

Ecological site R070BC030NM
Limy

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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 plains, alluvial fans, fan piedmont, adjacent to playa lake beds or playa rims. Slopes are 0 to 5 percent. Elevations range from 2,842 to 4,500 feet. The site is derived from calcareous mixed alluvium derived from sedimentary rock. Rock fragments range less than 10 percent.

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (2) Alluvial fan (3) Plain
Flooding frequency	None
Ponding frequency	None
Elevation	870 – 1,370 m
Slope	0 – 10 %
Aspect	Aspect is not a significant factor

Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity short duration thunderstorms.

Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.

The average frost-free season is 207 to 220 days. The last killing frost is in late March or early April and the first killing frost in late October or early November.

Temperature and rainfall both favor warm season perennial plant growth. In years of abundant moisture, annual forbs and cool season grasses can make up an important component of the site. Strong winds blow from the west and southwest from January through June, which accelerate soil drying during a critical period for cool season plant growth.

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 wetlands or streams.

Soil features

Soils are deep and very deep. Surface layers are fine sand, very fine sand, silty clay loam, very fine sandy loam, clay loam and loam. Subsoil textures are loam, clay loam, silty clay loam, sandy clay loam or silt loam. Depth to calcic horizon: 10 to 24 inches, and calcium carbonate equivalent is averaging more than 40 percent. Permeability is moderate and the available water holding capacity is moderate. Because of the high lime content and rather moderately coarse surface textures, the soils are easily windblown if not protected by vegetation.

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

Characteristic soils:

- Karro
- Armesa
- Jal

Table 4. Representative soil features

Surface texture	(1) Fine sandy loam (2) Very fine sandy loam (3) Silty clay loam
Family particle size	(1) Sandy
Drainage class	Moderately well drained to well drained

Permeability class	Slow to moderately slow
Soil depth	150 – 180 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	12.7 – 17.78 cm
Calcium carbonate equivalent (0-101.6cm)	30 – 50 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 10
Subsurface fragment volume <=3" (Depth not specified)	0 – 20 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

The Limy site occurs on nearly level or slightly concave upland plains, fans, and terraces, or adjacent to playa lakebeds. The Limy site can occur as a distinct unit adjacent to, or as part of, a mosaic with Loamy, Sandy, and Shallow Sandy sites. A soil layer high in lime, of soft or weakly cemented calcium carbonate, usually within two feet of the soil surface, distinguishes the Limy site. The historic plant community of the Limy site exhibits a grassland aspect, with shrubs and half shrubs noticeable and evenly scattered. Grasses account for approximately 65 to 80 percent of the total potential production. Black grama and blue grama are the dominant grass species. Yucca, winterfat, and ephedra are common shrubs. Overgrazing and/or extended drought can reduce grass cover, effect a change in grass species dominance, and may result in a shrubdominated state. Decreased fire frequency may also play a key role in the transition to shrub dominance.

1 Resource competition by shrubs, continued loss of grass cover, and resulting erosion

may initiate the transition to a shrubland state.

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				104-156	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	104-156	–
2				52-104	
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	52-104	–
3				104-207	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	104-207	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	104-207	–
4				104-156	
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	104-156	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	104-156	–
5				31-52	
	low woollygrass	DAPU7	<i>Dasyochloa pulchella</i>	31-52	–
	ring muhly	MUTO2	<i>Muhlenbergia torreyi</i>	31-52	–
6				31-52	
	threeawn	ARIST	<i>Aristida</i>	31-52	–
7				31-52	
	burrograss	SCBR2	<i>Scleropogon brevifolius</i>	31-52	–
8				31-52	
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	31-52	–
	vine mesquite	PAOB	<i>Panicum obtusum</i>	31-52	–
9				31-52	
	Grass, perennial	2GP	<i>Grass, perennial</i>	31-52	–
Shrub/Vine					
10				52-104	
	yucca	YUCCA	<i>Yucca</i>	52-104	–
11				52-104	
	jointfir	EPHED	<i>Ephedra</i>	52-104	–
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	52-104	–
12				21-52	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	21-52	–
13				31-52	
	American tarwort	FLCE	<i>Flourensia cernua</i>	31-52	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	31-52	–
	creosote bush	LATR2	<i>Larrea tridentata</i>	31-52	–
14				21-52	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	21-52	–
Forb					

15				31-52	
	woolly groundsel	PACA15	<i>Packera cana</i>	31-52	–
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus var. flaccidus</i>	31-52	–
16				21-52	
	leatherweed	CRPOP	<i>Croton pottsii var. pottsii</i>	21-52	–
17				21-52	
	bladderpod	LESQU	<i>Lesquerella</i>	21-52	–
18				21-52	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	21-52	–

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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Animal community

This site provides habitat which supports a resident animal community that is characterized by black-tailed jackrabbit, spotted ground squirrel, black-tailed prairie dog, yellow-faced pocket gopher, Merriam's kangaroo rat, hispid cotton rat, swift fox, burrowing owl, horned lark, meadowlark, lark bunting, scaled quail, greater earless lizard, leopard lizard, Texas horned lizard, Western spadefoot toad, prairie rattlesnake and Western coachwhip. The marsh hawk hunts over the site in winter, and long-billed curlew, and sandhill crane utilize playas associated with the site during migrations.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups. Hydrologic Interpretations Soil Series Hydrologic Group Jal----- B Armesa----- B Karro----- B

Recreational uses

This site offers recreation potential for hiking, horseback riding, nature observation and photography, and quail, dove, antelope and predator hunting.

Wood products

This site produces no significant wood products.

Other products

This site is suitable for grazing during all seasons of the year by all kinds and classes of livestock. As this site deteriorates there will be a decrease in plants such as black grama, bush muhly, blue grama, vine-mesquite, Arizona cottontop, winterfat and fourwing saltbush. This will cause an increase in fluffgrass, burrograss, yucca, creosotebush, tarbush and broom snakeweed. There will also be an increase in bare ground. As vegetative cover is reduced the soil is very open to wind erosion. This site responds best to a system of management that rotates the season of use.

Other information

Other Information: Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month Similarity----- Index Ac/AUM 100 - 76----- 3.0 – 3.5 75 – 51----- 3.4 – 4.8 50 – 26----- 4.7 – 7.0 25 – 0----- 7.1 +

Inventory data 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. Eddy County, Lea County, and Chaves County.

Other references

References

1. Humphrey, R.R. 1974. Fire in the deserts and desert grassland of North America. In: Kozlowski, T. T.; Ahlgren, C. E., eds. Fire and ecosystems. New York: Academic Press: 365-400.
2. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheet. Rangeland Soil Quality—Wind Erosion. Rangeland Sheet 10. [Online]. Available: <http://www.statlab.iastate.edu/survey/SQL/range.html>
3. Vallentine, J.F. and J.J. Norris. 1964. A comparative study of soils of selected creosotebush sites in southern New Mexico. J. Range. Manage. 17: 23-32.
4. Welsh, R.G. and R.F. Beck. 1976. Some ecological relationships between creosotebush and bush muhly. Journal of Range Management 29:472-475.

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:
