

# OBSERVATION ON VEGETATION CHANGES IN CAJUN PRAIRIE, A COASTAL PRAIRIE FLORA IN SOUTHWEST LOUISIANA

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## ABSTRACT

Cajun Prairie once covered 2.5 million acres in southwest Louisiana but has been reduced by agricultural practices (plowing) to less than 100 acres in small, isolated remnant strips along railroad rights of way. Based on observations of restoration sites and of regrowth in disturbances in remnants, the pattern of vegetation change is reported. The early successional dominants in the Cajun Prairie habitat are mainly annuals with variation in species composition tied to moisture, location, and history of agricultural use. Most annuals disappear in less than two years but goatweed (*Croton capitatus*) often persists for three to four years. The second stage of succession includes three groups of perennial species: native non-prairie, introduced, and Cajun Prairie. With time, the Cajun Prairie species increase in abundance with a corresponding decrease in abundance of the other two groups. The introduced Brazilian vervain (*Verbena brasiliensis*) and vasey grass (*Paspalum urvillei*) are very common invaders in Cajun Prairie but disappear with time. Typically, the first native species to disappear is late flowering thoroughwort (*Eupatorium serotinum*) and the last to be lost is common goldenrod (*Solidago altissima*).

## RESUMEN

La pradera Cajun alguna vez cubrió 2.5 millones de acres en el suroeste de Louisiana pero se ha reducido por las prácticas agrícolas (roturación) a menos de 100 acres en bandas pequeñas, aisladas a lo largo del ferrocarril a la derecha del camino. Basados en observaciones en lugares de restauración y la recuperación de restos alterados, se ha realizado el patrón de cambio de la vegetación. Las dominantes en el inicio de la sucesión en la pradera Cajun son principalmente plantas anuales con variación en la composición específica debido a la humedad, localización, e historia del uso agrícola. La mayoría de las anuales desaparecen en menos de dos años excepto *Croton capitatus* que frecuentemente persiste durante tres o cuatro años. El segundo estadio de la sucesión incluye tres grupos de especies perennes: nativas no de pradera, introducidas, y de la pradera Cajun. Con el tiempo, las especies de la pradera Cajun aumentan en abundancia con la disminución correspondiente de la abundancia de los otros dos grupos. La verbena de Brasil (*Verbena brasiliensis*) y *Paspalum urvillei* son invasoras muy comunes en la pradera Cajun pero desaparecen con el tiempo. Típicamente, la primera especie nativa que desaparece es *Eupatorium serotinum* de floración tardía y la última perderse *Solidago altissima*.

## INTRODUCTION

Cajun Prairie developed in southwestern Louisiana between the Atchafalaya and Sabine rivers where most of the European Settlers were Cajuns (Allen et al. 2001). The flora is best described as a coastal plain flora overlaid with a major midwestern prairie component. This prairie once occupied 2.5 million acres but most has been destroyed. The remaining Cajun Prairie is reduced to 100 acres or less and is in small, isolated remnant strips along railroad rights of way. There are ongoing Cajun Prairie restoration projects with the oldest being the ten acre site in Eunice (Vidrine et al. 2001).

The Cajun Prairie flora was presented at the 17<sup>th</sup> North American Prairie Conference by Allen et al. (2001). These report included 513 specific and sub-specific taxa in 92 families and 277 genera. An understanding of vegetation changes in Cajun Prairie is important in future restoration and preservation efforts.

The present report documents vegetation change in four restorations: Eunice ten-acre restoration; Duralde Wildlife Refuge; Eunice 2.5-acre mitigation restoration; and Acadia Power Partner Prairie. Observations on vegetation change after disturbance in remnants are also included. The goals in these restoration efforts were to recreate as closely as possible the Cajun Prairie as it exists in the remnants and to place Cajun Prairie plants into protected areas to ensure the survival of this threatened and vanishing genome. All four restoration efforts have used transplanted plugs and hand gathered seeds. Due to the high variability in the number and kinds of plant propagules within each plug, no specific data are available on the numbers and kinds of species in each restoration. The senior author has been involved in all four restoration efforts.

## RESTORATION SITES

1. The Eunice restoration site is a ten-acre site located in the city of Eunice in St. Landry Parish, Louisiana with restoration beginning in 1988 and represents the oldest Cajun Prairie restoration effort. Prior to the restoration effort, the site was an abandoned fallow area with a pasture like appearance. The soil type at this restoration site is Crowley silt loam (Murphy et al. 1986). For a complete description of this restoration effort, refer to Allen and Vidrine (1989, 2004) and Vidrine et al. (2001).

2. The Duralde Wildlife Refuge is a federally owned 334-acre site in Evangeline Parish, Louisiana that has a patchwork of age and restoration methods scattered across its landscape (Allen and Grafe 2004). Restoration was begun in 1995 and restoration continues today. The site was an agricultural field, mainly rice, that was abandoned a few years earlier and just prior to restoration was dominated by Chinese tallow trees (*Triadica sebiferum*). The soils at this site are mostly of the Crowley-Vidrine complex with limited amounts of Mowata silt loam and Mamou silt loam (Touchet et al. 1974).

3. The Eunice 2.5 acre mitigation restoration was begun in 1999 and is just north of the ten-acre Eunice site. Prior to restoration, this area was a fallow area maintained by periodic mowing and had a pasture appearance. The soils in the northern two-thirds of this site are Mamou silt loam with the southern third containing Crowley silt loam (Murphy et al. 1986).

4. Acadia Power Partner Prairie is a fourteen-acre site with approximately four-acres of the area undergoing restoration efforts in late 2003 and early 2004. This area was an agricultural field, mainly rice, and is adjacent to and part of a power plant in Acadia Parish, Louisiana. The soils at this site are Crowley silt loam (Clark et al. 1962).

In all four of these restorations plus in the remnants, each area contained one or more wet areas in addition to mesic ones so all contained wet, mesic and intermediate zones.

## METHODS

During the past 15 years, observations were made and recorded by the senior author on species composition in all stages of succession in all four restorations plus after disturbance in the remnants. Ten remnants were walked every two weeks from February to November in 1987 and all species present were recorded and the abundance of each determined visually and with 100 permanent plots. Some plots were sampled for species composition during the early stages of the Duralde and Eunice restoration. Notes on which species is found in which wetness zone were also made and recorded.

Nomenclature and information on nativity are from USDA Plants Database (USDA, NRCS 2004). The native non-prairie and Cajun Prairie distinction was made by the senior author based on more than 20 years of experience in Cajun Prairie Habitat and more than 30 years of work with the Louisiana Flora. The senior author contributed similar information to the floristic quality assessment for the coastal prairie species (Allain et al. 2006).

## RESULTS

The vegetational changes in prairie restoration and remnant recovery are continuous but can be artificially divided into stages. The initial dominants after disturbance in the Cajun Prairie habitat are annuals; this has been observed in the first years of all four restoration efforts plus the vegetational changes associated with disturbances in the remnants. A list of annual species observed during these early stages in restoration or disturbance recovery in Cajun Prairie is in Table 1. This table includes 140 species; 42 were observed in Cajun Prairie restoration on land that was in agricultural use and 118 on land that was fallow-pasture. Annual species almost always observed in prairie restoration after agricultural field crops include *Ambrosia* spp., *Bromus cathericus*, *Caperonia palustris*, *Digitaria* spp., *Iva annua*, *Melochia corchorifolia*, *Sesbania herbacea*, *Sida rhombifolia* and *Urochloa platyphylla*. Annual species usually associated with prairie restoration after pasture or fallow fields include *Agalinis* spp., *Aristida* spp., *Conyza canadensis*, *Croton capitatus*, *Diodia teres*, and *Hypericum* spp. Twenty-four of these species are introduced. In Table 1, the species are also identified as to their moisture

TABLE 1. List of annual species observed in Cajun Prairie restorations in southwest Louisiana. An \* before the name indicates an introduced species. The first letter(s) in parenthesis after the name indicates the observed condition for the taxon prior to its appearance in early stage Cajun Prairie where A = agricultural and F = fallow-pasture. The second letter in parenthesis after the name is the moisture preference for the taxon where M = mesic, W = wet, and I = intermediate moisture requirements.

### Apiaceae

*Chaerophyllum tainturieri* Hook. (F,M)  
*Cynosciadium digitatum* DC. (F,M)  
*Ptilimnium capillaceum* (Michx.) Raf. (F,I)  
*Spermelepis echinata* (Nutt. ex DC.) Heller (F,M)

### Asteraceae

*Ambrosia artemisiifolia* L. (AF,M)  
*Ambrosia bidentata* Michx. (AF,M)  
*Ambrosia psilostachya* DC. (AF,M)  
*Ambrosia trifida* L. (AF,M)  
*Bidens aristosa* (Michx.) Britt. (F,I)  
*Conyza canadensis* (L.) Cronq. (AF,M)  
*Coreopsis tinctoria* Nutt. (F,M)  
*Erechtites hieraciifolia* (L.) Raf. ex DC. (F,M)  
*Erigeron annuus* (L.) Pers. (F,M)  
*Erigeron strigosus* Muhl. ex Willd. (F,M)  
*Gamochaeta purpurea* (L.) Cabrera (F,M)  
 \**Helenium amarum* (Raf.) H. Rock (AF,M)  
*Iva annua* L. (A,I)  
*Krigia caespitosa* (Raf.) Chambers (F,M)  
*Krigia virginica* (L.) Willd. (F,M)  
*Lactuca canadensis* L. (F,M)  
*Lactuca floridana* (L.) Gaertn. (F,M)  
*Packera glabella* (Poir.) C. Jeffery (F,I)  
*Pluchea camphorata* (L.) DC. (F,W)  
*Pyrrhopappus carolinianus* (Walt.) DC. (F,M)  
*Sonchus asper* (L.) Hill (F,M)  
*Sonchus oleraceus* L. (F,M)

### Boraginaceae

*Myosotis verna* Nutt. (F,M)

### Brassicaceae

*Cardamine hirsuta* L. (F,I)  
*Cardamine parviflora* L. var. *arenicola* (Britt.) O.E. Schulz (F,I)  
*Lepidium virginicum* L. (AF,M)

### Buddlejaceae

*Polypremum procumbens* L. (F,M)

### Callitrichaceae

*Callitriche heterophylla* Pursh (F,W)

### Campanulaceae

*Triodanis perfoliata* (L.) Nieuwl. (F,M)

### Caryophyllaceae

*Cerastium glomeratum* Thuill. (F,M)  
*Silene antirrhina* L. (F,M)

### Clusiaceae

*Hypericum drummondii* (Grev. & Hook.) Torr. & Gray (F,M)  
*Hypericum gentianoides* (L.) B.S.P. (F,M)

### Convolvulaceae

*Ipomoea lacunosa* L. (A,M)

### Cucurbitaceae

\**Cucumis melo* L. (A,I)

### Cyperaceae

*Bulbostylis capillaris* (L.) Kunth ex C.B. Clarke (F,M)  
*Cyperus acuminatus* Torr. & Hook. ex Torr. (F,W)  
*Cyperus erythrorhizos* Muhl. (A,W)  
 \**Cyperus iria* L. (AF,W)  
*Eleocharis microcarpa* Torr. (AF,W)  
*Eleocharis montana* (Kunth) Roemer & J.A. Schultes (F,W)  
*Eleocharis obtusa* (Willd.) J.A. Schultes (AF,W)  
*Fimbristylis autumnalis* (L.) Roemer & J.A. Schultes (F,I)  
*Fimbristylis miliacea* (L.) Vahl (F,I)  
*Isolepis carinata* Hook. & Arn. ex Torr. (F,I)  
*Kyllinga odorata* Vahl (F,I)

### Euphorbiaceae

*Acalypha gracilens* Gray (F,M)  
*Caperonia palustris* (L.) St.-Hil. (A,I)  
*Chamaesyce humistrata* (Engelm.) Small (F,M)  
*Chamaesyce maculata* (L.) Small (F,M)  
 \**Chamaesyce nutans* (Lag.) Small (A,M)  
*Croton capitatus* Michx. (AF,M)  
*Croton glandulosus* L. (AF,M)  
*Croton willdenowii* G.L. Webster (F,M)  
*Euphorbia spathulata* Lam. (F,M)

### Fabaceae

\**Aeschynomene indica* L. (A,I)  
*Chamaecrista fasciculata* (Michx.) Greene (F,M)  
 \**Glottidium vesicarium* (Jacq.) Harper (A,I)  
 \**Kummerowia striata* (Thunb.) Schindl. (A,M)  
 \**Medicago lupulina* L. (F,M)  
 \**Medicago polymorpha* L. (F,M)  
 \**Melilotus indicus* (L.) All. (F,M)  
*Trifolium bejariense* Moric. (F,M)  
 \**Trifolium dubium* Sibthorp (F,M)  
 \**Trifolium resupinatum* L. (F,M)  
*Vicia ludoviciana* Nutt. (F,M)

### Gentianaceae

\**Centaurium pulchellum* (Sw.) Druce (F,M)  
*Sabatia campestris* Nutt. (F,M)

### Geraniaceae

*Geranium carolinianum* L. (F,M)

### Iridaceae

*Sisyrinchium rosulatum* Bickn. (F,M)

### Lamiaceae

\**Lamium amplexicaule* L. (F,M)  
*Monarda punctata* L. (F,M)  
*Stachys crenata* Raf. (F,M)

TABLE 1. continued.

**Linaceae**

*Linum medium* (Planch.) Britt. var. *texanum* (Planch.)  
Fern. (F,M)

*Linum sulcatum* Riddell (F,M)

**Loganiaceae**

*Mitreola petiolata* (J.F. Gmel.) Torr. & Gray (F,M)

*Mitreola sessilifolia* (J.F. Gmel.) G. Don (F,M)

**Malvaceae**

*Modiola caroliniana* (L.) G. Don (F,M)

*Sida rhombifolia* L. (A,M)

**Molluginaceae**

\**Mollugo verticillata* L. (AF,M)

**Onagraceae**

*Gaura longiflora* Spach (F,M)

*Ludwigia decurrens* Walt. (F,W)

*Ludwigia leptocarpa* (Nutt.) Hara (F,W)

*Oenothera laciniata* Hill (F,M)

*Oenothera linifolia* Nutt. (F,M)

**Plantaginaceae**

*Plantago aristata* Michx. (F,M)

*Plantago heterophylla* Nutt. (F,M)

*Plantago virginica* L. (F,M)

**Poaceae**

*Alopecurus carolinianus* Walt. (A,I)

*Aristida longispica* Poir. var. *longispica* (F,M)

*Aristida oligantha* Michx. (F,M)

\**Briza minor* L. (F,M)

\**Bromus catharticus* Vahl (A,M)

*Digitaria ciliaris* (Retz.) Koel. (A,M)

\**Digitaria ischaemum* (Schreb.) Schreb. ex Muhl. (A,M)

\**Digitaria violascens* Link (A,M)

*Echinochloa crus-galli* (L.) Beauv. (A,W)

*Limnodea arkansana* (Nutt.) L.H. Dewey (F,M)

\**Lolium perenne* L. (A,M)

*Phalaris angusta* Nees ex Trin. (A,I)

*Phalaris caroliniana* Walt. (A,I)

*Setaria pumila* (Poir.) Roemer & J.A. Schultes (AF,M)

*Sphenopholis obtusata* (Michx.) Scribn. (F,M)

\**Sporobolus indicus* (L.) R. Br. (AF,M)

*Urochloa platyphylla* (Munro ex Wright) R. Webster (A,W)

*Vulpia octoflora* (Walt.) Rydb. (F,M)

**Polygalaceae**

*Polygala leptocaulis* Torr. & Gray (F,I)

*Polygala mariana* P. Mill. (F,M)

**Primulaceae**

\**Anagallis arvensis* L. (F,M)

*Anagallis minima* (L.) Krause (F,I)

**Ranunculaceae**

*Ranunculus laxicaulis* (Torr. & Gray) Darby (AF,W)

\**Ranunculus muricatus* L. (AF,W)

*Ranunculus pusillus* Poir. (AF,W)

**Rubiaceae**

*Diodia teres* Walt. (AF,M)

*Galium aparine* L. (F,I)

*Houstonia micrantha* (Shinners) Terrell (F,M)

**Sapindaceae**

*Cardiospermum halicacabum* L. (A,I)

**Saxifragaceae**

*Lepuropetalon spatulatum* Eil. (F,M)

**Scrophulariaceae**

*Agalinis fasciculata* (Eil.) Raf. (F,M)

*Agalinis heterophylla* (Nutt.) Small ex Britt. (F,M)

*Agalinis oligophylla* Pennell (F,M)

*Agalinis skinneriana* (Wood) Britt. (F,M)

*Agalinis viridis* (Small) Pennell (F,M)

*Buchnera americana* L. (F,M)

*Gratiola neglecta* Torr. (F,I)

*Gratiola virginiana* L. (F,W)

*Lindernia dubia* (L.) Pennell var. *dubia* (F,I)

*Nuttallanthus canadensis* (L.) D.A. Sutton (F,M)

*Nuttallanthus texanus* (Scheele) D.A. Sutton (F,M)

*Veronica arvensis* L. (F,M)

*Veronica peregrina* L. (F,M)

**Solanaceae**

*Physalis angulata* L. (AF,M)

*Solanum americanum* P. Mill. (F,M)

**Sterculiaceae**

\**Melochia corchorifolia* L. (A,I)

**Valerianaceae**

*Valerianella radiata* (L.) Dufr. (F,M)

**Verbenaceae**

*Glandularia pulchella* (Sweet) Troncoso (F,M)

preference and include 100 in mesic condition, 16 in wet conditions, and 24 in intermediate conditions. Some annuals usually found in wet to moist areas during early restoration include *Cyperus* spp., *Ranunculus* spp., *Sesbania herbacea*, and *Urochloa platyphylla*. Most annuals disappear in a year or two but *Agalinis* spp., *Croton capitatus*, *Chamaecrista fasciculata*, and *Sabatia campestris* may persist for three to four years or even longer. Some aggressive perennials may also appear during the first year and include *Axonopus fissifolius*, *Eupatorium serotinum*, *Paspalum dilatatum*, *Paspalum plicatulum*, *Paspalum urvillei*, and *Verbena brasiliensis*.

A second stage of vegetation change includes three groups of perennial and biennial species: native non-prairie, introduced, and Cajun Prairie (Table 2). A complete listing of Cajun Prairie species can be found

TABLE 2. List of perennial/biennial species observed in Cajun Prairie Restorations in Southwest Louisiana. An \* before the name indicates an introduced species. The first letter(s) in parenthesis after the name indicates the observed condition for the taxon prior to its appearance in early stage Cajun Prairie where A = agricultural and F = fallow-pasture. The second letter in parenthesis after the name is the moisture preference for the taxon where M = mesic, W = wet, and I = intermediate moisture requirements. The superscripted <sup>c</sup>, if present, indicates a Cajun Prairie species.

### Amaranthaceae

\**Alternanthera philoxeroides* (Mart.) Griseb. (AF,W)

### Apiaceae

*Cicuta maculata* L. (F,W)

### Asclepiadaceae

*Asclepias obovata* Ell. (F,M<sup>c</sup>)

*Asclepias viridis* Walt. (F,M<sup>c</sup>)

*Cynanchum laeve* (Michx.) Pers. (F,M)

### Asteraceae

*Baccharis halimifolia* L. (F,I<sup>c</sup>)

*Boltonia asteroides* (L.) L'Hér. (F,I<sup>c</sup>)

*Boltonia diffusa* Ell. (F,W<sup>c</sup>)

*Chromolaena ivifolia* (L.) King. & H.E. Robins. (F,M<sup>c</sup>)

*Cirsium horridulum* Michx. (F,M)

*Coreopsis lanceolata* L. (F,M<sup>c</sup>)

*Coreopsis pubescens* Ell. (F,M<sup>c</sup>)

*Erigeron philadelphicus* L. (F,M)

*Eupatorium capillifolium* (Lam.) Small (AF,M)

*Eupatorium serotinum* Michx. (F,M)

*Euthamia leptoccephala* (Torr. & Gray) Greene (F,M<sup>c</sup>)

*Euthamia tenuifolia* (Pursh) Nutt. (F,M<sup>c</sup>)

*Helenium flexuosum* Raf. (F,I<sup>c</sup>)

*Helianthus angustifolius* L. (F,I<sup>c</sup>)

*Krigia dandelion* (L.) Nutt. (F,M<sup>c</sup>)

*Mikania scandens* (L.) Willd. (F,M)

*Packeria tomentosa* (Michx.) C. Jeffery (F,I<sup>c</sup>)

*Pluchea foetida* (L.) DC. (F,W)

*Pluchea rosea* Godfrey (F,W)

*Solidago altissima* L. (F,M)

*Solidago sempervirens* L. var. *mexicana* (L.) Fern. (F,I)

### Caprifoliaceae

\**Lonicera japonica* Thunb. (F,M)

### Cistaceae

*Lechea mucronata* Raf. (F,M<sup>c</sup>)

*Lechea tenuifolia* Michx. (F,M<sup>c</sup>)

### Clusiaceae

*Hypericum gymnanthum* Engelm. & Gray (F,I)

### Commelinaceae

*Commelina erecta* L. (A,M)

*Tradescantia hirsutiflora* Bush (F,M)

*Tradescantia virginiana* L. (F,M)

### Convolvulaceae

*Dichondra carolinensis* Michx. (F,M)

### Cucurbitaceae

*Melothria pendula* L. (A,M)

### Cyperaceae

*Carex alata* Torr. (F,W)

*Carex albolutescens* Schwein. (F,W)

*Carex frankii* Kunthb (F,W)

*Carex vulpinoidea* Michx. (F,W)

*Cyperus croceus* Vahl (F,M)

*Cyperus haspan* L. (F,W)

*Cyperus pseudovegetus* Steud. (A,W)

*Cyperus retrorsus* Chapman (F,M)

\**Cyperus rotundus* L. (A,I)

*Cyperus strigosus* L. (A,I)

*Cyperus virens* Michx. (A,W)

*Eleocharis quadrangulata* (Michx.) Roemer & J.A. Schultes (F,W)

*Eleocharis tuberculosa* (Michx.) Roemer & J.A. Schultesb (F,W)

*Kyllinga brevifolia* Rottb. (F,M)

*Rhynchospora corniculata* (Lam.) Gray (A,W<sup>c</sup>)

### Euphorbiaceae

\**Triadica sebifera* (L.) Small (AF,I)

### Haloragaceae

*Proserpinaca palustris* L. (F,W<sup>c</sup>)

### Hydrophyllaceae

*Hydrolea ovata* Nutt. ex Choisy (F,W<sup>c</sup>)

### Iridaceae

*Sisyrinchium angustifolium* P. Mill. (F,M<sup>c</sup>)

*Sisyrinchium atlanticum* Bickn. (F,M<sup>c</sup>)

*Sisyrinchium langloisii* Greene (F,M<sup>c</sup>)

### Juncaceae

*Juncus brachycarpus* Engelm. (F,W)

*Juncus effusus* L. (F,W)

*Juncus marginatus* Rostk. (F,M)

*Juncus nodatus* Coville (F,W)

*Juncus polycephalus* Michx. (F,W)

*Juncus tenuis* Willd. (F,M)

*Juncus validus* Coville (F,W)

### Lamiaceae

\**Stachys floridana* Shuttlw. ex Benth (F,M)

*Teucrium canadense* L. (F,M)

### Liliaceae

*Allium canadense* L. var. *canadense* (F,M<sup>c</sup>)

*Nothoscordum bivalve* (L.) Britt. (F,M<sup>c</sup>)

### Lythraceae

*Cuphea glutinosa* Cham. & Schlecht. (F,I)

*Lythrum alatum* var. *lanceolatum* (Ell.) Torr & Gray ex Rothrock (F,W)

### Melastomataceae

*Rhexia mariana* L. (F,I<sup>c</sup>)

### Onagraceae

*Ludwigia glandulosa* Walt. (F,W)

TABLE 2. continued.

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<i>Ludwigia linearis</i> Walt. (F,I <sup>o</sup> )	<i>Panicum rigidulum</i> Bosc ex Nees var. <i>rigidulum</i> (F,I <sup>o</sup> )
<i>Ludwigia palustris</i> (L.) Eil. (F,W)	* <i>Paspalum dilatatum</i> Poir. (AF,M)
<i>Oenothera biennis</i> L. (F,M <sup>o</sup> )	<i>Paspalum plicatulum</i> Michx. (AF,I)
<i>Oenothera speciosa</i> Nutt. (F,M)	* <i>Paspalum urvillei</i> Steud. (AF,I)
<b>Orchidaceae</b>	<i>Setaria parviflora</i> (Poir.) Kerguelen (AF,M)
<i>Spiranthes vernalis</i> Engelm. & Gray (F,M <sup>o</sup> )	* <i>Sorghum halepense</i> (L.) Pers. (AF,M)
<b>Oxalidaceae</b>	<i>Steinchisma hians</i> (Eil.) Nash (F,I <sup>o</sup> )
<i>Oxalis stricta</i> L. (F,M)	<i>Tridens strictus</i> (Nutt.) Nash (F,I <sup>o</sup> )
<b>Passifloraceae</b>	<b>Polygonaceae</b>
<i>Passiflora incarnata</i> L. (F,M <sup>o</sup> )	<i>Polygonum hydropiperoides</i> Michx. (AF,W)
<b>Phytolaccaceae</b>	<i>Rumex verticillatus</i> L. (AF,I)
<i>Phytolacca americana</i> L. (F,M)	<b>Rosaceae</b>
<b>Poaceae</b>	<i>Rubus argutus</i> Link (F,M)
<i>Agrostis hyemalis</i> (Walt.) B.S.P. (A,M <sup>o</sup> )	<i>Rubus trivialis</i> Michx. (F,M)
<i>Axonopus fissifolius</i> (Raddi) Kuhl. (AF,I <sup>o</sup> )	<b>Rubiaceae</b>
<i>Bothriochloa exaristata</i> (Nash) Henr. (F,M <sup>o</sup> )	<i>Diodia virginiana</i> L. (F,I)
* <i>Bothriochloa ischaemum</i> (L.) Keng (F,M)	<i>Galium tinctorium</i> L. (F,M)
<i>Bothriochloa longipaniculata</i> (Gould) Allred & Gould (F,M <sup>o</sup> )	<i>Oldenlandia boscii</i> (DC.) Chapman (F,I)
* <i>Chloris canterai</i> Arech. (F,M)	<b>Scrophulariaceae</b>
* <i>Cynodon dactylon</i> (L.) Pers. (AF,I)	<i>Bacopa rotundifolia</i> (Michx.) Wettst. (AF,W)
<i>Dichantherium dichotomum</i> (L.) Gould var. <i>dichotomum</i> (F,I <sup>o</sup> )	<i>Mecardonia acuminata</i> (Walt.) Small (F,M <sup>o</sup> )
<i>Dichantherium scoparium</i> (Lam.) Gould (F,I <sup>o</sup> )	<b>Solanaceae</b>
<i>Dichantherium sphaerocarpon</i> (Eil.) Gould var. <i>sphaerocarpon</i> (F,M <sup>o</sup> )	<i>Physalis heterophylla</i> Nees (F,M)
<i>Eragrostis bahiensis</i> (Schrad. ex J.A. Schultes) J.A. Schultes (F,I)	<i>Solanum carolinense</i> L. (F,M)
<i>Eragrostis elliottii</i> S. Wats. (F,M <sup>o</sup> )	<i>Solanum elaeagnifolium</i> Cav. (F,M)
<i>Eragrostis hirsuta</i> (Michx.) Nees (F,M <sup>o</sup> )	<b>Typhaceae</b>
<i>Eragrostis lugens</i> Nees (F,M <sup>o</sup> )	<i>Typha latifolia</i> L. (F,W)
<i>Eragrostis refracta</i> (Muhl.) Scribn. (F,M <sup>o</sup> )	<b>Urticaceae</b>
<i>Eragrostis spectabilis</i> (Pursh) Steud. (F,M <sup>o</sup> )	<i>Boehmeria cylindrica</i> (L.) Sw. (F,W <sup>o</sup> )
<i>Leersia hexandra</i> Sw. (A,W)	<b>Verbenaceae</b>
<i>Panicum hemitomon</i> J.A. Schultes (AF,W <sup>o</sup> )	<i>Phyla nodiflora</i> (L.) Greene (F,I)
	* <i>Verbena brasiliensis</i> Vell. (AF,I)
<i>Verbena halei</i> Small (F,M)	

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in Allen et al. (2001). The total of 122 species include 24 species that were commonly observed with prairie restoration after agricultural field crops and 113 on land that was fallow-pasture areas. The species are also identified as to their moisture preference and include 63 in mesic conditions, 31 in wet conditions, and 28 in intermediate conditions. A total of 12 of these species are introduced, 65 are considered by us as native non-prairie species and the remaining 47 species are early stage Cajun Prairies species. The most commonly observed perennial species include *Axonopus fissifolius*, *Eupatorium serotinum*, *Paspalum dilatatum*, *Paspalum plicatulum*, *Paspalum urvillei*, *Solidago altissima*, and *Verbena brasiliensis*.

#### DISCUSSION

The Cajun Prairie vegetation, like other vegetation types, changes dramatically after a disturbance and then continues to change over time. The initial dominants are annuals which are replaced by native and introduced perennial species. With time, the Cajun Prairie species become the dominant species and the introduced species and the native non-prairie species are lost; the mechanism(s) by which the Cajun Prairie species are able to dominate is not known and should be the focus of a future research project. The first

introduced perennial to disappear is Brazilian vervain (*Verbena brasiliensis*) and the last to disappear is vasey grass (*Paspalum urvillei*). The first native species to disappear is late flowering thoroughwort (*Eupatorium serotinum*), followed by dog fennel (*Eupatorium capillifolium*) and the last to be lost is common goldenrod (*Solidago altissima*). This change in species composition toward a prairie dominated one is observed in all three moisture regimes.

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