

Ecological site DX035X03F127 Savanna

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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.

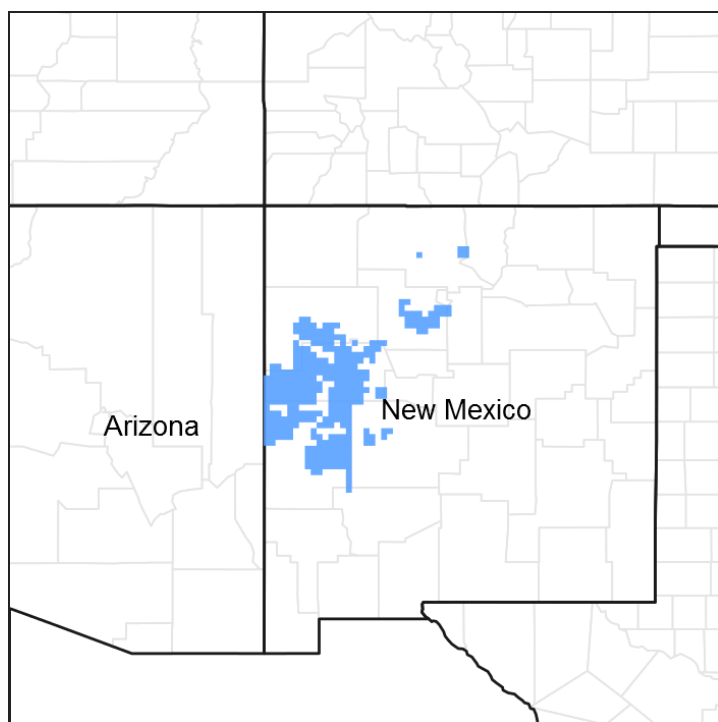


Figure 1. Mapped extent

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.

Ecological site concept

This site occurs on moderately deep and deep soils with sandy surface textures. Slopes average 7 percent.

Table 1. Dominant plant species

Tree	(1) <i>Juniperus</i> (2) <i>Pinus edulis</i>
Shrub	(1) <i>Krascheninnikovia lanata</i> (2) <i>Artemisia tridentata</i>
Herbaceous	(1) <i>Bouteloua gracilis</i> (2) <i>Pascopyrum smithii</i>

Legacy ID

R035XG127NM

Physiographic features

This site normally occurs on gently to moderately sloping topography. Typically, areas of steeper slopes connect from above, and the savannah site becomes a gradation down to more level upland plains. Slopes average about 7 percent but range occasionally to just above 10 percent. Elevations range from approximately 6,000 to 7,200 feet above sea level.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Plateau
Flooding frequency	None
Ponding frequency	None
Elevation	6,000–7,200 ft
Slope	7–10%
Aspect	Aspect is not a significant factor

Climatic features

Average annual precipitation varies from about 13 inches to just over 16 inches. Fluctuations ranging from about 8 inches to 28 inches are common. The overall climate is characterized by cold, dry winters in which winter moisture is less than summer moisture. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than they are for those of spring.

The average frost-free season is about 120 days and extends from approximately mid May too early or mid September. Average annual air temperatures are 50 degrees F or lower and summer maximums rarely exceed 100 degrees F. Winter minimums typically

approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given ecological site, which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm/cool-season dominants are present.

Associated mountainous areas may tend to affect precipitation positively on this site.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site 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)	148 days
Freeze-free period (average)	174 days
Precipitation total (average)	16 in

Influencing water features

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

Soil features

The soils in this site are moderately deep to deep and well drained. Typically, the surface layer is sandy loam, fine sandy loam, or loamy fine sand over somewhat finer textured subsoils. Occasionally, the surface may be loam. Permeability is moderate to rapid, and the water-holding capacity is moderate.

Table 4. Representative soil features

Surface texture	(1) Gravelly sandy loam (2) Cobbly fine sandy loam (3) Loamy fine sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderate to rapid
Soil depth	40–72 in

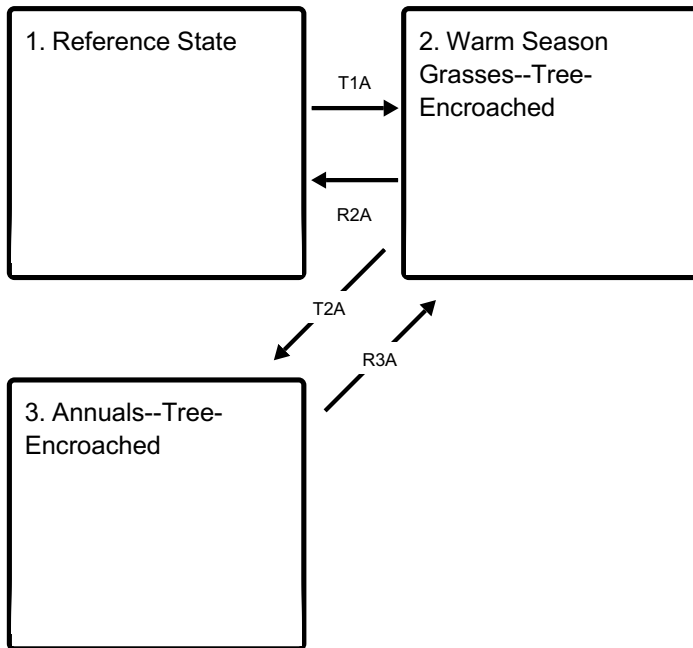
Surface fragment cover <=3"	5–15%
Surface fragment cover >3"	0–5%
Available water capacity (0-40in)	6–9 in
Calcium carbonate equivalent (0-40in)	5–25%
Electrical conductivity (0-40in)	0–2 mmhos/cm
Sodium adsorption ratio (0-40in)	0–5
Soil reaction (1:1 water) (0-40in)	6.1–9
Subsurface fragment volume <=3" (Depth not specified)	5–15%
Subsurface fragment volume >3" (Depth not specified)	0–5%

Ecological dynamics

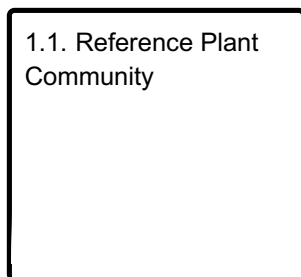
This site is characterized by scattered large tree-type pinyon and/or juniper with open grass stands in between. Understory grasses are dominated by blue grama, western wheatgrass, Indian ricegrass, and sand dropseed. Pinyon ricegrass and pine dropseed may also be found, usually beneath the trees and at the higher elevation ranges of the site. Winterfat and some forbs may occur in significant amounts. Broom snakeweed is most common in certain good rainfall years and when the understory plant community deteriorates from its potential. Reproduction of pinyon pine and juniper is normally very slow and, historically, may have been controlled by natural fire. Tree canopy of the natural potential plant community averages approximately 25 percent. In exceptional cases, a few more or less even-aged ponderosa pines may occur on this site naturally. Reproduction of this species is ordinarily even less evident than that of pinyon or juniper, and no more than 1 or 2 percent of the understory is likely to be made up of pine seedlings, even in the absence of livestock grazing.

State and transition model

Ecosystem states



State 1 submodel, plant communities



State 1 Reference State

Thus state describes reference conditions. Refer to phase 1.1 for more information.

Community 1.1 Reference Plant Community

This community is characterized by scattered large tree-type pinyon and/or juniper with open grass stands in between. Understory grasses are dominated by blue grama, western wheatgrass, Indian ricegrass, and sand dropseed. Pinyon ricegrass and pine dropseed may also be found, usually beneath the trees and at the higher elevation ranges of the site. Broom snakeweed is most common in certain good rainfall years and when the understory plant community deteriorates from its potential. Reproduction of pinyon pine and juniper is normally very slow and, historically, may have been controlled by natural fire. Tree canopy of the natural potential plant community is generally below 10 percent. At high elevations or on north aspects, a few more or less even-aged ponderosa pines may occur on this site naturally. Reproduction of this species is ordinarily even less evident than that of pinyon or juniper, and no more than 1 or 2 percent of the understory is likely to be made up of pine seedlings, even in the absence of livestock grazing.

Dominant plant species

- oneseed juniper (*Juniperus monosperma*), tree
- twoneedle pinyon (*Pinus edulis*), tree
- spineless horsebrush (*Tetradymia canescens*), shrub
- blue grama (*Bouteloua gracilis*), grass
- western wheatgrass (*Pascopyrum smithii*), grass
- alkali sacaton (*Sporobolus airoides*), grass
- Indian ricegrass (*Achnatherum hymenoides*), grass

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Tree	60	500	700
Grass/Grasslike	190	380	570
Shrub/Vine	30	90	180
Forb	30	50	70
Total	310	1020	1520

Table 6. Ground cover

Tree foliar cover	5-15%
Shrub/vine/liana foliar cover	10-20%
Grass/grasslike foliar cover	15-30%
Forb foliar cover	2-5%
Non-vascular plants	0%
Biological crusts	0%
Litter	10-15%
Surface fragments >0.25" and <=3"	5-15%
Surface fragments >3"	0-5%
Bedrock	0%
Water	0%
Bare ground	40-65%

Figure 5. Plant community growth curve (percent production by month). NM0317, R035XG127NM-Savanna-HCPC. Large tree-type pinyon and/or juniper w/open grass stands in between..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	7	10	15	25	25	8	5	0	0

State 2

Warm Season Grasses--Tree-Encroached

This state occurs where prolonged continuous grazing and lack of fire have led to a robust tree overstory and a grass community dominated by warm-season perennials. Tree cover ranges from 20 to 40 percent.

Dominant plant species

- oneseed juniper (*Juniperus monosperma*), tree
- twoneedle pinyon (*Pinus edulis*), tree
- spineless horsebrush (*Tetradymia canescens*), shrub
- James' galleta (*Pleuraphis jamesii*), grass
- alkali sacaton (*Sporobolus airoides*), grass
- ring muhly (*Muhlenbergia torreyi*), grass
- prickly Russian thistle (*Salsola tragus*), other herbaceous

State 3

Annuals--Tree-Encroached

This state occurs where prolonged continuous grazing and lack of fire have led to a dominant tree overstory and an herbaceous community dominated by annual grasses and forbs. Tree cover ranges from 20 to 50 percent.

Dominant plant species

- oneseed juniper (*Juniperus monosperma*), tree
- twoneedle pinyon (*Pinus edulis*), tree
- spineless horsebrush (*Tetradymia canescens*), shrub
- broom snakeweed (*Gutierrezia sarothrae*), shrub
- cheatgrass (*Bromus tectorum*), grass
- alkali sacaton (*Sporobolus airoides*), grass
- prickly Russian thistle (*Salsola tragus*), other herbaceous

Transition T1A

State 1 to 2

Season-long grazing providing little rest and recovery for preferred grazed plants during critical growing periods, coupled with high utilization. Lack of fire is an additional mechanism here.

Restoration pathway R2A

State 2 to 1

Fire/brush control coupled with a prolonged period of prescribed/deferred grazing.

Seeding may also be required.

Transition T2A

State 2 to 3

Season-long grazing providing little rest and recovery for preferred grazed plants during critical growing periods, coupled with high utilization. Lack of fire is an additional mechanism here.

Restoration pathway R3A

State 3 to 2

Fire/brush control coupled with a prolonged period of prescribed/deferred grazing. Seeding may also be required.

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				90–120	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	88–118	—
2				60–90	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	59–88	—
3				30–60	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	29–59	—
4				30–60	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	29–59	—
5				10–190	
	pinon ricegrass	PIFI	<i>Piptochaetium fimbriatum</i>	9–18	—
	muttongrass	POFE	<i>Poa fendleriana</i>	9–18	—
6				30–60	
	pine dropseed	BLTR	<i>Blepharoneuron tricholepis</i>	29–59	—
	squirreltail	ELEL5	<i>Elymus elymoides</i>	29–59	—
	needle and thread	HECO26	<i>Hesperostipa comata</i>	29–59	—
	New Mexico " "	HENE5	<i>Hesperostipa neomexicana</i>	29–59	—

	teathergrass				
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	29–59	–
	green needlegrass	NAVI4	<i>Nassella viridula</i>	29–59	–
7				20–30	
	threeawn	ARIST	<i>Aristida</i>	18–29	–
	ring muhly	MUTO2	<i>Muhlenbergia torreyi</i>	18–29	–
8				10–20	
	sand muhly	MUAR2	<i>Muhlenbergia arenicola</i>	9–18	–
9				20–30	
	common wolfstail	LYPH	<i>Lycurus phleoides</i>	18–29	–
	spike muhly	MUWR	<i>Muhlenbergia wrightii</i>	18–29	–
10				20–30	
	James' galleta	PLJA	<i>Pleuraphis jamesii</i>	18–29	–
Forb					
11				20–50	
	Forb, perennial	2FP	<i>Forb, perennial</i>	18–47	–
12				10–30	
	Forb, annual	2FA	<i>Forb, annual</i>	9–29	–
Shrub/Vine					
13				10–20	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	9–18	–
14				10–20	
	Bigelow sage	ARBI3	<i>Artemisia bigelovii</i>	9–18	–
15				10–20	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	9–18	–
16				20–30	
	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	18–29	–
	rubber rabbitbrush	ERNAN5	<i>Ericameria nauseosa ssp. nauseosa var. nauseosa</i>	18–29	–
	spineless horsebrush	TECA2	<i>Tetradymia canescens</i>	18–29	–
18				20–30	
	fourwing	ATCA2	<i>Atriplex canescens</i>	18–29	–

	saltbush				
Tree					
17				60–120	
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	59–118	–
	juniper	JUNIP	<i>Juniperus</i>	59–118	–
	twoneedle pinyon	PIED	<i>Pinus edulis</i>	59–118	–

Animal community

Habitat for Wildlife:
This site provides habitat that supports a resident animal community characterized by kit fox, badger, desert cottontail, spotted ground squirrel, Ord’s kangaroo rat, white- throated woodrat, Botta’s pocket gopher, plains pocket mouse, northern grasshopper mouse, ferruginous hawk, mourning dove, meadowlark, plains spadefoot toad, eastern fence lizard, plateau whiptail, shorthorned lizard, and prairie rattlesnake. Pronghorn antelope use the site peripherally but seldom reside on it. Common raven and prairie falcon hunt over the site, and Swainson’s hawk nest here. Woodland wildlife species such as mule deer, gray fox, rock squirrel, harlequin quail, pinyon jay, scrub jay, chipping sparrow, and Cassin’s kingbird also use the site, and in instances where pinyon and juniper have increased substantially, may become site characteristic. Elk may also use 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
Abrazo-----D
Amenson-----D
Apache-----D
Ascalon-----?
Celacy-----C
Celavar-----C
Datil-----B
Diatee-----B
Dioxice-----B
Flugle-----B
Guy-----B
Hiarc-----C

Joachim-----D
Loarc-----B
Nogal-----C
Parquat-----B
Ralphston-----B
Tafoya-----C
Todest-----B
Vibo-----?

Recreational uses

This site offers fair to good potential for hiking, horseback riding, nature observation, photography, camping and picnicking. Hunting for mule deer or mourning dove can be fair, while pronghorn antelope hunting is poor.

Wood products

At its potential, the site has a limited, hard to sustain productive capacity for firewood and fence posts. Under deteriorated ecological condition, pinyon and juniper trees may increase dramatically, thus increasing wood production. Harvesting in either case should be selective, and it is considered unlikely that clear cutting should ever be recommended.

Other products

Grazing:

This site is suited to grazing by most kinds and classes of livestock in all seasons of the year, but is poorly suited to continuous yearlong grazing if potential natural understory vegetation is to be maintained. Under such use, cool-season grasses such as western wheatgrass and Indian ricegrass characteristically decline or even disappear. If use is heavy and prolonged, the more palatable warm-season grasses will also decline, pinyon and juniper will increase, and the site becomes characterized by low-vigor, sod-like blue grama, ring muhly, threeawn spp., and overall reduced herbaceous plant density. Understory production may eventually be reduced to onethird or less of the sites original potential. Pinyon and juniper may increase to the point that the site eventually takes on the appearance of a woodland. Where intensive-grazing management is used, livestock selectivity against the more palatable and productive plants may be reduced, deferment instituted, and natural ecological conditions more nearly maintained at higher levels.

Other information

Guide to Suggested Initial Stocking Rate
Acres per Animal Unit Month

Similarity Index-----Ac/AUM

100 - 76-----4.0 – 5.0
75 – 51-----4.7 – 7.5
50 – 26-----7.0 – 12.5
25 – 0-----12.5+

Type locality

Location 1: Catron County, NM
Location 2: Socorro County, NM

Other references

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus and Mesas 36 Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: Rio Arriba, Sandoval, McKinley, Cibola, Catron, Socorro.

Characteristic Soils Are:

Ascalon, Vibo

Other Soils included are:

Abrazo, Amenson, Apache, Celacy, Celavar Datil, Diatee, Dioxice, Flugle, Guy, Hiarc Joachem, Loarc, Nogal, Parquat, Ralphston Tafoya, Todest

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Approval

Kendra Moseley, 5/20/2025

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	05/21/2025
Approved by	Kendra Moseley
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:
