

Ecological site R080BY155TX

Redland

26-33" PZ

Last updated: 9/19/2023
Accessed: 05/29/2026

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.

MLRA notes

Major Land Resource Area (MLRA): 080B–Texas North-Central Prairies

MLRA 80B consists of gently rolling, dissected plains with very steep hillsides and sideslopes and narrow flood plains associated with small streams. Loamy and clayey soils range from very shallow to deep and developed in sandstones, shales, and limestones of Pennsylvanian age.

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 over shallow non-calcareous clay loam soils on uplands. The reference vegetation includes native perennial tall and midgrasses with numerous forbs and scattered oaks. Without periodic fire or brush management, woody species may increase and dominate the site.

Associated sites

R080BY148TX	<p>Deep Redland 26-33" PZ</p> <p>Deeper soils. Similar plant community.</p>
--------------------	--

Similar sites

R085AY183TX	<p>Redland 30-38" PZ</p> <p>Similar Redland site in MLRA 85.</p>
--------------------	---

Table 1. Dominant plant species

Tree	<p>(1) <i>Quercus stellata</i></p> <p>(2) <i>Quercus fusiformis</i></p>
Shrub	Not specified

Herbaceous	(1) <i>Andropogon gerardii</i> (2) <i>Schizachyrium scoparium</i>
------------	--

Physiographic features

This site occurs on linear to convex side slopes, nose slopes, and crests of dip slopes and ridges in the Texas North-Central Prairies. This site is characteristically a water distributing site. Slopes are typically less than 2 percent.

Table 2. Representative physiographic features

Landforms	(1) Dip slope (2) Ridge
Runoff class	Negligible to high
Elevation	230 – 730 m
Slope	0 %
Aspect	Aspect is not a significant factor

Climatic features

The climate is subtropical subhumid and is characterized by hot humid summers and relatively mild winters. Tropical maritime air controls the climate during spring, summer and fall. In winter and early spring, frequent surges of polar Canadian air cause sudden drops in temperatures and add considerable variety to the daily weather. The average first frost generally occurs about November 5 and the last freeze of the season usually occurs about March 19. The average frost free period ranges from 215 days in the northern counties, to 240 days in the south.

The average relative humidity in mid-afternoon is about 60 percent in the summer months. Humidity is higher at night, and the average at dawn is about 80 percent. The sun shines 75 percent of the time possible during the summer and 50 percent in winter. The prevailing wind direction is from the southwest and highest windspeeds occur during the spring months.

Approximately 75% of annual rainfall occurs between April 1 and October 31. Rainfall during the months of April through September typically occurs during thunderstorms which tend to be intense and brief, resulting in large amounts of rain in a short time. The wettest months of the year are May, June, September, and October. The driest months during the growing season are July and August. The winter months of November, December, January, and February are the driest months overall.

Average annual precipitation for the entire MLRA is approximately 28 inches. There is a noticeable difference in the average annual precipitation in the northern counties in comparison to the southern and western counties of this Major Land Resource Area. Jack, Clay, Young, and Palo Pinto Counties all have an average annual precipitation of more than 31 inches. Stephens, Eastland, McCulloch, and San Saba Counties all have an average annual precipitation of less than 28 inches.

Winters tend to be mild, with occasional periods of very cold temperatures which can be accompanied by strong northerly winds and freezing precipitation. Snow is infrequent and significant accumulations are rare. These periods of very cold weather are generally short-lived. Summers tend to be hot and dry. Drought conditions are common during most summers. Air temperatures of more than 95oF are common from mid-June through September. In the northern counties nearest to the Red River, temperatures are generally slightly cooler during winter months and slightly warmer during summer months than in the other counties in the North Central Prairie.

Table 3 Representative climatic features

Frost-free period (characteristic range)	180-200 days
--	--------------

Freeze-free period (characteristic range)	210-230 days
Precipitation total (characteristic range)	760-810 mm
Frost-free period (actual range)	180-200 days
Freeze-free period (actual range)	210-230 days
Precipitation total (actual range)	740-840 mm
Frost-free period (average)	190 days
Freeze-free period (average)	220 days
Precipitation total (average)	790 mm

- (1) SAN SABA 7NW [USC00417994], Richland Springs, TX
- (2) BROWNWOOD 2ENE [USC00411138], Early, TX
- (3) EASTLAND [USC00412715], Eastland, TX
- (4) MINERAL WELLS AP [USW00093985], Millsap, TX
- (5) BRECKENRIDGE [USC00411042], Breckenridge, TX
- (6) GRAHAM [USC00413668], Graham, TX
- (7) JACKSBORO [USC00414517], Jacksboro, TX

Influencing water features

These sites may both receive water and shed water via overland flow during rain events. The presence of good ground cover and deep rooted grasses can help facilitate water infiltration into the soil. These sites are not associated with wetlands.

Wetland description

NA

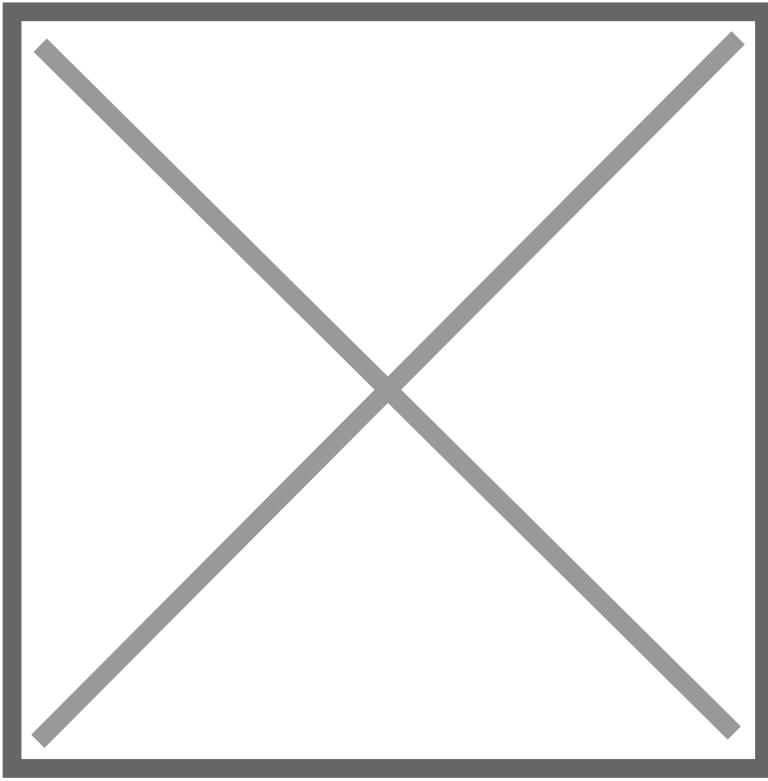


Figure 7.

Soil features

Representative soil components for this ecological site include: Hensley

The site is characterized by shallow, noncalcareous, well drained soils.

Table 4. Representative soil features

Parent material	(1) Residuum – limestone
Surface texture	(1) Stony loam (2) Very stony loam (3) Extremely stony loam (4) Loam
Drainage class	Well drained
Permeability class	Slow
Soil depth	30 – 50 cm
Surface fragment cover <=3"	Not specified
Surface fragment cover >3"	0 – 20 %

Available water capacity (0-101.6cm)	5.08 – 7.62 cm
Calcium carbonate equivalent (0-101.6cm)	0 – 10 %
Electrical conductivity (0-101.6cm)	Not specified
Sodium adsorption ratio (0-101.6cm)	Not specified
Soil reaction (1:1 water) (0-101.6cm)	6.1 – 8.4
Subsurface fragment volume <=3" (Depth not specified)	0 – 20 %
Subsurface fragment volume >3" (Depth not specified)	0 – 50 %

Ecological dynamics

The plant communities that can occur on this site range from a Tallgrass/Midgrass dominant, live oak (*Quercus fusiformis*) and post oak (*Quercus stellata*) savannah to a midgrass savannah, to an Ashe juniper (*Juniperus ashei*) and mesquite (*Prosopis glandulosa* var. *glandulosa*) dominated mixed-grass and/or shortgrass community, to a thick canopy Ashe juniper/mesquite/shrub short and annual grass and forb complex community. This wide diversity of plant communities occurring on this site is in direct response to type of grazing management, the inherent selection of this site by all kinds of grazing animals due to its fertility in relation to other neighboring sites, reaction to fire regimes, extermination of the prairie dogs, and the impacts of droughts on the different hydrologies associated with each of the steady states.

The reference plant community is a tallgrass/midgrass savannah of live oak and post oak that have a canopy of approximately 20 percent. The tallgrasses are big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium* var. *scoparium*), and Indiangrass (*Sorghastrum nutans*). These grasses dominate the site with a number of midgrasses such as sideoats grama (*Bouteloua curtipendula* var. *curtipendula*), tall dropseed (*Sporobolus asper* var. *asper*), cane bluestem (*Bothriochloa barbinodis* var. *barbinodis*), silver bluestem (*Bothriochloa laguroides* ssp. *torreyana*), vine mesquite (*Panicum obtusum*), and cool-season grasses such as Canada wildrye (*Elymus canadensis* var. *canadensis*), Texas bluegrass (*Poa arachnifera*), and Texas wintergrass (*Nassella leucotricha*). There are numerous perennial forbs that share the landscape. Such plants include Maximilian sunflower (*Helianthus maximiliani*), bush sunflower (*Simsia calva*), Englemann's daisy (*Engelmannia peristenia*), dotted gayfeather (*Liatrix punctata* var. *punctata*), blacksamson (*Echinacea angustifolia*), bundleflowers (*Desmanthus* sp.), heath aster (*Chaetopappa ericoides*), western ragweed (*Ambrosia psilostachya*), and legumes such as prairie clover (*Dalea* sp.), trailing wildbean (*Strophostyles helvula*), least snoutbean (*Rhynchosia minima*), tickclover (*Desmodium* sp.), and scurfpea (*Pediomelum* sp.). Besides the live oak and post oak, there are numerous other woody plants such as Texas oak (*Quercus buckleyi*), bigelow oak (*Quercus sinuata* var. *breviloba*), elm (*Ulmus* sp.), hackberry (*Celtis laevigata*), redbud (*Cercus canadensis* var. *texasensis*), bumelia (*Sideroxylon lanuginosum* ssp. *oblongifolium*), sumacs (*Rhus* sp.), elbowbush (*Forestiera pubescens*), agarito (*Mahonia trifoliolata*), greenbriar (*Smilax* sp.), vine ephedra (*Ephedra antisiphilitica*), bush honeysuckle (*Lonicera albiflora*), catclaw mimosa (*Mimosa aculeaticarpa* var. *biuncifera*), and dalea (*Dalea* sp.) .

In the reference plant community, tall and midgrasses dominated the shortgrasses due to their ability to capture sunlight and shade them. The tall and midgrasses also had deeper root systems that allowed them to capture the deep moisture while the shortgrasses had shorter root systems and could capture only the more shallow moisture. Many of the deep-rooted grasses also have more root hairs that allow them to be more efficient at extracting moisture from very dry soil. Due to these differences, the tall and midgrasses maintained their dominance over the shortgrasses as they could produce much more food and maintain a high state of health and vigor even in times of drought.

When European settlers arrived, the area was inhabited by bison, whitetail deer, turkey, quail, dove, many song birds, rabbits, squirrel, prairie dogs, lizards and snakes. Fire was a major factor in maintaining the site in the reference savannah state. Lightning fires and fires set by Native Americans would burn for days without stopping. Hundreds of thousands of acres would burn as there was nothing but wide spread rivers or a change in weather to stop them. This repeated burning kept the ecological site in a savannah state, with only the large tall trees being spared a top kill. The re-sprouting shrubs, the fresh green growth of the grass and forbs made this range a sea of lush growth that attracted the grazing and browsing animals and provided them highly nutritious forage.

There were no fences. The bison were free to roam and migrate from south to north in the summer and north to south as the winter season was nearing. This area provided the winter grazing for the bison herds that had ventured north for the summer. They came by the thousands and grazed the range as they moved around. Antelope were on the range, and grazed and roamed at their desire, seeking the best nutrition they could find in the forbs and grasses. Prairie dogs lived in groups on the site. They kept the woody shrubs cut down as a means of protection from hawks, eagles, coyotes, bob-cats, and cougar. Recent research has shown that they would not let a mesquite stand overnight that was planted in or around their town.

European settlers started settling this area in the early 1800's with a major thrust just before and after the civil war. The first settlers moved about from ranch to ranch as no one owned land. After the grass was grazed to a point of "being gone", they would move to another place where the grass was good and start another ranch. When the grass "came back" on the ranch they had left, a new rancher would move in and take over that ranch.

In 1880, barbed wire was introduced into this area. The land had also come under private ownership. The fencing stopped the open range, where livestock had wandered to be guided only by the line riders. Now the forces of contained livestock grazing started to have its toll on the plant communities. The wild fires that once systematically burned over the land were either put out or burned with less intensity due to reduced fine fuel due to the heavier and continuous grazing.

Depending on how the rancher managed, the plant communities started to change. If the rancher allowed fire to continue to control the Ashe juniper and mesquite seedlings, they could manage their land as the tall and midgrass savannah community. If fire was not allowed to maintain the invading brush species, the Ashe juniper and mesquite would spread over the range as the many other shrubs natural to the site rapidly expanded in canopy. If the brush species were burned prior to achieving approximately 6 feet in height, fire could be used to reclaim the land. If the brush was allowed to exceed 6 feet, then fire could no longer control the brush and the range entered a new steady state that would require more than just fire to reclaim it. The manager would have to use machinery or apply herbicides to manage the brush to a desired canopy.

Also, the manager would have to apply a well thought out prescribed grazing plan to maintain the vigor and health of the grasses and forbs that they desired on the range. As the stocking rates exceeded the carrying capacity of the land and the natural graze-rest cycles were broken by continuous grazing, the palatable and highly selected tallgrasses were grazed to the point that they could no longer produce sufficient food in their leaves to maintain their health and vigor. Records of stocking rates show that on much of the land, there was a cow to 2 acres. When the tallgrasses were grazed to the point that they had little leaf area left, they stopped supplying the root system with food, as all available food produced was going to grow more leaf area to enhance the food manufacturing process. If the overgrazing continued, the root system of the overgrazed plants continued to be used up and shrink, as respiration continued in the root system that required energy. In time, with continued close grazing, the tallgrasses would become not a deep rooted, healthy plant, but a shallow rooted, small leaf area, weak plant that was set up for doom during the next drought. This process was intensified due to the natural droughts that occur in the area. These tallgrasses were now not in a dominant position to the midgrasses, but in a position of being dominated by the midgrasses on the site. This shift has led to the decrease of tallgrass species and an increase of mid and shortgrasses. These midgrasses were sideoats grama, cane bluestem, silver bluestem and vine mesquite. At the same time this was occurring with the grasses, the palatable forbs were being overgrazed and killed out of the plant community.

If the new steady state of juniper and mesquite and mixed grasses was overgrazed and no brush was controlled, the site would evolve to a canopy of 30 to 50 percent, with mainly buffalograss, Texas wintergrass and other shortgrasses in the understory. If this management was allowed to continue, the site would change to a dense canopy of juniper and mesquite, shortgrasses and invading forbs and annual cool-season grasses.

Since the soils of this site are very productive and fertile, much of this site has been plowed and put into cropland. In many instances, this land has either been reseeded to native grasses, introduced grasses or just turned out to let come back what could. Many times this turned out land, also known as Abandoned or "Go Back Land", was planted to native or introduced grasses when it was found that it was not very productive growing the annual grasses and forbs.

After the land was planted to native or introduced grasses and forbs, management of the land to control the invasion of ash juniper and mesquite from neighboring lands was a must if the manager desired to keep the open land. This could be accomplished with prescribed

burning or other means of brush management. Also, to maintain the stand of native or introduced grasses planted, a prescribed grazing plan must be designed and applied that meets the needs of the plants, the animals and the managers objectives.

State and transition model

Additional community tables

Table 5. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production ()	Foliar Cover (%)
Grass/Grasslike					
1	Tallgrasses			1121-2242	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	0-2242	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0-2242	–
	Indiangrass	SONU2	<i>Sorghastrum nutans</i>	0-2242	–
2	Midgrasses			560-1121	
	cane bluestem	BOBA3	<i>Bothriochloa barbinodis</i>	0-280	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	0-280	–
	silver beardgrass	BOLAT	<i>Bothriochloa laguroides ssp. torreyana</i>	0-280	–
	plains lovegrass	ERIN	<i>Eragrostis intermedia</i>	0-280	–
	Texas cupgrass	ERSE5	<i>Eriochloa sericea</i>	0-280	–
	green sprangletop	LEDU	<i>Leptochloa dubia</i>	0-280	–
	purpletop tridens	TRFL2	<i>Tridens flavus</i>	0-280	–
	vine mesquite	PAOB	<i>Panicum obtusum</i>	0-280	–
	Drummond's dropseed	SPCOD3	<i>Sporobolus compositus var. drummondii</i>	0-280	–
3	Cool-season Grasses			392-785	
	sedge	CAREX	<i>Carex</i>	0-196	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0-196	–
	Texas wintergrass	NALE3	<i>Nassella leucotricha</i>	0-196	–
	Texas bluegrass	POAR	<i>Poa arachnifera</i>	0-196	–
4	Shortgrasses			140-280	
	buffalograss	BODA2	<i>Bouteloua dactyloides</i>	0-67	–
	hairy grama	BOHI2	<i>Bouteloua hirsuta</i>	0-67	–
	tall grama	BOHIP	<i>Bouteloua hirsuta var. pectinata</i>	0-67	–
	fall witchgrass	DICO6	<i>Digitaria cognata</i>	0-67	–
	curly-mesquite	HIBE	<i>Hilaria belangeri</i>	0-67	–
5	Shortgrasses			28-56	
	purple threeawn	ARPUP6	<i>Aristida purpurea var. purpurea</i>	0-56	–
	Wright's threeawn	ARPUW	<i>Aristida purpurea var. wrightii</i>	0-56	–
Forb					
6	Forbs			140-280	
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0-67	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0-67	–
	aster	ASTER	<i>Aster</i>	0-67	–
	Berlandier's sundrops	CABEB2	<i>Calylophus berlandieri ssp. berlandieri</i>	0-67	–
	prairie clover	DALEA	<i>Dalea</i>	0-67	–
	bundleflower	DESMA	<i>Desmanthus</i>	0-67	–

	ticktrefoil	DESMO	<i>Desmodium</i>	0-67	-
	blacksamson echinacea	ECANA	<i>Echinacea angustifolia var. angustifolia</i>	0-67	-
	Engelmann's daisy	ENGEL	<i>Engelmannia</i>	0-67	-
	Maximilian sunflower	HEMA2	<i>Helianthus maximiliani</i>	0-67	-
	coastal indigo	INMI	<i>Indigofera miniata</i>	0-67	-
	Nuttall's sensitive-briar	MINU6	<i>Mimosa nuttallii</i>	0-67	-
	Indian breadroot	PEDIO2	<i>Pediomelum</i>	0-67	-
	smartweed leaf-flower	PHPO3	<i>Phyllanthus polygonoides</i>	0-67	-
	least snoutbean	RHMI4	<i>Rhynchosia minima</i>	0-67	-
	wild petunia	RUELL	<i>Ruellia</i>	0-67	-
	pitcher sage	SAAZG	<i>Salvia azurea var. grandiflora</i>	0-67	-
	awnless bushsunflower	SICA7	<i>Simsia calva</i>	0-67	-
	amberique-bean	STHE9	<i>Strophostyles helvola</i>	0-67	-

Shrub/Vine

7	Shrubs			140-280	
	eastern redbud	CECA4	<i>Cercis canadensis</i>	0-67	-
	Texas redbud	CECAT	<i>Cercis canadensis var. texensis</i>	0-67	-
	clapweed	EPAN	<i>Ephedra antisyphilitica</i>	0-67	-
	stretchberry	FOPU2	<i>Forestiera pubescens</i>	0-67	-
	western white honeysuckle	LOAL	<i>Lonicera albiflora</i>	0-67	-
	algerita	MATR3	<i>Mahonia trifoliolata</i>	0-67	-
	catclaw mimosa	MIACB	<i>Mimosa aculeaticarpa var. biuncifera</i>	0-67	-
	Texas red oak	QUBU2	<i>Quercus buckleyi</i>	0-67	-
	bastard oak	QUSIB	<i>Quercus sinuata var. breviloba</i>	0-67	-
	sumac	RHUS	<i>Rhus</i>	0-67	-
	gum bully	SILAO	<i>Sideroxylon lanuginosum ssp. oblongifolium</i>	0-67	-
	greenbrier	SMILA2	<i>Smilax</i>	0-67	-

Tree

8	Trees			280-560	
	Texas live oak	QUFU	<i>Quercus fusiformis</i>	0-560	-
	post oak	QUST	<i>Quercus stellata</i>	0-560	-
	elm	ULMUS	<i>Ulmus</i>	0-560	-

Table 6. Community 1.2 plant community composition

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

Table 7. Community 1.3 plant community composition

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

Table 8. Community 2.1 plant community composition

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

Table 9. Community 2.2 plant community composition

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

Table 10. Community 2.3 plant community composition

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

Table 11. Community 3.1 plant community composition

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

Table 12. Community 3.2 plant community composition

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

Table 13. Community 4.1 plant community composition

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

Animal community

Bison and prairie dog were inhabitants of this site when the area was settled by European man. They have been removed from the site as explained in the Ecological Dynamics portion of this site description. This site is used for the production of domestic livestock and to provide habitat for native wildlife. Cow-calf and stocker operations are the primary livestock enterprises. Sheep and goat operations have been used in the past, but currently are very few. Sustainable stocking rates have declined over the years due to a change in the plant community. As the tall and midgrasses have been removed by continuous overgrazing and the invasion of ashe juniper, mesquite, and lotebush, the production of plants desired by cattle have been drastically reduced in some situations. Determining the stocking rate for an area is very site specific. Therefore, to determine the correct stocking rate, an on site evaluation must be made. Forage production by the different plant species must be determined. This is then evaluated to determine the harvestable forage per acre by calculating the amount of forage produced that is desired and harvested by the livestock and wildlife on the site. Wildlife present gets first choice. They are always there and you can only control their numbers by hunting. You cannot move them from pasture to pasture like livestock, except as they relate to your livestock movements. So, when calculating stocking rates, calculate the forage used by the wildlife first and then calculate the stocking rate for the livestock based on what desired forage is left. Also, the manager's objectives for managing the plant community as well as meeting the needs of his livestock and wildlife must be considered in the forage inventory and Prescribed Grazing Plan. (See guidance in the NRCS National Range and Pasture Handbook on calculating safe starting stocking rates.) As the plant community changes, the stocking rate for one animal species may decrease while the amount of desired forage for other animals may increase. For instance, as grass production decreases, and the forbs and shrub/vine production increases, the production for food and cover for quail and whitetail deer are increasing. Therefore, the early stages of (4) Cedar/Mesquite with Mid-grasses, 30 % Canopy steady state may be outstanding for quail and deer. In the manager's scheme, he or she may desire to maintain all or part of their land in this steady state to meet their overall wildlife and domestic livestock plan. Smaller mammals on the site include rodents, jackrabbit, cottontail rabbit, raccoon skunks, opossum, and armadillo. Mammalian predators include coyote, red fox, gray fox, and bobcat. Species of snakes and lizards are native to the site. Many species of birds are found on this site including game birds, song birds and birds of prey. Major game birds that are economically important are Rio Grande turkey, bobwhite quail, and mourning dove. Turkey prefers plant communities with substantial amounts of shrubs and trees interspersed with grassland. Quail prefer plant communities with a combination of low shrubs, bunch grass, bare ground and low successional forbs. The different song birds vary in their habitat preferences. In general, habitat that provides a large variety of grasses, forbs, shrubs, vines and trees and a complex of grassland , savannah, shrubland and woodland will support a good variety and abundance of songbirds. Birds of prey are important to keep the numbers of rodents, rabbits and snakes in balance. The different plant communities of the site will sustain different species of raptors. Feral hogs are present on this site in many instances. They can cause much damage to the site as they up root the desirable plants. They can be controlled by trapping and hunting.

Hydrological functions

The hydrologic group is D and the runoff class is high. The drainage class is well drained. Permeability class is very slow. The soil is underlain by slightly fractured limestone at less than 20 inches. There is no water table within 6 feet of the surface. Site does not pond water and the area does not flood. The Tallgrass/Midgrass Savannah, 10% Canopy had a very favorable influence on the infiltration and deep percolation of rainfall. As the site is overgrazed there is a reduction in the tallgrasses and midgrasses. As this change occurs, organic matter in the soil is reduced. This has a negative impact on infiltration and water holding capacity of the soil. More runoff is generated from rainfall, and erosion becomes more evident. When the soil is dry, it cracks. This allows rapid infiltration at first, but as the cracks close, infiltration is greatly reduced. Light showers tend to be ineffective on this site. As the site is invaded by ashe juniper and mesquite, the water cycle is further altered. Interception of rainfall by tree canopies is increased which reduces the amount of rainfall reaching the surface. Stem flow is increased due to the funneling effect of the canopy, which increases soil moisture at the base of the tree. Increased transpiration, especially when evergreen species such as live oak and juniper dominate, provides less chance for deep percolation into aquifers. As woody species increase, grass cover decreases, which causes some of the same effects as overgrazing. Brush management combined with good grazing management can help restore the natural hydrology of the site.

Recreational uses

This site has the appeal of the wide open spaces. The abundant tall and mid grasses with the scattered live oak and post oak and shrubs provides excellent fall color variations. This site produces excellent wildlife foods, there fore is a choice for bird watching, viewing deer, turkey, and quail, as well as hunting.

Wood products

Honey mesquite, oaks, and ashe juniper can be used for firewood and the specialty wood industry.

Other products

None.

Other information

None.

Inventory data references

417 data collected on the site with emphasis form 1979 until 1985.

Type locality

Location 1: Montague County, TX

References

. 2021 (Date accessed). **USDA PLANTS Database**. <http://plants.usda.gov>.

Other references

1. 417 data collected on the site with emphasis form 1979 until 1985.
2. Data was collected by Joe Norris prior to 1972 when the range site description was originally prepared.
3. The Tight Sandy Loam range site description prepared 3/20/79 for Albany, Breckenridge, and Throckmorton.
4. WETS table information.
5. Soils data
6. Beef, Brush and Bobwhites, Quail Management in Cattle Country, Fred S. Guthery, Caesar Kleberg Wildlife Research Institute, Texas A&I University, Kingsville, Texas78363, 1986.
7. Research report on impacts of prairie dogs on the range ecosystem, Dr. Steve Archer, Texas A&M University, College Station, Texas.
8. NATIONAL SCIENTIFIC PLANT SYMBOLS, Plant list for Texas.
9. CHECKLIST OF THE VASCULAR PLANTS OF TEXAS, Stephan L. Hatch, Kancheepuram N. Gandhi, and Larry E. Brown, Texas Agricultural Experiment Station, MP-1655, July 1990.
10. THE GRASSES OF TEXAS, Frank W. Gould, The Texas Agricultural Experiment Station, Texas A&M University Press, College Station, TX. 1975.
11. TEXAS RANGE PLANTS, Stephan L. Hatch and Jennifer Pluhar, Texas A&M University Press, College Station, TX, Third printing 1999.
12. WILD FLOWER OF THE UNITED STATES-TEXAS, Harold William Rickett, The New York Botanical Garden, McGraw-Hill Book Company, New York.
13. TREES SHRUBS AND VINES OF THE SOUTHWEST, Robert A Vines, University of Texas Press, Austin, TX. 1960.
14. SPRING FLORA OF THE DALLAS-FORT WORTH AREA TEXAS, Lloyd H. Shinnners, Copyright 1958, Lloyd H. Shinnners, SMU Box 473, Dallas 22, Texas, USA.
15. INTERWOVEN – A PIONEER CHRONICLE, Sallie Reynolds Matthews, Texas A&M Press, College Station, Texas

Contributors

Joe B Norris
Rhett H. Johnson

Approval

Bryan Christensen, 9/19/2023

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.

Author(s)/participant(s)	Colin Walden, Soil Survey Region 9
Contact for lead author	colin.walden@ok.usda.gov
Date	02/15/2018
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills: Minimal evidence of current or past rill formation.**

2. **Presence of water flow patterns: Few water flow patterns on steep areas. Short and stable, not incising.**

3. **Number and height of erosional pedestals or terracettes: No pedestals or terracettes present.**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground): Bare ground less than 10 percent. Bare areas small and not connected.**

5. **Number of gullies and erosion associated with gullies: No gullies present.**

6. **Extent of wind scoured, blowouts and/or depositional areas: No wind scoured areas.**

7. **Amount of litter movement (describe size and distance expected to travel):** Litter movement less than 3 feet. Vegetative cover should restrict litter movement over long distances. Only herbaceous litter less than .25 inches expected to move.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil stability scores of 5 or greater expected.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Hensley series :A--0 to 10 cm (0 to 4 in); brown (7.5YR 4/2) loam, dark brown (7.5YR 3/2) moist; moderate fine granular structure, surface crusty when dry; hard, friable See official description for specific soil component.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Presence of native tallgrasses and midgrasses allow for good infiltration across the landscape.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No compaction under reference conditions. Beware texture change of Bt horizon not product of compaction.

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: Tallgrasses/Midgrasses (group 1 & 2)

Sub-dominant: Forbs (6) Cool Season Grasses (3) Trees (8)

Other: All other groups

Additional:

13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Possible mortality only during prolonged drought. Less than 5%.

14. **Average percent litter cover (%) and depth (in):** Litter expected to be at 75% cover at average .25 inch depth.

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production 3,750 lb/ac. Ranging from 2,500 to 5,000 lbs.

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 and Juniper (ashe juniper/eastern redcedar) most common invaders.

17. **Perennial plant reproductive capability:** Plants should be capable of reproducing every year with exception of prolonged growing season drought.
-