

Ecological site R070BB006NM

Gyp Upland

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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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on valley floors, plains, fan piedmonts, piedmont slopes or relic lakebeds on basins. The parent material consists of mixed alluvium and or eolian deposits derived from sedimentary rock or residuum weathered from gypsum. Slopes range from 0 to 35 percent and average less than 8 percent. The soil does not meet hydric criteria, the calcium carbonate equivalent with in the control section is less than 20 percent and gypsum percent greater than 40 percent. Elevations range from 2,800 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Fan remnant (3) Basin-floor remnant
Flooding duration	Very brief (4 to 48 hours)
Flooding frequency	None to occasional
Ponding duration	Very brief (4 to 48 hours)
Ponding frequency	None to rare
Elevation	850 – 1,520 m
Slope	0 – 40 %

Aspect	Aspect is not a significant factor
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Climatic features

The frost free season ranges from 180 to 221 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.

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 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.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site 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)	220 days
Freeze-free period (average)	240 days
Precipitation total (average)	330 mm

Influencing water features

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

Soil features

Soils are shallow to moderately deep to gypsum material. Surface and subsurface textures range from loam, fine sandy loam or sandy loam. Substratum is a dense layers of soft or cemented gypsum material and gypsiferous earth at various depths. The 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 make up about 75 percent of the mass and are restrictive to root development. 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.

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

Characteristic Soils:

Holloman
 Alamogordo
 Aztec
 Cottonwood
 McCullough
 Malargo
 Reeves
 Reflection
 Yesum

Table 4. Representative soil features

Surface texture	(1) Gypsiferous fine sandy loam (2) Loam (3) Sandy loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Moderately slow to moderate
Soil depth	60 – 180 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	10.16 – 20.32 cm
Calcium carbonate equivalent (0-101.6cm)	10 – 30 %
Electrical conductivity (0-101.6cm)	0 – 20 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.4 – 8.6
Subsurface fragment volume <=3" (Depth not specified)	0 – 10 %

Subsurface fragment volume >3" (Depth not specified)	Not specified
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Ecological dynamics

Overview

The vegetation of this site often intergrades with that of Loamy sites, depending on the amounts of gypsum, soil texture, and depths of gypsic horizons. Low-lying areas where run-in water occurs behave like draws. Areas where gypsum outcrops are exposed harbor little vegetation. Gyp Uplands may intergrade with the Salt Flats site depending on salinity levels. Thus, the vegetation of this site is very patchy, variable, and difficult to characterize. The historic plant community types that are likely to be associated with the gyp uplands site include 1) an alkali sacaton (*Sporobolus airoides*) and black grama (*Bouteloua eriopoda*) or blue grama (*B. gracilis*)-dominated community associated with soils having relatively deep (> 10 ") gypsic horizons and 2) a gyp grama (*Bouteloua breviseta*) and gyp dropseed (*Sporobolus nealleyi*)-dominated community on soils with shallow (10") gypsic horizons. Tobosa (*Pleuraphis mutica*), burrograss (*Scleropogon brevifolius*), and/or saltbush (*Atriplex canescens*) may also dominate depending on texture, land-use history, or other features. The subshrub *Coldenia* (*Coldenia* spp) increasingly dominates sites with very shallow gypsic horizons as grasses decline. Gyp upland sites are susceptible to erosion when vegetation cover is reduced due to drought and overgrazing. Mesquite (*Prosopis glandulosa*) may invade soils with deeper gypsic horizons within the site that are dominated by tobosa or burrograss. Erosion of A horizons bring gypsic horizons closer to the surface and can shift community composition to dominance by gyp dropseed, coldenia, and bare soil.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Warm Season			298-362	
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	298-362	–
2	Warm Season			33-99	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	33-99	–
3	Warm Season			7-66	
	gypsum grama	BOBR	<i>Bouteloua breviseta</i>	7-66	–
4	Warm Season			20-99	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	20-99	–
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	20-99	–
5	Warm Season			7-20	
	gyp dropseed	SPNE	<i>Sporobolus nealleyi</i>	7-20	–
6	Warm Season			7-20	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	7-20	–
7	Warm Season			7-20	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	7-20	–
8	Warm Season			20-99	
	threeawn	ARIST	<i>Aristida</i>	20-99	–
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	20-99	–
	ear muhly	MUAR	<i>Muhlenbergia arenacea</i>	20-99	–
Shrub/Vine					
9	Shrub			20-46	

	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	20-46	–
	jointfir	EPHED	<i>Ephedra</i>	20-46	–
	littleleaf sumac	RHMI3	<i>Rhus microphylla</i>	20-46	–
10	Shrub			7-20	
	javelina bush	COER5	<i>Condalia ericoides</i>	7-20	–
	knifeleaf condalia	COSP3	<i>Condalia spathulata</i>	7-20	–
	crown of thorns	KOSP	<i>Koeberlinia spinosa</i>	7-20	–
11	Cactus			7-20	
	pricklypear	OPUNT	<i>Opuntia</i>	7-20	–
	yucca	YUCCA	<i>Yucca</i>	7-20	–
Forb					
12	Forb			33-66	
	woody crinklemat	TICAC	<i>Tiquilia canescens var. canescens</i>	33-66	–
13	Forb			7-99	
	Forb, annual	2FA	<i>Forb, annual</i>	7-99	–
	trailing windmills	ALIN	<i>Allionia incarnata</i>	7-99	–
	daisy	CHRY2	<i>Chrysanthemum</i>	7-99	–
	golden tickseed	COTI3	<i>Coreopsis tinctoria</i>	7-99	–
	leatherweed	CRPOP	<i>Croton pottsii var. pottsii</i>	7-99	–
	Seven River Hills buckwheat	ERGY	<i>Eriogonum gypsophilum</i>	7-99	–
	blazingstar	MENTZ	<i>Mentzelia</i>	7-99	–
	fiddleleaf	NAMA4	<i>Nama</i>	7-99	–
	whitest evening primrose	OEAL	<i>Oenothera albicaulis</i>	7-99	–
	beardtongue	PENST	<i>Penstemon</i>	7-99	–
	Texan phacelia	PHINT	<i>Phacelia integrifolia var. texana</i>	7-99	–
	white milkwort	POAL4	<i>Polygala alba</i>	7-99	–
	desert unicorn-plant	PRAL4	<i>Proboscidea althaeifolia</i>	7-99	–
	whitestem paperflower	PSCO2	<i>Psilostrophe cooperi</i>	7-99	–
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus var. flaccidus</i>	7-99	–
	Hopi tea greenthread	THME	<i>Thelesperma megapotamicum</i>	7-99	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

This site provides habitats which support a resident animal community that is characterized by coyote, hooded skunk, desert cottontail, whitethroated woodrat, sparrow hawk, cactus wren, scaled quail, loggerhead shrike, mourning dove, and a number of ground nesting birds including, varied bunting, grasshopper sparrow, and Baird's sparrow Texas horned lizard, lesser earless lizard, and western diamondback rattlesnake. Fourwing saltbush, littleleaf sumac, spiny allthorn, common javilina bush, and knifeleaf condalia provide

protective cover for scaled quail. Seed, green herbage and fruit from a variety of grasses, forbs and shrubs provide food for a number of birds and mammals, including scaled and Gambel's quail, mourning dove and prairie dogs. The fruit of tesajo cactus is relished by 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 Cottonwood C Holloman C Yesum B Alamogordo B Aztec C Malargo B Reeves C Reflection B

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. During years of abundant moisture, a colorful array of wildflowers can be observed from spring through fall.

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 site. The woody pods of devils claw are also used in curiosities.

Other products

This site is suitable for grazing during all seasons of the year. Care must be taken to leave enough vegetation cover for soil protection during windy and rainy periods or severe soil erosion will result. About 300 pounds per acre of total vegetation and litter is minimal for soil protection. This site is best suited and most efficiently utilized by cattle. It can also be utilized by small numbers of goats and sheep in combination with cattle where control or protection from predators can be provided. Grazing management that results in a mosaic of use patterns provides diversity for wildlife.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month Similarity Index Ac/AUM 100 - 76 5.5 – 8.0 75 – 51 7.5 – 11.0 50 – 26 11.0 – 15.0 25 – 0 25.0 +

Type locality

Location 1: Eddy County, NM	
Township/Range/Section	T26S R24E S27
General legal description	N.W. ¼, Sec. 27, T. 26 S., R. 24 E., NMPM. 2 ½ miles N. E. of the Texas – New Mexico State line, on the west side of Highway 180. A. M. Leeman Ranch. GC Mapping Unit, Cottonwood component. Map Sheet 148 insert, Eddy Area New Mexico Soil Survey Report.

Other references

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:
