



The Natural Heritage of Texas

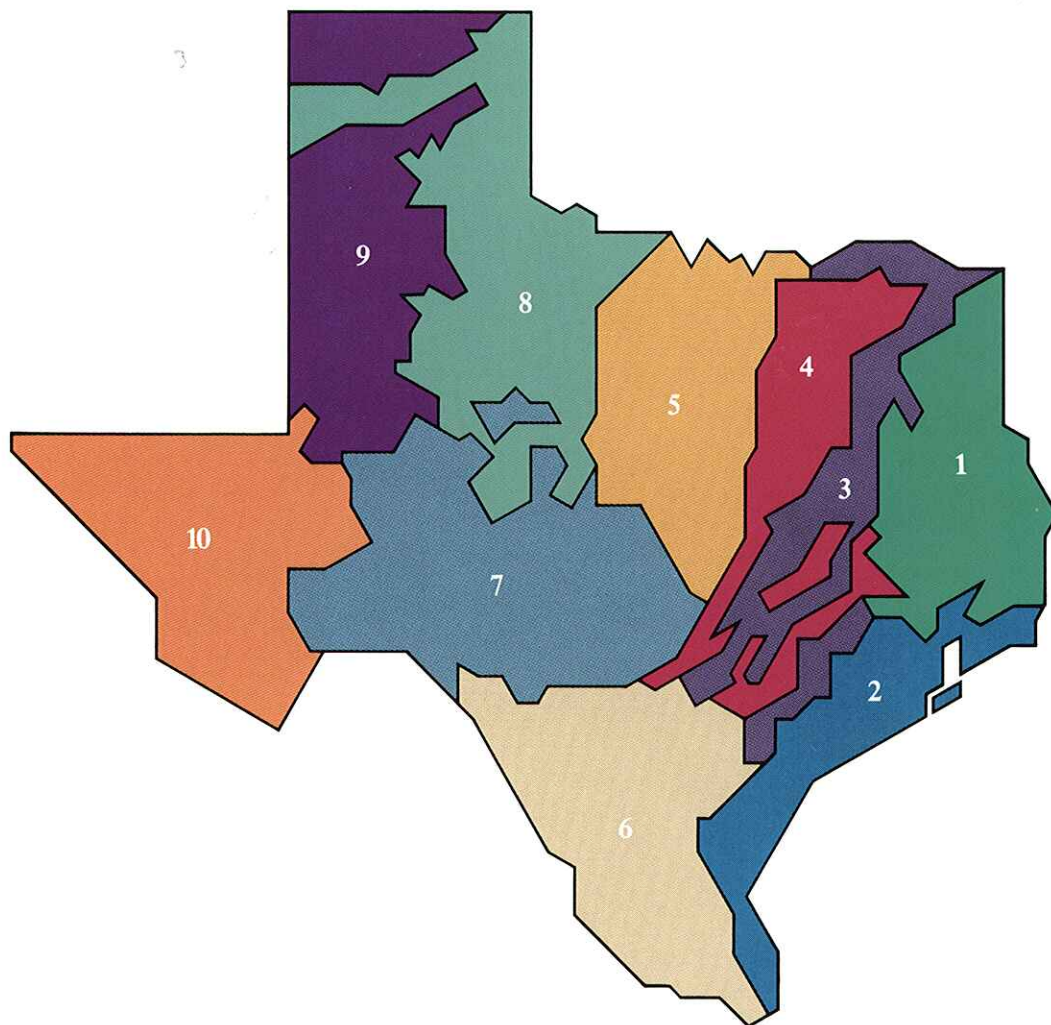
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Texas, because of its unusual size and extremes of climate, is blessed with a wealth of natural diversity matched by few other states. Coastal marshes and verdant forests of the humid eastern portion stand in stark contrast to the brushy Chihuahuan desert landscape and the arid High Plains in the west. Elevations range from the tidal marshes bordering the Gulf of Mexico to the alpine vistas of the Guadalupe, the Chisos and other mountain ranges dotting the western portion of the state.

Naturalists and scientists have offered many ways of classifying the natural world. Few of these adequately describe the incredible array of plants, animals and natural communities which may be

found in Texas. However, natural scientists generally recognize ten vegetational areas, or biogeographic areas, which represent the broad changes in plants and animals across the state. We have adopted this system of biogeographic areas to help us in our brief survey of natural diversity in Texas.

The map below illustrates the location of each of these ten areas. Descriptions of each, along with some interesting facts and features, accompany pictorial descriptions on the following pages.



Vegetational Areas of Texas

1. Pineywoods
2. Gulf Prairies and Marshes
3. Post Oak Savanna
4. Blackland Prairies
5. Cross Timbers and Prairies
6. Rio Grande Plain
7. Edwards Plateau
8. Rolling Plains
9. High Plains
10. Trans-Pecos, Mountains and Basins

Dear Concerned Texans:

Texas possesses the richest natural heritage of any state in the Union. Among its many natural assets are 5,000 species of plants, including 2,000 different wildflowers, 550 species of birds, mountains, deserts, prairies, marshes and some of the longest barrier islands in the world.

Until recently, Texans have known very little about this rich natural heritage that surrounds them.

Even now, as we celebrate 150 years of Texas history, we face the very real possibility that remnants of our native Texas Landscape may not survive this generation.

At the same time, our lack of knowledge concerning the location of rare or endangered biological "elements" has been a major factor in conflicts between developers and preservationists. All too often in the past, major environmental disputes have been the direct result of our ignorance.

In order to bridge this biological information gap, the Texas General Land Office joined with The Nature Conservancy and private contributors in 1983 to create the Texas Natural Heritage Program — a two-year effort to inventory the most rare and unique elements in Texas.

The result is the Texas Natural Heritage Program information system, which makes possible a more objective evaluation of lands and ecological resources in Texas. The system was designed for simple use and easy access (call toll-free, 1-800-252-RARE) so that decision makers with diverse needs can use the information for their own purposes: whether for identifying potential state parks, or for evaluating alternate routes for a future highway.

The result is a program that will help us protect both public and private lands for all times for all Texans.

Sincerely,

Garry Mauro

Texas Land Commissioner



Agenda for the Future

The Lone Star State is some 150 years old this year. Yet, not all is going as planned.

The burgeoning growth of the Texas economy over the past decade seems but a fading memory from today's troubled perspective. Worse yet, the fuel of that explosive expansion — our natural resources — has declined substantially, jeopardizing the revenues that have traditionally financed our state.

There are bright spots, however. Over \$15 billion is pumped into the Texas economy each year by our tourism and recreation industry. And, it's growing by leaps and bounds.

Again, though, the paradox of dependency looms. An increasing reliance on natural resources to support recreation and tourism is met by a society that allows these same resources to disappear. In all America, Texas is blessed with the most bountiful and diverse of all natural landscapes. But, of all the natural areas still unprotected in the nation, more than 40 percent fall within our own borders.

Only recently has there developed a clear and resolute approach by state agencies to meet the formidable challenges of the future. The Texas Parks and Wildlife Commission has pledged to acquire an additional 1.2 million acres as part of its aggressive six-year plan to protect our natural areas and to meet the outdoor recreation needs of our citizens. And, innovative policies of the General Land Office now call for committing 20 percent of public lands under its control to environmental conservation, natural resource management and outdoor recreation.

By providing vital and timely information, the Texas Natural Heritage Program will play a key role in this joint effort between the two state agencies and the Texas Nature Conservancy.

Likewise, in the same cooperative spirit of this bold venture, effective partnerships between state and federal agencies and the essential support of Texas' philanthropic community will be required to protect our remaining natural areas.

Now is the time for action! Opportunities have never been better to bring some of the state's most important areas under protection. We must move quickly, even as the pace of decline is quickening. For example, perhaps one half of existing native prairies in Texas have disappeared just since the Texas Natural Heritage Program was founded some three short years ago.

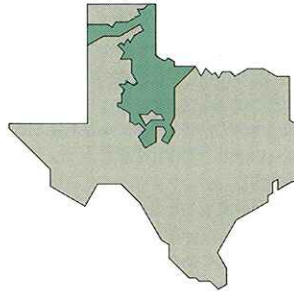
We can protect our native lands. And we must! Beyond providing our current society with a valued and critical resource, their continued existence will speak through the generations. Our children and their descendants will see in the magnificent beauty of their natural heritage the measure of our concern and the depth of our values.

Edwin L. Cox, Jr., Chairman

Texas Parks and Wildlife Commission

Rolling Plains

Location: North central.
Soils: Soft prairie sands and clays.
Flora: Juniper woodlands, prairie midgrasses.
Fauna: Primarily prairie species; some Rocky Mountain relicts.
Rainfall: From 18 to 28 inches.
Rarities: Harter's Water Snake, Interior Least Tern, Texas Kangaroo Rat, Palo Duro Mouse, Texas poppy mallow.



2

The softly rolling hills and broad flats of the Rolling Plains are the birthplace of many Texas rivers.

The Canadian, the Colorado, the Concho and the Red River all begin in the western reaches of the Rolling Plains and the breaks of the Cap Rock Escarpment. These rivers and their numerous tributaries, as they cut their way into the soft sands and clays of the region, are responsible for the rolling character of the land.

The rivers harbor their own unique inhabitants. The harmless Harter's Water Snake lives only in a few restricted areas of the Colorado and Brazos river systems, where the waters still run freely through rocky rapids. Sandy bars provide nesting habitat for the rare Interior Least Tern, as well as more common Snowy Plovers and Killdeer.

The high breaks of the Cap Rock Escarpment shelter relicts of Rocky Mountain flora and fauna that were once more widespread throughout the southwest. Juniper woodlands, on the steep breaks of the canyons, are home to the Palo Duro Mouse, a close relative of the Pinyon Mouse of the Rockies.

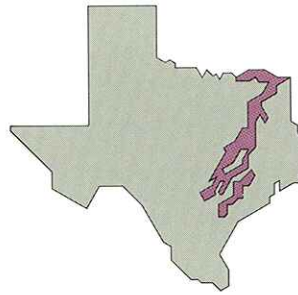
East of the Cap Rock, on heavier clay soils, the native prairies of the Rolling Plains consisted of midgrass and tallgrass communities nurtured by the intense summer rains and hot summer days. Much of what was once a sweeping expanse of sideoats grama, little bluestem and blue grama has been cleared for grain fields and oil well pads. As the grasses were exploited, mesquite spread into the prairies, along with snakeweed and prickly pear. Sand-sage communities have replaced grasslands on pockets of sandy soils.

On certain clay-loam soils, Texas Kangaroo Rats burrow at the base of mesquite trees, foraging by night for seeds and greens. These unique, desert-adapted animals are seemingly out of place in the relatively moist climate of the Rolling Plains. Their presence here continues to perplex scientists who are unable to decide whether the Kangaroo Rats are relicts of drier times or whether they are relative newcomers taking advantage of an increasingly drier climate.



Post Oak Savannah

Location: East-central Texas.
Soils: Clay pan under acid, loamy soils.
Flora: Mid-American oak-hickory forest.
Fauna: Mostly prairie animals with some woodland species.
Rainfall: From 30 to 45 inches.
Rarities: Carrizo Sands, Navasota ladies'-tresses orchid, branched gayfeather, Texas meadow-rue.



The Post Oak Savannah was one of the earliest regions of Texas to be settled by Americans. Its soils have paid the price for this distinction. Open grasslands have almost all been cultivated at one time or another and many of its soils have been severely eroded.

The more wooded areas have been used as grazing land and many of these have become "thicketized," as woody understory and midstory plants such as yaupon and bumelia have proliferated between the dominant oaks and hickories.

Early settlers were attracted to the Post Oak Savannah because it was truly transitional between forest and prairie. Although most of its species are common to other Texas regions, its soils are a distinguishing factor.

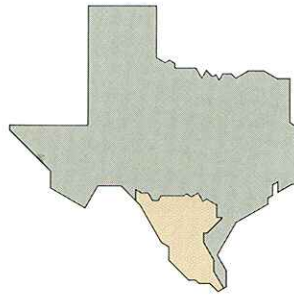
A "clay pan," which is nearly impervious to water, underlies the surface layers of soil at depths of only a few feet. As a result, the moisture available for plant growth is limited and the habitat is surprisingly arid. This region, with its soils in such contrast to the sandy soils of the Pineywoods and the deep clay prairie soils, is also known as the "Clay Pan Savannah."

One unusual exception to the "clay pan" soils can be found in Bastrop County and is the home of the famed "Lost Pines." A sandy inclusion of moist soils, the Carrizo Sands, supports this unique community of loblolly pine, post oak and blackjack oak. This sandy inclusion also provides one of the last two major refuges for the endangered Houston Toad, and is also home to sphagnum bogs with ferns and carnivorous pitcher plants.



Rio Grande Plain

- Location:** South Texas, south of Balcones Escarpment and San Antonio River.
- Soils:** Many types, from clays to sands.
- Flora:** Thorn woodlands, shrublands.
- Fauna:** Semi-tropical, with some tropical species at the northern limit of their ranges; also some Chihuahuan desert species.
- Rainfall:** From 18 inches to 35 inches.
- Rarities:** Johnston's frankenia, ashy dogweed, Jaguarundi, Ocelot, Berlandier's Tortoise, Brown Jay, Green Jay, Coues' Rice Rat, Giant Toad.



Great changes have occurred on the Rio Grande Plain since presettlement times. It was once an open grassland with a scattering of shrubs, low trees and wooded flood plains along the rivers. But overgrazing, the suppression of prairie fires and other changes in land use patterns over three centuries have transformed most of these grasslands into a thorn forest, covered with subtropical shrubs and trees.

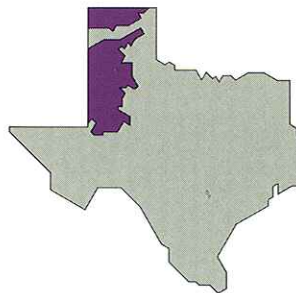
The Bordas Scarp, a long, curving outcrop of caliche once covered with a savannah-like carpet of shrubs and grasses, is now cloaked with solid thickets of thorny brush. And most of the lower Rio Grande Valley, which once supported majestic groves of Texas palmetto, tall ebony-anaqua woodlands, jungle-like expanses of Tamulipan thorn shrubs with shy Ocelots and Jaguarundis, has been bulldozed, plowed or paved.

Despite a history of land abuse that is the oldest in the state, the Rio Grande Plain remains a haven for many rare species of plants and animals. There are a surprising number of plants that occur here and nowhere else, especially among the cactus family such as black lace cactus and Runyon's cory cactus. Remnant grasslands can still be found as well as presettlement shrublands and woodlands. Endangered plants such as Johnston's frankenia and ashy dogweed can be found clinging to fencelines and scattered along streambeds.



High Plains

Location: Panhandle south to the Pecos River.
Soils: Mostly outwash sediments from the Rocky Mountains.
Flora: Mostly grasses such as blue grama, buffalograss.
Fauna: Prairie species.
Rainfall: From 12 to 20 inches.
Rarities: Sand-dune Sagebrush Lizard.



5

The first Europeans to cross the High Plains drove stakes into the ground to help them find their way across the flat, featureless plain. They found a carpet of short grasses that was home to immense herds of buffalo and fleet pronghorns. But the character of these high plains (actually the broad, gently sloping shoulders of the Rocky Mountains) have been forever changed by the plow and the barbed wire fence.

Gray Wolves, Grizzly Bear and Elk have given way to barbed wire, cattle and cotton. The adaptable Coyote, the Red-tailed Hawk, the diminutive Kit Fox and the Rattlesnake now sit at the top of the food chain.

Although the vast "towns" of prairie dogs have been plowed under, the large flocks of wintering waterfowl still come to the ephemeral *playa* lakes but in fewer numbers. Sandhill Cranes and smaller wading birds still forage in the margins of those *playas* that remain undrained. Lesser Prairie Chickens, which once danced in buffalo wallows for as far as the eye could see, now exist in scattered bunches. And migrating flocks of Horned Larks and Lark Buntings can still be seen wheeling at sunset, as though a dark feather blanket were being pulled across the sky.

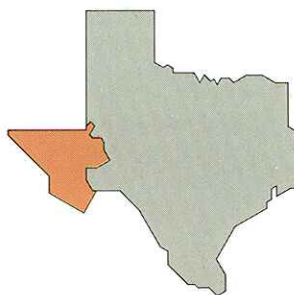
Unique areas within the High Plains include scattered sand dunes that are cloaked with Havard shin-oak, sand sage and little bluestem. These are the home of the Sand-dune Sagebrush Lizard, a relict of the Great Basin desert, stranded here by climatic changes brought on by a receding glacier long ago. Unusual tallgrass meadows wave in the breezes along the Canadian River and its tributaries, nurtured by underground water that flows through the sands.

Although few rivers cross the High Plains, the thin ribbons of scarce water along the Canadian and Red Rivers once supported luxuriant growths of tall cottonwoods and willow. Today, the rivers are dammed. Now salt cedar and Russian olive (both Old World exotics) have replaced the native trees to line the banks and provide alternate homes for resilient kingbirds and phoebes.



Trans-Pecos

- Location:** Far West Texas (west of the Pecos River).
Soils: From clays to sands, usually shallow.
Flora: Desert scrub such as creosotebush and tarbush; desert grasslands; pinyon-oak-juniper woodlands.
Fauna: Unique, desert-adapted assemblage rich in reptiles, mammals and relict fishes.
Rainfall: Depends on elevation: from 8 inches in the low desert to as much as 20 inches in the mountains.
Rarities: Colima Warbler, Peregrine Falcon, unique species of pupfish, mosquito fish and shiners; unique species of rockdaisies, pennyroyals and oaks.



6

The Trans-Pecos region, which is the northern portion of the Chihuahuan desert, is a living museum of rare wonders. More rare species are found among its desert valleys, grassy plateaus, wooded mountains and protected canyons than in any other part of Texas.

The only true mountain ranges in Texas rise out of the surrounding landscape like islands from the desert seas. This archipelago of mountains includes the Guadalupe and Franklin ranges, which bring the flora and fauna of the southern Rockies into Texas, as well as the Davis, the Chinati, the Glass, the Sierra Diablo, the Chisos, and the Del Carmen ranges.

Each mountain range possesses its own set of rare plants. McKittrick columbine, McKittrick pennyroyal, McKittrick snowberry and Guadalupe valerian are found only in the Guadalupe Mountains. The Davis Mountains are the only home of the Livermore sandwort, Little Aguja pondweed and Shinner's tickle-tongue. And the Chisos Mountains provide the only refuge for Big Bend bluegrass, slender oak, robust oak and Chisos Mountains oak.

Also scattered through the Big Bend are old mercury and lead mines, volcanic plugs, hot springs and deep canyons carved by wind and water into the shapes of dreams. Farther west are moonscapes of salt flats and gypsum dunes — minerals left behind as the water that long ago carried them down from the surrounding uplands evaporated into the parched desert air.

The Guadalupe and Glass mountains are part of an

ancient fossil reef, one of the largest in the world.

Within the wind-sculpted dunes of the Monahans sandhills lie the bones of extinct camels and mastodons.

Most of the Trans-Pecos is sparsely clad with desert scrub, but the composition of many desert plant communities has been drastically altered in the last 75 years.

Although much of the Trans-Pecos was desert grassland in presettlement times, most of the edible grasses (and the soils that nourished them) have been lost to grazing. One of the few areas to escape overgrazing is the gypsum dunes and salt flats, whose sparse vegetation and high mineral content held little attraction for grazing animals. Some species, such as Kay's grama, are extremely rare. Another relic from the more distant past, Hinckley oak, exists in only three small populations where once it was abundant 10,000 years ago.

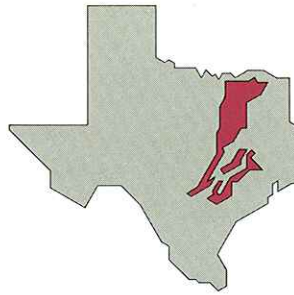
Stream courses are the oases of the desert, but few have escaped the impact of grazing. Just a few relatively undisturbed desert watercourses are left, remnants of once mighty river systems. Those that remain are home to what were once abundant stands of willows, cottonwoods, sycamores, ash and little walnuts. In these spring canyons, plants that cannot tolerate the dry desert find refuge in the cool moist surroundings. One of these spring canyons contains both the only known stand of Hinckley's columbine and the highest waterfall in Texas (Capote Falls).





Blackland Prairies

Location: North-south crescent in East-Central Texas.
Soils: Deep, black, clayey deposits enriched by past grasslands.
Flora: Tallgrasses: big bluestem, Indiangrass, little bluestem, gammagrass.
Fauna: Prairie fauna, no large mammals.
Rainfall: From 32 inches to 44 inches.
Rarities: Blackland Prairie plant communities.



8

The Blackland Prairies, like all of the prairie communities comprising the Great Plains of North America, support few rare plants or animals. What are special and what are unique about these prairies are the grassland communities themselves.

Yet the prairie communities, just like the Bison and the Plains Wolf, are almost gone. The original 12 million acres of tallgrass prairie that was once the Blacklands has shrunk to less than 5,000 acres.

The soils of the Blacklands are extremely fertile and virtually all of them have been converted for rowcrop production at some time. These few areas that have escaped the plow have been abusively overgrazed.

Blackland Prairie grasslands consist of three basic types. Upland areas in the northern Blacklands consist of loamy soils swathed with *Silveanus* dropseed,

switchgrass and sedges. Other uplands dominated by clay soils (and lowlands throughout the region) support grassland with gammagrass, switchgrass and Indiangrass. Typical uplands throughout the remainder of the region support communities in which big bluestem, little bluestem, and Indiangrass are the primary dominants. All three of these grassland communities are faced with extinction.

The below-ground elements of the prairie communities are at least as diverse as the above-ground inhabitants. These soils are primarily deep, black, clayey deposits that are replete with accumulated organic matter. Scientists now know that the richness of the prairie soils is derived from the abundant invertebrate fauna and fungal flora found in the soils themselves.



Edwards Plateau

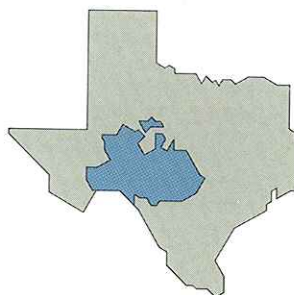
Location: Alkaline soils in limestone areas; neutral soils in granite areas.

Flora: Oak savannahs, oak woodlands, juniper breaks, many endemic plants.

Fauna: Varied mix of native animals.

Rainfall: From 15 to 33 inches.

Rarities: Blind catfish, cave salamanders, Clear Creek Gambusia, San Marcos Gambusia, Large Spring Gambusia, Fountain Darter, Golden-cheeked Warbler, Black-capped Vireo, basin bellflower, Texas snowbells, rock quillwort, Edwards Plateau cornsalad, bracted twistflower, Edge Falls anemone, Texas wild rice.



9

The life of the Edwards Plateau is divided between the daylight and the dark, between the wet and the dry.

The weatherbeaten surface of the Plateau, blistered by drought and cut by flashfloods, is one of limestones and granites. It is a land of many rare plants such as Texas snowbells, basin bellflowers and rock quillwort.

And it is a land of many springs, whose sparkling waters are sought by man and animal alike. The purity and constant temperature of the waters are the ideal habitat for specialized spring dwellers such as Clear Creek Gambusia, the San Marcos Gambusia, the Large-spring Gambusia, the Fountain Darter and the San Marcos Salamander.

The moist river corridors are lined with cypress, pecan, hackberry and sycamores. Within the rivers can be found the unique Guadalupe Bass and Cagle's Map Turtle. On the slopes above, the Golden-cheeked Warbler, which winters in the tropical forests of Mexico, nests in thickets of Ashe juniper and Texas oak.

The limestones of the Plateau, cut by springs and rent by flash floods, are honeycombed with thousands of caves of all sizes. Many animals, such as cave shrimp and blind salamanders, live only within the confines of these cave systems. Others visit this intermediate world for special purposes, such as nursery colonies of free-tailed bats. Bracken Cave, near San Antonio, contains an estimated 20 million bats during the breeding season.

A wet, dark world lies beneath the eastern edge of the Plateau. This hidden world of underground lakes is known as the Edwards Aquifer. It is a series of underground reservoirs that is replenished by surface waters that sink through the porous limestone. The Edwards Aquifer is home to a host of curious creatures, including two kinds of blind catfish, a blind salamander and a plethora of invertebrates — all blind and without any pigments to give them color.

But, while there are many more species remaining to be discovered in this subterranean world, its very existence is being threatened. As cities and towns along the Balcones Fault draw ever increasing amounts of water from the Edwards Aquifer for their domestic and municipal use, they increasingly threaten the existence of the world's most diverse collection of aquifer fauna.



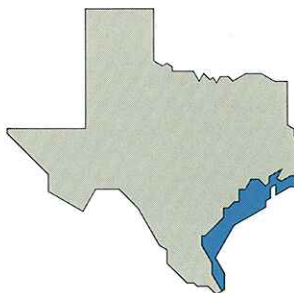
Gulf Prairies and Marshes

- Location:** A 50-to-100 mile-wide arc bordering the Gulf of Mexico from the Sabine River to Baffin Bay.
- Soils:** Deep clays, loamy soils with "pimple mounds," and island silt and sand.
- Flora:** Tallgrass and midgrass prairies; cordgrass marshes.
- Fauna:** Very diverse. Many species of waterfowl and shore birds during the winter.
- Rainfall:** Varies from 55 inches a year near the Sabine River to 25 inches per year at Baffin Bay.
- Rarities:** Attwater's Prairie Chicken, Kemp's Ridley Sea Turtle, Diamond-backed Terrapin, Whooping Crane, Houston Toad, Texas bitterweed, Houston machaeranthera.

Agricultural development has turned the Coastal Prairie from a parkland of prairies and forests into farm land.

Once the bottoms of this land of sluggish coastal rivers were clothed in woodlands of sugarberry, pecan, elms and live oaks. Extensive open prairies characterized by little bluestem, Indiangrass and various sedges covered the uplands between the rivers. Few such areas remain, as most of these prairies have been shaped into farms or ranches or absorbed into urban areas. As a result, Texas bitterweed, Houston machaeranthera and the Houston Toad have all but vanished under the plow and the bulldozer.

The remaining native sod of the Coastal Prairie has been overgrazed and invaded by exotics such as Macartney rose and Chinese tallow as well as native woody plants such as mesquite and huisache. Attwater's Prairie Chicken, once numbering in the millions, now exist in only a few scattered flocks.



10

The Coastal Marshes, which border the bays and estuaries, are the hatcheries for many estuarine and marine species. The marshes serve as spawning and nursery areas for finfish and shellfish. They also serve as important wintering grounds for the endangered Whooping Crane and many species of ducks, geese and wading birds.

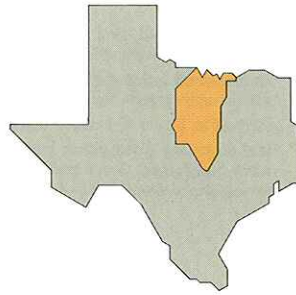
On the seaward side of the estuaries, the Barrier Islands form a thin crescent along the Gulf. These discrete islands have also suffered from overgrazing, which removed the protective grassy cover from the silt and sand of the island dunes. Although many of the dunes on these islands have recovered, few areas have healed enough to support true Barrier Island Grasslands.

The fauna of the Barrier Islands have suffered a mixed fate. The Peregrine Falcon can still be found wintering along the islands of the lower coast, but Kemp's Ridley Sea Turtle (and other sea turtles) that once nested here have been all but eliminated.



Cross-Timbers and Prairies

Location:	North Central Texas.
Soils:	Cross-Timbers has loamy or sandy soils with acid surface layers while Prairies have basic, neutral soils.
Flora:	Post oaks, blackjack oaks, prairie tallgrasses and prairie midgrasses.
Fauna:	A mixture of eastern forest and prairie species.
Rainfall:	From 25 to 40 inches.
Rarities:	Comanche Peak prairie clover.



11

The Cross-Timbers and Prairies are a transitional region for many of the plants and animals of Texas.

Most of the flora and fauna found here have ranges that extend northward into the Great Plains or eastward into the forests. There are few species that are rare or that are confined strictly to this region. The most notable exception is the Comanche Peak prairie clover, which is found only among limestone outcrops in the Comanche Peak region along the border between Grand Prairie and the eastern Cross-Timbers. This plant was collected in the 1880s and not seen again for almost 100 years. It is currently known from only two locations within one mile of each other.

The Cross-Timbers were named by early Texas settlers, who found belts of oak forests crossing strips of prairie grassland. While the vegetation of the Cross-Timbers is similar to the Post Oak Savannah, the post oaks and blackjack oaks that predominate in these woodlands are shorter than those found in the Savannah.

The Grand Prairie, sandwiched between the woodlands of the eastern and western Cross-Timbers, was an open expanse of tall grasses, broken by an occasional mesquite or juniper (cedar).

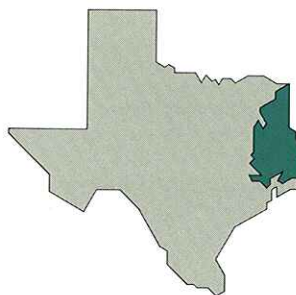
Much of the native vegetation of the region has been altered by plowing or overgrazing, but relatively large areas of unbroken sod can still be found. Little bluestem, Indiangrass and big bluestem were the dominant grasses in presettlement prairies, but these have given way to species more tolerant of modern grazing such as silver bluestem, Texas wintergrass and buffalograss. Even a few native hay meadows survive in the northern Grand Prairie, relicts of the great grassland communities of past.

A more common fate for Texas grasslands, however, can be found in the North-Central Prairie. This area, which lies on the western border of the Cross-Timbers and Prairies, was once an open, rolling mesquite grassland that was dominated by midgrasses such as sideoats grama and little bluestem. Now these grasses have given way to mesquite, lotebush and other woody plants because livestock have suppressed the grasses, and prairie fires (which once controlled the spread of woody plants) have been less frequent.



Pineywoods

- Location:** Eastern Texas.
- Soils:** Highly weathered, deep loamy or sandy soils developed over ancient marine sedimentary material.
- Flora:** Southeastern forest species; most have ranges extending across southeastern North America.
- Rainfall:** Highest in Texas: 40 to more than 55 inches per year.
- Rarities:** Red-cockaded Woodpecker, blue-star, golden glade cress, white bladderpod, Texas trailing phlox, longleaf pine savannah, beech-magnolia forest.



12

Rolling hills cloaked with pines and oaks, and rich bottomland with tall hardwoods characterize the forests of the East Texas Pineywoods. Flowering dogwoods are scattered about the moist uplands; their beautiful white blossoms gleam through the woodlands in the spring while the tall overstory of red and white oaks are still leafless.

Frequent, long-term flooding is an essential part of the environment of bottomland hardwood communities. Even small changes in the elevation of the bottomlands, which produce shifts in the depth and duration of flooding, can create changes in the dominant tree species. Oxbows often contain forests of bald cypress and water tupelo, while the bottoms are home to large cypress swamps. Man-made lakes have inundated many floodplain forests, and the changes in flooding patterns downstream from the dams have caused forests in these areas to deteriorate in quality.

Open longleaf pine woodlands and savannahs, along with moist beech-magnolia forest, once blanketed many parts of southeastern Texas. Conversion of these woodlands to plantations of loblolly or slash pine has destroyed all but a few of these natural forest communities. Pine savannahs are home to the rare Red-cockaded Woodpecker, which selects overaged pines afflicted with red-heart disease to make its nest cavities (the soft wood makes it easier to excavate the dens). However, the elimination of these overaged pine forests has resulted in the disappearance of the magnificent Ivory-billed Woodpecker.

Sphagnum bogs and shrub thickets are two special communities characteristic of East Texas. Bogs harbor ferns, orchids and insectivorous plants (such as the pitcher plant), which derive their nutrients from trapping and digesting insects that are caught in their specially formed leaves. Shrub swamps (called "bay galls" after the sweet bay magnolia and gallberry holly — two characteristic trees) often surround bogs or are found along seeps. This latter community forms the core of the famous Big Thicket area of southeastern Texas.

Sandylands are another special community of eastern Texas. These are found where rivers and creeks have deposited sands of ancient seashores, creating relatively dry habitats. These open pine-oak woodlands are home to the rare Texas trailing phlox. And a few relict populations of the rare white bladderpod and the diminutive golden glade cress can be found in seeps located among outcroppings of Weches sandstone.



A Statewide Information System

Establishing Priorities

The Natural Heritage system identifies "elements" of special concern in Texas' environment. An element is a natural feature of particular interest because it is exemplary, unique, threatened or endangered on a national or statewide basis. For example, elements in Texas include Texas snowbells, a booming ground for the endangered Avenger's Prairie Chicken or gammagrass-switchgrass prairie.

Classification

The elements inventoried are grouped in 4 major categories:

- special plants
- special animals
- natural communities
- other (e.g. bat caves, colonial nesting sites)

Cataloguing Information

The Natural Heritage Information is stored in an integrated data management system. Map files, manual files and computer files keep the information well organized and accessible for a variety of users.

Information about elements is gathered from published data, museum collections, the scientific community, organizations and individuals. New field work is undertaken when these sources are exhausted or gaps in information are identified.

Data System

Map Files

Element locations are mapped on detailed USGS topographic maps.

Manual Files

Literature, field survey notes and other pertinent information are available for each element.

Computer Files

An abstract of information for each element occurrence is coded for rapid retrieval.

Using the Information System

The Natural Heritage Program information system makes possible objective evaluations of lands and ecological resources, identifying the most important components of Texas' remaining natural heritage. The system has been structured so that decision makers with diverse needs can use the information for their own purposes, whether it is identifying potential natural areas or state parks or evaluating alternate routes for transmission lines or highways.

An information system of this design is effective as a planning tool. Planners, developers and other decision-makers can use it to evaluate various options, before commitments are made.

Users

The information available in the Natural Heritage system has many different applications:

Natural Resource Development

Developers can direct projects to the least sensitive lands.

Natural Areas Protection

The data can be used to identify those areas most needing protection.

Environmental Review Process

Planners can use the data to help evaluate the environmental impact of routing and siting options on development projects.

Research and Education

Scientists and educators can focus their attention on key natural areas.

Products

The Natural Heritage Program provides information in a format most useful to the needs of the user. Data can be aggregated in a variety of ways including:

Geographic area

Maps of an element can be generated at different scales such as USGS topographic maps, county or landscape region.

Species or natural feature

The abundance and distribution of special plants and animals or other natural features can be compiled on a regional or statewide basis.

Protection status

Elements can be evaluated to determine the proportion of occurrences that are located in areas which afford them protection (e.g. state and national parks, wildlife management areas or nature preserves).

For more information, call

~~1-800-252-RARE~~

Wrong No,

Call (512) 448-4311

Natural Heritage Program

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TEXAS NATURAL HERITAGE PROGRAM

The Texas Natural Heritage Program was established in September 1983, as a cooperative venture between The Nature Conservancy and the Texas General Land Office. The creation of this program is a critical step in mapping strategies for responsible development, while ensuring that we do not inadvertently diminish the natural heritage of future Texans.

This publication was produced jointly by The Conservancy and the Land Office to commemorate the completion of the effort. The photography is the work of:

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