

# Ecological site R039XB050NM Mountain Grassland

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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.



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 the north and northeast facing slopes at the lower elevation and on all exposures at the higher elevations. The site is located on open benches, fans, or ridges between parks, valleys, and mountain slopes. High mountain rims and valleys are included in this site. It often occurs on benches or depressed areas within the steeper slopes of the ponderosa pine zone. Slopes range from 0 to 20 percent, but average less than 15 percent. Elevation ranges from 6,500 to 12,000 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Fan (2) Ridge
Elevation	1,981–3,658 m

Slope	0–20%
Aspect	N, NE

## Climatic features

The average annual precipitation ranges from 16 to 30 inches. Precipitation increases with elevation. Variations of five inches, more or less, are common. Nearly two-thirds of the precipitation falls in the form of high-intensity, short-duration thunderstorms from March to October. Winter precipitation is mainly in the form of snowfalls of six to ten inches.

Mild summers and moderately cold winters characterize the temperature regime. Large seasonal and diurnal temperature changes occur. The average annual temperature is about 45 degrees F with extremes of -26 degrees F in winter to 100 degrees F in summer.

The average frost-free season is 80 to 145 days. The last killing frost is in early May to early June, and the first killing frost is in early September to early October.

Temperature and precipitation favor cool-season, perennial plant growth. However, the temperatures are warm enough at the lower elevations to allow the warm-season species to occupy an important part of this plant community.

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)	147 days
Freeze-free period (average)	175 days
Precipitation total (average)	762 mm

## Influencing water features

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

## Soil features

The soils of this site are typically moderately deep and well drained over partially weathered igneous bedrock at about 30 to 50 inches, although pockets of deep soil also occur. Surface textures are typically loams. Underlying layers vary from clay loam to clay at a depth of 2 to 7 inches. Permeability is slow. Available water-holding capacity is high.

**Table 4. Representative soil features**

Surface texture	(1) Cobbly loam (2) Stony
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow
Soil depth	76–183 cm
Surface fragment cover >3"	15–35%
Available water capacity (0–101.6cm)	22.86–30.48 cm

Subsurface fragment volume >3" (Depth not specified)	15–35%
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## Ecological dynamics

To be developed.

## State and transition model

### Ecosystem states

1. Historic Climax Plant Community
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### State 1 submodel, plant communities

1.1. Historic Climax Plant Community
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## State 1 Historic Climax Plant Community

### Community 1.1 Historic Climax Plant Community

This is a grassland site characterized by cool-season, perennial mid-grasses. Woody species and forbs occupy a major role on this site. Other grasses that could appear on this site include: Kentucky bluegrass, muttongrass, sedges, redtop, New Mexico feathergrass, Letterman needlegrass, Canadian wildrye, sleepygrass, bottlebrush squirreltail, timothy, slender wheatgrass, wolftail, creeping muhly, orchardgrass, nodding brome, and Indiangrass. Other woody species that could appear on this site include: rubber rabbitbrush, broom snakeweed, pingue, snowberry, fringed sagewort, cliffrose, skunkbush sumac, fourwing saltbush, New Mexico locust, mountain ash, and rose. Other forbs that could appear on this site include: lupine, locoweed spp., trailing fleabane, aster spp., goldenrod, and geranium.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	381	877	1372
Forb	56	129	202
<b>Total</b>	<b>437</b>	<b>1006</b>	<b>1574</b>

Table 6. Ground cover

Tree foliar cover	5-15%
Shrub/vine/liana foliar cover	3-5%
Grass/grasslike foliar cover	0%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%

Litter	15-25%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	15-30%

Figure 5. Plant community growth curve (percent production by month).  
 NM1601, R039XB050NM Mountain Grassland HCPC. R039XB050NM  
 Mountain Grassland HCPC Cool-season perennial mid-grass grassland with  
 components of shrubs and forbs. .

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	5	10	25	30	15	7	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				129–194	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	129–194	–
2				258–323	
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	258–323	–
3				129–194	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	129–194	–
4				258–323	
	mountain muhly	MUMO	<i>Muhlenbergia montana</i>	258–323	–
5				129–323	
	pine dropseed	BLTR	<i>Blepharoneuron tricholepis</i>	129–323	–
6				65–129	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	65–129	–
7				65–129	
	spike muhly	MUWR	<i>Muhlenbergia wrightii</i>	65–129	–
8				65–129	
	Arizona fescue	FEAR2	<i>Festuca arizonica</i>	65–129	–
9				65–129	
	mountain brome	BRMA4	<i>Bromus marginatus</i>	65–129	–
10				194–258	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	194–258	–
11				129–194	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	129–194	–
12				65–129	
	Graminoid (grass or grass-like)	2GRAM	<i>Graminoid (grass or grass-like)</i>	65–129	–
<b>Forb</b>					
13				0–65	

	iris	IRIS	<i>Iris</i>	0–65	–
14				0–65	
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0–65	–
15				0–65	
	pea	LATHY	<i>Lathyrus</i>	0–65	–
16				0–65	
	vetch	VICIA	<i>Vicia</i>	0–65	–
17				0–65	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	0–65	–
<b>Tree</b>					
18				65–129	
	oak	QUERC	<i>Quercus</i>	65–129	–
19				0–258	
	juniper	JUNIP	<i>Juniperus</i>	0–258	–
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	0–258	–
	ponderosa pine	PIPO	<i>Pinus ponderosa</i>	0–258	–
<b>Shrub/Vine</b>					
20				0–65	
	hairy mountain mahogany	CEMOP	<i>Cercocarpus montanus var. paucidentatus</i>	0–65	–
21				0–65	
	Shrub, deciduous	2SD	<i>Shrub, deciduous</i>	0–65	–

## Animal community

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by elk, deer, mountain lion, black bear, gray fox, porcupine, chipmunk, red and rock squirrels, eagle, great horned owl, turkey, harlequin quail, band-tailed pigeon, Stellar's jay, pinyon jay, junco, woodpecker, hummingbird, Sacramento Mountain salamander, short-horned lizard, garter and patch-nosed snakes, and black-tailed rattlesnake.

Bald eagle hunts over this site and the Sacramento Mountain salamander may be resident under logs and rocks.

## 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

Monjeau-----D

Nolton-----D

## Recreational uses

This site offers recreation potential for picnicking, camping, horseback riding, biking, nature observation, and photography. Hunting opportunities include elk, deer, turkey, red squirrel, bear, and mountain lion. The mountainous setting of the site enhances its natural beauty.

## Wood products

The potential for tree production is limited to a few scattered ponderosa pine and Douglas fir. Some Christmas trees can be cut in the fringed areas along the adjacent woodland. Scattered pinyon and juniper could be cut for fuelwood and/or fence posts.

## Other products

Grazing:

This site is suitable for grazing by all kinds and classes of livestock during late spring, summer, and early fall. The length of the grazing season varies with elevation and from year to year with weather patterns. Although this site is suited to all kinds and classes of livestock, it is best suited to younger animals. To reduce spot-grazing and overgrazing of gentle slopes, herding and/or construction of stock trails are recommended. Continuous grazing during the grazing season will cause the more desirable species, such as Arizona fescue, mountain muhly, prairie junegrass, sideoats grama, western wheatgrass, and oatgrass to decrease. There would be a corresponding increase in bare ground, Kentucky bluegrass, blue grama, oak, pinyon, and juniper. Goats can be a good tool to help control brush species. This site responds best to a system of grazing that rotates the season of use in pastures.

## Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index-----	Ac/AUM
100 - 76-----	3.0 – 4.2
75 – 51-----	3.9 – 5.0
50 – 26-----	4.8 – 9.0
25 – 0-----	9.0+

## Type locality

Location 1: Lincoln County, NM
Location 2: Otero County, NM
Location 3: Torrance 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. Eddy, Otero, Lincoln, and South Chavez Soil Surveys.

Characteristic Soils Are:  
Monjeau, Nolton

## 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:**

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2. **Presence of water flow patterns:**

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3. **Number and height of erosional pedestals or terracettes:**

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):**

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5. **Number of gullies and erosion associated with gullies:**

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6. **Extent of wind scoured, blowouts and/or depositional areas:**

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7. **Amount of litter movement (describe size and distance expected to travel):**

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):**

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

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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:

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13. **Amount of plant mortality and decadence** (include which functional groups are expected to show mortality or decadence):
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14. **Average percent litter cover (%) and depth ( in):**
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15. **Expected annual annual-production** (this is TOTAL above-ground annual-production, not just forage annual-production):
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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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