

Ecological site R039XA016NM

Shallow Hills

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.

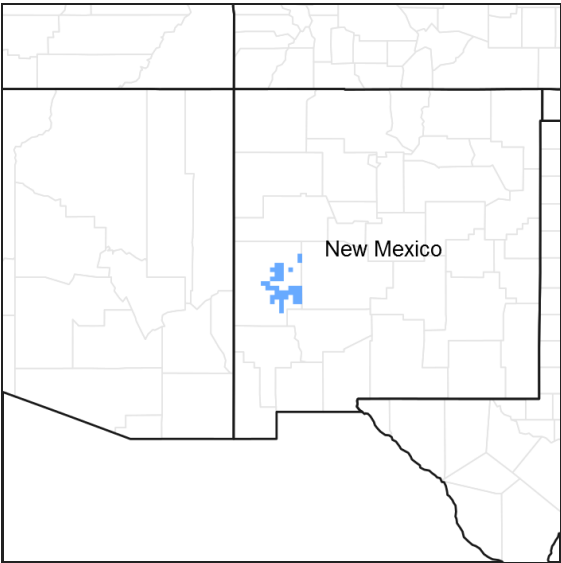


Figure 1. Mapped extent

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

The terrain on which this site occurs is rolling or hilly, sometimes steep. Slopes average about 15 percent but range from 10 percent to just over 40 percent. Exposed bedrock and ledges occur occasionally and exposure varies. Elevations typically range upward from 7,000 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Hill
Elevation	7,000 ft
Slope	10–40%
Aspect	NE, SW

Climatic features

Average annual precipitation varies from approximately 14 to 18 inches, depending upon where the site is found. Year-to-year fluctuations in precipitation are common. Half or more of the precipitation occurs during the late-fall through early spring period, often in the form of snow. The balance of the precipitation falls typically from mid-June through September and is characterized by short-duration, high-intensity thunderstorms.

The average frost-free season is about 103 days but is highly variable from location to location. The last killing frost in the spring occurs about June 1st, and the first killing frost in the fall normally occurs by October 1st. Lighter frosts may occur anytime in June and again in late August or early September. Average annual air temperature is about 50 degrees F. Monthly average air temperatures vary from 30 degrees F in January to just under 70 degrees F in August.

Both the air temperature and moisture regime of this climate favor cool-season vegetation.

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)	112 days
Freeze-free period (average)	133 days
Precipitation total (average)	18 in

Influencing water features

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

Soil features

Soils are very shallow to shallow over bedrock and are derived from such parent materials as volcanic tuff. Surface textures are loams or sandy loams and are usually gravelly, stony, or cobbly. Permeability varies from moderately rapid to moderately slow. Available water-holding capacity is very low to low and runoff is medium.

Table 4. Representative soil features

Surface texture	(1) Gravelly sandy loam (2) Cobbly (3) Stony
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow to moderately rapid
Soil depth	7–20 in
Surface fragment cover <=3"	35–60%
Surface fragment cover >3"	15–35%
Available water capacity (0–40in)	0–6 in
Soil reaction (1:1 water) (0–40in)	6.1–7.3

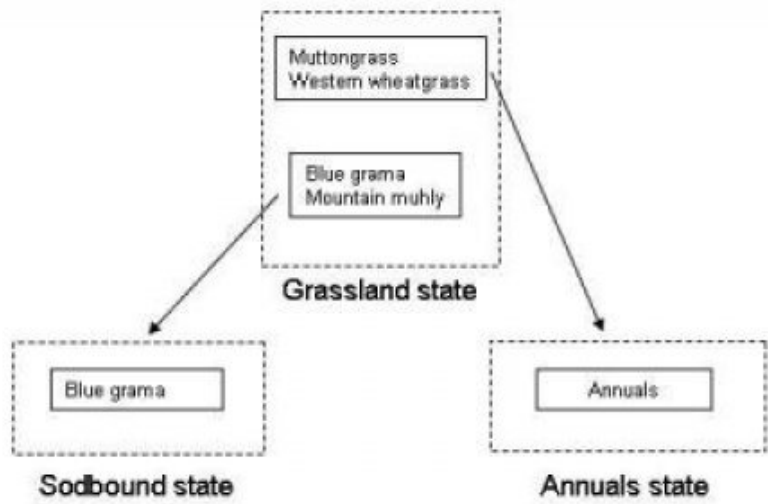
Subsurface fragment volume <=3" (Depth not specified)	15–60%
Subsurface fragment volume >3" (Depth not specified)	15–35%

Ecological dynamics

To be developed.

State and transition model

State-Transition model: MLRA 39, AN-2, Shallow Hills



State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

Vegetation on this site is an expression of several closely interrelated and difficult to separate plant communities. Factors such as exposure, intermixed pockets of deeper soil, exposed bedrock, and ledges contribute to this association of plants. Generally all exposures are open and are dominated by perennial grasses. Cool-season species are more prevalent on the north and east facing slopes, while blue grama, little bluestem, and sideoats grama are more frequently encountered on south and west facing slopes. Large shrubs and trees are few and scattered, and where present, usually occupy north-facing slopes. Half-shrubs occur thinly across the site. Forbs include wildbuckwheat, trailing fleabane, lupines, sageworts, and Indian paintbrush. Other species include: bottlebrush squirreltail, wolftail, threeawn spp., muhlenbergia spp., big bluestem, broom snakeweed, green

sagewort, oak spp., and winterfat.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	450	600	750
Forb	60	80	100
Total	510	680	850

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	0%
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	20%

Figure 5. Plant community growth curve (percent production by month). NM1306, R039XA016NM Shallow Hills HCPC. R039XA016NM Shallow Hills HCPC Vegetation on this site is actually an expression of several closely interrelated and difficult to separate plant communities dominated by perennial grasses with scattered shrubs, half-shrubs and forbs. .

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

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				120–160	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	120–160	–
2				80–120	
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	80–120	–
3				160–240	
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	160–240	–
	muttongrass	POFE	<i>Poa fendleriana</i>	160–240	–
4				24–64	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	24–64	–
5				8–40	
	spike muhly	MUWR	<i>Muhlenbergia wrightii</i>	8–40	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	8–40	–
6				40–80	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	40–80	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	40–80	–
7				8–40	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	8–40	–
Forb					
8				24–64	
	Forb, perennial	2FP	<i>Forb, perennial</i>	24–64	–
9				8–40	
	Forb, annual	2FA	<i>Forb, annual</i>	8–40	–
Shrub/Vine					
10				8–24	
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	8–24	–
11				8–24	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	8–24	–
12				0–8	
	juniper	JUNIP	<i>Juniperus</i>	0–8	–
13				24–40	
	Shrub, deciduous	2SD	<i>Shrub, deciduous</i>	24–40	–

Animal community

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by deer, gray fox, eastern cottontail, kestrel, mourning dove, horned lark, meadowlark, chipping sparrow, short-horned lizard, Sonoran gopher snake, and prairie rattlesnake.

Elk range into the site and golden eagle and common raven hunt over it.

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

Coni-----D

Tolman-----D

Recreational uses

This site offers recreation potential for picnicking, hiking, horseback riding, nature observation, and photography. Camping opportunities can be good, but the terrain may limit access to site. Hunting is fair to poor for both deer and elk due to a lack of cover adequate to keep these animals on the site for extended periods of time. Natural beauty is strongly tied to the mountainous setting on which the site occurs.

Wood products

This site has insignificant potential for wood products. What few trees or large shrubs might exist probably should not be harvested unless an increase or invasion of this type of vegetation resulting from a decline in condition takes place.

Other products

Grazing:

Better than 75 percent of the vegetation produced on this site comes from plants that produce forage for grazing animals, including domestic livestock. The site is best suited to late-spring, summer, or early fall grazing but may also be used in wintertime when weather conditions are not prohibitive. Yearlong, continuous use is not recommended, however. Wherever possible, a system of deferment that discourages grazing in the same season, year after year, should be instituted. Particular attention to spring/fall rest for cool-season plants and summer rest for those that are warm-season will help to maintain a healthy balance of vigorous plants on the site.

In addition to domestic livestock, this site is used by deer, elk, small mammals, and birds.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index-----Ac/AUM

100 - 76-----3.2 – 4.1

75 – 51-----3.8 – 4.8

50 – 26-----4.5 – 9.0

25 – 0-----9.0+

Type locality

Location 1: Catron County, NM
Location 2: Grant County, NM
Location 3: Sierra County, NM
Location 4: Socorro County, NM

Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the Arizona and New Mexico Mountains, Major Land Resource Area 39, of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Socorro, Catron, Sierra, and Grant.

Characteristic Soils Are:
Coni, Tolman

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:**
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