Ecological site R078BY086TX
Sandy 19-26" PZ

Last updated: 9/15/2023
Accessed: 05/13/2025

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.

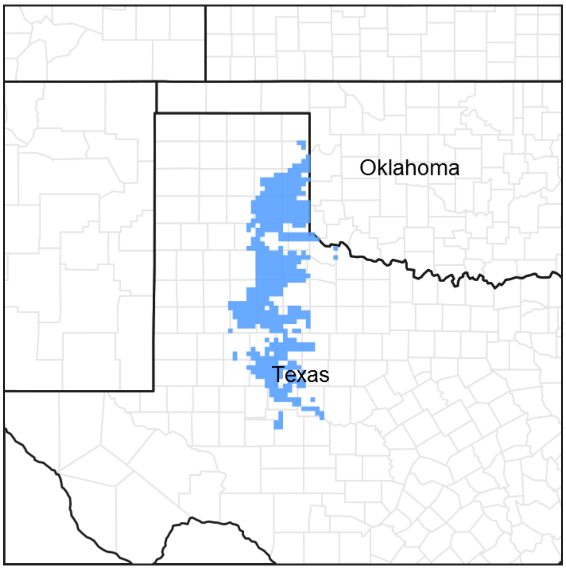


Figure 1. Mapped extent

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): 078B–Central Rolling Red Plains, Western Part

MLRA 78B is characterized by strongly dissected, rolling plains with prominent ridges and valleys and rolling to steep irregular topography. Loamy soils are generally well drained, range from shallow to deep, and developed in sediments of Triassic and Permian age.

LRU notes

NA

Classification relationships

This ecological site is correlated to soil components at the Major Land Resource Area (MLRA) level which is further described in USDA Ag Handbook 296.

Ecological site concept

These sites occur on deep undulating sandy soils under shinnery oak. The reference vegetation consists of tall and midgrasses with forbs and scattered oaks. Abusive grazing practices can lead to a shift in the plant community and a decline in the more palatable tallgrass species. Without periodic fire or alternative brush management, woody species canopy cover may increase.

Associated sites

R078BY082TX	**Loamy Sand 19-26" PZ** The loamy sand is not quite as sandy to the surface, and will have less shinoak and more sand sagebrush and mesquite present. The loamy sand will have many of the same grass species but will tend to have more sideoats grama and other midgrasses present.
R078BY081TX	**Loamy Upland 19-26" PZ** Moderately deep loamy soils on uplands
R078BY088TX	**Sandy Loam 19-26" PZ**

Similar sites

R078BY082TX	**Loamy Sand 19-26" PZ** The loamy sand is not quite as sandy to the surface, and will have less shinoak and more sand sagebrush and mesquite present. The loamy sand will have many of the same grass species but will tend to have more sideoats grama and other midgrasses present.

Table 1. Dominant plant species

Tree	Not specified
Shrub	(1) *Quercus havardii*
Herbaceous	(1) *Andropogon hallii*

Physiographic features

This site is classified as an upland. These sandy soils have been reworked by wind and may have small areas of stabilized dunes. Terrain is nearly level to gently rolling or undulating. Slopes range from 0 to 5 %. The site occurs on upland plains or on ancient alluvial terraces. Elevations range from 1700 to 2900 feet.

Table 2. Representative physiographic features

Landforms	(1) Sandhills > Terrace (2) Sandhills > Ridge
Runoff class	Very low to low
Flooding frequency	None
Ponding frequency	None
Elevation	518–884 m
Slope	0–5%
Water table depth	152–203 cm
Aspect	Aspect is not a significant factor

Climatic features

The climate of the western rolling plains is dry, sub-humid with hot summers and mild winters. Temperatures often reach 100 degrees F for several consecutive days during summer. Cold spells with temperatures less than 20 degrees F only last short periods of time. The soil is not frozen below the 3-inch depth for more than 2 to 3 days. Humidity is low during the winter and early spring months. Sometimes relative humidity is high enough to make summer days seem uncomfortable. Most of the precipitation comes in the form of rain and that in the spring and early summer principally. May is the wettest month followed by June. July and August are dryer and much hotter. Rainfall often comes as intense showers of relatively short duration. Rainfall rate per hour is often high and runoff is significant. Infiltration is diminished due to lack of opportunity time. The growing season begins in April and ends with the first killing frost in November. There is little snowfall with the average being about 10 inches. Rainfall averages about 22 inches.

There is a 70% chance that yearly precipitation will fall between 16 and 24 inches. About 55% of the time, the yearly rainfall is below the mean. Dry spells during the growing season are common and long-term droughts occur in cycles of about 20 years. Native vegetation is principally warm season.

Table 3. Representative climatic features

Frost-free period (characteristic range)	189-194 days
Freeze-free period (characteristic range)	204-222 days
Precipitation total (characteristic range)	584-610 mm
Frost-free period (actual range)	184-201 days
Freeze-free period (actual range)	202-223 days
Precipitation total (actual range)	559-635 mm
Frost-free period (average)	192 days
Freeze-free period (average)	213 days
Precipitation total (average)	584 mm

Climate stations used

- (1) WELLINGTON [USC00419565], Wellington, TX
- (2) PADUCAH [USC00416740], Paducah, TX
- (3) JAYTON [USC00414570], Jayton, TX
- (4) SNYDER [USC00418433], Snyder, TX
- (5) ROBERT LEE [USC00417669], Robert Lee, TX

Influencing water features

No surface water features. Deep sandy soils have maximum infiltration of rainfall.

Wetland description: None – No portion of this site is classified as wetland.

Wetland description

NA

Soil features

The soils of this site are deep, fine sands with sandy loam to sandy clay loam subsoils. They are slightly acidic to slightly alkaline. They are highly susceptible to wind erosion without good protective plant cover. Water moves into the soil rapidly. These soils have a low water and fertility holding capacity but release maximum amounts of water to plants. There is a good plant, soil, water, air relationship.

Major soil taxonomic units that typify the site include: Heatly fine sand, Delwin fine sand, Nobscott fine sand

These soils are taxonomically classified as Typic or Arenic Paleustalfs.

Table 4. Representative soil features

Parent material	(1) Eolian sands
Surface texture	(1) Fine sand
Family particle size	(1) Loamy

Drainage class	Well drained
Permeability class	Moderate to rapid
Soil depth	152–203 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	4.32–12.19 cm
Calcium carbonate equivalent (0-101.6cm)	0–5%
Electrical conductivity (0-101.6cm)	0–2 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0
Soil reaction (1:1 water) (0-101.6cm)	5.6–7.8
Subsurface fragment volume <=3" (Depth not specified)	0–2%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

The reference plant community consists of tall and midgrasses, a good variety of perennial forbs, and scattered low growing Havard oak (*Quercus havardii*). There are scattered motts of taller oak (6 to 15 ft. in height). It is best described as a Tall/Midgrass/Oak Complex. There are often scattered plants of sand sagebrush (*Artemisia filifolia*), sand plum (*Prunus angustifolia*), skunkbush (Rhus tribolata) and yucca (Yucca spp.). A few trees are present in addition to the oak, mainly hackberry (Celtis spp.) and western soapberry (*Sapindus saponaria*). Woody plants make up approximately 20 to 30 % of the total vegetative production for the site in the reference community. The principal grass species are sand bluestem (*Andropogon hallii*) and little bluestem (*Schizachyrium scoparium*). Lesser amounts of Indiangrass (*Sorghastrum nutans*), sideoats grama (*Bouteloua curtipendula*), sand lovegrass (*Eragrostis trichodes*) and dropseeds (Sporobolus spp.) occur. Some of the more commonly occurring forbs are prairie spiderwort (*Tradescantia occidentalis*), queen’s delight (*Stillingia texana*), Illinois bundleflower (*Desmanthus illinoensis*), western ragweed (*Ambrosia psilostachya*), catclaw sensitivebriar (*Mimosa nuttallii*), and Virginia tephrosia (Tephrosa virginiana). In advanced ecological condition, this site is both diverse and productive.

Fire and long periods of rest following grazing were major factors in maintaining the reference plant community. Large herbivores such as bison and elk along with pronghorn grazed and browsed the site and then moved on to areas of more abundant fresh forage. Natural fires probably occurred on the average of every 7-12 years according to the speculations of grassland ecologists. These fires probably played a major role in sustaining the balance between the oak and the tallgrasses. The oak species were kept in check by fire as long as it was scattered and the tallgrasses were vigorous. Tallgrasses such as sand and little bluestem are stimulated by fire and respond very well to periodic burns, especially if the burns are in spring or early summer. Oak, although suppressed temporarily by fire, is a prolific re-sprouter and is not usually adversely affected. Fire also promoted diversity in the community allowing forbs to express themselves more in seasons following burning. In is quite likely that the historic variability was more of an ebb and flow situation with the oak increasing and then being set back by fire and the tallgrasses dominating. A balance between woody plants and grasses was able to exist until settlement when fires were suppressed and abusive grazing began to occur. With the oak being such a well adapted and deep rooted plant, it probably had a great advantage in years of long-term drought. Oak is able to capture moisture from the soil year round and store it in its thick network of roots.

With abusive grazing by domestic livestock, the taller grasses are unduly pressured and begin to decline in both composition and production. Midgrasses generally increase along with annual forbs. The oak will slowly take over and become more and more the dominant plant. There probably is no plant any better adapted to the soils and climatic conditions than shinnery oak (*Quercus sinuata*). It acts as a strong increaser in the absence of competition from tallgrasses, but will generally not act as an invader moving into areas where it never occurred previously. In time with abusive grazing, no fire and no brush management, lower successional stage grasses and plants like western ragweed will become more numerous and the tallgrasses will all but disappear.

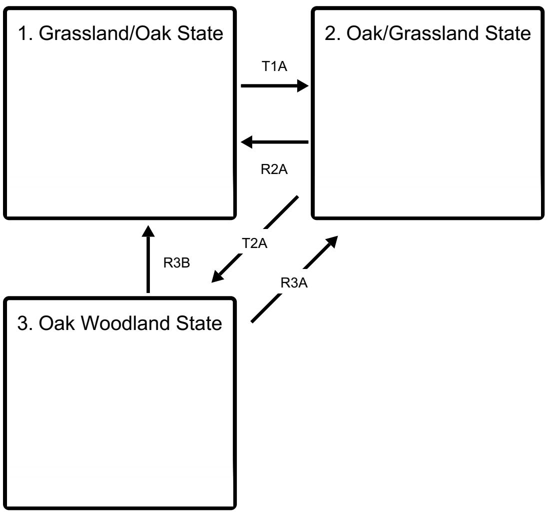
Sometimes the plant community will go toward a total oak dominated state; or if the oak is controlled by brush management and then the site is severely overgrazed, the community may be dominated by ragweed, sand sagebrush and yucca. Invaders such as juniper and mesquite will sometimes appear on the site but are not common. The native trees namely western soapberry and hackberry will often grow in among oak motts. It is difficult for these trees to gain much size due to competition from the oak. Fire may have favored these species becoming established. This site responds well to brush management with safe approved herbicides. The oak can be successfully controlled, at least for several years, and the tallgrasses respond quickly to the reduction in competition for water and nutrients. Great care must be taken to properly graze the site following brush management. If abusive grazing takes place after the oak is suppressed, then low order forbs and grasses will soon dominate and in time the oak will usually return. Once oak domination exists, brush management will be necessary from time to time in order to keep it suppressed. The use of prescribed fire is not useful if the oak is dominant and the tallgrasses are only a small part of the community. Generally, range seeding will not be necessary to improve this site even when it is degraded. There is usually enough seed source and old root crowns of perennial grasses left that a good response can result if competition from the oak is removed.

Plant Communities and Transitional Pathways (Diagram)
The following diagram suggests some of the pathways that the vegetation on the sandy site may take in response to various management treatment and/or natural stimuli. There may be other vegetative states that do not appear on the diagram. Those shown are some of the most common and most likely scenarios. This information is intended to illustrate in a general way that changes that can occur in a given set of circumstances, and those changes may not always happen in the same way. Local professional guidance is recommended when making plans to manipulate native plant communities for any specific purpose.

As a site changes in plant community makeup, the changes may occur due to management or natural stimuli or both. Change may occur rapidly or rather slowly depending on the events effecting change. At some point in the transition from one community to another, a threshold is crossed; a point is reached where the former vegetative state or some other desired state cannot be achieved through natural means such as grazing management alone. There must be energy input in order to effect change in the plant community. An example might be the application of herbicides to control woody shrubs that have begun to dominate a site when the objective is to promote perennial grass and forb growth. Management alone could not change the community in the desired direction, but with energy input the community could be changed. The amount of energy input needed to effect change will depend on the existing vegetative state and the desired plant community. Sometimes several different inputs will be needed and the time necessary to effect change may be fairly short or may take many years.

State and transition model

Ecosystem states



T1A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

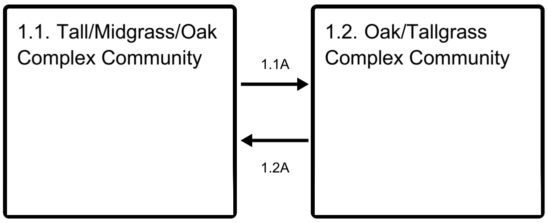
R2A - Adequate rest from defoliation and removal of woody canopy, followed by reintroduction of historic disturbance regimes

T2A - Absence of disturbance and natural regeneration over time, may be coupled with excessive grazing pressure

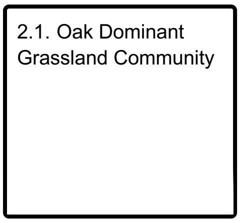
R3B - Adequate rest from defoliation and removal of woody canopy, followed by reintroduction of historic disturbance regimes

R3A - Adequate rest from defoliation, removal of woody canopy, reintroduction of fire

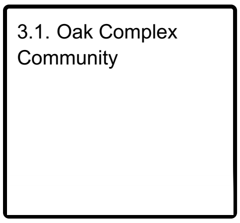
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
Grassland/Oak State

The Tall/Midgrass/Oak Community is a tallgrass dominated community such as little bluestem with scattered Havard oak throughout. Some large oak motts are present. A good perennial forb component is present although somewhat overshadowed by the grasses. Major grass species found in this community are little bluestem and lesser amounts of sand bluestem. The Oak/Tallgrass Complex community has some tall and midgrasses remaining with sand shinoak increasing dramatically from the reference community. Midgrasses have increased along with annual forbs. The oak now makes up well over half the total production for the site. There is sufficient seed source and existing tallgrass plants remaining for good recovery if the competition from the oak is reduced.

Community 1.1
Tall/Midgrass/Oak Complex Community

Figure 8. 1.1 Tall/Midgrass/Oak Community

This community is a tallgrass dominated community such as little bluestem with scattered Havard oak throughout. Some large oak motts are present. A good perennial forb component is present although somewhat overshadowed by the grasses. Production is very good and ecological processes are functioning well. Major grass species found in this community are little bluestem and lesser amounts of sand bluestem.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1457	2466	2746
Shrub/Vine	392	560	953
Forb	90	168	224
Tree	56	78	78
Total	**1995**	**3272**	**4001**

Figure 10. Plant community growth curve (percent production by month). TX2030, Tall and midgrass - oak complex. Mixture of tall and midgrasses with up to 30 percent woody plants..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	6	18	25	18	10	12	5	2	0

Community 1.2
Oak/Tallgrass Complex Community

Figure 11. 1.2 Oak/Tallgrass Complex Community

This Oak/Tallgrass Complex Community has some tall and midgrasses remaining with sand shinoak increasing dramatically from the reference community. Midgrasses have increased along with annual forbs. The oak species now makes up well over half the total production for the site. Brush management or prescribed fire will be required to push the community toward the reference community. There is sufficient seed source and existing tall grass plants remaining for good recovery if the competition from the oak is reduced.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	785	1233	1681
Grass/Grasslike	392	785	953
Forb	112	202	280
Tree	34	45	67
Total	**1323**	**2265**	**2981**

Figure 13. Plant community growth curve (percent production by month). TX2031, Harvard oak dominant with tall and midgrasses. Sand shinoak dominant with tall and midgrasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	8	25	23	16	8	10	4	2	0

Pathway 1.1A
Community 1.1 to 1.2


Tall/Midgrass/Oak Complex Community


Oak/Tallgrass Complex Community

With Heavy Continuous Grazing and no fires, the Tall/Midgrass/Oak Community will shift to the Oak/Tallgrass Complex Community.

Pathway 1.2A
Community 1.2 to 1.1


Oak/Tallgrass Complex Community


Tall/Midgrass/Oak Complex Community

With Prescribed Grazing and Prescribed Burning conservation practices, the Oak/Tallgrass Complex Community can shift back to the Tall/Midgrass/Oak Community.

Conservation practices

Prescribed Burning
Prescribed Grazing

State 2
Oak/Grassland State

The Oak Dominant Grassland Community is totally dominated by shinoak with significant sand sagebrush. Some tallgrasses remain. Grasses such as perennial threeawn, fringed signalgrass, red lovegrass and dropseeds have increased. Desirable forbs have been replaced by ragweed, and annuals.

Community 2.1
Oak Dominant Grassland Community

Figure 14. 2.1 Oak Dominant Grassland Community

This community is totally dominated by shinoak with significant sand sagebrush. Some tallgrasses remain. Grasses such as perennial threeawn, fringed signalgrass, red lovegrass and dropseeds have increased. Desirable forbs have been replaced by ragweed, and annuals. This community is a stable state and will not change unless there is input in the form of brush management and at least two seasons of complete rest during the growing season. There is sufficient seed source for tallgrasses to recover if brush management is effective and the oak competition is dramatically reduced.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Tree	897	1233	1681
Grass/Grasslike	392	785	953
Shrub/Vine	123	235	314
Microbiotic Crusts	6	6	11
Total	**1418**	**2259**	**2959**

Figure 16. Plant community growth curve (percent production by month). TX2032, Harvard oak dominant with few midgrasses. Shinoak dominant with few grasses remaining..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	8	26	30	15	5	8	3	1	0

State 3
Oak Woodland State

This community is totally dominated by Havard oak. No other plants are able to express themselves. Very few if any tallgrasses can be found. A few short and midgrasses are present. Some annuals forbs are present where the cover is not quite as heavy. Oak is about 80% of the total community.

Community 3.1
Oak Complex Community

Figure 17. 3.1 Oak Complex Community

This community is totally dominated by Havard oak. No other plants are able to express themselves. Very few if any tallgrasses can be found. A few short and midgrasses are present. Some annuals forbs are present where the cover is not quite as heavy. Oak is about 80% of the total community. Even though oak is totally dominant, there may be enough seed source and dormant root crowns of tall and mid grasses to effect recovery if effective brush management is applied. If no brush management is done, this community will prevail unchanged. Effective brush management will be necessary along with at least two consecutive growing seasons rest following the brush management.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Shrub/Vine	986	1625	2074
Grass/Grasslike	135	235	314
Forb	123	235	314
Tree	34	45	56
Total	**1278**	**2140**	**2758**

Figure 19. Plant community growth curve (percent production by month).
TX2033, Sandy - Harvard oak dominant with shrubs. Shrub dominant - oak..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	1	3	8	26	30	15	5	8	3	1	0

Transition T1A
State 1 to 2

With Heavy Continuous Grazing, no fires, and Brush Invasion, the Grassland/Oak State will transition into the Oak/Grassland State.

Restoration pathway R2A
State 2 to 1

With Prescribed Grazing, Brush Management, and Prescribed Burning conservation practices, the Oak/Grassland State can be restored into the Grassland/Oak State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Transition T2A
State 2 to 3

With Heavy Continuous Grazing, no fires, No Brush Management, and Brush Invasion, the Oak/Grassland State will transition into the Oak Woodland State.

Restoration pathway R3B
State 3 to 1

With the implementation of various conservation practices including Reclamation, Prescribed Grazing, Brush Management, and Prescribed Burning, the Oak Woodland State can be restored back to the Grassland/Oak State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Restoration pathway R3A
State 3 to 2

With the implementation of various conservation practices including Prescribed Grazing, Brush Management, and Prescribed Burning, the Oak Woodland State can be restored back to the Oak/Grassland State.

Conservation practices

Brush Management
Prescribed Burning
Prescribed Grazing

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Shrub/Vine					
0	**Shrub**			336–897	
	Havard oak	QUHA3	*Quercus havardii*	336–897	–
7	**Shrubs**			56–101	
	sand sagebrush	ARFI2	*Artemisia filifolia*	17–45	–
	Oklahoma plum	PRGR	*Prunus gracilis*	17–45	–
	skunkbush sumac	RHTRT	*Rhus trilobata var. trilobata*	17–45	–
	soapweed yucca	YUGL	*Yucca glauca*	17–45	–
Grass/Grasslike					
0	**Midgrass**			168–308	
	sideoats grama	BOCU	*Bouteloua curtipendula*	168–308	–
1	**Tallgrasses**			1009–1569	
	sand bluestem	ANHA	*Andropogon hallii*	560–1121	–
	little bluestem	SCSC	*Schizachyrium scoparium*	560–1121	–
2	**Midgrasses**			224–392	

	sand dropseed	SPCR	*Sporobolus cryptandrus*	56–336	–
	giant dropseed	SPGI	*Sporobolus giganteus*	56–336	–
3	**Shortgrasses**			336–504	
	Wright's threeawn	ARPUW	*Aristida purpurea var. wrightii*	11–84	–
	hairy grama	BOHI2	*Bouteloua hirsuta*	11–84	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	11–84	–
	hooded windmill grass	CHCU2	*Chloris cucullata*	11–84	–
	fall witchgrass	DICO6	*Digitaria cognata*	11–84	–
	sand lovegrass	ERTR3	*Eragrostis trichodes*	11–84	–
	brownseed paspalum	PAPL3	*Paspalum plicatulum*	11–84	–
	fringed signalgrass	URCI	*Urochloa ciliatissima*	11–84	–
4	**Tallgrasses**			135–202	
	switchgrass	PAVI2	*Panicum virgatum*	28–168	–
	Indiangrass	SONU2	*Sorghastrum nutans*	28–168	–
5	**Cool-season Grasses**			56–101	
	Canada wildrye	ELCA4	*Elymus canadensis*	22–56	–
	needle and thread	HECO26	*Hesperostipa comata*	22–56	–
Forb					
6	**Forbs**			112–247	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–62	–
	field sagewort	ARCAC	*Artemisia campestris ssp. caudata*	0–62	–
	whitemouth dayflower	COER	*Commelina erecta*	0–62	–
	purple prairie clover	DAPU5	*Dalea purpurea*	0–62	–
	spectaclepod	DIMOR	*Dimorphocarpa*	0–62	–
	annual buckwheat	ERAN4	*Eriogonum annuum*	0–62	–
	beeblossom	GAURA	*Gaura*	0–62	–
	marked gilia	GIIN7	*Giliastrum insigne*	0–62	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	0–62	–
	dotted blazing star	LIPU	*Liatris punctata*	0–62	–
	bractless blazingstar	MENUS	*Mentzelia nuda var. stricta*	0–62	–
	Nuttall's sensitive-briar	MINU6	*Mimosa nuttallii*	0–62	–
	slimflower scurfpea	PSTE5	*Psoralidium tenuiflorum*	0–62	–
	pitcher sage	SAAZG	*Salvia azurea var. grandiflora*	0–62	–
	Riddell's ragwort	SERI2	*Senecio riddellii*	0–62	–
	queen's-delight	STSY	*Stillingia sylvatica*	0–62	–
	Virginia tephrosia	TEVI	*Tephrosia virginiana*	0–62	–
	prairie spiderwort	TROC	*Tradescantia occidentalis*	0–62	–
Tree					
8	**Trees**			34–78	
	hackberry	CELTI	*Celtis*	0–56	–
	wingleaf soapberry	SASA4	*Sapindus saponaria*	0–56	–

Animal community

The plant community on the sandy site can provide excellent habitat for various wildlife species. In pre-settlement times the site was home to bison, prairie chicken, pronghorn, bob-white quail, many small mammals, and occasionally white-tailed deer. There are a few lesser prairie chicken remaining in isolated areas in the MLRA. The white-tailed deer have increased dramatically over the last 50 years and this site offers good habitat. Bob-white quail prefer the site as long as the brush is not too thick and some areas of bare ground can be available for feeding and loafing. Rio Grande turkey sometimes uses the site for nesting but prefer adjacent sites where roosting trees are available. Feral hogs have also become established in many areas and they also utilize the site. Many species of song birds and a whole host of rodents and small mammals such as skunks, raccoons, porcupines, rabbits, and predators like coyotes and bobcats can be found on the site.

The site is most commonly utilized for livestock grazing, and secondarily for hunting. Cattle are the primary grazers, although there are some sheep and goats grazed on the site. Shinoak is toxic to cattle, sheep and goats at certain plant growth stages. Tannins are the toxins involved. The plant parts that are most toxic are the buds and new twigs in the spring of the year. Mature leaves are not generally toxic. Acorns in the fall of the year may also be toxic if consumed in large quantities. Competition between deer, sheep and goats can be significant and should be considered if combinations of different kinds of animals are using the site. Due the nature of the forage, the site is better grazing for herbivores in the summer months.

Hydrological functions

The deep, coarse textured soils of this site have a moderately rapid to rapid permeability resulting in high infiltration rates. Maximum amounts of water enter the soil and are available to the plants. In heavy rainfall periods some water may be lost to deep percolation. These sandy soils are zones of recharge for shallow aquifers. Runoff from these soils is negligible. Tall perennial warm season grasses and perennial forbs are essential for maintaining site integrity and diversity.

Recreational uses

Hunting, camping, horseback riding, bird watching and photography are the more common recreational activities on the site.

Wood products

Larger shinoak trees from motts can be utilized for firewood.

Other products

None.

Other information

None.

Inventory data references

Information in this document is based on: Long term observation of sites and working with well managed ranches, review of NRCS 417 clipping data that spanned 8 years of collection, examination of old range inventory information and sets of range site descriptions dating to the 1960s. Also, historical accounts of military expeditions and early day surveyors were reviewed.

Soil survey Reports of counties in MLRA
Soil Series Official Descriptions, NRCS FOTG, Ecological Checklist of Texas Plants (Tx. A&M publ.)
Gould’s Grasses of Texas, and personal interviews (Dr. Ronald Sosebee, Texas Tech Univ. and Dr. Robert Wright, W.T.A.M.U. at Canyon)

Other references

Technical Reviewers:
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Approval

Bryan Christensen, 9/15/2023

Acknowledgments

Site Development and Testing Plan:

Future work, as described in a Project Plan, to validate the information in this Provisional Ecological Site Description is needed. This will include field activities to collect low, medium and high intensity sampling, soil correlations, and analysis of that data. Annual field reviews should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document.

Annual reviews of the Project Plan are to be conducted by the Ecological Site Technical Team.

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	09/04/2007
Approved by	Bryan Christensen
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 20 to 25% bare ground.

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):** Slight to moderate.

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):** Fine sanc single grained surface; very low SOM.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Basal cover and density with small interspaces should make rainfall impact minimal. This site has rapid permeability, 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 tallgrasses > Shrubs/Vines > Forbs

    Additional:

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

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

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 1,800 to 3,600 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:** Sand sagebrush, sand shinoak and yucca can be invasive.

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