USDA Natural Resources Conservation Service

Ecological site R083DY015TX
Saline Clay

Last updated: 9/21/2023
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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.

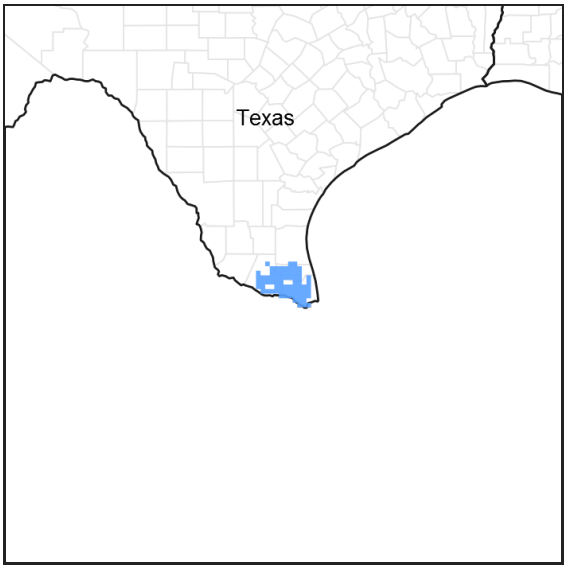

Figure 1. Mapped extent

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.

MLRA notes

Major Land Resource Area (MLRA): 083D–Lower Rio Grande Plain

Major Land Resource Area (MLRA) 83D makes up about2,500 square miles (6,475 square kilometers). The towns of Brownsville, Edinburg, Harlingen, McAllen, and Raymondville are in this area. U.S. Highways 77 and 281 terminate in Brownsville and McAllen, respectively. The Santa Ana National Wildlife Area is along the Rio Grande in this area.

Classification relationships

USDA-Natural Resources Conservation Service, 2006.
-Major Land Resource Area (MLRA) 83D

Ecological site concept

The Saline Clay sites are affected by salts in the soil profile. Heavy clays, coupled with salts, create a specialized plant community adapted to this unique environment.

Associated sites

R083DY007TX	**Lakebed**
R083DY019TX	**Gray Sandy Loam**
R083DY025TX	**Clay Loam**

Similar sites

R083BY015TX	**Saline Clay**

Table 1. Dominant plant species

Tree	(1) *Prosopis glandulosa*
Shrub	(1) *Atriplex canescens* (2) *Celtis ehrenbergiana*
Herbaceous	(1) *Sporobolus airoides* (2) *Sporobolus wrightii*

Physiographic features

These soils are on stream terraces on the Rio Grande delta plain. Slope ranges from 0 to 5 percent. Some sites are frequently ponded after heavy rainfall events.

Table 2. Representative physiographic features

Landforms	(1) Delta plain > Stream terrace
Runoff class	Negligible to very high
Flooding frequency	None
Ponding duration	Long (7 to 30 days)
Ponding frequency	None to frequent
Elevation	3–46 m
Slope	0–5%
Ponding depth	0–15 cm
Water table depth	46–203 cm

Climatic features

MLRA 83 has a subtropical, subhumid climate. Winters are dry and warm, and the summers are hot and humid. Tropical maritime air masses predominate throughout spring, summer and fall. Modified polar air masses exert considerable influence during winter, creating a continental climate characterized by large variations in temperature. Peak rainfall occurs late in spring and a secondary peak occurs early in fall. Heavy thunderstorm activities increase in April, May, and June. July is hot and dry with little weather variations. Rainfall increases again in late August and September as tropical disturbances increase and become more frequent. Tropical air masses from the Gulf of Mexico dominate during the spring, summer and fall. Prevailing winds are southerly to southeasterly throughout the year except in December when winds are predominately northerly.

Table 3. Representative climatic features

Frost-free period (characteristic range)	365 days
Freeze-free period (characteristic range)	365 days
Precipitation total (characteristic range)	559-660 mm
Frost-free period (actual range)	271-365 days
Freeze-free period (actual range)	365 days

Precipitation total (actual range)	533-686 mm
Frost-free period (average)	348 days
Freeze-free period (average)	365 days
Precipitation total (average)	610 mm

Climate stations used

- (1) SANTA ROSA 3 WNW [USC00418059], Edcouch, TX
- (2) WESLACO [USC00419588], Weslaco, TX
- (3) HARLINGEN [USC00413943], Harlingen, TX
- (4) RAYMONDVILLE [USC00417458], Raymondville, TX
- (5) BROWNSVILLE [USW00012919], Brownsville, TX
- (6) MCALLEN [USC00415701], McAllen, TX
- (7) MERCEDES 6 SSE [USC00415836], Mercedes, TX
- (8) LA JOYA [USC00414911], Mission, TX
- (9) MISSION 4 W [USC00415972], Mission, TX
- (10) RIO GRANDE CITY [USC00417622], Rio Grande City, TX
- (11) MCALLEN MILLER INTL AP [USW00012959], McAllen, TX

Influencing water features

During high intensity rainfalls, lower elevations of this site frequently pond. Onsite investigation is needed to determine if wetlands are present.

Wetland description

Onsite investigation is needed to determine if wetlands are present.

Soil features

The soils are very deep, moderately well to well drained, and very slowly permeable to impermeable. The major affecting characteristics are the heavy clays and visible salts within the profile. Soil series correlated to this site include: Benito, Chargo, Mercedes, and Racombes.

Table 4. Representative soil features

Parent material	(1) Alluvium–sedimentary rock
Surface texture	(1) Clay (2) Silty clay
Family particle size	(1) Fine (2) Very-fine
Drainage class	Poorly drained to moderately well drained
Permeability class	Very slow to slow
Soil depth	203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	7.62–12.7 cm
Calcium carbonate equivalent (0-101.6cm)	2–20%
Electrical conductivity (0-101.6cm)	0–16 mmhos/cm

Sodium adsorption ratio (0-101.6cm)	10–30
Soil reaction (1:1 water) (0-101.6cm)	7.9–9
Subsurface fragment volume <=3" (Depth not specified)	0–2%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The Lower Rio Grande (MLRA 83D) was a disturbance-maintained system. Prior to European settlement (pre-1825), fire and grazing were the two primary forms of disturbance. Grazing by large herbivores included antelope, deer, and small herds of bison. The infrequent but intense, short-duration grazing by these species suppressed woody species and invigorated herbaceous species. The herbaceous savannah species adapted to fire and grazing disturbances by maintaining belowground tissues. Wright and Bailey (1982) report that there are no reliable records of fire frequency for the Rio Grande Plains because there are no trees to carry fire scars from which to estimate fire frequency. Because savannah grassland is typically of level or rolling topography, a natural fire frequency of three to seven years seems reasonable for this area.

Historical accounts prior to 1800 identify grazing by herds of wild horses, followed by heavy grazing by sheep and cattle as settlement progressed. Grazing on early ranches changed natural graze-rest cycles to continuous grazing and stocking rates exceeded the carrying capacity. These shifts in grazing intensity and the removal of rest from the system reduced plant vigor for the most palatable species, which on this site were midgrasses and palatable forbs. Shortgrasses and less palatable forbs began to dominate the site. This shift resulted in lower fuel loads, which reduced fire frequency and intensity. The reduction in fires resulted in an increase in size and density of woody species.

The open grassland in this area supports mid prairie grasses with scattered woody plants, perennial forbs, and legumes on soils in the uplands. Twoflower and fourflower trichloris, plains bristlegrass, and lovegrass tridens are among the dominant grasses on these soils. Desert yaupon, spiny hackberry, and blackbrush are the major woody plants. In bottomland areas, tallgrasses and midgrasses, such as switchgrass, giant sacaton, fourflower trichloris, big sandbur, little bluestem, and southwestern bristlegrass, are dominant. Hackberry, mesquite, elm, and palm trees are the major woody plants. Forbs are important but minor components of all plant communities.

Most of this area is cropland or improved pasture that is extensively irrigated. Large acreages of rangeland are grazed mainly by beef cattle and wildlife. The major crops are cotton, grain sorghum, citrus, onions, cabbage, and other truck crops. Almost all the crops are grown under irrigation. Hunting leases for white-tailed deer, quail, white-winged dove, and mourning dove are an important source of income in the area. Some of the major wildlife species in this area are white-tailed deer, javelina, coyote, fox, bobcat, raccoon, skunk, opossum, jackrabbit, cottontail, turkey, bobwhite quail, scaled quail, white-winged dove, and mourning dove.

State and transition model

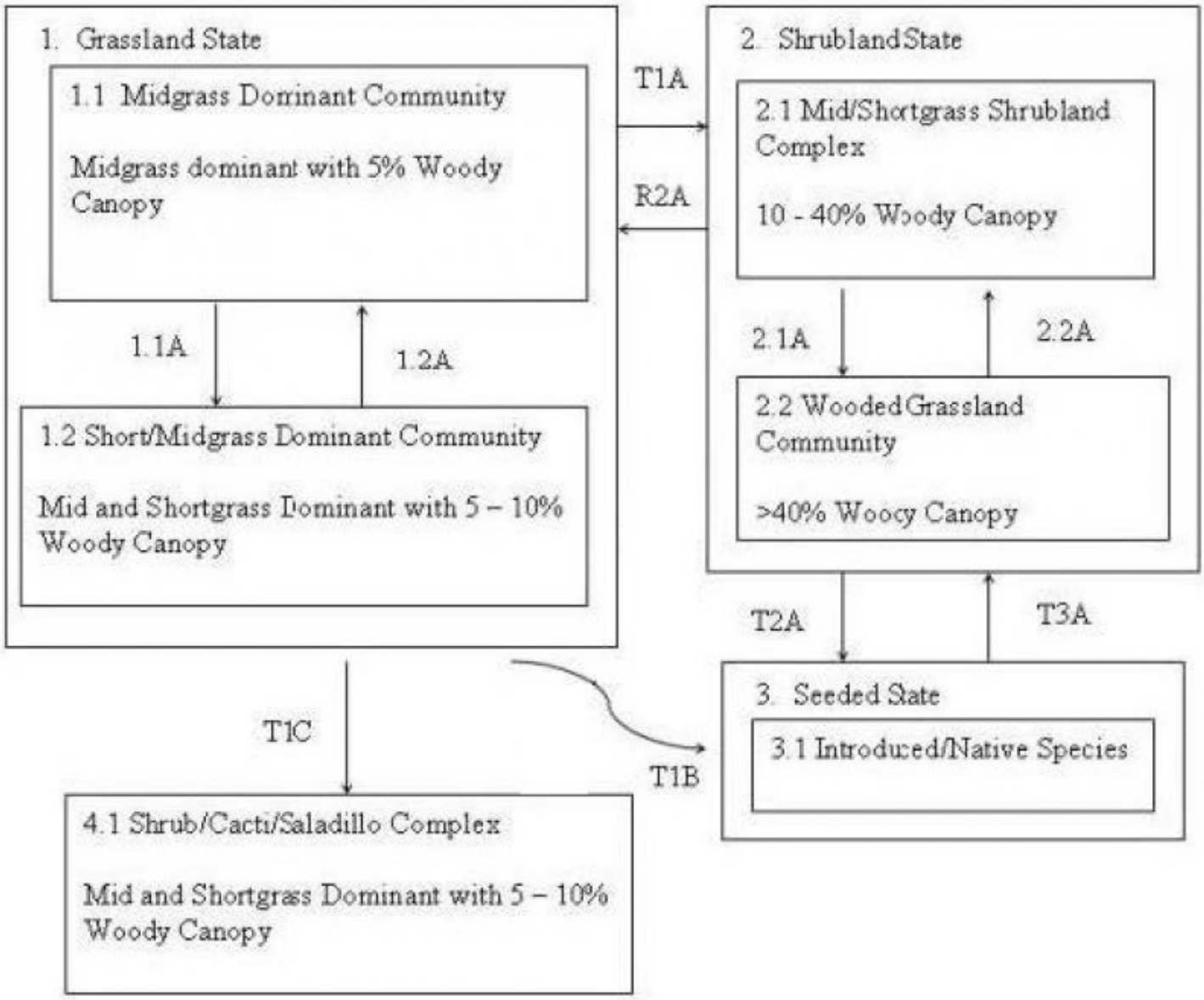

Figure 8. STM

State 1
Grassland

Dominant plant species

- fourwing saltbush (*Atriplex canescens*), shrub

- spiny hackberry (*Celtis ehrenbergiana*), shrub
- alkali sacaton (*Sporobolus airoides*), grass
- big sacaton (*Sporobolus wrightii*), grass

Community 1.1
Midgrass Dominant

The Saline Clay was dominated by midgrasses with a minor component of shortgrasses. Big sacaton and alkali sacaton make up a significant percentage of the herbaceous production. It should be noted that early ranchers and grazers (mid-to-late 1700's) burned this site frequently to remove old stubble and increase the palatability of the midgrasses. In addition to the sacatons, false Rhodesgrass, plains bristlegrass, Arizona cottontop, and silver bluestem were also an important midgrass component. There were some shortgrasses present, but they make up a small percentage of total herbaceous production. There are scattered trees and shrubs like mesquite and pricklypear. This community was maintained by periodic intense fire and grazing by large herbivores. If this site is overgrazed and excessive grazing continues, the midgrass community will be replaced by increased amounts of shortgrasses and more soil will be exposed. Some of the first midgrasses to disappear will be the sacatons, followed by false Rhodesgrass, plains bristlegrass, and Arizona cottontop. Shortgrasses that increase with this grazing pressure include curly mesquite, hooded windmillgrass, and whorled dropseed. If overgrazing continues, red grama, Texas varilla, whorled dropseed, and annuals will dominate the site. Patches of bare ground will begin to appear and grow larger, becoming susceptible to erosion.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1154	2774	3923
Shrub/Vine	56	84	112
Tree	56	84	112
Forb	28	56	84
Total	**1294**	**2998**	**4231**

Figure 10. Plant community growth curve (percent production by month). TX4800, Midgrass Dominant Community. Warm-season midgrasses with forbs and shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	2	10	20	20	5	8	15	10	6	2

Community 1.2
Mid/Shortgrass Dominant

This community results from continued heavy grazing over time and results in reduction of the midgrasses and an increase in the volume of shortgrasses. Big and alkali sacaton along with false Rhodesgrass, plains bristlegrass and Arizona cottontop make up significantly less volume of herbaceous production. These are replaced by pink pappusgrass, hooded windmillgrass, curly mesquite, and whorled dropseed.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1009	2242	3363
Shrub/Vine	84	112	224
Tree	56	84	112
Forb	28	84	112
Total	**1177**	**2522**	**3811**

Figure 12. Plant community growth curve (percent production by month). TX4805, Mid/Shortgrass Dominant Community. Mid and shortgrasses with increasing trees and shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	5	15	20	20	5	5	15	8	4	1

Pathway 1.2A
Community 1.2 to 1.1

This community can be taken back to community 1.1 through the use of prescribed grazing and prescribed burning.

State 2
Shrubland

Dominant plant species

- blackbrush acacia (*Acacia rigidula*), grass
- catclaw acacia (*Acacia greggii var. greggii*), grass
- lotebush (*Ziziphus obtusifolia*), grass

Community 2.1
Mid/Shortgrass Shrubland Complex

This plant community develops because of continued heavy grazing which reduces biomass production and litter accumulation. Fire frequency and intensity is greatly reduced. Other subtle impacts occur on the site as water, mineral, and energy cycles are altered. Midgrasses are significantly reduced and the sacatons, false Rhodesgrass, silver bluestem, Arizona cottontop, and other palatable midgrasses may be absent. Midgrasses such as pink pappusgrass, white tridens, hooded windmillgrass and sand dropseed are the most common midgrasses. Shortgrasses such as curly mesquite, buffalograss, whorled dropseed, and Hall’s panicum are more common than in the reference community and represent a higher percentage of herbaceous production. Due to reduced grass canopy, decreased fire frequency, and more exposed soil surface, woody species begin to increase on the site. Early woody increasers may include blackbrush acacia, twisted acacia, lotebush, javelina bush, allthorn goatbush, prickly pear, and mesquite.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	841	1121	2242
Shrub/Vine	168	280	364
Forb	84	140	224
Tree	84	140	196
Total	**1177**	**1681**	**3026**

Figure 14. Plant community growth curve (percent production by month). TX4801, Mid/Shortgrasses Shrubland Community. Mid and shortgrasses with forbs and 20-50% woody canopy..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	2	10	20	20	5	8	15	10	6	2

Community 2.2
Wooded Grassland

This community is somewhat similar to community 2.1 except that midgrasses only grow within the woody shrubs and are dominated by shortgrasses such as curly mesquite, buffalograss, whorled dropseed, and Hall’s panicum. In

this community, fire is a rare occurrence due to woody canopy and drastically reduced fine fuel loads. Woody shrubs such as blackbrush acacia, twisted acacia, spiny hackberry, allthorn goatbush, lotebush, guayacan, prickly pear, and appear throughout. Many wildlife species find this community suitable and some landowners manage towards this community.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	785	1681
Shrub/Vine	336	560	785
Tree	112	168	280
Forb	84	140	224
Total	**980**	**1653**	**2970**

Figure 16. Plant community growth curve (percent production by month). TX4804, Wooded Grassland Community, >40% canopy. Midgrasses are found only within thorny shrubs having woody canopies exceeding 40 percent and interspaces are dominated by shortgrasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	2	10	20	20	5	8	15	10	6	2

Pathway 2.2A
Community 2.2 to 2.1

Managerial activities that restore the hydrologic cycle, such as the energy captured by midgrasses, and restored ground cover will tend to move the Community 2.2 toward the Mid/Shortgrass Shrubland Complex (2.1). Selective brush management is needed to accomplish the desired canopy level and spatial arrangement of woody species. Integrated brush management and utilizing historic ecological disturbances such as herbivory and fire in are needed to maintain the desired brush densities. The time to shift back to the 10 to 40 percent canopy is dependent upon favorable growing conditions and could take three to five years.

State 3
Seeded

Dominant plant species

- Rhodes grass (*Chloris gayana*), grass
- beardgrass (*Bothriochloa*), grass

Community 3.1
Introduced/Native Species

This community is a result of the land manager planting introduced or native grass species. Seeding with native species is uncommon due to the lack of-availability of seeds that are adapted to saline soils of South Texas. Although this site is infrequently plowed due to salt and sodium content, mechanical manipulation has been done in some instances. When mechanical manipulation is done, the site is usually seeded to bell Rhodesgrass (*Chloris gayana*) or Kleberg bluestem. Either of these species, most commonly Kleberg bluestem, may invade this site when soils are denuded and native grasses are removed by overgrazing. Seeds of both Kleberg bluestem and bell Rhodesgrass are wind borne and a ready seed source is available from public roadways. Once the site is established to either of these species, return to a native state is extremely difficult, if not impossible.

Table 9. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	560	1345	2802
Shrub/Vine	56	84	140
Tree	56	84	140
Forb	28	56	84
Total	**700**	**1569**	**3166**

Figure 18. Plant community growth curve (percent production by month). TX4806, Converted Land Community - Introduced Seeding. Seeded into introduced grass species..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	5	15	20	20	5	5	15	8	4	1

State 4
Shrub/Cacti/Saladillo Complex

Dominant plant species

- pricklypear (*Opuntia*), shrub
- Texas varilla (*Varilla texana*), shrub

Community 4.1
Shrub/Cacti/Saladillo Complex

The pathway to this state is not well understood. Perhaps continuous excessive grazing removes both mid and shortgrasses, as well as woody seedlings, preventing the initial transition to communities 2.1 or 2.2. This community might also be achieved by mechanical manipulation like root-plowing, which destroys woody plants and native herbaceous plants. Regardless of the pathway, this state is dominated by shortgrasses. Cacti and woody shrubs may be present. In this state, there is excessive bare ground and Texas varilla is almost always present. Due to wind and water erosion, plants are often pedicelled. Salts may be present on the soil surface. The water cycle is drastically altered, and this state is in a perennial drought. It is doubtful that Community 4.1 can be changed to any other state.

Table 10. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	112	336	560
Shrub/Vine	224	336	448
Forb	224	336	448
Tree	–	–	–
Total	**560**	**1008**	**1456**

Figure 20. Plant community growth curve (percent production by month). TX4807, Shrub/Cacti/Saladillo Complex. Shrubs and Cacti community..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	2	10	20	20	5	8	15	10	6	2

Transition T1A
State 1 to 2

The Grassland State will cross a threshold to Shrubland (State 2) with abusive grazing and without brush

management or fire. Severe drought is also a significant factor to accelerate this crossing of a threshold. In State 2 more rainfall is being utilized by woody plants than the herbaceous plants. Because of the increased canopy, sunlight is being captured by the woody plants and converted to energy instead of the herbaceous plants.

Transition T1B
State 1 to 3

The transition to the Converted Land State is triggered by major ground disturbing mechanical treatment and planting to native or introduced forages. Planting is usually done following brush management.

Transition T1C
State 1 to 4

This transition is not fully understood, but the driver is replacement of midgrasses by shortgrasses and cacti.

Restoration pathway R2A
State 2 to 1

Brush management is the key driver in restoring State 2 back to the Grassland State (1). Reduction in woody canopy below 20 percent will take large energy inputs depending on the canopy cover. A prescribed grazing plan and prescribed burning plan will keep the state functioning.

Transition T2A
State 2 to 3

The transition to the Seeded State is triggered by major ground disturbing mechanical treatment and planting to native or introduced forages. Planting is usually done following brush management.

Transition T3A
State 3 to 2

The transition from the Seeded State to the Shrubland State is triggered by neglect or no management over long periods of time. Shrubs re-establish from the seed bank and introduction from wildlife and livestock. A complete return to a previous state is not possible if adapted non-native plants have been established.

Additional community tables

Table 11. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
0	**Tallgrass**			112–448	
1	**Midgrasses**			359–1569	
	alkali sacaton	SPAI	*Sporobolus airoides*	112–1009	–
	false Rhodes grass	TRCR9	*Trichloris crinita*	84–560	–
	large-spike bristlegrass	SEMA5	*Setaria macrostachya*	112–448	–
	southwestern bristlegrass	SESC2	*Setaria scheelei*	56–224	–
2	**Midgrasses**			247–1009	
	vine mesquite	PAOB	*Panicum obtusum*	112–448	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	112–448	–
	Arizona cottontop	DICA8	*Digitaria californica*	112–336	–
	plains lovegrass	ERIN	*Eragrostis intermedia*	84–336	–

	tobosagrass	PLMU3	*Pleuraphis mutica*	0–336	–
	lovegrass tridens	TRER	*Tridens eragrostoides*	84–336	–
3	**Mid/Shortgrasses**			224–560	
	pink pappusgrass	PABI2	*Pappophorum bicolor*	112–448	–
	white tridens	TRAL2	*Tridens albescens*	112–448	–
	Texas bristlegrass	SETE6	*Setaria texana*	56–224	–
	purple threeawn	ARPU9	*Aristida purpurea*	84–168	–
4	**Shortgrasses**			45–112	
	hooded windmill grass	CHCU2	*Chloris cucullata*	28–168	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	28–112	–
5	**Shortgrasses**			168–224	
	curly-mesquite	HIBE	*Hilaria belangeri*	112–224	–
	buffalograss	BODA2	*Bouteloua dactyloides*	56–168	–
	Hall's panicgrass	PAHA	*Panicum hallii*	28–112	–
	Madagascar dropseed	SPPY2	*Sporobolus pyramidatus*	84–112	–
	Texas grama	BORI	*Bouteloua rigidiseta*	28–56	–
	fall witchgrass	DICO6	*Digitaria cognata*	22–56	–
	red grama	BOTR2	*Bouteloua trifida*	11–28	–
Forb					
6	**Forbs**			17–34	
	whitemouth dayflower	COER	*Commelina erecta*	6–11	–
	Gregg's tube tongue	JUPI5	*Justicia pilosella*	6–11	–
	littleleaf sensitive-briar	MIMI22	*Mimosa microphylla*	1–6	–
	globemallow	SPHAE	*Sphaeralcea*	1–6	–
	prairie clover	DALEA	*Dalea*	0–6	–
7	**Forbs**			11–50	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–11	–
	woolly globemallow	SPLI	*Sphaeralcea lindheimeri*	6–11	–
	ashy pricklyleaf	THTE8	*Thymophylla tephroleuca*	6–11	–
	Texas varilla	VATE2	*Varilla texana*	0–11	–
	fiveneedle pricklyleaf	THPEP	*Thymophylla pentachaeta var. pentachaeta*	0–6	–
	low silverbush	ARHUH	*Argythamnia humilis var. humilis*	1–6	–
	Rio Grande stickpea	CACO	*Calliandra conferta*	1–6	–
	wild tantan	DEVI3	*Desmanthus virgatus*	1–6	–
	shaggy dwarf morning-glory	EVNU	*Evolvulus nuttallianus*	1–6	–
	silver dwarf morning-glory	EVSE	*Evolvulus sericeus*	1–6	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	0–6	–
	haplopappus	HAPLO11	*Haplopappus*	1–6	–
	Drummond's goldenbush	ISDR	*Isocoma drummondii*	0–6	–
	Berlandier's nettlespurge	JACA3	*Jatropha cathartica*	1–6	–

	upright prairie coneflower	RACO3	*Ratibida columnifera*	0–6	–
	fanpetals	SIDA	*Sida*	1–6	–
	silverleaf nightshade	SOEL	*Solanum elaeagnifolium*	0–6	–
	Forb, annual	2FA	*Forb, annual*	0–6	–
	Forb, perennial	2FP	*Forb, perennial*	0–6	–
	prairie false foxglove	AGHE4	*Agalinis heterophylla*	0–6	–
	weakleaf bur ragweed	AMCO3	*Ambrosia confertiflora*	0–6	–
	prairie broomweed	AMDR	*Amphiachyris dracunculoides*	0–6	–
Shrub/Vine					
8	**Shrubs/Vines**			56–112	
	fourwing saltbush	ATCA2	*Atriplex canescens*	28–56	–
	spiny hackberry	CEEH	*Celtis ehrenbergiana*	11–22	–
	pricklypear	OPUNT	*Opuntia*	6–22	–
	clapweed	EPAN	*Ephedra antisyphilitica*	6–11	–
	Berlandier's wolfberry	LYBE	*Lycium berlandieri*	6–11	–
	javelina bush	COER5	*Condalia ericoides*	6–11	–
	Texan goatbush	CAERT	*Castela erecta ssp. texana*	6–11	–
	blackbrush acacia	ACRI	*Acacia rigidula*	6–11	–
	Christmas cactus	CYLE8	*Cylindropuntia leptocaulis*	1–7	–
	Brazilian bluewood	COHO	*Condalia hookeri*	0–6	–
	Schaffner's wattle	ACSCB	*Acacia schaffneri var. bravoensis*	0–6	–
	whitebrush	ALGR2	*Aloysia gratissima*	0–6	–
	catclaw acacia	ACGRG3	*Acacia greggii var. greggii*	1–6	–
	catclaw acacia	ACGRW	*Acacia greggii var. wrightii*	0–6	–
	Texas lignum-vitae	GUAN	*Guaiacum angustifolium*	1–6	–
	leatherstem	JADI	*Jatropha dioica*	1–6	–
	crown of thorns	KOSP	*Koeberlinia spinosa*	0–6	–
	desert yaupon	SCCU4	*Schaefferia cuneifolia*	0–6	–
	lime pricklyash	ZAFA	*Zanthoxylum fagara*	0–6	–
	lotebush	ZIOB	*Ziziphus obtusifolia*	1–6	–
Tree					
9	**Tree**			56–112	
	honey mesquite	PRGL2	*Prosopis glandulosa*	56–112	–

Animal community

As a historic tall/midgrass prairie, this site was occupied by bison, antelope, deer, quail, turkey, and dove. This site was also used by many species of grassland songbirds, migratory waterfowl, and coyotes. This site now provides forage for livestock and is still used by quail, dove, migratory waterfowl, grassland birds, coyotes, and deer.

Feral hogs (Sus scrofa) can be found on most ecological sites in Texas. Damage caused by feral hogs each year includes, crop damage by rutting up crops, destroyed fences, livestock watering areas, and predation on native wildlife, and ground-nesting birds. Feral hogs have few natural predators, thus allowing their population to grow to high numbers.

Wildlife habitat is a complex of many different plant communities and ecological sites across the landscape. Most animals use the landscape differently to find food, shelter, protection, and mates. Working on a conservation plan

for the whole property, with a local professional, will help managers make the decisions that allow them to realize their goals for wildlife and livestock.

Grassland State (1): This state provides the maximum amount of forage for livestock such as cattle. It is also utilized by deer, quail and other birds as a source of food. When a site is in the reference plant community phase (1.1) it will also be used by some birds for nesting, if other habitat requirements like thermal and escape cover are near.

Tree/Shrubland/Cacti (2/4): This state can be maintained to meet the habitat requirements of cattle and wildlife. Land managers can find a balance that meets their goals and allows them flexibility to manage for livestock and wildlife. Forbs for deer and birds like quail will be more plentiful in this state. There will also be more trees and shrubs to provide thermal and escape cover for birds as well as cover for deer.

Seeded State (3): The quality of wildlife habitat this site will produce is extremely variable and is influenced greatly by the timing of rain events. This state is often manipulated to meet landowner goals. If livestock production is the main goal, it can be converted to pastureland. It can also be planted to a mix of grasses and forbs that will benefit both livestock and wildlife. A mix of forbs in the pasture could attract pollinators, birds and other types of wildlife. Food plots can also be planted to provide extra nutrition for deer.

This rating system provides general guidance as to animal preference for plant species. It also indicates possible competition between kinds of herbivores for various plants. Grazing preference changes from time to time, especially between seasons, and between animal kinds and classes. Grazing preference does not necessarily reflect the ecological status of the plant within the plant community. For wildlife, plant preferences for food and plant suitability for cover are rated. Refer to habitat guides for a more complete description of a species habitat needs.

Hydrological functions

The grassland and the shrubland communities on this site use all the water from rainfall events that occur. Research has shown that the evapotranspiration rate on the grassland and the shrubland is nearly the same. Very little water could be harvested from this site if the woody plant community is replaced by a grass dominated community.

Recreational uses

White-tailed deer, quail, javelina, and feral hogs are hunted on the site. Bird watching may also be done.

Inventory data references

Information presented was derived from the revised Range Site, literature, limited NRCS clipping data (417s), field observations, and personal contacts with range-trained personnel.

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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.

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Date	04/01/2008
Approved by	Bryan Christensen
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):** 0 to 5 percent bare ground. Small and non-connected areas.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** None.

7. **Amount of litter movement (describe size and distance expected to travel):** Minimal and short.

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):** 0 to 22 inches thick light brownish gray clay, moderately fine granular to very fine angular blocky structure; very hard, friable, sticky, plastic; few siliceous pebbles, threads of gypsum along crack faces; strongly effervescent; slightly alkaline.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** High canopy, basal cover and density with small interspaces should make rainfall impact negligible. This site has well drained soils, deep with 0 to 3 percent slopes which allows negligible runoff and erosion.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None.

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: Warm-season midgrasses >>

    Sub-dominant: Warm-season shortgrasses >

    Other: Forbs > Trees.

    Additional: Forbs make up 5 percent species composition and shrubs/trees compose of 5 percent species composition.

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Grasses due to their growth habit will exhibit some mortality and decadence, though very slight.

14. **Average percent litter cover (%) and depth (in):** Litter is primarily herbaceous.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1,155 to 3,775 pounds per acre.

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: Mesquite, pricklypear, and Texas varilla are the primary invaders.

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17. **Perennial plant reproductive capability:** All species should be capable of reproduction, except during periods of prolonged drought conditions, heavy natural herbivory, and/or intense wildfires.
