

Ecological site R070BY076NM Wet Meadow

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.

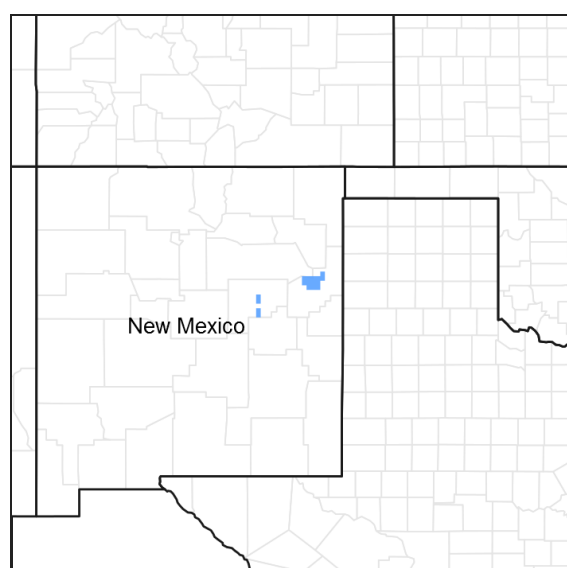


Figure 1. Mapped extent

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 floodplains of perennial streams and, to a lesser extent, on water-collecting positions along the bases of upland slopes. Water tables fluctuate between 1 and 4 feet in depth. Soils are deep to very deep, are generally loamy in texture, and have high gypsum content (30 to 60 percent) in the control section.

Table 1. Dominant plant species

| | |
|------------|---------------|
| Tree | Not specified |
| Shrub | Not specified |
| Herbaceous | Not specified |

Physiographic features

This site occurs in nearly level to gently sloping depressions and on stream terraces*. Soils frequently have a fluctuating water table at a depth of 1 to 4 feet. The site receives water from the surrounding sites, either as shallow groundwater or surface runoff. Slopes range from 0 to 2 percent. Elevation ranges from 4,200 to 5,000 feet. Exposure varies and is not significant.

*Editor's note: The high water table described above would not occur on stream terraces. Rather, this probably describes floodplains.

Table 2. Representative physiographic features

| | |
|--------------------|---|
| Landforms | (1) Flood plain (2) U-shaped valley (3) Valley side |
| Flooding duration | Brief (2 to 7 days) to long (7 to 30 days) |
| Flooding frequency | Occasional to very frequent |
| Ponding duration | Brief (2 to 7 days) to long (7 to 30 days) |
| Ponding frequency | Rare to occasional |
| Elevation | 4,200–5,000 ft |
| Slope | 0–3% |
| Ponding depth | 0–3 in |
| Water table depth | 3–20 in |
| Aspect | Aspect is not a significant factor |

Climatic features

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

Annual average precipitation ranges from 11 to 16 inches. Roughly 78 percent of the moisture falls during the 6-month period of May through October. Most of this summer precipitation falls in the form of brief and heavy afternoon and evening thunderstorms. Hail may accompany the more severe summer storms. In the winter, there is normally only one day a month when as much as one-tenth inch of moisture falls, usually in the form of snow. Snow seldom lies on the ground for more than a few days.

Temperatures are characterized by a distinct seasonal change and large annual and diurnal temperature ranges. Summers are moderately warm. Maximum temperature average above 90 degrees F from July to August, and an average summer includes about 80 days with high readings exceeding 90 degrees F and 10 days with readings above 100 degrees F. Temperatures usually fall rapidly after sundown and lows average 60 degrees F on most summer nights. Winters are mild, sunny, and dry. Daytime shade temperatures in midwinter usually rise to the 50's. However, freezing temperatures normally occur at night from mid-November to mid-March.

The freeze-free season ranges from 196 to 218 days. Dates of the last freeze range from April 11th to April 17th and the first freeze ranges from October 20th to October 25th.

Both temperature and rainfall distribution favor warm-season, perennial plant communities in the area. However, sufficient late winter and early spring moisture allows cool-season species to occupy a minor component within the plant community.

Climate data was obtained from <http://www.wrcc.dri.edu/summary/climsmnm.html> web site. Data were interpreted utilizing NM Climate Summarizer spreadsheet.

Table 3. Representative climatic features

| | |
|-------------------------------|----------|
| Frost-free period (average) | 192 days |
| Freeze-free period (average) | 218 days |
| Precipitation total (average) | 16 in |

Influencing water features

Perennial streams, including the Pecos River, are associated with this site.

Soil features

Soils are deep to very deep. Surface texture is loam or silt loam. Subsurface textures include sandy loam, fine sandy loam, loam, and silt loam. Subsoil textures are sandy loam, fine sandy loam, loam, or silt loam. Gypsum content ranges from 30 to 60 percent in the control section. Content of gypsum plus calcium carbonate is greater than 40 percent. Effective rooting depth ranges from 12 to more than 60 inches.

Characteristic soils are:

Bluhol
Holloman
Palo

Table 4. Representative soil features

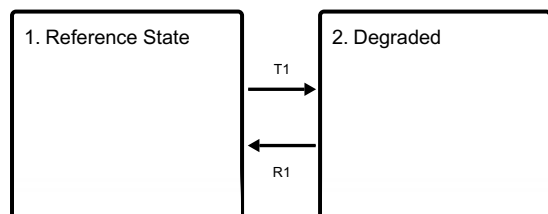
| | |
|---|---|
| Surface texture | (1) Very fine sandy loam (2) Silt loam (3) Sandy loam |
| Family particle size | (1) Loamy |
| Drainage class | Somewhat poorly drained to poorly drained |
| Permeability class | Moderate to slow |
| Soil depth | 20–60 in |
| Surface fragment cover ≤3" | 0–5% |
| Surface fragment cover >3" | 0% |
| Available water capacity (0–40in) | 5–8 in |
| Calcium carbonate equivalent (0–40in) | 10–30% |
| Electrical conductivity (0–40in) | 2–20 mmhos/cm |
| Sodium adsorption ratio (0–40in) | 5–13 |
| Soil reaction (1:1 water) (0–40in) | 8–8.6 |
| Subsurface fragment volume ≤3" (Depth not specified) | 0–10% |
| Subsurface fragment volume >3" (Depth not specified) | 0% |

Ecological dynamics

This site is a grassland containing shrubs. Vegetation is tolerant to the saline or alkaline conditions which characterize the site. Grasses such as alkali sacaton, saltgrass, western wheatgrass, and vine mesquite dominate the site, with shrubs and salt-tolerant forbs making up an important portion of the plant community.

State and transition model

Ecosystem states



State 1 submodel, plant communities

1.1. Reference Plant Community

State 1
Reference State

This state is a grassland mixed with shrubs.

Dominant plant species

- fourwing saltbush (*Atriplex canescens*), shrub
- alkali sacaton (*Sporobolus airoides*), grass
- western wheatgrass (*Pascopyrum smithii*), grass
- vine mesquite (*Panicum obtusum*), grass
- saltgrass (*Distichlis spicata*), grass

Community 1.1
Reference Plant Community

This phase is a grassland mixed with shrubs. Vegetation is tolerant of saline or alkaline conditions. Grasses such as alkali sacaton, inland saltgrass, western wheatgrass, and vine mesquite dominate the site, with shrubs and salt-tolerant forbs making up the important portion of the plant community.

Table 5. Annual production by plant type

| Plant Type | Low (Lb/Acre) | Representative Value (Lb/Acre) | High (Lb/Acre) |
|-----------------|------------------|-----------------------------------|-------------------|
| Grass/Grasslike | 1700 | 2500 | 3150 |
| Forb | 100 | 200 | 350 |
| Shrub/Vine | 60 | 80 | 170 |
| Total | 1860 | 2780 | 3670 |

Table 6. Ground cover

| | |
|-----------------------------------|--------|
| Tree foliar cover | 0% |
| Shrub/vine/liana foliar cover | 0-5% |
| Grass/grasslike foliar cover | 35-40% |
| Forb foliar cover | 3-5% |
| Non-vascular plants | 0% |
| Biological crusts | 0% |
| Litter | 10-15% |
| Surface fragments >0.25" and <=3" | 0% |
| Surface fragments >3" | 0% |
| Bedrock | 0% |
| Water | 0% |
| Bare ground | 30-40% |

Figure 5. Plant community growth curve (percent production by month).
NM4076, R070BY076NM Wet Meadow Reference State. R070BY076NM Wet

Meadow Reference State.

| 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
Degraded

The degraded state has crossed a threshold where alkali sacaton, vine mesquite, and western wheatgrass are greatly reduced. Low-stature, warm-season grasses such as blue grama and buffalograss have increased.

Transition T1
State 1 to 2

A prolonged period of season-long grazing coupled with high utilization.

Restoration pathway R1
State 2 to 1

Prescribed grazing with low to moderate stocking rates and rest during critical growing periods.

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 | Alkali Sacaton | | | 600–1220 | |
| | alkali sacaton | SPAI | <i>Sporobolus airoides</i> | 600–1225 | – |
| 2 | Inland Saltgrass | | | 100–350 | |
| | saltgrass | DISP | <i>Distichlis spicata</i> | 100–350 | – |
| 3 | cane bluestem rushes spp. sedge spp. | | | 60–170 | |
| | cane bluestem | BOBA3 | <i>Bothriochloa barbinodis</i> | 60–175 | – |
| | Nebraska sedge | CANE2 | <i>Carex nebrascensis</i> | 60–175 | – |
| 4 | mat muhly creeping muhly vine mesquite western whe | | | 100–350 | |
| | blue grama | BOGR2 | <i>Bouteloua gracilis</i> | 100–350 | – |
| | creeping muhly | MURE | <i>Muhlenbergia repens</i> | 100–350 | – |
| | mat muhly | MURI | <i>Muhlenbergia richardsonis</i> | 100–350 | – |
| | vine mesquite | PAOB | <i>Panicum obtusum</i> | 100–350 | – |
| | western wheatgrass | PASM | <i>Pascopyrum smithii</i> | 100–350 | – |
| Forb | | | | | |
| 5 | coldenia | | | 60–170 | |
| | plumed crinklemat | TIGR | <i>Tiquilia greggii</i> | 60–175 | – |
| 8 | rayless goldenrod curley jack | | | 60–170 | |
| | Nuttall's rayless goldenrod | BINU2 | <i>Bigelowia nuttallii</i> | 60–175 | – |
| | curly dock | RUCRC | <i>Rumex crispus ssp. crispus</i> | 60–175 | – |
| Shrub/Vine | | | | | |
| 6 | pseudoclappia | | | 60–170 | |
| | Trans-Pecos false clappaisy | PSAR | <i>Pseudoclappia arenaria</i> | 60–175 | – |
| 7 | fourwing saltbush | | | 60–170 | |
| | fourwing saltbush | ATCAC | <i>Atriplex canescens var. canescens</i> | 60–175 | – |

Animal community

Wildlife habitat: This ecological site provides habitats that support a resident animal community that is characterized by coyote, desert cottontail, meadow mole, sparrow hawk, scaled quail, mourning dove, roadrunner, bullsnake, ornate box turtle, and Great Plains skunk.

Killdeer will often use these habitats for breeding, and there may be seasonal use by pronghorn antelope.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

Hydrologic Interpretations

Bluhol-----C

Palo -----C

Holloman-reeves-----C

Recreational uses

This site is suitable for transitory recreational activities but may become boggy at any time, making it unsuitable for campsite development. As an open space dotted with shrubs, this site has fair aesthetic appeal. It is poor for camping, hiking, and picnicking. Hunting is poor to fair for antelope, rabbits, and upland game birds. This site provides fair winter range for big game where it occurs in the foothills of the mountains.

Wood products

There are no potential wood products on this site.

Other products

Grazing: This site is suitable for late winter, spring, and early summer grazing, but may be restricted by boggy conditions at any time. Forage can best be utilized by horses or cattle due to the coarseness of the forage produced by alkali sacaton. When alkali sacaton dominates the site, maximum available forage production from this site can be achieved by mowing in late winter, concentrating livestock in small pastures during the summer, and resting individual pastures in alternate years. Approximately 85 percent of the total annual yield is from species that furnish forage for livestock.

Continuous grazing during the growing season will cause the the more desirable forage plants such as western wheatgrass, vine mesquite, blue grama, and fourwing saltbush to decrease. Species most likely to increase include alkali sacaton, saltgrass, mat muhly, alkali muhly, and salt cedar. As ecological conditions deteriorate, there is a sharp increase in inland saltgrass and/or alkali sacaton.

As deterioration advances, there is a reduction in plant cover, and the plant community may become dominated by inland saltgrass.

A system which varies the times of grazing and rest in a given pasture in successive years is needed to maintain or improve the plant community. Rest during April, May, and June is especially beneficial to western wheatgrass.

Other information

Guide to Suggested Initial Stocking rate in Acres per Animal unit month

Similarity Index-----Acres/AUM

100 to 76-----1 to 1.9

75 to 51-----1.8 to 2.6

50 to 26-----2.5 to 5.9

25 or less-----5.9 plus

Type locality

| |
|----------------------------------|
| Location 1: Guadalupe County, NM |
|----------------------------------|

| |
|--------------------------------|
| Location 2: De Baca County, NM |
|--------------------------------|

Contributors

Don Sylvester

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) | |
| Contact for lead author | |
| Date | 05/10/2025 |
| 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:**
-