

Big Thicket

Sundew Trail



Sundew
Drosera spp.

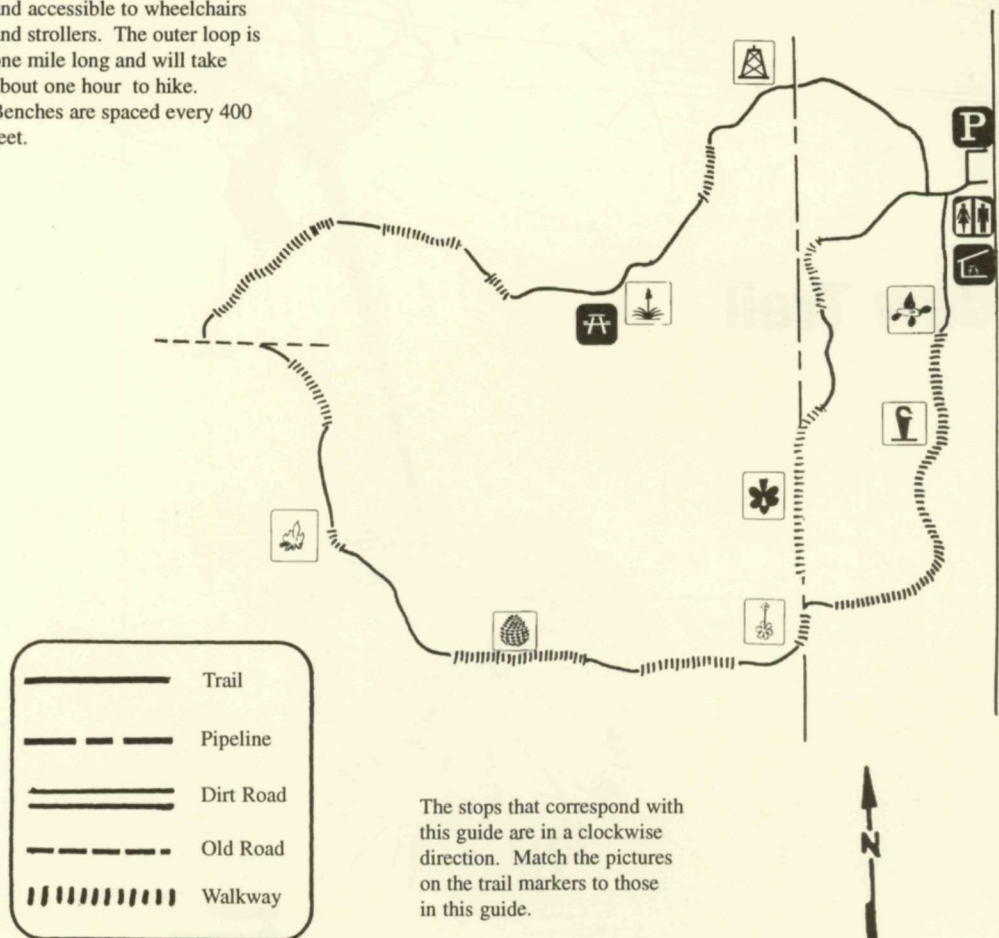


Sundew Trail

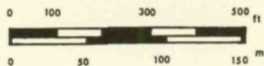
Trail distance and location

The inner loop is 1/4 mile long and accessible to wheelchairs and strollers. The outer loop is one mile long and will take about one hour to hike. Benches are spaced every 400 feet.

FM 1943
1/2 mile north



The stops that correspond with this guide are in a clockwise direction. Match the pictures on the trail markers to those in this guide.



Trip Tips

For your own protection:

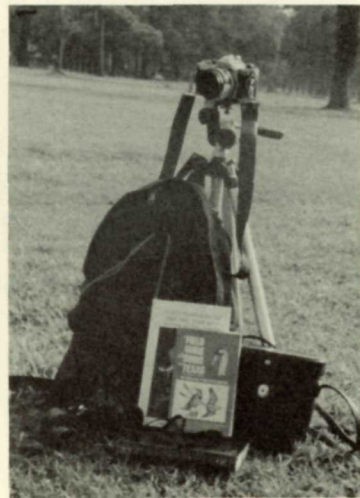
- Please register at the trailhead and take a map.
- Do not leave valuables in your car.
- Use insect repellent.
- Watch out for bees, wasps, and fire ants.
- Wear a hat on hot days.
- Carry drinking water.

For the preserve's protection:

- Stay on the boardwalks.
- Do not cut or collect specimens. All plants and animals in the preserve are protected.
- No motorized vehicles.
- No pets or horses.
- No camping.

For your own enjoyment:

- Carry a wildflower field guide or notepad.
- Have a tripod and macro lens for close-up photography.
- Have binoculars for bird watching.
- Carry a hand lens.



Note: *Italicized words* are defined in the glossary.



Hickory Creek Savannah



Wetland Savannahs

Wetland savannahs are open grassy flatlands dotted with widely scattered longleaf pine trees. The ground is covered with an array of grasses, sedges, rushes, and wildflowers; including four species of *carnivorous* plants and at least five species of orchids. With their open appearance and colorful display of wildflowers, wetland savannahs are considered by many to be the prettiest *biological community* in the Big Thicket. Few suspect this beauty is born of adversity.

wet . . .

Savannahs develop in saucer-like depressions on otherwise high ground. The depressions collect large amounts of rain-water. Annual precipitation averages 55 inches. As the water filters down through the soil, it carries away vital *nutrients* and picks up minute particles of clay. The clay particles settle out forming an almost impenetrable hardpan a few feet below the surface. This results in a soil profile that traps surface water during the rainy season and prevents ground water from migrating to the surface during dry periods.

hungry . . .

Plants growing in the savannahs have to adjust to nutrient-poor soils and moisture levels that alternate between flood and drought. These growing conditions are somewhat unbearable for most woody plants. Without a dense *canopy*, the strong sunlight favors annual and *perennial* flowers. The nutrient-poor soil gives an additional edge to carnivorous plants that can supplement their diet with insects.



Carnivorous Plants

Nature's rule is that insects eat plants. Carnivorous plants are the exception to the rule. They have highly developed leaf structures capable of capturing insects. Four of the five carnivorous plants in the United States are found in the Big Thicket. They occur in the wetland savannah because of the low *mineral* content of the soil. The carnivorous plants supplement their diet with nitrogen from the insects they capture.



Pitcher Plant - *Sarracenia alata*

Pitcher plants have long, narrow funnel-shaped leaves. The lengthwise seam is dotted with nectar glands which are most numerous on the nectar roll at the funnel's opening. The nectar glands attract insects to the opening and once inside, their escape is difficult due to long downward-pointing hairs. Trapped insects fall in fluid that collects at the base. Digestive *enzymes*, similar to those in our stomachs, and naturally occurring *bacteria* aid in digestion, leaving only the insect's tough *exoskeleton* and wings. The dissolved material is then absorbed into the plant by specialized glands.



Sundew *Drosera annua*

The trail's namesake, Sundew, is a tiny carnivorous plant, and is often smaller than a dime. Take a dime, close your eyes, and pitch it in a sunny spot near the trail. Now, if you get on your hands and knees and look for the dime, you may notice some tiny red rosettes down among the grass. As you inspect these marvelous plants, you might find one that has trapped an insect. If it is summer, you may even be lucky enough to see the small white or pink flowers. The leaves are covered with red hairlike glands. The tip of each gland produces a glistening droplet of sticky fluid. In fact, the



sundew's genus name comes from the Greek word *droseros* meaning "dewy," and refers to the sticky droplets on the leaves. These sticky droplets act like fly paper, trapping unwary insects. The process is reminiscent of Uncle Remus's tar baby - the more a trapped insect struggles, the more droplets it contacts, and the tighter it becomes stuck. The same sticky droplets that capture the insects contain digestive enzymes that dissolve their prey.

By the way, don't forget your dime!

The 1/4-Mile Inner Loop

(wheelchair and stroller accessible)



Wildflowers

Wetland savannahs enjoy a high light level and a blooming season that begins in February and runs into November. The growing conditions that are not conducive to heavy wooded vegetation are quite agreeable to a large number of wildflowers.



Bearded Grass Pink
Calopogon barbatus

SPRING--Showy *Calopogon* orchids share the stage with beautiful white rose-mallows and pretty red chokeberry bushes. The savannah is splashed with yellow meadow beauty and yellow sunny-bell blossoms.



Meadow Beauty
Rhexia virginica

SUMMER--Common meadow beauty flowers, rose gentians, and meadow pinks compete with some plants that bloom across two or three seasons such as grassy arrowhead, white-topped umbrella grass, yellow-eyed grass, and the ever-present pipewort called grandmother's hat pin.



Sharp Gay-feather
Liatris acidota

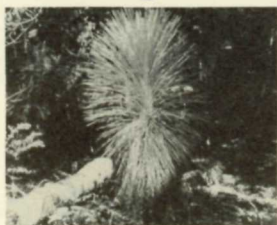
FALL--The predominately straw-colored hues of fall are punctuated by purple and lavender gay-feathers. Snowy orchids and yellow fringed orchids bloom in the fall. Delicate purple and white Barbara's-buttons add a touch of fall color.

The One Mile Outer Loop

Only four species of southern pine grow in the Big Thicket: longleaf pine (*Pinus palustris*), shortleaf pine (*Pinus echinata*), loblolly pine (*Pinus taeda*), and slash pine (*Pinus elliottii*). Historically, the longleaf pine inhabited wetland savannah habitats. Pure stands of longleaf pine with a bluestem grass undercover have been all but eliminated. Aggressive resource management action is required to restore longleaf pine to its position of dominance in wetland savannahs.



Longleaf Pine



Longleaf Pine Grass Stage

Tufts of greenery close to the ground are young longleaf pines, even though they look like clumps of grass. The long needles protect a soft white terminal bud. During the grass stage, the young trees grow slowly forming a deep tap root. They remain in the grass stage for 5 to 7 years.

At maturity, longleaf pines can be 75 to 120 feet tall with 60 feet of clear *bole*. The wood is strong and very durable. Longleaf pines were harvested extensively to support the early ship building industries along the Gulf.

Historically, longleaf pine was the dominant timber cover in east Texas. Because longleaf pine is resistant to fire, early fire prevention programs favored the regrowth of the faster growing loblolly pine and suppressed the reproduction of longleaf pine.

Later, foresters began importing slash pine from Florida to increase timber yields, and slash pine plantations further diminished the reign of longleaf pine.



Mature Longleaf Pine
Pinus palustris



Fire Management

Smokey Bear wisely admonishes: "Remember, only you can prevent forest fires." Forest fires are very destructive, but fire is also natural in some ecosystems, and fire is necessary in wetland savannahs. In wetland savannahs the soil is so impoverished, ash from frequent, fast burning fires is necessary to refertilize the soil.



Prescribed fire in Big Thicket National Preserve

Fires and Flowers

Prescribed fires are conducted very carefully to achieve the desired habitat conditions without endangering lives or property. A well executed prescribed burn will open up the overhead canopy and remove dense thickets. Wildflowers that have been stifled in the shade will not have to compete with woody shrubs for sunlight and soil nutrients. Carnivorous plants that have been supplementing their diet with insects will thrive with a fresh application of ash. The year after a controlled burn is usually a banner year for wild orchids.

Fires and Forests

Exceptionally long needles protect the delicate terminal buds of longleaf pine saplings from fire. Loblolly and shortleaf pine, on the other hand, are vulnerable to the culling effect of fire. With the advantage of recurring fire, the slower growing, native longleaf pine will dominate the savannah once again. With the dense thickets of yaupon holly held in check, native bluestem grasses will become reestablished under boughs of longleaf pine.



Oil and Gas

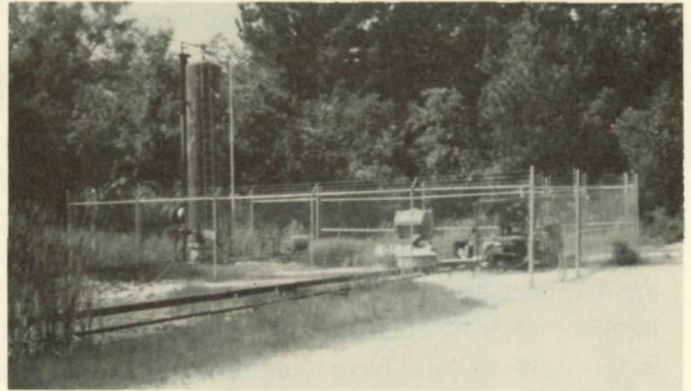


Lucas Gusher

Ever since the Lucas gusher blew in at Spindletop in 1901, the Big Thicket has been a focal point for oil and gas exploration. Big Thicket was the first unit of the National Park system to be designated as a "preserve" because its authorizing legislation allowed for the continuation of oil and gas exploration. A prominent oil line right-of-way passes through the Sundew Nature Trail.

Drilling for oil in the Big Thicket today bears little resemblance to the days when oil strikes created boom towns such as Gladys City, Saratoga, Sour Lake, and Batson. Oil operators are required to follow a detailed plan of operations and to comply with National Park Service rules as well as the Clean Water Act, Clean Air Act, Oil Pollution Act, and the Hazardous Materials Management Act.

Preserve standards are designed for maximum environmental protection. Seismic crews, for example, must hand carry all lines. They are not allowed to use heavy equipment. They cannot cut any vegetation over four inches in diameter, and they must cut vegetation flush with the ground. When seismic operations are completed, all flagging must be removed. Drilling operations must remove and protect topsoil; berm and fence the site; pump out all *brine*; and plug, recontour and reseed abandoned sites.



Regulated Oil Operation In
Big Thicket National Preserve



Biological Diversity

Big Thicket National Preserve was established in 1974 to hold in trust the rich biological diversity of the region where the eastern hardwood forests, the southern coastal marshes, the central prairie, and the southwestern deserts intermingle. So far, there are 85 tree species, more than 60 shrubs, and nearly 1,000 other flowering plants including 26 ferns and allies, 20 orchids, and 4 of North America's 5 types of insect-eating plants. Over 175 kinds of birds live or migrate through the area, and it is home to 50 reptile species.

There are ten well-defined habitats in the Big Thicket. The wetland savannah habitat supports at least 71 different species of grass and 64 plus species of wildflowers. Big Thicket is part of a worldwide system of *Biosphere Reserves*, not because it is unusual, but because it contains unusual combinations of ordinary things.



Flowering Dogwood
Cornus florida



Louisiana Yucca
Yucca louisianensis

This area contains yucca plants growing beside a dogwood tree. The yucca is a species native to the arid southwest, but the dogwood tree is an eastern species. Here the conditions are delicately balanced, enabling them to coexist.

Glossary of *italicized* words

Bacteria

A class of single celled microscopic plants having round, rodlike, spiral, or filamentous bodies.

Biological community

Any assemblage of populations living in a prescribed area or physical habitat.

Biosphere Reserve

An internationally designated protected area managed to demonstrate the value of conservation. The MAB (Man and the Biosphere) program under UNESCO is a global network of scientifically oriented protected areas.

Bole

The trunk of a tree.

Brine

Water saturated with common salt.

Canopy

The uppermost spreading branchy layer of a forest.

Carnivorous

Flesh-eating plants which trap and digest insects or other small organisms.

Enzyme

Any of numerous complex proteins that are produced by living cells and catalyze specific biochemical reactions.

Exoskeleton

An external supportive covering of an animal, as in a beetle's shell.

Mineral

Any of several inorganic substances necessary for plant growth, such as nitrogen, phosphorus, potassium, calcium, sulfur and magnesium.

Nutrients

Organic or inorganic substances in the soil that furnish nourishment to plants.

Perennial

Living for more than two years.



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