USDA Natural Resources Conservation Service

Ecological site R070BY660TX
Sandy Bottomland 12-18" PZ

Last updated: 9/12/2023
Accessed: 05/03/2024

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.

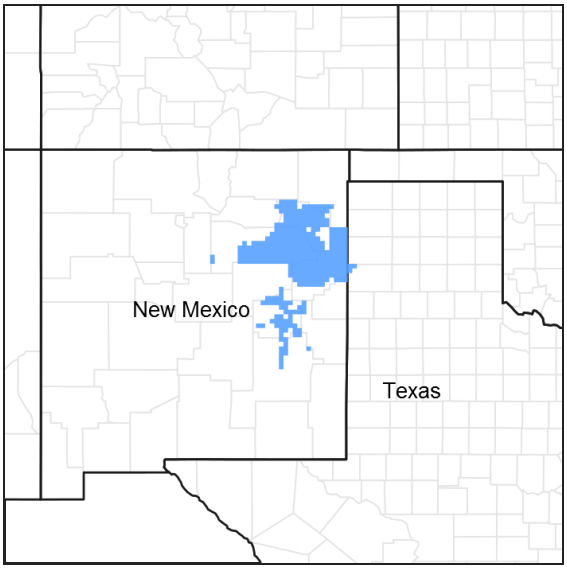


Figure 1. Mapped extent

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): 070B–Pecos and Canadian River Basins

MLRA 70B is characterized by broad, rolling piedmonts, plains, and tablelands broken by drainageways and tributaries of the Pecos River. Native vegetation is mid- to short-grass prairie species in the lowlands, with pinyon and juniper in the higher elevations and on steeper north-facing slopes. Current land use is predominantly livestock grazing. The soils formed in material weathered from sedimentary rocks of Cretaceous age.

Ecological site concept

This site occurs on floodplains and low terraces where soils are sandy throughout.

Associated sites

R070BY661TX	**Breaks 12-18" PZ** These are upland sites that may occur adjacent to Sandy Bottomland sites.
R070BY665TX	**Shallow Sandstone 12-18" PZ** These are upland sites that may occur adjacent to Sandy Bottomland sites.

Similar sites

R077EY058TX	**Loamy Bottomland 16-24" PZ** There may be small areas of Loamy Bottomland mingled with Sandy Bottomland sites. Loamy Bottomland soils are more developed and usually produce more total vegetation.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

The Sandy Bottomland site occurs in the floodplains of major streams. It also occupies low, fluvial terraces immediately adjacent to the streambed. The site may be flooded periodically to frequently, and signs of deposition are usually visible. Soils consist mostly of sandy alluvium with some silty and loamy layers interspersed in certain locations. Relative to other sites, Sandy Bottomland is located at the lowest position on the landscape.

Table 2. Representative physiographic features

Landforms	(1) Terrace (2) Flood plain
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Occasional
Elevation	1,067–1,280 m
Slope	0–5%
Water table depth	91–152 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate of this area can be classified as “semi-arid continental”. Summers are hot with winters being generally mild with numerous cold fronts that drop temperatures into the single digits for 24 to 48 hours. Temperature extremes are the rule rather than the exception. Humidity is generally low and evaporation high. Canadian and Pacific cold fronts come through the region in fall, winter, and spring, and resulting temperature changes can be rapid.

Total annual precipitation averages 12 to 18 inches. Most of the precipitation comes in the form of rain during the period from May through October. Snowfall averages around 20 inches but ranges from 10 to 36 inches. Rainfall in the growing season often comes as intense showers of relatively short duration. Long-term droughts occur on the average of once every 20 years and may last as long as five to six years. During these drought years moisture during the growing season is from 50 to 60 percent of the mean. Based on long-term records, approximately 60 percent of years are below the mean rainfall and approximately 40 percent are above the mean. May, June ,and July are the main growth months for perennial warm-season grasses. Forbs perform their growth somewhat earlier.

Low air temperatures vary from a monthly mean of 20 degrees F in January to 64 degrees F in July. Mean daily maximum temperatures average in the upper 80’s and low 90’s during the summer months. Winter minimum temperatures fall below the freezing mark much of the time from November through March, with daily lows sometimes reaching 10 degrees F in December and January. Dates of the last killing frost may vary from April 15 to April 22, and the first killing frost from October 15 to October 24.

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.

Table 3. Representative climatic features

Frost-free period (average)	200 days
Freeze-free period (average)	205 days
Precipitation total (average)	457 mm

Influencing water features

This ecological site occurs adjacent to intermittent and perennial streams. Its soils are occasionally to frequently flooded, but it is not classified as a wetland. There are few plants that occur on this site that are classified as hydrophytic. The soils on this site are well-drained to the surface. There may be a water table within 3 to 5 feet of the surface in places.

Soil features

These are very deep soils developed from sandy alluvium with occasional layers of loamy or silty sediments. There is limited soil development on this site, and erosional and depositional cycles are still occurring. Organic matter is low. Generally, the surface is loamy sand or fine sand with occasional inclusions of fine sandy loam or silt loam. Periodic flooding occurs on much of the site, but is usually of short duration. There may be a high water table present under portions of this site, but the soil is not saturated to the surface. The upper profile is generally well-drained, although water can be found at depths of 3 to 5 feet along major streams in the region. The depth to water fluctuates from season to season and year to year. This site is low in fertility and water holding capacity. Runoff is negligible and infiltration is rapid. The amount of plant available water is comparatively high. Production potential for plant growth is from moderate to moderately high.

Major Soil Taxonomic Units correlated to this site include Minneosa loamy fine sand.

Table 4. Representative soil features

Surface texture	(1) Very fine sandy loam (2) Loamy fine sand
Family particle size	(1) Loamy
Drainage class	Well drained
Permeability class	Moderately rapid to rapid
Soil depth	152 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	7.62–10.16 cm
Calcium carbonate equivalent (0-101.6cm)	0%
Electrical conductivity (0-101.6cm)	0 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	7.4–8.4
Subsurface fragment volume <=3" (Depth not specified)	0%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

This is a riparian site occurring on low terraces and floodplains along major rivers and streams in this region of the plains. The site does not occur along the dry sandy draws that are associated with more upland terrain. The soils are composed of sandy and silty alluvium that has been deposited as a result of flooding and associated overland flow. Soil development processes are generally limited. The frequency of flooding events varies from periodic to frequent and these events have played a major role in the development of the historic natural plant community. Deposition of sandy alluvium has occurred over time and continues on portions of many Sandy Bottomland delineations. Some of the fluvial terraces located further upland from the streambed are no longer regularly flooded and have become more stable. The development of the plant community depends upon the frequency of major flooding, as well as soil development and the presence or absence of a high water table.

In historic times, most ecologists agree that these prairie river riparian sites in the plains produced scattered timber, mainly cottonwoods (Populus spp.) and a few willows (Salix spp.) along with some shorter shrubs such as plum (Prunus spp.), sumac (Rhus spp.), and willow baccharis (*Baccharis salicina*). Cottonwoods, willows, and willow baccharis are classified as phreatophytes and make up greater than 60% of all the woody species. Tallgrasses such as sand bluestem (*Andropogon hallii*), switchgrass (*Panicum virgatum*), Indiangrass (*Sorghastrum nutans*), and little bluestem (*Schizachyrium scoparium*) were the dominant class of herbaceous vegetation in the historic climax plant community (HCPC). Production in the HCPC was moderately high with annual production approaching 3000 pounds per acre of air dry plant material. It should be noted that annual air dry production does not mean standing biomass, as the amount of standing biomass is usually considerably more than the current year’s growth referred to in this description.

In the periods between flooding events, vegetation would establish and increase, but with a major flood, vegetation was often at least partially destroyed and erosion and deposition left a more sparse plant population, mainly in the areas closest to the channel. The actual channel of these streams would shift in location with different areas being more subjected to flooding over time. Under this cycle of flooding and stable periods, fluvial terraces were formed. Over time, some areas were less frequently flooded and became more stable. With stability, the plant community would increase in both diversity and density. Generally, smaller streams have less-developed terraces that are narrower in width. Major rivers may have stream terraces several hundred feet in width.

There is some speculation as to whether flooding events were influenced by overgrazing of the surrounding watershed, contributing to greater runoff. This is possible, but difficult to say definitely. One of the Spanish explorers of the 1600’s described the Canadian River as a rather narrow stream of live water with scattered groves of cottonwoods and with shrubs and tallgrasses growing to the banks. This description is different from the one of the early day cattle drivers who had to cross this treacherous stream in the 1870’s and 80’s. These cowboys often encountered a swiftly running river up to one hundred yards wide, or a wide, sandy bottomed stream with a meandering channel with numerous pockets of quicksand. But in either case, there had not been chronic overgrazing of domestic livestock occurring as no ranching operations were in place in the region before about 1877. Of course, the bison often did graze the range closely, but their migratory habits usually allowed for recovery of the native vegetation.

If the watershed burned off prior to some heavy rains, then increased runoff would surely occur. It is likely that there was considerable variation in the appearance of the larger streams as they meandered eastward. The flooding events were probably quite variable from year to year.

In some cases, impoundments (reservoirs) have been constructed on the major streams which have interrupted the natural frequency of flooding. This has caused a major change in the amount and the nature of the vegetation on this site. If flooding is taken out of the picture almost entirely, then vegetation rapidly becomes established on the floodplain down to the actual channel with woody vegetation often leading the way. Downstream from dams, the amount of all types of vegetation has usually increased, and in many cases, invasive woody species such as saltcedar (*Tamarix ramosissima*) have invaded and become dominant. Over time, with no major flooding, vegetation of all types will usually increase as the site stabilizes. This is a natural process, but is one that is definitely influenced by human activities such as dams and channels.

The fact that there is quite often a high water table present beneath these streams and the associated fluvial terraces also affects the type and amount of native vegetation present. Generally, willows and cottonwoods take advantage of this presence of water, as do some of the deeper-rooted shrubs and tallgrasses. In general, the

presence of phreatophytic woody species coincides with a shallow aquifer. If the ground water happens to be somewhat saline or alkaline, then species (both shrubs and herbaceous plants) tolerant of this characteristic will tend to dominate. Generally speaking, a plant community dominated by a variety of grass species with fewer water-loving shrubs indicates a greater depth to ground water. The depth to water will have just as much or more influence on the plant community makeup as grazing management or the presence or absence of fire.

Grazing of domestic livestock has had some influence on native plant communities on this site. The vegetation on this site is not necessarily more preferred by livestock, but is often utilized heavily because of the protection offered by landscape position and cover, shade in summer, and sometimes because of proximity to live water. If the tallgrasses which often dominate this site are continually over-utilized, they will decrease and mid and short grass species such as dropseeds (Sprorobolus spp.), inland saltgrass (*Distichlis spicata*), scratchgrass (*Muhlenbergia asperifolia*), threeawns (Aristida spp.), and annual forbs such as camphorweed (*Heterotheca subaxillaris*) and the perennial forb western ragweed (*Ambrosia psilostachya*) will increase. Woody shrubs such as sandbar willow (*Salix exigua*) and willow baccharis (*Baccharis salicina*) may also increase on portions of the site where the tallgrasses offer little or no competition. Saltcedar is an introduced shrub/tree that has invaded bottomlands along many of the western streams in the U.S., and occupies significant portions of many Sandy Bottomland delineations in this region. Russian olive (Elaeagnus angustifolius) and common bermudagrass (*Cynodon dactylon*) may also invade this site. This site usually has a few cool-season grasses such as Canada wildrye (*Elymus canadensis*) and western wheatgrass (*Pascopyrum smithii*), along with some winter and early spring forbs which attract livestock during the dormant period for warm-season plants. Increased animal impact on this site can disturb the fragile sandy soil and stimulate annual forbs and sandburs. Inappropriate grazing methods can increase the possibility of downstream pollution. Maintaining good vegetative cover on this site has a positive effect on water quality downstream by reducing sedimentation and increasing aquifer recharge. This site should be carefully grazed and regular deferment periods are recommended.

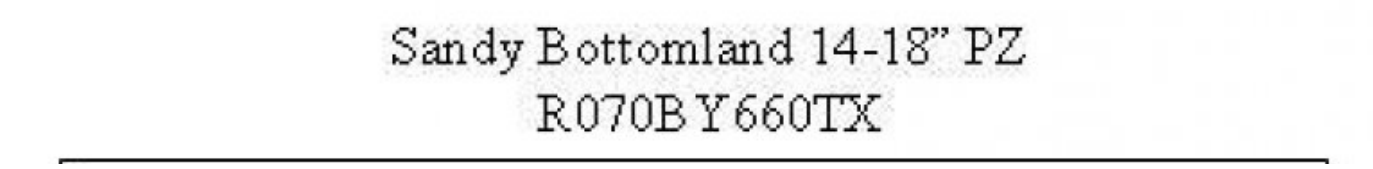
Natural fire was also an important factor in shaping and maintaining the historic plant community on the Sandy Bottomland site. Because there was often a significant fuel load of tallgrasses present on portions of the site, along with some accumulated dead woody material from shrubs and trees, fire was a predictable visitor. Periodic fires kept the presence of shrubs and trees limited in historic times. There is no doubt that cottonwoods have increased dramatically on many sites due to fire being controlled (as well as flooding events being limited). If the presence of cottonwoods is desired, which is often the case for aesthetic and wildlife reasons, the use of prescribed fire on this site must be carefully planned and judiciously applied, as these trees are quite susceptible to damage by fire. The larger cottonwoods must be protected by mowing underneath the canopy, removing accumulated dead limbs, and otherwise reducing fuel loads immediately adjacent to the trees. Most of the shrubs present on the site are re–sprouting species and are only suppressed by fire. However this suppression may last several years depending upon the species of shrub involved. Occasional burning removes old accumulated plant residues common to the tallgrass species, which renders these plants more palatable to grazing animals. Since this site is adjacent to streams that often have a largely bare sandy streambed, the movement of fire can sometimes be more easily managed.

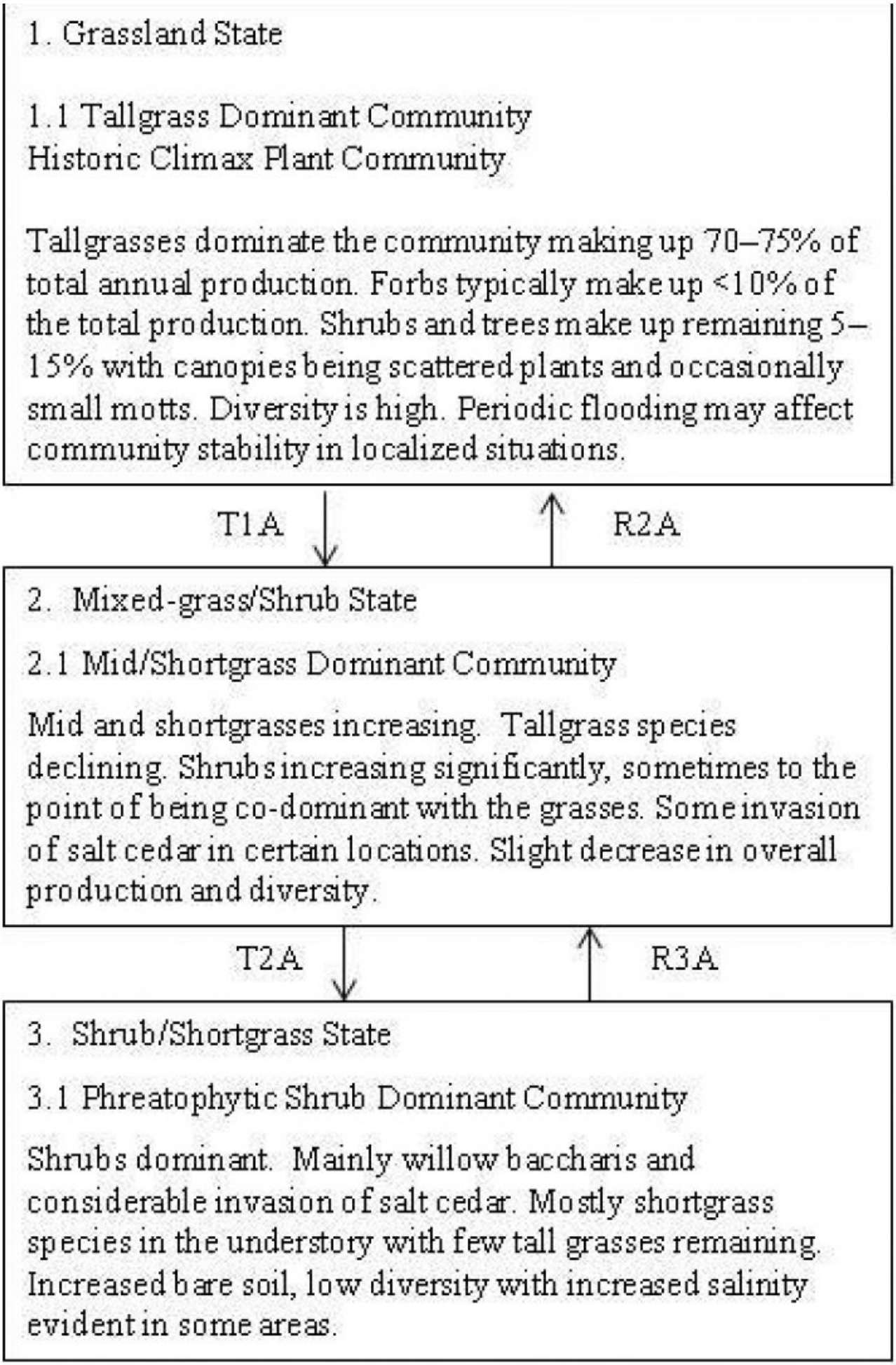
NOTE : Rangeland Health Reference Worksheets have been posted for this site on the Texas NRCS website (www.tx.nrcs.usda.gov) in Section II of the eFOTG under (F) Ecological Site Descriptions.

STATE AND TRANSITIONAL PATHWAYS: (DIAGRAM)

Narrative:
The following diagram suggests some pathways that the vegetation on this site might take. There may be other states not shown on the diagram. This information is intended to show what might happen in a given set of circumstances; it does not mean that this would happen the same way in every instance. Local professional guidance should always be sought before pursuing a treatment scenario.

State and transition model





LEGEND

T1A Heavy Continuous Grazing, No Fire, No Brush Management

R2A Prescribed Grazing, Brush Management, Prescribed Burning

R2A Prescribed Grazing, Brush Management, Prescribed Burning
T2A Heavy Continuous Grazing, Brush Invasion, No Fire, No Brush Management
R3A Prescribed Grazing, Brush Management, Prescribed Burning

State 1
Grassland State

This is a tallgrass-dominant state with scattered shrubs and trees. This also represents the historic climax native plant community (HCPC). The major tallgrasses are switchgrass, Indiangrass, sand bluestem, and occasional common reedgrass. Tallgrasses comprise about 75% of species composition. For the shrub/tree component, there are scattered plants of willow baccharis, cottonwoods, and willows present and near the stream channel. Shrubs compose 10 percent or less, and trees (cottonwood and willows) 5 to 10 percent. Forbs are variable but usually make up 8 to 10 percent of composition.

Community 1.1
Tallgrass Dominant Community

Figure 4. 1.1 Tallgrass Dominant Community

HCPC (1.1) is the interpretive plant community for the Sandy Bottomland ecological site. This is a tallgrass-dominant community with scattered shrubs and trees. This represents the historic climax native plant community (HCPC). The major tallgrasses are switchgrass, Indiangrass, sand bluestem, and occasional common reedgrass. Tallgrasses comprise about 75% of species composition. For the shrub/tree component, there are scattered plants of willow baccharis, cottonwoods, and willows present and near the stream channel. Shrubs compose 10 percent or less and trees (cottonwood and willows) 5 to 10 percent. Forbs are variable but usually make up 8 to 10 percent of composition. Occasional prescribed burning will help perpetuate the tallgrass species and will keep the composition of shrubs in check. With heavy continuous grazing and no planned rest periods, the tallgrasses will decrease and mid- and short-grass species, along with numerous annual forbs, will increase. The density of grass cover will decrease and shrubs will increase, especially willow baccharis, and quite often saltcedar will start to invade the site. The depth to water also affects species composition with these phreatophytic shrubs invading more readily where ground water is quite shallow. The site pictured here has been deferred for several years and has been occasionally burned with the last prescribed fire being applied some 15 years prior.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1289	1928	2578
Forb	112	168	224
Shrub/Vine	90	123	157
Tree	90	123	157
Microbiotic Crusts	–	–	1
Total	**1581**	**2342**	**3117**

Figure 6. Plant community growth curve (percent production by month). TX0262, Tallgrass Dominant Community. Tallgrasses with few shrubs and trees..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	2	3	8	20	24	17	9	9	4	3	1

State 2
Mixed-grass/Shrub State

This community (2.1) is in transition from tallgrasses with a few woody plants to a community with significant shrubs. There are considerable tallgrasses remaining, and the community can be manipulated to return to a tallgrass-dominant community (1.1). Shrubs are in direct competition with tallgrasses and there are many small plants of salt cedar and willow baccharis present.

Community 2.1
Mid/Shortgrass Dominant Community

Figure 7. 2.1 Mid/Shortgrass Dominant Community

This community (2.1) is in transition from tallgrasses with a few woody plants to a community with significant shrubs. There are considerable tallgrasses remaining, and the community can be manipulated to return to a tallgrass dominant community (1.1). Shrubs are in direct competition with tallgrasses and there are many small plants of saltcedar and willow baccharis present. These shrubs are very competitive but can be controlled with a timely application of appropriate herbicide. This community can be shifted back toward a tallgrass-dominated community (1.1) with brush management and growing season rest. Prescribed fire might also be a possible follow-up once the herbicide application is made. Shrubs will continue to invade this site if the grass community is weakened and cannot compete favorably. This site shows indications of a high water table which will make phreatophytic shrub encroachment more of a problem.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	673	1121	1569
Shrub/Vine	336	560	785
Forb	28	45	73
Tree	22	34	45
Microbiotic Crusts	–	–	1
Total	**1059**	**1760**	**2473**

Figure 9. Plant community growth curve (percent production by month). TX0255, Midgrass/Shortgrass/Shrubs Community. Warm season midgrasses, forbs, and short shrubs..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	4	6	10	16	22	10	5	15	8	2	1

State 3
Shrub/Shortgrass State

This Shrub/Shortgrass State is dominated by phreatophytic shrubs with saltcedar being the dominant species. Most of the tallgrass production has given way to shrubs and short-grasses. There is a major invasion of saltcedar with some Russian olive showing up. Short-grasses comprise the understory, and include inland saltgrass, common bermudagrass, and scratchgrass .

Community 3.1
Phreatophytic Shrub Dominant Community

Figure 10. 3.1 Phreatophytic Shrub Dominant Community

This community (3.1) is dominated by phreatophytic shrubs with saltcedar being the dominant species. Most of the tallgrass production has given way to shrubs and shortgrasses. There is a major invasion of saltcedar with some Russian olive showing up. Short-grasses comprise the understory , and include inland saltgrass, common bermudagrass, and scratchgrass . A major threshold has been crossed and considerable energy input will be necessary to drive the community in the direction of the HCPC (1.1). It is possible that with brush management with appropriate herbicides and growing season rest, some of the tallgrasses will return. The success of returning tallgrasses may depend on the rate of re-invasion of shrubs and the fluctuation of water table. The invasion of phreatophytic shrubs will often occur when a seed source is available and the tallgrass communities are weakened. There is a high water table present, and evidence suggests that salinity is increasing. Sometimes shifts in the water table and changes in water quality (such as salinity) have a greater effect on the plant community than grazing management. Once shrubs dominate the site, it is difficult to return to HCPC (1.1).

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	560	897	1233
Grass/Grasslike	336	673	1009
Forb	56	84	112
Tree	22	34	45
Microbiotic Crusts	–	–	1
Total	**974**	**1688**	**2400**

Figure 12. Plant community growth curve (percent production by month). TX0252, Shrub/Shortgrass Community. Warm-season shrubs and shortgrasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2	5	8	18	22	8	5	11	15	4	1

Transition T1A
State 1 to 2

With heavy continuous grazing, no fires, and no brush management practices conducted, the Grassland State will transition to the Mixed-grass/Shrub State.

Restoration pathway R2A
State 2 to 1

With the implementation of conservation and management practices such as Prescribed Grazing, Brush Management, and Prescribed Burning, the Mixed-grass/Shrub State can be restored to the Grassland State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Transition T2A
State 2 to 3

With heavy continuous grazing, no fires, brush invasion of willow baccharis and saltcedar , and no brush management practices conducted, the Mixed-grass/Shrub State will transition to the Shrub/Shortgrass State.

Restoration pathway R3A
State 3 to 2

With the implementation of desirable conservation practices such as Prescribed Grazing, Brush Management, and Prescribed Burning, the Shrub/Shortgrass State can be restored to the Mixed-grass/Shrub State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Additional community tables

Table 8. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Tallgrasses**			986–1973	
	sand bluestem	ANHA	*Andropogon hallii*	269–538	–
	switchgrass	PAVI2	*Panicum virgatum*	269–538	–
	Indiangrass	SONU2	*Sorghastrum nutans*	168–336	–
	little bluestem	SCSCS	*Schizachyrium scoparium var. scoparium*	123–247	–
	Canada wildrye	ELCA4	*Elymus canadensis*	45–90	–
	common reed	PHAU7	*Phragmites australis*	45–90	–
	giant sandreed	CAGI3	*Calamovilfa gigantea*	34–67	–
	big sacaton	SPWR2	*Sporobolus wrightii*	34–67	–
	prairie cordgrass	SPPE	*Spartina pectinata*	0–34	–
2	**Midgrasses**			235–482	
	sideoats grama	BOCU	*Bouteloua curtipendula*	101–202	–
	alkali sacaton	SPAI	*Sporobolus airoides*	50–101	–
	Drummond's dropseed	SPCOD3	*Sporobolus compositus var. drummondii*	28–56	–
	western wheatgrass	PASM	*Pascopyrum smithii*	28–56	–
	needle and thread	HECO26	*Hesperostipa comata*	22–45	–
	streambed bristlegrass	SELE6	*Setaria leucopila*	11–22	–
3	**Shortgrasses**			56–123	
	saltgrass	DISP	*Distichlis spicata*	22–45	–
	scratchgrass	MUAS	*Muhlenbergia asperifolia*	22–45	–
	blue grama	BOGR2	*Bouteloua gracilis*	11–22	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	6–11	–
4	**Grasslike**			0–22	
	common spikerush	ELPA3	*Eleocharis palustris*	0–22	–
Forb					
5	**Forbs**			112–224	
	Forb, annual	2FA	*Forb, annual*	6–13	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	6–13	–
	rose heath	CHER2	*Chaetopappa ericoides*	6–13	–
	spiny chloracantha	CHSP11	*Chloracantha spinosa*	6–13	–
	whitemouth dayflower	COER	*Commelina erecta*	6–13	–
	nineanther prairie clover	DAEN	*Dalea enneandra*	6–13	–
	purple prairie clover	DAPUP	*Dalea purpurea var. purpurea*	6–13	–
	bundleflower	DESMA	*Desmanthus*	6–13	–
	Indian blanket	GAPU	*Gaillardia pulchella*	6–13	–
	beeblossom	GAURA	*Gaura*	6–13	–
	splitleaf gilia	GIIN6	*Giliastrum incisum*	6–13	–
	American licorice	GLLE3	*Glycyrrhiza lepidota*	6–13	–

	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	6–13	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	6–13	–
	blazingstar	MENTZ	*Mentzelia*	6–13	–
	Roemer's mimosa	MIRO6	*Mimosa roemeriana*	6–13	–
	evening primrose	OENOT	*Oenothera*	6–13	–
	queen's-delight	STSY	*Stillingia sylvatica*	6–13	–
	prairie spiderwort	TROC	*Tradescantia occidentalis*	6–13	–
Shrub/Vine					
6	**Shrubs/Vines**			90–157	
	willow baccharis	BASA	*Baccharis salicina*	50–78	–
	Oklahoma plum	PRGR	*Prunus gracilis*	11–22	–
	sandbar willow	SAIN3	*Salix interior*	11–22	–
	mustang grape	VIMU2	*Vitis mustangensis*	0–22	–
	fragrant sumac	RHAR4	*Rhus aromatica*	11–17	–
	false indigo bush	AMFR	*Amorpha fruticosa*	6–17	–
Tree					
7	**Trees**			90–157	
	plains cottonwood	PODEM	*Populus deltoides ssp. monilifera*	78–135	–
	willow	SALIX	*Salix*	6–11	–
	western soapberry	SASAD	*Sapindus saponaria var. drummondii*	6–11	–

Animal community

Animal species using the site include turkey, deer, quail, and an assortment of small mammals and songbirds. This is a diverse site with all elements of habitat being present. More variety and higher total numbers of these various species are likely to be seen on this site than on the adjoining upland sites.

Plant preference by animal kind:

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.

Legend: P=Preferred D=Desirable U=Undesirable N=Not Consumed T=Toxic X=Used, but not degree of utilization unknown.
Preferred – Percentage of plant in animal diet is greater than it occurs on the land.
Desirable – Percentage of plant in animal diet is similar to the percentage composition on the land.
Undesirable – Percentage of plant in animal diet is less than it occurs on the land.
Not Consumed – Plant would not be eaten under normal conditions. It is only consumed when other forages not available.
Toxic – Rare occurrence in diet and, if consumed in any tangible amounts, results in death or severe illness in the animal.

Hydrological functions

Good vegetative cover on this site helps lessen water erosion and sedimentation downstream and offers recharge to shallow aquifers. A good cover of tall grasses minimizes damage from periodic floods.

Recreational uses

Hunting, Camping, Hiking, Birdwatching, Photography, Horseback Riding. This site does not respond well to heavy traffic and the overall environmental quality of the site will decline if much off road vehicle use is allowed.

Wood products

None

Other products

None

Other information

None

Inventory data references

NRCS FOTG – Section II of the FOTG Range Site Descriptions and numerous historical accounts of vegetative conditions at the time of early settlement in the area were used in the development of this site description. Vegetative inventories were made at several site locations for support documentation.

Inventory Data References (documents):
NRCS FOTG – Section II - Range Site Descriptions
NRCS Clipping Data summaries over a 20 year period

Other references

Natural Resources Conservation Service - Range Site Descriptions
USDA-Natural Resources Conservation Service - Soil Surveys & Website soil database
Rathjen, Frederick W., The Texas Panhandle Frontier, Rev. 1998, Univ. of Texas Press
Hatch, Brown and Ghandi, Vascular Plants of Texas (An Ecological Checklist)
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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.

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Date	05/08/2008
Approved by	Kendra Moseley
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

2. **Presence of water flow patterns:** Well defined water flow patterns.

3. **Number and height of erosional pedestals or terracettes:** Common due to concentrated water flow.

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 10-15% along banks, up to 50% in channel areas.

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

6. **Extent of wind scoured, blowouts and/or depositional areas:** Slight to moderate.

7. **Amount of litter movement (describe size and distance expected to travel):** Frequent and extensive during heavy rainfall events.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Not resistant to surface erosion.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Loamy fine sand single grain surface, and medium SOM.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Extensive basal cover, density with small interspaces should make rainfall impact minimal. This site is a rapidly permeable soil, runoff is slow, and available water holding capacity is low.

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 tallgrasses >>

    Sub-dominant: Warm-season midgrasses >

    Other: Cool-season midgrasses > Cool-season tallgrasses > Trees > Shrubs/Vines > Forbs

    Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Minimal mortality and decadence.

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):** 1,400 - 2,800 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:** Willow baccharis, salt cedar and Russian olive.

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