

# Ecological site R039XA014NM Stony Loam

Accessed: 05/12/2025

## 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.

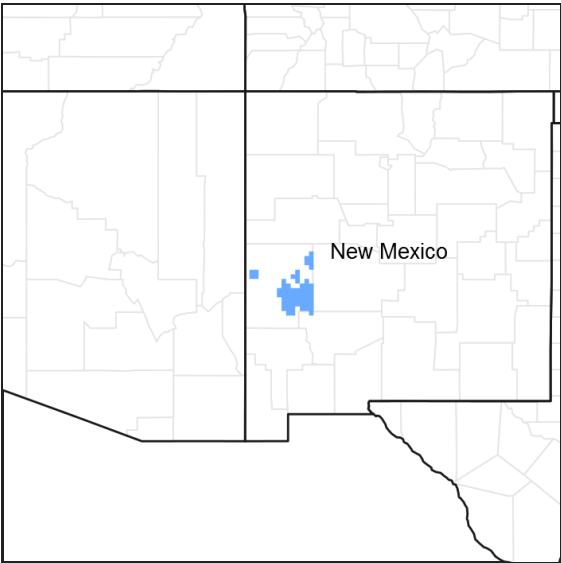


Figure 1. Mapped extent

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

Topography is gently rolling to rolling with extremes in slopes ranging from 0 to 40 percent. Elevations vary between 7,000 and about 9,000 feet above sea level, but are more typically in the 7,500 foot to 8,500 foot range.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	2,134–2,743 m
Slope	0–40%
Aspect	Aspect is not a significant factor

## Climatic features

Average annual precipitation varies from approximately 16 to 20 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 temperatures vary from 30 degrees F in January to just under 70 degrees F in August.

Both the air temperature and moisture regimes 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)	508 mm

## Influencing water features

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

## Soil features

Surfaces are thin gravelly loams and clay loams. Subsurfaces are stony or cobbly. Soils are moderately deep to deep. They may be formed over basalt but seldom include outcroppings. Available water-holding capacity is moderate to high; permeability is moderate to slow.

**Table 4. Representative soil features**

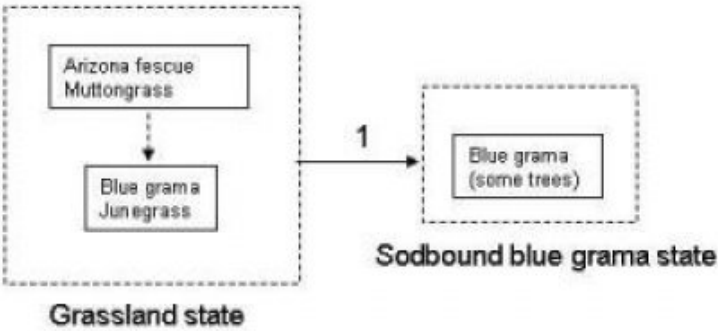
Surface texture	(1) Gravelly loam (2) Cobbly sandy loam (3) Stony
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Very slow to moderately slow
Soil depth	51–102 cm
Surface fragment cover <=3"	15–60%
Surface fragment cover >3"	15–35%
Available water capacity (0–101.6cm)	15.24–30.48 cm
Soil reaction (1:1 water) (0–101.6cm)	6.1–7.8
Subsurface fragment volume <=3" (Depth not specified)	15–60%
Subsurface fragment volume >3" (Depth not specified)	15–35%

Ecological dynamics

To be added.

State and transition model

State-Transition model: MLRA 39, AN-2, Stony Loam



State 1  
Historic Climax Plant Community

Community 1.1  
Historic Climax Plant Community

This is a grassland site with few if any trees. Cool-season grasses predominate. Shrubs are sparse and normally restricted to north-facing slopes and higher elevations. Forbs such as trailing fleabane, wildbuckwheat, globemallow, sageworts, and Indian paintbrush are noticeable but do not make up a substantial proportion of the potential plant community. Other grasses may include: needlegrass spp., wolftail, threeawns, pine dropseed, and muhlenbergia spp. Other woody plants may include: broom snakeweed, pinyon, juniper, Apacheplume, fringed sagewort, and oak spp.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	695	863	1031
Forb	69	86	103
<b>Total</b>	<b>764</b>	<b>949</b>	<b>1134</b>

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	3%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	14%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	30%

Figure 5. Plant community growth curve (percent production by month).  
 NM1304, R039XA014NM Stony Loam HCPC. R039XA014NM Stony Loam  
 HCPC Grassland with minor components of 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 (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1				216–324	
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	216–324	–
2				54–163	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	54–163	–
3				163–216	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	163–216	–
	muttongrass	POFE	<i>Poa fendleriana</i>	163–216	–
4				108–163	
	longtongue muhly	MULO	<i>Muhlenbergia longiligula</i>	108–163	–
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	108–163	–
	New Mexico muhly	MUPA2	<i>Muhlenbergia pauciflora</i>	108–163	–
5				11–54	
	spike muhly	MUWR	<i>Muhlenbergia wrightii</i>	11–54	–
6				54–108	
	squirreltail	ELEL5	<i>Elymus elymoides</i>	54–108	–
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	54–108	–
7				33–86	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	33–86	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	33–86	–
8				33–54	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	33–54	–
<b>Forb</b>					
9				33–86	
	Forb, perennial	2FP	<i>Forb, perennial</i>	33–86	–
10				11–33	
	Forb, annual	2FA	<i>Forb, annual</i>	11–33	–
<b>Shrub/Vine</b>					
11				33–54	
	skunkbush sumac	RHTR	<i>Rhus trilobata</i>	33–54	–
12				11–33	
13				11–54	
	Shrub, deciduous	2SD	<i>Shrub, deciduous</i>	11–54	–

## Animal community

### Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by gray fox, eastern cottontail, thirteen-lined ground squirrel, Botta's pocket gopher, kestrel, mourning dove, horned lark, meadowlark, short-horned lizard, Chihuahua whiptail, Sonora gopher snake, and prairie rattlesnake.

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

## 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

Adobe-----D

Barella-----C

Midnight-----D

Slash-----C

Smilo-----C

## Recreational uses

The site offers recreation potential for picnicking, hiking, horseback riding, nature observation, and photography. Camping sites may be limited by stony or cobbly surfaces. Hunting is limited although elk may use the site. Natural beauty is tied closely to the mountainous setting within which the site occurs.

## Wood products

This site has no significant potential for wood products naturally.

## Other products

### Grazing:

Approximately 80 percent of the annual vegetative production on this site comes from species that produce forage for grazing animals. In some areas the site may be suited to spring-, summer-, or fall-uses only; in others use may be year-round. However, continuous use in the same season, year after year, may result in a decline in range condition. Continued heavy use will also result in such a decline, with cool-season plants such as Arizona fescue being the first to go. Blue grama increases under such circumstances and may eventually dominate the site in a sod-like, low-vigor form that is very unproductive when compared to the potential plant community. Shrubs, half-shrubs, and annuals also increase as condition declines. A system of deferred grazing that varies the season of use from year to year is needed to maintain a healthy balance of plants in the plant community. Deferment during late spring is especially helpful to cool-season species. 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-----2.8 – 3.7

75 – 51-----3.5 – 5.5

50 – 26-----5.0 – 8.5

25 – 0-----8.5+

## 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:  
Barella, Midnight, Slash, Smilo

## Contributors

Brandon Bestelmeyer  
Don Sylvester  
Elizabeth Wright  
John Tunberg  
Michael Carpinelli

## 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:**

---