

# TEXAS

## PARKS & WILDLIFE

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# 150 YEARS OF CHANGE

LAND · WILDLIFE · WATERS · PEOPLE



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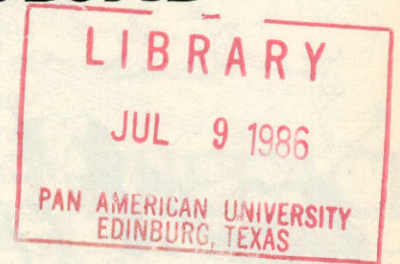
# 150 YEARS OF CHANGE

LAND • WILDLIFE • WATERS • PEOPLE

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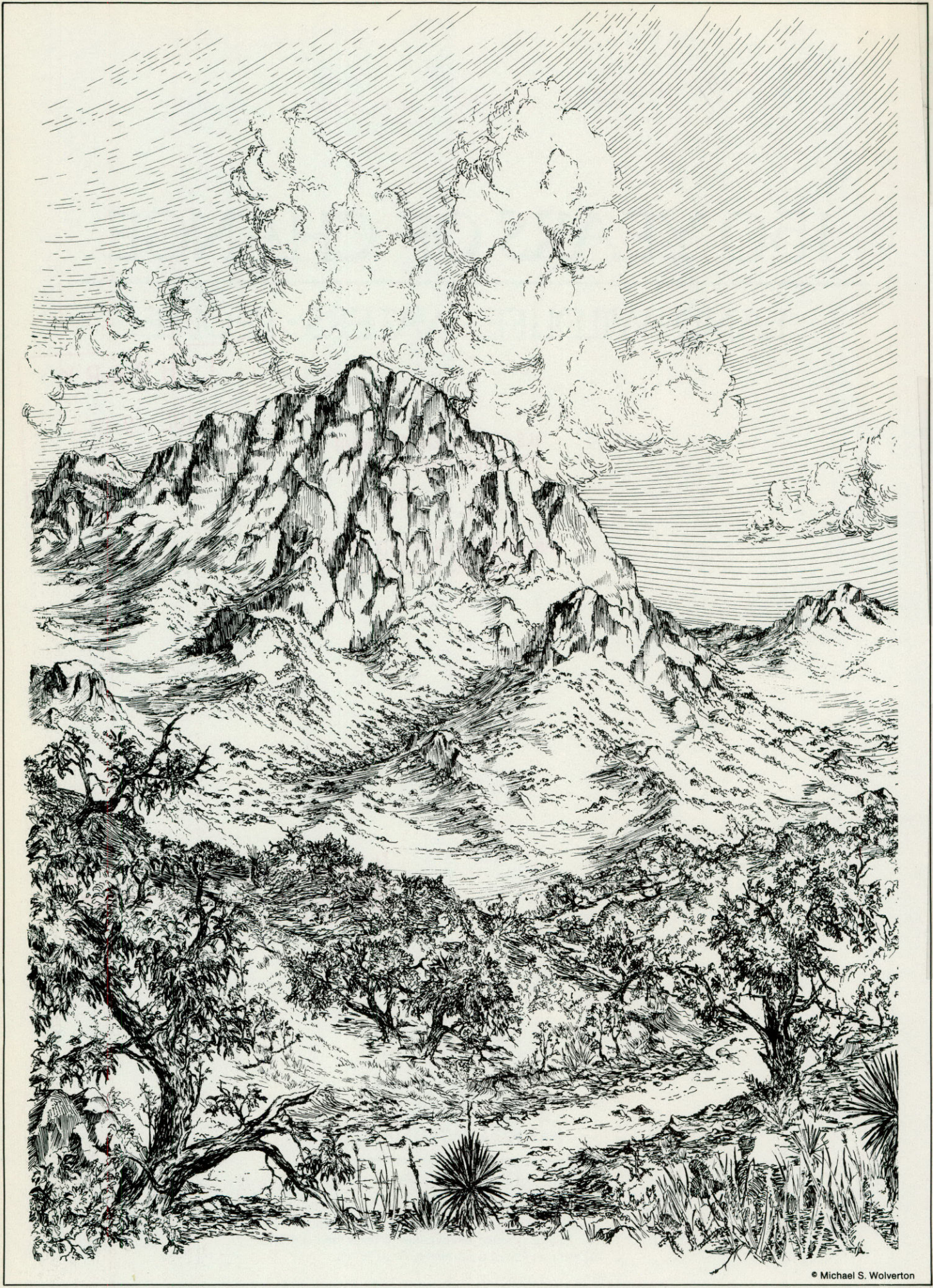


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**TEXAS**  
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# W

ith this special issue of *Texas Parks & Wildlife* magazine we commemorate Texas' 150 years of independence. Independence and freedom are cherished by all Texans, but both come with considerable responsibility. Here at the Parks and Wildlife Department we are responsible as stewards and managers of our wildlife, fisheries and state park lands.

As a reflection of this responsibility, we have divided this special issue into four sections—the state's land, wildlife, waters and people, how they have changed during the past 150 years and what we can hope for by the state's bicentennial in the year 2036.

Books could be written about each of the four sections and we don't presume to have done more than hit the high spots. But there is a theme of conservation throughout. When settlers arrived in Texas in the early 19th century they found rich land and forests, plentiful game and clean rivers flowing into bays teeming with marine life.

The early empresarios who received land grants from Mexico touted this area as nothing less than the land of milk and honey. Settlers flocked here, and as soon as they started arriving they began changing what they found—the land, wildlife and waters.

The story of Texas land, wildlife and waters in the days of the Republic is one of exploitation. Settlers came and began clearing the land for farms and homes, removing animals that threatened or competed with their livestock and overharvesting others for food. Streams and bays were considered an inexhaustible source of fish to be harvested by whatever means available—nets, explosives or poison. Few people ever thought that land could be exhausted, wildlife killed out or the sea depleted of fish. But we know better from our perspective of 150 years, and the lessons have not been lost on us. Resources once thought to be infinite we now painfully realize to be finite.

This is the challenge we face: More people in the state put more pressure on finite land, wildlife and fisheries. People need places to live and industry needs places for factories. Yet, most of these same people demand park land for recreation, clean lakes with fish to catch and places to hunt. We must strike a balance between the demands of an urban state and its ever-expanding population, and the natural resources that attracted settlers here in 1836 and continue to attract them in 1986.

We have made tremendous progress in recent years—the single largest land donation in the department's history of some 23,000 acres, the Wildlife Conservation Act of 1983, the most successful state waterfowl stamp program, the John Wilson Saltwater Fish Hatchery and Project WILD—and more about each of these achievements follows.

We've prepared for the future by the development of a Six-Year Strategic Plan. During the coming years, the goals of our department include adding another 72,000 acres of park land to the 203,000 acres already in the system. We must obtain 1.2 million acres through lease, purchase or license, and we also estimate that it will be necessary to stock 52 million fingerling fish each year in the state's waters.

Those are some of our goals, and it will take the support of every Texan to reach them. Perhaps through this special issue we can gain insight into what has made Texas special during the past 150 years, and what it will take to keep its land, wildlife, waters and people the most special in the nation.

## PREFACE

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*Charles D. Travis,*  
Executive Director,  
Texas Parks and Wildlife  
Department



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**L**n the months following the victory at San Jacinto, the new Republic of Texas recognized an urgent need to make the fledgling government stable and productive by increasing its population. As an incentive to encourage settlement, the Republic offered something it had in abundance . . . land. The Texas Congress enacted laws offering large tracts of land, and colonists flocked to the republic that was blessed with abundant natural resources, fertile soil and an ideal climate. Settlers claimed their land, cultivated it with pride, raised their crops and reared their children on it. Thus began the intense, almost reverent feelings Texans hold for the land.

Land has played a starring role in Texas' colorful history, and has been the basis for the considerable wealth the state has enjoyed. The General Land Office, one of the oldest public agencies in the state, was established by the Republic in 1837 to handle land problems. During the 10 years the Republic of Texas existed, it allotted more than 41 million acres to encourage settlement, to reward veterans of the War for Independence from Mexico, to pay public debts and finance government operations. When Texas joined the Union in 1845, it kept all of its public lands, as well as its \$10 million debt. Texas' first state constitution, adopted in 1845, recognized all land titles granted during the preceding decades by Spain, Mexico and the Republic.

By not relinquishing its vast public lands, the new State of Texas was able to use the acreage for the benefit of its citizens and its government. One of the first uses, in 1850, was the transfer of 67 million acres in the western reaches to the United States in exchange for \$10 million in government bonds. Those 67 million acres now are part of New Mexico, Colorado, Oklahoma, Kansas and Wyoming. Millions more acres were relinquished for internal improvements, homesteads, veterans' grants, capitol construction, settlement of boundary disputes and promotion of railroad construction. Some 50 million acres were set aside as an endowment to public schools and colleges. By 1898, there was little remaining public land, a legacy to 20th-century hunters who must lease land from private owners in order to pursue their sport.

For the past 150 years, Texas land has been both aesthetically and economically valuable, and although its appearance has changed since the days of the Republic, Texans of the 1980s have the same appreciation for the land that their ancestors did. Whether it's the owner of a 30,000-acre West Texas ranch or the backyard gardener, the hiker in the Guadalupe Mountains or the beachcomber on Padre Island, Texans know their land is special.

One reason Texas land is special is because there's so much of it. It's trite, but it's also true . . . Texas is big. With 262,134 square miles of land and 5,204 square miles of inland water, the state sprawls over a whopping 267,338 square miles—larger than the combined areas of Michigan, Wisconsin, Iowa, Illinois and Indiana, and more than 220 times larger than Rhode Island. More than 800 miles separate the southernmost tip of the Rio Grande Valley from the northwest corner of the Panhandle. The easternmost bend of the Sabine River and the western extreme of the Rio Grande just above El Paso are 773 miles apart, and El Paso is closer to the Pacific Ocean than it is to Beaumont.

But size alone isn't responsible for the Texas mystique. More significant is the variety of resources this big state encompasses. Texas is a land of canopied woodlands and parched deserts; sandy beaches and high, flat plains; tropical valleys and lofty mountains. Elevation within the state's borders rises from sea level along the coast to a mile and a half in the Guadalupe Mountains. Texas

# LAND

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*by Mary-Love Bigony*

land is composed of some 1,000 different soil series, which support almost 600 kinds of grasses. Some 4,000 species and subspecies of wildflowers add splashes of color to virtually every part of the state during much of the year.

This abundance and diversity is the result of the state's fortuitous location. Situated almost exactly between the Atlantic and Pacific Oceans, four of the great geographic regions of the United States converge in Texas: the Gulf Coastal Forested Plains, the Great Western Lower Plains, the Great Western High Plains and the Rocky Mountain Region. The Gulf Coastal Plains stretch along the Gulf of Mexico between Florida's west coast and the Rio Grande. To the west lie the North Central Plains, the lower extension of the Great Plains that extend northward to the Canadian border. Toward the west and the north, the North Central Plains gradually rise to meet the Staked Plains or Llano Estacado, an extension into Northwest Texas of Great High Plains which lie east of the Rocky Mountains. Westernmost of the four great geographic regions is a southern extension of the Rocky Mountains, known in Texas as the Trans-Pecos.

# T

exas land can be broken down even further into 10 ecological or vegetational areas (see map). A brief look at these 10 diverse regions illustrates how the terrain changes moving from east to west, and provides conclusive evidence of the state's geographic riches.

1. Pineywoods, 16 million acres of pine forests interspersed with grasslands. Elevation ranges from 50 to 500 feet above sea level.

2. Gulf Prairies and Marshes, some 10 million acres of marsh and salt grasses at the tidewater, changing to bluestems and tall grasses farther inland. Some hardwoods grow along the streams.

3. Post Oak Savannah, at nine million acres, lies just to the west of the forest region. Oaks, elms and pecan trees can be found here, and elevation begins to increase.

4. Blackland Prairies, about 11 million acres, has a variety of oaks, pecan, elm, bois d'arc and mesquite along its streams in addition to the prairies for which it was named.

5. Cross Timbers and Prairies, approximately 16.5 million acres, is an area of alternating woodlands and prairies. This region contains a variety of soils and topography, which in turn creates sharp changes in vegetation.

6. South Texas Plains, at 20 million acres, contains extensive brushlands known as the Brush Country or the Spanish equivalent, Chaparral. Subtropical dryland vegetation here includes small trees, shrubs and cacti.

7. Edwards Plateau, covering 24 million acres, lies between the Rio Grande and the Balcones Escarpment. Woodlands in the east change to grassy prairies in the west. Terrain in the Edwards Plateau ranges from rolling to mountainous, and this region includes the Texas Hill Country, a picturesque area of hills and spring-fed streams.

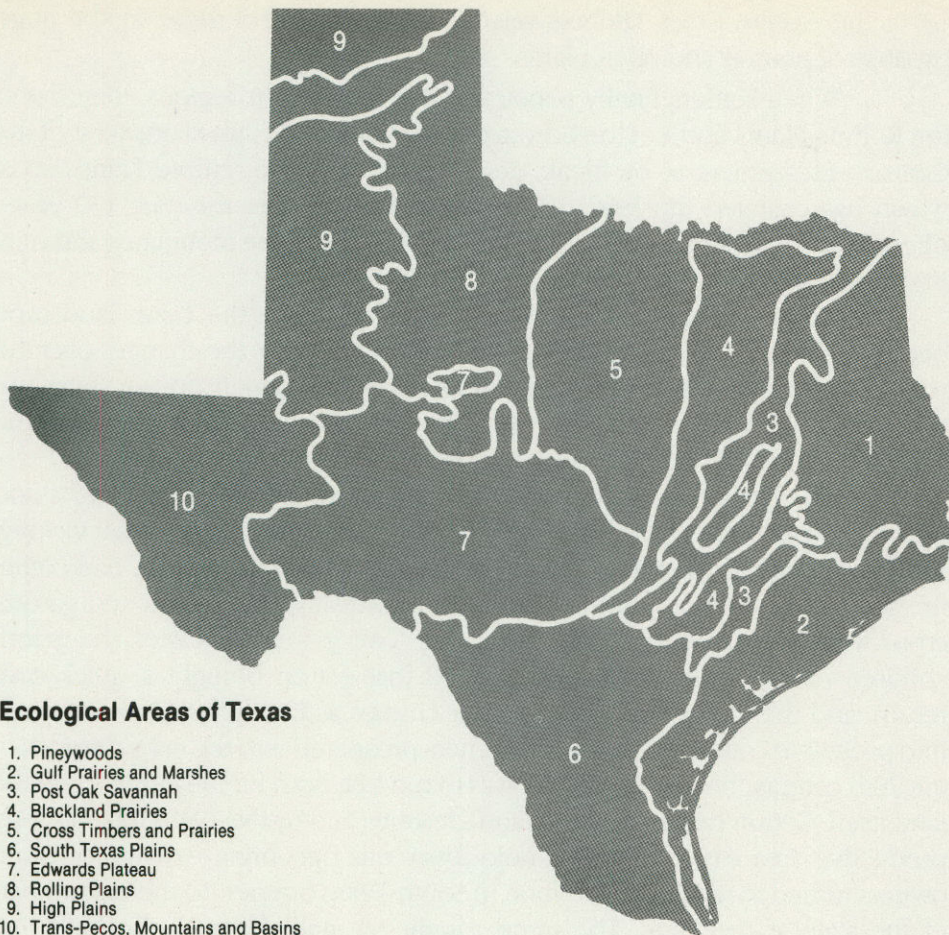
8. Rolling Plains, also 24 million acres, is half mesquite woodland and half prairie. Rough, broken land and steep slopes dominate the western portion, where the rugged Caprock Escarpment forms a natural boundary between the lower Rolling Plains and the High Plains.

9. High Plains, approximately 20 million acres in the Western Panhandle, are level and almost treeless.

10. Trans-Pecos, Mountains and Basins, 18 million acres, is the terrain many people picture when they think of Texas. It contains all of the state's true







**Ecological Areas of Texas**

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

mountains, as well as canyons and deserts. Most of the vegetation here is drought-resistant, although several forest species can be found in the higher elevations.

When settlers began pouring into the Republic of Texas following the 1836 War for Independence from Mexico, the land they found was for the most part untrodden and uncultivated. The appearance it presented was one that Texans of the 1980s would hardly recognize as the Lone Star State. Early explorers described the grasses of those times in astonishing terms, grasses of a variety of species that were yet to show the impact of civilization. Oceans of luxuriant tallgrass prairies covered much of south and central Texas as far as the East Texas pines. Moving west, the tall grasses blended into mixed prairies, and prairies above the Caprock Escarpment were covered with short grasses. Grasses in the Edwards Plateau ranged from tall in the east to short toward the west. In the farthest reaches of the west, desert grasslands carpeted the lower elevations.

Other features also were untouched by man and his tools. The grassy lowlands and marshes lining the Gulf Coast were protected by a chain of barrier islands composed of pristine sand dunes. Dense pine forests covering East Texas blended into pine-oak-hickory woodlands to the north and west and into Central Texas. A little farther west were the miles and miles of tallgrass prairies. From San Antonio northeast to the Red River stretched the fertile Blackland Prairie, untouched by the blades of a plow. The rough limestone terrain of the Edwards Plateau was covered by thin soils, with live oaks growing on the slopes and cedar confined to the canyons. Within the rolling Cross Timbers region was a belt of oak woodland thick enough to present an obstacle for travelers. According to Robin Doughty, author of "Wildlife and Man in Texas," until the



1870s the eastern Cross Timbers was the frontier; west of there lay the huge expanse of prairies and open plains.

When settlers finally penetrated the far western regions, they found the Rolling Plains north of the Edwards Plateau and the High Plains west of the Caprock Escarpment to be bleak, desolate and dry. The remote Trans-Pecos, which has changed the least of the state's regions over the past 150 years, offered short, sparse grasses; oaks, pines and juniper in the mountains and cacti in the desert.

But as soon as colonization began, the face of the Texas landscape began to change. It is important to note here that many of the changes over the past 150 years have been of tremendous economic benefit to the state. But everything has a price, and these benefits have taken a toll on the land, the wildlife that inhabits it and Texans themselves.

The first pioneers settled on the meadows between the Brazos and Colorado Rivers, and others soon were drawn to the fertile lands in that vicinity. In the tradition of the plantation life of the states from which they had come, the settlers carved out family farms in the promising land. Grain and garden crops were the staples of these early farms. Two generations later, the grandchildren of these first settlers discovered that cotton brought a quick cash return, and the land underwent another change as family farms were turned into profitable cotton fields. Cotton farmers prospered into the early decades of the 20th century, but the prosperity was to run out, both for the farmers and the land itself. Cotton can deplete the land's fertility, and by the 1930s this formerly productive area east of the Colorado River was becoming exhausted. Landowners turned to ranching, common in South Texas but new to the eastern part of the state at that time. The trend caught on, and much of the land that formerly had supported crops now grazed cattle. While the change from farming to ranching was a profitable one for landowners it was detrimental to many of the original inhabitants of the land—the wildlife species that had depended on the diminishing habitat.



Other changes were taking place farther east in the state. Small, isolated settlements had sprung up in East Texas, the colonists having been attracted by the pines and hardwoods and some small prairies easily cleared for planting. They used the wood for their houses and barns, but their impact on the forests was small. After the Civil War, lumber companies discovered what they believed to be an infinite supply of virgin pine and hardwoods. Sawmills and logging roads invaded the dense, quiet forests, the beginning of what would be years of indiscriminate harvesting of trees. By the 1930s, Texas' once-abundant forests were almost gone. Following World War II, lumbering became a national and international business. Selective cutting was replaced by clearcutting; the land was bulldozed clean and trees were planted in rows for the convenience of harvesting machines.



Around the turn of the century, it became apparent that some of Texas' most valuable resources were lying beneath the land, and the eastern part of the state changed quickly and dramatically. In 1895, the citizens of Corsicana struck oil while they were drilling for water, and three years later the first oil refinery west of the Mississippi River was built there. Then in 1901, the huge gusher at Spindletop near Beaumont erupted, permanently changing the face of that area. Today some of the world's largest oil refineries and related petrochemical plants sprawl into the Texas marshlands.

An oil field discovered near Rusk in 1930 extended under five counties around Tyler, Kilgore and Longview. Oil and gas refineries soon followed this discovery into Northeast Texas; pipelines were installed and associated manufacturing companies moved in. This part of East Texas rapidly changed from

sleepy and rural to industrial. Further discoveries, not only of oil but natural gas as well, provided wealth for the state, but often at the expense of the aesthetics and wildlife habitat the land once offered.

Meanwhile, as sophisticated farming techniques came to the rich and fertile soils of the Blackland Prairies, farmers introduced new species of vegetation and killed native plants they considered undesirable. Farms prospered and the Blackland Prairies developed rapidly. The region led the state in cotton production until the 1930s, when irrigation came to the west. But because of the area's early growth, it remains the most densely populated region of the state and today contains the most diversified manufacturing industry.

**D**uring the period when farmers began to prosper in the Blackland Prairies, ranching came to other areas of the state. Stockmen brought cattle, sheep and goats to the grasslands of the Edwards Plateau and the South Texas Plains, and grazing by these animals eventually had a tremendous impact on the land. Land bared of its protective cover by herds of hungry livestock is vulnerable to erosion; it washes away, blows away and loses the nutrients that supported a variety of vegetation in the early days.

Settlers avoided the dry plateau to the west until after the Civil War. Cattlemen then moved into the Panhandle following the resolution of Indian problems in the 1870s, and when railroads headed west in the 1880s the pioneers were not far behind.

Change initially came to the western part of the state with the introduction of ranching to the prairies. Development of irrigation techniques later transformed land that was only marginally usable for agriculture into farmlands. In 1923, a shallow oil well came in near San Angelo, and in succeeding years other fields were discovered from time to time around Big Spring, Midland and Odessa. Then in 1948 came a discovery in Scurry County that spread into Borden and Howard Counties, and the Permian Basin became the world's richest oil-producing territory. The region changed from a tranquil pasture into a jungle of storage tanks and derricks. The Texas Panhandle—comprised of both the Rolling and High Plains with the Caprock Escarpment dividing the two regions—also has seen its landscape changed. Irrigation techniques allowed agriculture into the area, and oil, cattle, wheat and cotton comprise the wealth of that region; all are dependent on the drilling of holes in the ground.

The 1940s also saw the bulldozer and plow invade the Lower Rio Grande Valley. The area's subtropical climate gives it an almost year-round growing season, and citrus farming in the Valley had its beginning as far back as the mid-18th century, when Spaniards planted a small orange grove near what now is the town of Mission. For the next two centuries oranges were cultivated in modest numbers, primarily for the consumption of the individuals growing them. But during the 1940s, agriculture became big business in the Valley, and oranges and grapefruits were shipped to eastern markets by the thousands. Virtually all the native vegetation in the area was cleared to accommodate the booming citrus business. Elsewhere in the South Texas Plains, mesquite and brush had replaced the grasslands, the results of decades of livestock grazing.

Sand dunes along Texas' Gulf Coast, sculpted with skillful artistry by the forces of nature, began to change in the mid-19th century. The settlers who colonized the barrier islands brought in livestock in their attempt to make a living off the land, and overgrazing eventually destroyed dune vegetation. The



dunes themselves came under attack a century later, when inlanders discovered the allure of the seashore and builders responded with hotels, condominiums and vacation houses.

The most obvious changes to Texas land since 1836 aren't logging, drilling or agriculture, although they are a consequence of all the state's resources. The most dramatic change is the cities. The men and women who first colonized Texas would undoubtedly gape in astonishment at the skyscrapers rising from the land they knew in the early days of the Republic. Major cities thrive in every section of the state, from sprawling Houston in the Gulf Prairies and Marshes to metropolitan El Paso in the once-forbidding Trans-Pecos. With Texas' status as one of the key areas of the Sunbelt, these cities are certain to grow even larger in the coming decades. And with every subdivision, every shopping center, every highway, another piece of the land those early-day pioneers knew is permanently altered.

But Texas in 1986 is not entirely urban, industrial or agricultural. Thanks to some farsighted conservationists of the early 20th century and the work of present-day individuals and agencies, there are some relatively undisturbed regions in every part of the state where wildlife flourishes and where Texans of the 1980s can revel in the land that is their heritage. A few areas were preserved before development reached them; others have been restored, or at least have staved off encroachment of some of the more disruptive aspects of civilization.

**I**t is impossible to acknowledge every agency, company and individual who has had a hand in protecting Texas land. Every landowner who leaves native vegetation on parts of his property, every builder who incorporates natural features of the land into his development, every individual who petitions a city council to preserve parklands, can be proud of their contributions. But a few of the large-scale conservation efforts must be mentioned to bring this account of Texas land use up to date.

Texas state parks have expanded from fewer than 2,000 acres in the 1920s to some 204,000 acres in 1986. As early as 1883, the Texas Legislature recognized the importance of preserving certain areas significant to Texas history. The 18th Legislature provided appropriations for "Purchase of the Alamo church lot and building . . ." and "Purchase of the ground where the graves of the fallen heroes of the Battle of San Jacinto are now situated." Similarly, provisions were made for the acquisition of Fannin Battleground and Washington-on-the-Brazos in 1913 and 1915. However, the concept of public state parkland began in 1916, when Mrs. Isabella Neff, mother of Governor Pat M. Neff, deeded six acres of land to the state for "religious, educational, fraternal and political purposes." Often referred to as the forerunner of the present Texas parks system, this area, to which additional acreage later was added, exists in Coryell County today as Mother Neff State Park. In 1923, the Texas Legislature created the State Parks Board (now part of the Texas Parks and Wildlife Department), but for the first 10 years of its existence the board was limited to accepting donations of land for park sites. The year 1932 saw the first purchase of state parkland, and in the ensuing 54 years the system has expanded through gifts, purchases and lease agreements. The more than 120 Texas state parks in existence today provide outdoor recreation and preserve significant historical and natural areas in every region of the state.



Also managed by the Texas Parks and Wildlife Department are 28 wildlife management areas totaling more than 400,000 acres. These geographically diverse areas are laboratories for scientific study and the development of wildlife management techniques, and most are available to the public for hunting and other outdoor activities. Like the state parks, these wildlife management areas are located in all areas of the state: Black Gap in the Trans-Pecos mountains; Engeling in the Post Oak Savannah; J.D. Murphree in the coastal marshlands; Kerr in the limestone hills of the Edwards Plateau.

At Las Palomas Wildlife Management Area in the Lower Rio Grande Valley, biologists are attempting to restore the area to its condition before agriculture altered the land. The Texas Parks and Wildlife Department began acquiring acreage in the Valley in 1976 with revenue accrued from the sale of white-winged dove stamps. But since most of the floodplain has been cleared for agricultural and urban development, the native brushland white-winged doves require is difficult to find. Department biologists are replanting the cleared land with native brush, and are using the wildlife management area to show private landowners how to manage for doves.

Some 177,000 acres of Texas land are preserved under the National Wildlife Refuge system established by President Theodore Roosevelt in 1903. The National Park Service is trustee of Big Bend's 741,000 acres of mountains and deserts; 76,000 acres in the remote Guadalupe Mountains; 130,000 acres of solitary beaches along Padre Island; 85,000 acres of the Big Thicket, an ecological system unique in the United States; and two recreation areas at Lake Amistad on the Rio Grande and Lake Meredith in the Panhandle.

National forests cover more than 700,000 acres of land in East Texas. Established in 1936 following land purchases from private owners, the national forests were the first federal public lands in Texas, since public domain was retained by the state when Texas joined the Union in 1845. Among the objectives in preserving this East Texas land were to restore the forests on cutover lands and protect the watersheds from erosion. State forests cover some 7,000 acres in East Texas.

If additional Texas land is to come under the stewardship of public or nonprofit conservation agencies, it must be obtained from private owners. The Texas Parks and Wildlife Department is actively seeking tracts of land to acquire through purchases, leases or donations for future park sites and wildlife management areas. In July 1985, the department received its single largest land donation to date, Elephant Mountain Ranch in Brewster County. The 23,000-acre ranch will be managed by the department as a combination wildlife management area and state park. Department officials hope this donation will be a forerunner to other donations or sales by landowners who are faced with finding alternatives to selling portions of their land and seeing its beauty destroyed.

A six-year plan adopted by the Texas Parks and Wildlife Commission in 1985 seeks to accomplish the following objectives by 1991: acquire 72,000 state park acres; acquire approximately 6,000 acres annually of waterfowl habitat; develop and implement programs to encourage management of approximately 100,000 acres of waterfowl habitat on private and public lands; acquire approximately 500 acres annually of white-winged dove habitat; acquire approximately 200 acres annually of nongame habitat; acquire approximately 10,000 acres annually of representative and/or ecologically sensitive wildlife habitats; provide technical guidance to an additional 175 resource managers of approximately 1 million acres of wildlife habitat; increase the acreage of wildlife management areas to 1.2 million.

The Texas Conservation Foundation and the Texas Nature Conservancy actively and effectively work to preserve Texas lands. Established by the Texas



Legislature in 1969, the Texas Conservation Foundation acts as a trustee for donations of land to state or local conservation programs. The Texas Nature Conservancy, a state affiliate of a national nonprofit conservation organization, strives to identify and save remnant native ecosystems. The Conservancy buys ecologically important lands and sometimes resells them to responsible state and federal conservation agencies. When the owners of Enchanted Rock decided to sell the property in 1977, there were fears that this unique area would fall prey to subdivision and development. The Nature Conservancy stepped in, negotiated a contract with the owners for 1,640 acres and sold the site to the Texas Parks and Wildlife Department. The Department of the Interior assisted in the purchase, and Enchanted Rock was added to those natural areas preserved within the Texas State Park System.

Since more than 90 percent of Texas land is in the hands of private landowners, these people control the future of land preservation in the state, and conservation awareness does appear to be taking hold. In Texas, a number of landowners are beginning to realize that preserving or improving land makes sense financially. Good land attracts wildlife, which in turn attracts hunters who many times bring in more money than crops or livestock do. An innovative resource management plan involving the General Land Office and the U.S. Soil Conservation Service aims to restore overgrazed and overcultivated farms and ranches. Texas Parks and Wildlife Department technical guidance biologists also help landowners preserve or improve their land to attract wildlife species.

As the 21st century approaches, this is the challenge facing all who love Texas and its land: to preserve it when possible, restore it when needed and strike a balance between its economic uses and aesthetic value. We will determine whether Texans of the future will revere this land as their ancestors did, this land that is our heritage. \*\*



*Canyons and mountains in the western part of Texas presented formidable obstacles for early pioneers. Today, a portion of Palo Duro Canyon (above) is preserved as a state park. Layers of multicolored clays and rocks line the walls of this 800-foot chasm in the Texas Panhandle. To the southwest, the remote Trans-Pecos contains Texas' only true mountains. The Nature Conservancy, a nonprofit organization, has acquired 67,000 acres in the North Rossillos Mountains (right).*







**C**anopied forests and lush vegetation give much of the eastern part of Texas a subtle beauty. This half of the state was the first settled by Anglo colonists, and as a result the land has seen a great deal of change over the past 150 years. At the time of the Republic, East Texas was for the most part untrodden and uncultivated, and colonists flocked to the land of fertile soil and ideal climate. Man and his tools have wrought many changes, but Texans of the 1980s can enjoy the beauty of this part of the state in some of the areas that have been set aside: stroll the leaf-littered grounds of Daingerfield State Park (below) or explore the oak-pine forests accented by bracken ferns at Bastrop State Park (left).



**B**ig Bend National Park in the Trans-Pecos contains the landscape many people picture when they think of Texas: mountains, desert and the ubiquitous cacti. This



is Texas at its most dramatic—jagged peaks of the Chisos Mountains rising against Burro Mesa (right); the vivid “false agave” of Boquillas Canyon, found only in Big Bend (left); blooming desert plants such as the ocotillo (above) adding springtime splashes of color. West Texas land, like that in the rest of the state, is owned for the most part by private individuals due to generous land grants in the days of the Republic. But Big Bend, operated by the National Parks Service, provides 741,000 acres of public land that has changed little over the past 150 years. Don’t be intimidated by the park’s vast size; take time to explore it carefully, one section at a time. The best of West Texas is secluded in these cryptic mountains and deserts.







**C**hanges began as soon as the settlers arrived, and farming was the first use of this fertile land. Colonists carved out family farms, with grain and vegetables as the primary crops. The meadows between the Brazos and Colorado Rivers were the first areas settled, but farmers soon discovered the rich and fertile soils of the Blackland Prairies (below and bottom). Further changes came as they introduced new species of vegetation and killed native plants they considered undesirable. Before the turn of the century, cotton became the major cash crop, and by 1880, Texas had become the national leader in cotton production, a position it still holds today. But cotton can deplete the land, and the need for land and water conservation had not yet become apparent. By the 1930s, Texas land had been robbed of much of its native fertility. Toward the west, windmills and irrigation transformed land that was only marginally usable for agriculture into farmlands.





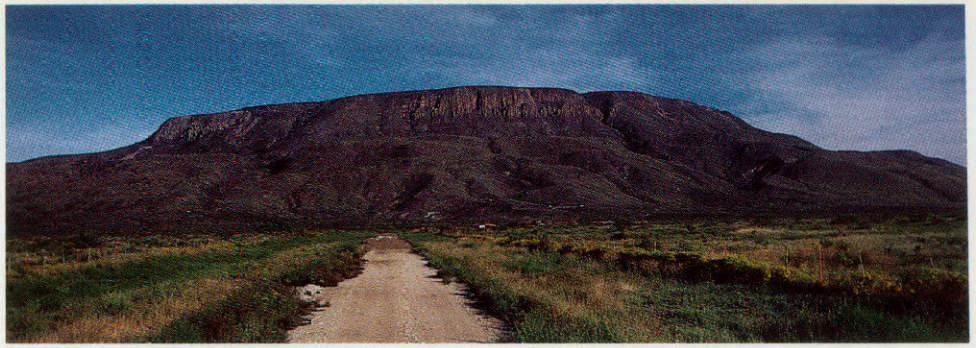




**I**t has been called the biological crossroads of America, a place where plants and animals of the north, south, east and west meet. The Big Thicket in Southeast Texas is an ecological system unique in the United States, a combination of semitropical wilderness, swamps, wooded uplands and semiarid sandylands. At one time, the region covered 3 million acres, but farming, lumbering, oil production and other land uses have taken a heavy toll. In 1974, 84,550 acres were designated the Big Thicket National Preserve. The Thicket's Pitcher Plant Savannah (left) is one of many excellent places to observe nature. In addition to the carnivorous pitcher plants, orchids and colorful shrubs grow in the wetland savannah. Wildlife in the Thicket ranges from large white-tailed deer to the tiny, colorful buckeye (below).



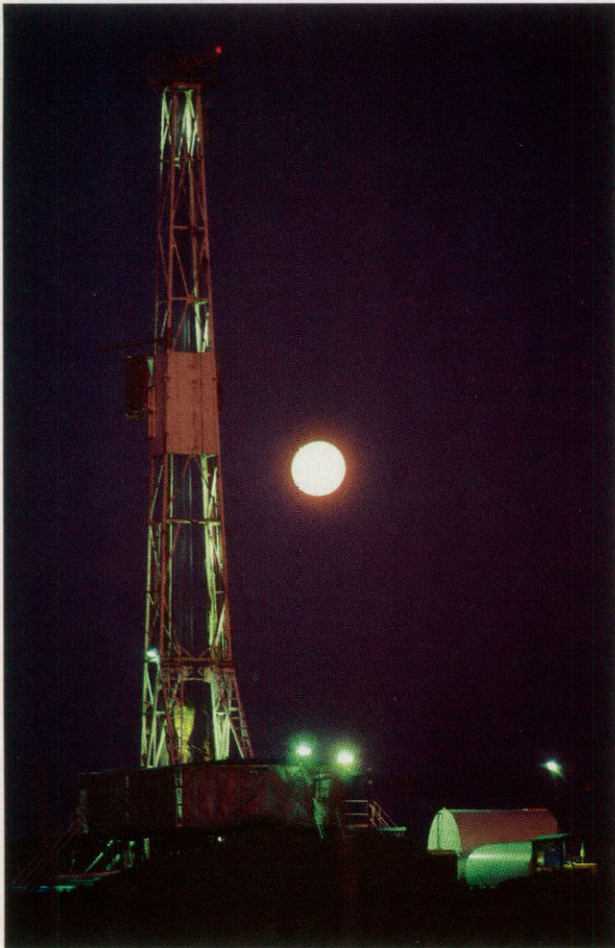




**H**orses, cattle and sprawling ranches—what could be more Texan? Ranching is big business from the east (below) to the South Texas Plains, to the Hill Country, Panhandle and the far west. But overgrazing has had a tremendous impact; land bared of its protective cover by herds of hungry livestock is vulnerable to erosion and nutrient loss. Today ranchers are learning that it makes sense to take care of their land, and private landowners are the key to bringing additional land under the stewardship of conservation agencies. Elephant Mountain Ranch in Brewster County (left) was donated to the Texas Parks and Wildlife Department in 1985.



**M**an's changes to the land are most evident in the structures he builds. Oil derricks dot the landscape across Texas, the nation's leading oil producing state. And while oil and gas have provided tremendous wealth for the state, it often has been at the expense of the aesthetics and wildlife habitat the land once offered. Over the past 150 years, Texas has changed from a rural to an urban state, and today cities thrive in every region. Dallas (right) in the Blackland Prairies, has a population approaching one million. With every skyscraper, every highway, every subdivision, another piece of land is permanently altered.









**A**s if Texas didn't have enough scenic variety with its mountains, canyons, forests and prairies, a 370-mile coastline stretches along the Gulf of Mexico from the Louisiana border to Brownsville. Shorebirds such as the great blue heron (below) and marsh birds such as cattle egrets (below left) share their coastal home with an ever-expanding human population, both migrant and permanent. Sand dunes of various shapes and sizes add beauty to the beach and protect the land from the forces of nature. The dunes first came under attack in the mid-19th century, when settlers who colonized the barrier islands brought in livestock. Overgrazing by those animals began to destroy the vegetation that serves to anchor the dunes. A century later, the Texas coast saw the beginning of a construction boom, and today hotels, condominiums and vacation houses have replaced the dunes at coastal resort areas. Destruction of the dunes makes the beach less attractive and leaves inland areas vulnerable to hurricanes and storms.





The abundance and variety of wild creatures that awaited the first group of settlers in the early 19th century must have been staggering from a 20th century perspective. Americans crossing the Sabine River into East Texas or Europeans disembarking at the now-vanished port of Indianola found themselves in the midst of wildlife the likes of which had been unknown for decades back in the Atlantic Seaboard states or in Europe.

This plenty fostered settlement in Texas and sustained its westward push from the coast to the Trans-Pecos. But it was this seemingly inexhaustible source of game that led to the depletion and extirpation of many species during the coming century of expansion and settlement.

The chronicle of wildlife in Texas during the past 150 years can be broken into four parts. First, wildlife before the Republic—a time of plenty and dependence by settlers on game for their subsistence. Second, the time of exploitation in the mid-19th century. Third, a growing awareness in the last half of the 19th and first part of the 20th centuries of wildlife's limitations. And fourth, modern wildlife management in the middle part of this century and what the future holds for wildlife between now and the state's bicentennial in the not-too-distant year of 2036.

The regions in which wildlife live follow for the most part the regions outlined in the chapter on land: East Texas pine forest, coastal prairie, South Texas brushland, blackland prairies, crosstimbers and prairies, post oak savannah, Edwards Plateau, High Plains, Rolling Plains and the Trans-Pecos.

The pine forests of more than 150 years ago were rich in gray squirrels, eastern wild turkey, passenger pigeons, black bear, otter, beaver and other fur bearers. Some of the earliest exploration in Texas was for otter and beaver. The river bottoms of the Neches, Angelina, Trinity and others were home to the ivory-billed woodpecker, and nesting grounds for the wood duck, one of the two duck species that commonly nest in Texas, the other being the mottled duck, also known as a black mallard or summer mallard.

The marshes of the Coastal Prairies served as breeding grounds for the mottled duck and large populations of muskrats. More than a million Attwater's prairie chickens roamed the prairies with male Attwater's making their "booming" calls each mating season. And each fall and winter millions of waterfowl descended on the coast. Flocks of sandhill cranes and their now-famous relatives the whooping cranes were among the waterfowl. As a matter of fact, there are accounts of both species being taken for food during the winter, with the sandhills easier to hunt than the more wary whooping cranes. Some reports from the pre-Republic era have whoopers sighted as far inland as Salado Creek in Central Texas. There is no indication of when they were sighted, so the birds could have been on their way either to or from their coastal wintering grounds on the Texas coast.

Just as the whooping cranes on Salado Creek would have surprised a modern traveler, the herds of antelope grazing outside of what is now Corpus Christi back in the early 19th century might give pause to someone moving along Interstate 37. But such herds of pronghorns were common throughout South Texas well into the middle of the last century. A small, remnant herd in Jim Hogg County is all that now remains.

The plains of South Texas and coastal prairies also supported herds of mustangs in numbers high enough to be considered as pests by some early settlers. The mustang had mixed reviews, some Texans saw it as a noble

## WILDLIFE

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*by David Baxter*



embodiment of freedom on the prairie. Others, such as ranchers and farmers, were glad to see the crop-trampling, waterhole-fouling mustangs driven out of the region.

In this same general region Stephen F. Austin noted that deer were plentiful west of the Brazos and along the lower portions of the Guadalupe River. At the confluence of the San Antonio and Guadalupe Rivers, Austin and his party saw an estimated 400 deer and 150 mustangs in a single day. The blackland prairies, a strip of fertile land running through east-central Texas, originally had belts of woods running along the region's many streams. This cover sheltered Rio Grande turkeys and white-tailed deer. The rich grasses fed herds of antelope, bison and the greater prairie chicken, a soon-to-be extinct relative of the coastal prairie's Attwater's and the Panhandle's lesser prairie chicken which still is present in huntable numbers.

Most of these species also were found in the east and west cross-timbers, and the grand prairie which separates the two.

**T**he Edwards Plateau of Central Texas seems to have been a beacon for German and Alsatian immigrants, and they describe finding this region teeming with bears, turkeys, whitetails, ducks and squirrels. Game was so plentiful around the German communities of Fredericksburg and New Braunfels that wild turkeys sold in the local markets for less than domestically grown birds, and venison was half the price of beef.

When the Germans arrived, much of the Edwards Plateau was true savannah, with oak and juniper (cedar) trees restricted to draws and other broken areas. This contrasts with today's Hill Country of thick cedar brakes, scrubby oaks and other woody vegetation. But before white settlers came, Indians frequently burned the prairie grasses and in doing so held in check the growth of cedars, oaks and other invading trees. The increase in brushy cover and acorn-producing oaks was a factor in the increase in turkey, deer, squirrel and other creatures that favor such habitat.

What few settlers or travelers came to the Rolling or High Plains found antelope, lesser prairie chickens and bison by the thousands. Deer and turkey were abundant in the draws and wooded creek bottoms.

But it was the bison that was the dominant species in this part of Texas. Great herds moved through the plains on their annual migrations. Their trails still are evident in many places on the Caprock where millions of hooves wore grooves in the rocks over the course of centuries.

Farther to the west and south the Trans-Pecos' basins and mountains were home to desert bighorn sheep, mule deer, black bears (and an occasional grizzly by some accounts), antelope, cougars and gray wolves.

These are the birds and animals white man found in the early 19th century, and their numbers and distribution began to change as man altered Texas to suit his needs.

Changes in wildlife started in the eastern part of the state because that's where Anglos first settled and made their presence known. Trees came down for houses and saw mills and land was cleared for farming. Livestock came with the farmers, which spelled an eventual end for predators that might develop taste for cattle, fowl or hogs. Some of the hogs also were allowed to run free and root around beneath pines and postoaks in search of acorns and other food.



Free-ranging hogs, and feral hogs—those gone wild—started competing with native animals for food. The aggressive and omnivorous swine ate mast used by squirrels and turkeys, destroyed the nests of ground-dwelling birds and uprooted tree seedlings.

As mentioned earlier, furbearers such as otter were hit hard by early Texans. They were taken along the Rio Grande, Brazos, Trinity and Red Rivers. Currency was in short supply in frontier Texas so furs were used in trade. Beaver, wolf, otter, bear, lion, deer and bison hides were sold and bartered by both whites and Indians.

The hardest hit of the animals in the fur trade were bison. In 1846, a hide sold for about three dollars on the Houston market. If ever there was a wildlife resource squandered not only in Texas but throughout the Plains, it was the bison. Their hides were about the only thing salvaged since most of the meat was left to rot.

The bison also had the unusual distinction of being one of the few wildlife species in history used as a tool for the extirpation of a part of the human species. Anglos quickly observed that as the bison went so went the Indian. Destruction of the huge bison herds was encouraged by no less a figure than General Phil Sheridan. The General pointed out that buffalo hunters had done more to move out the Indians than the army had ever been able to do. Exit bison and Indian; enter cattle and rancher.

Bison were no match for even 19th century firearms and the slaughter was on. The same went for other animals and birds that congregated in large herds or flocks on either the High Plains or Coastal Prairie. The three prairie chickens—Attwater's, lesser and greater—were easy targets for early settlers. The birds numbered in the millions out in the grasslands and constituted what was thought to be an inexhaustible supply of tasty food.

There are tales of great hunts in which hundreds of birds were killed. Commercial hunters harvested wagon loads for shipment to markets and willing buyers. The confined body heat of a wagon load of birds coupled with warm temperatures did not contribute to freshness and ice was seldom used. By today's standards the meat would have been considered inedible, but tastes of those days were not offended by well-aged meats.

Competitive shoots with as many as 50 contestants were held from the coast up to the Panhandle. Individual settlers often took more birds than they had room for in the cooking pot and shared in the waste. So, by 1880 a major portion of the prairie chickens was gone, and the greater prairie chicken had vanished completely. But hunting was not solely to blame, since prairie chickens are birds of the grasslands, overgrazing by livestock and control of wild fires allowed woody vegetation to grow, reducing the birds' food and cover.

Eastern turkey in the Pineywoods had much the same fate as the prairie chickens out on the grasslands. Year around hunting and shooting birds off their roosts all accounted for birds. In general, the eastern turkey declined in proportion to man's occupation of this part of the state. Clearing and thinning of the forest destroyed excellent cover and nesting habitat.

West of the pine forests, the blackland prairies were rapidly falling under the plow, putting turkey habitat in cultivation. Turkeys had lived along area streams, but by 1895, the birds had vanished from the North Fork of the Trinity River in Jack and Wise Counties. Records also show the last known turkey in Denton County was killed in 1880.

Down in Frio County the birds were abundant in the 1890s and commercial hunters took as many as 500 roosting turkeys in a night. Clearing of bottomlands along the Nueces and other rivers turned habitat into farms.

Clearing the forest and turning soil under the plow did work to the



advantage of one game species, however. Before settlement, bobwhite quail probably never were very plentiful in much of the state except along the margins of woodlands, openings and in burned areas. Cultivation prompted the growth of weeds and grasses used by quail for food and cattle grazing encouraged the growth of woody cover for the birds in what was once open prairie.

For a while, everyone who exploited the land did bobwhite quail a favor. The birds increased with all this inadvertent help, and at the same time escaped most hunting pressure. Sometimes it pays to be small and inconspicuous. Bobwhites reached a peak in the years between 1875 and 1910. But a good thing started coming to an end as rail fences were replaced with barbed wire and improved agricultural equipment enabled farmers to plow right up to a fence, leaving no weedy cover for the birds.

While turkey, prairie chickens and other native species were hurt by agriculture in the 19th century, it wasn't until about the 1920s that quail began to suffer. Power machinery used in the Panhandle and poor land and water conservation readied the land for the days of the Dust Bowl. Fields throughout the state previously considered marginal for planting were put to pasture for goats and sheep. It was a bad time for land in general and bobwhite quail in particular.

Back in 1836—as well as in 1986—the most important wildlife species in Texas was the white-tailed deer. Buckskin and venison sustained frontiersmen not just in Texas but throughout North America. All of the pioneers in Texas hunted deer for food. Many of the cotton plantation owners along the Trinity River had full-time hunters on the payroll to provide venison. One fellow who was employed by a logging railroad which operated in the Big Thicket claims to have killed 3,000 whitetails in a single year to feed the hands.

Out west in Pecos County, ranchers described deer hunts with dogs. The ranchers had stocked sheep after fencing their land and begun to ride after coyotes. However, the dogs seemed to prefer running deer rather than coyotes, so it became necessary to kill all the deer before the dogs would track coyotes.

Uncontrolled hunting in whatever form did much to reduce the number of whitetails in the state. Perhaps the most destructive means was spotlighting, that is, blinding the deer with a strong light and shooting them where they stand. Here's how it worked back in the 19th century before the invention of battery-powered lights: Hunters would set out after dark shouldering long-handled frying pans filled with pitch pine or some other combustible material. They would move slowly along until a pair of eyes shone in the brush. Experienced hunters could distinguish between the widely spaced eyes of a deer and those of other animals. Good hunters could kill 10 deer in a couple of hours, then return in the morning to retrieve them.

As with bison, trade in deer hides was big business. One trading post near Waco shipped some 75,000 hides to New York markets between 1844 and 1853. Sale of deer hides was important up until the turn of the century and many professional hunters killed deer for their skins alone.

Hand in hand with market hunting went destruction or alteration of habitat. Deer can survive in some marginal habitat where other, less adaptable species would move on. But in some parts of the Blackland Prairies, cultivation became so intense there was little suitable food and cover for even whitetails.

If you have a map of Texas, find the 97th meridian that runs through the eastern third of the state. Everything to the west of the 97th meridian, roughly two-thirds of Texas, was home to the pronghorn antelope when white man arrived on the scene. You'll have to drive well into the Permian Basin of West Texas to find an antelope these days, which will tell you something about the impact man had on pronghorns.



Prairie grasses began to be replaced by mesquite and other brush, which pushed antelope farther and farther west. With an increase in cattle raising, ranchers came to regard antelope as competition for grazing and killed them in ever increasing numbers.

Later on, mesh wire fences used by sheep raisers curtailed the movement of antelope since the animals refused to jump even the lowest mesh fences, where they would crawl under a barbed wire fence. Mesh fences could trap entire herds of antelope and prevent them from moving to good forage. There is one report of some 150 antelope freezing to death during a Panhandle blizzard because they could not escape the pasture they were in.

The highland neighbor of the pronghorn, the bighorn sheep, also competed with sheep for grazing, and some diseases and parasites that affect domestic sheep were transferred to bighorns with fatal results. Market hunters shot them for meat, and by 1903 action was taken to close the season on bighorns. Nevertheless, native bighorns continued to decline and were extirpated from the state by 1960.

**C**oncern for the state's declining wildlife resources was voiced much sooner than 1903. By the middle of the 19th century the alarm was sounded by individuals and organizations who had become aware through their travels about Texas that animals which they formerly had seen in profusion were either missing or present in fewer numbers than before. Deer, turkey, furbearers and other conspicuous animals had started disappearing in proximity to settlements, especially those along the coast and in the central part of the state.

The finger was first pointed at overhunting, especially market hunting. Of course, overhunting was only part of the problem. Abuse of the land and subsequent changes in wildlife habitat probably did as much to bring on the demise of many species as did hunting. With so much inexpensive land available, what was the incentive for soil conservation? When the soil on your farm was depleted you moved on. The same with game.

It was this frontier outlook that did much to exhaust the land and the wildlife that depended on it. There always was more game and better farmland just off to the west. It took a while to overcome this and convince 19th century Texans that their wildlife resources had limitations.

Informed sportsmen and interested citizens organized to lobby their legislators for laws to protect wildlife.

The first game law in Texas was enacted in 1861. Known as the Act for the Protection of Game on Galveston Island, it prohibited quail hunting on Galveston Island for two years and closed future hunting of bobwhites from March through August. It was a beginning but had no statewide impact, nor did it encompass other species of wildlife.

The Civil War put wildlife conservation on the backburner and it wasn't until the 20th century that effective laws were passed to protect the state's wildlife. First of the modern laws, which was passed by the Texas Legislature in 1903, was known by the impressive title of The 1903 Act to Preserve and Protect the Wild Game, Wild Birds, and Wild Fowl of the State.

This 1903 act not only shut down hunting of bighorns, but closed the season on pronghorns and pheasants, outlawed market hunting and set bag limits on deer at six bucks a season, 25 turkeys, quail and doves at any one time.



It was poorly enforced, but laid the groundwork for a 1907 law extending the five-year moratorium to prairie chickens.

As with the 1903 act, the legislation of 1907 faced an indifferent public and judiciary. But it was passed without counties claiming exemptions, and thus the Texas Parks and Wildlife Department started down the road to the Wildlife Conservation Act of 1983 which placed all of Texas' wildlife and fisheries under the regulatory authority of the department. The intervening 76 years saw much in the way of laws and ever-increasing sophistication of wildlife management.

From 1907 up through World War I, more species fell under the protection of closed seasons or decreased bag limits—deer and turkey limited to three per season, bag limits on quail and dove cut from 25 to 15 per day in 1915, a five-year closed season on wood ducks, and turkey hens protected by laws in 1919.

**A**bout the time of the First World War, or shortly thereafter, the Texas Game, Fish and Oyster Commission started trapping and restocking deer, and releasing quail. The premise was that if you closed seasons and encouraged propagation wildlife would increase to their former numbers. It took a while for professionals and the public to realize this was not always the case and that renewable resources such as quail could not be stockpiled.

Releasing thousands of quail into habitat made unsuitable by agriculture or urban development was a waste. Habitat in the state's major game areas in many cases was so altered as to be untenable for most wildlife, especially those with specific food and cover requirements. We have lost an abundance of some species and gained others that are better suited to changing conditions.

The white-tailed deer is one of the best examples of wildlife that has survived and even made a dramatic comeback in many regions. Restocking of whitetails to suitable ranges has been one of the 20th century success stories. Back in the early 1920s the Texas deer herd was at its all-time low. One newspaper claimed that you could work your way from Dallas to west of San Antonio without seeing a deer. Whitetails had been cleared out of the Big Thicket, and people living on ranches in the Kerrville area hadn't seen a deer in years. The only deer in the Hill Country where they now are so abundant were on some ranches where owners went to the trouble of protecting them.

Now herds in the Edwards Plateau number in the millions of animals, but a lot of deer doesn't necessarily mean good deer since most Hill Country whitetails are notoriously small. Old attitudes die hard, and the attitude of protecting does and spikes has taken longer to die than Rasputin. The first season on antlerless deer was held in 1953 in the Plateau counties of Mason, Kerr and Gillespie, but only after more than 30 years has it gained general acceptance.

Restoration of whitetails was funded in Texas and elsewhere across the nation by a piece of landmark legislation in the history of American wildlife. The Federal Aid in Wildlife Restoration Act of 1937, or Pittman-Robertson Act, required that excise taxes on sporting arms and ammunition be collected and apportioned to the states for use in wildlife research and management.

These so-called P-R funds have been used in Texas on work with virtually all of Texas wildlife—game, nongame and endangered animals.



Pittman-Robertson Funds helped pay for the restoration of pronghorn antelope. The first pronghorns were trapped and transplanted to suitable range in 1939 after herds reached an all-time low of 2,400 animals in 1925. Most of today's pronghorns—as well as white-tailed deer and turkey—are the result of stocking by the Game and Fish Department up through the 1970s. Herds had rebuilt to the point that a hunting season was held in 1944, and antelope became the first game species in Texas to be harvested under a method affording complete scientific control. During that first season, 402 hunting permits were issued.

Eastern turkey made their comeback to the pine forests of East Texas through department restocking, financed in part by P-R funds. The eastern strain of this popular game bird had been eliminated from its range by 1920. Eastern turkey from Louisiana were stocked in portions of Polk and Tyler Counties in 1964, and the birds adapted well to their surroundings. These birds progressed to the point that a nine-day hunting season was authorized for portions of the counties in spring 1977—the first such season there in 36 years.

If eastern turkeys and pronghorns have been snatched from the brink of extinction through scientific management, bighorn sheep still are teetering on the edge. In 1941 the total bighorn population was estimated at no more than 150 animals. By 1945 the Texas Legislature appropriated funds to purchase the Sierra Diablo Wildlife Management Area in the Diablo Mountains of the Trans-Pecos. The first genuine restoration efforts were started in 1954 through a cooperative agreement among the department, the U.S. Fish and Wildlife Service, the Boone & Crockett Club, the Wildlife Management Institute and the Arizona Game & Fish Commission.

It might seem ironic that while unregulated or illegal hunting was a primary factor in the bighorns' early demise in Texas, sport hunting may be its salvation in the 20th century. Numerous sportsmen's organizations have rallied to the bighorn's aid with more than just words. The Texas Bighorn Society, a coalition of several conservation groups, is dedicated to the preservation and restoration of the desert bighorn in Texas. To that end, the society is committed to raising funds for the bighorn's restoration and has donated some \$150,000 for construction of facilities on the department's Sierra Diablo Wildlife Management Area for bighorn propagation. With a little help from their friends, the bighorns might make it yet.

Texas' other endangered or nongame species of wildlife also have many friends in the state. Since 1973 the Parks and Wildlife Department has had specific responsibilities under the Texas Nongame and Endangered Species Act. Mention endangered species to most folks and a frown immediately crosses their faces. It's amazing to hear how little most people know about endangered creatures and which species are in trouble in this state. White-tailed deer certainly are not, although many school children and people who should know better think so.

Among the species that currently are classified as endangered there are 14 mammals, 11 birds, 11 fishes, five reptiles and three amphibians. And not all are sad stories; in fact, some such as the brown pelican and whooping crane should bring on a smile. Both are success stories for governmental agencies, private organizations and individuals willing to work on the species' protection and habitat needs.

Texans who live near coastal marshes and waterways might know first hand of how well the American alligator rebounded from its endangered classification to an abundance that has warranted a limited harvest.

Like everything else in modern wildlife management, it takes money to put biologists and game wardens in the field to work with nongame and



endangered species. Money for work with game species such as deer and turkey historically has come from sportsmen and their hunting licenses and gear. No such funding vehicle was available for nongame species and initial revenues had to be appropriated by the Texas Legislature. In 1984 conservationists followed the lead of waterfowl hunters and marketed through the Parks and Wildlife Department the nation's first Nongame Stamp. Voluntary purchase of the stamps and associated prints, medallions and decals may be used by the department for nongame research and conservation, development and acquisition of their habitat and education of the public on nongame species. The 1985 Nongame Stamp appropriately featured a whooping crane; the 1986 stamp has an Attwater's prairie chicken.

Stamps as revenue producers are nothing new in the history of wildlife management. A Federal Migratory Waterfowl Stamp has been required since the 1930s, and a Texas stamp was authorized by the legislature in 1980. It has proven to be the most successful state stamp of its kind in the U.S., earning hundreds of thousands of dollars for the state's waterfowl. Such revenue is earmarked for waterfowl research, management and habitat acquisition. The first purchase of waterfowl habitat from stamp revenue came in 1984—the 1,700-acre Stofer-McNeel Trust in Calhoun County. Since 1984 three additional tracts have been acquired with stamp revenue, totalling some 10,500 acres.

Such habitat acquisitions come at a critical time in the history of Texas waterfowl, especially along the mid to upper Texas coast. The upper coast in particular has been identified by the U.S. Fish and Wildlife Service as one of the most important waterfowl regions in the nation. About a third of the Central Flyway's ducks and more than half the geese depend on this region. It also is home to our native mottled duck. The region's wetlands encompass the major estuaries of Sabine Lake, Galveston and Matagorda Bays. Inland is a broad band of coastal prairies that 50 years ago was mostly undeveloped rangeland. Now, some of the world's largest oil refineries reach eastward, and Houston's borders reach farther to the west, crowding waterfowl into ever-diminishing habitat. No other part of Texas is capable of sustaining the great numbers of waterfowl that winter along the upper coast, so the problems of this part of Texas will have an impact far beyond our borders.

We began this chronicle of wildlife in East Texas, so let's end it there also. Historically, the region's rivers, streams, sloughs and oxbows with their abundant hardwoods have provided rich habitat for wood ducks, squirrels and other wildlife. The character of the Pineywoods and its future prospects as wildlife habitat has been altered with the construction of huge reservoirs. Their waters have flooded hardwoods behind the dams, and deprived downstream bottomlands of natural flooding beneficial to waterfowl.

It's ironic, but as we will see in the next chapter on water, as more aquatic habitat is made available for fish and Texas' fishermen in the form of reservoirs, the less suitable habitat remains for Texas wildlife.

Between now and the state's bicentennial in 2036, Texas wildlife and its stewards in the Parks and Wildlife Department will face an awesome challenge—how to balance the desires of a growing urban state with the needs of wildlife. \*\*

*Huge reservoirs in eastern Texas have flooded bottomlands that once served as breeding habitat for mallards and wood ducks (below). While the lakes have formed new wetlands, the waters are marginal in value to resident and wintering waterfowl, such as the little grebe swimming at right. Making waterfowl habitat enhancement part of reservoir construction and management would help offset the loss of some critical lands. Waterfowl throughout Texas faces an uneasy future if habitat loss and degradation continues in the state.*





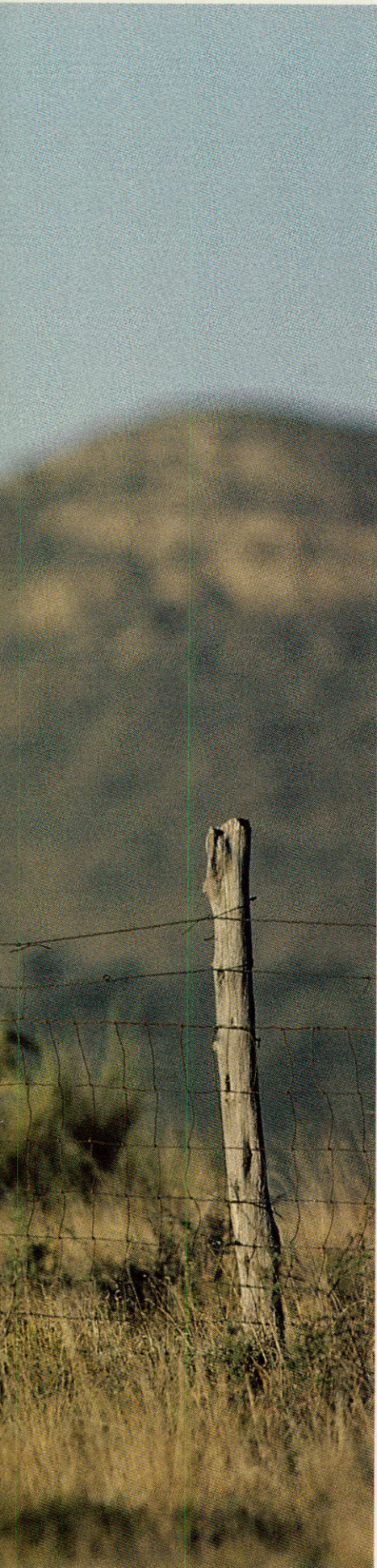




**L**arge species of mammals such as bison (left), elk (below) and white-tailed deer first attracted the attention of early settlers. Vast herds of the shaggy bison roamed up and down Texas, providing Indians with a mobile larder. Now, only remnants of the millions remain. Elk never existed in Texas in the numbers of bison. Historically, the now-extinct Merriam's elk was found in the Guadalupe Mountains and parts of New Mexico prior to 1900. The current elk population is composed of a different species of animals from the Rocky Mountains. Bobcats (above), like other predators, have been under pressure but so far have managed to coexist with civilization.







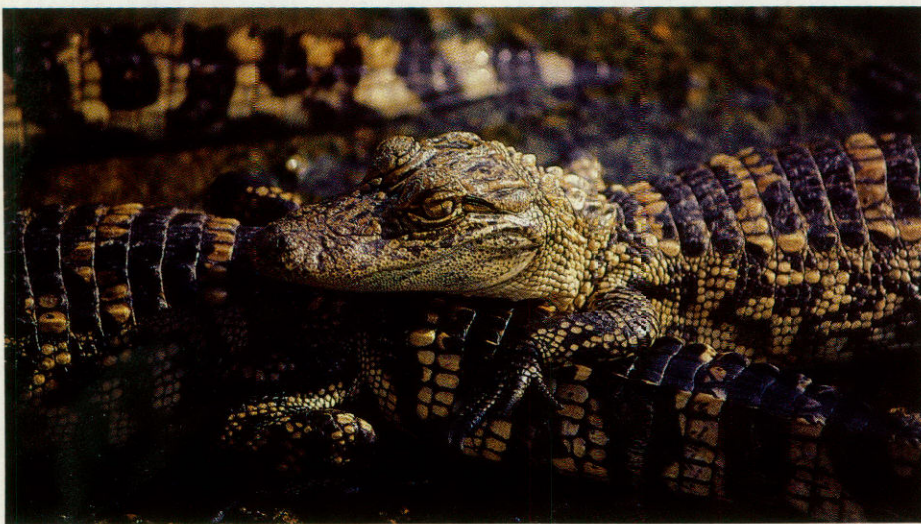
**M**anagement of game species like the mule deer at left is provided for in large part by funds from the sale of hunting and fishing licenses. Trapping and transplanting of mule deer started in 1949, and during the next two years more than 200 muleys were transported to their former ranges. The high, bouncing gait of a mule deer is exaggerated in this animal's leap over a fence.



In the rough country of West Texas their long, high bounds can send them over rocks and brush much faster than other animals can run through or around obstacles. Its West Texas neighbor, the badger (center), is not so agile, but makes up for it in ferocity. Badgers feed on ground squirrels, such as the thirteen-lined squirrel (top), and possibly horned lizards (bottom). Notice the circle of blood around the horned lizard's eye? An agitated lizard can squirt blood from the thin-walled membrane around its eye. This bizarre trait is done by increasing blood pressure in the lizard's head, and could be a defense mechanism. Lizards, badgers and ground squirrels are non-game animals and their management depends in large part on funds from sale of Nongame Stamps.



**P**ressures of one type or another have driven these creatures to the edge of extinction—from uncontrolled hunting and habitat loss in the case of the Attwater's prairie chicken (top) and alligator (bottom), to pesticides affecting the reproduction of brown pelicans (across). The whooping crane (center) is the symbol of the nation's concern for endangered species, and through the combined efforts of public and private organizations and individuals, the whoopers are increasing. So are brown pelicans and alligators, while the Attwater's future is dim as its coastal habitat continues to shrink from urbanization and agriculture. Some 1,460 Attwaters' occupy 243,000 acres of habitat. Compare this to the estimated one million birds living on seven million acres of prairie extending from the Nueces River into Louisiana in the days of early settlement. On a positive note, the brown pelican steadily increases with the help and protection of man.







**T**here's more to Texas' wildlife than just the popular species familiar to most everyone. Bats, spiders and owls aren't as glamorous as deer and quail, but they have a part in the scheme of things. Bats comprise the second largest population of mammals on earth, with 29 species found in Texas. This



evening flight of Mexican freetail bats will consume tons of insects before they return to roost in their cave. But many people have a fear of bats which they cannot logically explain. Another night creature, the great-horned owl, also has received a lot of bad press. They have been called barbingers of evil and monsters of the night, but owls also are known as cats with wings. They are powerful hunters and control rats and other vermin. When it comes to illogical fears, spiders run neck and neck with snakes. This female wolf spider will drag her egg case about until the young hatch and swarm over her abdomen.



**A** coyote's serenade often was all the company settlers had when they moved into western Texas and the High Plains. Coyotes preyed on many of the ranchers' animals, but despite extermination efforts they have survived and even prospered. Estimates of prairie dog populations (lower right) exceeded 800 million animals. As settlement continued to push back the frontier, more and more Texans became concerned with ever-diminishing wildlife resources, especially species they considered useful—scaled quail (top), turkeys (center) and whitetails (next page).













**M**an started changing wildlife habitat the day he arrived in Texas. Species with a narrow range of food and cover requirements disappeared and more adaptable ones took their place. Generalists like raccoons (top) are thriving from river bottomlands to city dumps. Species that depend on wetlands perhaps have been the most affected by settlement, as marshes used for nesting colonies by green herons (top left) are drained for agriculture and urban development, and whistling duck (left) feeding areas are inundated by lakes.



**A** gentle zephyr swirling across the sun-baked West Texas plain bears a hint of chill as it fans a vast expanse of cotton and grain fields. The stable flow of air is soon to meet a more turbulent environment, spawned in the badlands of the Caprock. A warm, southerly air mass, bearing moisture from the distant Gulf of Mexico, rises to meet the westerly inflow at the sawtooth edge where the historic Staked Plain drops abruptly into a network of mesquite and saltcedar arroyos. A cloud created by these opposing air flows generates a cooling shower for the parched land. Some of the moisture sinks into the the thirsty earth, but more flows downstream to meet with the effluent of other mini-watersheds, eventually forming the mighty Colorado River.

Only 150 years ago, rainwater falling in what is now Borden County could have flowed unimpeded 600 miles to the Gulf of Mexico at Matagorda. Today it must pass through nine dams, and the number may grow to 11 within the next decade.

The Colorado, like its namesake river in the western United States, is perhaps the most harnessed waterway in Texas. From a wild and unpredictable menace the stream has been bridled into virtual submission like a tethered mustang. The taming of the Colorado, the largest river whose watershed is totally within the state, is not unique. There are no major rivers in Texas untouched by the dam builders, and hundreds of smaller waterways have been thus altered.

Rivers were the arteries along which cultures developed from the state's earliest days to the present. Settlers, as the Indians had before them, found life easier along streams that offered abundant game and fish, fertile soil and water—commodities less readily available over much of the state's plains and deserts. As the state developed, however, its shallow and unruly rivers proved too wild for early Texans' taste. Dramatic fluctuations of water levels flooded farmlands during wet spells and stranded vessels during dry ones.

By the turn of the century, many small dams already had sprung up on small watersheds as water was harnessed to power gristmills and for electricity. There was no major reservoir in Texas until Lake Medina's dam on the Medina River was constructed west of San Antonio in 1913. Medina Lake, considered huge in its time, impounded 254,000 acre-feet of water, well over half the capacity of the rest of Texas' reservoirs combined. The following half-century saw reservoir storage capacity grow to 1.6 million acre-feet in 1950 to more than 58 million in 1983.

Texas lakes are as varied as the diverse geography on which they were impounded. Deep and rocky Lake Meredith is a welcome sight in the Panhandle region where surface water is a rarity. Other West Texas lakes such as Spence and J.B. Thomas threaten to disappear during severe droughts. As the terrain changes farther east, reservoirs appear on every watershed.

In fact, Interstate Highway 35 between San Antonio and Dallas/Fort Worth can serve as a symbolic divider, both for number and character of reservoirs. The rich clay soils and fertile watersheds of East Texas provide the environment for extremely productive fisheries, and names like Toledo Bend, Sam Rayburn, Murvaul, Monticello and Livingston are familiar to fishermen across the nation as well as Texans. Oddly, four of Texas' largest reservoirs are only partially in Texas. Toledo Bend, the largest, impounds 181,000 acres on the Texas-Louisiana border; Texoma, covering 91,000 acres, is on the Red River

## WATERS

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*by Jim Cox*

bordering Oklahoma, and Amistad and Falcon are shared with Mexico.

Thus the dam-building activity of the past half-century has transformed Texas from a state with no large reservoirs except Caddo—a true natural lake—to one boasting approximately 5,600 reservoirs 10 surface acres or more in size, totaling almost 1.6 million acres, according to the Natural Resources Information System's Impoundment Inventory.

This radical alteration of the state's geography was not accomplished without controversy and compromise. The benefits are obvious—controlling floods and establishing consistent water supplies for a growing state are compelling and justifiable goals. Passage of the Texas Water Plan in 1985 is an indicator that water now is a major concern of Texans, perhaps more so than during the state's first century. The negative aspects of dam-building also have received attention during recent decades. For every surface acre of water impounded, an acre of wildlife habitat is lost forever. What makes this loss more profound is that bottomland habitat in Texas usually supports a wider array of wildlife and plants than the surrounding uplands.

While major dams have brought a ready supply of water to cities, those same cities in many cases have ironically contributed to declining water quality levels in the rivers dammed to create this supply. Rapid growth of urban areas often outstrips the capacity of outdated sewage treatment plants, leading to the dumping of poorly treated or untreated effluent into the waterways.

Another consideration is the effect of dams on freshwater inflows to the state's bays and estuaries. Periodic flushing with fresh water is just as vital to the bay systems as rainfall is to the Panhandle. No other aquatic environment in Texas has been subjected to as many pressures as the shallow bays that are the nursery grounds for the fish and shellfish species supporting a vast fishery.

Even subsurface waters have been subject to fervent debate in recent decades, fueled by increased suspicion that the waters of Texas' underground aquifers such as the Ogallala in West Texas and Edwards in Central Texas will suffer declines in recharge capacity or be degraded by development and pollution. There are few easy answers to Texas' water problems. Every time a dam, factory or housing development is planned, environmental compromises are necessary.

To compound what already is a confusing situation, many state, federal and local agencies are involved in the various aspects of water management in Texas, creating an echo chamber of widely varied policies and objectives.

Although the problems are considerable, there are signs that growing awareness in the public and private sectors is beginning to pull water problems into focus. The Parks and Wildlife Department is one of several agencies with some voice in Texas water management, and the agency's role was enhanced with passage of its Sunset legislation during the Legislature's 1985 session. The Sunset bill firmed up the agency's role as manager of all fish and wildlife resources and gave it an opportunity to be a party to applications before the Texas Water Commission. To meet the needs of this expanding role, the department's Resource Protection Division was expanded to meet the demands. The Resource Protection Division is involved in both aquatic and terrestrial habitat protection, including water quality and pollution surveillance, fish kill investigations and permitting activities.

One relatively new concept in resource management is that of mitigation. The term in this context means efforts to reduce damages to fish and wildlife caused by any project subject to permitting requirements, whether it be a dam, canal or strip mine. If the potential environmental damages cannot be resolved in the project's planning stages, the other aspect of mitigation, i.e. compensation, may be brought to bear.



An example of this compensation is when a dam-constructing agency floods a valuable hardwood bottomland or marsh wetland. Prior to the 1970s, compensation was seldom required to replace inundated habitat. Now the project sponsors must provide land of similar value, preferably in the same general area, to make up for losses caused by the project. The department already has acquired a number of tracts as a result of this policy for use as wildlife management areas, fish hatchery sites and the like.

Just as the department's environmental protection role in matters concerning water have been increased, its job of managing the state's extremely varied sport and commercial fisheries has been intensified. This is due in large measure to Texas' tremendous population growth and the inexorable pressures placed on finite fishery resources.

**D**uring Texas' early days, little thought was given to the vulnerability of its fisheries. Fish inhabiting the streams and bays were considered an inexhaustible crop to be harvested by the most efficient means, and a prohibition on the use of explosives, poison or lime was not enacted until 1897. During those days, all fish species were legal for commercial sale, and the saltwater bays in particular were subjected to harvest on a scale comparable to the slaughter of bison on the plains. One of the state's first and most lucrative fishing industries was the sea turtle harvest, a practice that eventually reduced turtle numbers past the point of economic gain.

The first law containing restrictions on coastal netting and seining was enacted in 1874, but comprehensive regulations on the harvest of coastal fishes was not to come until much later.

The state's first efforts at freshwater fishery management were well-meaning but misdirected from a contemporary viewpoint. During the 1870s, shad and salmon were stocked in several rivers. They died in Texas' warm waters, so the next experiment was introduction of the German carp in 1879. This experiment was wildly successful in terms of getting carp established, but the cottage industry of carp production in farm ponds envisaged by officials never materialized. While the carp's detrimental role in Texas freshwater lakes has been largely exaggerated, it nevertheless proved to be a fish with only marginal sport or commercial value at best. The failed experiment and other political ramifications caused the Legislature to abolish the Fish Commission in 1885, and it was a decade before any efforts were made to manage fisheries.

The carp later became a handy scapegoat when fishing for bass, catfish and other native fishes began to decline on some Texas lakes. This decline in productivity, which often occurs five to eight years after impoundment, is a phenomenon that is related more to deterioration of bottom structure, declines in water fertility and overharvest than to the activities of rough fish such as carp.

The aging process was of minimal concern during the 1940s and 1950s, since fishing pressure was low and new reservoirs were coming on line with regularity. But by the 1970s, the dam-building frenzy was abating and anglers were becoming increasingly concerned about poor fishing in the older reservoirs—especially for largemouth bass.

Largemouth, or black, bass have been the darlings of Texas sport fishermen since the days of the steel casting rod and braided line. However, native largemouths evolved as stream fish and can adapt to reservoirs only when the habitat—including riverine-type cover and suitable forage—is present.





Fishery biologists in the early days of their science reacted to declines in bass populations by stocking more bass, but in recent decades it became more apparent that indiscriminate stocking is no panacea for ailing fisheries. In most cases, releasing native bass into a lake that already supports stable populations of bass is an expensive waste.

This realization, plus revelations from other states, set the stage for the fishery management scheme seen in the state today. The keystone of present management of freshwater lakes is to attempt to tailor fish introductions and other management to each reservoir's unique needs and characteristics.

The entry of non-native game fish species has been an important part of changes wrought in freshwater fishing. The Florida strain largemouth already has proved a worthy addition, providing fast growth, large maximum sizes and better utilization of certain habitats than native bass. Now bass from Cuba and California are being used in hybridization experiments with native bass in an effort to find the optimum fish for stocking.

Smallmouth bass, long a mainstay of northern fisheries, has been a successful introduction in clear lakes lacking in classic largemouth habitat. Many of Texas' reservoirs west of Interstate Highway 35 are destined to be excellent smallmouth fisheries in time, officials believe.

A hybrid cross between the striped and white bass has augmented fishing in many power plant reservoirs that often have surplus forage fish but insufficient numbers of predator fish. Biologists are especially pleased that stripers and hybrid stripers have given anglers additional sport without making inroads on bass or other native game fish. Saltwater red drum (redfish) are another species that has proven to be a valuable asset in small power plant lakes whose waters have sufficient chloride contents to support them. Lake Braunig near San Antonio is a showcase lake and unique in the nation for freshwater redfish angling.



**A**lthough pioneer Texans found no trout or salmon in Texas' rivers, they did find a good variety of native stream fish, many of which still are contributing to sport fishing. These include largemouth, spotted and Guadalupe bass; channel, blue and flathead catfish; white and black crappie; buffalo, gar, bowfin, and a host of sunfish species. Rainbow and other trout species have been stocked in several public areas and state park lakes each winter.

Producing fish for stocking the state's public waters is stretching the state's hatchery system to the limit, and even with improved fish culturing techniques the facilities are unable to produce the needed number of fish. Like fishing itself, production of fish for stocking is never cut-and-dried, with production often being influenced by the weather and other variables. One example of this occurred in November 1985 when runoff from heavy rains washed out a 50-year-old dam at the department's Huntsville Fish Hatchery, possibly taking with it a third of the anticipated 1986 Florida bass production.

One hatchery, located in San Marcos, is currently being renovated and will feature state-of-the-art computer controls for producing several species of popular game fish for stocking. Stocking fish in salt water is a relatively new concept, but completion of the department's John Wilson Hatchery at Corpus Christi has made red drum stocking a reality for Texas. The hatchery was built with funds raised by the Gulf Coast Conservation Association and is situated on

Corpus Christi has made red drum stocking a reality for Texas. The facility to date has produced more than 22 million red drum fingerlings, and all Texas bay systems will have received portions of the bounty by mid-1986.

If fish introductions are half of Texas' fishery management picture, control of harvest is the other half. One of the areas in which the department moved with the new authority of the Wildlife Conservation Act was establishment of more effective limits on fish. In fresh water, an increasing number of lakes have special length and bag limits for largemouth bass. These limits are designed to prevent overharvest while continuing to provide quality fishing. Limits on other species have been tightened to prevent overharvest and bring about a more equitable distribution of the catch.

Legislation enacted in recent years has enhanced protection for salt-water fish, notably red drum and spotted seatrout (speckled trout). Commercial harvest of these two species now is prohibited, and sport fishing limits are considerably more stringent than they were a decade ago. Biologists hope the combination of good natural spawns, the stocking of hatchery-raised fish and more restrictive harvest regulations will restore populations of red drum that were overharvested for many years.

Bay waters can be adversely affected by alteration of river flows, a problem that grows with increasing upstream demands for water. During 1984, action by the department led to a landmark decision by the Texas Water Commission to order the release of water from an impoundment solely for the benefit of an estuarine system. The TWC, acting on a request from department officials, ordered the emergency release of 10,000 acre-feet of water from Lake Texana near Edna. High salinities in the Lavaca River below the lake had threatened fish and shellfish that use the delta area as nursery grounds. This incident suggests that government and reservoir sponsors may be able to work together more in the future to assure that estuaries get needed fresh water.

Environmental problems and those attributable to activities such as fishing have gotten widespread attention during the recent decades where Texas bays are concerned, but the Gulf of Mexico has at the same time been considered by many to be resistant to such pressures. Veteran offshore fishermen, who once found a seemingly endless supply of king mackerel and red snapper, now have to acknowledge that supplies of these and other species have indeed dwindled. The blame for declining fisheries is a matter of perspective, but biologists believe overfishing is the main culprit in the diminished numbers of mackerel and snappers. The department has authority to set bag limits and other regulations on fishing as far as nine nautical miles from shore. Beyond that line, federal agencies set the limits. The state and federal agencies so far have worked in concert to keep regulations uniform for all offshore waters, and new, more restrictive limits on king and Spanish mackerel, red snapper and cobia (ling) are results of their efforts. Uniform seasons also are set for shrimping in all offshore waters. Regulations are vital to maintenance of this troubled industry. Texas shrimpers are faced with a host of problems, including increased competition in home waters, imports from other countries and skyrocketing expenses of operation.

One thing becomes apparent as Texas' first 150 years draw to a close. Water and all aquatic resources must be considered finite. The frontier-days belief that supplies of land, wildlife, fish or water are available for unlimited exploitation has finally expired. Resource users will have to accept increased constraints on harvest, and management agencies such as the Parks and Wildlife Department will be obliged to act as referees in the apportionment of these resources. In spite of the pressures brought on by growth, the next 150 years can be viewed with optimism if lessons of the past are taken to heart. \*\*



**T**housands of miles of rivers and streams greeted Texas' first explorers and settlers. These early Texans described the region's waterways in terms of both admiration and fear, reflecting the untamed nature of the precious water resource. They learned what succeeding Indian cultures already knew; the flowing waters made life possible in a sometimes hostile environment. The fish and wildlife associated with stream drainages supported early food-gathering cultures and provided welcome respite for explorers. As the Anglo influence increased, the streams were increasingly exploited for transportation, irrigation and as a source of power. Barton Creek (below) and the Colorado River (right) intersect at what is now downtown Austin. Along their banks are found evidence of simpler times when streams were used, respected, even deified; but seldom altered. The days of wild, free-flowing rivers, however, were becoming numbered by the turn of the century.



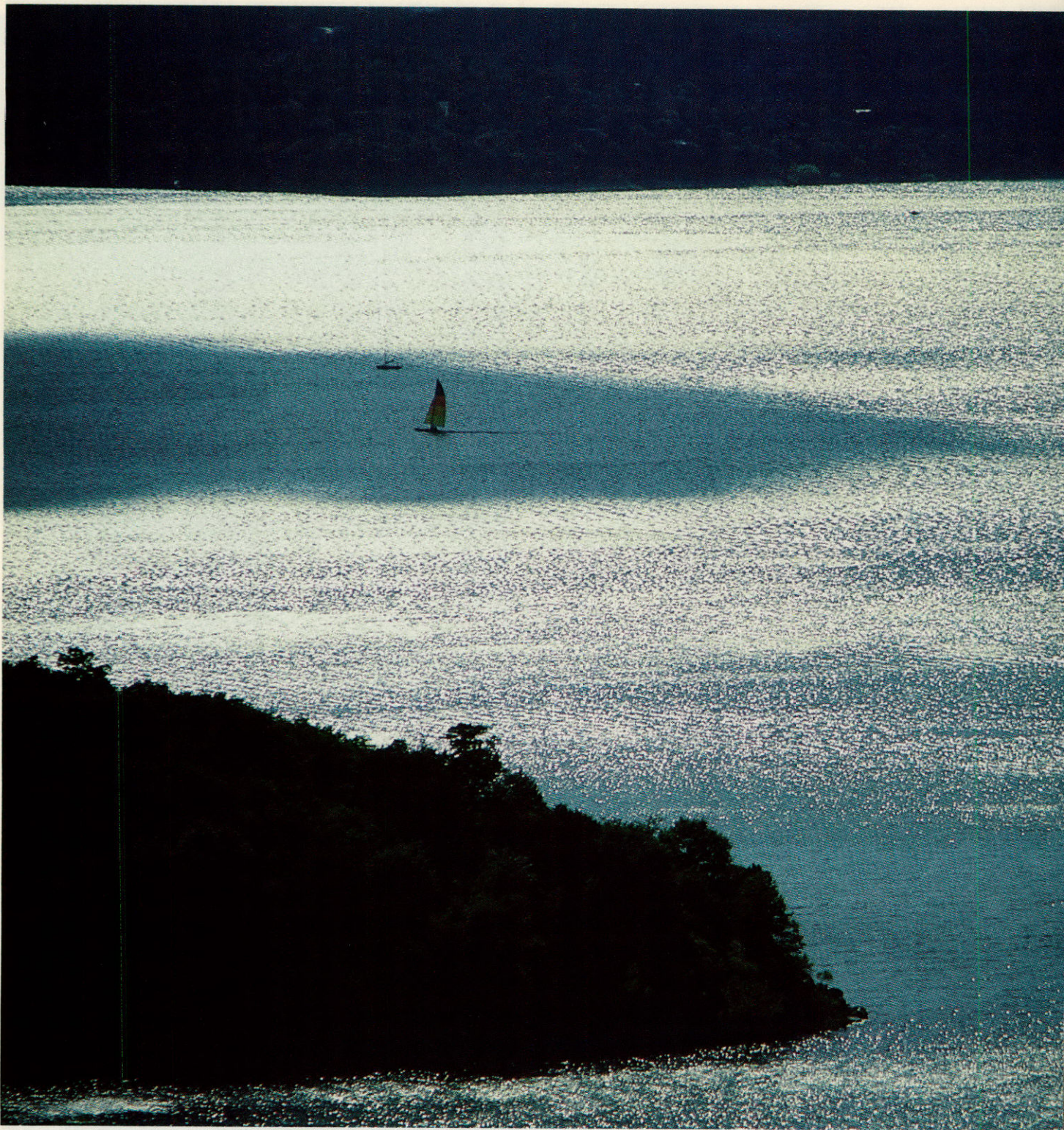






**T**emptation was strong among Texas' early settlers to harness uncontrolled waters. Rivers, in fact, were considered part of a raw and untamed land which had to be reined in to bring orderly growth and prosperity. A simple dam could stabilize water supplies for drinking, turn the machinery for gristmills and sawmills and yield water for thirsty crops during dry spells. Recreational use of impounded water probably was a minor byproduct of dam building during Texas' early history since most citizens were struggling to wrest a living in an agrarian society. Even as early as the 1800s the pattern of future development could be seen as impoundments immersed sections of bottomlands. A waterfall on the West Cave Nature Preserve in Central Texas (left) could be symbolic of areas which should be protected from exploitation, especially inundation by water. Streams and rivers were populated by a myriad aquatic creatures, including bass, catfish, gar, sunfish and unusual species such as the now-rare paddlefish. Conversion of free streams into lakes would be tolerated by some of these life forms; others would perish.









**T**he end of World War II signaled the beginning of an era of dam building in Texas which would reach a crescendo in the 1960s. It was a period which would have staggered the imaginations of our ancestors. The region now called Texas had only one large lake 100 years ago. Caddo Lake on the Texas-Louisiana border



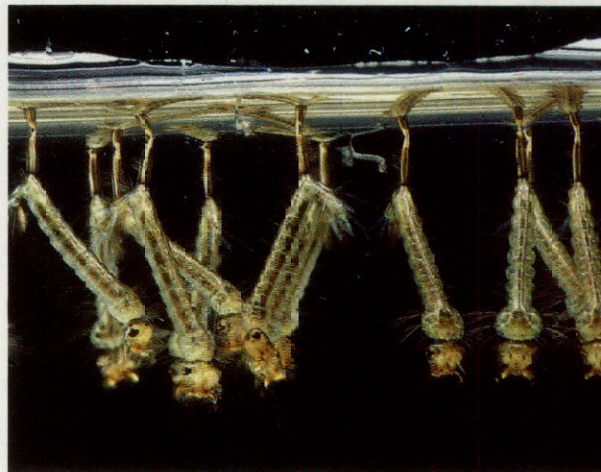
was created by natural forces, and it was king until the dam impounding Lake Medina was constructed west of San Antonio in 1913. Now the state boasts about 5,600 reservoirs more than 10 acres in size, and they impound almost 1.6 million acres. Reservoirs in large measure are responsible for Texas' emergence as a Sun Belt powerhouse among the states. Along with economic benefits, this vast watery acreage has been an undeniable bonanza for recreation, which has developed into a major industry.



**D**uring Texas' early days, fishery resources were considered inexhaustible, and laws governing the harvest reflected this attitude. The first law containing restrictions on coastal netting and seining was enacted in 1874, but significant controls on both fresh and salt water fishes would not occur until much later. One early effort at managing fisheries was centered around small impoundments such as the one at right. The German carp was introduced in 1879 as possible food source which could be produced in the many small ponds across the state. This experiment failed because of the fish's lack of acceptance. The dam-building activity of the postwar era coincided with the emerging science of fishery management to set the stage for future advancements.

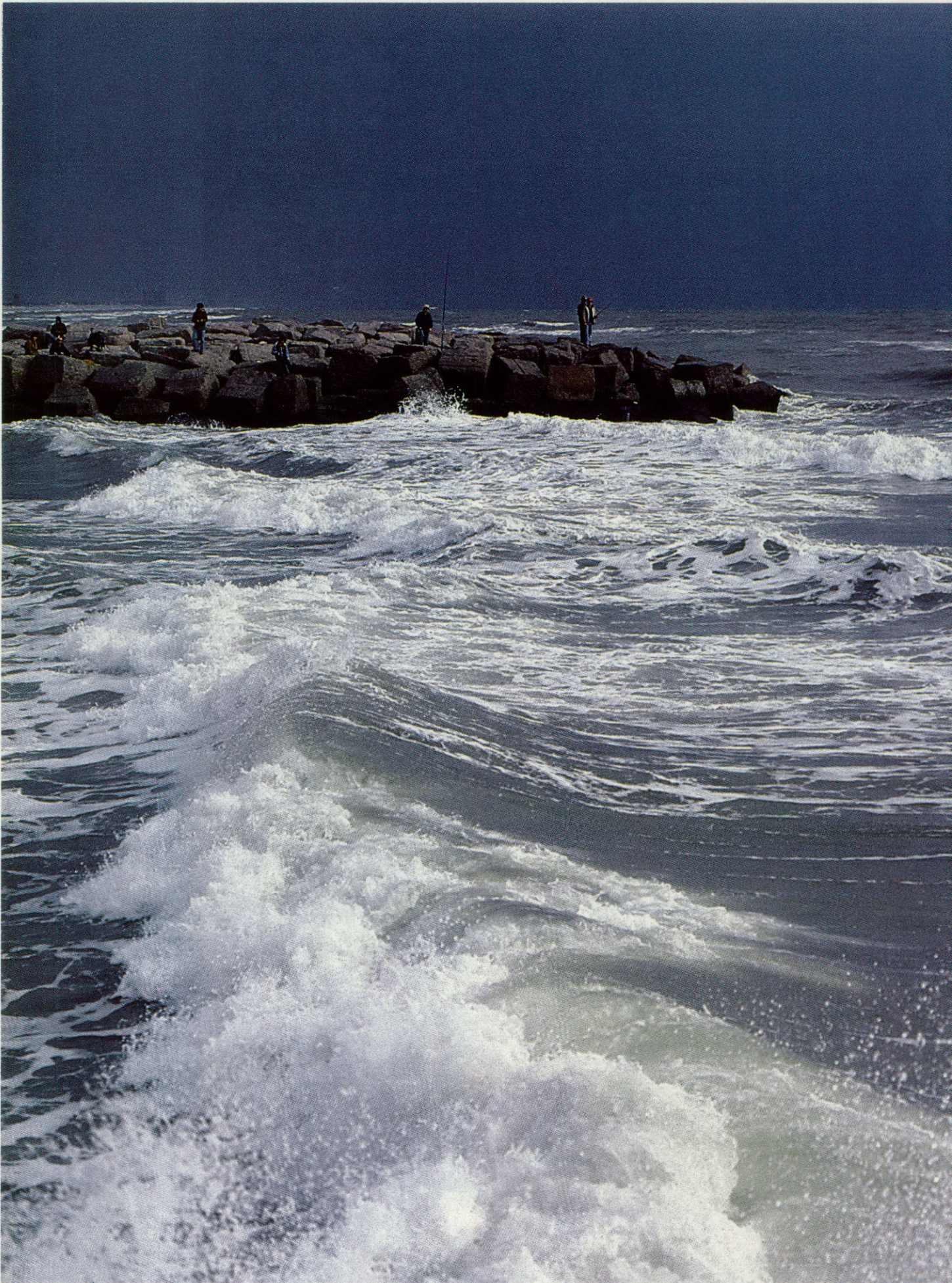








**F**reshwater fishing popularity has grown monumentally in Texas during the past decade. At the same time, reservoir construction has abated and more impoundments have declined due to lack of fertility, siltation and loss of brush and other bottom structures through deterioration. Fishery biologists realized this was a complex problem whose solution would require more than one approach. The department's programs today combine research and stocking of non-native game fish species as well as native species where applicable, control of the harvest through regulations and their enforcement, and protection of the aquatic environment.





**T**he Gulf of Mexico and its associated system of bays and estuaries also was once considered immune from overharvest. Declines in popular fishes such as spotted seatrout (above and right) and red drum during the 1960s and 1970s proved this theory untrue. The department annually surveys the coastal fishery and uses this data base to guide its management programs. As with the freshwater fisheries, more restrictive bag and length limits have been vital for bringing overfished species back to prominence. Unique partnerships among the department, conservation organizations and industries also are resulting in construction of new saltwater hatchery facilities which are expected to have far-reaching implications for the future of coastal fishing.







**P**eople brought about the changes in Texas during the past 150 years, and no discussion would be complete without devoting some time to them. Although it takes us back further than 1836, we probably should start with those who were either responsible for or involved in the early settlement of Texas.

In the 1500s, Spanish explorers claimed the area that one day would be known as Texas. They conducted several expeditions through it searching for gold, and their priests attempted to establish missions, but no permanent settlements resulted from these early explorations.

The towns of Ysleta (recognized today as the oldest town in Texas), Socorro and San Elizario, located along the Rio Grande south of El Paso were established before 1682, but they were little more than chapels in the wilderness serving as way stations for travelers.

It took the arrival of the French to stir things up. The French flag first flew over Texas in 1685 when Rene Robert Cavelier, Sieur de la Salle, landed at the head of Lavaca Bay and built Fort Saint Louis. From this site he made several expeditions to the west, possibly in search of Spanish gold and silver mines, and to the east in search of the Mississippi River. LaSalle was killed by one of his own men a couple of years later and the fort was destroyed by disease and Indians, but the Spanish were unaware of what had happened. They considered Fort Saint Louis as a threat and took action to locate it to protect their holdings in what is now known as East Texas.

In their efforts to find LaSalle's French colony, Spanish officials sent out five sea expeditions to search the Gulf coast from Florida to the Rio Grande, and six land expeditions that obtained the first detailed information on the interior of Texas. Finally in 1689, an expedition under the command of Alonso de Leon, governor of Coahuila, discovered the ruins of the French fort. De Leon then continued eastward to the Neches River where he and Father Damian Massanet established the first East Texas mission, San Francisco de los Tejas. (Modern-day visitors to the area can see a replica of this mission in Mission Tejas State Park located near Weches.) Mission Tejas and another nearby mission, Santisimo Nombre de Maria, were abandoned when the fear that the French were taking over Spanish territory had passed. The Spanish seemed to be more interested in keeping the French out of the area than in settling it for themselves. Perhaps they felt more comfortable on the mountain slopes of Mexico and the more arid plateaus of West Texas than they did in the bayous and forests of East Texas that were so appealing to the later Anglo settlers.

Although the settlement of Texas was not a priority for the Spanish, De Leon's expedition into the area did result in the naming of the territory. When an Indian they met was asked the name of his tribe, he replied, "Tejas." This word, which means friends or allies, probably was meant to describe an intertribal group of Caddoes, but the Spaniards adopted it as the name for the land located between the Rio Grande and the Red River.

The arrival of another Frenchman, Louis Juchereau de Saint Denis, at San Juan Bautista on the Rio Grande (the site of present-day Eagle Pass) in 1714 got the Spanish back into the business of settling Texas. The Frenchman, who claimed he was merely traveling through Texas attempting to establish trade, was arrested and sent to Mexico City for questioning by authorities, and Capt. Domingo Ramon was sent out from San Juan Bautista to attempt to establish missions among the Texas Indians again.

## PEOPLE

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*by Ilo Hiller*

Some historians believe that the real settlement of Texas did not begin until 1718 when Father Antonio de San Buenaventura Olivares of the Order of St. Francis built a church mission named San Antonio de Valero. This mission, located about half way between the East Texas missions and the Spanish presidios in northern Mexico, was the first of five missions built in the area and it laid the foundation for the present-day city of San Antonio.

This group of missions and the people who settled around them established Texas as a Spanish state. Ironically the mission San Antonio de Valero was the predecessor of the Alamo, which played such an important role in Texas' bid for freedom from Mexico. (The structure presently known as the Alamo was not built until about 1754. When San Antonio ceased to be a mission colony, the building became a military garrison, which set the stage for the historic battle that would one day take place there.)

When Mexico won its independence from Spain in 1821, the white population in Texas was about 7,000 or less, and San Antonio, Goliad and Nacogdoches were the only communities of any size. However, by 1836, there were at least five times as many Anglos in the area.

Much of this growth was a result of the efforts of men, known as empresarios, who received land grants from Mexico and permission to bring families in to settle the land. Among the first, and possibly the most famous, were Moses Austin and his son Stephen F. Austin. Moses laid the groundwork before he died, but it was his son who secured permission from Mexico to bring 300 families to Texas. These colonists, known as the "Old Three Hundred" established Columbus on the Colorado River and Washington-on-the-Brazos. During the next decade Austin secured some 1,500 land titles and the population of his colony grew to more than 5,000.

Green DeWitt and Hayden Edwards also played important roles in colonizing Texas at this time. DeWitt brought several hundred families west of the Colorado and founded Gonzales in 1825, and Edwards settled some 800 families around Nacogdoches. Other American empresarios were Benjamin Milam, Gen. James Wilkinson, Sterling Clack Robertson, Joseph Vehlin, Robert Leftwich, David Burnet and the firms of McMullen and McGloin and Power and Hewitson. Mexican empresarios included Martin de Leon, whose settlement became present-day Victoria, and Lorenzo de Zavala, who later became a Texas Revolutionary leader.

As Anglo-American pioneers poured into East Texas across the Sabine River some settled in the established communities, but others spread across the surrounding plains in all directions. The success of this colonization brought a steady stream of settlers to Texas, a situation that should have benefited Mexico. However, conflicts arose from differences in language, culture and religion, along with the tendency for the authorities to be partial to Mexican settlers whenever disputes occurred between Anglos and Mexicans. It was only natural for Anglos to develop stronger ties with the United States, especially in view of the way they were treated.

Historians speculate that if the Mexicans had made any effort to govern the Anglo-Americans fairly, there might not have been a revolt. However, when Mexico forbade further settlement of Anglos in Texas except in two colonies, levied duties on all imports to discourage trade with the United States, forbade the use of English in public business, denied trial by jury and the right of bail and required that all settlers be Catholic (most were Protestants), the situation became intolerable for the Anglos.

As the controversy grew, minor skirmishes occurred, such as the one at Anahuac on July 13, 1832, over the arrest of some colonists trying to perfect their land titles. Efforts were made during the next two years to modify laws and



settle differences, but by 1835, most Texans had come to the conclusion that war seemed the only solution. The fight over the possession of a cannon at Gonzales on October 2, 1835, is considered to be the first battle of the Texas Revolution, and the confrontation with Santa Anna at San Jacinto on April 21, 1836, was the final battle leading to the independence of Texas.

The new Republic of Texas encouraged colonization, making large land grants to such empresarios as Henri Castro, who founded Castroville with 600 Alsatian families, and W.S. Peters, who established a settlement around present-day Dallas. The Fisher and Miller grant, issued to Henry Francis Fisher, Buchard Miller and Joseph Baker, initially allowed the settlement of 1,000 German, Dutch, Swiss, Danish, Swedish and Norwegian families and eventually included more than 3 million acres between the Colorado and Llano Rivers and involved 6,000 families and single men.

Prince Karl zu Solms-Braunfels, representing a group of German noblemen, brought more than 6,000 German immigrants into the Hill Country in 1844 and settled them on 1,265 acres located where the Guadalupe and Comal Rivers meet. They founded the town of New Braunfels, and then spread over the Hill Country to establish another German community called Fredericksburg. (Visitors who wish to step back into time and see life on a typical Hill Country German homestead will enjoy visiting the Sauer-Beckmann farm. Park interpreters in authentic costumes have turned the clock on this living history exhibit at the LBJ State Historical Park back to 1918.)

**T**exas had grown from a population of 7,000 in 1821 to somewhere between 35,000 and 50,000 at the time of its independence in 1836. The increased colonization efforts between 1836 and 1845, when Texas was annexed by the United States, brought the population to between 125,000 and 150,000. A short five years later, the U.S. Census recorded the Texas population as 212,592.

As settlers continued to spread across Texas and push westward, they expected the military to protect them from hostile Indians. The military responded by establishing forts along the frontier and along the Rio Grande. In addition to the protection these forts offered, they also served as bases for explorations into the frontier. They contributed to the local economy, enriched the social opportunities for nearby settlers and brought such improvements as new roads and the telegraph. Of course, they also attracted less desirable elements, such as saloons and thriving bawdy houses.

Few Texas forts were built in the traditional Hollywood stockade style. In fact, most of them looked like typical frontier towns. Each had a large parade ground fronted on one side by officers' quarters and the other by enlisted men's barracks. The administrative offices, storehouses, corrals and other necessary buildings were scattered about in a more or less random fashion. They usually were built from whatever materials were available locally—stone, adobe or rough lumber. The facilities were seldom comfortable or built to last since the forts came and went as the frontiers shifted and Indian dangers fluctuated.

The soldiers endured poor living conditions, poor food, low pay, isolation, strenuous field service and the fear of death or injury. They were told when to work, when to eat and when to sleep. Disciplinary actions for drinking and fighting were common. To help offset these harsh conditions, the military community amused themselves with dances, parties, festive dinners, riding and



sporting contests, and took advantage of hunting and fishing opportunities. Hunting provided an excellent source of food for both soldiers and pioneers, and it served as a diversion from the drudgery of everyday life.

For years the conflict between the Army and Indians continued as the settlers pushed westward, but by the 1880s it was all over. The crumbling walls of some of these forts still stand today as reminders of the past. Some have been restored by local communities and serve as museums, others have been preserved or partially restored as state parks. (Those who are interested in reading more about the historic forts of Texas will enjoy Robert M. Utley's new book, "If These Walls Could Speak," which brings to life, with the help of J.U. Salvant's paintings, the 10 key military posts that kept watch over the westward-advancing frontier of Texas during the pioneer decades.)

**S**ome of the settlers were cattlemen, and the advent of barbed wire in Texas in 1879 brought conflict to the cattle-raising areas of the state. Big ranchers, who were used to grazing their cattle on the open range, wanted it to remain open, but those who were buying the land wished to enclose their holdings. Fence cuttings were common, millions of dollars worth of damage occurred and lives were lost when the disputes became violent. The Texas Rangers and local law enforcement officers had the job of keeping the peace during this time of conflict, and in 1884 laws were passed making it felonies to fence unowned land and cut fences.

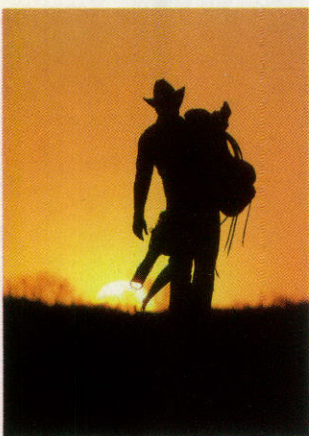
While Texas cattlemen were facing the problems barbed wire had brought to their lives, America was experiencing what many people refer to as the "golden age of hunting." The 30 years from 1870 to 1900 were a time of plenty for the hunter. Everyone believed that wildlife was an unlimited resource with a supply that would last forever and Texas shared in the abundance. These were the days before conservation when there were no such things as game laws or bag limits. Never again would there be so much game available, or so much open hunting land, or so many hunters with extensive field experience or so many professional shooters (market hunters) who spent their time harvesting wildlife for others.

These market hunters were all types. Some were poor squatters who sold game to feed their families. Others were energetic businessmen who paid careful attention to the marketing and shipping aspects and possibly served as both shooters and meat dealers. Others were marksmen who merely sold game to defray their hunting expenses. Their combined efforts were more than some wildlife species could tolerate. Birds were taken by the hundreds each day and buffalo were shot by the thousands for their hides and some of their meat.

As the 19th century ended, the ravages of the market hunter had become intolerable to the general public and sportsmen's organizations started advocating laws that would put an end to market hunting. However, they could see nothing wrong with an individual having the right to harvest all the game he wanted at any time of the year for personal use.

Hunting and fishing were commonplace activities and the harvested game became a part of the family's table fare. The few game laws were aimed primarily at market hunters, and sportsmen looked upon the large bag limits individuals were allowed as being a challenge rather than a restriction.

Local peace officers enforced these game laws in Texas until 1919 when the first game wardens were appointed. These six wardens, a sadly



inadequate number, faced enormous law enforcement problems. Game management was in its infancy and little attention was paid to it. People resented interference with their year-round free hunting and gave the wardens and their game laws little respect.

By the 1930s there were 20 times as many hunters in Texas as in the golden age of 1880, but hunting was now considered more of a sport than a necessity. Respect for game laws was increasing, more wardens were hired and new equipment purchased to make their jobs more effective.

Game wardens have come a long way since those early days. There are now more than 400 men and women employed as Texas game wardens and they are well equipped and well educated for their duties. The biggest change for wardens today is the scope of their responsibilities. The training classes started in 1946 have been replaced with an intensive 22-week course at the Game Warden Academy, which prepares them for these expanded duties. They no longer merely apprehend game law violators. They teach hunter safety and water safety courses; present programs to educate the public, and hopefully prevent violations; work with youth programs, such as hunting and fishing activities for underprivileged and handicapped; assist at times of disaster as members of the Civil Defense and Disaster Relief Team; assist local peace officers; and are on call 24 hours a day.

It would be difficult to say which duty is the most important, but many believe that their educational efforts, along with those of other trained wildlife specialists, will have the most far-reaching effects on wildlife, the environment and, ultimately, people in the future.

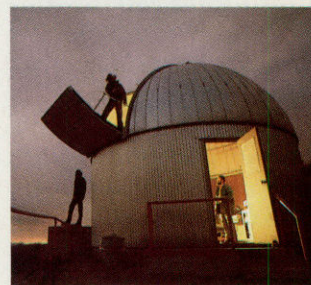
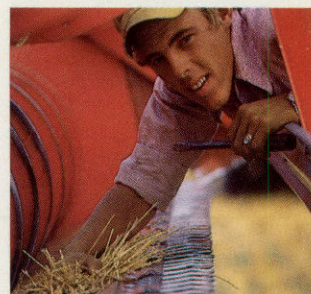
Who can predict what our state will be like 20, 40 or 100 years from now? With the past 150 years as a guide, we can anticipate dramatic changes that will affect us and our environment. Our technologies have given us the ability to manipulate our physical environment and its resources—for better or worse—and the directions we take will depend upon what we have learned about the world around us.

Two elements will play key roles in shaping our environmental future—resource management and education. The problems that developed during the reign of the market hunters were caused by a lack of education. The general public was not aware of what was happening until things were out of hand. If a good wildlife education program had been around then, things might have been different today.

We can't do anything about the past, but we can learn from it and help others to see how their actions and decisions affect the quality of the world around them. Educational programs aimed at landowners, sportsmen and outdoor enthusiasts are an integral part of the Parks and Wildlife Department's responsibilities. Hunter education and water safety programs reach a large number of people each year, and the department has implemented a new program—Project WILD—designed to reach the youth of our state. This new wildlife program, being made available to teachers free of charge, should give our young people the basic knowledge they one day will need to evaluate environmental problems and take intelligent and constructive action to conserve the wildlife and natural resources of Texas.

Although our department is just getting into a specific outdoor education program, we have been assisting the outdoor education movement for the past decade by working with teachers who have learned the value of exposing their students to wildlife and environmental concepts. If education is the key we believe it to be, the future of wildlife in Texas may depend upon how well we manage our educational responsibilities at all levels.

Of all the changes that have occurred in the state, none is as obvious



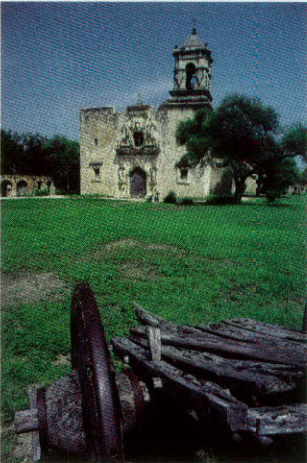
as the change from a rural to urban society during the past 86 years. At the start of the 20th century, just 65 years after independence was declared from Mexico, at least 60 times as many people (3 million) were living within the state's borders. Of these, more than 2.5 million lived in rural areas (82.9 percent), and agriculture dominated the state's economy. Eighty years later, Texas ranked third in the nation in total population—14,228,383 people. Of these, more than 11 million (80 percent) lived in metropolitan areas, a complete reversal of the way things were at the beginning of this century.

And where do all these people come from? Just as the early pioneers, they are migrating to Texas. The trend always has been one of more people moving into the state than leaving, but during the past 20 years, this number has been accelerating. During the 1970s, migration accounted for 58 percent of the state's total population growth, and experts are predicting we will have a population of at least 20 million by the year 2000.

As this migration to Texas continues, the Parks and Wildlife Department is faced with the problems of protecting our environmental resources while meeting the increased demands for living space and recreational opportunities. We already have seen the influence of more people using our state parks. Visitation increased to such an extent that a reservation system had to be initiated to manage the limited spaces available. As the population of Texas continues to grow the demand becomes even more critical. In order to help meet these needs, an accelerated land acquisition program has been approved and the department will be seeking areas to purchase for future park sites. No-cost acquisitions, such as donations and leases, will play a vital role in meeting the needs of our expanding population.

We also have seen an impact on our fisheries resources. As more anglers compete for the available fish, biologists have had to develop new regulations to insure that this renewable resource can keep up with the demand. The loss of habitat to subdivisions, reservoirs, highways and other urban needs, and the effect of this loss on wildlife is almost frightening.

As Texas continues to grow and take its place in today's high-tech society, who can predict what changes are in store for the state during the next 50 years. It's up to all of us to make sure they are changes we can live with in the year 2036. \*\*



*San Jose, one of the missions located halfway between East Texas and the presidios in Mexico, laid the foundation for present-day San Antonio. Fort Davis was one of the frontier forts established to protect settlers from the Indians. Descendants of the Spanish colonists who brought large-scale ranching to South Texas, still can be found in San Ygnacio.*





**M**any ethnic backgrounds were represented by the settlers who came to colonize Texas. Each year visitors to The Institute of Texan Cultures' Folklife Festival in San Antonio experience this ethnic variety as they taste the foods, listen to the music, watch the dances and examine the costumes such as those worn by these Greek girls. Tigua Indians at their pueblo at Ysleta (El Paso) represent one of the three Indian tribes native to Texas. Tiguas were recognized as Native Americans in 1960. The German influence is especially noticeable in Central Texas where these sturdy colonists came to work the land and establish their towns. And throughout the state the influence of our Mexican/Spanish residents can be seen.









**E**veryday people, regardless of their ethnic background or how they chose to earn their livelihood, have helped to make Texas what it is today. From the farmer and his wife who lived in a soto house during the early years in the Trans-Pecos to the man who bakes bread and pastries in the early morning hours or sells pottery in the market today, it is people who have and will shape the future of the state. When decisions are made to meet the demands of our high-tech society and ever-increasing population, we must not forget our responsibilities to the land, water and wildlife of Texas. We must make sure that the decisions we make today are ones we can live with in the year 2036.





**H**ow and where we choose to work may affect the way we view wildlife and the environment. If you spend your days sitting behind a sewing machine in the window of a tailor shop, or working among stained-glass windows and the products of another age in an architectural antique shop, or standing on your feet cutting hair, you may not have an opportunity to enjoy the outdoors. You, like many others, may see only the city street outside your window. As more people switch from a rural to an urban lifestyle, it becomes even more important for them to have state parks, lakes and other recreational areas where they can go to enjoy wildlife and the outdoors. And it is everyone's responsibility to see that such areas are preserved.

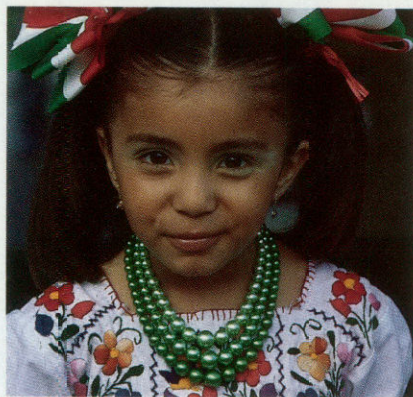




**A**fter the Civil War, when the Texas economy was facing a recession because of the collapse of the cotton market, an industry was developing in South and West Texas that would help put the state back on its financial feet—beef. Although people had been raising cattle in South Texas since colonial Spanish days, the animals had been used mainly for hide. People in the North and Midwest, who had developed a taste for beef, created a demand, and herds that had not been tended during the war years provided the resource. Unbranded cattle just waiting to be rounded up were common across the state. In 1866 an estimated 260,000 head were driven to market outside the state. Cattle and the people who work with them still play an important role in Texas.

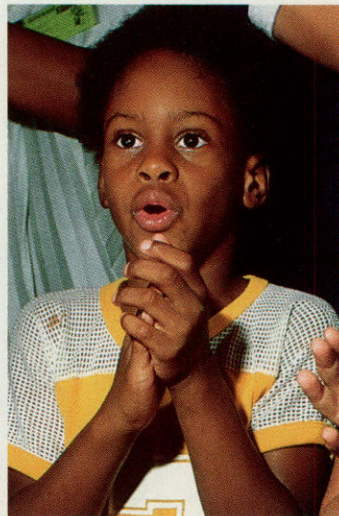
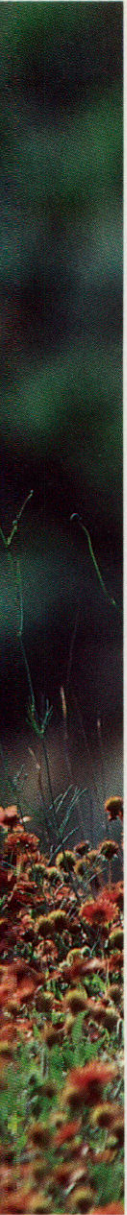




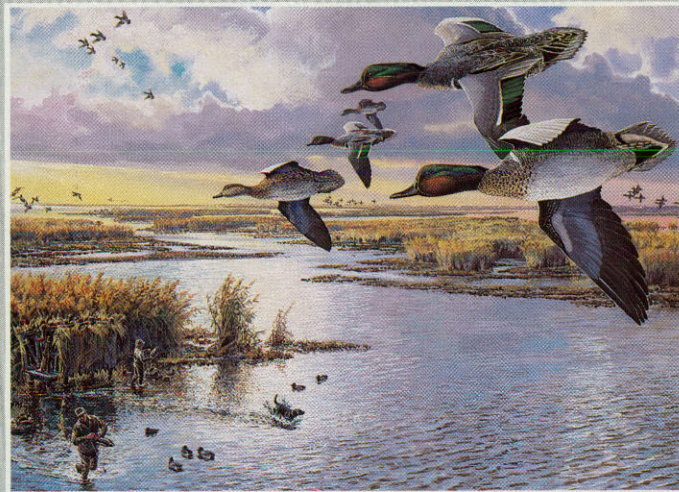


**E**ach of us has a responsibility to preserve the quality of the environment and make intelligent decisions on matters affecting land, water and wildlife. If the youth of today are going to be able to make the right decisions when they become adults, they must understand the fragile nature of our environment. They must learn that our decisions and actions will have impact, either good or bad. An educational program called Project WILD is being implemented in Texas schools by the Parks and Wildlife Department to teach wildlife concepts. Educators using this material will be teaching their students an awareness and appreciation of wildlife, human values concerning wildlife, the interdependency of wildlife and the ecological systems, wildlife conservation, cultural and social interaction with wildlife, wildlife issues and trends, and responsible human actions toward wildlife and the ecological systems. Another program being administered by the department is the hunter education course designed to teach young hunters safety, proper handling of firearms, hunting ethics, wildlife conservation and identification, survival, first aid, muzzleloading and archery.





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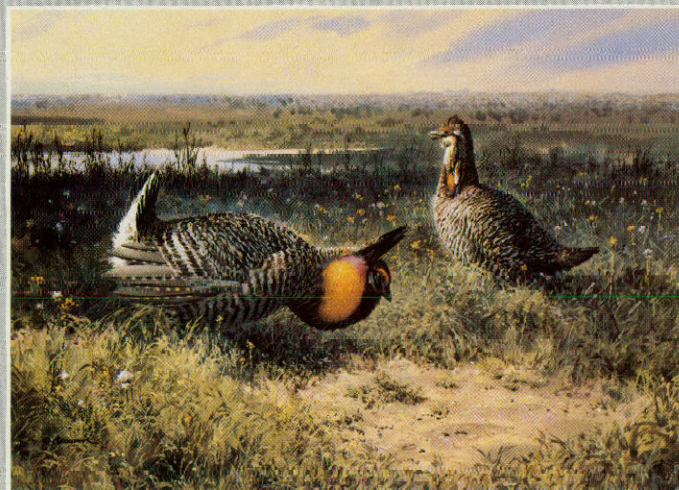
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## LOOKING AHEAD

The greater prairie chicken, the ivory-billed woodpecker and the passenger pigeon. Native bighorn sheep and bison. All extinct or decimated due to man's uncontrolled and short-sighted use of this state's wildlife resources.

One thing of value that has come out of the past 150 years of Texas history is a firm sense of responsibility in the conservation of wildlife. You can help. To report game violations, call Operation Game Thief toll-free at 1-800-792-4263. You may remain anonymous, and cash rewards are paid for information leading to convictions. But the greatest reward is being a part of a hopeful future for Texas wildlife.

# Photo and Illustration Credits

Front and Back Cover: Sunset near Balmorhea by Leroy Williamson.

Inside Front and Inside Back: Wheat in the Blackland Prairies by Paul M. Montgomery.

Contents, page 4: Tyler State Park by Leroy Williamson.

Illustrative plates, pages 2, 6, 32, 56 and 76 by Michael S. Wolverton.

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