USDA Natural Resources
Conservation Service

Ecological site R039XA012NM
Pine Grassland

Accessed: 05/11/2025

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.

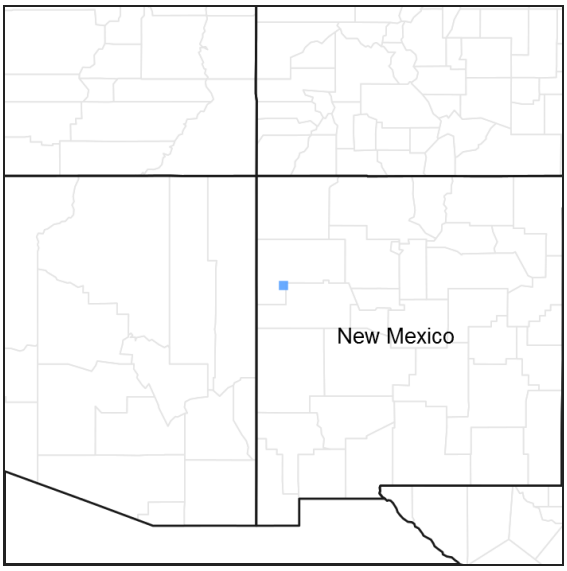


Figure 1. Mapped extent

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

This site occurs on gently sloping to rolling topography usually associated with mountainous surroundings. Slopes average less than 10 percent but range to 15 percent and occasionally higher. Elevations vary widely, ranging from just over 6,000 to over 8,000 feet above sea level. More typically, the site is found at 7,500 feet or just above.

Table 2. Representative physiographic features

Landforms	(1) Mountain slope
Elevation	6,000–8,000 ft
Slope	10–15%
Aspect	Aspect is not a significant factor

Climatic features

Average annual precipitation varies from approximately 14 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 temperature is about 50 degrees F. Monthly average air temperature varies 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)	20 in

Influencing water features

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

Soil features

Soils are typically moderately deep to deep. Surface textures range from sandy loam to clay loams. Soils may contain coarse fragments but are not skeletal. Underlying layers may be gravelly. The soils are well drained and have moderate permeability. Organic matter is moderate to high, and runoff is medium to slow. Available water-holding capacity is moderate to high.

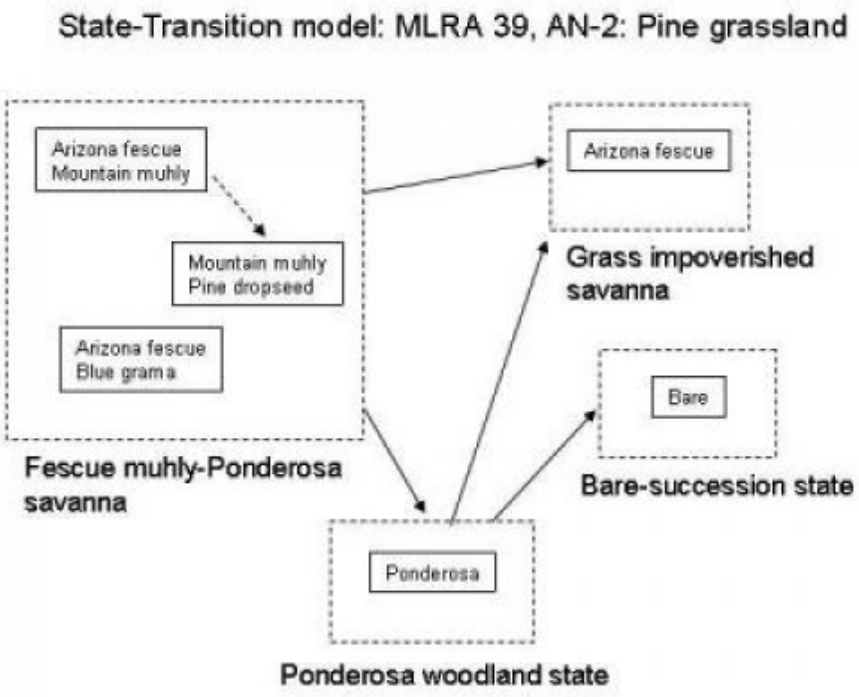
Table 4. Representative soil features

Surface texture	(1) Gravelly sandy loam (2) Clay loam
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Slow to moderately slow
Soil depth	60–72 in
Surface fragment cover <=3"	15–35%
Available water capacity (0-40in)	9–12 in
Electrical conductivity (0-40in)	0–2 mmhos/cm
Soil reaction (1:1 water) (0-40in)	6.1–7.8
Subsurface fragment volume <=3" (Depth not specified)	15–35%

Ecological dynamics

To be added.

State and transition model



State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

This site is a savanna-like grassland typically overstoried by a thin stand of ponderosa pine. Occasionally, alligator juniper and oak also occur. Cool-season grasses such as Arizona fescue dominate the herbaceous community with a variety of forbs such as green sagewort, western wallflower, and Fremont goosefoot scattered uniformly. Tree canopy ranges from 5 to 20 percent and averages about 10 percent. Other grasses may include: threeawn spp., sheep fescue, sideoats grama, and muhlenbergia spp. Kentucky bluegrass may become naturalized on the site. Other woody species may include fringed sagewort and pingue.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	700	890	1080
Forb	26	33	41
Total	**726**	**923**	**1121**

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

Figure 5. Plant community growth curve (percent production by month). NM1302, R039XA012NM Pine Grassland HCPC. R039XA012NM Pine Grassland HCPC Grassland with ponderosa pine overstory and scattered 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				167–278	
	Arizona fescue	FEAR2	*Festuca arizonica*	167–278	–
2				167–223	
	mountain muhly	MUMO	*Muhlenbergia montana*	167–223	–
	New Mexico muhly	MUPA2	*Muhlenbergia pauciflora*	167–223	–
3				111–167	
	blue grama	BOGR2	*Bouteloua gracilis*	111–167	–
4				111–167	
	prairie Junegrass	KOMA	*Koeleria macrantha*	111–167	–
	muttongrass	POFE	*Poa fendleriana*	111–167	–
5				33–56	
	western wheatgrass	PASM	*Pascopyrum smithii*	33–56	–
6				33–56	
	little bluestem	SCSC	*Schizachyrium scoparium*	33–56	–
7				11–56	
	pine dropseed	BLTR	*Blepharoneuron tricholepis*	11–56	–
	pinyon ricegrass	PIFI	*Piptochaetium fimbriatum*	11–56	–
8				33–56	
	squirreltail	ELEL5	*Elymus elymoides*	33–56	–
9				11–33	
	common wolfstail	LYPH	*Lycurus phleoides*	11–33	–
10				33–56	
	Graminoid (grass or grass-like)	2GRAM	*Graminoid (grass or grass-like)*	33–56	–
Forb					
11				11–33	
	Forb, perennial	2FP	*Forb, perennial*	11–33	–
12				11–33	
	Forb, annual	2FA	*Forb, annual*	11–33	–
Tree					
13				56–167	
	ponderosa pine	PIPO	*Pinus ponderosa*	56–167	–
Shrub/Vine					
14				11–33	
	skunkbush sumac	RHTR	*Rhus trilobata*	11–33	–
15				11–33	
	oak	QUERC	*Quercus*	11–33	–
16				11–33	
	juniper	JUNIP	*Juniperus*	11–33	–
17				11–33	
	Shrub, deciduous	2SD	*Shrub, deciduous*	11–33	–

Animal community

Habitat for Wildlife:
This site provides habitats which support a resident animal community that is characterized by elk, deer, gray fox, eastern cottontail, cliff chipmunk, thirteen-lined ground squirrel, Abert's squirrel, Botta's pocket gopher, white-throated woodrat, porcupine, red-tailed hawk, harlequin quail, mourning dove, screech owl, northern flicker, Cassin's kingbird, Stellar's jay, chipping sparrow, tiger salamander, southern plateau fence lizard, short-horned lizard, New Mexico garter snake, and prairie rattlesnake.

Merriam's turkey ranges into the site. Band-tailed pigeon may be present in years of high production of pinyon nuts or acorn mast. Purple martin nests, and gray-headed junco winters, on 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 Argiborolls----------D

Recreational uses

The site offers recreation potential for camping, picnicking, hiking, horseback riding, nature observation, and photography. Hunting opportunities include deer, turkey, bear, and possible elk. Natural beauty is well-reflected by the mountainous setting of the site.

Wood products

Some ponderosa pine may be cut from among the scattered trees found on the site. Very little other potential for wood products exists, with the possible exception of modest amounts of fuel wood.

Other products

Grazing:
In some areas this site may be suited to spring, summer, or fall use only. However, continuous use in the same season, year after year, may result in a decline in condition. Continued heavy use will almost certainly result in a decline of cool-season grasses such as Arizona fescue being the first to decrease. Blue grama will increase under such a decline, as well as threeawns, annual forbs, and woody species, especially half-shrubs. Kentucky bluegrass may occur as a naturalized species. 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 community. Rest during late spring is especially needed for cool-season species such as Arizona fescue, prairie junegrass, muttongrass, and western wheatgrass. Seventy percent or more of the herbage produced on this site furnishes forage for grazing animals. Elk, deer, small mammals, and birds use the site, in addition to domestic livestock.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index----------Ac/AUM
100 - 76----------2.3 – 3.2
75 – 51----------3.0 – 4.0
50 – 26----------3.7 – 5.5
25 – 0----------5.5+

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:
Argiborolls as mapped in Catron County

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):**

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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):**

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:**