

Notes on an Initial Survey of Encinitos Ranch,
Brooks, Hidalgo, Jim Hogg and Starr Counties, Texas, 14 June 2006

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Introduction

Sometime toward the end of spring 2006, landowner Elizabeth (Toddy) Burns contacted Lisa Williams, The Nature Conservancy's [Tamaulipan Thornscrub Project Director], to inquire about the possibility of assembling an ad-hoc team to conduct a biological survey of Encinitos Ranch, a large property on the Holocene Sand Sheet of South Texas. Aware that the Holocene Sand Sheet (also known as the Wild Horse Desert) is among North America's least-explored centers of plant species endemism, Lisa called me and asked whether I'd be interested in joining her for a preview tour. Naturally, I was more than happy to oblige. We decided to take a first look at the property in June, even though drought conditions made it unlikely that we'd see much of the region's famous flora. That initial visit, we hoped, would make us familiar enough with the ranch to enable us to help guide a larger team during a more protracted survey that could be conducted after rains in fall 2006 or during some future spring.

That plan sounded good to Ms. Burns, and on the morning of 14 June 2006 she met us at headquarters and took us on a whirlwind tour of the northeastern part of the ranch. She took us to a patch of active sand dunes, through a live oak motte, and across hundreds of acres of nondescript but interesting sand plain. After a delicious lunch in air conditioning, she sent Lisa and me out on our own to find plants in the hundred-degree heat. During the course of the one-day visit, we saw something like 130 plant species, which of course is only a fraction of the number of species that will ultimately be found there. And I think we have a pretty good idea of where to spend time during future surveys.

Setting

The Encinitos Ranch occupies about 40,000 acres in southwestern Brooks, southeastern Jim Hogg, northwestern Hidalgo and northwestern Starr counties, Texas. Headquarters is located on the northwest side of State Route 755 about 18.3 roadmiles southwest of its junction with US Route 281 at Rachal, on the Santa Elena East Quadrangle (USGS, 1972d). From there the property extends west onto the Santa Elena Quadrangle (USGS, 1972c) and south onto the San Isidro (USGS, 1972b) and La Reforma (USGS, 1972a) quadrangles.

The entire property lies on the Holocene Sand Sheet, a nearly level plain of wind-blown sands deposited on top of marine sandstones and clays of the Lissie and Goliad formations during the last 11,000 years or so (Williamson, 1993). Sources of the sand include "a relict Pleistocene barrier island system along the western shores of Laguna Madre in Kenedy County; a sandy shoreline (now submerged) that was deposited when the sea level dropped during the Pleistocene ice advances; and the fluvial deposits in Cameron and Hidalgo counties (also of Pleistocene age) (Jacobs, 1981). In some places, including many on the Encinitos Ranch, this sand occurs in low narrow ridges oriented along a northwest-southeast axis, i.e., parallel to the direction of the prevailing winds that shape them. This sand is by and large vegetated, but one spot in the northeastern quarter of the ranch includes several hundred acres of active sand dunes. This patch of active dunes lies almost exactly 50 miles from the nearest point on the shoreline of the Gulf of Mexico. At 260 feet above mean sea level, the tops of these dunes are some of the highest spots on the ranch. The lowest point on

the ranch, somewhere around 175 feet above mean sea level, lies along Vargas Creek, an intermittent stream that drains part of the region. Like most of the very few streams on the Holocene Sand Sheet, Vargas Creek peters out in the middle of nowhere a few miles southeast of the ranch, long before reaching the Gulf of Mexico.

Soils of the ranch and vicinity are mapped on sheets 23, 24, 27 and 28 of the Brooks County soils survey (Williamson, 1993); sheets 1 and 2 of the Hidalgo County soil survey (Jacobs, 1981); sheets 36 and 37 of the Jim Hogg County soil survey (Sanders, Thompson, Williams & Jacobs, 1974); and sheets 6, 7, 13, 14 and inset sheet 31 of the Starr County soil survey (Thompson, 1972). Fifteen soil series are recognized, representing nine range sites (Table 1). In general, these soils are deep, well to somewhat excessively drained, neutral to slightly acid, nonsaline sands and loamy sands. Clay soils are scarce on the ranch and limited to a few pothole depressions.

Surface water is rather limited. The ranch is almost unique in the region in having a definable creek, but that creek is dry except during and immediately following major storms. Natural depressions are common, and some of these must hold water for considerable periods after rains, but this initial survey didn't encounter any wet spots. Reliable water for ranching purposes is provided only by tanks fed by wells; during this visit, we stopped for a look at one, but we didn't make an effort to determine how many "permanent" tanks are present on the ranch.

Land use on the Encinitos Ranch is typical of much of South Texas. Cattle ranching was a major focus in the past, but hunting (of quail and white-tailed deer) is currently more important. In fact, cattle have been absent from some parts of the ranch, e.g., the dune field in the northeastern quarter, for seven years, and cattle ranching operations may be suspended ranch-wide by the time of the proposed fall 2006 surveys. Oil and gas development is typical of the region, and caliche-surfaced roads are present but not abundant in most of the ranch.

Vegetation

The matrix vegetation in the subset of Encinitos Ranch that we visited is a mesquite savanna, i.e., a short- to mid-grass grassland dotted with honey mesquite (*Prosopis glandulosa*) and a few other brush species, notably colima (*Zanthoxylum fagara*), brasil (*Condalia hookeri*), prickly pear (*Opuntia engelmannii* var. *lindheimeri*), tasajillo (*Opuntia leptocaulis*) and Gregg's catclaw (*Acacia greggii* var. *greggii*). Brush cover is variable due to edaphic/hydrologic factors or brush clearing history or both, but in general it is not dense. The ground layer is also variable for the same reason or reasons. In loose sandy Falfurrias soils in the vicinity of the active dune field (stops 1 and 2 in Figure 1), midgrasses such as little bluestem (*Schizachyrium scoparium*) are common. In tighter sandy soils that have been more recently grazed, shorter grasses such as threeawn (*Aristida* sp.) and red lovegrass (*Eragrostis secundiflora*) are more common. Gopher mounds are common, and perhaps as a result the forb (broadleaf herbaceous) flora seems to be rather rich. Species typical of the dune area include oneleaf snoutbean (*Rhynchosia americana*), woolly dalea (*Dalea lanata*), bracted zornia (*Zornia bracteata*), pencil-flower (*Stylosanthes* sp.), silverleaf croton (*Croton argyranthemus*), Lindheimer's goat-rue (*Tephrosia lindheimeri*), Texas heliotrope (*Heliotropium texanum*), blue-hearts (*Buchnera floridana*) and square-bud daisy (*Tetragonathea repanda*).

Also noteworthy if uncommon are oak mottes composed of live oak (*Quercus virginiana*, *Q. fusiformis*, or an intermediate or hybrid with a Mexican species). In the representatives we examined (stops 10 and 12 in Figure 1), these oaks are mostly less than 25 feet tall and mixed with mesquite; granjeno (*Celtis pallida*) is also common. Understory shrubs include

colima, brasil, chapote (*Diospyros texana*) and many of the other species seen in the matrix mesquite savanna. At stop 10, the ground layer is dominated by two exotic grasses, St. Augustine (*Stenotaphrum secundatum*) and guineagrass (*Panicum maximum*). At stop 12, the ground layer was composed of native midgrasses and forbs. Texasgrass (*Vaseyochloa multinervosa*) was frequent at the time of this visit, but most of the components were grasses and forbs commonly found in the mesquite savanna.

Vegetation of seasonal wetlands or interdunal swales was not examined during this visit, since drought conditions had removed all surface water except that in pump-fed tanks. This should be a focus of future surveys.

Plant Species of Conservation Interest

For the purposes of conservation planning, The Nature Conservancy keeps tabs on all plant species thought to occur in fewer than 100 populations world-wide. About 40 such species occur in the four county area surrounding the Encinitos Ranch (Table 2). Because this region is largely in private ownership, there have been few opportunities to search for many of these species, and as a result their current status is based more on guess-work than science. Regional specialties that seem rare on paper often prove to be quite common in the field when someone actually gets a chance to look for them.

Three of these forty species were encountered during this first survey of Encinitos Ranch. A fourth was discovered by Toddy Burns prior to our visit. The status of each species is outlined below. None of these species has any federal or state status as a "threatened" or "endangered" species. Surveys of all four species are incomplete at present, and many other interesting plant species should be expected to occur on the ranch.

Smallflower milkvine (*Matelea parviflora*) is a perennial with numerous stems that creep along the ground for most of their length. The leaves are opposite and have rather thick, ovate blades usually 1-2 inches long. Flowers are small and greenish and produced in loose erect spikes that arise almost perpendicularly from the prostrate stems. All parts of the plant contain milky sap. Smallflower milkvine is one of many plant species that occur only in sandy regions of South Texas and nowhere else in the world. To date it has been reported from Atascosa, Brooks, Dimmit, Duval, Frio, Hidalgo, Jim Hogg, Jim Wells, Karnes, Kleberg, La Salle, Live Oak, Starr, Webb and Zapata counties.

During this visit, smallflower milkvine turned up at stops 2, 11 and 15 (Figure 1); it seems to be fairly common on the ranch. Many of the dozens of individuals we saw were in full bloom, perhaps in response to recent rains. At stop 2, about 20 smallflower milkvine plants occurred on a sandy flat about 500 feet north of the highway and east of the road from the Agua Dulce gate, at N26⁰51'04.4", W098⁰19'32.6". Gopher mounds were fairly common in this area, providing a tiny amount of microtopography as well as the bare soil that many plant species need for seed germination. Cover by perennial grasses was fairly sparse, and large woody plants were absent from the immediate area. Forbs and annual or early-successional grasses, on the other hand, were rather abundant. Common species in the area included bushy horsemint (*Monarda fruticulosa*), blue evolvulus (*Evolvulus alsinoides*), hoary milkpea (*Galactia canescens*), sandbur (*Cenchrus spinifex*) and threeawn.

An abundance of forbs and the bare sand of gophers mounds was also notable at stop 11, which lies on a somewhat generic sandy flat along both sides of the main caliche-surfaced road in the southeastern part of the ranch, about 0.2 roadmiles west-northwest of the house/camp at the east end of the road, at N26⁰46'01.2", W098⁰18'49.6". Mesquite was in greater abundance here than at site 1 but was nowhere close to forming a woodland. Associates here

included cardinal-feather (*Acalypha radians*), bushy horsemint and Parks' croton (*Croton parksii*). About ten individual milkvines were seen here during a quick stop. One small Texas peachbush was also noted in the neighborhood.

Stop 15 lies on a similar landscape along the same road, a couple of miles to the northwest of stop 11, at N26°46'48.7", W098°20'43.1". A couple of smallflower milkweed plants were seen during the five minutes spent at this site; associates included threeawns, hoary milkpea, South Texas wild-mercury, cardinal-feather and Parks' croton. Once again, perennial grasses were scarce, and bare soil (gopher mounds) was plentiful. Although shrub cover was insignificant in the immediate area, some dense mesquite-pricklypear vegetation occurred nearby.

South Texas rushpea (*Pomaria austrotexana*) is a perennial legume with rhizomes that typically produce numerous stems a foot or so tall. It has alternate, bipinnately compound leaves with 5-7 pinnae per leaf and 6-10 leaflets per pinna; the ultimate segments are small (less than 1/4 inch long) and densely hairy on both surfaces. The flowers resemble those of partridge pea (*Chamaecrista* spp.), but the glandular fruiting pods are distinctive. South Texas rushpea is almost restricted to the Holocene Sand Sheet of South Texas, where it has been collected from Brooks, Hidalgo, Kenedy, Jim Hogg, Starr and Zapata counties. It is also known from Tamaulipas.

One small population of south Texas rushpea was encountered during this survey; it was located on the southwest side of the main caliche-surfaced road south of R. M. 755, about 800-900 feet southeast of the gate on the highway, at N26°47'50.3", W098°22'15.9" (see stop 16 in Figure 1). Toddy Burns found this population when the temperamental fuel pump on her Suburban stopped functioning momentarily, forcing us all to jump out and take a quick look at nearby plants. The colony was found along the edge of a stand of mesquite, brasil, lotebush (*Ziziphus obtusifolius*) and other brush species. The plants were lightly covered in dust from the caliche roadbed but were nonetheless flowering and fruiting. Efforts to find additional plants away from the road were unsuccessful, but other colonies will doubtless materialize during the fall survey.

Texas peachbush (*Prunus texana*) is a medium-sized, intricately-branched, deciduous shrub that is similar in both foliage and habit to hog plum (*Colubrina texensis*), but it differs in producing an edible if small peachlike fruit instead of a dry inedible capsule. The bark of Texas peachbush is smooth and shiny gray, not unlike that of the true peach (*Prunus persica*) and cherries (various other *Prunus* species) to which it is related. Although endemic to Texas, it is rather widespread in the southern half of the state, ranging from sandy areas of the South Texas Plains north into the post oak belt on Eocene sands of the upper Coastal Plain and, in a somewhat disjunct fashion, into the Llano Uplift region. There are records from Aransas, Atascosa, Bastrop, Bexar, Brooks, Goliad, Gonzales, Hidalgo, Kenedy, Kleberg, Llano, Mason, Refugio, San Patricio, Starr, Victoria and Wilson counties.

This shrub species was encountered at stops 1, 11, 15 and 16. Numbers were small at each site, and none of the shrubs bore flower or fruit at this season. Texas peachbush may prove to be frequent but widely scattered (rather than locally abundant) on the ranch.

At stop 1, a single shrub was found on stabilized sand along the rim of a deep sand blowout in the active dune field just north of R. M. 755 near the Agua Dulce gate, near N26°51'06.1", W098°19'34.9". Vegetation in the immediate area was composed mostly of grasses and forbs; few other shrubs were present. Little bluestem, oneleaf snoutbean, and threeawn were common.

Stop 11 lies on a somewhat generic sandy flat along both sides of the main caliche-surfaced road in the southeastern part of the ranch, about 0.2 roadmiles west-northwest of the house/camp at the east end of the road, at N26°46'01.2", W098°18'49.6". The single two-foot-tall Texas peachbush seen here was growing by itself in an opening within a fairly brushy mesquite savanna. The dominant herbaceous species in that opening were probably cardinal-feather (*Acalypha radians*), bushy horsemint, and Parks' croton. Smallflower milkvine was also seen at this spot.

A five-foot-tall shrub was observed at stop 15, along the same caliche road a couple of miles to the northwest of stop 11, at N26°46'48.7", W098°20'43.1". It was growing in a brushy mesquite savanna on hummocky sand with lots of gopher mounds. Associated woody species included prickly pear, tasajillo, Gregg's catclaw, Texas lantana (*Lantana urticoides*) and lotebush.

Two shrubs were encountered at stop 16, both of them less than 500 feet southwest of the main road south of R. M. 755 from a point about 800-900 feet southeast of the gate on the highway, at N26°47'49.4", W098°22'16.5". Both were mixed with other shrubs in an somewhat open area among dense stands of mesquite and brasil.

Amelia's sand-verbena (*Abronia ameliae*) is a showy annual that forms loose, bush-like clumps that can be as much as two feet tall and are capped by bright pink flowers in globose clusters about three inches in diameter. When not in flower, Amelia's sand-verbena can be recognized by its extremely glutinous (sticky) stems and foliage. Amelia's sand-verbena is restricted to the South Texas Sand Sheet, where it has been reported from Brooks, Hidalgo, Jim Hogg, Kenedy, Kleberg and Starr counties. It was named in honor of Amelia Lundell, a famous Texas botanist.

This species was discovered on Encinitos Ranch on 8 June 2006 by Toddy Burns. We didn't get a chance to examine this population during this initial visit; apparently it is rather small, consisting of a handful of plants. Other populations should be expected..

Recommendations for Future Surveys

A return visit is currently being planned for some time in fall 2006. If weather has been wet, one main botanical focus during that visit should be interdunal swales or depressional wetlands, the flora of which can be expected to include many warm-season species. Another major focus should be the active dune area and the surrounding pasture, which has not been grazed in seven years. The Vargas Creek bottom should also be interesting; it contains one caliche pit (just upstream from the R. M. 75 culvert) and may also have natural exposures of the Goliad Formation sandstone that underlies the ranch's wind-blown sand.

From the plant community perspective, it would be worthwhile to search for large representatives of oak woodlands and document the composition and structure, particularly that of the ground layer. Quantitative data should also be collected from high-quality example of herbaceous vegetation in the active dune area.

Additional information about regional specialties would also be useful. Surveys should continue for the four species of interest reported above, particularly for Amelia's sand-verbena and South Texas rushpea. Many other species of conservation interest could be sought during a spring visit, or even during an exceptionally wet fall season. Sand Brazos-mint (*Brazoria arenaria*), crown coreopsis (*Coreopsis nuecensis*), Cory's croton (*Croton coryi*), velvet spurge (*Euphorbia innocua*), shortcrown milkvine (*Matelea brevicoronata*)

and Jones' nailwort (*Paronychia jonesii*) are highly likely to occur on the Encinitos Ranch but would be more readily detected in spring than at other times.

Literature Cited

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Table 1Cu Soils of Jim Hogg Ranch Cas mapped in the soil surveys of Brooks County (Williamson, 1993), Hidalgo County (Reed, 1981), Jim Hogg County (Sanders, Thompson, Williams & Jacobs, 1974) and Starr County (Thompson, 1972)

Symbol	County	Mapping Unit	Classification	Range Site
COB	Brooks	Comitas loamy fine sand, gently undulating	Petrocalcic Ustic Argids Paleustalfs	Loamy Sand
DU	Brooks	Dune land	not applicable	not assigned
FAB	Brooks	Falfurrias fine sand, undulating	Typic Ustipsamments	Sand Hill
NFB	Brooks	Nueces fine sand, gently undulating	Arenic Paleustalfs	Sandy
SAB	Brooks	Sarita fine sand, gently undulating	Grossarenic Paleustalfs	Sandy
TSA	Brooks	Tasajal loamy fine sandy, nearly level	Petrocalcic Natraqualfs	Loamy Sand
YtB	Brooks	Yturria fine sandy loam, 0-3% slopes	Pachic Haplustolls	Sandy Loam
9	Hidalgo	Delfina loamy fine sand, 0-3% slopes	Aquic Paleustalfs	Loamy Sand
14	Hidalgo	Falfurrias fine sand, 0-5% slopes	Typic Ustipsamments	Sandy Hill
22	Hidalgo	Hebbronville sandy loam, 0-1% slopes	Aridic Haplustalfs	Sandy Loam
43	Hidalgo	Nueces-Sarita complex, 0-3% slopes	Aquic Arenic Paleustalfs (Nueces) and Grossarenic Paleustalfs (Sarita)	Sandy
58	Hidalgo	Rio fine sandy loam	Typic Argiaquolls	Clay Loam
66	Hidalgo	Sarita fine sand, 0-3% slopes	Grossarenic Paleustalfs	Sandy
Cm	Jim Hogg	Comitas soils	Arenic Aridic Haplustalfs	Loamy Sand

Cu	Jim Hogg	Cuevitas-Randado association	Ustollic Paleorthids (Cuevitas) and Petrocalcic Ustollic Paleargids (Randado)	Shallow Sandy Loam
Dl	Jim Hogg	Delmita soils	Petrocalcic Paleustalfs	Loamy Sand
Dn	Jim Hogg	Delmita association	Petrocalcic Paleustalfs	Sandy Loam
FfB	Jim Hogg	Falfurrias association, gently sloping	Typic Ustipsamments	Sandy Mound
Ns	Jim Hogg	Nueces-Sarita association	Aquic Arenic Paleustalfs (Nueces) and Grossarenic Paleustalfs (Sarita)	Deep Sand
Rd	Jim Hogg	Randado-Delmita association	Petrocalcic Ustollic Paleargids (Randado) and Petrocalcic Paleustalfs (Delmita)	Shallow Sandy Loam (Randado) and Red Sandy Loam (Delmita)
ZaB	Jim Hogg	Zapata soils, gently sloping	Ustollic Paleorthids	Shallow Ridge
Br	Starr	Brennan fine sandy loam	Aridic Haplustalfs	Sandy Loam
De	Starr	Delmita fine sandy loam	Aridic Petrocalcic Paleustalfs	Sandy Loam
Dm	Starr	Delmita loamy fine sand	Aridic Petrocalcic Paleustalfs	Loamy Sand
Fa	Starr	Falfurrias fine sand	Typic Ustipsamments	Sandy Mound
Mc	Starr	McAllen fine sandy loam	Typic Ustochrepts	Gray Sandy Loam
Ra	Starr	Ramadero loam	Pachic Argiustolls	Ramadero
Sa	Starr	Sarita fine sand	Grossarenic Paleustalfs	Deep Sand
Zp	Starr	Zapata soils	Ustollic Paleorthids	Shallow Ridge

Table 2's Plant species of conservation interest known from Brooks, Hidalgo, Jim Hogg and/or Starr counties, Texas. Species that have been found on the Encinitos Ranch are marked in boldface. Other species likely to occur in the sandy soils of the ranch are preceded by asterisks.

Species	Global Rank	Brooks	Hidalgo	Jim Hogg	Starr
Amelia's sand-verbena (<i>Abronia ameliae</i>)	G3	x	x	x	x
Vasey's adelia (<i>Adelia vaseyi</i>)	G3		x		x
prostrate milkweed (<i>Asclepias prostrata</i>)	G2				x
star cactus (<i>Astrophytum asterias</i>)	G2		x		x
Tamaulipan kidneypetal (<i>Ayenia limitaris</i>)	G2		x		
*sand Brazos-mint (<i>Brazoria arenaria</i>)	G3	x	x	x	
Kleberg saltbush (<i>Atriplex klebergorum</i>)	G2				x
Chihuahuan balloon-vine (<i>Cardiospermum dissectum</i>)	G2		x		x
Mission fiddlewood (<i>Citharexylum spathulatum</i>)	G3Q		x		x
Runyon's cory-cactus (<i>Coryphantha macromeris</i> var. <i>runyonii</i>)	G5T2		x		x

Zapata's croton (<i>Croton coryi</i>)	G3	x	x		
*crown coreopsis (<i>Coreopsis nuecensis</i>)	G3	x			
yellow alicoche (<i>Echinocere us papillosus</i>)	G3		x	x	x
Fitch's hedgehog (<i>Echinocere us reichenbachii var. fitchii</i>)	G5T3		x		x
Gregg's wild- buckwheat (<i>Eriogonum greggii</i>)	G2 or G3		x		x
*velvet spurge (<i>Euphorbia innocua</i>)	G3	?			
Johnston's frankenia (<i>Frankenia johnstonii</i>)	G3				x
South Texas gilia (<i>Gilia ludens</i>)	G3		x	x	
Croft's bluets (<i>Houstonia croftiae</i>)	G3		x		x
Mexican mud-babies (<i>Heteranther a mexicana</i>)	G2 or G3		x		
Runyon's water-willow (<i>Justicia runyonii</i>)	G2		x		
Texas stonecrop (<i>Lenophyllu m texanum</i>)	G3	x	x		x

Tepals bladderpod (<i>Lesquerella</i> <i>thamnophila</i>)	G2				x
Runyon's huaco (<i>Manfreda</i> <i>longiflora</i>)	G2 or G3		x		x
Major Siler's huaco (<i>Manfreda</i> <i>sileri</i>)	G3				x
Walker's manioc (<i>Manihot</i> <i>walkerae</i>)	G1		x		x
*shortcrown milkvine (<i>Matelea</i> <i>brevicoronat</i> <i>a</i>)	G3	x	x		x
smallflower milkvine (<i>Matelea</i> <i>parviflora</i>)	G3	x	x	x	x
Falfurrias milkvine (<i>Matelea</i> <i>radiata</i>)	GH		x		x
arrowleaf milkvine (<i>Matelea</i> <i>sagittifolia</i>)	G3		x		x
bushy nailwort (<i>Paronychia</i> <i>congesta</i>)	G1			x	
*Jones' nailwort (<i>Paronychia</i> <i>jonesii</i>)	G3	x	x		x
Lundells' nailwort (<i>Paronychia</i> <i>lundellorum</i>)	G1Q	x			
South Texas rushpea (<i>Pomaria</i> <i>austrotexana</i>)	G3	x	x	x	x

Texas peach-bush (<i>Prunus texana</i>)	G3	x	x		x
large selenia (<i>Selenia grandis</i>)	G3		x		
ashy dogweed (<i>Thymophylla tephroleuca</i>)	G2				x
Bailey's ballmoss (<i>Tillandsia baileyi</i>)	G2	x	x		
Wright's trichocoronis (<i>Trichocoronis wrightii</i> var. <i>wrightii</i>)	G4T3	x			
Texas shrimp-plant (<i>Yeatesia platystegia</i>)	G3 or G4				x

Explanation of Global Ranks

- G1 = less than 6 populations known globally; critically imperiled, especially vulnerable to extinction
- G2 = 6-20 populations known globally; imperiled and very vulnerable to extinction throughout its range
- G3 = 21-100 populations known globally; either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single state or physiographic region), or because of other factors making it vulnerable to extinction throughout its range
- G4 = more than 100 populations known; apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery
- G5 = demonstrably secure globally, though it may be quite rare in parts of its range

A "T" subrank following a global rank denotes the rank for subspecific taxa; i.e., the G rank is the rank for the species as a whole, while the T rank is the rank for the individual variety or subspecies.

Appendix 1. Plant species observed on Encinitos Ranch, Brooks, Hidalgo, Jim Hogg and Starr counties, Texas, 14 June 2006. During this visit only about one percent of the ranch was examined; future surveys will no doubt reveal the presence of hundreds of additional species. Scientific names mostly follow Jones, Wipff & Montgomery (1997); synonyms from Correll & Johnston (1970) and other sources appear in parentheses. Common names follow the various field guides listed in the reference section at the end of the list.

Trees, Shrubs and Woody Vines

Gregg's catclaw	<i>Acacia greggii</i> var. <i>greggii</i>
huisachillo	<i>Acacia schaffneri</i> (<i>A. tortuosa</i>)
huisache	<i>Acacia smallii</i> (<i>A. farnesiana</i>)
whitebrush	<i>Aloysia gratissima</i>
willow baccharis	<i>Baccharis neglecta</i>
sugar hackberry	<i>Celtis laevigata</i>
granjeno, spiny hackberry	<i>Celtis pallida</i>
brasil	<i>Condalia hookeri</i>
chapote, Texas persimmon	<i>Diospyros texana</i>
goldenweed	<i>Isocoma coronopifolia</i>
leatherstem	<i>Jatropha dioica</i>
Texas lantana	<i>Lantana urticoides</i> (<i>L. horrida</i>)
cenizo	<i>Leucophyllum frutescens</i>
Berlandier wolfberry	<i>Lycium berlandieri</i>
retama	<i>Parkinsonia aculeata</i>
mistletoe	<i>Phoradendron tomentosum</i>
honey mesquite	<i>Prosopis glandulosa</i>
+Texas peachbush	<i>Prunus texana</i>
live oak	<i>Quercus</i> sp. (<i>Q. virginiana</i> ?)
narrowleaf yucca	<i>Yucca constricta</i>
colima, lime prickly-ash	<i>Zanthoxylum fagara</i>
lotebush	<i>Ziziphus obtusifolius</i>

Cacti

Texas prickly-pear	<i>Opuntia engelmannii</i> var. <i>lindheimeri</i> (<i>O. lindheimeri</i>)
tasajillo, pencil cactus	<i>Opuntia leptocaulis</i>

Grasses and Grass-like Plants

threeawn	<i>Aristida</i> sp. (<i>A. purpurea</i> ?)
silver bluestem	<i>Bothriochloa laguroides</i> var. <i>torreyana</i> (<i>B. saccharoides</i>)
grassbur, sandbur	<i>Cenchrus spinifex</i> (<i>C. incertus</i>)
hooded windmillgrass	<i>Chloris cucullata</i>
-Bermudagrass	<i>Cynodon dactylon</i>
panicgrass	<i>Dichanthelium</i> sp. (<i>Panicum</i> sp.)
-Kleberg bluestem	<i>Dichanthium annulatum</i>
fall witchgrass	<i>Digitaria cognata</i> (<i>Leptoloma cognatum</i>)
gummy lovegrass	<i>Eragrostis curtipedicellata</i>
red lovegrass	<i>Eragrostis secundiflora</i>
tumble lovegrass	<i>Eragrostis sessilispica</i>
Mexican sprangletop	<i>Leptochloa uninervia</i>

-buffelgrass
-Natalgrass
little bluestem
southwestern bristlegrass
-St. Augustine grass
-guineagrass

+Texasgrass

Pennisetum ciliare (*Cenchrus ciliaris*)
Rhynchelytrum repens
Schizachyrium scoparium
Setaria sp. (*S. leucopila*?)
Stenotaphrum secundatum
Urochloa maxima (*Panicum maximum*)
Vaseyochloa multinervosa

Forbs

+Amelia's sand-verbena
cardinal-feather
purple pleat-leaf

chaff-flower
white prickly-poppy
hierba de zizotes
blue-hearts
bracted winecup
sundrops
straggler daisy
low partridge-pea

tall partridge-pea

heartleaf spurge

spurge

epazote
ivy treebine, cow-itch
barba de chivato
dayflower
common bindweed
Drummond rain-lily
coreopsis
scratch daisy
silverleaf croton
hog croton
toothed croton
+Parks' croton
bearded swallow-wort
poor Joe
hairy wild-mercury
Sand Sheet wild-mercury
tiny Tim

tall wild-buckwheat
yankee-weed
climbing eupatorium

crucita

Abronia ameliae
Acalypha radians
Alophia drummondii (*Eustylis purpurea*)
Alternanthera pungens
Argemone sanguinea
Asclepias oenotheroides
Buchnera americana
Callirhoe involucrata
Calylophus serrulatus (*C. australis*)
Calyptocarpus vialis
Chamaecrista calycioides (*Cassia aristellata*)
Chamaecrista fasciculata (*Cassia fasciculata*)
Chamaesyce cordifolia (*Euphorbia cordifolia*)
Chamaesyce glyptosperma (*Euphorbia glyptosperma*)
Chenopodium ambrosioides
Cissus incisa
Clematis drummondii
Commelina erecta
Convolvulus equitans
Cooperia drummondii
Coreopsis tinctoria
Croptilon divaricatum
Croton argyranthemus
Croton capitatus
Croton glandulosus
Croton parksii
Cynanchum barbigerum
Diodia teres
Ditaxis pilosissima
Ditaxis sp.
Dyssodia tenuiloba (*Thymophylla tenuiloba*)
Eriogonum multiflorum
Eupatorium compositifolium
Eupatorium incarnatum (*Fleischmannia incarnata*)
Eupatorium odoratum (*Chromolaena odorata*)

blue evolvulus
white palafoxia
slender snake-cotton
broadleaf snake-cotton
+hoary milkpea
gaura
silverleaf sunflower
weak sunflower
+Texas heliotrope
camphor golden-aster
old plainsman
St. John's wort
scarlet pea
common morning-glory

trailing ratany
sandsheet bladderpod
flax
+creeping milkvine
stickleaf, Velcro-plant
sensitive-briar
carpetweed
+bushy horsemint, shrubby beebalm
spotted beebalm
fiddleleaf tobacco
cutleaf evening-primrose
+Hooker's palafoxia
fogfruit
beach ground-cherry
juniper-leaf
South Texas rushpea
shaggy portulaca, chisme
wingpod portulaca
Mexican hats
oneleaf snoutbean
tropical-clover
pigeonberry
scarlet sage
twinevine
bracted sida
Lindheimer sida
diamondleaf sida
silverleaf nightshade
Lindheimer's globemallow
woolly stemodia
queen's delight
pencil-flower
+Lindheimer's goat-rue
+squarebud daisy, showy nerveray
greenthread
puncture-vine
Texas vervain
cowpen daisy

Evolvulus alsinoides
Florestina tripteris
Froelichia gracilis
Froelichia sp. (*F. latifolia*?)
Galactia canescens
Gaura sp.
Helianthus argophyllus
Helianthus sp. (*H. debilis*?)
Heliotropium texanum
Heterotheca subaxillaris (*H. latifolia*)
Hymenopappus artemisiifolius
Hypericum sp.
Indigofera miniata
Ipomoea cordatotriloba (*I. trichocarpa*)
Krameria lanceolata
Lesquerella sp.
Linum sp.
Matelea brevicoronata
Mentzelia sp.
Mimosa sp. (*Schrankia* sp.)
Mollugo verticillata
Monarda fruticulosa
Monarda punctata
Nicotiana repanda
Oenothera laciniata
Palafoxia hookeriana
Phyla nodiflora (*P. incisa*)
Physalis spathulifolia
Polypremum procumbens
Pomaria austrotexana
Portulaca pilosa
Portulaca umbraticola
Ratibida columnifera
Rhynchosia americana
Richardia brasiliense
Rivina humilis
Salvia coccinea
Sarcostemma cynanchoides
Sida ciliaris
Sida lindheimeri
Sida rhombifolia
Solanum elaeagnifolium
Sphaeralcea lindheimeri
Stemodia tomentosa
Stillingia sylvatica
Stylosanthes sp.
Tephrosia lindheimeri
Tetragonathea repanda
Thelesperma ambiguum
Tribulus terrestris
Verbena halei
Verbesina encelioides

Summary

Trees, shrubs and woody vines	23 species
Cacti	2 species
Grasses and grass-like plants	19 species
Forbs	86 species
Total	130 species
+ = endemics (found only in Texas)	11 species (8.5% of total)
- = exotics (not native to Texas)	6 species (4.6% of total)

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Figure 1. Areas examined during survey of Encinitos Ranch, Brooks, Hidalgo, Jim Hogg and Starr counties, Texas, 14 June 2006. Base maps: Santa Elena 7.5' Quadrangle (USGS, 1972c) and Santa Elena SE 7.5' Quadrangle (USGS, 1972d), reduced. 1= southern tip of active dune area; 2= forb-dominated sand plain; 3 and 4= points on northern fence line; 5 = depressional wetland with supplemental water source; 6= Koch pipeline; 7= oil field / young mesquite savanna; 8 = Texaco (Chevron) Gate; 9= house and outbuildings; 10= live oak motte with house and outbuildings; 11= representative brushy sand plain; 12= low sandy rise with live oak woodland; 13= hummocky sand plain with Gregg's acacia; 14= small pump-fed tank; 15= brushy mesquite savanna; 16= brushy mesquite savanna; 17= caliche pit in bed of intermittent stream