

U.S. Fish & Wildlife Service  
U.S. Geological Survey

# Paradise Lost?

*The Coastal Prairie of  
Louisiana and Texas*

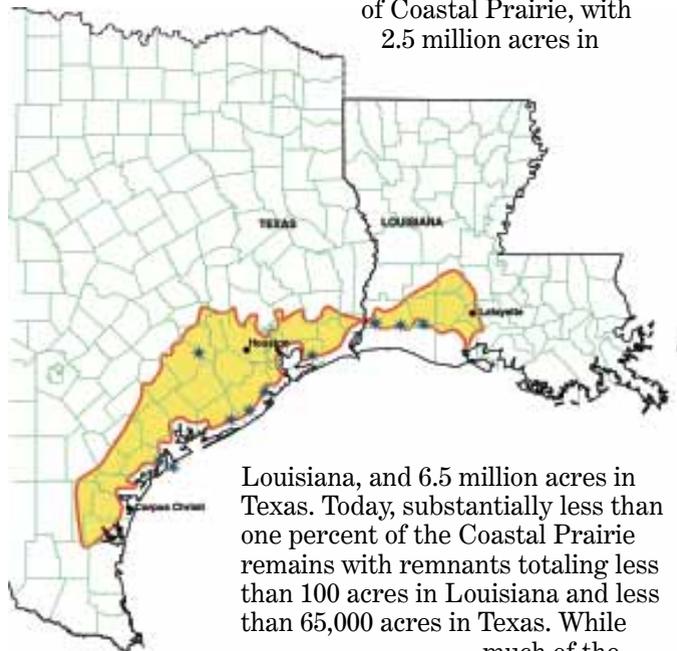


*Coastal prairie is a native grassland found along the coast of Texas and Louisiana. Over nine million acres of prairie once existed as a grassland paradise for Native Americans and early settlers. Today less than 1% remains as a refuge for rare and endangered birds, mammals, reptiles, insects and plants. Is "Paradise Lost?" Private groups, conservation organizations, and government agencies are working together to protect and restore this "critically imperiled" ecosystem. They need your help and support if this effort is to succeed.*

## History

The Coastal Prairie is located along the western gulf coast of the United States, in southwest Louisiana and southeast Texas, just inland from the coastal marsh (see map). This Coastal Prairie is a tallgrass prairie similar in many ways to the tallgrass prairie of the midwestern United States. It is estimated that, in pre-settlement times, there were nine million acres of Coastal Prairie, with 2.5 million acres in

*Historical range of Coastal Prairie. Stars represent national wildlife refuges.*



Louisiana, and 6.5 million acres in Texas. Today, substantially less than one percent of the Coastal Prairie remains with remnants totaling less than 100 acres in Louisiana and less than 65,000 acres in Texas. While



*Coastal Prairie railroad remnant in July*

much of the former prairie has been converted to pasture for cattle grazing, the majority has been altered for growing rice, sugarcane, forage, and grain crops. In Louisiana, most of the prairie's few remaining remnants are found on narrow strips of land along railroad tracks. A larger amount remains in Texas because it was used for cattle production and never plowed. Many species, however, have been lost through overgrazing.

## The “Cajun Prairie” of Louisiana

The portion of Coastal Prairie found in southwest Louisiana is often called the “Cajun Prairie” because it was settled in the early nineteenth century by exiled Acadian settlers. As of 1999, less than 100 acres remain of the 2.5 million acres that once dominated this area, making it one of our most endangered ecosystems. Most of the few remaining remnants of prairie in Louisiana are found on narrow strips of land along railroad tracks. Despite the small size of these remnants, most contain a high diversity of native tallgrass prairie flora.

Cajun prairie along railroad right-of-way in May



mourning dove

### What makes Coastal Prairie a prairie?

The Coastal Prairie can be likened to the central and northern “tallgrass prairie.” Many wildflowers common to the Midwestern prairies such as button snakeroot, compass plant, Kansas gayfeather, and black-eyed susan are also found in Coastal Prairie. In those remnants that still exist in Louisiana, switchgrass, little bluestem, big bluestem, and Indiangrass dominate just as they do in the Midwest. Because of the region’s high rainfall, and the fact that Coastal Prairie gradually turns into coastal marsh in Louisiana, switchgrass is more common than in Midwestern prairies. In contrast, remnants of Coastal Prairie in Texas are dominated by little bluestem, brown-seed paspalum, and Indiangrass. Common wildflowers found here are the prairie coneflower, Texas coneflower, white heath aster and yellow-puff.



Attwater's prairie chicken

Coastal Prairie differs from that found in the Midwest because plant species like sweet golden rod, red milkweed, and the grasses slender bluestem and brown-seed paspalum are found here. Coastal Prairie also provides habitat for the Attwater's prairie chicken, a relative of the extinct heath hen once found on the East coast.



Rejuvenating prairie with winter fire

Factors that contribute to the establishment and maintenance of prairie are soil type, fire, rainfall, and grazing. Drought, fire, and competition from adapted plant species combine to prevent the establishment of woody plants and maintain a grass-dominated ecosystem.



Grasshopper foraging on prairie grass

Many prairie species depend on fire for seed production because it removes accumulated plant litter and satisfies seed dormancy needs. Drought occurs in areas of low rainfall and heavy clay soils hold water making it unavailable to plants. Plants can also experience drought-like stress as a result of root restriction caused by a 8-12" deep hard pan layer in some soils that roots cannot penetrate. Grazing (historically bison and elk and now cattle) affects prairie vegetation in various ways. While it helps seeds to germinate by removing their seed

## Grasses and grasslike plants of the Coastal Prairie



*little bluestem*



*big bluestem*



*split-beard bluestem*



*pinewoods dropseed*



*gaping panicum*



*purple silkyscale*



*silver bluestem*



*bushy bluestem*



*switchgrass*



*Texas wintergrass*



*toothache grass*



*gulf cordgrass*



*Indiangrass*



*Eastern gamagrass*



*brown-seed paspalum*



*knotroot bristlegrass*



*falling beakrush*



*white-top sedge*



*Florida paspalum*



*thin paspalum*



*longspike tridens*



*Carolina's whipgrass*



*Vahl's hairy fimbry*



*yellow-eyed-grass*

coat during digestion, it also stresses grazed plants and creates disturbances that allow other plants to establish. Smaller grazers such as grasshoppers and other plant-eating insects often concentrate on a single plant species, leaving its neighbors untouched, therefore giving them an advantage over their competitors.



*Butterfly weed and blackeyed Susan in flower in May and June.*

Natural prairie abounds with long-lived perennials which form a dense “sod” or mat of intertwined roots. Disturbances to this dense mass are rapidly filled in by growth from surrounding plants. With the exception of partridge pea, false-foxgloves and a few others, annuals are rare in undisturbed prairie sod.

### Plants

Coastal prairie vegetation consists mostly of grasses overlain by a diverse variety of wildflowers and other plants. Its wildflowers are often found in patches creating a “flower garden” in the green sea of grass. Nearly 1,000 plant species have been identified in Coastal Prairie and almost all are perennials with underground structures (not all these structures are roots) like rhizomes, tubers, or crowns. These underground structures have a variety of functions, one of which is to ensure survival after fire. The underground portion of Coastal Prairie plants may be up to three times the size of the aboveground part.



*burrowing owl*

Coastal Prairie flowers bloom in a vivid range of colors from the green of the green flowered milkweed and nose burn; to the white of flowering spurge and button snakeroot; to the yellow of partridge pea and compass plant; to the blue of blue waterleaf and Sampson’s snakeroot; to the pink of false dragonhead and sensitive



*Kansas gayfeather in mass during August*



*Eastern kingbird*

briar; to the purple of gayfeathers and ironweed; and to the red of the red milkweed and winecup. Coastal Prairie wildflowers are a diverse group with many species belonging to the sunflower, legume, and mint families. Native Americans and European settlers on the Coastal Prairie used plants for foods, spices, dyes, textiles, and medicines.

Some of the more spectacular plants in Coastal Prairie include: blazing stars (with up to three foot spikes of purple flowers); compass plants (with leaves pointing east and west); button snakeroot (an important nectar source for many insects); sweet golden rod (with a liquorice odor and that can be used to make a tea); false indigos (yellow or white flowered species, whose flowers were used by early settlers to dye Easter eggs); and butterfly weed (with bright orange flowers favored by butterflies).

## Wildflowers of the Coastal Prairie



*white colic-root*



*false garlic*



*drummond rain lily*



*spider lily*



*swamp lily*



*spring beauty*



*snowy orchid*



*spring ladies'-tresses*



*ten petal anemone*



*Illinois bundleflower*



*white wild-indigo*



*hairy ticktrefoil*



*multibloom-hoarypea*



*white prairie clover*



*flowering spurge*



*snow on the prairie*



*New Jersey tea*



*woolly rose-mallow*



*large-flowered  
beeblossom*



*pennywort*



*button snakeroot*



*water hemlock*



*American snowball*



*whorled milkweed*



*narrowleaf sandvine*



*tansy dogshade*



*silky evolvulus*



*cluster bushmint*



*clustered  
mountain-mint*



*slender mountain-  
mint*



*white mountain mint*



*poorjoe*



*prairie bluets*



*Indian plantain*



*narrowleaf boneset*



*roundleaf boneset*



*marsh fleabane*



*rabbit tobacco*



*climbing hemp vine*



*roundpod St. John's wort*



*nits and lice*



*St. Peter's-wort*



*doll's daisy*



*heath aster*



*yarrow*



*grassland prickly pear*



*Texas prickly pear*



*yellow meadowbeauty*



*golden colic-root*



*eastern yellow stargrass*



*prairie buttercup*



*narrowleaf seedbox*



*common evening-primrose*



*prairie parsley*



*huisache*



*yellow-puff*



*partridge pea*



*Canada lousewort*



*false dandelion*



*woolly groundsel*



*nodding wild-indigo*



*yellow wild indigo*



*arrowleaf rattlebox*



*Canadian goldenrod*



*seaside goldenrod*



*shiny goldenrod*



*sidebeak pencil-flower*



*stiff yellow flax*



*candyroot*



*sweet goldenrod*



*wrinkle-leaf goldenrod*



*flat-topped goldenrod*



*rayless goldenrod*



*hairy golden aster*



*Maryland golden-aster*



*silkgrass*



*compass plant*



*rosinweed*



*yellow Indian-blanket*



*bitterweed*



*fringed sneezeweed*



*Texas coneflower*



*prairie coneflower*



*spotflower*



*purple-head sneezeweed*



*meadow garlic*



*red iris*



*annual sunflower*



*Maximilian sunflower*



*narrowleaf sunflower*



*bearded grass-pink*



*sensitive briar*



*sessile-leaf ticktrefoil*



*ashy sunflower*



*tall coneflower*



*black-eyed susan*



*round-head bushclover*



*coralbean*



*spurred butterfly pea*



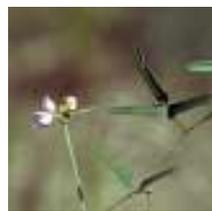
*lanceleaf tickseed*



*plains coreopsis*



*tall tickseed*



*pink wildbean*



*downy milkpea*



*sandbur*



*Maryland milkwort*



*drumheads*



*pink milkwort*



*swamp milkwort*



*Turk's cap*



*Texas star hibiscus*



*false foxglove*



*sharpsepal beardtongue*



*Texas thistle*



*winecups*



*Maryland meadow beauty*



*showy evening-primrose*



*pale coneflower*



*hairy spiderwort*



*Virginia dayflower*



*centaury*



*prairie rose-gentian*



*butterfly-weed*



*eastern blue-eyed grass*



*prairienymph*



*southern blueflag*



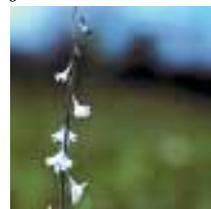
*red milkweed*



*water southern morning-glory*



*saltmarsh morning-glory*



*Carolina larkspur*



*blue jasmine*



*Sampson's snakeroot*



*prairie phlox*



*American germander*



*slender false dragonhead*



*single stem scurpea*



*Louisiana vetch*



*arrow-leaf violet*



*Texas paintbrush*



*Lindheimer's beebalm*



*spotted beebalm*



*maypop*



*lanceleaf loosestrife*



*blueflower eryngo*



*hooker's eryngo*



*catchfly prairie gentian*



*eastern blue-star*



*Kansas gayfeather*



*scaly gayfeather*



*slender gayfeather*



*blue waterleaf*



*Texas vervain*



*rough skullcap*



*white bract blazingstar*



*tall ironweed*



*Texas ironweed*



*small skullcap*



*blue sage*



*lemon beebalm*



*blue-mist flower*



*ivyleaf boneset*



*late purple aster*



*silverleaf nightshade*



*western horsenettle*



*Muskogee beardtongue*



*western silver aster*



*willowleaf aster*



*American aloe*



*old field toadflax*



*Florida bluehearts*



*prairie petunia*



*woolly croton*



*three-seeded mercury*



*betonyleaf noseburn*



*Venus' looking-glass*



*downy lobelia*



*pale lobelia*



*green milkweed*



*long-leaf milkweed*



*pineland milkweed*



*white ibis*



*red-tailed hawks*



*praying mantis*



*hummingbird on  
ashy sunflower*

## Animals

Coastal Prairie, and its adjacent marsh habitat, provided immense spaces for waterfowl and thousands of other forms of wildlife. Even in its altered state, Coastal Prairie routinely hosts more red-tailed hawk, northern harrier, white ibis, and white-faced ibis than any other region in the United States. Waterfowl, sandpipers, and other shorebirds are abundant during the fall, winter, and spring months, paralleling and often surpassing other regions with longstanding traditions as crucial stopover areas for these species. Many rare European species such as northern wheatear, black-tailed godwit, curlew sandpiper, and ruff have also been observed routinely.

Prairie flowers and insects naturally go together. Native insects need native plants as food, and many prairie plants provide plentiful and continuous supplies of nectar. Prairie also provides habitat with relatively little insecticide residue. The result is unique insect diversity including butterflies, dragonflies, and numerous kinds of bees, wasps, ants, grasshoppers, beetles, and preying mantis. This plethora of insects provides a food source for many animals enhancing the habitat value of Coastal Prairie.

The most conspicuous prairie insects are the butterflies and skippers with more than 100 species found in Louisiana's prairie alone. The gulf fritillary, also known as the passion-vine butterfly, is the most common butterfly species found in Coastal Prairie. Monarchs, whose larvae depend on the many milkweeds found in Coastal Prairie, are frequent visitors. More than 100 different species of dragonfly eat mosquitoes and other insects as they dart and bob over the prairie. The prairie forceptail is a unique dragonfly in the Cajun Prairie as it is seen nowhere else.



*scissortailed  
flycatcher*

## What's at risk?

Wildflowers and grasses once covered the Coastal Prairie region, along with birds, butterflies, and other insects. In earlier times it was home to herds of bison and pronghorn antelope, and red wolves roamed among the riverine forests that crisscrossed the area. Today, the bison, antelope, and red wolves have disappeared, and this ecosystem is listed as "critically imperiled" by major conservation organizations.

No one knows how many Coastal Prairie species have followed the prairie vole and the Louisiana Indian paintbrush to extinction, but it is certain that many other species are now quite rare. The black-lace cactus and Texas prairie dawn-flower are the



### *Milkweed Butterflies*

*The milkweed butterflies are a family of mostly tropical butterflies that includes the monarch and the queen. Monarch butterflies cannot withstand freezing temperatures, so they migrate south for winter, flying several thousand miles. The larvae of these North American species feed on milkweeds, incorporating toxic substances into their bodies and making them distasteful to predators. Twelve species of milkweed occur in Coastal Prairie, making the area an important element in the migration flyway of monarchs. Some monarchs winter on the gulf coast, depending on the great variety of Coastal Prairie wildflowers for nectar.*

*Illustrated at left are the stages of metamorphosis of a monarch butterfly:*

- 1. the egg,*
- 2. the caterpillar,*
- 3. the pupa or chrysalis, and*
- 4. the adult butterfly.*

## Butterflies of the Coastal Prairie



*black swallowtail*



*pipevine swallowtail*



*gorgone crescent*



*tiger swallowtail, male*



*zebra longwing*



*tiger swallowtail, female*



*red admiral*



*buckeye butterfly*



*cloudless sulphur*



*gulf fritillary, female*



*zebra swallowtail*



*hackberry*



*spring azure*



*pearl crescent*



*spicebush swallowtail*



*gulf fritillary, male*



*wood nymph*



*queen*



*variegated fritillary*



*goatweed*



*question mark*



*gray hairstreak*



*viceroy*



*red spotted purple*



*wild coco*

only Coastal Prairie plant species on the U.S. Fish and Wildlife Service's endangered species list. However, more than a dozen plant species are listed as imperiled or critically imperiled, including the wild coco, Texas windmill grass, coastal gayfeather, and Correll's false dragonhead. Another 15 plant species are listed as rare to very rare including Texas coneflower, fringed sneezeweed, Silveus dropseed, southwestern bedstraw, and lemon beebalm.

In addition to plants, the Coastal Prairie is home to the federally-endangered Attwater's prairie chicken (North America's most endangered bird) and is the exclusive



*American bison*

wintering ground of the federally-endangered whooping crane. Other residents such as the gulf coast hog-nosed skunk and the Cagle's map turtle are also critically imperiled. A number of rare migratory grassland birds depend on coastal grasslands including Bachman's, Texas olive and Henslow's sparrows and the loggerhead shrike.

### Threats

Development poses the greatest risk to what remains of Coastal Prairie. Most remnants are privately owned with only a small percentage preserved on government land. The largest and most pristine remnants in Texas are hay meadows, and they are in danger of development or conversion to other kinds of agriculture. Remnants along railroads make up much of what remains in Louisiana and are currently being destroyed when adjacent highways are widened or railroad beds are graded or sprayed with pesticides.



*whooping crane*



*sandhill crane*

The suppression of fire allows remnants to become overgrown with native shrubs like eastern baccharis and wax myrtle. Another able invader, and a primary threat to Coastal Prairie, is the Chinese tallow tree. Chinese tallow and other exotic plants invade Coastal Prairie, often becoming the focus of land managers. While fire is an important tool in the control of these exotic plants, herbicides are also used. The impact of herbicide used for control of prairie invaders and weeds on adjacent croplands has not yet been fully explored. There are other exotic plants that are fire and herbicide tolerant and while they have not yet arrived in Coastal Prairie may



*Chinese tallow*

present even greater problems in the future.

The current absence of big bluestem, Indiangrass, and some wildflowers in many Texas prairies may be due to overgrazing

by cattle. Palatable native grasses such as big bluestem, Indiangrass, and eastern gamagrass cannot tolerate the close grazing of cattle but are adapted to the occasional, fast moving, tip nipping of bison. Foreign species, such as vaseygrass, from South America, and johnsongrass, from the Mediterranean, are adapted to cattle grazing and flourish in overgrazed prairie. While haying and rotational grazing are important tools of prairie management, overgrazing can decrease diversity and impact the effectiveness of fire.

## Dragonflies of the Coastal Prairie



*calico pennant*



*common green darner, male*



*black saddlebags*



*blue dasher, female*



*roseate skimmer, male*



*common whitetail, female*



*golden winged skimmer*



*widow skimmer, female*



*prairie forceptail, female*



*painted skimmer*



*eastern pondhawk, female*



*familiar bluet*



*prairie forceptail, male*



*blue footed dancer*



*widow skimmer, male*



*golden winged skimmer*



*Halloween pennant, female*



*ebony jewelwing*



*common whitetail, male*



*common green darner, male*



*Needham's skimmer*



*variegated meadowhawk*



*Rambur's forktail*



*citrine forktail, male*

## Restoration

Even if every acre of Coastal Prairie now in existence was preserved for future generations, we would continue to lose species to extinction. Plants and animals need large areas of habitat for survival, so if future generations are to enjoy the biodiversity found in Coastal Prairie, more area must be restored.

Enthusiasm for restoration of Coastal Prairie is growing thanks to the efforts of pioneers like Drs. Charles Allen

and Malcolm Vidrine who in 1988 succeeded in restoring a prairie in Eunice, Louisiana. A number of private groups and conservation organizations exchange information, provide education, work to preserve remnants, and assist restoration efforts while government agencies assist private land owners with incentive programs. Scientists at the U.S. Geological Survey's National Wetlands Research Center are conducting experiments relevant to prairie restoration and management and are developing methods to disseminate this information.

The U.S. Fish and Wildlife Service lists restoration of Coastal Prairie as one of its top priorities in the gulf coast area. National wildlife refuges including Anahuac, Aransas, AttwaterPrairie Chicken, Brazoria, Cameron Prairie, Lacassine and Sabine are restoring and managing prairie on federal lands. Lacassine NWR in Louisiana has embarked on several Coastal Prairie restorations including 327 acres called the Duralde Prairie. Brazoria National Wildlife Refuge in Texas has undertaken to restore more than 5,000 acres of overgrazed prairie by limiting cattle grazing, conducting

prescribed burns, haying, and chemically controlling invasive plants.

The Coastal Prairie Conservation Initiative is a partnership between the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture's Natural Resources Conservation Service, local soil and water conservation districts, and private landowners along the middle and upper gulf coast region of Texas. The goals of this initiative are to conserve and restore the Coastal Prairie ecosystem, reintroduce captive-bred Attwater's prairie chickens on private lands, and provide private landowners with incentives directed at Coastal Prairie conservation.

Restoration methods vary between geographical areas and individual restorationists, and

success varies from year to year. Planting a restoration involves:

1. site preparation by herbicide, solarization, and/or tillage;
2. planting by haying, seeding, hydromulching, sodding, plugging, and/or reintroduction; and
3. management by mowing, irrigation, grazing, and/or burning.

Fall and winter are generally the best times for planting. Seeds can be purchased commercially but are sometimes hard to find. If seeds are collected from wild populations it is best to collect from plants in the vicinity of your restoration. These



Sign at eleven-year-old restoration site.



grasshopper sparrow



Hand held seed collection.



Top: USGS restoration experiments.

Below: mechanized seed collection.

## Other Species of the Coastal Prairie



*cloudless sulphur larva*



*ambush bug*



*dickcissels*



*fence lizard*



*flower beetle*



*grasshopper and  
Turks cap*



*giant swallowtail larva*



*gulf coast toad*



*grass spider*



*lark bunting*



*eastern hognosed  
snake*



*halictid bee and  
wild petunia*



*loggerhead shrike*



*indigo bunting*



*green tree frog*



*crab spider*



*walking stick on  
blazing star*



*tiger swallowtail*



*gulf fritillary larva*



*lynx spider*



*halictid bee and  
partridge pea*



*Potter's wasp*



*leopard frog*



*metallic bee on  
tickseed*

plants are adapted to local conditions and their gene pools should be preserved. Restorationists do not agree on how far from a site seeds may be collected, and distances range from 50 to 250 miles. Most restorationists use 100 miles as a

rule of thumb, and that distance can be stretched east or west if no other seeds are available. Individuals or organizations interested in restoration should thoroughly explore the

options. Several books, websites, and experts are available to assist restorationists, and some are listed at the back of this brochure.



*Hay seeding Coastal Prairie at Lacassine National Wildlife Refuge.*



*yellow-breasted chat*



*Savannah sparrow*

## Management

Restorationists are often discouraged when the first few years after a restoration has been implemented aggressive annual weeds dominate the site. However, they shouldn't despair for perennials will eventually displace the weedy annuals. Experts don't recommend the use of fertilizer because it will often give weedy annuals an advantage.

Burning is the natural mechanism by which prairie renews itself. Fire prevents woody plants from establishing, stimulates seed germination, replenishes nutrients, and allows light to reach young leaves. Winter burning after the first year speeds the change from an annual community to one dominated by perennial plants. Restorations can be burned every one to three years based on available fuel and management objectives. Historically, prairie fires occurred in the summer as a result of lightning strikes. Native Americans often burned



*American pipit*

prairie in the winter and early spring. It is most common to burn when plants are dormant, but an occasional burn during the growing season enhances diversity. Where fire is not an option, the restoration may be mowed or hayed (mowing and haying are very different — hay is not removed after mowing), but this may affect the species that survive long term. Weeds such as Chinese tallow trees may have to be sprayed with herbicide or physically removed, especially from wet spots where fire does a poor job of control. It will take several years before a Coastal Prairie patch begins to mature, but when it does, most weedy exotics will be excluded naturally.

The Coastal Prairie is a unique and vital part of the biosphere that has almost vanished within the last 100 years. Much has been lost both in terms of land coverage and native species, and what remains is in need of protection and rehabilitation. Because so little remains, the future of Coastal Prairie depends on restoration.

*Using fire to control Chinese tallow trees.*



Americans can help in this effort to protect and restore Coastal Prairie by supporting or participating in restoration efforts. Even a small backyard prairie garden (12' x 12') provides a piece of this native ecosystem. Thousands of such gardens dot the midwestern countryside, providing a refuge for native plants, insects, and birds, and an alternative, sustainable landscape.

## Appendix

Contacts for more information

### Louisiana Organizations

Cajun Prairie Habitat Preservation Society, Dr. Charles Allen  
Dept. of Biology, University of Louisiana at Monroe, Monroe, LA 71209  
318/342 1814

Cajun Prairie Gardens, Dr. Malcolm Vidrine  
1932 Fournerat Road, Eunice, LA 70535  
337/457 4497

Lacassine National Wildlife Refuge  
209 Nature Road, Lake Arthur, LA 70549  
337/774 5923

Louisiana Native Plant Society, Beth Erwin, Secretary  
P.O. Box 126, Collinston, LA 71229  
318/874 7777

U.S.G.S. National Wetlands Research Center  
700 Cajundome Boulevard, Lafayette, LA 70506  
337/266 8500

U.S. Fish and Wildlife Service  
646 Cajundome Boulevard, Suite 400, Lafayette, LA 70506  
337/291 3100

### Texas Organizations

Anahuac National Wildlife Refuge  
P.O. Box 278, Anahuac, TX 77514  
409/267 3337

Aransas National Wildlife Refuge  
P.O. Box 100, Austwell, TX 77950  
361/286 3559

Armond Bayou Nature Center, c/o Mark Kramer, Stewardship  
Coordinator, 8500 Bay Area Blvd., P.O. Box 58828, Houston, TX 77258  
713/474 2551

Attwater Prairie Chicken National Wildlife Refuge  
P.O. Box 519, Eagle Lake, TX 77434  
979/234 3021

Brazoria National Wildlife Refuge  
1212 North Velasco, Suite 200, Angleton, TX 77515  
979/849 7771

Sam Houston RC&D Area  
1410 South Gordon, Alvin, TX 77511  
281/388 1734

Environmental Institute, University of Houston at Clear Lake,  
c/o Dr. Jim Lester, Director,  
2700 Bay Area Boulevard, Houston, TX 77058  
281/283 3950

Houston Audubon Society  
440 Wilchester Boulevard, Houston, TX 77079  
713/932 1639

Katy Prairie Conservancy  
3015 Richmond Avenue, Suite 230, Houston, TX 77098-3114  
713/523 6135

Lady Bird Johnson Wildflower Center  
4801 Lacrosse Avenue, Austin, TX 78739  
512/292 4200

Native Plant Society of Texas  
P.O. Box 891, Georgetown, TX 78627  
512/868 8799

Native Prairies Association of Texas  
3503 Lafayette Avenue, Austin, TX 78722-1807  
512/327 5437

The Nature Conservancy of Texas  
P.O. Box 1440, San Antonio, TX 78295-1440  
210/224 8774

Texas Organization for Endangered Species  
P.O. Box 12773, Austin, TX 78711

Texas Audubon Society  
2525 Wallingwood, Suite 301, Austin, TX 78746-6922  
512/306 0225

Texas Society for Ecological Restoration  
University of North Texas, P.O. Box 310559, Denton, TX 76203  
940/565 4332

Texas Chapter - The Wildlife Society, Welder Wildlife Foundation  
P.O. Box 1400, Sinton, TX 78387

Texas Chapter - Society for Range Management, Clifford W. Carter  
234 Lakeview Drive, Victoria, TX 77905  
361/578 9296

U.S. Fish and Wildlife Service  
17629 el Camino Real, Suite 211, Houston, TX 77058-3051  
281/286 8282

### Books

*A Cajun Prairie Restoration Journal*:1988-1995. M. F. Vidrine,  
C. M. Allen and W. R. Fontenot

*Butterflies of Houston & Southeast Texas*, 1996. John & Gloria Tveten.

*Grasses of Louisiana*, 1992. Charles Allen.

*Grasses of the Texas Gulf Prairies and Marshes*, 1999.  
Stephan L. Hatch, Joseph L. Schuster, and D. Lynn Drawe.

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[www.nwrc.usgs.gov/coastalprairie](http://www.nwrc.usgs.gov/coastalprairie) (National Wetlands Research Center)

[www.cajunprairie.org](http://www.cajunprairie.org) (Cajun Prairie Habitat Preservation Society)

[www.fws.gov/r4lcs/lcsframe.htm](http://www.fws.gov/r4lcs/lcsframe.htm) (Lacassine NWR)

[www.eih.uh.edu](http://www.eih.uh.edu) (University of Houston Environmental Institute)

[www.npsot.org](http://www.npsot.org) (Native Plant Society of Texas)

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*Plant species photographs*

common name	scientific name
American aloe .....	<i>Manfreda virginica</i>
American germander .....	<i>Teucrium canadense</i>
American snowball .....	<i>Styrax Americana</i>
Annual sunflower .....	<i>Helianthus annuus</i>
Arrowleaf rattlesbox .....	<i>Crotalaria sagittalis</i>
Arrow-leaf violet .....	<i>Viola sagittata</i>
Ashy sunflower .....	<i>Helianthus mollis</i>
Bearded grass-pink .....	<i>Calopogon oklahomensis</i>
Betonyleaf noseburn .....	<i>Tragia betonicifolia</i>
Big bluestem .....	<i>Andropogon gerardii</i>
Bitterweed .....	<i>Helenium amarum</i>
Black-eyed susan .....	<i>Rudbeckia hirta</i>
Blueflower eryngo .....	<i>Eryngium integrifolium</i>
Blue jasmine .....	<i>Clematis crispa</i>
Blue sage .....	<i>Salvia azurea</i>
Blue waterleaf .....	<i>Hydrolea ovata</i>
Blue-mist flower .....	<i>Eupatorium coelestinum</i>
Bushy bluestem .....	<i>Andropogon glomeratus</i>
Butterfly-weed .....	<i>Asclepias tuberosa</i>
Brown-seed Pasaplum .....	<i>Paspalum plicatulum</i>
Button snakeroot .....	<i>Eryngium yuccifolium</i>
Canada lousewort .....	<i>Pedicularis canadensis</i>
Canadian goldenrod .....	<i>Solidago canadensis</i>
Candyroot .....	<i>Polygala nana</i>
Carolina larkspur .....	<i>Delphinium carolinianum</i>
Carolina whipgrass .....	<i>Sceleria pauciflora</i>
Catchfly prairie gentian .....	<i>Eustoma exaltatum</i>
Centuary .....	<i>Centaurium breviflorum</i>
Climbing hemp vine .....	<i>Mikania scandens</i>
Cluster bushmint .....	<i>Hyptis alata</i>
Clustered mountain-mint .....	<i>Pycnanthemum muticum</i>
Common evening primrose .....	<i>Oenothera biennis</i>
Compass plant .....	<i>Silphium laciniatum</i>
Coralbean .....	<i>Erythrina herbacea</i>
Doll's daisy .....	<i>Boltonia diffusa</i>
Downy lobelia .....	<i>Lobelia puberula</i>
Downy milkpea .....	<i>Galactia volubilis</i>
Drumheads .....	<i>Polygala cruciata</i>
Drummond rain lily .....	<i>Cooperia drummondii</i>
Eastern blue-eyed-grass .....	<i>Sisyrinchium atlanticum</i>
Eastern blue-star .....	<i>Amsonia tabernaemontana</i>
Eastern gamagrass .....	<i>Tripsacum dactyloides</i>
Eastern yellow stargrass .....	<i>Hypoxis hirsuta</i>
Falling beakrush .....	<i>Rhynchospora caduca</i>
False dandelion .....	<i>Pyrrophappus carolinianus</i>
False foxglove .....	<i>Agalinis sp.</i>
False garlic .....	<i>Nothoscardum bivalve</i>
Flat-topped goldenrod .....	<i>Euthamia tenuifolia</i>
Florida bluehearts .....	<i>Buchnera floridana</i>
Florida paspalum .....	<i>Paspalum floridanum</i>
Flowering spurge .....	<i>Euphorbia corollata</i>
Fringed sneezeweed .....	<i>Helenium drummondii</i>
Gaping panicum .....	<i>Panicum hians</i>
Golden colic-root .....	<i>Aletris aurea</i>

*Plant species photographs*

common name	scientific name
Grassland prickly pear .....	<i>Opuntia macrorhiza</i>
Green milkweed .....	<i>Asclepias viridiflora</i>
Gulf cordgrass .....	<i>Spartina spartinae</i>
Gulf coast muhly .....	<i>Muhlenbergia capillaris</i>
Hairy golden aster .....	<i>Chrysopsis pilosa</i>
Hairy spiderwort .....	<i>Tradescantia hirsutiflora</i>
Hairy ticktrefoil .....	<i>Desmodium ciliare</i>
Heath aster .....	<i>Aster ericoides</i>
Hooker's eryngo .....	<i>Eryngium hookeri</i>
Huisache .....	<i>Acacia farnesiana</i>
Illinois bundleflower .....	<i>Desmanthus illinoensis</i>
Indiangrass .....	<i>Sorghastrum nutans</i>
Indian plantain .....	<i>Arnoglossum ovatum</i>
Ivyleaf boneset .....	<i>Eupatorium ivifolium</i>
Kansas gayfeather .....	<i>Liatris pycnostachya</i>
Knotroot bristlegrass .....	<i>Setaria geniculata</i>
Lanceleaf loosestrife .....	<i>Lythrum alatum var.lanceolatum</i>
Lanceleaf tickseed .....	<i>Coreopsis lanceolata</i>
Large-flowered beeblossom .....	<i>Gaura lindheimeri</i>
Late purple aster .....	<i>Aster patens</i>
Lemon beebalm .....	<i>Monarda citriodora</i>
Lindheimer's beebalm .....	<i>Monarda lindheimeri</i>
Little bluestem .....	<i>Schizachyrium scoparium</i>
Longspike tridens .....	<i>Tridens strictus</i>
Long-leaf milkweed .....	<i>Asclepias longifolia</i>
Louisiana vetch .....	<i>Vicia ludoviciana</i>
Marsh fleabane .....	<i>Pluchea foetida</i>
Maryland golden-aster .....	<i>Chrysopsis mariana</i>
Maryland meadow beauty .....	<i>Rhexia mariana</i>
Maryland milkwort .....	<i>Polygala mariana</i>
Maypop .....	<i>Passiflora incarnata</i>
Maximilian sunflower .....	<i>Helianthus maximiliani</i>
Meadow garlic .....	<i>Allium canadense var. mobilense</i>
Multibloom-hoarypea .....	<i>Tephrosia onobrychoides</i>
Muskogee beardtongue .....	<i>Penstemon laxiflorus</i>
Narrowleaf boneset .....	<i>Eupatorium hyssopifolium</i>
Narrowleaf sandvine .....	<i>Cynanchum angustifolium</i>
Narrowleaf seedbox .....	<i>Ludwigia linearis</i>
Narrowleaf sunflower .....	<i>Helianthus angustifolius</i>
New Jersey tea .....	<i>Ceanothus americanus</i>
Nits and lice .....	<i>Hypericum drummondii</i>
Nodding wild-indigo .....	<i>Baptisia bracteata var. leucophaea</i>
Old field toadflax .....	<i>Linaria canadensis</i>
Pale coneflower .....	<i>Echinacea pallida</i>
Pale lobelia .....	<i>Lobelia appendiculata</i>
Partridge pea .....	<i>Chamaecrista fasciculata</i>
Pennywort .....	<i>Hydrocotyle sp.</i>
Pineland milkweed .....	<i>Asclepias obovata</i>
Pinewoods dropseed .....	<i>Sporobolus junceus</i>
Pink milkwort .....	<i>Polygala incarnata</i>
Pink wildbean .....	<i>Strophostyles umbellata</i>
Plains coreopsis .....	<i>Coreopsis tinctoria</i>
Poorjoe .....	<i>Diodia virginiana</i>
Prairie bluets .....	<i>Hedyotis nigricans</i>

*Plant species photographs*

common name	scientific name
Prairie buttercup .....	<i>Ranunculus fascicularis</i>
Prairie coneflower .....	<i>Ratibida pinnata</i>
Prairie parsley .....	<i>Polytaenia nuttallii</i>
Prairie petunia .....	<i>Ruellia humilis</i>
Prairie phlox.....	<i>Phlox pilosa</i>
Prairie rose-gentian .....	<i>Sabatia campestris</i>
Prairienymph .....	<i>Herbertia lahue ssp. caerulea</i>
Purple-head sneezeweed .....	<i>Helenium flexuosum</i>
Purple silky scale .....	<i>Anthaeantia rufa</i>
Rabbit tobacco .....	<i>Pseudognaphalium obtusifolium</i>
Rayless goldenrod .....	<i>Bigelovia virgata</i>
Red iris .....	<i>Iris fulva</i>
Red milkweed .....	<i>Asclepias lanceolata</i>
Rosinweed .....	<i>Silphium gracile</i>
Rough skullcap .....	<i>Scutellaria integrifolia</i>
Round-head bushclover .....	<i>Lespedeza capitata</i>
Roundleaf boneset .....	<i>Eupatorium rotundifolium</i>
Roundpod St. John's Wort .....	<i>Hypericum cistifolium</i>
Saltmarsh morning-glory .....	<i>Ipomoea sagittata</i>
Sandbur .....	<i>Krameria lanceolata</i>
Sampson's snakeroot .....	<i>Orbexilum pedunculatum</i>
Scaly gayfeather .....	<i>Liatris squarrosa</i>
Seaside goldenrod .....	<i>Solidago sempervirens</i>
Sensitive briar .....	<i>Schrankia microphylla</i>
Sessile-leaf ticktrefoil .....	<i>Desmodium sessilifolium</i>
Sharpsepal beardtongue .....	<i>Penstemon tenuis</i>
Shiny goldenrod .....	<i>Solidago nitida</i>
Showy evening-primrose .....	<i>Oenothera speciosa</i>
Sidebeak pencil-flower .....	<i>Stylosanthes biflora</i>
Silkgrass .....	<i>Pityopsis graminifolia</i>
Silky involulus .....	<i>Evolvulus sericeus</i>
Silver bluestem .....	<i>Bothriochloa laguroides</i>
Silverleaf nightshade .....	<i>Solanum elaeagnifolium</i>
Single-stem scurfpea .....	<i>Orbexilum simplex</i>
Slender false dragonhead .....	<i>Physostegia intermedia</i>
Slender gayfeather .....	<i>Liatris acidota</i>
Slender mountain-mint .....	<i>Pycnanthemum tenuifolium</i>
Small skullcap .....	<i>Scutellaria parvula</i>
Snow-on-the-prairie .....	<i>Euphorbia bicolor</i>
Snowy orchid .....	<i>Habenaria nivea</i>
Southern blueflag .....	<i>Iris virginica</i>
Split-beard bluestem .....	<i>Andropogon ternarius</i>
Spot flower .....	<i>Acmella oppositifolia</i>
Spotted beebalm .....	<i>Monarda punctata</i>
Spider lily .....	<i>Hymenocallis caroliniana</i>
Springbeauty .....	<i>Claytonia virginica</i>
Spring ladies'-tresses .....	<i>Spiranthes vernalis</i>
Spurred butterfly pea .....	<i>Centrosema virginianum</i>
Stiff yellow flax .....	<i>Linum medium</i>
St. Peter's-wort .....	<i>Hypericum stans</i>
Swamp lily .....	<i>Crinum americanum</i>
Swamp milkwort .....	<i>Polygala leptocaulis</i>
Sweet goldenrod .....	<i>Solidago odora</i>
Switchgrass .....	<i>Panicum virgatum</i>

*Plant species photographs*

common name	scientific name
Tall coneflower .....	<i>Rudbeckia grandiflora</i>
Tall ironweed .....	<i>Vernonia gigantea</i>
Tall tickseed .....	<i>Coreopsis tripteris</i>
Tansy dogshade .....	<i>Limnoscadiadum pinnatum</i>
Ten-petal anemone .....	<i>Anemone berlandieri</i>
Texas coneflower .....	<i>Rudbeckia texana</i>
Texas ironweed .....	<i>Vernonia texana</i>
Texas paintbrush .....	<i>Castilleja indivisa</i>
Texas prickly pear .....	<i>Opuntia lindheimeri</i>
Texas star hibiscus .....	<i>Hibiscus coccineus</i>
Texas thistle .....	<i>Cirsium texanum</i>
Texas vervain .....	<i>Verbena halei</i>
Texas wintergrass .....	<i>Nassella leucotricha</i>
Thin paspalum .....	<i>Paspalum setaceum</i>
Three seeded mercury .....	<i>Acalypha gracilens</i>
Toothache grass .....	<i>Ctenium aromaticum</i>
Turks' cap .....	<i>Malva viscosus arboreus</i>
Vahl's hairy fimbry .....	<i>Fimbristylis tuberculata</i>
Venus' looking glass .....	<i>Triodanis perfoliata</i>
Virginia dayflower .....	<i>Commelina virginica</i>
Water hemlock .....	<i>Cicuta maculata</i>
Water southern morning-glory .....	<i>Stylisma aquatica</i>
Western horsenettle .....	<i>Solanum dimidiatum</i>
Western silver aster .....	<i>Aster sericeus</i>
White bract blazingstar .....	<i>Liatris elegans</i>
White colic-root .....	<i>Aletris farinosa</i>
White mountainmint .....	<i>Pycnanthemum albescens</i>
White prairieclover .....	<i>Dalea candida</i>
White-top sedge .....	<i>Rhynchospora colorata</i>
White wild-indigo .....	<i>Baptisia alba</i>
Whorled milkweed .....	<i>Asclepias verticillata</i>
Wild coco .....	<i>Pteroglossaspis ecristata</i>
Willowleaf aster .....	<i>Aster praealtus</i>
Winecups .....	<i>Callirhoe papaver</i>
Woolly croton .....	<i>Croton capitatus</i>
Woolly groundsel .....	<i>Senecio tomentosus</i>
Woolly rose-mallow .....	<i>Hibiscus lasiocarpus</i>
Wrinkled-leaf goldenrod .....	<i>Solidago rugosa</i>
Yarrow .....	<i>Achillea millefolium</i>
Yellow-eyed-grass .....	<i>Xyris laxiflora</i>
Yellow Indian-blanket .....	<i>Gaillardia aestivalis</i>
Yellow meadowbeauty .....	<i>Rhexia lutea</i>
Yellow wild indigo .....	<i>Baptisia sphaerocarpa</i>
Yellowpuff .....	<i>Neptunia lutea</i>

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