

TEXAS

PARKS & WILDLIFE



December 1987



TEXAS PARKS & WILDLIFE

December 1987, Vol. 45, No. 12

GOVERNOR OF TEXAS
William P. Clements Jr.

COMMISSION

Edwin L. Cox Jr., Chairman Athens
Richard R. Morrison III
Vice-Chairman Clear Lake City
Bob Armstrong Austin
Henry C. Beck III Dallas
George R. Bolin Houston
William L. Graham Amarillo
Chuck Nash San Marcos
Beatrice Carr Pickens Amarillo
A.R. (Tony) Sanchez Jr. Laredo

DEPARTMENT

Charles D. Travis Executive Director

MAGAZINE

(ISSN 0040-4586)

Dedicated to the conservation and enjoyment of Texas wildlife, parks, waters and all outdoors.

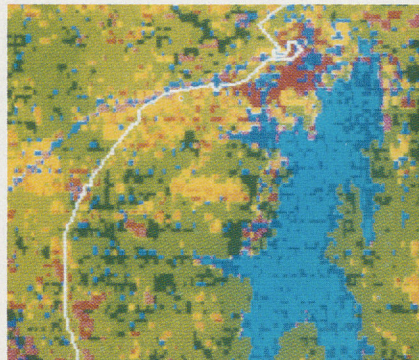
David Baxter Editor
Mary-Love Bigony Managing Editor
Barbara Karwhite Art Director
A. Gayland Moore Assistant Editor
Ilo Hiller Contributing Editor
Jim Cox Contributing Editor
Leroy Williamson Chief Photographer
Glen Mills Photographer
Susan E. Geary Typesetting
Belva McKann Promotions
Barbara Sloan Circulation
La Verne Moccia Office Manager

Published monthly by the Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744. Circulation: 512,389-4830; Editorial Office: 512,389-4992. Reproduction of materials is not permitted except by special written permission. The inclusion of advertising is considered a service to subscribers and is not an endorsement of products nor concurrence with advertising claims. Rate schedule available upon request. Subscription rates: \$8 for one year and \$15 for two years. Foreign subscription rates: \$10 for one year and \$18 for two years.

Postmaster: If undeliverable, please send notices by form 3579 to 4200 Smith School Road, Austin, Texas 78744. Second class postage paid at Austin, Texas, with additional mailing offices.



Contents



Page 2



Page 20



Page 24

- The Cost of Strip Mining** 2
by Robert W. Spain and Dr. Ray C. Telfair II
Must wildlife pay the price for lignite mining in Texas?
- Indian Life in Texas** *by Charles Shaw* 11
An excerpt from the recently published book.
- Christmas Across the Centuries** *by Leslie Rodier* 20
Christmas open house at Fulton Mansion State Historic Structure is a blend of 19th and 20th century customs.
- Young Naturalist: Insect Eyes** *by Ilo Hiller* 24
An insect's eye is a complex structure.
- Hope for Unemployed Youth** *by A. Gayland Moore* 30
Modeled after the Civilian Conservation Corps of the 1930s, the Texas Conservation Corps is putting young people to work.
- Outdoor Roundup** 34
News briefs compiled by the department's news service.
- A New Era in Soil Conservation** *by Ronnie R. George* 36
Texas has what may be the worst soil erosion problem in the nation, but help is on the way in the form of the Conservation Reserve Program.
- Letters to the Editor** 48

Covers

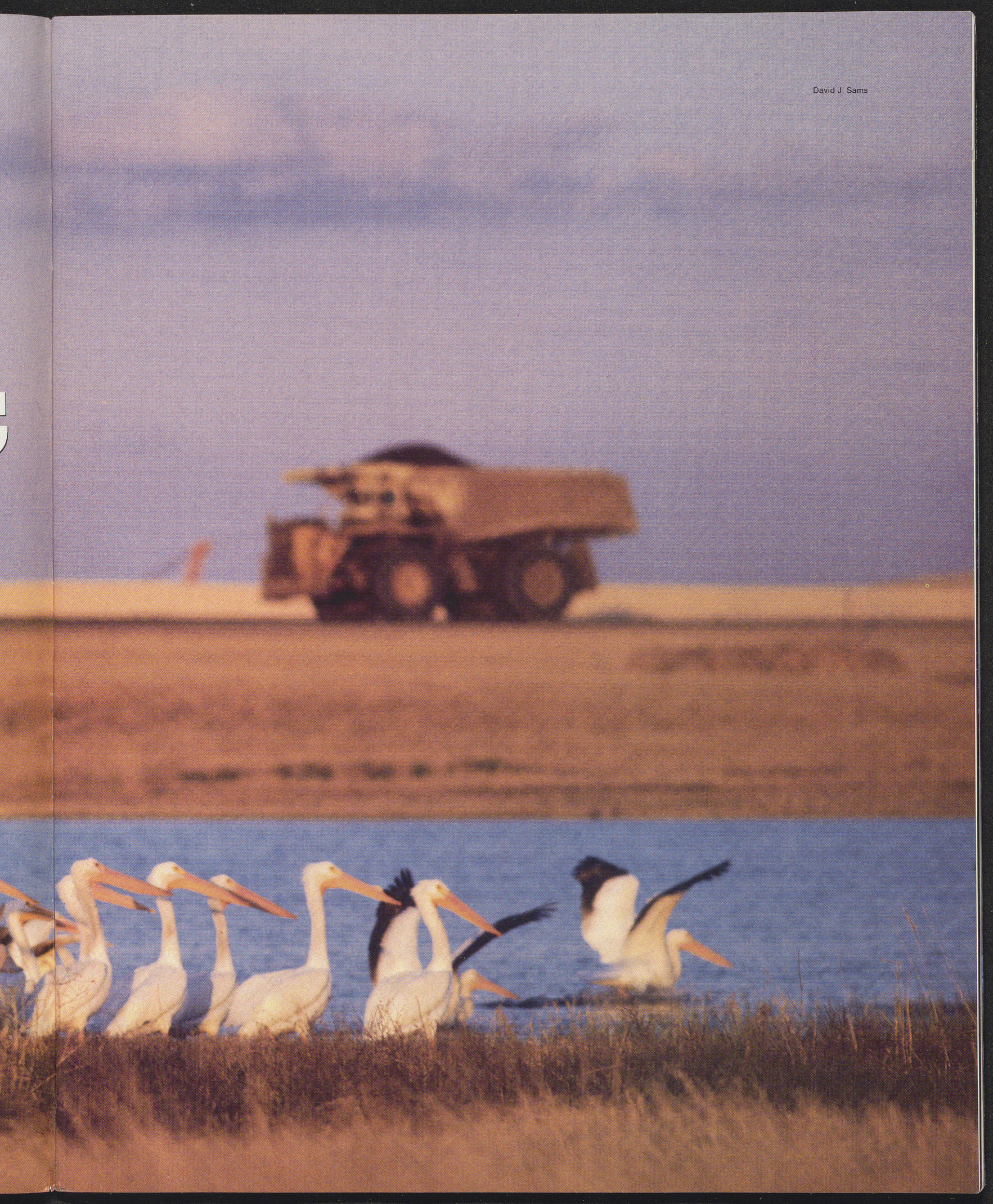
Front: No one knows exactly what an insect like this deer fly sees with its eyes, but we do know that their vision is poor when compared to ours. (See Young Naturalist on page 24.) Photo by Stephan Myers. **Inside Front:** When the cold weather of December arrives in the Big Bend National Park area, ice crystals on cacti are commonplace. This cactus is of the genus *Echinocereus*, variously known as hedgehog cacti, pitayas or strawberry cacti. Photo by Tracy Lynch.

DOES WILDLIFE PAY THE PRICE?

**the cost of
STRIP MINING**

by Robert W. Spain and Dr. Ray C. Telfair II





The discovery of oil at the Spindle Top well near Beaumont in 1901 marked the beginning of Texas' energy industry. In addition to oil, fossil fuels such as natural gas and coal have provided cheap natural energy. The energy industry, aided by technological advances, has been responsible for much of the state's wealth; however, there have been costs in environmental terms.

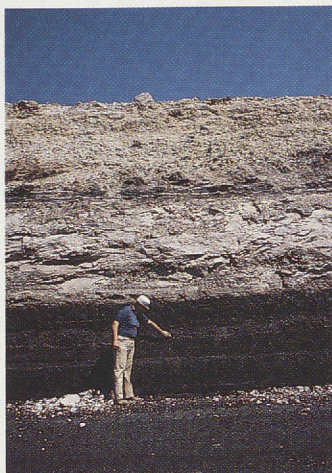
The quality of our lives depends upon the purity of the air we breathe and the water we drink. To preserve this quality of life, we must protect the natural habitats which are important not only to man but also to fish, wildlife and other organisms.

Texas has an abundance of natural resources, such as our fossil fuel resources. While most Texans are familiar with the abundance of oil in the state, many are not aware that coal has been mined in Texas for many years. Even before oil and gas became important energy commodities in Texas, coal was used to power cotton gins, steam power plants and railroads. In 1929, 61 percent of the power used in Texas was supplied by coal-burning generating plants. However, as oil became more abundant coal mines shut down. But when oil prices began to rise in the 1970s, a resurgence of coal mining began. Today, Texas is the leading producer of a form of coal called lignite.

Lignite, or brown coal, is a low-quality coal that was formed from the decomposition of vegetation millions of years ago. During the early part of the 20th century, lignite mining was done by hand. In the vertical shaft method, a cavity was dug through the earth's surface to the lignite seam. Horizontal tunnels were dug to follow the seams.

Another method was used when the lignite was at or near the surface. In the slope or inclined shaft method, a shaft was dug that followed the lignite outcropping. Miners then excavated large rooms within the coal, and placed timber pillars in the mine area to support the ceiling. These mines were always dangerous and cave-ins sometimes occurred. Today's mines use an open-pit, strip mining method aided by large draglines.

Lignite production in Texas has increased steadily during the past 10 years. In 1979, approximately 27 million tons of lignite and bituminous coal were mined in Texas. Of this figure, only 77,000 tons was bituminous coal. By 1985, the Texas Railroad Commission listed total coal production at 45 million tons, only 400,000 tons of which was bituminous coal. According to projec-



Grady Allen



Grady Allen



Grady Allen

Texas is the leading producer of lignite (top). In strip mining, the overburden (topsoil and subsurface layers) above the lignite seam is scooped off by giant electric draglines (right). Lignite is then removed with large mining shovels (middle) which are attached to 320-foot booms (above).

tions of the Bureau of Economic Geology at the University of Texas, future lignite production could reach 160 to 175 million tons annually by the year 2000. Because their estimates also reveal minable lignite reserves of 15.4 billion tons within 200 feet of the soil surface, mining in Texas probably will continue to increase for a number of years. Coal production is limited by current technology, but as new and better methods are developed, deeper mining will become cost effective. This also should result in the loss of more acres of natural habitats.

Lignite deposits which lie near the soil surface are found in two subterranean geologic formations called the Wilcox and Jackson-Yegua Groups. These formations pass through the state in one continuous belt, beginning in East Texas and running in a southwesterly direction. These formations pass beneath two major vegetative regions of the state, the East Texas Pineywoods and the Post Oak Savannah. The Pineywoods Ecological Region covers approximately 15 million acres of gently rolling, forested land with stands of loblolly, shortleaf and slash pines, and hardwoods such as oak, maple and sweetgum. The Post Oak Savannah is an area of approximately 8.5 million acres of wooded hills. Dominant tree species are post oak and black-jack oak and black hickory. Grasses include little bluestem, panic grasses, purple top and grama grass.

The total number of acres that could be affected by mining is difficult to determine. However, a sizable portion of land probably will be disturbed. Minalable lignite resources within 150 feet of the surface underlie approximately one million acres. If mining extends to a 200-foot depth, the estimate increases to about 1.5 million acres. Mining companies currently have permits from the Texas Railroad Commission to mine approximately 100,000 acres. Future estimates indicate that 125,000 acres could be mined by the year 2000. One reason that lignite mining has such a significant impact upon natural environment is the inherent and unavoidable effects of the current surface or strip mining technique. This technique is especially devastating to plant life and wildlife. An explanation of strip mining follows.

The first step in mining lignite is to remove all plant material, topsoil and subsurface layers that cover the coal deposits. When the area to be mined is forest land, the trees are cleared, piled and burned. This eradicates all wildlife habitat. The overburden (topsoil and subsurface layers) above the lignite seam then is scooped off







Robert W. Parvin



Steve Bentsen



Grady Allen



Grady Allen



Grady Allen

At left, an active mine in Bastrop County shows how mining operations can change the landscape by removing vegetation and excavating soil and subsurface material. While all wildlife including deer, squirrels, ducks and rabbits vacates the area during mining, proper reclamation can allow the reestablishment of wildlife.

with giant electric draglines. The more overburden that must be removed the greater the cost. Thus, lignite deposits near the surface are more economical to mine.

Generally, mining goes no deeper than 150 feet. However, surface mining to depths of 300 feet is projected to become commonplace in Texas. Next, the lignite is removed with electric mining shovels and loaded into huge bottom-dump trailers or railroad cars, or onto conveyor belts to be transported to a power plant.

When the coal has been removed, the overburden is placed into the pits. The surface then is shaped to its approximate original contours. In a typical operation, overburden is mixed, spoil piles leveled and contours restored within six to eight months after mining. At first, the surface contours may be higher than before mining, but the surface soon settles. Sometimes topsoil is stockpiled during mining and spread back on the surface later to help the vegetation reestablish itself.

The final step is to fertilize the reclaimed area, disc it and plant vegetation that will limit erosion. Successful revegetation requires careful monitoring and special cultivation practices for five to 10 years. Current rules for reclamation do not require planting the same type of natural vegetation that was present before mining. When vegetation changes, the wildlife it supports also can change.

Because surface mining completely removes all the surface elements (vegetation topsoil, subsurface soil, wildlife, fish, etc.) the effect on air, water, and land is significant.

Lignite mines generally are located in rural areas where the air quality is free of most pollutants. The effect of a mine can alter these conditions. The construction of dirt-surface roads and the removal of all the grass, shrubs and trees while the site is being prepared exposes the topsoil and releases dust particles into the surrounding areas. This situation is worsened by the movement of large hauling equipment over unpaved roads. Exposed stock piles of lignite and spoil piles of material removed from the mine pit also contribute to the problem. These problems can be reduced by wetting down roads, and using spray systems on spoil piles.

The physical action of mining is one source of air pollution; the combustion of lignite is another source. Since most mines have a lignite-burning power plant at the site or near the mine, sulfur dioxide (SO₂), nitrogen oxides (NO_x), hydrocarbons and other trace metals are emitted when the



Grady Allen

lignite is burned. Sulfur dioxide can react with moisture in the atmosphere to form acid compounds that can fall back to earth as acid rain, a serious problem in the eastern U.S., parts of Canada and Europe.

Acid rain develops when large quantities of SO₂ are emitted in the air and the gases dissolve in water and fall back to earth. It affects vegetation, soil, surface water, wildlife, fish and, of course, man. With the large number of lakes in East Texas, the potential for harm to fish and other aquatic life is a legitimate concern. While no immediate adverse effects of acid rain have been documented in Texas, the potential is there. As the mining industry grows, more lignite-fired power plants will be developed. A report published by the Texas Energy and Natural Resources Advisory Council in 1983 stated that while acid rain is not "of immediate concern, it is a possible problem with increased burning of lignite in the state." A working task force of 11 agencies led by the Texas Parks and Wildlife Department has been formed to monitor and evaluate the potential for acid rain in Texas.

Surface mining also can be detrimental to water and aquatic resources. Specific areas of concern are sedimentation, pollu-



David J. Sams



Since strip mining (top) removes all surface elements (vegetation, topsoil, subsurface soil, wildlife, fish, etc.), the effect on air, water (above) and land (middle) is significant.

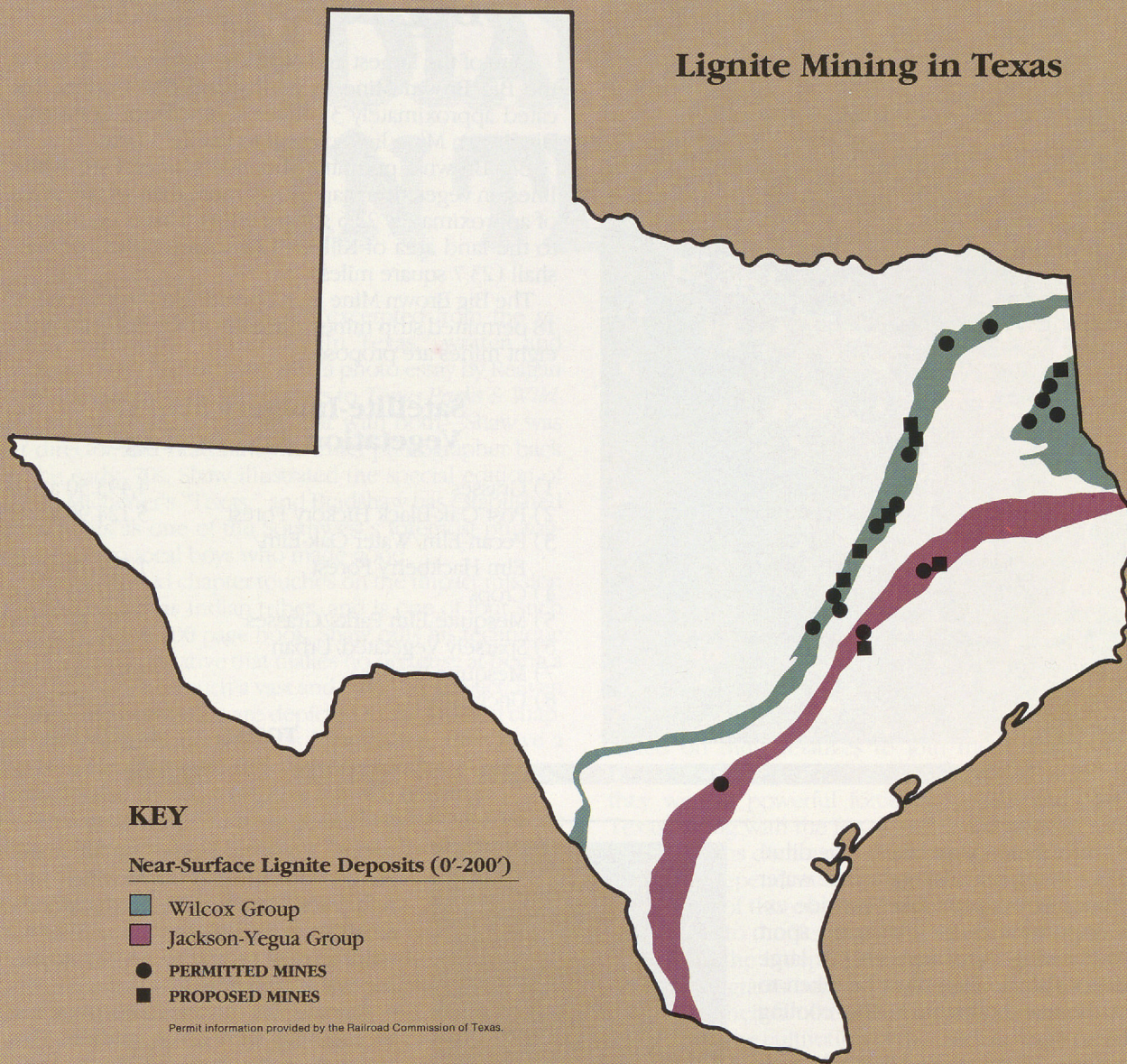
tant discharge, alteration of subsurface drainage and stream modification or diversion.

Runoff erosion is an inevitable result of mining. Muddy water and excessive sedimentation are the most noticeable effects. This harms fish and prevents light from reaching aquatic plants. Excessive sedimentation can retard plant growth, thus prolonging erosion. Rapid revegetation of exposed areas is the best method of erosion control. Ponds are also built to trap sediments.

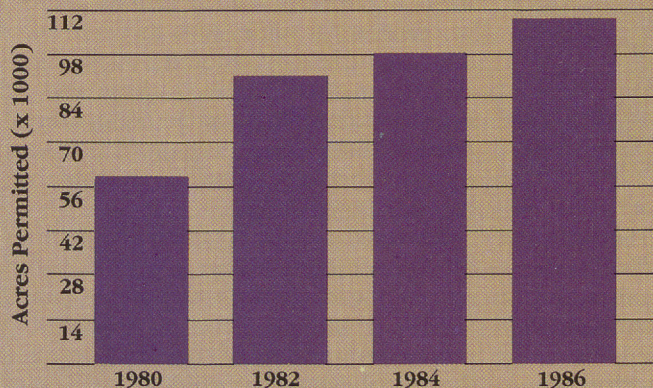
Byproducts of the mining process are also a matter of concern. Selenium, a heavy metal, is a water pollutant associated with lignite mines. Uncontrolled releases of the element into surface waters can cause fish kills. Such fish kills caused by selenium have been documented at power plant lakes, including at least one cooling pond in Texas where thousands of fish died. Industry and government agencies are cooperating to eliminate selenium pollution.

Heated water discharge from power plants also can cause water pollution. The volumes of water power plants use for cooling are provided by reservoirs constructed nearby. Hot water from the plants is dis-

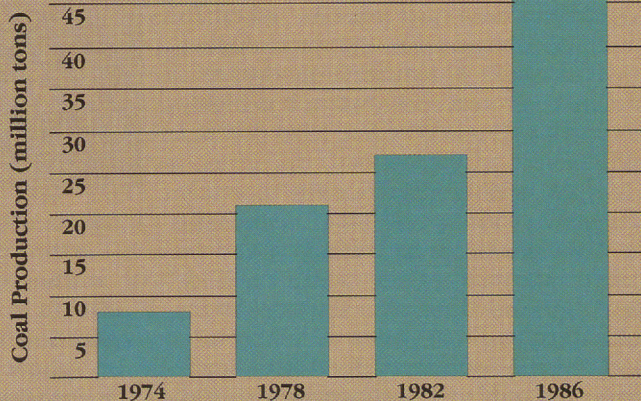
Lignite Mining in Texas

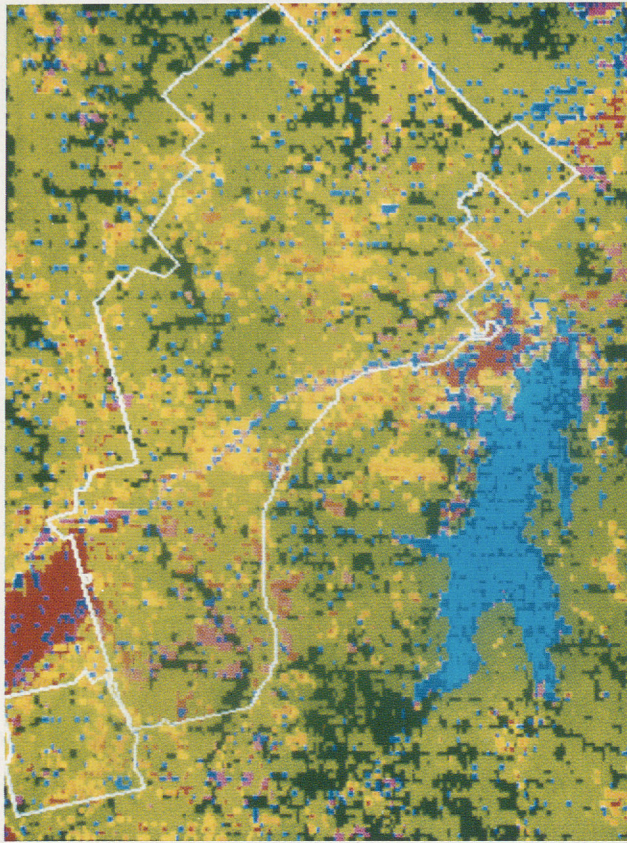


Habitat Permitted for Surface Mining



Coal Production in Texas





Big Brown Mine

One of the largest and oldest strip mines in Texas is the Big Brown Mine in north Freestone County. Located approximately 35 miles southeast of Corsicana, Big Brown Mine lies adjacent to Fairfield Lake.

Big Brown's permitted boundary lines (see white lines on vegetation map) cover more than 14,000 acres of approximately 22.6 square miles. This is equivalent to the land area of Killeen (22 square miles) or Marshall (23.7 square miles).

The Big Brown Mine is an operating mine and one of 18 permitted strip mines currently in the state; another eight mines are proposed.

Satellite-Imagery Map Of Vegetation And Acreage

1) Grasses	4,493.50 acres
2) Post Oak-Black Hickory Forest	5,124.90 acres
3) Pecan-Elm/Water Oak-Elm/ Elm-Hackberry Forest	1,591.70 acres
4) Crops	462.00 acres
5) Mesquite-Elm Parks/Grasses	705.10 acres
6) Sparsely Vegetated/Urban	605.00 acres
7) Mesquite Woods	877.80 acres
8) Unclassified	600.60 acres
TOTAL:	14,460.60 acres



charged into the cooling lakes, thus diluting the hot water, but raising the lake water temperature. Power plant lakes provide excellent opportunities for managing sport fish. Overheating the water can kill large numbers of fish, so care must be taken to prevent thermal pollution in the cooling reservoirs.

Excavation of mine pits disrupts both surface water and groundwater. Stream courses can be restored following mining; however, groundwater percolation patterns may be permanently interrupted. Therefore, groundwater seepage may not contribute to streamflow, and care must be taken to minimize damage to groundwater supplies caused by surface mining. Groundwater is difficult to protect and restore; it is highly important to humans as well as to fish and wildlife.

Surface mining operations completely change the landscape by removing the vegetation and excavating the soil and sub-surface material that cover the lignite. Wildlife disappears along with the vegetation. Bulldozers push over trees which provide food, perches and nests for birds. Small shrubs are removed, shrubs which shelter rabbits and provide cover for deer, rac-



David J. Sams

Reclamation of habitat is the key to survival and success of fish and wildlife in or near mining areas. Sedimentation ponds (above) should be incorporated with other types of wildlife habitat.

coons, foxes and other small mammals. Herbaceous ground cover which provides refuge for lizards, snakes, rodents and other small animals is cleared away. While some wildlife may escape to nearby areas, their survival is uncertain.

Animals that migrate to nearby areas have to compete with other wildlife. This can cause overcrowding and stress. Artificially high populations can exceed the carrying capacity of the nearby habitats, to the detriment of migrating wildlife and wildlife on the adjacent areas.

All wildlife is dislocated during mining, including species with important hunting or commercial value, such as white-tailed deer, squirrels, cottontails, jackrabbits, mourning doves, quail, turkeys and fur bearing mammals. Endangered and threatened wildlife need special protection since their numbers are precarious and their habitats need protection.

Activities such as educational field trips, bird watching, photography and nature tours come to a halt when an area is mined. While all wildlife leaves during mining, proper reclamation of the area can allow the reestablishment of wildlife.

(Continued on page 41)

INDIAN LIFE IN TEXAS

EDITOR'S NOTE

The following eight pages are excerpted from the recently published "Indian Life In Texas," written and illustrated by Charles Shaw with a photo essay by Reagan Bradshaw. Long-time subscribers to *Texas Parks & Wildlife* magazine should be familiar with both—Shaw was art director and Bradshaw was chief photographer back in the early '70s. Shaw illustrated the special edition of James Michener's "Texas," and Bradshaw has established credentials as one of the Southwest's foremost photographers: two local boys who made good.

The excerpted chapter touches on the impact mission life had on Texas Indian tribes, and is one of four such chapters in the 200-page book. Shaw calls his technique an illustrated narrative that makes no pretense at being a scholarly work on such a vast and complex subject. Even though the events that are depicted in the Mission chapter are conjured from Shaw's imagination, they have a basis in fact. Those familiar with Mission San Jose in San Antonio also should recognize it in the drawings.

"Indian Life in Texas" is published by State House Press, P.O. Box 15247, Austin, 78761; hardback copies are \$22.50; soft covers, \$16.50.

AUTHOR'S INTRODUCTION

This book shows what it was like to be an Indian in early Texas. My intention is to capture the flavor and to evoke the feel of the life led by the people who lived in our state before us. To achieve this end, neither paragraphs of description nor photographs of relics left behind are adequate. Therefore, I've chosen to use an art form called "illustrated narrative." The stories that follow are drawn from my imagination, but everything shown in the pictures and every event described in the narrative is based on archaeological and historical fact. The result is not so much a book about Indians as it is a book about people who happen to be Indians.

The experience of the American Indian in Texas can be divided into four distinct segments or eras. Of the first eras each is shorter and more violent than the one preceding. The fourth era—the twentieth century—is still unfolding.

First came centuries of Pre-History, which began with the migration of the Asian hunter-gatherers across the Bering Land Bridge into the New World. Over a period of tens of thousands of years, virtually every corner of the western hemisphere became home to some descendants of these first wayfarers, and by the time the last ice age ended and the rising oceans submerged the land bridge, the American Indian was here. For our purposes, this

first epoch lasted until the Indian discovered wild European horses escaped from Spanish herds and decided to ride them, in the Spanish manner, rather than eat them, as their ancestors had done with the small native horses that had once wandered the grasslands.

The second era began with the nomadic tribes on horseback, early in the seventeenth century. Learning horsemanship from the Spaniards (in spite of Spanish attempts to prevent Indians from coming into contact with horses), Indians in what was then northern Mexico learned to ride; and this skill, along with the horse itself, spread northward. As the Spaniards expected, they did indeed rue the day the Indian learned to ride. From about 1650 to just after 1700, mounted Lipan Apaches ruled this part of the world. The Lipans, however, were but pale forerunners of what was to follow. Comanches began to visit Texas, and finding the pickings good, called on their relatives to join them. This was the Golden Age of the horse Indians in Texas. For 250 years, they were a powerful force in Spanish and Mexican Texas. Along with the few white residents of Texas, the horse Indians dominated the weaker Indian tribes, who were also dependent upon horses.

The end of this era came with Mexican General Santa Anna's loss to the Texas army at San Jacinto on April 21, 1836. With the independence of Texas came a flood of Anglo immigrants bent on making a new life for themselves and their families. This life was centered on agriculture and the cultivation of the land. Acreage on which Indians had lived and hunted for generations was now to be turned over by the white settler's plow. Except for the fleeting time Sam Houston spent in charge of Texas' policy toward the Indian, the governments of Texas wanted the Indian to just disappear, and if he wouldn't oblige voluntarily, then the Anglo leadership would see him destroyed. The state did just that, with a fifty-year assault aimed at eliminating all Indians from Texas.

The story of the last era is still being written today. Although Texas has three Indian reservations—The Alabama-Coushatta at Woodville in East Texas, the Kickapoo near Eagle Pass on the Rio Grande, and the Tigua in El Paso—there are more native Americans living off the reservations than on them in the state. The 1980 census reports Texas as ninth in total Indian population with a count of 40,074. This figure compares with South Dakota's 45,101 and Oklahoma's 169,464. Even with over 169,000 Indians in residence, the old Indian Territory is in second place numerically. California has 201,311 Indians living within its borders. * *

WHEN THE EUROPEANS CAME TO STAY IN THE AMERICAS THEY BROUGHT THEIR OWN VARIED WAYS AND MEANS OF DEALING WITH THE INDIANS THEY FOUND ON THE LAND.

THE ENGLISH TOOK WHAT THEY WANTED AND DEPENDED ON FORCE OF ARMS TO HOLD IT.

THE PRAGMATIC DUTCH HONORED THE PEOPLE ALREADY IN RESIDENCE BY NEGOTIATING AND PAYING FOR MOST OF THE LAND THEY SETTLED.

THE FRENCH CAME FOR FURS—IN THE MAIN—TRADING FOR THEM WITH BEADS AND TOOLS AND FIREARMS AND MAKING FEW DEMANDS ON THE PEOPLE OR THE LAND.

THE SPANISH CAME TO CONQUER. THEY FOUND GOLD IN MEXICO AND CENTRAL AMERICA AND ONCE THEY WERE FIRMLY ENSCONCED THERE THEY TURNED NORTH AND SOUTH LOOKING FOR MORE. RUMORS OF VAST RICHES LED THEM TO PUSH THEIR OUTPOSTS FURTHER AND FURTHER NORTH INTO THE WILDERNESS.

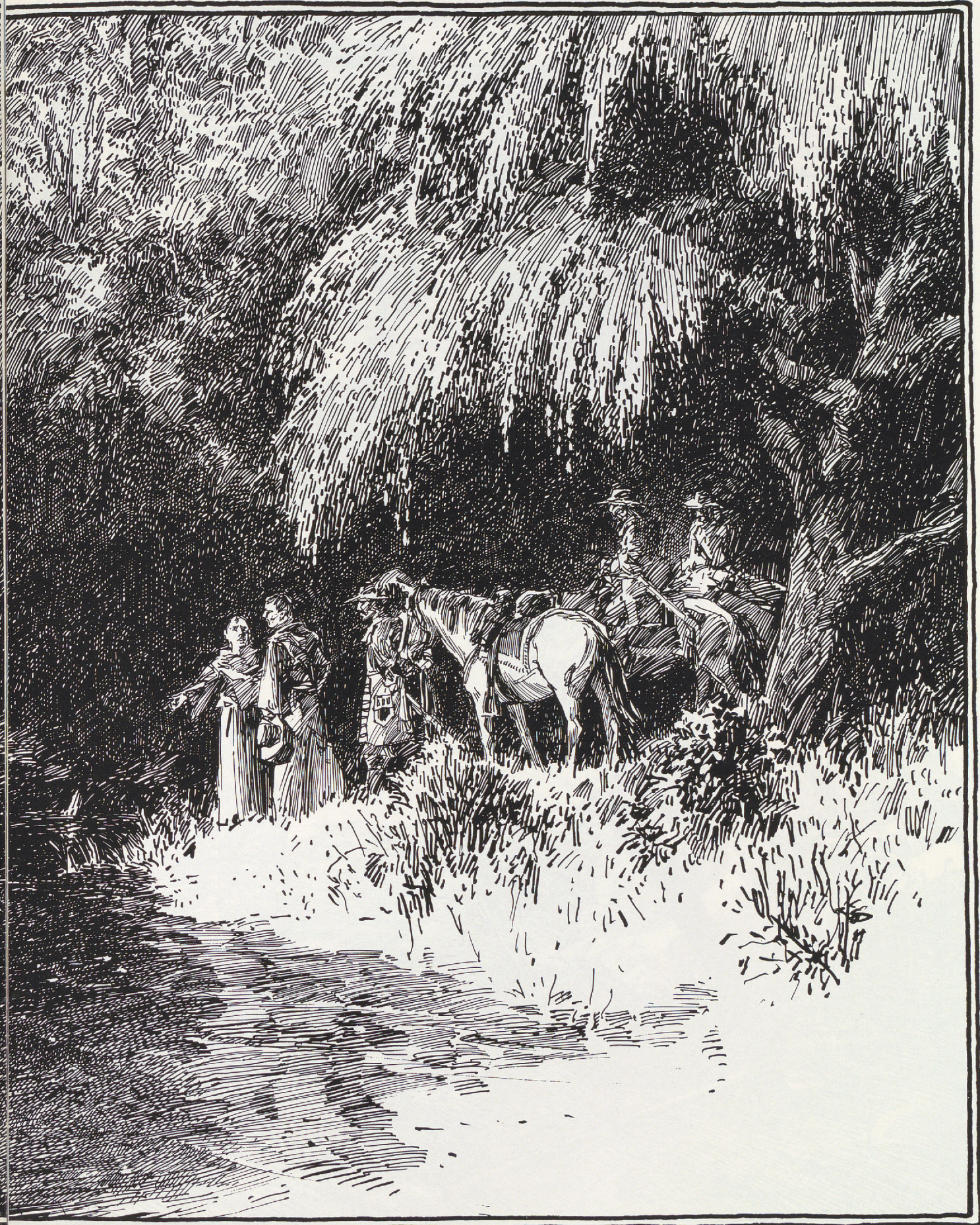
WITH THE CLERGY IN THE LEAD, CONVERTING ALL THE SOULS THEY COULD ALONG THE WAY, THEY SOON CROSSED THE RIO GRANDE INTO WHAT WOULD BECOME TEXAS.

IN CONCERT WITH THE PADRES CAME THE MILITARY, REPRESENTATIVES OF THE CROWN AND THE CLERGYMEN'S PROTECTORS THOUGH OFTEN, THE TWO WERE NOT EVEN ON SPEAKING TERMS. THE MILITARY ALSO DEVELOPED—EARLY ON—A TENDENCY TO USE THE NEW CONVERTS AS SLAVES, THIS BECAME A REGULAR POINT OF CONTENTION WITH THE CLERGY.

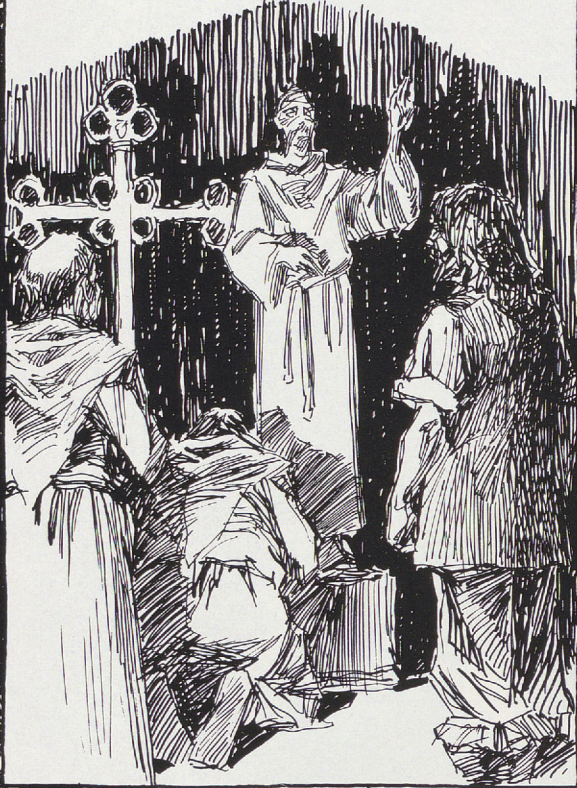
IN APRIL OF 1729, A DEDICATED FRANCISCAN FATHER WITH HIS TWO ASSISTANTS AND HIS MILITARY ESCORT MAKE CAMP ON THE BANKS OF A SPRING FED CREEK IN CENTRAL TEXAS. HERE THE PADRE WILL GATHER HIS FLOCK... HERE HE WILL BUILD HIS

MISSION





THE FIRST ORDER OF BUSINESS IS A SHELTER FOR THE CROSS AND A SIX FOOT TALL STATUE OF ST. FRANCIS THAT HAS BEEN CARRIED OVER THE TRACKLESS LANDSCAPE FROM SALTILLO.

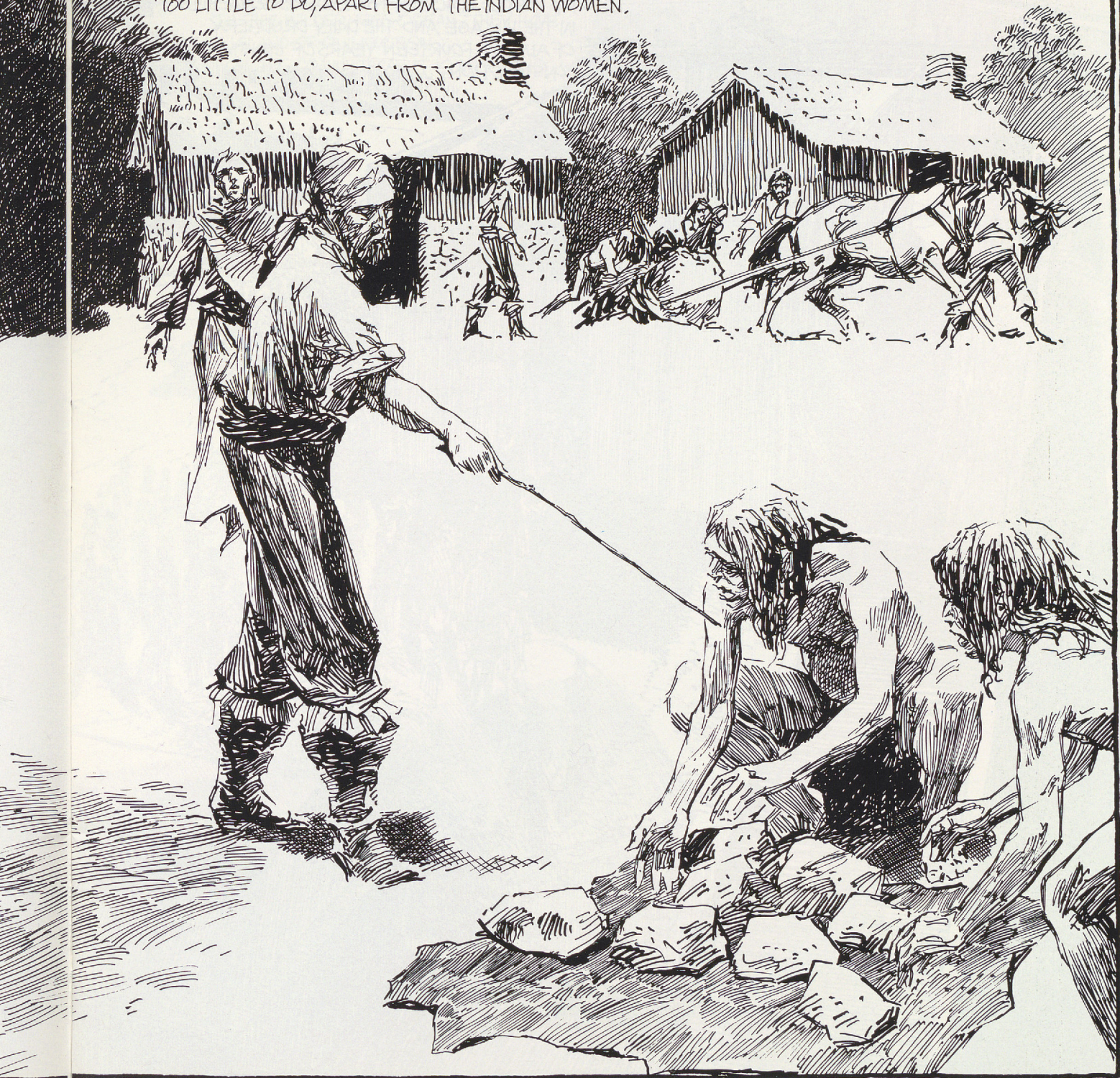


AT THE OUTSET THE LOCAL COAHUILTECANS WERE SHY AND FEARFUL OF THESE OUTSIDERS WHO LOOKED AND ACTED SO STRANGELY, BUT AS WITH PEACEFUL INVASIONS THROUGHOUT HISTORY, SUGAR CONES AND CHOCOLATE BARS MADE THE FIRST FEW STEPS EASIER.



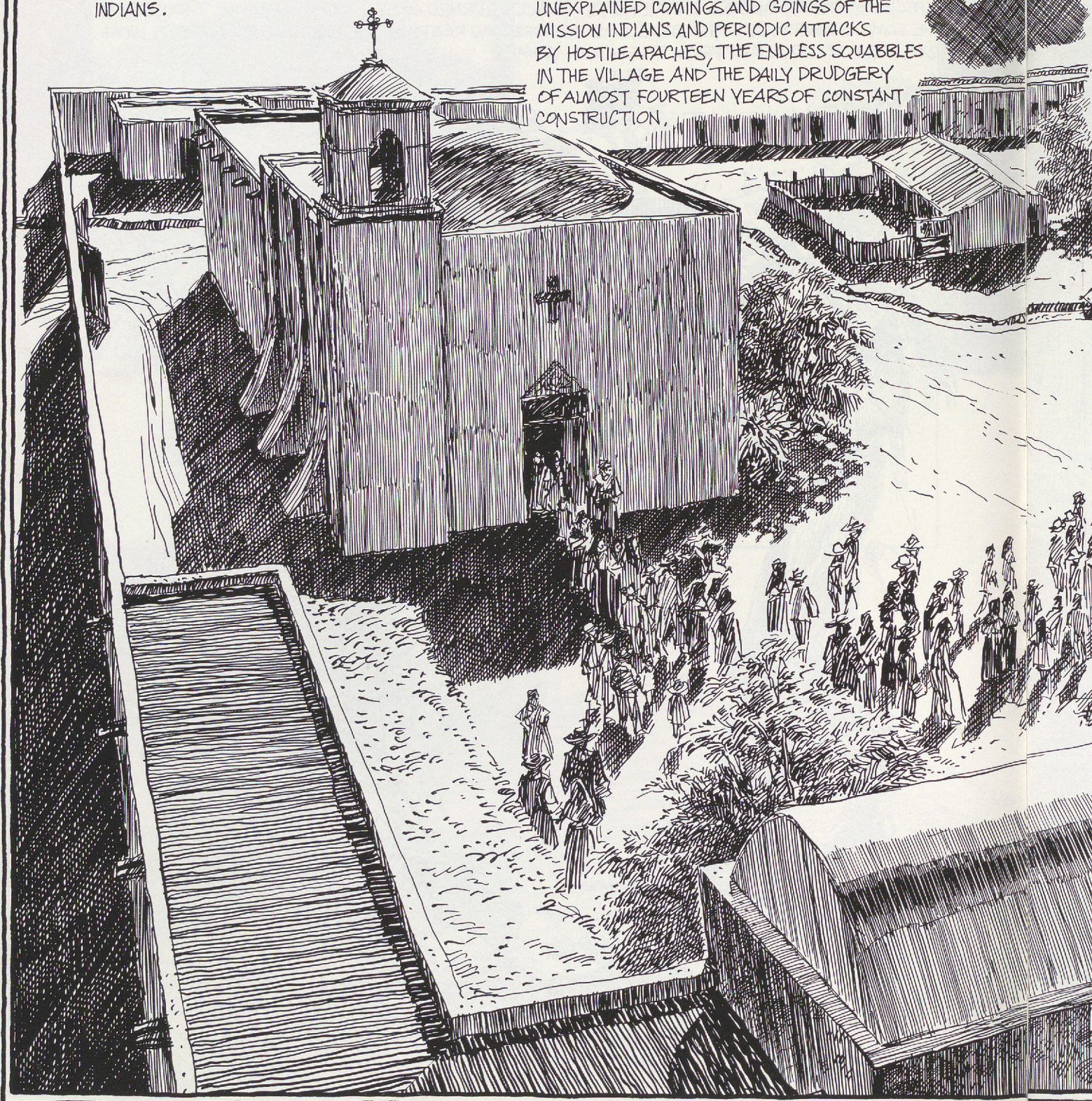
BY MID-NOVEMBER WHEN THE FIRST BLUE NORTHER ROARED DOWN FROM THE HILLS, CRUDE SHELTERS WERE READY FOR THE SOLDIERS AND A REGULAR CONTINGENT OF FORTY-TWO INDIANS WERE IN PERMANENT CAMP NEARBY.

THE SOLDIERS' QUARTERS HAD BEEN BUILT WITH THE HELP OF THE INDIANS, CYNICALLY BRIBED BY THE MILITARY MEN INTO DOING THE HEAVIEST AND DIRTIEST OF THE LABOR. THE PADRE BASKED IN HIS SUCCESS AT GETTING ALL OF THE ADULT INDIANS TO ACCEPT THE UNIVERSAL CHURCH AND ESPECIALLY, NEVER MISSING COMMUNION. HIS MOOD TURNED GREY THOUGH WHEN HE THOUGHT OF THE COMING WINTER AND THE PROBLEMS HE FORESAW KEEPING THE BACHELOR SOLDIERS WITH TOO LITTLE TO DO, APART FROM THE INDIAN WOMEN.



OCTOBER, 1743 — THERE IS STILL WORK TO DO ON THE GRIST MILL, BUT THE MISSION COMPOUND IS COMPLETE. THIS SUNDAY MORNING ALL ARE IN ATTENDANCE AT MASS FOR THE BLESSING OF THE MISSION AND AFTERWARDS, THE FIRST CHRISTIAN WEDDING WILL TAKE PLACE BETWEEN TWO YOUNG INDIANS.

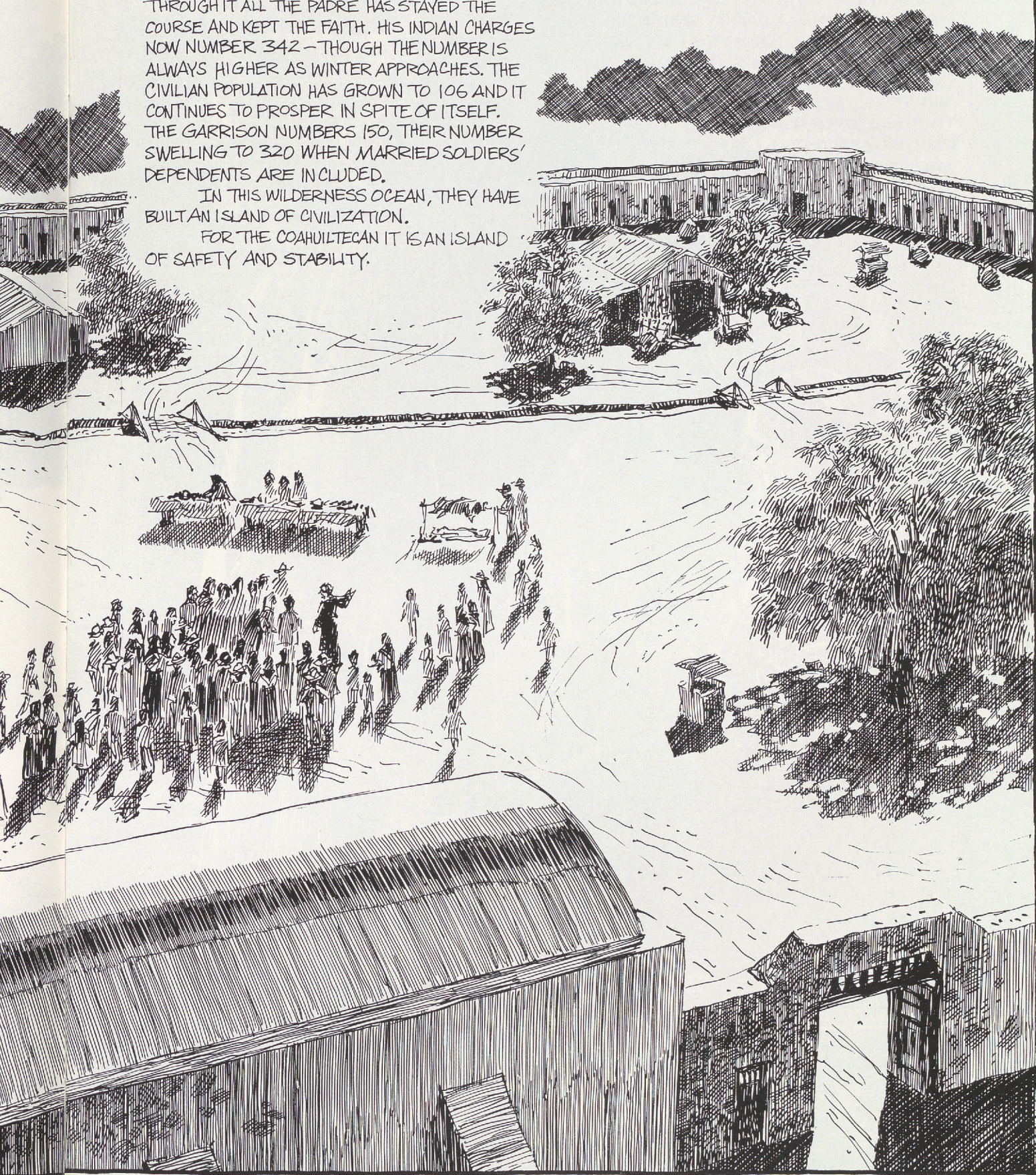
IT IS A DAY FOR FEASTING AND CELEBRATION, DESPITE ALL OF THE ODDS AGAINST HIM, THE PADRE HAS SUCCEEDED. HE BROUGHT THE CHURCH INTO A WILDERNESS AND PLANTED A SEED SO STRONG THAT IT SURVIVED HEAT AND COLD, INTERNAL STRIFE CAUSED BY THE MILITARY, THE UNEXPLAINED COMINGS AND GOINGS OF THE MISSION INDIANS AND PERIODIC ATTACKS BY HOSTILE APACHES, THE ENDLESS SQUABBLES IN THE VILLAGE AND THE DAILY DRUDGERY OF ALMOST FOURTEEN YEARS OF CONSTANT CONSTRUCTION.



THROUGH IT ALL THE PADRE HAS STAYED THE COURSE AND KEPT THE FAITH. HIS INDIAN CHARGES NOW NUMBER 342 - THOUGH THE NUMBER IS ALWAYS HIGHER AS WINTER APPROACHES. THE CIVILIAN POPULATION HAS GROWN TO 106 AND IT CONTINUES TO PROSPER IN SPITE OF ITSELF. THE GARRISON NUMBERS 150, THEIR NUMBER SWELLING TO 320 WHEN MARRIED SOLDIERS' DEPENDENTS ARE INCLUDED.

IN THIS WILDERNESS OCEAN, THEY HAVE BUILT AN ISLAND OF CIVILIZATION.

FOR THE COAHUILTECAN IT IS AN ISLAND OF SAFETY AND STABILITY.



WHEN WINTER SETS IN WITH ITS BONE CHILLING COLD THE MISSION DOES NOT HIBERNATE. ALL HANDS TURN TO THE THINGS THAT WERE PUT ASIDE DURING THE BUSY SUMMER. SPINNING, WEAVING, SEWING, CANDLE AND SOAP MAKING AND A HUNDRED OTHER CHORES WILL MORE THAN FILL THEIR TIME UNTIL, ONCE AGAIN, THE PLANTING SEASON ARRIVES.







FULTON MANSION

Christmas Across the Centuries

Article and Photos by Leslie Rodier

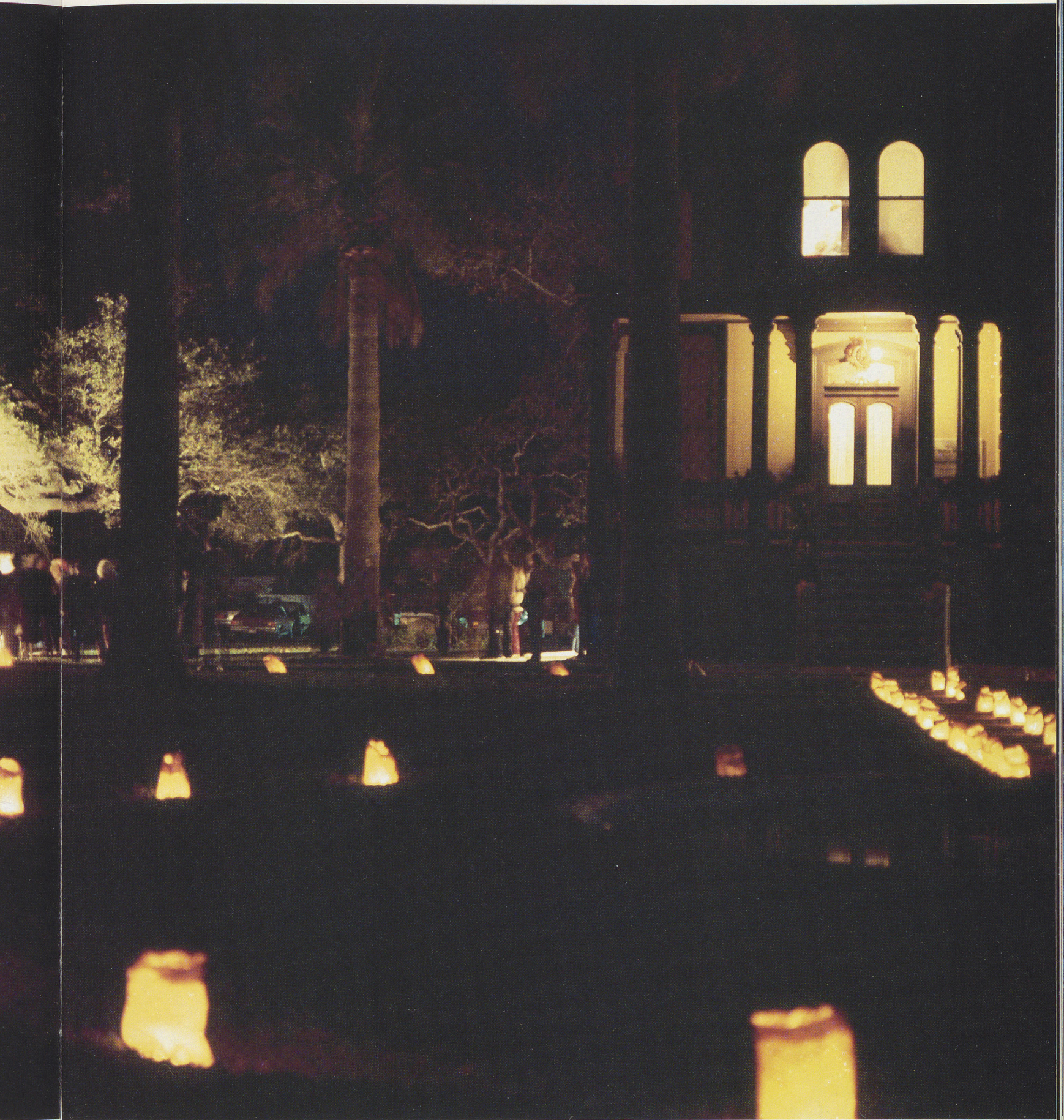
The ghosts of Christmases past and present mingle freely at Fulton Mansion during the Christmas season, especially on the nights of the Christmas Open House when the mansion welcomes the public to its halls decked with traditional Christmas finery. The ghosts of Christmas present exist in the flesh, as contemporary visitors visit the mansion to share the Christmas spirit.

Previous rumors to the contrary, Fulton Mansion State Historic Structure no longer harbors ghosts in its hallways or growlery (tower room)—at least none of the current tenants, Parks and Wildlife Department staff members, have seen any during their tenure. Curator Paula Ussery attributes the absence of supernatural visitors to the happy lives of the former residents.

By all accounts, George and Harriet Fulton, who began building the house in 1874, were very happy during their stay, as were subsequent inhabitants. For this reason, the only ghosts present are those spirits evoked by the traditional Christmas decorations—many

Bright luminarias (right) welcome visitors to a Christmas open house at the Fulton Mansion (top left) located on Aransas Bay (middle) in Rockport.







handmade—that adorn the parlor, dining room and mantels of the upstairs bedroom.

The Christmas spirit spreads outside the mansion onto the porch railings adorned with garland. During the Christmas open house, luminarias light the yard and driveway. On the grounds, several choirs sing traditional and modern Christmas songs.

The Christmas Open House of 1986 found staff members and volunteer docents dressed up and answering questions in each of the public rooms. In the parlor, in keeping with 19th century custom, live musicians played. Community volunteers donated Christmas cookies and punch for the refreshment of famished mansion guests.

Painstaking research precedes the crafting and hanging of all Christmas decorations, ensuring that everything maintains the delicate balance between historical accuracy and contemporary pragmatism. While the traditional Christmas tree, an East Texas pine such as Harriet Fulton might have cut, contains candles, they cannot be lit. All the ornaments—including the garlands on the banister—are handmade annually by staff members and volunteers.

Festivities at Fulton Mansion are not limited to the Christmas season. The mansion hosts a variety of seasonal activities from evening Halloween games for children, to an afternoon of games on the lawn during the summer. These activities allow visitors from the Fulton-Rockport area to participate in life across centuries.

"You live in two different centuries when you work here," says Denise Griffith of the TPWD staff. "I can give tours and interpret for the 19th Century, and then come upstairs and do 20th Century paperwork. I go to the bank and write 1887 on a check and they excuse it, no problem."

This sense of life across centuries adds as much to the enjoyment of the mansion experience as the beauty of the decorations. It is this overlapping of centuries which brings past and present Christmases together at the Fulton Mansion. * *

Curator Paula Ussery (top left) decorates the native East Texas pine Christmas tree (right). At left, children enjoy the 19th-century Christmas music performed by Kevin Gramer (middle).





Fulton Mansion

Location: Aransas County, three miles north of Rockport off State Highway 35, at the corner of Henderson Street and Fulton Beach Road.

1987 Christmas Open House: Thursday and Friday, December 10 and 11, from 7 p.m. to 9 p.m.

Regular Hours: Open for guided tours Wednesday through Sunday, 9 a.m. to noon and 1 p.m. to 4 p.m.; last tour in the morning at 11:30 a.m. and last tour in the afternoon at 3:30 p.m. Closed Christmas Day.

Admission: \$2 for adults and \$1 for children 6 to 12. Groups of 10 or more should make reservations at least one month in advance.

Other Requirements: Visitors are requested to wear flat, soft-soled shoes to prevent damage to carpets and floors. The first floor and basement are accessible to the handicapped.

For information: Call 512-729-0386 or write Fulton Mansion, P.O. Box 1859, Fulton, Texas 78358.

TV Series Features Mansion

Take an extended tour of the Fulton Mansion through the seasons in "Life Across Centuries," an upcoming program in the "Made in Texas" television series. "Life Across Centuries" visits the mansion at Halloween, Christmas and summer, giving a behind-the-scenes look at staff and volunteer efforts.

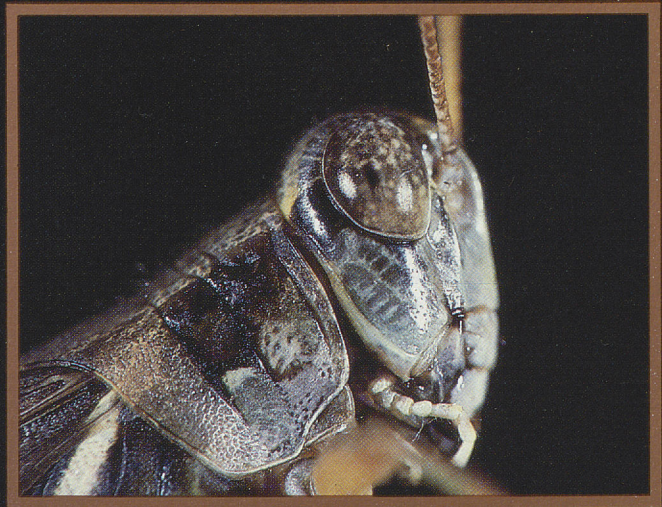
The program also features military reenactors at Fort McKavett as well as the home-grown interpreters at the Sauer-Beckmann Living History Farm. "Made in Texas" is produced by TPWD and broadcast on public television. Call your local PBS station for dates and times.



INSECT EYES

Insects view the world through eyes that are quite different from ours. In fact, insects usually have two sets of eyes—a complex set, called compound eyes, which can form and record an image, and a simple set (ocelli), which can vary in number and may do no more than distinguish light from dark.

The insect's simple eyes usually are located between the compound eyes. Each ocellus consists of a single lens over a light-sensitive retina. The retina has so few sensory cells that any image it receives would be very poor. However, since the image projected by the lens



Locust

Young Naturalist

actually focuses behind the retina, instead of on it as in human eyes, we know insects' simple eyes do not function as ours do. Insects cannot close either their simple or compound eyes.

Each compound eye is made up of many separate, hexagon-shaped units (eyes) that fit together like the cells of a honeycomb. Since each one points in a slightly different direction, each one sends only a small part of the total scene to the insect's brain. The brain then puts these pieces together to form a composite picture. To understand how this works, imagine that each hexagon image is a piece of a jigsaw puzzle. When all of the pieces are fitted together, the picture is complete.

Taking a closer look at one of these miniature eye units, we find that its lens is a transparent bit of cuticle that bends light and focuses it on a cluster of transparent sensory cells located just beneath the lens. At the core of each cluster of cells, and a part of each one, is the actual light-absorbing portion—a pigmented rod. This rod, called the rhabdome, is perpendicular to the surface of the eye. The lens, sensory cells and rhabdome form the single visual unit.

Each compound eye is a rigid structure of individual units and it cannot move or focus to produce a sharp image. The only movement that can be compared to human eyes is the expansion and contraction of the pigmented cells in the sleeve around each visual unit. This sleeve reacts to light the way our colored iris does.

In strong light the sleeve expands, isolating each unit from its neighbors and forcing the incoming light to pinpoint on the unit's sensitive rod. Directing these points of light to each visual unit ensures that the brain receives an overall mosaic pattern or image. In dim light the sleeve contracts so the available light can fall on more than one rod. This allows the insect to see in the dim light, but its brain receives a poor picture.

The quality of the mosaic image received by the brain depends on the number of visual units in the compound eye. Thousands of units are required to produce a sharp

image. Fewer units produce a coarse image. To understand this better, magnify a black and white picture printed in a newspaper and you will see that it is made up of small dots. Now look at a black and white photograph printed in a book or high-quality magazine. You will find that the book or magazine picture, which is sharper and more detailed, has more and smaller dots than the newspaper picture. If you look at a color picture in this magazine with a strong magnifying glass, you will see that it is made up of small colored dots—red, blue, yellow and black. The combination of these four colors of ink produces all of the colors you see when the photo is not magnified.

Insects that need better vision have more visual units. Dragonflies, which hunt their prey in flight, have as many as 28,000 units in each compound eye, but some species of ants have as few as six. Within the honeybee family the drones, which need good vision to see and catch the queen during the mating flight, have some 13,000 units while the queen has only 3,900. Worker bees have 6,300.

Magnifying the compound eyes of the horsefly will show that the units on the upper portion of its eye are larger than those on the lower portion. Could this be like wearing bifocals? Another strange type of compound eyes is found on a water insect called the whirligig beetle. Its eyes are divided into upper and lower portions. The upper portion is adapted for seeing in air and the lower portion is adapted for seeing underwater. This makes it possible for the swimming beetle to watch for food and enemies above and below the water's surface at the same time.

No human can know exactly what an insect sees with its eyes, but we do know their vision is poor compared to ours. Even those insects with as many as 30,000 visual units in each compound eye cannot measure up to the view we get from the millions of rods and cones found in ours.

Insects may have an advantage when it comes to seeing movement because the object in motion registers images on the different units, one after the other. Being able to recognize moving objects is important to an insect because



Hover fly



Horse fly



d
a
s.
a
ok
d,
If
g
ll
a-
rs

s.
as
of
e
n
e

w
n
g
d
e
n
d
e
d

s
o
s
e

g
s
o
e

Closeup of butterfly head area

Young Naturalist



Red ladybird beetle (lady bug)

movement usually identifies an enemy to avoid or prey to be captured. The flickering patterns that pass over the mosaic image of the compound eye as the insect or things around it move must be quite a visual experience.

But insects are at a disadvantage when it comes to seeing slow movements. If you have patience and move slowly, you can catch almost any insect. Slow motion either does not register or does not alarm the insect. The praying mantis is an example of an insect stalker that takes full advantage of slow movements to conceal its approach. With infinite patience it moves slowly toward its victim, lashing out to catch the insect only after it is extremely close.

In addition to providing vision, the insect's eyes also serve as instruments of navigation. Compound eyes are especially well suited for sun navigation since each lens is focused on only a small portion of the sky.

Ants can maintain a straight path by moving at a fixed angle to the sun. To prove that ants navigate by the sun, a

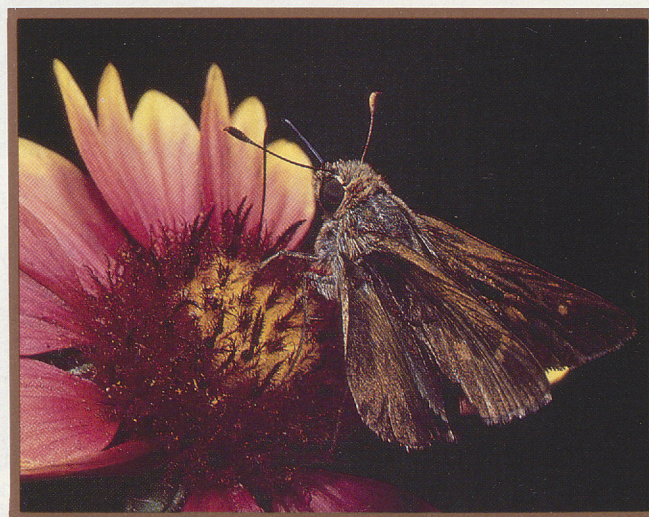




Robber fly



Soldier beetle



Skipper feeding at firewheel

scientist placed a light-tight box over a line of ants heading toward their nest and left them covered for a couple of hours. When he lifted the box, the ants resumed their journey, but took a slightly different direction. Measurements showed the new direction was at an angle exactly equal to the distance the sun had traveled while the ants were under the box. The scientist also found that he could make the ants crawl in any direction, even away from their nest, by using a mirror to reflect the sun's image.

Scientists later discovered that insects rely on polarization of light to get their bearings and can distinguish qualities of light coming from different directions at various times of the day. Ultraviolet light, which passes through the clouds and can be seen by insects, makes it possible for them to navigate when the sun is hidden from view.

Whatever their purpose, the combination of simple and compound eyes makes it possible for insects to "see" the things they need to see in order to survive. **

Texas Conservation Corp

Hope for unemployed youth

by A. Gayland Moore

Where is a young person to go when he or she is a high school dropout living in the Rio Grande Valley where the unemployment rate is extremely high? For Ricardo Avilez and many other young Texans, the answer to this question was found by joining the Texas Conservation Corps.

Modeled after the Civilian Conservation Corps (CCC) of the 1930s, the Texas Conservation Corps (TCC) is based upon the principle that "the way to learn how to work hard is to do hard work." The TCC's objective is to get jobs in the private sector for trainable young men and women who possess good work habits and attitudes.

Conceived amid skepticism during the first weeks of President Franklin D. Roosevelt's first administration, the CCC became one of the most popular and successful of all New Deal programs. Among its many innovations, the CCC of the 1930s involved the federal government for the first time directly in the development of state and local parks. It provided jobs and family income for approximately four million of America's young men, while they performed beneficial tasks on public lands. There are 31 state parks and several city and county parks in Texas today that exhibit distinctive structures and facilities built by the CCC between 1933 and 1942.

Although the days of the Depression are long past, many economic and conservation problems remain today. In 1986, the U.S. Department of Education listed Texas as the state with the 10th worst high school dropout problem in the nation, with a dropout rate estimated at one-third. This large high school dropout rate cost the state more than \$17 billion last year in lost income, lost tax revenues and increased costs of welfare, crime and incarceration.



Experts in a multitude of fields have been warning about the dropout rate for years. But only in the last few years have Texas officials begun a concentrated effort to define the problem and begin looking for viable, organized solutions. One such program is the Texas Conservation Corps.

The belief of most TCC leaders is that employers are willing to hire an applicant who can demonstrate that he or she is trainable, motivated, can get to work on time, can follow instructions, work well with other employees and is not afraid of hard work.

"And that, by definition, is a TCC graduate," said Doug Duke, director of TCC. "We believe that we can place our participants in jobs by demonstrating to employers that a TCC graduate has proven that he or she has the necessary attributes to be a good employee."

The Texas Conservation Corps is a private nonprofit organization financed by a combination of federal funds, private sector donations and fees earned from the work performed by the corpsmembers. The TCC program is open to Texas residents between ages 18 and 21 who are certified by the Job Training Partnership Act, eligible and not on

probation. The program is aimed at youth from economically disabled families whose children seem to "fall through the cracks" of the system.

"There are a lot of kids in Texas who need help," said Gene Binder, former coordinator of TCC. "You can't reach them all, but the TCC has succeeded in helping many young people who are struggling without turning to illegal means to get by."

A major difference between the Texas Conservation Corps and other youth jobs programs is its full immersion approach. That is, corpsmembers not only work together but live at accommodations near their worksites and participate together in physical training, career awareness and educational and recreational activities. There is as much emphasis on teamwork and self-discipline as on job skills and training.

The TCC also stands out from similar programs such as the California Conservation Corps and Young Adult Conservation Corps in the amount of participation it receives from the private sector. An advisory council consisting of businesses and corporations, environmental groups and alumni of the Civilian Conservation Corps provides

Evening courses in reading skills, math skills, computers and GED pre-testing are just a few of the choices offered to TCC students. The classes are usually held at nearby community colleges such as San Jacinto Community College in Houston (opposite page). TCC workers at the Houston worksite (left and below) helped build the Cypress Woods Golf Course near Humble.



Glen Mills



Glen Mills

most of the time and resources necessary to develop and maintain the TCC.

Boots, uniforms, first-aid kits, transportation and even portable housing are arranged or donated by the advisory council, and many other businesses donate or provide equipment at cost. More important, the advisory council assists in providing future employment opportunities for corpsmembers who excel in the program.

Once a TCC recruit has been ruled eligible for the program, he or she first must earn the opportunity to serve in the Texas Conservation Corps by successfully completing the 21-day Training Academy in Mineral Wells. At the Academy, corpsmembers are pre-tested to determine their aptitudes, skills and educational levels. The students are

paid \$5 per day at the Academy plus room and board.

During these first three weeks, corpsmembers rise at 5:30 a.m. for physical training (PT) and spend half their day in classes and the other half in field training. At night, corpsmembers attend meetings and prepare for the next day. Lights are out at 11 p.m. The long days at the Academy are filled with leadership classes and team building exercises, water safety and first aid instruction. Sessions on fire fighting and disaster relief prepare the corps for possible service in an emergency. Training in tool use safety and conservation focus on the basic skills and knowledge essential to the work to be performed in the city and state parks and wildlife facilities.

After academy graduation, corpsmembers are transported to work camps across the state. The corpsmembers stay at the various camps for five months, where they continue to rise early for PT, work from 8 a.m. to 5 p.m., and go to school in the evenings. During their time at the work sites, TCC members earn minimum wage (\$3.35/hr.) and are paid every two weeks. However, FICA, income tax and \$84 for meals and housing (\$6 per day) is deducted from each paycheck. "It's not a hand-out," says Austin site manager Harold G. Wells. "TCC corpsmembers work hard for their money."

TCC graduate Janette Adameit said she didn't mind the strict rules, hectic schedule and meager earnings the program offers. "It's tough while you're



Leroy Williamson

here," she said. "But I think that my TCC experience has made life a lot easier for me."

"It's not easy," admitted Darrell Hinojosa. "And sometimes I would give anything just to lie in bed another 10 minutes, but then I stop and remember what it was like before—never having any reason to get up."

Wells, a supervisor with TCC since August 1985, said that it's rewarding "when you see the changes in the students' attitudes and their perspectives on life. To some, their first TCC paycheck is also the first paycheck of their lives. And with each paycheck, a growing sense of responsibility and maturity becomes very noticeable among most corpsmembers. We encourage all corpsmembers to save at least \$50 to \$100 from each paycheck."

During the program's first three years, TCC members have built trails at Eisenhower State Park on Lake Texoma, renovated cabins at Bastrop State Park, cleaned and painted portions of the Battleship *Texas*, repaired and painted old World War II buildings on Matagorda Island State Park and restored Pan American University's main administration building in Edinburg.

Other TCC projects have included Bonham State Park, Lockhart State Park, Port O'Connor, a nature park in Monahans and the Sheldon Wildlife Management Area near Houston. More recently, TCC work crews have helped restore Risien Park in San Saba and build a golf course for the Cypress Woods Golf Club, north of Houston.

Although their efforts benefit the local community near or at their work site, many Texans aren't quite sure how to react to the TCC corpsmembers when they begin to set up camp at a new location. "When people see us for the first time, some think that we are convicts," said Avilez. "But they soon find out who we really are—a group of committed people who take pride in their work. And I don't mind people coming by and watching us because it shows that they are interested in what we are doing. Besides, I want them to see what TCC is all about."

Corpsmembers at all of the work sites in Texas are kept informed on the happenings of all TCC members by reading the TCC High Times newsletter which is published by TCC students stationed at the TCC Academy in Mineral Wells. At each three-week acad-

emy, interested students volunteer to staff the newsletter which varies in length depending on the amount of cartoons, poems, artwork, photography and articles submitted.

There are also rewards for students who wake up on time, work hard at the project site, attend all classes and keep themselves clean and properly dressed at all times. Each month, based on a point system, the top TCC member at each work site is awarded the title of Corpsmember of the Month. This distinction earns some added privileges during the weekend such as two full-day passes to Astroworld or two tickets to a Houston Astros baseball game, or a round-trip ticket home. Corpsmembers, however, who fail to earn 80 percent of the possible 1,030 points during any week are given no privileges during their days off and are required to stay at the lodging site the following weekend.

Evening courses at the work sites are usually held at nearby community colleges such as San Jacinto Community College in Houston and Austin Community College in Austin. Classes on reading skills, math skills, computers and GED pre-testing are just a few of

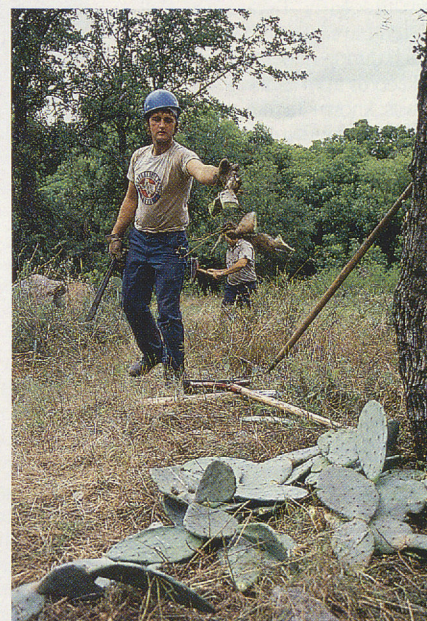
At left, a corpsmember finishes work on an outdoor reflecting pool at the renovated Risien Park in San Saba. Below and right, Texas Conservation Corps workers restore trails at the Risien Park worksite. Other TCC projects have included Bonham State Park, Lockhart State Park, Port O' Connor, a nature park in Monahans and a golf course north of Houston.



Leroy Williamson



Leroy Williamson



Leroy Williamson

the choices offered to TCC students.

"I seldom have any problems with them," said Rhonda Harris of San Jacinto Community College. "Most of the TCC corpsmembers I have had in my classes really want to apply themselves."

For Juan Reyes, who is married and the father of a baby girl, joining the Texas Conservation Corps has been a very positive experience. "It's been a great place to earn pay, learn skills in a college class and get my GED. In Brownsville, with the unemployment rate so high, there was nowhere for me to go and earn a living for my family."

Although TCC students gain valuable job skills and learning skills, TCC's emphasis centers around helping young people develop good work habits and attitudes. "It is a demanding program,"

admits Melissa Martinez of Weslaco, "but we learn to hang in there and absorb everything it has to offer. The TCC helps you gain confidence in yourself so that you can face reality better, but you have to work at it."

Graduates of the Texas Conservation Corps are given a copy of their individual job file which is created and maintained for them during the six-month program. Job interviews for graduates are set up by the TCC. "We feel good about recommending our TCC graduates to employers in the private sector," TCC director Doug Duke said. "At the conclusion of our program, many graduates are prepared for entry level positions at municipal parks, recreation departments and at construction, cement and brick companies."

The CCC of the 1930s and today's Texas Conservation Corps have a great deal in common—providing meaningful work, individual attention and education, discipline, adventure and support for one of our nation's most precious natural resources: our youth. And while the TCC corpsmembers are working on their individual futures, they are also working to preserve and enhance our state's other natural resources.

If you would like to know more about the TCC, or if you know someone who could benefit from the program or an employer who could use a tried and tested employee, call 1-800-822-PLAN or write: Texas Conservation Corps, P.O. Box 793, Austin, Texas, 78767. * *

Outdoor Roundup

by Jim Cox

Historic Fanthorp Inn Now Open For Visitation

A ribbon-cutting ceremony was held on October 4 at historic Fanthorp Inn in Anderson, officially opening the restored 150-year-old inn to public visitation.

Texas Parks and Wildlife Department officials said the inn, which was established during the Republic of Texas era, has been restored to the period of 1850 to 1867. Seven rooms and a barn portray the early Texas inns that hosted travelers arriving by stagecoach during Anderson's heyday.

Records from Fanthorp Hotel, as it was known in the 1850s, and local accounts report visits by many prominent civic and military leaders, including Texas presidents Sam Houston and Anson Jones; Jefferson Davis, who was to become president of the Confederacy; future United States Presidents Zachary Taylor and Ulysses S. Grant; and Generals Robert E. Lee and Stonewall Jackson.

Dove Baiting Cases Increase In South Texas

Game wardens report that the illegal baiting of hunting areas to attract doves appears to be increasing.

Glen Felps of San Antonio, a district law enforcement supervisor for the Texas Parks and Wildlife Department, said several groups of hunters have been caught shooting mourning doves over baited areas near San Antonio.

"Using bait to attract and concentrate migratory birds is highly effective, and that's why it is prohibited by both state and federal law," said Felps.

Texas hunters should be aware that under state regulations, corn or other feed can be used to bait non-migratory species such as quail, turkey or deer, but not migratory species such as doves, ducks, geese or sandhill cranes.

"Hunters can legally take migratory birds in areas where grain is present because of normal agricultural activities," Felps said, "but it is illegal to distribute or re-dis-



Leroy Williamson

tribute grain in an area and then hunt migratory birds there."

Felps added that guest hunters should be aware that they may be subject to a fine if caught shooting over a baited area, even though the landowner or someone else may have done the baiting without their knowledge. "I would advise any hunter to inspect the ground around the area where he or she plans to hunt," he said. "If some sort of grain has been scattered around, it would be advisable to cancel hunting plans."

Texas Ranks Second In Fishing License Sales

Texas ranks second only to California in numbers of fishing licenses sold, according to the Sport Fishing Institute.

During fiscal year 1986, Texas had 1,934,808 paid fishing license holders, compared to California's 2,347,323.

While California had only about 400,000 more license purchasers than Texas, its anglers paid considerably more for licenses, tags, permits and stamps. The gross cost to California fishermen during the year was some \$36.7 million, while Texas anglers spent only about \$15.5 million.

Following California and Texas

in numbers of licensed fishermen were: (3) Wisconsin, 1,505,201; (4) Michigan, 1,483,910; (5) Minnesota, 1,474,882; (6) Ohio, 1,196,243; (7) Pennsylvania, 1,110,054; (8) Missouri, 1,007,223; (9) Florida, 884,185; and (10) Washington, 821,612.

Queen Isabella Fishing Pier Lights Turned On

One of the most popular night fishing spots on the Lower Texas Coast is now back in operation.

A new lighting system recently installed at the Queen Isabella State Fishing Pier on South Padre Island was activated recently, according to Texas Parks and Wildlife Department officials.

The pier, which is a portion of the old causeway linking Port Isabel and South Padre Island, is operated by the department on a concession basis. It is open for fishing all the time, and a fee of \$1 plus tax per rod is charged, the concessionaire said.

Good catches of spotted seatrout over the 14-inch minimum length limit have been reported since the lights became operational. The lighting system is designed to illuminate the pier and also cast light on the water to attract fish, officials said.

Rayburn Survey Shows Bass Population Growing

The 14-inch largemouth bass minimum length limit established just over a year ago is already paying dividends at Lake Sam Rayburn, according to Texas Parks and Wildlife Department officials.

The minimum length, along with a five-per-day bag limit, is in effect on most public reservoirs.

Biologist Paul Seidensticker said August cove rotenone surveys showed the standing crop of largemouths was 31.8 pounds per acre, compared to 19.8 pounds per acre found in the August 1986 survey.

Seidensticker said in the 1987 survey, 43 percent of bass collected were over 12 inches in length. In 1986, only 24 percent were over that length. Also, in 1987 more than 16 percent were 14 inches and longer, compared to only nine percent in 1986.

Seidensticker believes the minimum length limit is an important factor in the increased bass density in the big East Texas lake. "The 14-inch minimum went into effect just when a strong year-class of bass in the 10-inch range was coming into the system," Seidensticker explained. "The extra protection provided by the limit really helped these fish develop."

COMPILED BY THE PARKS AND WILDLIFE DEPARTMENT'S NEWS SERVICE

A creel survey conducted on the lake September 13 revealed that fishing is good, and that anglers are releasing many sub-legal sized bass. Anglers in 27 boats were interviewed. Seidensticker said the fishermen kept 31 bass that day, weighing 65 pounds. They also released 31 additional bass over the 14-inch minimum length, along with 179 that were under 14 inches.

"These data indicate that on that day, fishermen were catching an average of 10 bass per boat," Seidensticker said. "That's pretty good fishing on anybody's lake."

Seidensticker said good numbers of school bass have been taken recently on topwater lures, but most of the larger fish have been caught on jigs and worms in hydrilla beds.

Bald Eagle Case Highlights Game Thief Rewards

An incident involving the killing of a bald eagle was the most significant case reviewed by the Texas Parks and Wildlife Department's Operation Game Thief Committee in Austin October 6.

A tip from a Texas resident led to the arrest of a man who had killed a bald eagle for a wall mount. After his arrest by state and federal game wardens, the man was charged with illegal possession of an endangered species.

The anonymous caller who reported the violation will receive a \$500 reward paid by the U.S. Fish & Wildlife Service to Operation Game Thief in compliance with the federal Bald and Golden Eagle Act.

A federal judge assessed the violator a \$1,000 fine, three years' probation, suspended his hunting rights for one year and ordered him to perform community service four hours a week for one year.

Persons observing violators of game laws in Texas may call toll-free 1-800-792-GAME. If the information provided leads to conviction, the caller may be eligible for a cash reward from Operation Game Thief, which is funded entirely by donations from individuals and organizations and di-

rected by a volunteer committee.

The OGT Committee also authorized payment of \$2,450 in rewards to 13 callers, while 22 callers did not request rewards and one was ineligible. During the past six months, the OGT line received 364 calls. The 268 calls investigated resulted in apprehensions involving 70 violators, from which 132 convictions were obtained. Of the 268 calls investigated, 13.4 percent resulted in arrests and convictions, according to Captain Stanley Brooks, OGT coordinator.

Matagorda Island Beach Cleanup Collects Trash

About 140 employees of the Texas Parks and Wildlife Department were among a group of 400 persons who picked up some 15½ tons of trash from the Matagorda Island beach September 19.

The Matagorda operation was part of the Texas Coastal Cleanup sponsored by the nonprofit Center for Environmental Education.

The volunteer workers worked four hours on Matagorda, cleaning almost four miles of beach and filling 1,244 garbage bags.

Much of Matagorda has been under government ownership since World War II, and it has not received periodic cleanings.

The majority of debris was plastic, including trash bags, egg cartons, milk jugs and six-pack

holders. Thousands of pieces of styrofoam, glass bottles, nylon rope ranging from ¼-inch to four inches in diameter, fluorescent light tubes, metal containers and hard hats also were collected. Unusual items included a mattress, refrigerator door, couch and miscellaneous articles bearing labels in Russian, Japanese and Spanish.

Special Christmas Events Planned In State Parks

Special Christmas observances are planned at several state parks and historic sites this month.

—Landmark Inn, Castroville, 4-9 p.m. December 11, musical performance featuring Alsatian Christmas traditions, 512-538-2133.

—LBJ State Park near Stonewall, 6-9 p.m. December 13, Christmas tree lighting ceremony featuring Lady Bird Johnson and traditional German Christmas at Sauer-Beckmann Living History Farm, admission free, 512-644-2252.

—Fulton Mansion, Rockport, 7-9 p.m. December 10-11, Christmas open house featuring Victorian Christmas decorations and music, admission free, 512-729-0386.

—Sam Bell Maxey House, Paris, 1-4 p.m. December 13, Christmas open house, featuring Victorian Christmas decorations and chamber music, 214-785-5716.

—Starr Family State Historic Site, Marshall, 2 p.m. December 12, reception for Harriet Engler and dis-

play of her historic clothing collection, 214-935-3044.

—Goliad State Historical Park, Goliad, 4 p.m. December 6, Family Christmas Concert at Espiritu Santo Church, featuring the University of Houston Concert Choir and Victoria Civic Choir; tickets available from Goliad Heritage and Cultural Association at \$3; tickets may be purchased by mail; send stamped, self-addressed envelope with payment to P.O. Box 939, Goliad, Texas 77963. At 7:30 p.m. December 12, Our Lady of Guadalupe Mass will be recited in the reconstructed Spanish mission church.

January In . . .

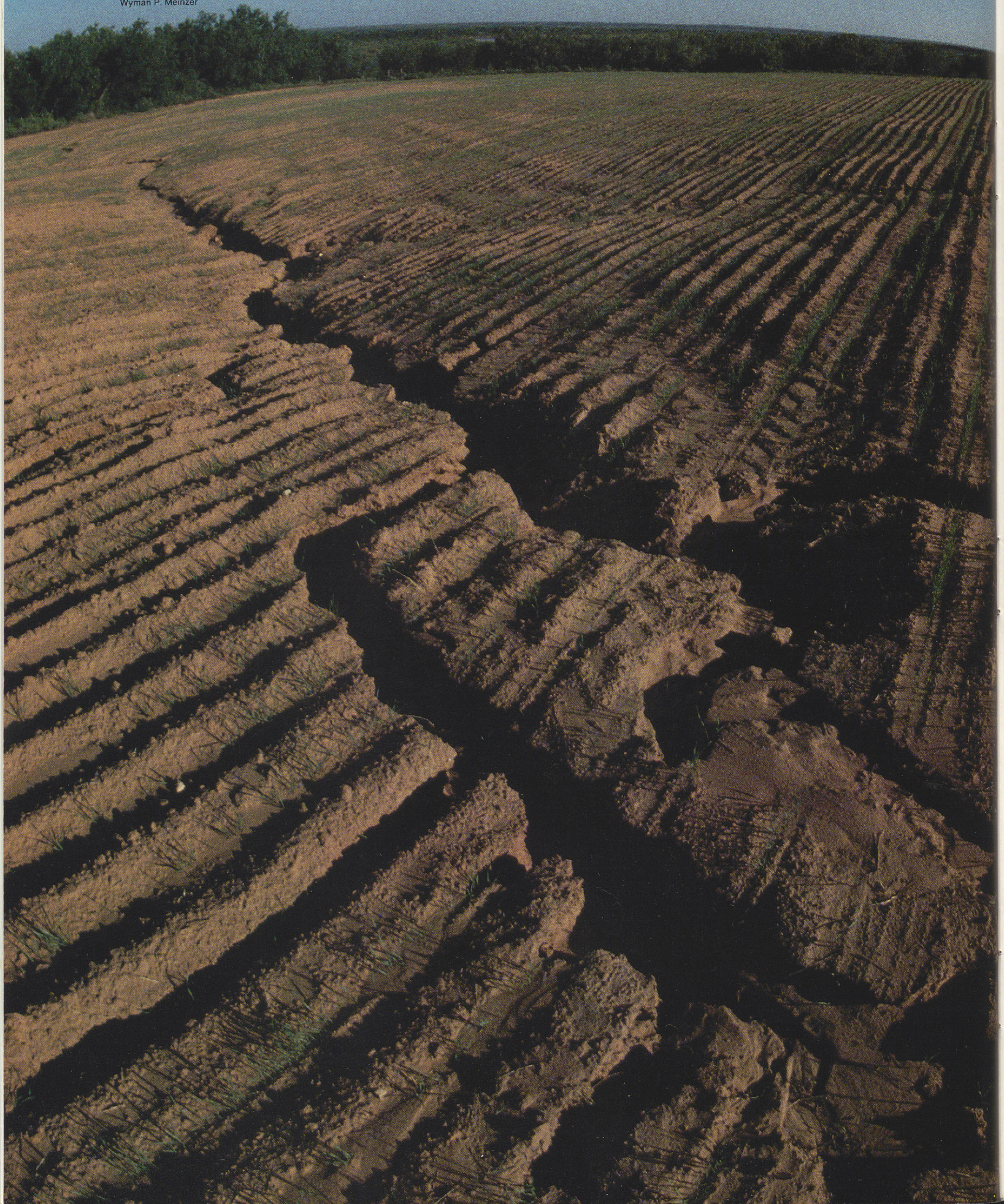
TEXAS PARKS & WILDLIFE

A century ago, the Lower Rio Grande Valley was an impenetrable expanse of thornbush, forests and jungles. Today, all but about five percent of the original wilderness has fallen to agricultural expansion. Next month we'll take a close look at the Lower Rio Grande Valley, its past and future. If you're looking for something to fill some long winter hours, consider custom building your own casting rod. We'll give you step-by-step directions in the January issue. Also next month are stories on state parks during the off-season, rabbit hunting and the pinon pines of the Hill Country.



Glen Mills

Wyman P. Meinzer



Conservation Reserve Program

A new era in soil conservation

by Ronnie R. George, Texas Parks and Wildlife Department Federal Farm Program Coordinator

Texas has always had a reputation for having the biggest and best of many things. Unfortunately, Texas may have the biggest and *worst* soil erosion problem of any state in the nation.

In the higher rainfall regions of Texas, the rapid movement of water across unprotected crop and pasture land results in severe sheet and gully erosion. In the western part of the state where rainfall is lighter, wind erosion is a greater problem. U.S. Department of Agriculture (USDA) figures indicate there is some highly erodible cropland in every county in Texas. However, the most severe soil erosion problem in Texas—and one of the most severe in the nation—is near Lubbock in the High Plains of Northwest Texas.

Organized efforts to reduce soil erosion have been around since the “Dust Bowl” days of the 1930s. In 1935, the U.S. Soil Conservation Service (an agency of USDA) began helping Texas farmers and ranchers solve their soil erosion problems. In the 1950s, Texas school children wrote themes and prepared posters for “Soil Conservation Week.” In the late 1950s and early 60s, many Texas farmers participated in the “Soil Bank Program” which temporarily retired approximately 20 million acres of cropland from production nationwide.

In the 1970s, maximum farm production was the name of the game again, and additional fragile, highly erodible soils were put into crop pro-

duction. “Fencerow to fencerow” production, as this all-out farming effort was known, was disastrous to the nation’s soil, water, fish and wildlife resources. Millions of tons of soil and thousands of tons of fertilizer, herbicides and insecticides were blown or washed into streams, rivers and reservoirs to the detriment of fish and other aquatic wildlife. Terrestrial wildlife ranging from pheasants and prairie chickens to meadowlarks and horned lizards also suffered from this habitat deterioration.

A new era in American soil conservation began in December 1985 with the signing of the Federal Farm Bill (of-

icially the Food Security Act of 1985). The Conservation Reserve Program (CRP) is a major provision of the Farm Bill. Patterned somewhat after the old “Soil Bank Program,” this program is designed to reduce soil erosion by removing highly erodible cropland from production and placing it under some type of permanent protective cover. In addition to reducing soil erosion and conserving soil and water resources, CRP is expected to improve water quality in streams and rivers, curb production of surplus commodities, increase long-term timber supplies and enhance fish and wildlife habitat.

Land that is eligible for CRP must be

Ronnie R. George



University of Texas Barker History Center



Soil conservation started in the 1930s Dust Bowl (top), and continues in the 1980s (left). Cropland reseeded with grass (right) is a remedy.



Ronnie R. George

Severe wind erosion (right) is all too common in the Texas Panhandle. The machine at left is seeding perennial grass in wheat stubble. Below, a wind break and permanent wildlife cover is taking shape. Wildlife will be the beneficiary of the CRP, especially pheasants, prairie chickens and quail (below) as well as other gamebirds and animals and nongame species.

actual cropland which was farmed for at least two of the years between 1981 and 1985. It also must be identified by the SCS as highly erodible. Landowners who participate in CRP sign a 10-year contract with USDA, an agreement that carries explicit obligations for both parties. The landowner agrees to establish and maintain protective vegetative cover on his CRP lands. In exchange, USDA guarantees that the landowner will receive annual rental payments (about \$40 per acre for West Texas) for 10 years and up to 50 percent cost-sharing for cover establishment. During the 10-year contract, CRP lands cannot be grazed or hayed, but hunting is permitted.

Permanent vegetative cover eligible for CRP includes introduced and native grasses, forbs, legumes, shrubs and trees. CRP also permits the construction of shallow wetlands, which provide wildlife habitat and protect soil from erosion. In addition, USDA has recently agreed to allow farmers to plant up to 10 percent of their CRP acreage in annual wildlife food plots. Under the food plot provision, the farmer would not receive costsharing, but he would receive annual rental payments for his total CRP acreage. Twelve CRP conservation practices are currently permitted in Texas.

CRP has the potential to greatly improve wildlife habitat conditions throughout Texas over the next 10 to 15 years. However, landowners can increase the wildlife benefits of CRP while supplementing their farm income through hunting leases by providing for specific wildlife needs when planning and implementing this program. The wildlife benefits of each conservation practice will vary with plant species, climate, wildlife species present in the area and individual skill in establishing and maintaining the cover practice. A general knowledge of potential problems as well as realistic expectations of wildlife benefits for each cover practice are important when selecting a practice.

Farmers who plan to participate in CRP should remember that native plants do better than introduced plants. Mixtures of several species are better for wildlife than monocultures of a single species. Mixtures of several habitat components (grass, brush, trees, water and food) with maximum "edge effect" also are better for wildlife than large blocks of a single type of habitat. Shredding for weed control or other habitat disturbance should be kept to a minimum during the critical April through August wildlife nesting period.

To date, approximately 2.8 million



Ring-necked pheasant by Wyman P. Meinzer



Lesser prairie chicken by Wyman P. Meinzer



Scaled quail by Wyman P. Meinzer



USDA Soil Conservation Service

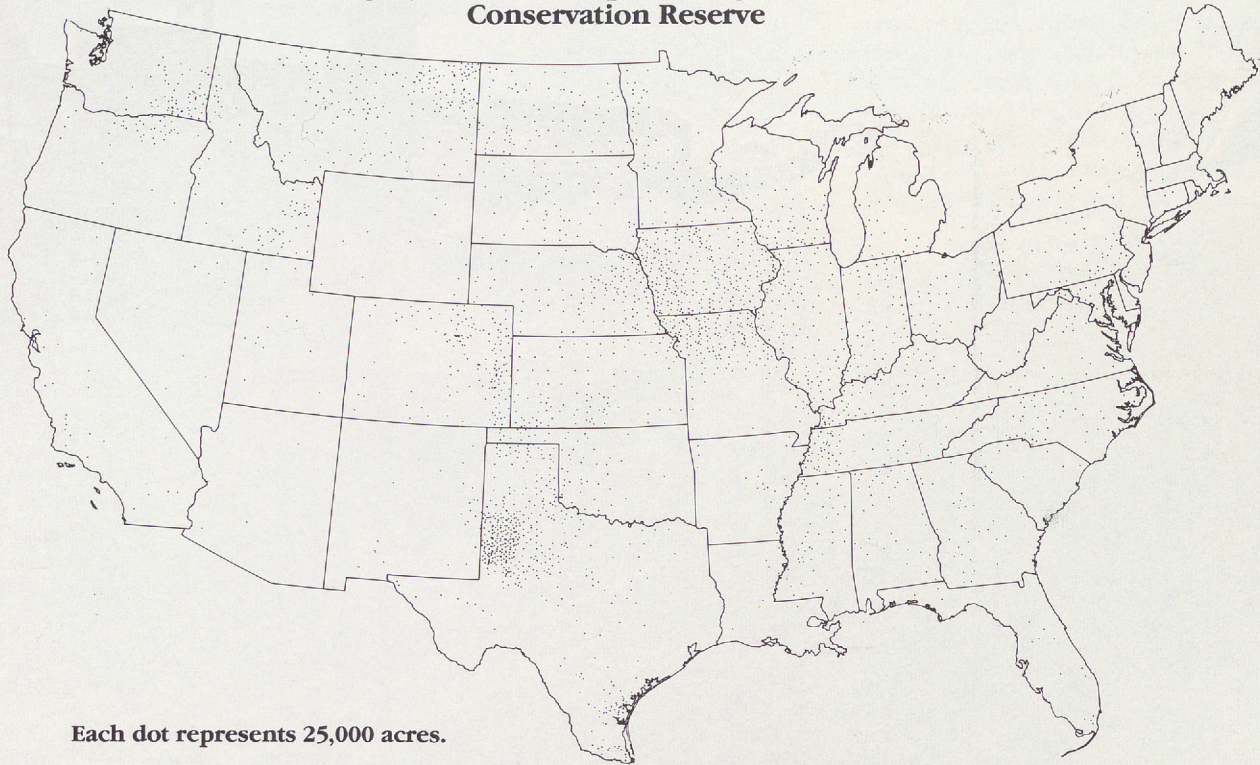


acres of highly erodible cropland in Texas have been enrolled in CRP, more than 80 percent of it in the High Plains and Rolling Plains of Northwest Texas. Much of this acreage has been planted with grasses and legumes. From a wildlife perspective, the greatest benefit of these practices will likely be the development of nesting, brood-rearing and winter habitat for wildlife.

Ring-necked pheasants will probably benefit more from CRP in Texas than any other game species. However, quail, prairie chickens, wild turkeys, rabbits, waterfowl, pronghorns, deer, and a variety of nongame wildlife also are expected to increase in areas where there is significant CRP acreage. Studies are planned to monitor any CRP-related wildlife population changes.

Several factors may reduce the effectiveness of CRP for Texas wildlife. Much of Texas is rangeland rather than cropland, and even highly erodible rangelands do not qualify for CRP. Highly erodible croplands are not uniformly distributed throughout the state and some areas will benefit more than others. Some of the desirable native

Highly Erodible Cropland Eligible for the Conservation Reserve



Each dot represents 25,000 acres.

USDA Soil Conservation Service

plant seeds and nursery stock are not available in the quantities needed for this program. Some CRP lands will undoubtedly be returned to cultivation at the end of the 10-year period.

Even with some limitations, the Conservation Reserve Program is expected to be the most important agricultural conservation effort of the 20th century. Nationally, nearly 23 million acres of land have been enrolled in CRP, and the current goal is to reach 45 million acres by 1988. Proposed legislation would increase the goal to 65 million acres by 1990.

A recent study conducted for the American Farmland Trust (AFT) revealed that CRP saves taxpayers' money in addition to protecting the nation's soil, water and wildlife. The financial benefits, according to AFT's report, result in part from the reduction in subsidized crop production. In return for annual CRP payments, farmers stop producing excess commodity crops on enrolled land and, instead, plant grasses, legumes or trees. The report projects that the federal government will save \$578 million during the CRP's 10-year life span, because the CRP pay-

Conservation Practices Permitted in Texas Under the Conservation Reserve Program

1. Establishment of permanent introduced grasses and legumes
2. Establishment of permanent native grasses
3. Tree planting
4. Establishment of permanent wildlife habitat
5. Establishment of field windbreaks
6. Construction of diversions
7. Construction of erosion control structures
8. Construction of grass waterways
9. Development of shallow water areas for wildlife
10. Permanent vegetative cover (grass) already established
11. Permanent vegetative cover (trees) already established
12. Annual wildlife food plots

ments will be much less than subsidy payments on the crops that would have been grown.

The potential of this landmark legislation has been recognized by federal, state and private conservation organizations, throughout the nation. Ultimately, many Texas citizens and many species of Texas wildlife will benefit from the Conservation Reserve Program. * *

Editor's Note: If you are interested in enrolling land in CRP, you should contact your county Agricultural Stabilization and Conservation Service (ASCS) office. Additional information on the program is available through the Texas Agricultural Extension Service. Technical assistance is available through the Soil Conservation Service, Texas Forest Service and the Texas Parks and Wildlife Department.

A free Texas Tech University Management Note entitled "Managing for Wildlife with the Conservation Reserve Program" is available by writing: Literature Section, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas or calling toll free 1-800-792-1112.

Strip Mining

(Continued from page 10)

In Texas, lignite mining is regulated by the Texas Railroad Commission, which requires each mine to obtain a surface mining permit. The permit application requests information about wildlife found at the site, a reclamation plan which lists the plant species to be planted on the mined area and a wildlife plan which describes which methods will be used to lessen adverse effects upon wildlife during mining.

Unfortunately, current mining regulations do not require that native vegetation be restored, and only a few kinds of herbaceous and woody plant species are usually planted. The emphasis is to plant vegetation that will prevent erosion. Thus, it seems reducing erosion has a much higher priority than replacing original vegetation.

Replacing topsoil during reclamation is crucial to the successful establishment of vegetation at the site. Because topsoil contains nutrients, microorganisms and native seeds, it should be stored during mining and replaced once mining is completed. Topsoil will hasten the establishment of high quality native vegetation and help provide the diversity of plants needed for many wildlife species.

When wet areas are mined, hydric (wet) soils are removed. The replacement of this type of soil is essential to reestablish wetland plant species following mining. Wetlands are high quality wildlife habitats which are saturated with water on a frequent basis. They also support vegetation which requires an abundance of water. If upland soils are substituted for wetland soils, the area will not support wetland plant species. Replacing the topsoil is not required at all mines. Instead many mining companies use a mixture of topsoil and subsurface material and spread this mixture on the land surface. While this process may be less expensive, there are several questions which should be asked.

—Will a mixture of topsoil and subsurface material sustain vegetation over a long period of time?

—Will this material be more effective than topsoil in preventing erosion?

Another area which needs careful consideration during the reclamation process is the selection of plant species. Current reclamation favors mono-

cultures of coastal Bermuda grass. This plant is readily available, easy to establish and produces good ground cover. Maintenance of coastal Bermuda grass is high. It must be fertilized and irrigated, and this is an expensive endeavor. It also has low food value for wildlife.

Government agencies and mining companies have been working together, but better reclamation techniques are needed. Cooperative efforts of the Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service and the U.S. Soil Conservation Service have assisted the Texas Railroad Commission

Although we cannot prevent the adverse impact of lignite mining upon Texas fish and wildlife, the effects can be lessened through proper reclamation measures.

in establishing reclamation standards. Universities also have performed research to evaluate the success of vegetation on mined lands. The Texas Parks and Wildlife Department also provides recommendations to mining companies for actions beneficial to wildlife. These recommendations are made during field visits to individual mine sites.

Habitat is the key to survival and success of fish and wildlife. Management practices to enhance the recovery of displaced habitat are available. Well-planned management programs can speed recovery of a damaged area. Reclamation should be based upon a holistic (i.e., entire, total, or whole) resource management plan that combines idealistic and realistic goals. Reclamation plans should consider wildlife species found in the area and define specific objectives for reclamation of these species. Smaller areas might be devoted totally to one species, while a mosaic over a large area would be necessary for the management of several species.

Reclamation should emphasize re-

establishment of native plant species that provide food and cover for wildlife. These plants are adapted to long term, intermittent extremes that usually limit survival and distribution. Native plants are adapted to local environments (ecotypes) and will persist through periods of drought and other stress.

One of the most important subjects to be considered for planting trees is their spacing. Quality should not be sacrificed for quantity. Too much canopy or overstory can seriously reduce ground cover for wildlife. Therefore, the planting of hardwood saplings in closely spaced rows like farm crops or pine plantations should be avoided.

Reclamation should be oriented toward a long-term goal. Plant species and planting patterns used should attempt to restore the natural community and provide food and cover for wildlife. Reclaimed stream channels should have flat bottoms and gently sloping banks.

Sedimentation ponds should be incorporated with other types of wildlife habitat. This concept integrates these ponds with woodlands; permanent, semi-permanent, and temporarily watered wetlands; and waterfowl management. These impoundments should terminate a meandering ditch five to six feet deep. Adjacent areas should be contoured for zones of water of varying depths with islands at each bend in the meander at approximately 100-yard intervals. Water control devices are necessary for complete drawdown to allow for management of natural or cultivated marshes. Wood duck production programs are also recommended. This involves the installation of nest boxes and establishment of suitable rearing habitat.

From all this, it is apparent that a large array of factors must be considered during the restoration of a mined area. It is also evident that we cannot prevent the adverse impact of Texas lignite mining upon fish and wildlife, but the effects can be lessened through proper reclamation measures. This can be accomplished only by the interaction of government agencies, private landowners, mining companies, educational institutions and the general public. Only a cooperative effort of all parties involved can further state-of-the-art reclamation and restoration of fish and wildlife habitat on mined areas. * *

OF INDIANS AND LIVING ROCK

Watch for MADE IN TEXAS,

the Award-Winning
T.V. Series
Produced by the

Texas Parks & Wildlife Department

"Captured Moments" takes a poetic and inspiring look at the ancient rock art of Texas, as scientists offer personal reflections on its beauty and mystery. Starting on page 11 in this issue of *TEXAS PARKS & WILDLIFE* magazine, you can read more of the story in a chapter from Charles Shaw's "Indian Life in Texas."

Enjoy all this and more about Texas wildlife, history and recreation by watching for the **MADE IN TEXAS** series, on PBS nationwide. Check your local schedule, or call your local PBS affiliate for schedule information. Or you can call us toll-free at 1-800-792-1112 (in Austin 512-389-4996). This is no ordinary T.V. series. This is . . .

MADE IN TEXAS

Taking orders now for



**DUCK
STAMP
PRINTS**

1987

- 1987 TEXAS "Geese" by G. Moss
(Complete Series In Stock)
- 1987 SALTWATER Fishing Stamp
("Speckled Trout" by Al Barnes)
- 1987 TEXAS TURKEY/Ken Carlson
(Complete Series In Stock)
- 1987 NONGAME /Bald Eagle/B. Kuhn
- 1987 GCCA "Kingfish"/Mike Stidham
(Complete Series In Stock)
- 1987 FEDERAL "Redheads"
- 1987 "1st" W. Virginia/Arizona/
Kansas/Idaho

CALL NOW TO RESERVE (713) 370-6945
Free Color Brochures and Price List
Available Upon Request



Charlie's Gallery

Federal & State Duck Stamp Print Specialists
All States - All Years
P.O. BOX 11056 • SPRING, TX 77391
(713) 370-6945
Serving Texas Collectors Since 1980
Greater Houston's Largest Stamp Print Dealer

Real Texas Bar-B-Que

A Beginner's Guide

4.95



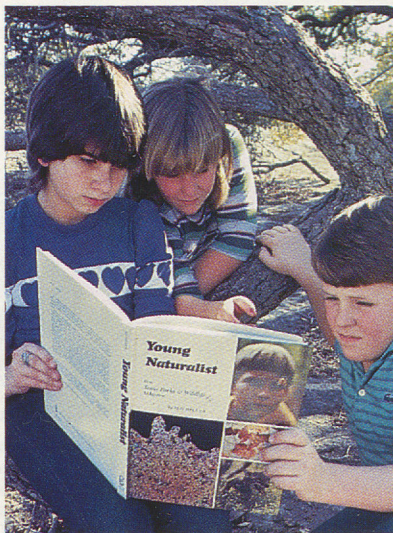
- Step-by-Step Directions to Successful Bar-B-Que
- Build Your Own Pit

TO ORDER: Send \$5.76 per copy for Texas residents, or \$5.45 per copy for out-of-state residents to:

SPORT-TECK
2606 Maria Anna Rd.
Austin, Texas 78703

Includes Postage & Sales Tax

YOUNG NATURALIST



Features from *TEXAS PARKS & WILDLIFE* magazine. A book of nature articles enhanced by beautiful color photos. Ilo Hiller writes about animals, rainbows, snowflakes, wildlife babies, frost flowers, meteors, geodes and many other topics. This collection will be treasured by naturalists of all ages. \$15.95

Please send me _____ copies of *YOUNG NATURALIST* at \$15.95. (Book No. 09961638) (M-49).

NAME _____

ADDRESS _____

CITY _____

STATE/ZIP _____

TEXAS A&M UNIVERSITY PRESS/
DRAWER C/COLLEGE STATION,
TEXAS 77843-4354

Payment must accompany order.
Texas residents add sales tax.
Add \$1.00 postage.

ABC's of Retriever Training
with Mike Pind

PART I VIDEO TAPE PART II
Choosing a puppy to single Retrieves The Finished Dog


\$49 plus sales tax, shipping & handling
Call or Write: **FOWL PLAY PRODUCTIONS**
5814 Osage • Houston, TX 77036 • (713) 777-9166

Professionally Managed
WILDLIFE EXECUTIVE LEASE
IN BEAUTIFUL CENTRAL TEXAS

261 Secluded Acres Along Two Miles of River. Working Heritage Ranch Operated by same family since 1874. All Game and Fishing. Furnished cabin with Fireplace. Many extras. Perfect year round getaway for your clients. Yearly Lease. Unlimited Sportsmen. Contact: *Bradley Ware, Rt. 3, Box 211, Killeen, TX 76541 817-699-9165 Days/634-6691 Nights*

NO GAME/NO PAY
TROPHY EXOTIC & WHITETAIL
Aoudad, Axis, Antelope, Elk, Red Deer, Fallow, Mouflon Rams & Sika
Double U Ranch — 30 Miles North of San Antonio, Box 31A5, Spring Branch, Texas — 512/885-4636

TEXAS WILDLIFE SHIRTS



Eagles, ocelots, jaguars, bighorn sheep, whooping cranes. Gold 100% cotton. All sizes. T-shirts \$12.00. Sweatshirts \$18.00. Tax included. Check, money order, C.O.D.
Texas Endangered Species
Box 200251, Austin, Texas 78720

Getting Close to South Texas Whitetail
best South Texas Video on the market!



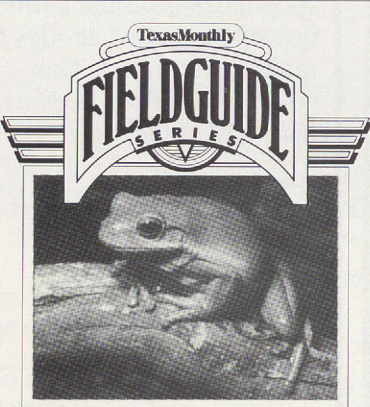
- See 50 different So. Texas buck!
- Camo techniques, scents & lures.
- A must for beginner or expert*
- Exciting! Bucks fighting, making rubs & scrapes plus a B&C book 10 point and learn how to judge them on the hoof.

WITH TEXAS TROPHY HUNTERS PRES. JERRY JOHNSTON
SEND \$39.95

to **HUNTERS PRO P.O. Box 791510 San Antonio, TX 78279-1510**
for credit charges call 512/349-4868 weekdays, 8:30 a.m. 6:00 p.m.
Send this form: Charge my MC VISA AMX

Card No. _____ Expiration Date _____
Name _____
Address _____
City _____ State _____ Zip _____
***Land owners and lease operators should insist on all hunters, viewing this tape.**
Allow two to four weeks for delivery. PW

★
Texas Monthly Press



A FIELD GUIDE TO REPTILES AND AMPHIBIANS OF TEXAS
BY JUDITH GARRETT AND DAVID BARKER

A Field Guide to Reptiles and Amphibians of Texas is a unique and intriguing resource for locating and identifying the 166 Texas species and subspecies of frogs and toads, lizards and skinks, salamanders, and turtles. Each animal is described in a separate entry with a range map and details on its description, sounds and calls, habitat, and behavior.

Filled with facts, illustrations, and photographs, this exciting new field guide has more than 160 color photographs and 166 maps and is available in cloth and paperback.

Available at your local bookstores or directly from
Texas Monthly Press P.O. Box 1569 Austin, Texas 78767
Texas residents call TOLL FREE to order 1-800-252-4437

_____ Check/Money Order _____ Visa _____ MasterCard
Credit Card # _____ Exp. Date _____
Signature _____
Name _____
Address _____
City _____ State _____ Zip _____

- _____ **A Field Guide to Reptiles and Amphibians of Texas, cloth**
\$21.95 plus \$1.53 Texas sales tax # \$23.48 _____
- _____ **A Field Guide to Reptiles and Amphibians of Texas, paperback**
\$14.95 plus \$1.04 Texas sales tax # \$15.99 _____

Please allow 2-4 weeks delivery. Postage and handling \$2.00
TOTAL _____

TP09

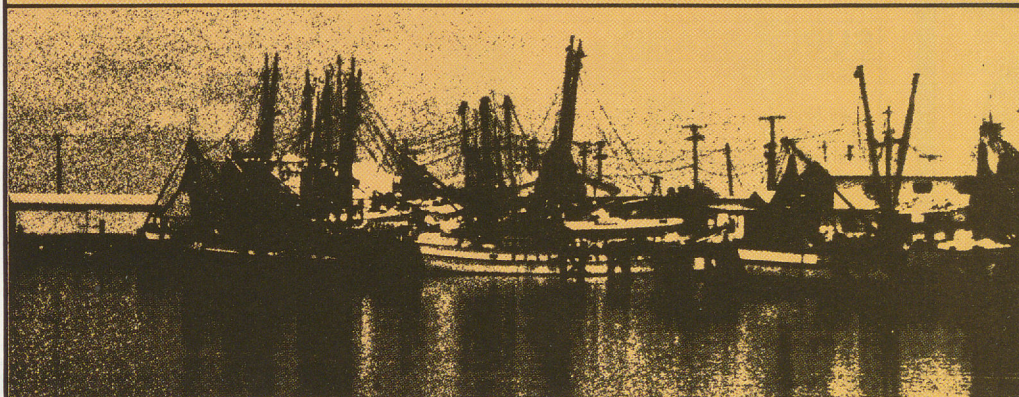
Cannibals and Condos

Texans and Texas along the Gulf Coast

Robert Lee Maril

"This would be a good book to read for anyone who plans to move to the Texas coast or who loves to vacation there, or who simply is curious about the part of the Lone Star State that most often is overlooked. *Cannibals and Condos* is a 'good read.' It is a good 'think' as well." — *Dallas Morning News*

". . . a superb book. . . It vividly captured the impact and feeling of development along the Gulf Coast in a manner that should touch any reader — regardless of the approach or bias towards the environment or development." — *David A. Ross*
136 pp. \$13.95



Order Form

Please send me _____ copies of *Cannibals and Condos* (M07), at \$13.95 each. Texas residents add \$.87 sales tax (per book). Publisher pays postage!

Payment enclosed

MasterCard Visa

Acct. # _____

Exp. Date _____

Signature _____

Name _____

Street _____

City _____

State _____ Zip _____

Telephone _____

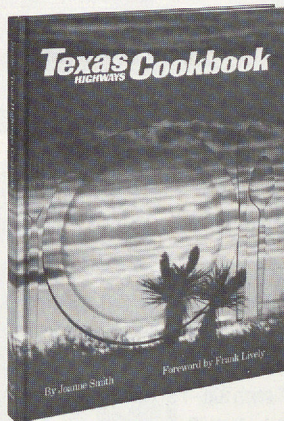
Texas A&M

University Press

Drawer C

College Station, Texas 77843-4354

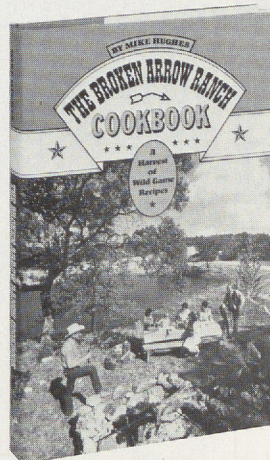
*For food with the best taste in Texas . . .
turn to these down-home cookbooks from UT Press:*



Texas Highways Cookbook. A culinary trip into the heart of Texas, with more than 275 recipes and many, many color photographs from the state's premier travel magazine, *Texas Highways*. A book for keeping and for giving! \$24.50 hardcover



Cooking Texas Style: A Heritage of Traditional Recipes. Now in its fifth printing, the kitchen bookshelf standard for authentic Texas recipes. Over 200 cherished family recipes . . . clearly explained, simple to prepare, and simply delicious! \$12.95 hardcover



The Broken Arrow Ranch Cookbook. A harvest of wild game recipes—more than 200 of them—that's ideal for gourmet cooks and hunters alike. This book features hearty, ranch-style fare that's guaranteed to make your mouth water and your guests clamor for seconds. \$14.95 hardcover

Ordering (87TPW1) Information

Please send me:
_____ Texas Highways Cookbook (SMIHIG) at \$24.50 each

_____ Cooking Texas Style (WAGCOO) at \$12.95 each

_____ Broken Arrow Ranch Cookbook (HUGBRO) at \$14.95 each

Payment should include appropriate sales tax and \$1.50 postage.

Send to:

Name _____

Address _____

Check or money order

Visa MasterCard

American Express

Account # _____

Expiration date _____

Signature _____

In Texas, call toll free 1-800-252-3206 to place your credit card order during business hours.

Or mail your order to:

University of Texas Press
BOX 7819 AUSTIN, TEXAS 78713

AUTOMATIC FEEDERS FOR WILD GAME

- SPIN OR DROP UNITS
- CLOCK TIMED
- AFFORDABLE

SPORTSMAN'S FEEDER CO.
 4018 Lockwood, #67 Houston, TX 77026 713-672-6104
 1001 Minda, #62 Austin, TX 78758 512-837-1505

ORIGINAL PERFORMANCE PROVEN PATENTED
Flying Decoys
 Specify: Snow/Canadian
 goose, sandhill crane, crow or duck hen kites

EASY TO FLY!
 DECOY KITES TESTED & PROVEN

SEND CHECK OR MONEY ORDER—\$24.95 (Includes Postage)
 To: P.O. Box 747 Red River, N.M. 87558

TEXAS PARKS & WILDLIFE MAGAZINE MAKES A GREAT BIRTHDAY GIFT, TOO.

SHARE THE PLEASURES OF THIS OUTDOOR MAGAZINE WITH ALL YOUR FRIENDS.

NEW HUNTING BLIND

PORTABLE—FOLDS COMPACTLY
 BENCH REST ACCURACY
 WEIGHS ONLY 12 lbs.
 ATTACHES TO LAWN CHAIR

ADVANTAGE PRODUCTS
 P.O. BOX 1934 DEPT. A
 CEDAR PARK, TX 78613
 (512) 267-4928

WRITE FOR FREE BROCHURE

THE AMERICAN HEART ASSOCIATION MEMORIAL PROGRAM

WERE FIGHTING FOR YOUR LIFE

American Heart Association

Don't Spoil The Game

PORT-A-COOL
 WILD GAME STORAGE
 2013 WEST AVE. 736-1603

San Antonio, Texas 78201 (512) 736-1605

- Prevents spoilage/ages meat
- Eliminates trips to town
- Easily loads in pickup
- Holds 15 - deer
- Approx. 500 lbs. - 4' x 7' x 7'

Production Equipment Supply Liberty
 Dealers: Deer Hunters Supply, Jim Garrison, Whitehouse Co. Hondo, Fort Worth, Orange, Laredo

SUPER STAND™
 Guaranteed Five Years!

All blinds complete with sliding windows & carpet (Complete 10 ft. tower blind)

As low as **\$393.**

Also available: Patented 6 ft. to 20 ft. models

MINI-MAC™ Feeder
 7 gal. 50# capacity
 Also available: 16 gal. 100# capacity

Clock Timed Automatic Feeder →

BIG-MAC Feeder
 55 gal. 400# capacity
 Solar Optional

Also available: Builders kits, parts & other accessories

For More Information call (including weekends) or write: *Dealer inquiries welcome

CHAS-MAC, Inc., 2124 Marnel, Houston, TX 77055, 713-461-9163

BIGFOOT Quail Feeders

Designed by noted South Texas dog trainer and hunting guide, Jeff Waugh, **BIGFOOT FEEDERS** are anti-proof and ward off hogs and javelinas better than any feeder on the market. Order now and keep more quail on your land.

COST EACH—\$38.95 + TAX AND SHIPPING
DOZEN OR MORE—\$36.95 EACH + TAX AND SHIPPING

HUNTING DOGS
 Ask about our finished hunting dogs from Champion bloodlines. We have English Pointers and Labrador Retrievers, ready to make this your best season ever.

We also have our own line of protective dog equipment including boots, leggings and vests.

BIGFOOT KENNELS
 512-663-4160
 Star Rt. Box 148B Bigfoot, Texas 78005

AUTOMATIC ELECTRIC FEEDER
 Battery Powered — Solar Optional
 Feeds Only Animals, Anytime
 by Clock, Dawn, Dusk, and Manual
 Multitimer Controls

MULTITIMER
 SPECIALTY SYSTEMS, INC.
 5911 BULLARD DR., AUSTIN, TEXAS 78731
 U.S. PATENT PENDING

SOLAR CLOCK TIMER
 SPECIALTY SYSTEMS, INC.
 5911 BULLARD DR., AUSTIN, TEXAS 78731
 U.S. PATENT PENDING

THE SSI SMART FEEDERS FOR GAME, FISH, AND LIVESTOCK

ssi

Improved once again, with a new conical lid to shed water, and two microcomputer timers to choose from. Closed lockable dispenser box.

MULTITIMER feeding options include up to 6 runs by digital quartz clock, photoelectric Dawn and Dusk, and remote manual by wire/pushbutton. Run durations can be different for each run—1 to 99 seconds.

SOLAR CLOCK feeding options include Dawn plus up to 6 selectable quartz timed runs after the dawn event; Dusk and an early morning run timed from the dusk event; and remote manual by wire/pushbutton. Run durations can each be any one of 10 ranging from 1 to 30 sec.

Both timers are 6 or 12 volt DC, are reverse battery protected, and can replace any known game feeder timer. Available separately.

Full line of accessories including solar chargers, tripod suspensions, etc. Shipped fully assembled anywhere. Many thousands sold—since 1964. Still, only feeders guaranteed 3 years. Top quality. Send for free brochure.

Better than World Class . . .

AMERICAN CLASS

SWEENEY Feeders Attract Wildlife

Automatic Wildlife Feeders
 Quartz accuracy and dependable SWEENEY quality team up to keep the SWEENEY Feeders as America's favorite. There's a SWEENEY Feeder sized to fit every feeding need. Feed deer, turkey, quail or fish.



Used and Endorsed by
BOB LILLY
 Former Dallas Cowboy, All-Pro Tackle and Professional Football Hall of Fame.



Write or call for a
FREE COLOR BROCHURE

SWEENEY ENTERPRISES, INC.
 Route 2, Box 2452, Dept. TP
 Boerne, Texas 78006
 (512) 537-4631



FEEDERS
 BY Sweeney
 SWEENEY ENTERPRISES INC. WILFARE, TEXAS 78060

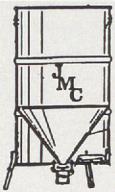
LIVE-CATCH TRAPS Write for FREE CATALOG



Traps without injury squirrels, chipmunks, rabbits, mink, fox, raccoons, stray animals, pets, etc. Sizes for every need. Save on our low factory prices. Send no money. Write for free catalog and trapping secrets. MUSTANG MFG. CO., Dept. N-37 Box 920947, Houston, TX 77292, (713) 682-0811

GAME FEEDERS & KITS

free brochure



Jackson Manufacturing Company
 1306 FM 1092
 SUITE 208
 MISSOURI CITY, TX 77459
 (713) 261-0803

Duck Stamps and Prints
 Texas and Federal Duck Stamps and Prints. Also Texas Salt-water, Turkey, GCCA, other states, albums and frames. Free price list and color brochures.

DEATON'S

2516 Drexel at Westheimer
 in Highland Village
 Houston, Texas 77027
 Phone 621-9020; outside Houston
 call tollfree 800-627-3000

The Best in the Field . . .

AUTOMATIC FEEDERS

HUNTERS-FISHERMEN-WILDLIFE VIEWERS



- Thousands in use worldwide due to quality control and dependable service.
 - 80, 250, 500 & 1,000 lb. capacities
 - Install on pipe legs or hanging
- Tough, specially made, H₂O - tight hoppers made from galvanized metal & durably painted.
- Feed at selected times, 1-48 times per day.

DEPENDABLE TIMERS to choose from

THE TIMER IS THE MOST IMPORTANT PART IN ANY AUTOMATIC FEEDER. OUR EASY TO SET QUARTZ SOLID STATE TIMER ADAPTS TO ALL SIMILAR FEEDING SYSTEMS.


- 6-12V Top of the Line 2H612 Timer: Quartz, Solid-state, Integrated Circuit. Allows single battery operation, 6 or 12V, feeding 1-24 times.
- Our "original" 6V Timer: #6-1 1/2 c.p.m.
- Economy 12 volt "Get By" Mini Timer
- Dry cell or rechargeable D.C. battery.
- Timers and motor kits

FULLY GUARANTEED
 write or call for **FREE BROCHURE**
 ROUTE 3 - BOX 53, Dept. TPW
 CORPUS CHRISTI, TEXAS 78415
 (512) 855-0049
 Visa - MasterCard - American Express



I'm a rancher and Beefmaster breeder. My family and I have always enjoyed wildlife. Through an automatic feeding program we have improved the quality of our wildlife and our ranches. We've been using Lehman H Automatic Feeders for years and are well satisfied with their durability and low maintenance.

Nolan Ryan
 NOLAN RYAN
 Pitcher Houston Astros
PLUS NON-MECHANICAL QUAIL FEEDERS



STOP POACHING

Reward for information leading to the conviction of game and fish law violators. Call day or night.

OPERATION GAME THIEF

1-(800) 792-GAME

Letters

Arkansas Fan

Two years ago, my cousin in Channelview, Texas gave my father a gift subscription to *Texas Parks & Wildlife* magazine. And after he reads each issue, he passes it on to me.

As a kindergarten teacher, I have found many ways to use the beautiful pictures and the well-written articles from your magazine.

Your dedication to the conservation and enjoyment of Texas wildlife is to be commended. We likewise share in the appreciation of the wildlife here in Arkansas. Therefore, we wanted to express our sincere thanks for an outstanding magazine.

Leslie Larance
Warren, Arkansas
Lester Rabb
Monticello, Arkansas

Homegrown Grass

Paul Montgomery's article entitled "Homegrown Grass" in the September 1987 issue of *Texas Parks & Wildlife* is very well done and most welcome. It gives this outdoorsman a few clues on what to look for when scouting for wildlife feeding areas. However, due to its brevity it only whets the appetite.

You certainly would do us all a service to continue onward with the subject, and/or to recommend a good field manual on grasses and other forage that would help outdoorsmen find likely feeding areas for wildlife.

The necessity of locating good forage in order to find concentrations of wildlife is well understood by most of us. However, I'll bet I'm not the only one who doesn't know what to look for in trying to select prime forage from the less desirables.

It also should be said that people are becoming more and more aware of the need to conserve and protect our native flora and fauna, and the more we know about good native forage, the better prepared we are to preserve it.

David R. King
Houston

■ Paul Montgomery used the following books in researching the article: "Grasses of Texas," by Frank W. Gould, Texas A&M Press; "Texas Range Grasses," by Benjamin Tharp, University of Texas at Austin Press, 1952; "How To Know The Grasses," by Richard Pohl, William C. Brown Company, 1968; "100 Native Forage Grasses In 11 Southern States," by Horace Leithead and Lewis Yarlett; "Pasture and Range Plants,"

by Phillips Petroleum Company, 7th Printing, 1980; "Know Your Grasses," by J. Daniel Rogers and B.J. Ragsdale, Texas A&M Press, 1974; and "Texas Grasses," by W.A. Silveus, 1933.

Getting Hooked While Fishing

I read *Texas Parks & Wildlife* regularly, and in seeing the article, "Don't Just Stand There—Do Something" in the October 1987 issue, I felt I should comment on the procedure of removing a fish hook from someone's skin as described on page 17 in the article.

The removal of a fish hook can be a simple procedure by using a cord, whereas pushing the point of the hook through the skin as suggested by the author is most difficult.

If you press the eye of the hook down against the skin, and put a cord around the embedded hook, and then jerk along the same plane as the skin, the hook will easily come out of the skin.

I have removed many this way. If this procedure is done in the doctor's office or in an emergency room, then putting a small amount of analgesic next to the hook will lessen the pain.

This procedure is not original with me and since it works so easily, it is a good procedure for all fishermen to learn.

William S. Terry, M.D.
Jefferson

Invasion of Hawks

After receiving our October 1987 issue of *Texas Parks & Wildlife* which included an article on the migration of hawks, my wife and I decided to write and tell you a hawk story of our own.

I live on a small ranch seven miles northeast of Tahoka in Lynn County on FM 400. On October 3, I saw a large circling of birds over my south pasture. Thinking perhaps that I might have a dead cow or calf in the area, I went to investigate the situation.

To my great surprise, I found a large grouping of hawks. After driving on to a 30-acre wheat patch I had left unplanted this year, I came across thousands and thousands of hawks on the ground.

The following morning, however, all of the hawks were gone. I guess they had to make room for our first group of sandhill cranes that began arriving that afternoon.

Robert L. Harvick
Tahoka

Osprey Couple

In your August issue you had a short story about a pair of ospreys nesting at Sam Rayburn Reservoir. What happened to them? Did they have offspring?

Mary Palmer
San Antonio

■ As we reported in the "Outdoor Round-up" section of the October 1987 issue, the efforts by the Texas Parks and Wildlife Department personnel along with cooperation from the public apparently assisted this pair of ospreys to nest successfully.

Two immature ospreys were sighted flying near the nest with the parent birds on August 1 by game warden Jimmy Wood.

According to Dr. Bruce Thompson, non-game and endangered species program leader for the TPWD, "This is the first documented successful nesting effort of ospreys in Texas in 24 years."

"This success story is one that many people hope to see repeated in years to come, but it is one that can happen only through cooperative efforts like those of 1987," added Gene Miller, wildlife technician in Lufkin.

BACK COVERS

Inside: Although they are found in the northern counties of the Panhandle and in some parts of West and South Texas, the muskrat's favorite Texas home remains the southeastern part of the state where it breeds throughout the year. These large, scaly-tailed rodents usually live in marshes. Creeks, rivers, lakes, drainage ditches and canals support small populations in places where food and shelter are available. Muskrats live in dome-shaped houses or lodges constructed of marsh vegetation, which is also their main source of food. Photo by Tom J. Ulrich. **Outside:** On the wing, the great egret is more graceful and buoyant than its cousin, the great blue heron. This large white egret often is called the great white heron since it approaches the great blue heron in stature. It is the largest of the all-white Ardeidae species commonly found in Texas. The great egret is a Texas resident and very common inland in small colonies within the eastern half of the state. Photo by Tom J. Ulrich.



