USDA Natural Resources Conservation Service

Ecological site R150AY526TX
Southern Blackland

Last updated: 9/20/2019
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General information

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): 150A–Gulf Coast Prairies

MLRA 150A is in the West Gulf Coastal Plain Section of the Coastal Plain Province of the Atlantic Plain in Texas (83 percent) and Louisiana (17 percent). It makes up about 16,365 square miles (42,410 square kilometers). It is characterized by nearly level plains that have low local relief and are dissected by rivers and streams that flow toward the Gulf of Mexico. Elevation ranges from sea level to about 165 feet (0 to 50 meters) along the interior margin. It includes the towns of Crowley, Eunice, and Lake Charles, Louisiana, and Beaumont, Houston, Bay City, Victoria, Corpus Christi, Robstown, and Kingsville, Texas. Interstates 10 and 45 are in the northeastern part of the area, and Interstate 37 is in the southwestern part. U.S. Highways 90 and 190 are in the eastern part, in Louisiana. U.S. Highway 77 passes through Kingsville, Texas. The Attwater Prairie Chicken National Wildlife Refuge and the Fannin Battleground State Historic Site are in the part of the area in Texas.

Classification relationships

USDA-Natural Resources Conservation Service, 2006.
-Major Land Resource Area (MLRA) 150A

Ecological site concept

The Blackland ecological site shows an intact grass community with small clumped dispersal of woody species. The soils are very deep, richly black in color, and characterized by their shrink-swell nature. The sites are widely distributed across the uplands and terraces throughout the region.

Associated sites

R150AY528TX	**Claypan Prairie** Slightly lower and down-slope of the Blackland site.
R150AY535TX	**Southern Loamy Prairie** Adjacent to site.
R150AY537TX	**Lowland** Depressional site found within the Blackland site.

Similar sites

R150AY528TX	**Claypan Prairie** Tighter and somewhat less productive.
R150AY537TX	**Lowland** Similar physiographic position but without high water table.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

The Blackland site in MRLA 150A was formed by clayey fluviodeltaic sediments in the Beaumont Formation of Late Pleistocene age. These nearly level to very gently sloping soils are on the South Texas coastal plain. Slopes are mainly less than 1 percent but can range as high as 8 percent. Runoff is medium on 0 to 1 percent, high on 1 to 3 percent, and very high on slopes greater than 3 percent. Undisturbed areas exhibit gilgai microrelief. Elevation ranges from 15 to 200 feet.

Table 2. Representative physiographic features

Landforms	(1) Flat
Flooding frequency	None
Ponding frequency	None
Elevation	15–200 ft
Slope	0–8%
Water table depth	60–80 in
Aspect	Aspect is not a significant factor

Climatic features

The climate of MLRA 150A is humid subtropical with mild winters. The average annual precipitation in the northern two-thirds of this area is 45 to 63 inches. It is 28 inches at the extreme southern tip of the area and 30 to 45 inches in the southwestern third of the area. The precipitation is fairly evenly distributed, but it is slightly higher in late summer and midsummer in the western part of the area and slightly higher in winter in the eastern part. Rainfall typically occurs as moderate intensity, tropical storms that produce large amounts of rain during the winter. The average annual temperature is 66 to 72 degrees F. The freeze-free period averages 325 days and ranges from 290 to 365 days, increasing in length to the southwest.

Table 3. Representative climatic features

Frost-free period (characteristic range)	252-283 days

Freeze-free period (characteristic range)	365 days
Precipitation total (characteristic range)	32-41 in
Frost-free period (actual range)	235-365 days
Freeze-free period (actual range)	365 days
Precipitation total (actual range)	31-42 in
Frost-free period (average)	279 days
Freeze-free period (average)	365 days
Precipitation total (average)	36 in

Climate stations used

- (1) BEEVILLE CHASE NAAS [USW00012925], Beeville, TX
- (2) CORPUS CHRISTI [USW00012924], Corpus Christi, TX
- (3) KINGSVILLE NAAS [USW00012928], Kingsville, TX
- (4) POINT COMFORT [USC00417140], Port Lavaca, TX
- (5) REFUGIO 2 NW [USC00417533], Refugio, TX
- (6) REFUGIO 3 SW [USC00417530], Refugio, TX
- (7) ROBSTOWN [USC00417677], Robstown, TX
- (8) SINTON [USC00418354], Sinton, TX
- (9) VICTORIA FIRE DEPT #5 [USC00419361], Victoria, TX
- (10) VICTORIA RGNL AP [USW00012912], Victoria, TX
- (11) VICTORIA RGNL AP [USC00419367], Victoria, TX
- (12) WELDER WILDLIFE FNDN [USC00419559], Sinton, TX
- (13) BISHOP [USC00410805], Bishop, TX
- (14) C C BOTANICAL GARDENS [USC00412013], Corpus Christi, TX
- (15) PORT LAVACA [USC00417183], Port Lavaca, TX

Influencing water features

Water enters the soil rapidly when it is dry and cracked, and very slowly when it is wet and sealed. The site does not have a water table near the surface. No ponding or flooding is expected for this site.

Soil features

Blacklands consist of very deep, moderately well to well drained, very slowly permeable, slightly acid to moderately alkaline soils. The surface color is black to very dark gray. Soils correlated to this site include: Banquete, Contee, Laewest, Marcado, and Victoria.

Table 4. Representative soil features

Surface texture	(1) Clay
Family particle size	(1) Clayey
Drainage class	Moderately well drained to well drained
Permeability class	Very slow
Soil depth	80 in
Available water capacity (0-40in)	5–7 in
Calcium carbonate equivalent (0-40in)	0–10%
Electrical conductivity (0-40in)	0–4 mmhos/cm

Sodium adsorption ratio (0-40in)	0–10
Soil reaction (1:1 water) (0-40in)	6.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–2%

Ecological dynamics

The reference plant communities of the Blackland are stable tall and midgrass prairies that were in dynamic equilibrium with the ecological forces that formed them. These forces included grazing by native wild herbivores, natural and anthropogenic fire, and periodic drought and wet cycles. Bison were the primary large ungulates that grazed but companion species included antelope and whitetail deer. The typical bison grazing pattern was short but very intense, followed by total deferment until herds migrated back into the area. Long deferments allowed the tallgrasses time to recover carbohydrate reserves and produce a seed crop. A fire regime and frequency of 3 to 8 years was likely and was a more important factor in shaping this prairie than was grazing.

The plant community for this site is dominated by tall and midgrasses. Major tallgrass species included big bluestem (*Andropogon gerardii*), yellow Indiangrass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), eastern gamagrass (*Tripsacum dactyloides*), and Florida paspalum (*Paspalum floridanum*). Dominant midgrass species were little bluestem (*Schizachyrium scoparium*), brownseed paspalum (*Paspalum plicatulum*), sideoats grama (*Bouteloua curtipendula*), and meadow dropseed (*Sporobolus compositus*). Perennial forbs that were important to the site included sensitivebriars (Mimosa spp.), bundleflower (Desmanthus spp.), snoutbean (Rhynchosia spp), and gayfeather (Liatris spp.). Annual forbs occurred on this site in relatively high numbers in wet years and following intense grazing events by bison. Woody plants are nearly excluded from this site by competition from grasses and periodic intense fires. It should be noted however that some early accounts of this area showed a variable scattering of mesquite, live oak, and hackberry trees across the landscape. This is in keeping with the definition of true prairie which allows some large trees to be present but not enough to be termed savannah. The micro-highs and micro lows (gilgai micro-relief) on this site contribute to the diverse plant community. The micro highs are slightly drier and the micro lows slightly wetter. More wet-tolerant vegetation grows on the lower portions of the site while less wet-tolerant vegetation grows on the slightly higher portions of the site.

With the introduction of wild longhorn cattle in the late 1700’s and domestic cattle in the 1820’s, an era of heavy grazing began. During the Spanish Mission era of the 1600 to 1700’s, vast herds of cattle, horses, sheep, and goats were used for meat production for the missions. With no fences, these were free-roaming herds and animals could run free, and many escaped. Some portion of these herds took the place of bison once they were extirpated. This heavy grazing was exacerbated with the introduction of barbed wire and windmills in the 1880’s. Excessive grazing reduced or eliminated the tallgrass component and some midgrasses. As the site deteriorated, less palatable species such as brownseed paspalum, knotroot bristlegrass (*Setaria parviflora*), longspike tridens (*Tridens strictus*), and other shorter species like low panicums and paspalums increased.

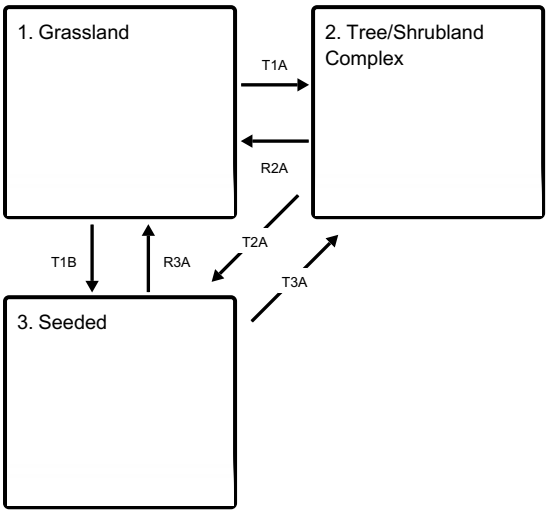
As the tall and midgrasses decreased in composition and biomass production decreased, fuel for fires decreased as well, resulting in less frequent and lower intensity fires. Continued overuse of the site by livestock and the cessation of fire allowed woody plants to invade. These woody pioneers included mesquite (*Prosopis glandulosa*), huisache (*Acacia farnesiana*), Macartney rose (*Rosa bracteata*), eastern baccharis (Baccharis halamifolia), and Chinese tallow tree (*Triadica sebifera*). Increases in annual weeds, midgrasses such as three-awns (Aristida spp.), smutgrass (*Sporobolus indicus*), bahiagrass (*Paspalum notatum*), and the introduced bluestems (Bothriochloa spp.) also occur.

As thresholds from tall/midgrass prairie to mid/shortgrass prairie to shrub/tree/grassland complex are crossed, changes that have occurred which impact plant composition, biomass production, litter accumulation, and water infiltration and storage. These changes impact other natural ecological functions such as frequency and intensity of fire. The result has been conversion from a true prairie, to a wooded grassland, and eventually a woodland. In the heavily wooded state, total canopy cover may exceed 100 percent due to varying heights and multiple layers of woody species.

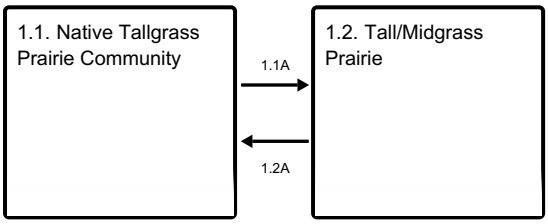
The resulting increase in woody cover signifies that thresholds have been crossed. Once these thresholds are crossed, restoration back to the reference plant community becomes more difficult and expensive. Even though the reference community may be restored through the use of a combination of practices, such as mechanical and herbicidal brush management, planned grazing, and fire, this community cannot be maintained without the use of these tools on a frequent basis.

State and transition model

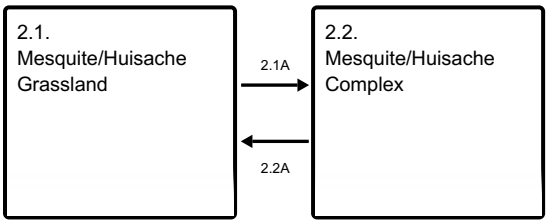
Ecosystem states



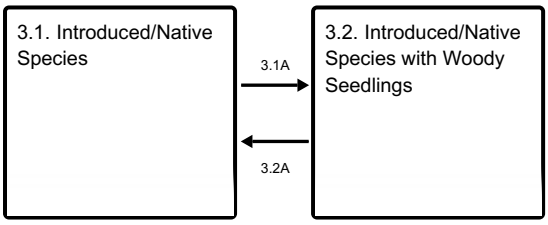
State 1 submodel, plant communities



State 2 submodel, plant communities



State 3 submodel, plant communities



State 1
Grassland

Community 1.1
Native Tallgrass Prairie Community

The Reference Plant Community for the Blackland is a grassland composed of tall and midgrasses. Composition of tallgrasses make up over 60 percent of annual production, midgrasses approximately 30 percent, and associated

grasses, forbs, shrubs and woody vines make up the remainder. Historically, bison grazing was intermittent, and fires were both frequent (3 to 8 years) and intense. Annual forbs occur in greater or lesser amounts in response to grazing intensity, fire, drought, or excessive precipitation.

This prairie site was heavily grazed by large numbers of domestic livestock by the late 1800's. Overgrazing without rest was exacerbated by the introduction of barbed wire fencing and water development. Overgrazing resulted in reduced production of biomass, reduced litter accumulation, loss of tallgrass and some midgrass species and reduction of fire frequency and intensity. Some mid and shortgrasses increased because of this overgrazing and eventually annual forbs and grasses.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	5850	7200	8550
Shrub/Vine	325	400	475
Forb	325	400	475
Tree	0	0	0
Total	**6500**	**8000**	**9500**

Figure 9. Plant community growth curve (percent production by month). TX7605, Tallgrass Prairie Community. Prairie community composed of dominant warm-season tallgrasses with some warm-season midgrasses..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	1	4	12	24	24	8	5	12	4	3	2

Community 1.2
Tall/Midgrass Prairie

This community develops as heavy grazing removes the tallgrass component of the reference community. As tallgrasses decrease, midgrasses such as little bluestem, sideoats grama, brownseed paspalum, and longspike tridens increase. Reduced fuel loads result in reduced fire frequency and intensity. Annual and perennial forbs often increase because of decreased competition for sunlight and moisture.

Continued heavy grazing over long periods of time further contributes to additional degradation and loss of more palatable midgrasses. Restoration to Community 1.1 is relatively simple and can be accomplished by prescribed grazing with appropriate stocking rates. The use of prescribed fire in conjunction with prescribed grazing enhances the recovery process.

Pathway 1.1A
Community 1.1 to 1.2

Heavy continuous grazing and lack of fire will transition the site to Community 1.2.

Pathway 1.2A
Community 1.2 to 1.1

Prescribed grazing with correct stocking rates and a return of fire will transition Community 1.2 back to the reference community.

State 2
Tree/Shrubland Complex

Community 2.1
Mesquite/Huisache Grassland

This community has occurred because of abusive grazing, loss of fire, greatly altered water and energy cycles, and invasion of woody plants. A threshold has been crossed between plant community 1.2 and community 2.1. If prescribed grazing is implemented, fire re-introduced, and seedling woody plants controlled chemically and/or mechanically, this community can be quite productive for cattle and wildlife. This community can also be maintained indefinitely. To do so will require judicious grazing, periodic fire, and almost continuous application of herbicides on an individual plant basis.

The Mesquite/Huisache community in this state will attract different better wildlife species than the previous state because of the increased amount of woody cover and the increased production of both perennial and annual forbs. With increased emphasis on whitetail deer, bobwhite quail, and Rio Grande turkey, many landowners choose to manage this state in this condition. Management such as prescribed fire and individual plant control of woody seedlings is still required if the site is to be maintained in this state.

Community 2.2
Mesquite/Huisache Complex

Over time, with continued heavy grazing, no fire, and no brush management, the site will be transformed into a woodland community with heavy influence of mesquite, huisache, and Macartney rose with canopies in excess of 90 percent. The herbaceous community is greatly reduced and is dominated by low panicums, paspalums, Texas wintergrass, gaping panicum, bentgrass, sedges, and annual forbs.

Major inputs, both chemical and mechanical, are required to restore this community to a grassland or a savannah state. A common practice is the use of aerial applied herbicides to reduce the canopy, allow sunlight to penetrate to the soil surface, and grow enough herbaceous fuel loads for suitable burning. Aerial spraying is followed using prescribed fire to remove some of the woody vegetation and maintain semi-open wooded grassland for several years. Although these practices kill some of the woody vegetation, much of it remains and resprouts from the crown and in a relatively short period will attain a 90 percent canopy again. Often with this community, mechanical means such as rootplowing and raking are utilized, and the land is converted to cropland or tame pasture.

Pathway 2.1A
Community 2.1 to 2.2

Heavy grazing and lack of fire will cause an increase in brush density. The transition occurs when brush canopy cover is over 25 percent.

Pathway 2.2A
Community 2.2 to 2.1

To return to Community 2.1, brush density needs to be removed below 25 percent. Return of fire and prescribed grazing also help in this transition.

State 3
Seeded

Community 3.1
Introduced/Native Species

A seedbed is prepared and the area is planted into grass. Because these soils are so productive, fertilizer has been inexpensive in the past, and precipitation is adequate, this site has been planted to bermudagrass, introduced bluestems, or kleingrass. If brush species are established, mechanical brush management must be utilized. Typically, rootplowing and raking are utilized to remove the woody vegetation, then a seedbed is prepared and the area is planted into grass. To maintain this seeded state, after approximately 3 to 5 years, herbicides must be used to control woody seedlings that seek to invade.

Not only is there a long-lived seed source of mesquite, huisache, and other woody species, additional seeds are brought in by grazing animals and domestic livestock. Macartney rose seed and canes are also left behind following mechanical control and will re-establish in relatively short order. In the seeded state, if practices such as fertilizer

application and weed control are stopped, prescribed grazing is applied, woody seedlings are managed, and prescribed burning is applied, this state will begin the reversion back to the Grassland State as seedlings of native species become established.

Community 3.2
Introduced/Native Species with Woody Seedlings

The transition from community 3.1 to 3.2 requires only time and the absence of woody seedling control. Due to the seed bank present in the soil and the constant addition of new seed from grazing/browsing animals and seed-eating birds, re-infestation of woody seedlings happens in a relatively short time period of 3 to 5 years. If woody seedlings are controlled on a semi-regular basis, this state can be maintained indefinitely, and the state can switch back and forth from 3.2 to 3.1.

If this site has been planted to introduced species such as bermudagrass, introduced bluestems, or kleingrass, and fertilization and weed control is stopped and prescribed burning and prescribed grazing applied, pioneer native grasses and forbs will gradually begin to move back towards State 1.3. Some degree of woody plant control would be required for this to occur. If no woody plant management is practiced, then State 3.2 will revert to State 2.2 with a dominance of huisache and Macartney rose.

Pathway 3.1A
Community 3.1 to 3.2

With heavy grazing and no brush control, woody species will encroach the site.

Pathway 3.2A
Community 3.2 to 3.1

Seedling brush control, prescribed grazing, and possibly prescribed fire will transition the community back to 3.1.

Transition T1A
State 1 to 2

Heavy grazing, lack of fire, and brush invasion over 10 percent canopy signal the transition to State 2.

Transition T1B
State 1 to 3

Conversion signals this transition by preparing a seedbed and planting to pasture.

Restoration pathway R2A
State 2 to 1

Restoration occurs when brush management reduces the canopy cover below 10 percent, prescribed grazing restores correct stocking rates, and once grasses have created enough biomass, prescribed fire returns.

Transition T2A
State 2 to 3

Conversion signals this transition by clearing brush, preparing a seedbed, and planting to pasture.

Restoration pathway R3A
State 3 to 1

Conversion of the site back to reference community grasses is required for restoration. Eliminating all introduced species from the site is difficult, and if enough degradation has occurred to the soils, full restoration may not be attainable.

Transition T3A
State 3 to 2

Without brush control to manage encroaching woody seedlings, the site will transition to State 2.

Additional community tables

Table 6. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					
1	**Tallgrasses**			3200–4700	
	big bluestem	ANGE	*Andropogon gerardii*	3200–4700	–
	Florida paspalum	PAFL4	*Paspalum floridanum*	3200–4700	–
	switchgrass	PAVI2	*Panicum virgatum*	3200–4700	–
	little bluestem	SCSC	*Schizachyrium scoparium*	3200–4700	–
	Indiangrass	SONU2	*Sorghastrum nutans*	3200–4700	–
	eastern gamagrass	TRDA3	*Tripsacum dactyloides*	3200–4700	–
2	**Tall/Midgrasses**			1200–1650	
	sideoats grama	BOCU	*Bouteloua curtipendula*	1200–1650	–
	vine mesquite	PAOB	*Panicum obtusum*	1200–1650	–
	brownseed paspalum	PAPL3	*Paspalum plicatulum*	1200–1650	–
	little bluestem	SCSCS	*Schizachyrium scoparium var. scoparium*	1200–1650	–
	large-spike bristlegrass	SEMA5	*Setaria macrostachya*	1200–1650	–
	composite dropseed	SPCOC2	*Sporobolus compositus var. compositus*	1200–1650	–
3	**Midgrasses**			600–950	
	buffalograss	BODA2	*Bouteloua dactyloides*	600–950	–
	silver beardgrass	BOLAT	*Bothriochloa laguroides ssp. torreyana*	600–950	–
	Pan American balsamscale	ELTR4	*Elionurus tripsacoides*	600–950	–
	longtom	PADE24	*Paspalum denticulatum*	600–950	–
	marsh bristlegrass	SEPA10	*Setaria parviflora*	600–950	–
	white tridens	TRAL2	*Tridens albescens*	600–950	–
	longspike tridens	TRST2	*Tridens strictus*	600–950	–
4	**Cool-season grasses**			500–750	
	sedge	CAREX	*Carex*	500–750	–
	Virginia wildrye	ELVI3	*Elymus virginicus*	500–750	–
	Texas wintergrass	NALE3	*Nassella leucotricha*	500–750	–
5	**Shortgrasses**			350–500	
	Grass, annual	2GA	*Grass, annual*	350–500	–
	Grass, perennial	2GP	*Grass, perennial*	350–500	–
	fall witchgrass	DICO6	*Digitaria cognata*	350–500	–
	Scribner's rosette grass	DIOLS	*Dichanthelium oligosanthes var. scribnerianum*	350–500	–
	panicgrass	PANIC	*Panicum*	350–500	–
	crowngrass	PASPA2	*Paspalum*	350–500	–

Forb					
6	**Forbs**			250–325	
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	250–325	–
	whitemouth dayflower	COER	*Commelina erecta*	250–325	–
	wedgeleaf prairie clover	DAEM2	*Dalea emarginata*	250–325	–
	Illinois bundleflower	DEIL	*Desmanthus illinoensis*	250–325	–
	velvet bundleflower	DEVE2	*Desmanthus velutinus*	250–325	–
	Engelmann's daisy	ENPE4	*Engelmannia peristenia*	250–325	–
	button eryngo	ERYU	*Eryngium yuccifolium*	250–325	–
	beeblossom	GAURA	*Gaura*	250–325	–
	coastal indigo	INMI	*Indigofera miniata*	250–325	–
	lespedeza	LESPE	*Lespedeza*	250–325	–
	dotted blazing star	LIPU	*Liatris punctata*	250–325	–
	littleleaf sensitive-briar	MIMI22	*Mimosa microphylla*	250–325	–
	powderpuff	MIST2	*Mimosa strigillosa*	250–325	–
	yellow puff	NELU2	*Neptunia lutea*	250–325	–
	fogfruit	PHYLA	*Phyla*	250–325	–
	white milkwort	POAL4	*Polygala alba*	250–325	–
	upright prairie coneflower	RACO3	*Ratibida columnifera*	250–325	–
	American snoutbean	RHAM	*Rhynchosia americana*	250–325	–
	least snoutbean	RHMI4	*Rhynchosia minima*	250–325	–
	violet wild petunia	RUNU	*Ruellia nudiflora*	250–325	–
	Drummond's skullcap	SCDR2	*Scutellaria drummondii*	250–325	–
	amberique-bean	STHE9	*Strophostyles helvola*	250–325	–
	Baldwin's ironweed	VEBA	*Vernonia baldwinii*	250–325	–
7	**Forbs**			60–90	
	spiny chloracantha	CHSP11	*Chloracantha spinosa*	60–90	–
	eastern annual saltmarsh aster	SYSU5	*Symphyotrichum subulatum*	60–90	–
8	**Forbs**			15–60	
	Forb, annual	2FA	*Forb, annual*	15–60	–
	Forb, perennial	2FP	*Forb, perennial*	15–60	–
	prairie broomweed	AMDR	*Amphiachyris dracunculoides*	15–60	–
	partridge pea	CHFAF	*Chamaecrista fasciculata var. fasciculata*	15–60	–
	croton	CROTO	*Croton*	15–60	–
	Dakota mock vervain	GLBIB	*Glandularia bipinnatifida var. bipinnatifida*	15–60	–
	camphorweed	HESU3	*Heterotheca subaxillaris*	15–60	–
	herb of the cross	VEOF	*Verbena officinalis*	15–60	–
Shrub/Vine					
9	**Shrubs**			325–475	
	sorrelvine	CITR2	*Cissus trifoliata*	325–475	–
	southern dewberry	RUTR	*Rubus trivialis*	325–475	–
	greenbrier	SMILA2	*Smilax*	325–475	

	greenbrier	SMILA2	*Smilax*	325–475	–
Tree					
10	**Tree**			0–1	
	hackberry	CELTI	*Celtis*	0–1	–
	honey mesquite	PRGL2	*Prosopis glandulosa*	0–1	–
	live oak	QUVI	*Quercus virginiana*	0–1	–

Animal community

The Coastal Prairie communities support a wide array of animals. Cattle and many species of wildlife make extensive use of the site. White-tailed deer may be found scattered across the prairie and are found in heavier concentrations where woody cover exists. Feral hogs are present and at times abundant. Coyotes are abundant and fill the mammalian predator niche. Rodent populations rise during drier periods and fall during periods of inundation. Attwater's pocket gophers are abundant and have an important impact on the ecology of the site. The badger is present but not abundant in locations at the southern extent of the site. Locally unique species alligators and bullfrogs.

The region is a major flyway for waterfowl and migrating birds. Hundreds of thousands of ducks, geese, and sandhill cranes abound during winter. Two important endangered species occur in the area, the whooping crane and Attwater's prairie chicken. Many other species of avian predators including northern harriers, ferruginous hawks, red-tailed hawks, white-tailed kites, kestrels, and, occasionally, swallow-tailed kites utilize the vast grasslands. Many species of grassland birds use the site, including blue grosbeaks, dickcissels, eastern meadowlarks, several sparrows, including, vesper sparrow, lark sparrow, savannah sparrow, grasshopper sparrow, and Le Conte's sparrow.

Hydrological functions

Peak rainfall periods occur in May and June from thunderstorms and in September and October from tropical systems. Rainfall events may be high (3 to 5 inches per event) and intense. Extended periods (45 to 60 days) of little to no rainfall during the growing season are common. Because of the flat topography of this site, erosion is minimal; however, on more sloping aspects (greater than 3 percent), erosion may be very significant. This site provides little water for aquifer recharge because when wet, infiltration is very slow.

Recreational uses

The site is used for camping when trees are present. Under proper management, when some woody species are present, the area will support large numbers of quail and is used for bird hunting. In a woodland state, white-tailed deer are present in large numbers and the site is hunted extensively. In the prairie state, large numbers of grassland birds are present and the area is used for bird watching.

Wood products

In the prairie state, no wood products are available. In a woodland state, the site may grow large numbers of large mesquite trees and these are often cut for firewood and barbecue wood.

Other products

Fruit from dewberries may be harvested. This site made up a major component of the historic Attwater's Prairie Chicken habitat and extensive efforts are being made to reclaim it and re-introduce the prairie chicken.

Inventory data references

Vegetative data for this site was obtained from existing Range Site Descriptions and SCS-417 data. Nineteen SCS-417's were available for this site in eight different counties. Extensive field work was done on-site to catalog the plant community. Several range-trained personnel with state and federal agencies and in private enterprise were consulted on the plant communities as well. Personal contact with ranchers and managers was utilized to ascertain

the use of plants by both cattle and wildlife.

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	Mike Stellbauer, Zone RMS, NRCS, Bryan, TX
Contact for lead author	
Date	07/18/2007
Approved by	Mark Moseley, RMS, NRCS, San Antonio, Texas
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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2. **Presence of water flow patterns:** Some water flow patterns are normal for this site due to landscape position and slopes.

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3. **Number and height of erosional pedestals or terracettes:** Pedestals or terracettes would have been very uncommon for this site.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Less than 20 percent bare ground randomly distributed throughout.

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

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

7. **Amount of litter movement (describe size and distance expected to travel):** Small to medium-sized litter may move short distances during intense storms.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil surface is resistant to erosion. Soil stability class range is expected to be 4 to 6.

9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Soil surface structure is 10 to 60 inches thick with colors ranging from black to dark grayish brown with subangular blocky structure. SOM is 1 to 6 percent.

10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** This true tallgrass prairie site with a combination of forbs, bunchgrasses and rhizomatous grasses which provides for optimum infiltration and little runoff under normal rainfall events.

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** No evidence 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: Warm-season tallgrasses

    Sub-dominant: Warm-season midgrasses

    Other: Warm-season forbs Warm-season annual grasses Annual forbs

    Additional:

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

14. **Average percent litter cover (%) and depth (in):**

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** 3,000 pounds per acre for below average moisture years to 8,000 pounds per acre for above average moisture years.

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:** Potential invasive species include Chinese tallow, huisache, mesquite, introduced bluestem, common bermudagrass, bahiagrass and Macartney rose.

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