

Ecological site R070BC028NM Salt Meadow

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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.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site is on nearly level to depressional areas, flood plains, or stream terraces. Slopes range from 0 to 2 percent. The soil formed in recent mixed calcareous or stratified coars loamy or moderately fine alluvium. The climate is arid to semiarid continental. Thornthwaite P-E indices about 12 to 22. Elevation ranges from 3300 to 4100 feet.

Table 2. Representative physiographic features

Landforms	(1) Basin floor (2) Playa (3) Flood plain
Flooding duration	Extremely brief (0.1 to 4 hours) to very brief (4 to 48 hours)
Flooding frequency	Rare to occasional
Ponding frequency	None
Elevation	1,010 – 1,250 m
Slope	0 %

Water table depth	60 – 90 cm
Aspect	Aspect is not a significant factor

Climatic features

Annual average precipitation ranges from 10 to 13 inches. Wide fluctuations from year to year are common, ranging from a low of about 2 inches to a high of over 20 inches. At least one-half of the annual precipitation comes in the form of rainfall during July, August, and September. Precipitation in the form of snow or sleet averages less than 4 inches annually.

The average annual air temperature is about 61 degrees F. Summer maximums usually exceed 100 degrees F., and winter minimums can go below zero. The average frost-free season exceeds 200 days and extends from April 1 to November 1.

Both the temperature regime and rainfall distribution favor warm-season perennial plants on this site. Spring moisture conditions are only occasionally adequate to cause significant growth during this period of the year. High winds from the west and southwest are common from March to June, which further tends to create poor soil moisture conditions in the springtime.

Table 3 Representative climatic features

Frost-free period (average)	220 days
Freeze-free period (average)	240 days
Precipitation total (average)	330 mm

Influencing water features

This site is primarily found in the floodplains of the Rio Grande and Pecos. Water tables are generally shallow but fluctuate within reach of deep rooted plants, and in most places are high enough that salts accumulate on the surface of the soil. The general aspect of this site is that of a wet, grassy meadow. This site is characterized by plants tolerant to saline or alkaline and to wet soil conditions.

Soil features

Soils are deep to very deep. Surface textures are ranging from loam, fine sandy loam or silty clay. Subsoil textures are ranging from clay loam, clay, silty clay loam, very fine sandy loam, fine sand, very fine sand, or loamy fine sand. These soils are stratified in the lower portions of the profile. Water tables are generally shallow but fluctuate within reach of deep rooted plants, and in most places are high enough that salts accumulate on the surface of the soil. Permeability is very slow to moderately rapid. Water holding capacity is moderate to high, and runoff is slow.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic Soils:

- Aqua Variet
- Belen Variet
- Balmorhea

Table 4. Representative soil features

Surface texture	(1) Loam (2) Fine sandy loam (3) Silty clay
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Family particle size	(1) Loamy
Drainage class	Somewhat poorly drained to somewhat excessively drained
Permeability class	Very slow to moderately rapid
Soil depth	100 – 180 cm
Surface fragment cover <=3"	0 – 10 %
Surface fragment cover >3"	Not specified
Available water capacity (0-101.6cm)	7.62 – 12.7 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 10 %
Electrical conductivity (0-101.6cm)	0 – 20 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	7.9 – 10
Subsurface fragment volume <=3" (Depth not specified)	10 %
Subsurface fragment volume >3" (Depth not specified)	Not specified

Ecological dynamics

Overview:

The historic plant community type of this site is dominated by alkali sacaton (*Sporobolus airoides*) and giant sacaton (*Sporobolus wrightii*). Inland saltgrass (*Distichlis spicata*) dominates secondarily, often in discrete patches. Sedges and rushes are common and

screwbean mesquite (tornillo; *Prosopis pubescens*) may be an important woody species. On the banks of the Rio Grande river, this site probably existed in a broad-scale, shifting mosaic with cottonwoods (*Populus deltoides* var. *wislizeni*), mesquite stands (*Prosopis* spp.), and salty bottomland grasslands determined by changes in the river course. The grassland community is supported in areas where the depth to the water table is shallow and where flooding and drainage may stabilize salinity levels. Grazing may reduce both giant and alkali sacaton and increase the proportional representation of saltgrass. As salinity increases due to reductions of flood frequency, flood volume, or changes to soils or water table depth, a critical value may be crossed such that giant sacaton cannot survive. With continued overgrazing, changes in hydrology and increased salinity, or mechanical disturbance, saltgrass may become established (or vegetatively expand) and become dominant. Alternatively, fire or disturbance, perhaps in the context of dry soils, may produce a state dominated by exotics such as Russian olive (*Elaeagnus angustifolia*) or Russian knapweed (*Acroptilon repens*) as well as native species characteristic of more arid habitats. Periodic river floods may cover grassland areas with sediments on which cottonwood trees establish. Any state may be colonized by saltcedar (tamarisk; *Tamarix ramosissima*) once propagules are available. This transition may be favored by reduced flooding frequencies, disturbance, drier soils, or increases in salinity. Saltcedar invasion may cause severe ecosystem changes including vegetation structure, increases in fire frequency, and greatly increased salinity at the surface of the soil. Once it has invaded, this plant often progresses to extreme dominance. Mechanical removal measures and herbicides applied to exotic species may be used to recover grassland and cottonwood states.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				673-897	
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	673-897	–
	big sacaton	SPWR2	<i>Sporobolus wrightii</i>	673-897	–
2				224-336	
	saltgrass	DISP	<i>Distichlis spicata</i>	224-336	–
3				6-11	
	sedge	CAREX	<i>Carex</i>	112-224	–
	rush	JUNCU	<i>Juncus</i>	112-224	–
4				22-112	
	vine mesquite	PAOB	<i>Panicum obtusum</i>	22-112	–
5				22-67	
	common reed	PHAU7	<i>Phragmites australis</i>	22-67	–
6				22-67	
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	22-67	–
7				22-112	
	Grass, perennial	2GP	<i>Grass, perennial</i>	22-112	–
Shrub/Vine					
8				179-269	
	iodinebush	ALOC2	<i>Allenrolfea occidentalis</i>	179-269	–
	screwbean mesquite	PRPU	<i>Prosopis pubescens</i>	179-269	–
9				22-112	
	arrowweed	PLSE	<i>Pluchea sericea</i>	22-112	–
	willow	SALIX	<i>Salix</i>	22-112	–
Tree					
10				0-67	
	Fremont cottonwood	POFR2	<i>Populus fremontii</i>	0-67	–
	Fremont cottonwood	POFR2	<i>Populus fremontii</i>	0-67	–

Forb					
11				67-179	
	desert seepweed	SUSU	<i>Suaeda suffrutescens</i>	67-179	–
12				112-224	
	Forb, perennial	2FP	<i>Forb, perennial</i>	112-224	–

Table 6. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1				673-897	
	alkali sacaton	SPAI	<i>Sporobolus airoides</i>	673-897	–
	big sacaton	SPWR2	<i>Sporobolus wrightii</i>	673-897	–
2				224-336	
	saltgrass	DISP	<i>Distichlis spicata</i>	224-336	–
3				6-11	
	sedge	CAREX	<i>Carex</i>	112-224	–
	rush	JUNCU	<i>Juncus</i>	112-224	–
4				22-112	
	vine mesquite	PAOB	<i>Panicum obtusum</i>	22-112	–
5				22-67	
	common reed	PHAU7	<i>Phragmites australis</i>	22-67	–
6				22-67	
	tobosagrass	PLMU3	<i>Pleuraphis mutica</i>	22-67	–
7				22-112	
	Grass, perennial	2GP	<i>Grass, perennial</i>	22-112	–
9				22-112	
	arrowweed	PLSE	<i>Pluchea sericea</i>	22-112	–
	willow	SALIX	<i>Salix</i>	22-112	–
Shrub/Vine					
8				179-269	
	iodinebush	ALOC2	<i>Allenrolfea occidentalis</i>	179-269	–
	screwbean mesquite	PRPU	<i>Prosopis pubescens</i>	179-269	–
10				0-67	
	Fremont cottonwood	POFR2	<i>Populus fremontii</i>	0-67	–
Forb					
11				67-179	
	desert seepweed	SUSU	<i>Suaeda suffrutescens</i>	67-179	–
12				112-224	
	Forb, perennial	2FP	<i>Forb, perennial</i>	112-224	–

Table 7. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 8. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 9. Community 5.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Table 10. Community 6.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
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Animal community

This site provides hatitat which support a resident animal community that is characterized by raccoon, desert shrew, desert pocket gopher, Apache pocket mouse, great horned owl, red shafted flicker, mourning dove, ladder backed woodpecker, vermillion flycatcher, phainopepla, redwinged blackbird, Bullock’s oriole, boat-tailed grackle, Gambel’s quail, bullfrog, Great Plains skink, New Mexico whiptail, kingsnake, and checkered garter snake.

Hydrological functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups. Soil Series Hydrologic Group Aqua D Belen D Balmorhea C

Recreational uses

Associated cottonwood and other riparian trees provide welcome shade. The site has high suitability for bird watching, nature study and other non-consumptive forms of wildlife use. Picnicking and camping suitability if fair. Hunting for waterfowl, quail and dove is good. Suitability for hunting deer, small game and/or predators is poor to fair.

Wood products

The site has little, if any, significant value for wood products.

Other products

The site is grazed by cattle and horses, generally without regard to class of livestock or season of use. Palatability of the dominant forage plants is greatest during the summer months when inland saltgrass and alkali sacaton are green. Sheep and goats may also graze the site, with a tendency to browse as much or more than they graze. Site retrogression is characterized by a decline in alkali sacaton and an increase in inland saltgrass. Signs of serious deterioration of the site is indicated by a heavy canopy of woody plants such as salt cedar.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month Similarity Index Ac/AUM 100 - 76 2.8 – 4.0 75 – 51 3.5 – 4.5 50 – 26 4.0 – 7.0 25 – 0 7.0 - +

Inventory data references

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Eddy County, Lea County, and Chaves 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)	
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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:
