USDA Natural Resources
Conservation Service

Ecological site R039XA015NM
Mountain Upland 14 to 18 inches

Accessed: 05/10/2024

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 slopes ranging up to 15 percent but averaging 5 percent or less. The landscape is typically that of a large intermountain park or plain, which small drainages and swales may interrupt. Elevation ranges from 6,500 to 8,100 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	1,981–2,469 m
Slope	0–15%
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 periods, 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 regimes of this climate favor cool-season vegetation.

Climate data was obtained from Web site http://www.wrcc.sage.dri.edu/summary/climsmnm.html using a 50% probability for freeze-free and frost-free seasons using 28.5 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

Soils are moderately deep to deep. Surface textures are medium to moderately fine with generally few coarse fragments in the profile. Subsurfaces are clay loams to very gravelly loams. They are well drained and have moderately slow permeability. Organic matter is moderate and runoff is medium. Available water-holding capacity is moderate to high.

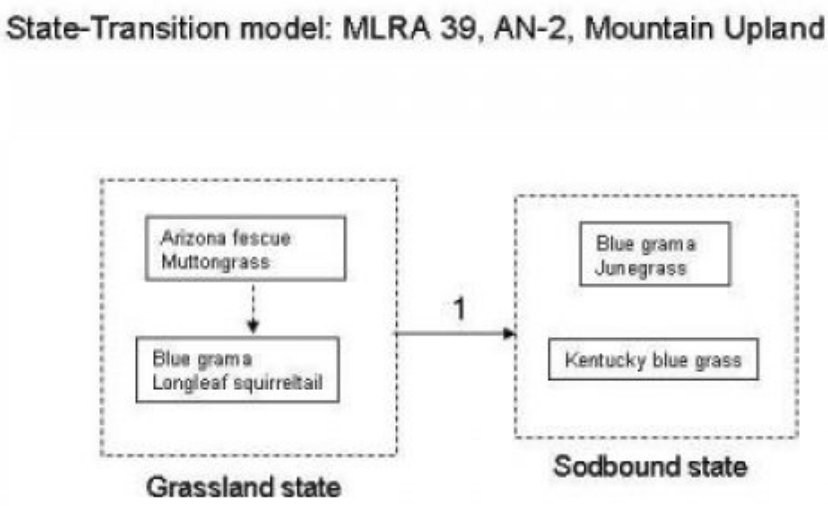
Table 4. Representative soil features

Surface texture	(1) Gravelly sandy clay loam (2) Loam (3) Gravelly sandy loam
Family particle size	(1) Clayey
Soil depth	51–183 cm
Surface fragment cover <=3"	15–35%
Available water capacity (0-101.6cm)	15.24–30.48 cm
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Soil reaction (1:1 water) (0-101.6cm)	6.6–9
Subsurface fragment volume <=3" (Depth not specified)	39–86%

Ecological dynamics

To be developed.

State and transition model



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

This site is an open grassland characterized by mid- and shortgrasses. Shrubs and half-shrubs are few. Forbs include Rocky Mountain beeplant, aster, Rocky Mountain zinnia, buckwheat, trailing fleabane and Carruth's sagewort. Blue grama, muttongrass, Arizona fescue, prairie junegrass, and squirreltail are characteristic of the natural potential vegetation. Western wheatgrass is found largely on the finer textured soils and in slight depressions. Spike muhly is found evenly distributed but in lesser amounts than most other species characterizing the site. Broom snakeweed comes and goes cyclically. Scattered rabbitbrush plants are common. Other muhly species may be present, as well as threeawn spp., wolftail, green sagewort, pingue, and winterfat. Kentucky bluegrass may have become naturalized on this site.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	715	929	1143
Forb	67	87	108
Shrub/Vine	50	66	81
Total	**832**	**1082**	**1332**

Figure 5. Plant community growth curve (percent production by month). NM1305, R039XA015NM Mountain Upland HCPC. R039XA015NM Mountain Upland HCPC Mixed mid/short-grassland with scattered forbs and shrubs..

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 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**blue grama**			110–164	
2	**Arizona fescue-muttongrass**			164–273	
3	**prairie junegrass**			33–55	
4	**western wheatgrass**			110–164	
	western wheatgrass	PASM	*Pascopyrum smithii*	110–164	–
5	**spike muhly**			55–110	
6	**mountain muhly**			11–55	
7	**squirreltail**			55–164	
8	**other grasses**			55–110	
Forb					
9	**perennial forbs**			33–87	
10	**annual forbs**			11–55	
Shrub/Vine					
11	**shrubs**			11–55	
	Carruth's sagewort	ARCA14	*Artemisia carruthii*	3–55	–
	prairie sagewort	ARFR4	*Artemisia frigida*	3–55	–
	rubber rabbitbrush	ERNA10	*Ericameria nauseosa*	3–55	–
12	**other shrubs**			11–33	

Animal community

This site provides habitat for a resident animal community that is characterized by coyote, badger, eastern cottontail, thirteen-lined ground squirrel, Gunnison’s prairie dog, Botta’s pocket gopher, kestrel, mourning dove, horned lark, meadowlark, tiger salamander, short-horned lizard, Sonora gopher snake, and prairie rattlesnake.

Elk and deer range into the site, and golden eagle and common raven hunt over it.
Where the site occurs as a large intermountain plain, pronghorn antelope may be resident.

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
Bario B
Big Red C
Luera C
Pleioville C

Recreational uses

This site offers recreation potential for picnicking, camping, horseback riding, nature observation, and photography. Hunting for elk and deer is limited except where near wooded areas. In these instances hunting may be fair to good. Natural beauty is enhanced by the mountainous surroundings typical of the site.

Wood products

This site has no significant potential for naturally produced wood products.

Other products

Grazing:
Eighty-five percent of the annual vegetative production on this site comes from plants that provide forage for grazing animals, including domestic livestock. Although the site may in some areas be suited to year-round use, continuous use in the same season, year after year, may result in a decrease of the better forage species. Continued heavy use will almost certainly cause a decrease in Arizona fescue, muttongrass, and other cool-season species. Blue grama tends to increase in this circumstance and will eventually form a low-vigor sod that is very unproductive when compared to the natural potential plant community. Rabbitbrush may increase substantially also, along with other low-value plants such as broom snakeweed. A system of deferred grazing that varies the season of use from year to year is needed to maintain a healthy balance of plant species in the community. Deferment during late spring is especially helpful to cool-season species. In addition to domestic livestock, this site is also used by elk, small mammals, and birds. On a more occasional basis, deer and pronghorn antelope may be seen.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month:

Similarity Index Ac/AUM
100 - 76 2.7 – 3.5
75 – 51 3.2 – 5.0
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.

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:**