

Ecological site R070AY012NM

Sandy Plains

Last updated: 9/12/2023
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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.

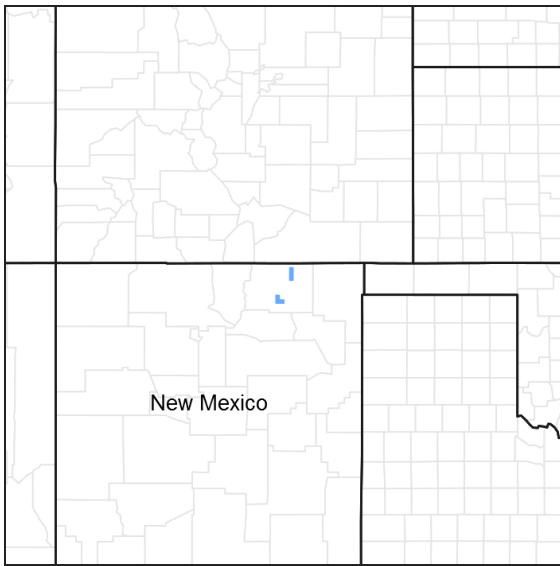


Figure 1. Mapped extent

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 gently-sloping upland landforms. Soils are mantled by sandy materials.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) <i>Artemisia filifolia</i> (2) <i>Yucca</i>
Herbaceous	(1) <i>Schizachyrium scoparium</i> (2) <i>Bouteloua curtipendula</i>

Physiographic features

This site is on gently sloping to rolling plains. Elevation ranges from 5,000 to 7,200 feet above sea level. Slopes are 1 to 7 percent on all aspects. Aspect is not significant to the plant community.

Table 2. Representative physiographic features

Landforms	(1) Plain
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Elevation	1,524–2,195 m
Slope	1–7%

Climatic features

The climate of this area can be classified as “semi-arid continental”.

Precipitation averages 14 to 16 inches. Seventy seven percent of the year’s moisture normally falls during the period of May through October. Practically all of it is brought by brief afternoon and evening thunderstorms. In July and August, normally the wettest months of the year, one can expect about one day in five when rainfall exceeds one-tenth inch. Early spring precipitation in May benefits the cool-season plants. Winter precipitation, supplying 24 percent of the year’s moisture, normally has no more than two days a month with as much as one-tenth inch of moisture. Much of the winter precipitation falls as snow.

Air temperatures vary from a monthly mean of 20 degrees F in January to 69 degrees F in July. Daily high temperatures average in the 80’s and low 90’s during the summer. Winter low temperatures fall below the freezing mark much of the time from November through March with minimum temperatures approaching 25 degrees F below zero. Dates of the last killing frost may vary from May 9th through May 17th, and the first killing frost from September 27th to October 8th. The frost-free season ranges from 141 days to 153 days from early May to early October.

Wind velocities for the area average 10 to 12 miles per hour and prevail from the south and southwest. Generally, March is the windiest month. Strong winds during the spring cause rapid drying of the soil surface.

Nearby mountains to the west intercept much of the precipitation from the Pacific storms coming through this area during the winter. About 70 percent of the 14 to 16 inches of annual precipitation falls in the form of rainfall during the frost-free season. About 40 percent of the annual precipitation benefits cool-season plants, 50 percent benefits warm-season plants and 10 percent falls during the season of plant dormancy. Relative humidity is moderately low. The sun shines approximately 75 percent of the time.

Climate data was obtained from <http://www.wrcc.sage.dri.edu/summary/climsmnm.html> web site using 50 percent 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)	149 days
Freeze-free period (average)	171 days
Precipitation total (average)	406 mm

Influencing water features

This site is not influenced by water from wetland and stream.

Soil features

The soils on this site are well drained and deep. The surface layers are moderately coarse to coarse textured and the subsoil is medium to moderately fine textured. Permeability is moderate to moderately slow. Available water-holding capacity is high. Effective rooting depth is 40 inches or more. The air-water relationship is beneficial to plant growth.

Table 4. Representative soil features

Surface texture	(1) Sand (2) Loamy sand (3) Sandy loam
Family particle size	(1) Loamy

Drainage class	Well drained
Permeability class	Moderately slow to moderate
Soil depth	102–152 cm
Available water capacity (0-101.6cm)	22.86–30.48 cm

Ecological dynamics

Text from the Grazing Section that is relevant to plant ecology:

Approximately 95 percent of the total annual yield are from species which provide good feed and good nutrition for livestock. Continuous yearlong grazing or grazing during the period from April through October will result in a plant community of sand dropseed, threeawn, red lovegrass, sand sagebrush, and yucca. Periods of rest during the spring (April-June) will allow cool-season grasses such as New Mexico feathergrass and various forbs to grow and to reproduce. Rest during this period is also beneficial to allow grasses such as sand bluestem and Indian ricegrass a period of green up before being grazed. Rest during the summer (July-September) is most beneficial to the warm-season grasses and forbs such as sand bluestem, sideoats grama, Indian ricegrass, little bluestem, blue grama, and various forbs.

State and transition model

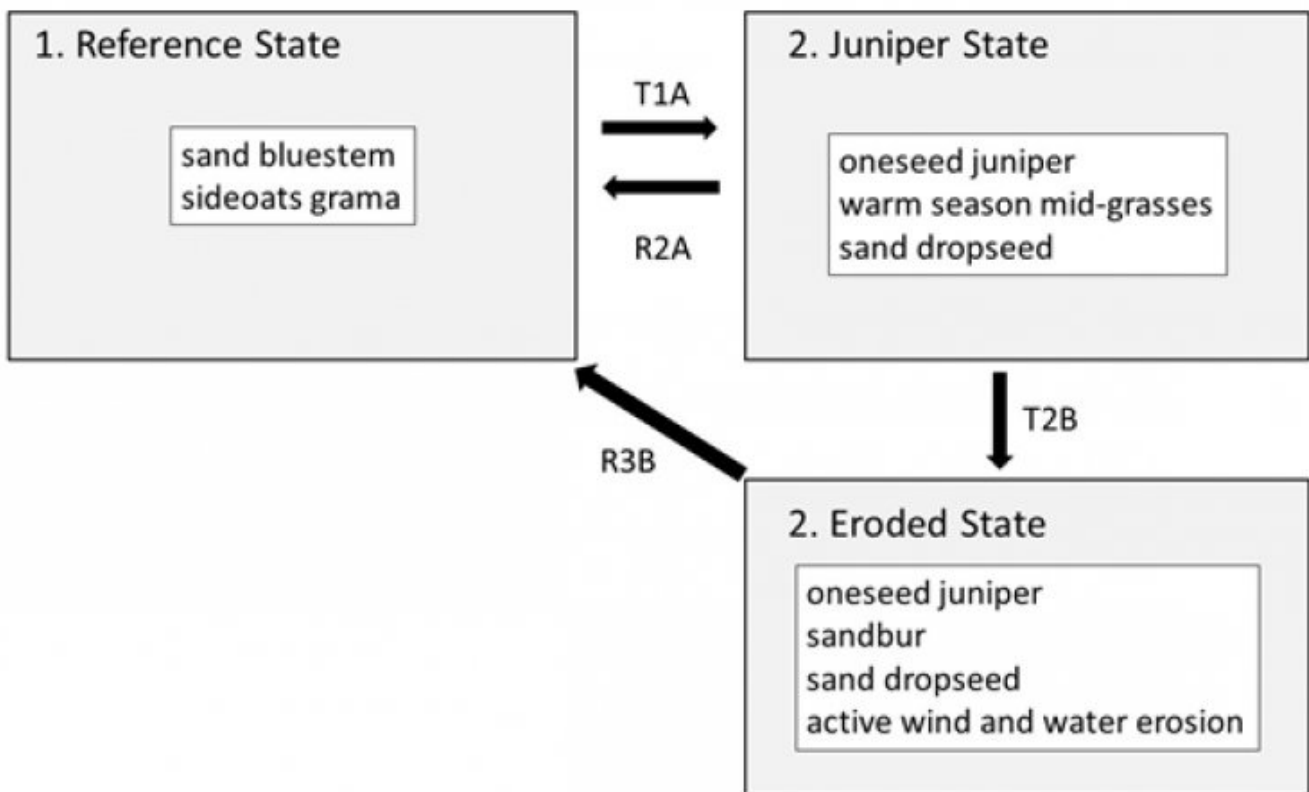


Figure 4. Generalized STM for sandy sites in 70A

State 1 Reference State

Community 1.1 Reference Plant Community

This site is a grassland dominated by a mixture of tall and mid-grasses. Woody species and forbs make up a minor portion of the plant community. A variety of perennial and annual forbs are evenly distributed.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	762	1502	2802
Forb	112	224	336
Shrub/Vine	78	146	224
Total	952	1872	3362

Table 6. Ground cover

Tree foliar cover	0%
Shrub/vine/liana foliar cover	5%
Grass/grasslike foliar cover	30%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	10%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	55%

Figure 6. Plant community growth curve (percent production by month).
 NM3712, R070AY012NM Sandy Plains HCPC. R070AY012NM Sandy Plains
 HCPC A mixed tall and mid-grass grassland with minor components of 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

State 2 Juniper

This state has a significant overstory of oneseed juniper.

State 3 Eroded

This state exhibits evidence of erosion such as truncated topsoil and pedestalling.

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.

Restoration pathway R2A State 2 to 1

Restoration pathway resulting from the implementation of prescribed grazing.

Conservation practices

Transition T2A

State 2 to 3

Additional season-long grazing providing little rest and recovery for preferred grazed plants during critical growing periods, coupled with high utilization. This leads to pronounced erosion.

Restoration pathway R3A

State 3 to 1

In theory, a very high-energy input--including the addition of topsoil and seeding--could lead to the re-establishment of the reference community.

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1				370–471	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	375–470	–
2				280–314	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	281–319	–
3				90–135	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	94–131	–
4				90–135	
	Indian ricegrass	ACHY	<i>Achnatherum hymenoides</i>	94–131	–
5				280–314	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	281–319	–
6				90–135	
	New Mexico feathergrass	HENE5	<i>Hesperostipa neomexicana</i>	94–131	–
7				90–135	
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	94–131	–
8				56–90	
	red lovegrass	ERSE	<i>Eragrostis secundiflora</i>	56–94	–
9				56–90	
	threeawn	ARIST	<i>Aristida</i>	56–94	–
10				56–90	
	sand muhly	MUAR2	<i>Muhlenbergia arenicola</i>	56–94	–
Forb					
11				56–90	
	globemallow	SPHAE	<i>Sphaeralcea</i>	56–94	–
12				22–56	
	ragwort	SENEC	<i>Senecio</i>	19–56	–
13				56–90	
	pigweed	AMARA	<i>Amaranthus</i>	56–94	–
	goosefoot	CHENO	<i>Chenopodium</i>	56–94	–

	annual buckwheat	ERAN4	<i>Eriogonum annuum</i>	56-94	-
	buckwheat	ERIOG	<i>Eriogonum</i>	56-94	-
14				0-34	
	golden pricklypoppy	ARAE	<i>Argemone aenea</i>	0-38	-
15				22-56	
	bladderpod	LESQU	<i>Lesquerella</i>	19-56	-
16				0-56	
	lemon scurfpea	PSLA3	<i>Psoraleidium lanceolatum</i>	0-56	-
17				22-56	
	Adonis blazingstar	MEMU3	<i>Mentzelia multiflora</i>	19-56	-
18				0-34	
	gilia	GILIA	<i>Gilia</i>	0-38	-
19				0-34	
	silverleaf nightshade	SOEL	<i>Solanum elaeagnifolium</i>	0-38	-
20				22-56	
	aster	ASTER	<i>Aster</i>	19-56	-
21				0-34	
	goldenweed	PYRRO	<i>Pyrrcoma</i>	0-38	-
22				34-78	
	sunflower	HELIA3	<i>Helianthus</i>	38-75	-
Shrub/Vine					
23				56-90	
	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	56-94	-
24				56-90	
	yucca	YUCCA	<i>Yucca</i>	56-94	-
25				22-56	
	winterfat	KRLA2	<i>Krascheninnikovia lanata</i>	19-56	-

Animal community

Habitat for Wildlife:

This site provides habitats which support a resident animal community that is characterized by pronghorn antelope, badger, coyote, desert cottontail, spotted ground squirrel, plains pocket gopher, black-tailed prairie dog, burrowing owl, marsh hawk, scaled quail, horned lark, loggerhead shrike, horned lizard, and western spadefoot toad.

The Swainson hawk may breed in these habitats.

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

Dalhart-----B

Seeleze-----B

Recreational uses

This site has fair aesthetic appeal and natural beauty. It has a large variety of plants that bloom from spring to fall. This site provides poor camping, picnicking, and hiking. Hunting for antelope is good as well as upland game birds.

Wood products

This site produces no significant wood products.

Other products

This site is suitable for grazing during all seasons of the year and by all classes of livestock. Approximately 95 percent of the total annual yield are from species which provide good feed and good nutrition for livestock. Continuous yearlong grazing or grazing during the period from April through October will result in a plant community of sand dropseed, threeawn, red lovegrass, sand sagebrush, and yucca. A system of deferred grazing, which varies the season of grazing and rest in pastures, is needed to maintain a healthy, well-balanced plant community. Periods of rest during the spring (April-June) will allow cool-season grasses such as New Mexico feathergrass and various forbs to grow and to reproduce. Rest during this period is also beneficial to allow grasses such as sand bluestem and Indian ricegrass a period of green up before being grazed. Rest during the summer (July-September) is most beneficial to the warm-season grasses and forbs such as sand bluestem, sideoats grama, Indian ricegrass, little bluestem, blue grama, and various forbs.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index-----Ac/AUM
100 - 76-----2.1 – 4.3
75 – 51-----2.6 – 8.6
50 – 26-----4.0 – 13.3
25 – 0-----13.3+

Contributors

Christine Bishop
Don Sylvester
Elizabeth Wright
John Tunberg

Approval

Kendra Moseley, 9/12/2023

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)	Kenneth Alcon
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Contact for lead author	Las Vegas Service Center 1927A 7th Street Las Vegas, NM 87701 Telephone: (505) 425-3594 Fax: (505) 425-1430
Date	05/05/2005
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** None

2. **Presence of water flow patterns:** None

3. **Number and height of erosional pedestals or terracettes:** None

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 40 to 50 percent Bare Ground.

5. **Number of gullies and erosion associated with gullies:** None

6. **Extent of wind scoured, blowouts and/or depositional areas:** Very seldom, however some erosion can be expected in disturbed areas.

7. **Amount of litter movement (describe size and distance expected to travel):** None or very little if present.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil Stability class anticipated to 3-4. These values will need to be verified in reference site.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** SOM ranges from 1 to 3 percent.

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:**
-