Sandy loam (3) Gravelly loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Slow to moderate
Soil depth	0–20 in
Surface fragment cover ≤3"	0–14%
Surface fragment cover >3"	0–5%
Available water capacity (0–40in)	1–3 in
Calcium carbonate equivalent (0–40in)	7–30%
Electrical conductivity (0–40in)	0–8 mmhos/cm
Sodium adsorption ratio (0–40in)	0–4
Soil reaction (1:1 water) (0–40in)	7.4–8.4
Subsurface fragment volume ≤3" (Depth not specified)	0–25%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

Included in these areas are gypsum rock and moderately hard gypsum materials which are void of vegetation and not part of the ecological site.

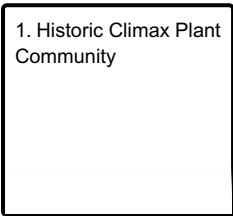
Also included within the site delineation are pockets of deeper soil material of the loamy range site. The soils have

moderate permeability and very low water holding capacity. Plant, soil, air, water relationships are poor. The site has a droughty appearance due to the soils inability to support a dense stand of vegetation. If unprotected by plant cover and organic residue, the soil becomes easily water eroded.

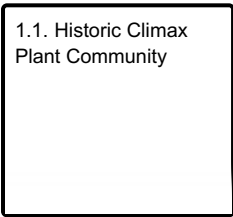
The general aspect of this site is that of a rough, broken badlands, sparsely vegetated and highly dissected. There is more of the surface area comprised of bare ground and rock than that which is vegetated. The map delineations of this site are in actuality a complex of bare ground, rock outcrop, a few deep soil pockets in cracks and fissures of the bed rock and areas of very shallow soils. The vegetation on the very shallow soil areas are dominated by rhizomatous and stoloniferous short grasses and forbs. Shrubs and half shrubs are apparent and rather unevenly distributed. The potential plant community varies somewhat with depth of soil, exposure and slope. Large bare areas with only surface lichens are common. Where there is little or no soil over the gypsum material only rough coldenia may be present.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

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Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Forb	40	80	120
Grass/Grasslike	40	80	120
Shrub/Vine	20	40	60
Total	100	200	300

Table 6. Soil surface cover

Tree basal cover	0%
Shrub/vine/liana basal cover	0%
Grass/grasslike basal cover	0%
Forb basal cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	12%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	48%

Figure 5. Plant community growth curve (percent production by month).
 NM2504, -Warm Season Plant HCPC. SD-2 Warm Season Plant Community.

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

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1				40–60	
	gypsum grama	BOBR	<i>Bouteloua breviseta</i>	40–60	–
	black grama	BOER4	<i>Bouteloua eriopoda</i>	40–60	–
2				20–30	
	gyp dropseed	SPNE	<i>Sporobolus nealleyi</i>	20–30	–
3				2–10	
	threeawn	ARIST	<i>Aristida</i>	2–10	–
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	2–10	–
Shrub/Vine					
4				10–20	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	10–20	–
	littleleaf sumac	RHMI3	<i>Rhus microphylla</i>	10–20	–
5				10–14	
	knifeleaf condalia	COSP3	<i>Condalia spathulata</i>	10–14	–
	crown of thorns	KOSP	<i>Koeberlinia spinosa</i>	10–14	–
6				6–10	
	creosote bush	LATR2	<i>Larrea tridentata</i>	6–10	–
	algerita	MATR3	<i>Mahonia trifoliolata</i>	6–10	–
	soaptree yucca	YUEL	<i>Yucca elata</i>	6–10	–
7				2–6	
	pricklypear	OPUNT	<i>Opuntia</i>	2–6	–
	pricklyleaf dogweed	THAC	<i>Thymophylla acerosa</i>	2–6	–
Forb					
8				30–50	
	hairy crinklemat	TIHI	<i>Tiquilia hispidissima</i>	30–50	–
9				10–20	
	flax	LINUM	<i>Linum</i>	10–20	–
	blazingstar	MENTZ	<i>Mentzelia</i>	10–20	–
	fiddleleaf	NAMA4	<i>Nama</i>	10–20	–
	Texan phacelia	PHINT	<i>Phacelia integrifolia</i> var. <i>texana</i>	10–20	–
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus</i> var. <i>flaccidus</i>	10–20	–
10				10–20	
	whitest evening primrose	OEAL	<i>Oenothera albicaulis</i>	10–20	–
	beardtongue	PENST	<i>Penstemon</i>	10–20	–
	desert unicorn-plant	PRAL4	<i>Proboscidea althaeifolia</i>	10–20	–
	whitestem paperflower	PSCO2	<i>Psilostrophe cooperi</i>	10–20	–
11				2–10	
	Forb, annual	2FA	<i>Forb, annual</i>	2–10	–
	Seven River Hills buckwheat	ERGY	<i>Eriogonum gypsophilum</i>	2–10	–

Animal community

This site provides habitats which support a resident animal community that is characterized by bobcat, gray fox, black-tailed jackrabbit, rock squirrel, rock pocket mouse, red-tailed hawk, scaled quail, loggerhead shrike, Texas horned lizard, lesser earless lizard, and western diamondback rattlesnake.

Where closely associated with high cliffs and ledges as in the Guadalupe and Sacramento Mountains, golden eagle and prairie falcon hunt over the site.

Fourwing saltbush, littleleaf sumac, spiny allthorn, and knifeleaf condalia provide protective cover for scaled quail. Fourwing saltbush and littleleaf sumac are browsed by desert mule deer. Seed, green herbage and fruit from a variety of grasses, forbs, and shrubs provide food for a number of birds and mammals, including dove and quail

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

Soils that would be either a B or C

None in NASIS at this time.

Recreational uses

This site offers recreation potential for hiking, horseback riding, rock, gem, and mineral collecting, nature observation and photography, and quail, dove, and predator hunting.

Wood products

This site provides little or no wood products other than curiosities and small furniture which can be made from the roots and stems of mesquite where it has invaded. The woody pods of devilsclaw are also used in curiosities.

Other products

About 75% of the area within map delineation's of this site are not suitable for domestic livestock grazing because of steep slope, rock outcrop and lack of forage. Grazing is least damaging to this sparse vegetative cover during fall and winter. The site is best utilized by goats or yearling cattle following seasons of abundant moisture. During normal or unfavorable years the plants are adequately utilized by native fauna. This site should not be depended on to furnish needed forage for perennial livestock breeding operations but can furnish some incidental grazing in conjunction with adjacent sites in the same pastures.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index Ac/AUM

100 - 76 7.5 – 10.0

75 – 51 9.5 – 13.0

50 – 26 13.1 – 19.0

25 – 0 30.0 - +

Type locality

Location 1: Eddy County, NM	
Township/Range/Section	T26S R24E S27

General legal description	Southwest corner of Northwest Quarter, Section 27, Township 26 S., Range 24E., NMPM. 2/14 miles N. E. of the Texas-New Mexico state line, on the west side of highway 180 on the A. M. Leeman Ranch, Map Sheet 148 insert, New Mexico Soil Survey Report
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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 Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Sierra County Dona Ana County Grant County Hidalgo County Luna County Otero County Eddy County.

Characteristic Soils Are:

Cottonwood loam, very shallow, less than 8 inches thick, greater than 9 percent slopes.

Holloman loam, very shallow, less than 8 inches thick, greater than 9 percent slope.

McCarran loam, very shallow, less than 8 inches thick, greater than 9 percent slopes.

Yesum fine sandy loam, less than 8 inches thick, greater than 9 percent slopes.

Alamogordo fine sandy loam, less than 8 inches thick, greater than 9 percent slopes.

Aztec gravelly loam (as mapped in Otero County, New Mexico)

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:**

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17. **Perennial plant reproductive capability:**
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