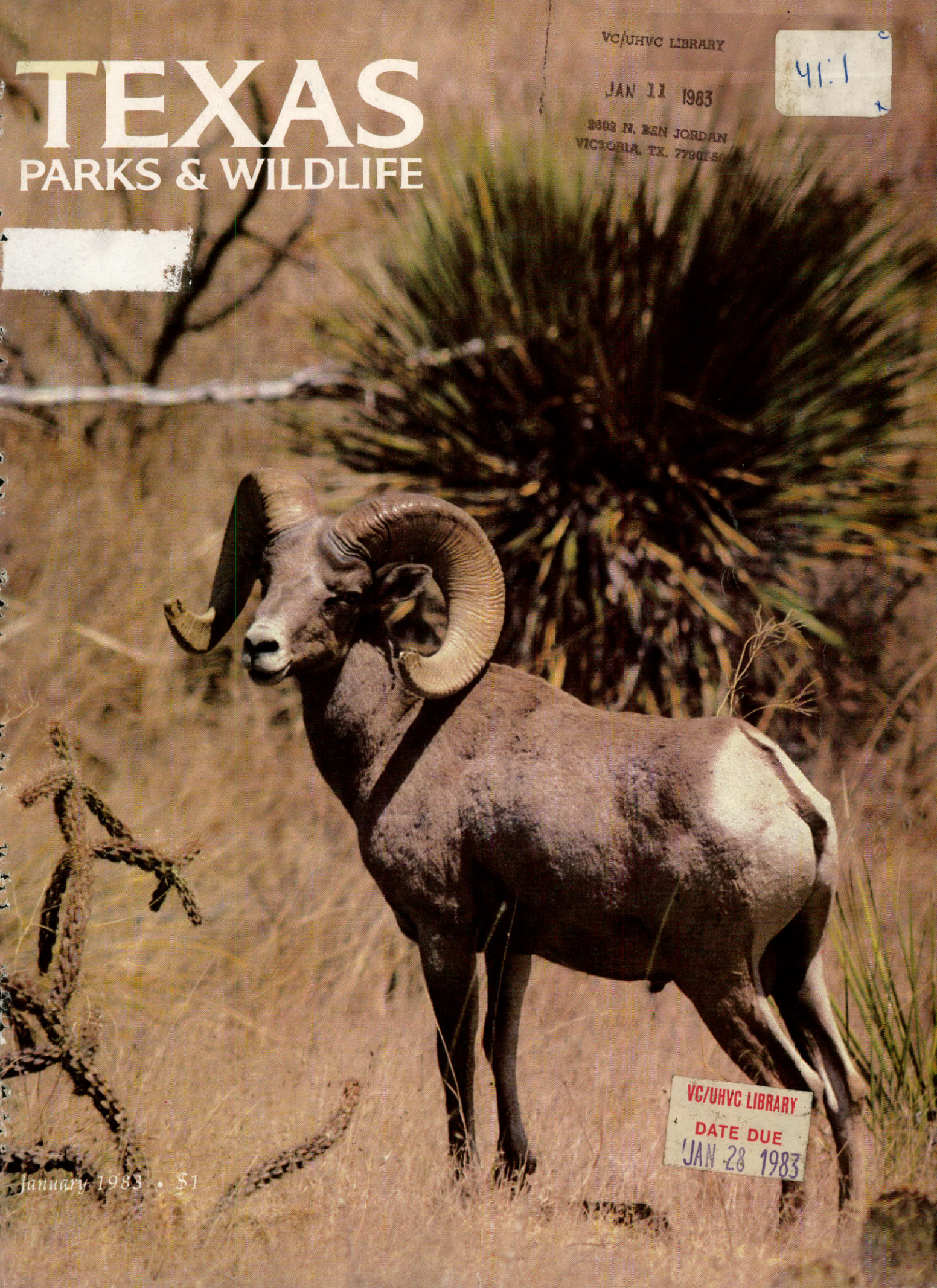
TEXAS
PARKS & WILDLIFE



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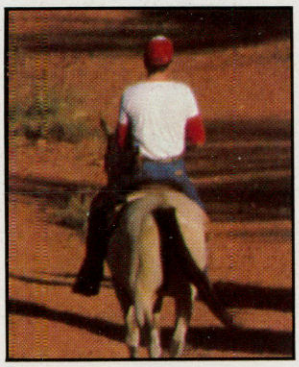
TEXAS PARKS & WILDLIFE

January 1983, Vol. 41, No. 1



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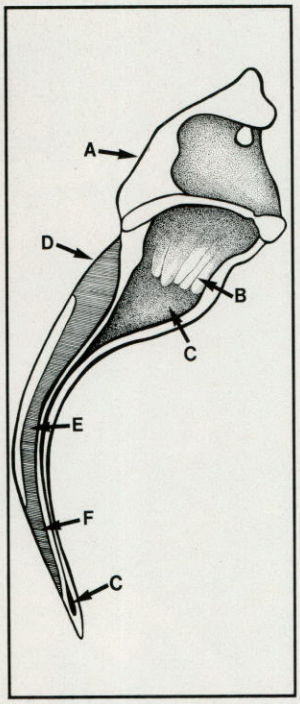

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Front Cover: Decline of the bighorn sheep in the Trans-Pecos was swift and severe. A combination of factors was responsible for the bighorn's demise, and countless problems have plagued restoration efforts. But a growing number of bighorn enthusiasts are optimistic about the animal's future. (See story on page 16.) Photo by Glen Mills.

Inside Front: An icy sheath turns an ordinary leaf into a glimmering ornament on a winter morning. Photo by Glen Mills.

A VIEW FROM THE SADDLE

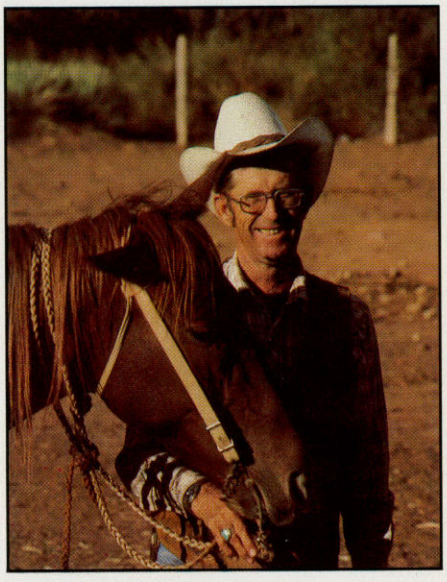
Rent a horse and ride in Palo Duro Canyon.

Article and Photos by Wyman P. Meinzer Jr.

The last rays of sun touched sandstone cliffs, marking the end of another busy day for both horses and personnel at Harold Lindsey's riding stables in Palo Duro Canyon State Park.

The last riders are accounted for and all 50 horses are relieved of their saddles. Hay is dispersed among the hungry animals and Lindsey tallies the number of riders for the day. "It was a good day, but tomorrow will be even better," says Lindsey. "On Sunday afternoon the people really come in. During the spring we sometimes have a two-hour waiting list."

Why is business so consistently good? "My philosophy is to take a sincere interest in people," says Lindsey. "We inquire about the ride they have had. Was it enjoyable? Did they like the horse? We try to give them individual horses that fit their riding skills, and someone is always on hand to help those riders who have difficulty handling their horses." Rarely does a person come away disappointed from the riding concession at Palo Duro.



"In ways, horses are like people," says Lindsey. "They have personal friends they like to stick close to. Since the horses like to stay with their special group, I try to send the ones that are real close friends out together. This seems to work best for both the horses and riders."

All the horses at Lindsey's stable recognize their names and they have their own characteristics and personality quirks. "I have a large, black horse named Rodchester that can be ridden easily by a child," says Lindsey. "Whenever he's in the group, you can bet Rodchester will be the one next to the lead horse. A sorrel horse named Spider is the oldest one I have. At 22 he's still very high-spirited and acts like an eight-year-old. Spider and Buttons, a little Black Welsh reserved for the ladies, are always first at the stable door in the evening to be unsaddled. They seem to know when the day should be over."

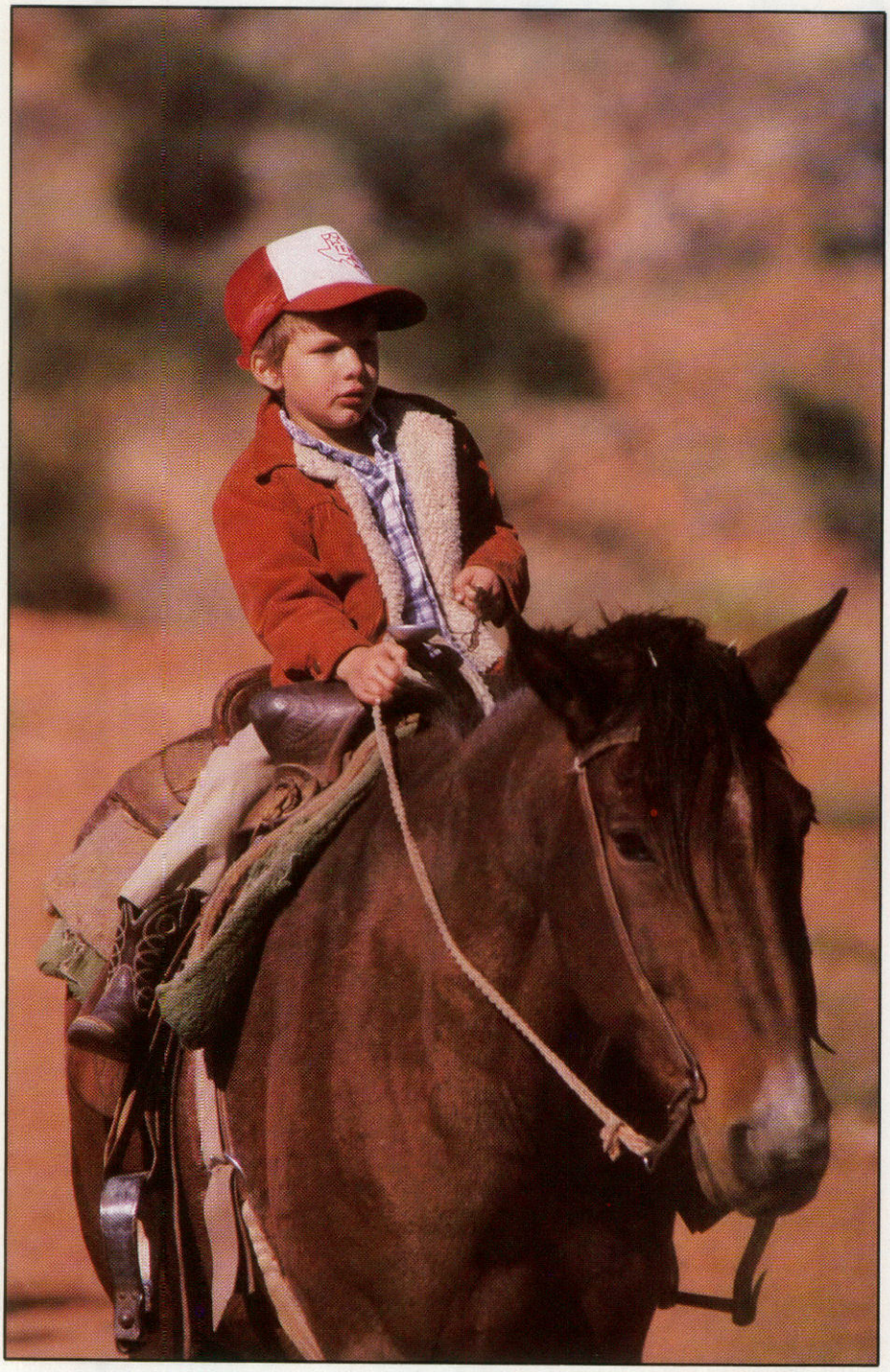
Those who patronize Harold Lindsey's riding stables in Palo Duro Canyon State Park are rarely disappointed. Riding the trails can be a treat for visitors of all ages, whether straddling the horse or riding in dad's backpack.

Lindsey's concession is located approximately three miles from the park entrance down on the canyon floor. It is hardly a surprise to hear of his success when you see the area surrounding his stables. Boulder-strewn ridges line a meandering creek flowing through the 1,000-acre riding area. Towering cottonwood trees cast shadows across many of the trails winding through the canyons. After riding out of the stables you're free to go anywhere within the area. Numerous trails lead riders through thickets of chinaberry, sumac, cottonwood, mesquite and juniper. Towering cliffs reach skyward, often obscuring even the magnificent upper canyon walls which are evident from various look-out points in the park.

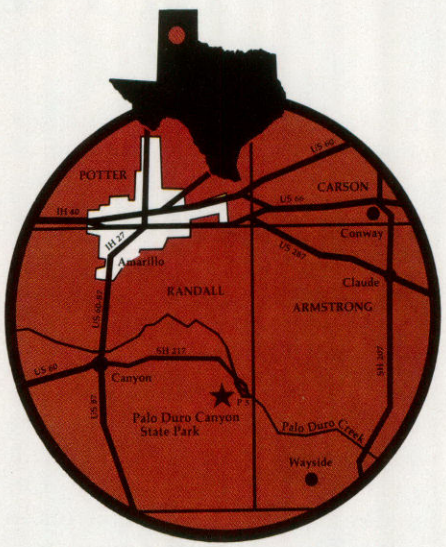
"I believe that people feel a sense of freedom when they ride in the park," says Lindsey. "It's getting away from the constant hustle of the daily routine."

Lindsey purchased the stables in 1973, and they have been a source of enjoyment to thousands of visitors each year. He also furnishes the horses and mules used in "Texas," the popular outdoor drama held in the park each summer. "I have one mischievous horse named Chubby that is always untying the other horses' reins or anything tied with a rope," says Lindsey. "I understand one night over at the drama he tried to turn one of the horses loose, but someone caught him in the act."

My curiosity about viewing the canyons from horseback got the better of me, so I asked to take a ride on Sunday. It had been a year or two since my last encounter with a horse,



Individuals are given horses to match their riding skills, allowing even young riders to handle their own mounts. Since horses, like people, have special friends, those that are close hit the trail together when possible.



Location: Armstrong and Randall Counties, 12 miles east of Canyon on Texas 217. Also 24 miles southeast of Amarillo.
Facilities: 96 picnic sites; 53 regular campsites; 23 campsites with water and electricity; 50 campsites with water, electricity and sewer; eight restrooms (four with and four without showers); dump station; park store; trading post; amphitheatre with summer musical drama; horseback riding; miniature train ride; playground; and interpretive center.
For reservations or information: Call 806-488-2227 or write Palo Duro Canyon State Park, Route 2, Box 285, Canyon 79015.

Spectacular scenery abounds, and riders are free to go anywhere within a 1,000-acre area. Many trails wind through the canyons leading riders by a meandering creek or through thicketts of chinaberry, sumac cottonwood, mesquite and juniper. Towering cliffs reach skyward and their colorful surfaces seem to change colors as the sun travels across the sky.

but all went well as Murel and Donna Lindsey helped me aboard. Cricket, my mount, didn't seem to mind the cameras so away I went full of anticipation.

Not only is the scenery spectacular, but wildlife also abounds. Within minutes I had spotted white-tailed deer, scaled quail and bobwhites. Rabbits and roadrunners scurried down the trails and coyote tracks were numerous. Raccoon and opossum signs were evident around the waterholes and mockingbirds scolded from nearby lote bushes. I was informed that aoudads and wild turkeys have been spotted at various times

I returned to the stable shortly and watched as the rush hour began. Within minutes almost every horse was taken and the waiting list started. As late evening crept into the canyon, more people seemed to be taken by the riding fever. But in the waning daylight, many were turned away as no riding is allowed to continue into the night. During a lax minute I inquired further about extended riding excursions into other areas of the park.

There are day-long trips in the early spring, fall and winter when 15 or 20 riders so desire. Beginning at the stables, these groups ride to the Lighthouse Rock Formation then on to Sunday Canyon and Devils Tombstone before returning to the stables. Sack lunches are provided and the entire excursion takes eight hours. A guide indicates points of interest along the way.

"Since I took the riding concession some nine years ago, our business has more than tripled," says Lindsey. "I like to see people enjoy their ride, and their satisfaction is reflected by return customers." **

Trapping and Transplanting
Spreading Deer Around

by Lyndon Schatz, Wildlife Biologist

Deer restocking is one of the most successful programs of the Texas Parks and Wildlife Department. Through this program, deer are released in areas where suitable habitat exists, but where there is a lack of deer brood stock.

Since 1940, the department has stocked 178 areas in 115 counties with approximately 20,000 deer. Federal Aid money has reimbursed the state for 75 percent of the cost of the project. An additional 2,500 deer have been sent to other states in exchange for other game species, and more than 800 have been shipped to other countries.

From 1940 to 1969 most of the brood stock was trapped on the Aransas National Wildlife Refuge in Aransas County. During this period as many as 14,300 deer were trapped and moved. But after Hurricane Beulah hit the Texas coast in 1967, most of the Aransas Refuge was under water for several months. This flooding reduced the number of deer on the refuge to the point that there was no longer an overpopulation problem, so trapping was stopped there. Since then deer primarily have been trapped on privately owned ranches and state parks, mostly in the Coastal Prairie and Edwards Plateau.

Most of the deer stocked by the department have been released in East Texas where deer populations historically have been low. At one time this area consisted of many small farms, and its residents often lived off the land. As soil fertility was depleted, farmers sold their land to timber companies and moved to town. This resulted in larger ownerships, fewer people and the land reverting to timber. When the habitat improved to the point that it could support deer again, the areas were stocked. Had it not been for the department's restocking program, much of East Texas would be without deer today.

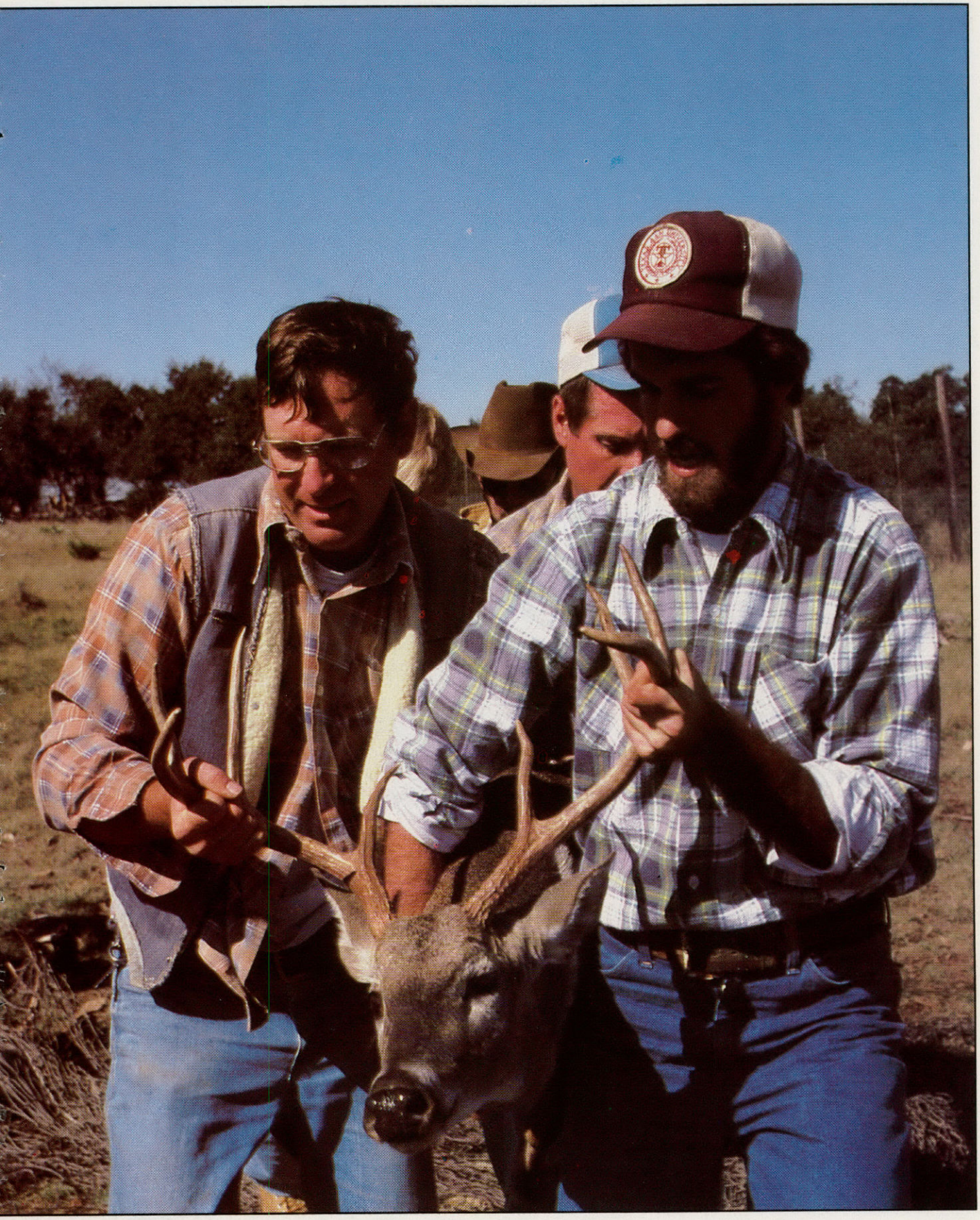
About 85 percent of the restocked areas now have a huntable deer herd. The Rolling Plains below the caprock is the only place transplanting efforts have failed. Habitat quality here is marginal and many areas will not sustain deer populations.

A restocking program begins when a landowner, group of landowners, sportsmen clubs or other such groups request that an area be restocked with deer. A wildlife biologist inspects the designated area to determine if the habitat is suitable for deer and if brood stock already is present. If the habitat is suitable and the area void of brood stock, a public hearing is held to give area residents a chance to voice their opinion about the introduction of deer. If the hearing is favorable, the person or group making the request is responsible for getting every landowner in the area to sign a Wildlife Management License. This license closes the deer season in the proposed area for up to five years from the date the final deer release is made. The area to be restocked must be large enough to support a huntable population. Once an area is signed up, it usually is stocked with deer the following fall, if brood stock is available. The number of deer stocked in an area depends upon its size, type of habitat and other factors. Prior to 1975, areas were stocked with 25 to 100 deer. Most of the sites with high-quality deer habitat had been stocked by 1975. Since then, stocking rates have been modified. In order to establish a deer herd in areas of marginal habitat, the stocking rate has been increased to 100 deer per year for three consecutive years. To attain maximum production, deer usually are stocked at a ratio of three to five does per buck.

Deer trapping and restocking is done in the fall and winter when the natural food supply is low and deer will respond to bait. Also, the fawns of the year are old enough to take care of themselves and the weather is cool enough that trapped animals will not die from overheating.

After deer are captured with a drop net, they are loaded into a hauling vehicle and taken to a release site that may be as far as 500 miles away. Most trapping is done on privately owned ranches and in state parks.

Glen Mills



Frank Aguilar

Drop nets (right) have been used for deer trapping since 1969, and capture an average of 10 deer on each drop. Before the animals are transported to release sites, their antlers are removed to prevent injury to biologists or each other.

Prior to 1969, deer trapping was done with walk-in box traps. These traps were nine feet long, four feet wide and four feet high, with sliding doors on each end. They were set out and baited with corn or cottonseed cake until deer fed in them regularly. A trip wire, added to the trap, caused the doors to slide shut once the deer were inside. The next morning the deer were taken from the traps, and antlers were removed from the bucks to prevent injury during transportation. The ear-tagged deer then were placed in a closed-bed, 1½-ton truck or hauling trailer and moved to the release site.

Despite the large number of deer trapped by this method, the box trap has several disadvantages. As many as 50 traps must be set out to catch 30 deer, the carrying capacity of the hauling vehicle, and setting out this number of traps can take several weeks. Since bucks sometimes run

does away from the feed, box traps catch a high percentage of bucks. One year on the Aransas Refuge 96 of the first 100 deer caught were bucks. More does than bucks are needed for each release, so this is a definite problem. Javelina, raccoons and feral hogs also present problems as they often take the bait and trip the traps.

In 1966 wildlife biologists on the Kerr Wildlife Management Area modified a turkey drop net to capture exotics and discovered it also was effective for capturing white-tailed deer. In 1969, the walk-in box traps were replaced by deer drop nets as the preferred capturing method. The department now has eight of these drop nets.

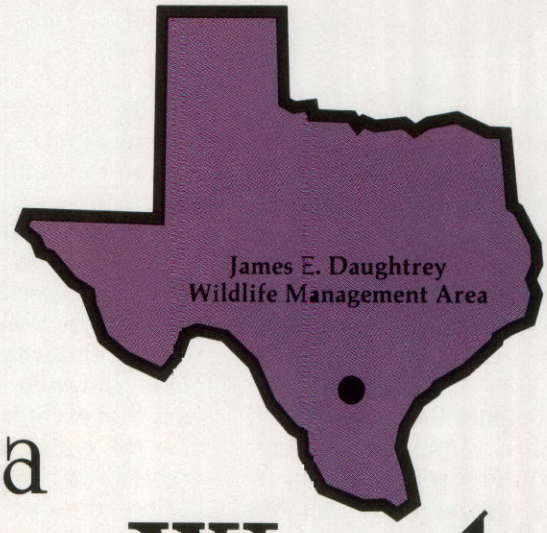
Three or four drop nets are used at a time to insure that a load of deer, usually 30, can be caught quickly and the animals will not have to be held on the hauling truck for a long time.

Prior to setting up the nets, six to eight brush-free sites that deer frequent are selected and baited with shelled corn. When deer start taking the bait, the area is fenced with steel posts and two strands of barbed wire that exclude livestock but allow deer to enter. After the fence is erected the net is set up. When the desired number of deer are under the net, a triggering device is activated, and the net falls on the deer. The deer then are removed from the net. Antlers are removed from the bucks, ears are tagged and the animals are loaded into the hauling vehicle. Average catch per drop is about 10 deer, but as many as 29 have been caught at one time. Once the deer have been loaded the net usually is reset so another drop can be made. Trapping continues until the hauling vehicle is filled. Then the vehicle heads for the release site, which may be 500 or more miles away. Upon arrival at the release site, which is usually in the center of the area, the doors are opened and the deer jump from the vehicle.

The local interest in deer being released is indicated by the number of people who turn out to witness the release. Sometimes as many as 200 people come to watch.

As the deer bound out of sight you can hear grandpa telling his grandson, "Son, I never had a chance to hunt deer because there weren't any in this area, but in a few years you will have that opportunity." **

Glen Mills



Daughtrey Area Tribute to a Warden

by Jim Cox

The Parks and Wildlife Department again has named a wildlife management area in honor of a person who lost his life while attempting to enforce game laws. This method of recognizing the sacrifices made by individuals began in 1953, when the Gus Engeling Wildlife Mangement Area in Anderson County was renamed for the manager of what was then called the Derden Wildlife Management Area. Wildlife biologist Gus Engeling was fatally shot by a waterfowl hunter in December 1951, after Engeling caught the man violating game laws. Although not a game warden, Engeling had been commissioned to enforce game and fish laws on the area.

Game Warden J.D. Murphree was killed by poachers in a similar situation involving waterfowl hunters at Big Hill Bayou Wildlife Management Area near Port Arthur in 1963. The area was given Murphree's name in 1964.

Game Warden James E. (Jim) Daughtrey of Tilden was pursuing game law violators in McMullen County on December 8, 1978, when he was fatally injured in an automobile collision. At the time of his death, there was no department-owned property in McMullen County, but that situation changed in 1981.

The Choke Canyon Dam and Reservoir Project was initiated by the City of Corpus Christi to create a water supply lake for the city and surrounding region. The dam, located near the City of Three Rivers, was completed in 1982. It eventually will impound a 26,000-acre reservoir. The entire 38,000-acre tract came under the Parks and Wildlife Department's control in February 1981 when the department was given authority to manage all fishery, wildlife and parkland resources through an agreement with the city. The Parks and Wildlife Commission subsequently designated portions of the lakeside property as units of Choke Canyon State Park, with the remainder of the tract to be operated as Choke Canyon Wildlife Management Area.

When friends and relatives of Jim Daughtrey gathered at the site in September 1982 to rename the facility, they were joined in a dedication ceremony by department officials, legislators and county officials. The ceremony was the symbolic opening of a unique complex that is expected to offer a wide array of recreational and scientific opportunities for the public. Hunters and fishermen will be prime beneficiaries, but the area will be a magnet for others interested in outdoor activities. The rugged ecology of the region supports abundant wildlife, including a surprising variety of native and migrant bird species. When the reservoir fills, it will open the door to water-related recreation, including fishing, boating, waterfowl hunting and birding.

The spirit of conservation that made establishment of the James E. Daughtrey Wildlife Management Area a reality is captured on the sign erected at the area entrance. It reads: "Let us conserve the natural resources he so faithfully protected." **

The family of Warden James E. Daughtrey joined state and county officials last September for dedication of the wildlife management area named in the warden's honor. Daughtrey, who had served as a game warden since 1962, was killed in an automobile collision in 1978 while in pursuit of game law violators.

Bill Reaves

Outdoor Roundup

COMPILED BY THE PARKS AND WILDLIFE DEPARTMENT'S NEWS SERVICE

THROWLINES BANNED FOR TROUT, REDFISH

The Texas Parks and Wildlife Commission has adopted an emergency regulation outlawing the use of throwlines to take red drum (redfish) and spotted seatrout (speckled trout) in Texas waters under the Parks and Wildlife Department's regulatory authority. Exceptions are Chambers, Harris and Victoria Counties, where it will remain legal to take trout but not redfish with throwlines.

The change redefines throwlines as a type of trotline in the regulations. Retention of redfish and speckled trout caught with trotlines became illegal by commission action in September 1982.

Assistant Chief of Coastal Fisheries Gary Matlock said throwlines have five or fewer hooks attached to a line which must be attached to a permanent fixture at one end.

Matlock told the commission that since the ban on retention of trout and redfish caught on trotlines was enacted in September, some fishermen have been circumventing the regulation by using large numbers of throwlines, especially on the Lower Texas Coast.

Matlock said the emergency amendment to the regulations became effective in November 1982.

The redefinition of throwlines, as well as a number of other recent regulations tightening restrictions on the harvest of the two species, are designed to protect stocks of the fish which have been on the decline in recent years, Matlock told commission members.

OYSTERING SEASON APPEARS BEST IN PAST 10 YEARS

Galveston Bay oystermen are in the midst of what appears to be the best oyster production year in a decade.

C.E. Bryan, shellfish program director, said he believes the placement in 1980 of 52,000 cubic yards of oyster shell in Galveston Bay and favorable weather conditions since that time have combined to bring on the oyster recovery.

The shell placement program was made possible by an emergency federal grant that was a response to several years of poor oyster reproduction and sharply declining harvests. The clean shell on the bay bottom provides a place for the free-swimming larval oysters, or spat, to attach and grow to marketable size.

The Parks and Wildlife Commission closed the oystering season in 1978-79 more than four months early because of the decline, and delayed the opening of the 1979-80 season by 45 days after flooding caused further damage to the beleaguered oyster populations.

Biologists estimate that within the 700 acres where the clean shell was deposited, production of young oysters increased by about 1.5 million per acre. Galveston Bay yields about 80 percent of Texas' annual oyster production.

The 1982-83 oystering season opened on November 1 and will continue through April 30, 1983. "We (the department) believe that the steps we have taken, along with help from generally good environmental conditions, will provide assurance of a sustained future harvest of oysters in Galveston Bay," Bryan said.

February in . . . TEXAS PARKS & WILDLIFE

With 600 public reservoirs, 80,000 miles of rivers and streams and a 370-mile coastline, Texas anglers enjoy vast recreational fishing opportunities. Next month, in a special 16-page section, we'll tell you about the work the Fisheries Division is doing to maintain and improve this valuable resource. In addition, we'll examine the decline of the mottled duck in Texas, and debunk a couple of mistaken beliefs many sportsmen harbor about this waterfowl species. Also in February is a story on two endangered and little known Texas cats, the ocelot and jaguarundi, often called the hidden jewels of the Brush Country. We'll see Harrison Bayou in East Texas, the Port Isabel Lighthouse in far South Texas and life in a prairie dog town. Rounding out the issue is a look at how controlled fires can enrich wildlife habitat.

POACHING CASES SHOW STATEWIDE INCREASE

Arrests for hunting and fishing law violations increased statewide during September and October 1982 over the same period a year ago, according to department law enforcement officials.

"There was a 35 percent increase in number of arrests for the two-month period, and it was a fairly consistent increase throughout the state," said David Palmer, director of field operations. He said the 1982 total was 9,065, compared to 6,741 in 1981.

"It just seemed like poachers decided to open all the hunting seasons early this year," Palmer said of the September-October flurry.

Palmer said some of the increase in cases could be attributed to additional game warden personnel in some counties, especially along the coast. "However, we certainly didn't add 35 percent more game wardens to account for that big an increase," he noted.

Deer hunting out of season accounted for a large number of the cases, and East Texas was a hotspot for that activity as well as the popular deer hunting areas of the Edwards Plateau and South Texas.

Frank Dickerson, regional law enforcement director at Corpus Christi, said a record number of cases for white-winged dove hunting violations were filed in his region, which includes the popular whitewing hunting counties of Cameron, Hidalgo and Willacy in the Lower Rio Grande Valley. "We filed over 500 cases during the four days of whitewing hunting," Dickerson said. "I thought it was interesting that we found the expected number of violations during the first weekend when a lot of hunters were in the field, but we got about the same number on the second weekend after the number of hunters had decreased." He said this indicated to him that a fairly high percentage of hunters were in violation of the regulations.

BIOLOGISTS HOPING FOR TARPON COMEBACK

For the past decade, fishery biologists have been watching hopefully for signs of a return of the magnificent tarpon to Texas' coastal waters.

More evidence that this may be happening emerged in 1982, with 11 immature tarpon caught in department survey nets set in Texas bays. Officials believe this is significant, since only three had been caught in the previous six years. Sport fishermen also have reported catches in Galveston Bay and Pass Cavallo.

The Texas coast formerly was a tarpon-fishing hotspot, and tarpon fishing tournaments attracted sport anglers from far and wide.

Biologist Hal Osborn of Rockport said four immature tarpon recently were caught in a survey gill net in a shallow and turbid area of Nueces Bay near Corpus Christi. "The fish averaged 27 inches long, and the largest weighed nine pounds," he said.

PHEASANT HUNT RESULTS GOOD

The first public pheasant hunt ever held on a Texas Parks and Wildlife Department wildlife management area has been judged a success by department officials.

Hunters selected by drawing were allowed to hunt the birds eight days during October at the Granger Wildlife Management Area in Central Texas.

Officials said 109 hunters harvested 75 ring-necked pheasants during the hunts.

Bobby Alexander, program director for wildlife facilities, said while stocking pheasants in the Central Texas area still must be considered experimental, he was encouraged by the hunt results. "The birds appear to be in good condition and many of the ones taken had survived last winter," Alexander said.

Pheasant stocking programs already have been successful in other parts of Texas, with huntable populations established in the Panhandle and several southeast Texas counties.

"I'm optimistic about the Granger population, since the birds seem to be doing well and plans are being made to improve the habitat in the future," Alexander said. These plans include share crop agreements for grain farming on certain portions of the management area, with stipulations that a certain percentage of the grain be left behind for the birds after harvest.

RAINBOW RUNNER SETS NEW RECORD

A 10-pound, one-fourth ounce rainbow runner caught off Port Aransas during September has been certified by the Texas Parks and Wildlife Department as a new state record.

Bryan Gulley of Corpus Christi caught the fish on live bait. It was 35 inches long and 19 inches in girth. It replaces a nine-pound, 10¼-ounce runner caught in 1980 as the state record.

TROTLINER CATCHES RECORD BLUE CATFISH

Lake Conroe's reputation as an outstanding catfish lake was enhanced recently with the catch of an 86-pound blue cat which has been certified as a new state record.

Texas Parks and Wildlife Department officials said J.H. Vick of Conroe caught the fish October 29 on a trotline. The fish replaces an 82½-pounder also caught at Lake Conroe last April.

Trotline-caught record fish are placed in the unrestricted category that includes fish caught by legal means other than hook and line.

Vick's record fish was 52 inches long and 36½ inches in girth.

HUNTING FROM HELICOPTER NETS FINES FOR FIVE MEN

A Lubbock federal judge has fined five West Texas residents $21,000 for their part in the killing of 10 white-tailed deer from a helicopter in 1981.

The five were convicted after pleading guilty to violations of the federal Airborne Hunting Act. Texas Parks and Wildlife Department game wardens arrested the men on November 21, 1981, after receiving calls from two hunters and a neighboring farmer that a helicopter was being used to haze deer into the range of hunters.

After the arrest, game wardens found untagged or improperly tagged deer in a barn near the scene of the shooting. Some of the deer had been shot from above with buckshot, officials said. Skeletons of three other deer also were recovered.

Four of the men received $5,000 fines, the maximum penalty prescribed under the Airborne Hunting Act. The fifth man, who cooperated with officials during the investigation, was fined $1,000.

Parks and Wildlife Department officials cooperated with law enforcement officials of the U.S. Fish and Wildlife Service in the investigation.

Glen Mills

BIGHORNS HAVE

RESTORATION WORK CONTINUES DESPITE LONG ODDS.

by Jim Cox

It is axiomatic among Trans-Pecos residents that everything there is equipped with thorns, stingers or poisonous fangs. The arid plains and rocky canyons seem better suited for wildlife than for man, and a surprising number of species have adapted to its demands and prospered. Most, in fact, probably still will be around after *Homo sapiens* has given up on taming the land of Pecos Bill.

In spite of the apparent immutability of the Trans-Pecos and its wild fauna, the region was the scene of a relatively rapid disappearance of a major big game animal—the desert bighorn sheep. It's ironic that the noble bighorn should perish during a period when other species survived or even proliferated. Pronghorn antelope populations are at a 50-year high, nurtured by management programs and controlled harvests; mule deer are holding their own in most available habitat; smaller mammals, reptiles and insects abound; even the mountain lion, which is considered a vanishing species over much of the United States, maintains stable populations in this region.

Yet, the last reported sighting of a native desert bighorn was in 1960, when wildlife personnel saw two ewes in the Diablo Mountains. Such a sighting was purely academic. The native bighorns had ceased to be a viable population; the remnants were not to survive for long.

This decline did not go entirely unnoticed by wildlife observers and biologists, but it happened so rapidly that restoration efforts had to proceed from ground zero, with virtually no gene pool of native stock from which to build.

As with the demise of countless other wildlife species, the desert bighorn's problems were a combination of factors. A simplistic explanation would be that the animals' fates were sealed when the final spikes were driven into the Texas and Pacific Railroad in 1881, linking El Paso with commercial centers to the east. The railroad cut through the heart of the bighorn range, and it opened the door for silver mining activities which eventually proved to be detrimental to the bighorn herd. The Hazel mine was situated between the Beach, Baylor and Diablo Mountains, an area which subsequently would be known as the sheep's last stronghold. Railroad crews and miners took advantage of whatever wildlife was available for food, and bighorn sheep became a staple of their diet.

Also during these years of unregulated hunting, market hunters began to feel the pinch of declining numbers of bison on the West Texas plains and moved into the mountainous Trans-Pecos in quest of deer, pronghorn antelope and bighorns. Wagonloads of game were hauled into Van Horn, where they were placed on refrigerated rail cars for shipment to northern markets. This continued until 1903, when the hunting of bighorns in Texas was prohibited.

SEEN BETTER DAYS

Glen Mills

In better days, bighorn ewes and their lambs could be found ranging throughout the rough, rocky Trans-Pecos (right). But the last native desert bighorn was seen in 1960 and the species was extirpated soon after that. Restoration efforts have met with one setback after another.

While unregulated hunting undoubtedly was a major factor in the extirpation of the desert bighorn, the stocking of domestic sheep and the appearance of net wire fences to contain them may have been an even more decisive blow. Domestic sheep not only competed directly with the bighorns for forage, but also introduced diseases and parasites into the herd. By 1938, sheep ranchers began stocking the last stronghold of the bighorn range, and by 1941 the total Texas bighorn population was estimated at only 150 animals.

Some steps actually were taken to help the bighorns before the population hit rock bottom. In 1945, the Texas Legislature appropriated funds for establishing the Sierra Diablo Wildlife Management Area in the Diablo Mountains. However, a simple refuge with no further management was not enough to halt the decline. The first genuine restoration efforts were started in 1954 through a cooperative agreement among the department (then known as Texas Game & Fish Commission), the U.S. Fish & Wildlife Service, the Boone & Crockett Club, the Wildlife Management Institute and the Arizona Game & Fish Commission.

At that time, the center of bighorn restoration efforts moved to the Black Gap Wildlife Management Area, a 100,000-acre tract just east of Big Bend National Park. A 427-acre brood pasture was fenced, and crews subsequently journeyed to the Kofa Game Range in Arizona to trap brood stock. From 1957 to 1959, they managed to relocate 16 sheep to the Black Gap. After an initial setback when 10 of the original sheep died, the herd appeared to be healthy, increasing to 68 head by 1970.

The herd, in fact, was outgrowing the brood pen, so in January 1971 biologists released 20 sheep from the pen. The free-ranging sheep also did well at first, producing six lambs in their first year of liberation. Thus it appeared that the herd was stabilizing and would provide brood stock for additional expansion of the bighorn range. But then disaster struck.

In fall 1971, biologists found 18 of the penned sheep dead. Necropsies revealed the probable causes of the die-off were nutritional stress brought about by poor range conditions and the rigorous breeding season. Also, pneumonia and bluetongue disease were discovered in many of the animals. At that point, the herd was reduced to about 10 adults and six lambs.

Predation by mountain lions was another survival factor that may have been underestimated before, but was well recognized by the mid-1970s. Lion-trapping programs on the area were cut back after 1973, and were stopped altogether for a year in 1975. Sheep losses were severe within the enclosure, so trapping resumed in 1976 to protect the remaining brood sheep. The fence was raised an additional 18 inches in another effort to discourage predators. In spite of resumption of trapping activities, mountain lions and bobcats killed 21

sheep from 1975 through 1977. The toll was severe enough to prompt a move of the program to the Chilicote Ranch in Presidio County, where private funds and labor provided by King Ranch, Inc. made possible the construction of a 600-acre brood pasture. Some of the remaining Black Gap sheep also were trapped and restocked at Sierra Diablo.

Even with the change of locations, predation remained a problem. Thus the past decade saw Texas' bighorn program waver between modest optimism and despair. Sheep were shifted from location to location, with a few animals from Arizona and Mexico augmenting the herd. The estimated current population of bighorns in Texas is 25 to 30 at the Sierra Diablo, five to 10 at the Black Gap, 17 at the Chilicote Ranch in Presidio County and seven at the Glaze Veterinary Clinic at Kerrville. The program still is on the rocks, but help appears to be on the way.

Financial support for the bighorn program was revived in 1982, and future support is anticipated from the newly formed Texas Bighorn Society. The organization's officers have expressed interest in funding construction of a new brood facility at the Sierra Diablo W.M.A., a factor which could make possible the production of up to 30 lambs per year with adequate brood stock.

Desert bighorns already have benefited from the support of the Texas Chapter of the North American Foundation for Wild Sheep, which has funded disease studies at the Glaze Clinic. Dr. Robert L. Glaze, who has endeared himself to bighorn enthusiasts by donating his facilities and expertise through the years, believes diseases are the main impediment to reestablishing a viable bighorn herd in Texas. "This is true throughout the desert bighorn range in the United States—not just in Texas," Glaze said. He said pneumonia is a persistent killer of bighorns, and chronic sinusitis is another.

Even with past setbacks in mind, Glaze remains optimistic about the Texas bighorn restoration program. "It's going to take lots of money, time and effort, but I think they can be brought back," said Glaze.

Wildlife Division officials hope to be able to bring more brood stock in from Arizona and Nevada to take

Reagan Bradshaw

Glen Mills

Things seemed to be looking up for Texas' bighorn program in 1971 when 20 penned sheep were released. The free-ranging bighorns produced six lambs the first year, but disease and predation soon took a heavy toll. Despite past setbacks, restoration work continues with help from individuals and organizations.

advantage of the anticipated new facilities. Another cause for optimism is the weather, which has been kind to bighorns and other Trans-Pecos wildlife during the past two years. Higher than normal rainfall during the past two spring and summer periods has helped the existing bighorns maintain better body condition and lamb survival.

One could easily view the total numbers of bighorns on hand today and deem the restoration work of past decades as a failure, but biologists have gained information about the animals that only could have been learned by observing them on their Texas ranges. Biologist Jack Kilpatric of Marfa has monitored the bighorn situation in the Trans-Pecos for more than a decade, and he summed up some of the insights he has gained. 'We have learned that good lamb crops can be produced in enclosure situations, and sheep reared in enclosures can rapidly adapt to life in the wild," Kilpatric said. "However, about half of all wild sheep relocated to pens will not adapt well enough to survive in the face of other stress factors such as poor nutrition. Additionally, we have concluded that a bighorn herd probably cannot be established without a full commitment to predator control." He said bighorns inside a brood pen appear to be even more vulnerable to predators than free-ranging animals.

If Texas has had problems restoring or maintaining bighorns, other states are facing similar situations. The only viable native populations of desert bighorns are found in remote areas of Utah, Arizona Nevada,

New Mexico and California. Limited hunting is allowed only in Utah, New Mexico, Arizona, and Nevada. As in Texas, those herds are subject to dramatic ups and downs, and biologists repeatedly mention disease as a prime factor in year-to-year fluctuations in the population.

It may appear ironic that while unregulated or illegal hunting was a primary factor in the bighorns' early demise in Texas and elsewhere, sport hunting is one reason the species can, and most likely will, be saved from extinction. Hunters and their various organizations are a powerful and effective constituency for any big game animal, and it has been amply demonstrated that no big game species in North America has ever been threatened by hunting when regulated by state wildlife agencies. On the contrary, controlled hunting has proven to be a necessary element of game management in areas where animal populations often outstrip the capacity of the habitat to support them.

Desert bighorns are in some measure blessed by the factors which keep them from becoming numerous. Their relative scarcity makes them without question the most difficult and expensive of the four major North American wild sheep species to hunt. Trophy hunters going after the coveted "grand slam" by bagging rams of each species have more difficulty getting a desert bighorn than any of the other three bighorn sheep—the Rocky Mountain, Dall and Stone. The states offering public hunts issue a scant number of permits to out-of-state applicants, and the fees are high. During 1981, Arizona Game and Fish Department officials issued only five out-of-state permits, priced at $250. This year the fee will be $375, officials said. In Utah, officials auction one permit in addition to their regular issuance, and the minimum bid is set at $20,000 for the opportunity to hunt a ram.

Whether future generations of Texans will have the opportunity to view a herd of agile bighorns bounding through the canyons of West Texas depends upon the tenacity of individuals and organizations who have pledged to save the species. With its growing list of enthusiasts and supporters, the desert bighorn's worst times may be past. **

Reagan Bradshaw

Grady Allen

Sandhill Cranes – A Seldom Tapped Resource

by Jim Steiert

Huge numbers of sandhill cranes swarm to West Texas and the Panhandle every winter, but few hunters take advantage of this game bird. In addition to providing a satisfying hunting trip, sandhills also are good table fare.

Consider a game bird that is available in substantial numbers, compares favorably to geese in size and wariness, decoys to grainfield decoy spreads and is quite acceptable on the table. You'd think action-hungry wing shooters would be swarming to take advantage of the species, right?

Wrong, in the case of the sandhill or little brown crane.

There's an open season on sandhills in nine states—Texas, Oklahoma, Colorado, New Mexico, North Dakota, South Dakota, Wyoming, Montana and Alaska. Yet, for some reason, most sportsmen haven't discovered the fun and challenge of hunting sandhills.

While the hordes apparently remain ignorant, a small fraternity of crane hunting enthusiasts, particularly in Texas, are enjoying wing shooting action that can rival goose hunting for its thrills and rewards.

In recent years Texas sandhill crane hunters have bagged more birds than their counterparts in the other crane hunting states combined. They score on cranes with an array of tactics ranging from variations on pass shooting to field decoying. Often, hunters double up on cranes and geese in the same outing, adding still more to the action.

Texas presently is divided into two zones for sandhill crane hunting

Zone A covers most of the Trans-Pecos and Permian Basin areas as well as the western Panhandle and South Plains. The Zone A season is October 30, 1982, through January 30, 1983. Zone B includes roughly the eastern Panhandle and extends southeast to Abilene and Albany. Zone B is open from December 4, 1982, through January 30, 1983. (See map on pages 26 and 27.)

Zone A contains some of the prime sandhill crane hunting hotspots in

Texas. A long season plus a liberal bag limit of three sandhills per day are excellent reasons to try the sport in this region.

Perhaps a misunderstanding of the species itself contributes to the apparent lack of interest in hunting sandhills. I've mentioned crane hunting to any number of folks in my own area of the Panhandle only to have them turn up their noses and gasp, "Cranes? You mean those old long-legged birds that eat fish and frogs?"

Sandhills are long-legged and gangling, but they're not the great blue herons with which most folks confuse them.

Sandhills roost for the night on shallow playa lakes and visit them to drink. However, they feed on land, eating waste grain, young wheat and other food. Their feathers are more like those of a chicken than other waterfowl or shorebird species and their predominantly grain diet gives their flesh an excellent eating quality when properly prepared.

January is a great month for crane hunting action in the Panhandle-West Texas region. Crane populations begin to build by mid-December and are often near their overwintering peak by mid- to late January.

Each year cranes swarm to the Muleshoe National Wildlife Refuge in Bailey County, northwest of the South Plains' major city, Lubbock. Shallow lakes dot the refuge area, and cranes by the thousands commonly roost there each night, soaring out in the morning to feed in neighboring fields.

As sandhills gather in even larger numbers, they fan out into the surrounding region, often taking up residence on playa lakes in the sprawling agricultural region that surrounds the refuge. Since the feeding activities of large crane concentrations sometimes damage wheat fields and other crops, many South Plains farmers welcome crane hunters.

After feeding, the sandhills return to their roosting lakes in the evening in strung-out formations that seem to stretch from horizon to horizon. These noisy flights can be heard for considerable distances.

A.T. Griffin, a long-time crane hunter who hails from Hereford, accompanied me on a scouting trip in the Bailey County area several seasons ago to indoctrinate me in checking out crane flight movements around the Muleshoe Refuge. Griffin had told me stories of afternoons spent in crane country with the sky filled with sandhills, but it took this scouting foray to drive the point home.

We did our scouting from a 4/WD Suburban, on the edge of a summer-tilled field overlooking a winter wheat patch and a dished-out, crane-tracked area holding a small playa lake.

What had to be thousands of cranes passed above and to the west of us as the sun began its evening descent. The chirruping trill of the crane hordes on their way to roost seemed almost deafening. I have to admit that hearing and seeing geese in such proximity and numbers couldn't have gotten me any more fired up than those sandhills did that evening.

Griffin made an important point to me during that outing. Watching cranes and knowing where they're working is vital to hunting success. Cranes are similar to geese in the way they move out in the morning to feed, and return to a chosen field for several days if left undisturbed.

A combination of scouting and tactics means the difference between scoring or going empty-handed. To know where to make your play for sandhills, you've got to know which areas they frequent.

Scouting usually begins near known concentrations. In Zone A there's no better starting point than in Bailey County and the area around the Muleshoe Refuge. Work outwards from there. Cranes aplenty are available in Bailey, Terry, Cochran and Lubbock Counties as well as numerous other places in the High and South Plains.

Thorough scouting will take some driving on the area's sandy country roads, as well as close scrutiny of flights with binoculars. Watch for favored fields and make a morning and evening check when possible.

Try to locate where the sandhills are actually feeding. This will simplify the problem of where to set up the following morning if you're planning to put out a decoy spread.

While finding preferred feeding fields is a good scouting plan, don't overlook converging flyways or areas cranes commonly overfly. Careful glassing of flights and observation of terrain, plus conditions such as overcast skies and stiff winds that put flights on the deck over certain points, can give you a hint as to where to set up shop on a pass.

These common convergence points might be productive with decoys. Passing flights often dip down to get a look at other cranes on their turf. If those other cranes just happen to be your decoys and you're well hidden in their midst, there's a good chance for action.

Hunting close to shallow lakes where cranes gather might pay off at times. However, don't take a chance on bumping the gangling birds from roosting lakes if you hope for action over a span of several days or even weeks. They'll relocate and that will be the end of any hunting oppportunity. Do check out these lakes relative to the population of cranes they hold, however, and watch for preferred flight directions of cranes leaving these roosting sites.

Scouting can be done effectively at a distance with the aid of binoculars. Don't move too close to their feeding area with vehicles to avoid spooking concentrations of birds.

I've left my vehicle and observed intermingled groups of cranes and geese on foot at various times, but only when there was good cover available to hide my presence. Cranes grow accustomed to a certain amount of vehicular activity associated with normal farming operations, but they get skittish when vehicles or humans move too close.

When pinpointing feeding areas in a field, try to align them with some specific landmark to help you get oriented properly for your hunt. If scouting in the evening prior to a decoy hunt the following morning, I'll sometimes wait until cranes have left the field for their roost, then leave a marker on the turnrow aligned with the area of the field I

want to hunt. This helps to find the proper position in the field in predawn darkness the next morning.

First-hand observation is the best form of scouting. But it's sometimes hard to scout an area before every hunt; therefore, it's a good idea to build up local contacts.

Getting acquainted with landowners in areas frequented by cranes and then making periodic calls concerning sandhill activity is a good way to get fresh information on movements. A phone call can save time and gas and can direct your scouting and hunting efforts toward areas where cranes are actually working.

Soil Conservation Service Offices of the U.S. Department of Agriculture in counties such as Terry, Bailey and Lubbock are good contacts for sandhill information. Updates on crane activities also can be obtained from the offices of Buffalo Lake National Wildlife Refuge at Umbarger, in Randall County, at 806-499-3382.

Once you've got the crane concentrations pinpointed and have obtained landowner permission to hunt, your tactics become crucial.

Through numerous trips to the South Plains from our Hereford home grounds, I've learned that Griffin is an avid crane pass shooter. "Cranes are gregarious and for some reason flights will trade back and forth between two feeding fields when they're in sight of one another. I like to get in between," Griffin told me a couple of seasons back as we loaded our gear readying to move into a Russian thistle-dotted fallow field between two sorghum patches. Cranes already were present in both dryland sorghum fields but they were far enough away they didn't seem to notice us.

That day we carefully concealed ourselves amidst clusters of Russian thistle at a point in the field midway between the two feeding areas. Griffin had done his scouting well and we were situated squarely in the flight path of sandhills moving from one sorghum field to the next.

At irregular intervals small, strung-out flights of cranes came soaring over us, so close we could hear the wind whistling in their wings. Since the overflight area was a distance from the sorghum fields, our frequent gunfire didn't disturb the concentrations of feeding cranes. In less than two hours we both downed our three-crane limits. Several of the cranes that fell to our shotguns already had their massive wings locked in a glide toward one of the feeding fields. It was pass shooting at such whisper-close quarters the massive size of the flying targets was enough to take your breath away.

Decoying cranes in feeding fields is a technique comparable to goose hunting in its excitement and challenge. But commercial sandhill crane decoys only recently have become available because of limited interest in crane decoying.

Crane hunters have been making-do by their own inventiveness. Do-it-yourselfers came up with plywood crane silhouettes in the Texas and New Mexico hunting areas, and the more sophisticated engineering types have even fashioned fiberglass shells.

Although I've not seen any yet, I've heard that a couple of companies now are marketing stackable plastic crane shell decoys similar to goose dekes. Most crane hunters using silhouettes look for areas to set up that will afford them some natural cover and still display their dekes convincingly.

A technique I first learned in the crane-rich Bailey County area of the South Plains involves using bluish-gray rags as decoys. The inspiration for this method apparently came from the Texas coastal rice country where white rag spreads have been used for years to lure snow geese.

Gene Autry, who at one time did considerable crane guiding in the Enochs-Needmore area, helped make the rag spread for cranes well known on the South Plains.

Autry set up his hunting parties in well-scouted sorghum fields. He put out a couple of hundred rags, specially dyed to match the grayish color of sandhill cranes. The rags were draped over sorghum stalks where they'd flutter in the wind, simulating the activity of a large flock of feeding sandhills.

Of the many ways to hunt sandhill cranes, decoying is one of the most exciting. Cranes and geese often use the same feeding area, and setting out a spread of goose shells (right) can bring cranes homing in on the decoys. Hunters often double up on cranes and geese in the same outing.

Autry stationed his hunters, clad in gray coveralls, amidst the rag spreads in sorghum fields. His technique proved extremely effective, paying off in large, mixed bags of sandhills and lesser Canada geese, which often fly in company with the cranes. The rag spread is a workable and affordable alternative for hunters on a budget who want to try decoying cranes.

A couple of seasons ago I stumbled onto a technique that has paid off for me on several occasions when cranes and lesser Canadas were using the same feeding area. During that season the sandhills were abundant well to the north of their more common wintering area and homed in on shallow playas in Deaf Smith and Randall Counties.

Scouting for geese one day I found a harvested corn field near a pasture playa that was drawing large flights of both geese and cranes. I watched the field for a couple of days and that weekend John Paclik of Canyon joined Kyle Holz and myself for what we were sure would be a great goose hunt.

We set out a spread of goose shells and settled in beneath netting and corn shuck blinds on a morning so frigid the biting wind sent tears rolling down our cheeks. Amidst occasional snow flurries, the first flights of the morning lifted off the lake and came boring toward our spread. Their slow wingbeats and gangling bodies identified the birds as cranes long before the wind let us hear their trilling calls.

To our amazement the sandhills homed in on our goose spread. The long-necked birds didn't drop their landing gears, but they came coasting over us low on those huge, glider-style wings.

Luckily we all had sandhill crane permits in our pockets and when the coasting cranes soared over the edge of the spread the three of us jumped

Jim Steier

from our blinds and unleashed a fusillade of No. 2 shot. Three cranes plummeted and another flight came soaring up from the roosting lake almost before we could gather in the birds we'd downed.

Paclik, on his first goose hunt, got a taste of mixed-bag wing shooting as good as it gets, despite the discomfort of the cold. We all downed limits of cranes and several geese that morning and the goose spread technique was no fluke. I've used it successfully several times since then.

Whatever decoying technique you choose with cranes, there are some important factors to consider. Put out the largest spread you can. Cranes congregate in large numbers in feeding fields and flights seem to draw confidence from large spreads.

Use good camouflage and remain still. Cranes are keen-eyed and the height at which they often fly gives them an excellent perspective of anything amiss. Don't just pile up some weeds to hide behind and expect to fool them. They recognize these potential danger points and climb well above them. When hiding for pass shooting take advantage of available natural cover and strive to blend in.

If you're decoying, stay low in stalk fields. Even better, devise a blind with natural cover that will allow you to lie down and be well hidden. Netting with a sprinkling of corn shucks attached with florist's wire will hide you effectively and let you see out. If the netting is too bright, tone it down with spray paint the tannish-ochre color of sorghum leaves and stalks.

Sandhills have up to a six-foot wingspan and Griffin has commented to me many times that bagging a crane "is like shooting down a B-29."

Cranes are showy flyers and can climb to nosebleed altitude with little effort. Even their fall is stylish. All that show on the wing can fool even the best shotgunner.

Sandhills fly with their necks outstretched and their long legs folded and trailing back, giving an odd, gangling appearance in length. Those glider wings seem to be fanning in slow motion but cranes move along at a goodly clip nonetheless.

This large, slow appearance can easily cause you to shoot behind a crane. You've got to follow through on these critters just as you do with the fleetest quail or dove. Sure, they look big, but they're not just hanging there.

Most crane gunners prefer 12-gauge smoothbores and some even use 10-gauge guns on passes. BB shot loads are popular for cranes. I've had excellent luck with both 2¾ inch and 3-inch magnum loads of No. 2 shot from my 12-gauge.

Cranes are hardy birds and it's a well-advised hunter who shoots for the front end. Pellets in the head and neck drop sandhills stone dead, while a botched job of shooting can send a "sailer" crane on a coast that may stretch more than a mile. Have a fast follow-up shot ready and concentrate on one bird at a time when a flock moves over you.

Use caution in approaching downed cranes. They have a long, wicked beak, and wounded birds use it as a weapon with lightning darts.

Many folks I talk to say they might hunt cranes "but they're tough and not much good to eat." Not true. The trick with sandhill

cranes, as with most wildfowl species, is in how they're prepared.

Most of the table fare from cranes comes from the breast. I skin back the breast, cut out the two large breast fillets and wash them thoroughly in cold water. I then split each fillet into two or three steaks which are soaked overnight in a refrigerated brine solution. Then I wash the steaks with cold water again and they're ready to bag and freeze or cook immediately.

One of my favorite ways to cook crane is on the barbeque grill. I pound the steaks with a tenderizing hammer, then brush them liberally with my own barbecue sauce concoction that goes heavy on the butter and catsup and also includes some lemon juice, a tablespoon of sugar, Worcestershire and a dash of Tabasco. I add chopped onions, too.

These crane steaks should be brushed liberally with sauce a time or two while on the grill. I stop down the air on my grill and keep it set well above the hot coals.

Over hot charcoal it takes only a few minutes to cook the steaks. Don't overdo the cooking time and the crane comes up tender and juicy and tastes great.

Crane also can be marinated in any number of substances, including wine. If you roast these birds, keep the oven temperature low. As with any game, don't rush the cooking with excess heat and you should find the resulting dish quite a treat.

If you've been holding back on hunting those old long-legged birds, give sandhills a try this month in the Texas Panhandle-South Plains area. January is a prime time for cranes.

South Texas Sandhill Hunts Proposed fo

The Texas Parks and Wildlife Department is requesting U.S. Fish and Wildlife Service approval of a new sandhill crane hunting zone in South Texas, beginning in 1984. If approved, the department could establish a 10- to 30-day midwinter season in that portion of South Texas bounded by U.S. Highway 277, Interstate 10, Texas Highways 36 and 35, Farm Road 616, U.S. Highways 87 and 77 and the Rio Grande (see map). This would encompass most of the state south of Interstate 10 and west of the coastal region. The suggested zone boundaries are based on highways for easy identification.

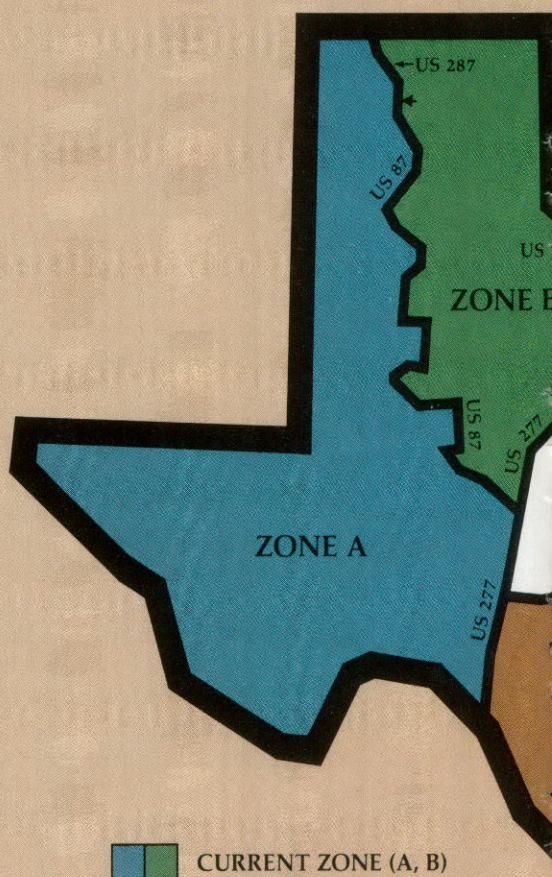
The sandhill cranes that occur in this region are part of a mid-continent population which numbers more than a half-million birds. The mid-continent cranes winter primarily in the Texas Panhandle and eastern New Mexico, but at least 70,000 cranes wintering in South Texas outside the present sandhill crane hunting zones cause considerable damage to sprouting grain and other crops.

A management plan for midcontinent sandhill cranes was jointly approved in 1981 by the U.S. Fish and Wildlife Service and all state wildlife agencies in the Central Flyway. It addresses the need for reducing crop depredation complaints associated with sandhill cranes and providing recreational hunting consistent with crane populations. The plan also addresses the need for providing special protection for endangered whooping cranes which migrate through the Central Flyway and winter along the Texas coast. Previous studies indicate whooping cranes are more or less sedentary along the Texas coast during midwinter, and the substantial buffer zone proposed for the coastal region should preclude contact between sandhill crane hunters and whoopers.

Since sandhill cranes in South Texas are scattered in relatively small flocks over a wide geographical area, they may not attract as much hunting pressure as the massive flocks in the Panhandle. But they occur in proximity to several major metropolitan areas and could provide many hours of recreation, as well as some good eating, to hunters willing to pursue these extremely wary birds. A midwinter crane hunting season also could provide beleaguered South Texas farmers with some relief from sandhill crane crop depredations.

If you have any comments you would like to make on the South Texas sandhill crane hunting proposal, please write to:

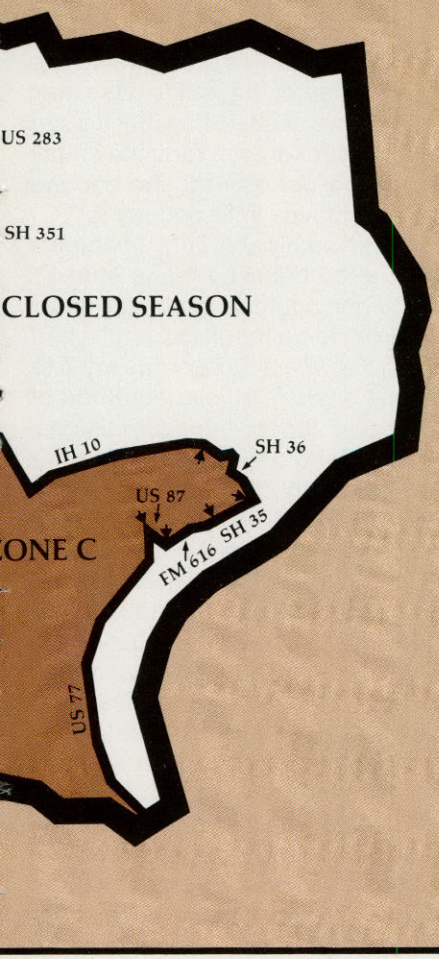
Ronnie R. George
Program Leader, Migratory Shore and Upland Game Birds
Texas Parks & Wildlife Department
4200 Smith School Road Austin, Texas 78744



You'll find plenty of sandhills and challenging, exciting hunting for a game bird worthy of the name. Texas crane hunters must possess a sandhill crane permit when hunting. These permits may be obtained by writing the Texas Parks and Wildlife Department or calling on the toll-free number (1-800-792-1112). The crane bag limit is three and possession limit is six.

Your chances are good for finding plenty of action and even better for having it all to yourself when you try Texas cranes. **

1984 by Ronnie R. George



Young Naturalist

SNAKE FANGS

Article by Ilo Hiller and Photos by Bill Reaves

Everyone knows a rattlesnake can inject a poisonous venom into its victim with one quick bite, but few know just how the rattler's efficient biting mechanism works. Because poisonous snakes are much too dangerous for the young naturalist to study first-hand, we will safely approach this fascinating subject through the research done by others.

Let's begin our study of the rattlesnake's bite by taking a close look at the fangs. These curved, hollow, front teeth deliver the venom, and their length insures that the poison is released deep in the victim's flesh during the bite.

The fang length is one of the factors that helps make the biting mechanism so interesting. If the long fangs were stationary, the snake's lower jaw would have to be massive to enclose them, or they would have to hang unprotected outside the mouth. Instead, the fangs fold up out of the way when the mouth is closed. Movement is made possible by a linkage of eight small bones attached to the maxillary bone that holds the fang. When the mouth opens, muscle contractions cause these eight bones to change position and push on the maxillary, bringing the fang into striking position. The process is reversed to fold the fang back out of the way when the mouth closes. Fang movement covers an arc of about 90 degrees from the roof of the mouth. In the folded position, the base and point of the fang are level with the roof of the mouth while the curved portion fits into a hollow space in the lower jaw just outside the bottom teeth.

The two maxillary bones that hold the fangs each contain two sockets—the inside maxillary socket and the outside maxillary socket. A rattlesnake is born with fangs in the inside sockets. When one or both of these fangs must be replaced, the new fangs appear in the outside sockets. On the average, the rattler's fangs last six to 10 weeks, but for many reasons they may not be shed at the same time. An examination of an adult snake may disclose a fang in the outside socket on one side of the mouth and in the inside socket on the other.

To understand how the fangs are replaced, let's consider only one side. Behind the maxillary bone with its two sockets lies a sac in which the reserve fangs form. Assuming there are six reserve fangs lined up in the sac, the first, third and fifth eventually will occupy one socket while the alternate second, fourth and sixth will find their way into the other one. The first reserve fang is the most developed and the sixth the least. In very young rattlers, the growth rate of the snake is so rapid that its reserve fang is longer than the one it replaces. Later when the growth rate slows down, there is very little difference in the size of the fangs.

Although fully formed in the sac, the first reserve fang is not anchored to any part of the skull. Its soft base does not begin to harden until it is time for it to move into the empty socket. It is not unusual for the replacement fang to move into the empty socket before the old fang is shed. During this overlapping period, the rattler will have two functional fangs on one side of its mouth. The sockets are separated enough to allow each fang to be anchored firmly in the maxillary bone and prevent problems when both are present. Since the fangs tend to swing to the same point when lowered into striking position, the inside socket is slightly in front of the outside one to solve this problem.

When the fang is ready to shed, a fracture occurs at the edge of its socket. The fangs are alternately used by the snake to pull prey into its mouth during the swallowing process, so it is common for the weakened fang to be broken off in the prey, pass through the snake's digestive system and then be expelled. Fangs also are shed during the strike. A portion of the fang's base may remain in the socket at the time of shedding, but it soon falls out or is absorbed. The socket then remains empty for a six- to 10-week resting period until the second reserve fang is needed and moves in to occupy it.

Because shed teeth occasionally are found in objects bitten by snakes, people once believed that a snake's fang, like a honeybee's stinger, could be used only once. The snake was then thought to be harmless until it had time to grow new fangs. This was a dangerous myth to believe. We now know the snake's efficient method of fang replacement insures that under normal conditions, the rattler always has one fang, usually two and, for short periods, could have as many as three or four. Even surgically removing a snake's fangs only makes it harmless for a short period. As soon as the first reserve fang develops enough to move into its empty socket, the rattler once more is able to deliver its poisonous bite.

Discovering how the venom traveled from the venom gland through the fang and into the victim occupied researchers for quite some time. Many theories were proposed, but most had to be abandoned because they could not be adapted to the double socket arrangement and tilting movement of the fangs.

Some of the earliest researchers thought that during the act of biting, the base of the fang pierced the venom gland, allowing the venom to flow into the wound through the hollow fang. Others discovered a more logical delivery method—a duct between the gland and

fang. However, they still had problems figuring out how the system worked.

Some thought the duct actually entered the top opening of the fang, somehow switching to the replacement fang when it appeared in the other socket. Unfortunately, they were unable to explain how it could deliver venom to the fangs when both sockets were occupied. Those who thought the duct attached itself to the outside of each fang in turn also had problems explaining venom delivery when two fangs were present. The theory that only one of the fangs delivered venom was easily disproved by slipping a card between the two fangs and then pressing on the venom gland. A jet of venom squirted from each fang at the same time.

The currently accepted venom delivery theory takes into account the fang sheath—a protective membrane that slides up and down the fang. The venom duct passes through the sheath in front of the fang and ends opposite the fang opening. As the duct delivers the venom, the sheath serves as a pocket to hold it until it is transferred to the fang. Since the sheath covers both fangs when they are present, it can deliver venom to both of them. If one of the fangs is not functional, the membrane's central fold can direct the venom to the active fang only. Although no muscular action grips the fang, the sheath is stretched tightly against the upper part of the fang when it is lowered into biting position. This tight fit is essential as the venom spurts out of the lower opening in the fang as if under pressure.

Experiments have shown that the rattlesnake has complete control of the venom discharged from both sides of its mouth. It can release venom from either, both or neither side. When releasing from both sides, it also can regulate the amount. Each fang may discharge equal amounts or one may release four or five times as much as the other.

The glands that supply the venom are located on each side of the head. They extend from the front of the eye to the angle of the mouth. Although they lie below the eyes, the glands extend behind the eye to a height level with the pupil.

Surrounding muscles squeeze the glands to release the venom. Several of these squeezing muscles also help close the jaws, but one is completely independent of the biting action. It can cause venom to be discharged when the strike is a stab instead of a bite.

The poison gland, which is comparable to the human salivary gland, may be merely an adaptation of the salivary gland. Researchers have found that substances within the venom contribute to digestion of the snake's food just as saliva begins the breakdown of starches in the human digestive system.

Snake venom is considered the most complicated of all animal poisons. In the past, it was oversimplified and divided into two main categories—poison that acted on the nervous system (coral snake), and poison that acted on the blood system (rattlesnakes, copperheads and cottonmouths). Actually, both types of venom can act on both systems.

Venoms vary within the pit viper family, to which the rattlesnake belongs, but all are complex. According to

Dr. Nathan Strickland of the University of Arkansas, they contain five to 15 enzymes, three to 12 nonenzyme proteins and at least a half-dozen other known and unknown substances.

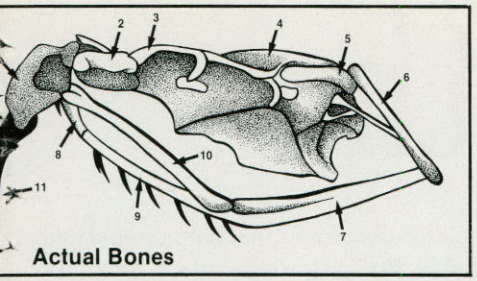
The function of venom is simple; it immobilizes the prey and then helps digest it. When injected into a human, the venom destroys blood cells, lymphatic vessels, capillaries and muscle tissue. A "spreading factor" included in the venom breaks down the substance that lies between the cells and allows the poison to spread more quickly through the affected part. In other words, the venom is getting the flesh ready for digestion.

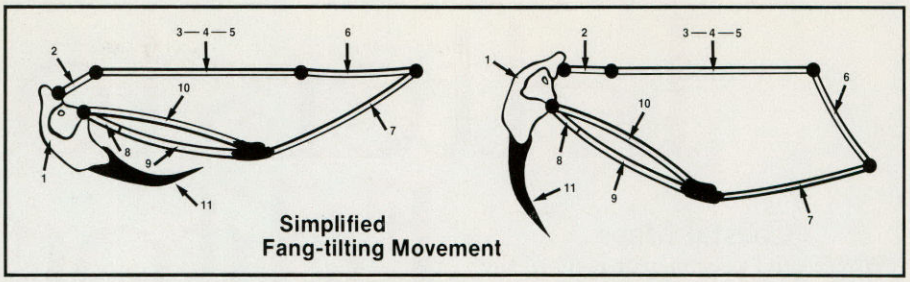
This digestive action is what makes the snake's venom so dangerous. Deaths from snakebite are rare, but ugly, crippling injuries are common. A bite on the leg can result in either loss of the leg or the proper use of it.

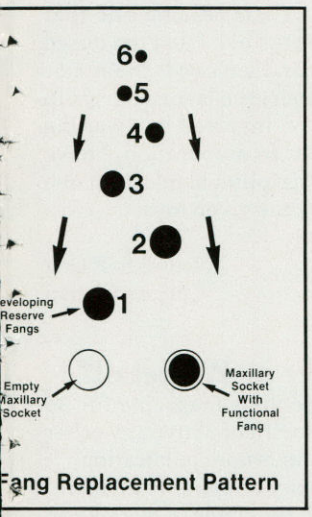
Rattlesnakes are not creatures for the inquisitive young naturalist to fool around with. Statistics show that many people who are bitten have put themselves in danger. They include amateur and professional snake handlers, researchers, zoo keepers and snake hunters. Some 30 percent of all snakebites are made by captive snakes.

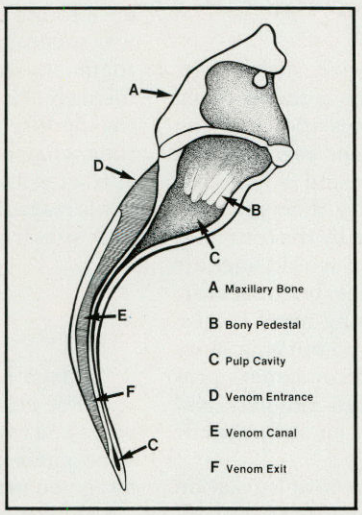
Accidental encounters with snakes usually take place in more rural settings. Those most likely to encounter snakes are hikers, campers, hunters, berry pickers, farmers, children playing in woodpiles or farm buildings and people wandering around in less-civilized areas at night when snakes are most active. Residents of new housing developments also may come into contact with snakes that did not leave their home territory when the houses were built and people moved in.

About 60 percent of the people bitten by snakes are less than 21 years old. The majority are children who, because of their age, lack the knowledge to avoid dangerous areas. They unknowingly poke their hands into holes, climb around on rocks and logs and wander into tall grass and brush.









The snake skull (extreme left) shows developing fangs lying above the mature fangs. Simplified drawings (above) show how the bones change position to fold the fang out of the way or bring it into striking position. The fang (number 11) normally is folded back, and extended while striking. Other parts of the skull change in the act of striking as indicated by the numbers. The skull (below) clearly shows that both sockets on one side are in use. The new outside fang moved into position before the inside fang was shed. (See fang replacement pattern.) The fang illustration (left) shows the top and bottom openings through which venom flows. These openings also can be seen in the skull photo below.

Fortunately, as many as 30 percent of all snakebites result in no venom being injected. However, to ignore a snakebite or fail to seek medical aid for this reason is dangerous. You might be lucky and receive no more than a painful bite, but you may have received enough venom to suffer pain over a long period of time with crippling results.

The wisest course of action is to try to avoid being bitten in the first place.

Since 30 percent of all bites occur on the hands, fingers and wrists, watch where you put your hands. Don't turn over rocks and logs with your hands. Use a stick and stay as far away as possible. Don't stick your hand in a hole in the ground, tree or rock. A snake may be in residence. Don't climb on rocks where you must reach up and grab where you cannot see. A snake could be sunning itself on that particular rock.

Another large percentage of bites occur on the feet, ankles and legs, so protect them. Wear boots and protective clothing when you are out in the woods. Stay on the trails when possible. Don't step where you cannot see. That big log or rock you step over may have a snake on the other side.

Since most snakes are active at night, don't wander around after dark. Gathering firewood can be dangerous anytime, but it is especially unwise at night.

A final word of caution is leave dead snakes alone. Reflex action of the muscles could bury a fang in some part of your body. The snake fangs and glands may still contain venom and this poison is just as potent whether the snake is dead or alive. Researchers have discovered that dried rattlesnake venom crystals, when dissolved in water or other liquid are still potent. The venom will remain toxic for many years. Venom kept in the dried state retained its original strength even after 25 years.

As stated before, rattlesnakes and their venoms are much too dangerous for the young naturalist to study first-hand, but it is hoped that this view has proved interesting. **

Letters to the Editor

Coastal Maps

Where can I get a map or maps of the Texas coastal waters that would be suitable to use for boating and fishing? I am particularly interested in the area from Bolivar to South Padre Island.

Although I am a short-time subscriber, I can hardly wait for each issue. There is not a publication in the United States that even approaches your fine magazine.

Don McGrew
Hearne

■ The National Oceanic and Atmospheric Association (NOAA) produces coastal maps which are available at most boating stores along the coast and other coastal merchants which cater to boaters and fishermen.

Container Legislation

It is almost inconceivable that some people can be led into thinking that container deposit legislation will control litter, save money, energy and resources or stretch landfill spaces (Letters to the Editor, November).

In actual cases of deposit legislation, head-of-household jobs have been eliminated with no improvement in the unsightly litter, because container litter comprises only a very small percentage of the litter problem. What we really need are better litter education and better litter laws, along with cooperation with the Keep America Beautiful committees. They alone have made significant reductions in litter. Let's get behind something that works and doesn't bleed more money out of us like container deposit legislation has done in each state where it has been established.

James Fairchild
San Antonio

Not the Answer

The need for a method of keeping our highways and countryside litter-free is clear, but a mandatory container deposit is not the answer (Letters to the Editor, November).

Containers account for only six percent of the solid waste strewn on our highways; 94 percent is tires, newspapers, mufflers, fast food wrappers, etc. Therefore, container deposit legislation would have little impact on the control of litter. In addition, such legislation would mean that consumers would pay for this deficient legislation by being charged higher prices for beer and soft drinks. Every retailer and wholesaler would be forced to raise their prices to cover costs necessitated by the container deposits. These costs would include modifying their facilities, building storage buildings, purchasing more trucks, traveling extra miles and burning more fuel. How could we as consumers possibly save money when retailers and wholesalers must pass on such significant costs?

Beverage container deposit legislation would mean much higher costs to consumers and would have practically no effect on the majority of the solid waste and rubbish cluttering our highways. I suggest that we look for alternative ways to control litter, such as the Clean Community System programs under the direction of Keep America Beautiful, Inc.

Charles D. Ward
Highlands

Taking Issue

I am taking issue with your article on white-tailed deer hunting by Ray Sasser in the November issue.

Dr. James Kroll and biologist Gary Spencer stated in the article that moon phases do not affect daytime deer activity. On the contrary—many of my friends and I have noted that a bright moon does indeed inhibit daytime deer activity. Regarding their spotlight surveys, don't they know that a deer's eyes shine whether it is feeding or not? Just to make an assumption on that basis does not seem too scientific to me.

Richard Sumrall
Votaw

Two Reasons To Visit The Dentist

For a number of years I have visited my dentist every four months, for two reasons. First, to have my teeth checked and second, to read his *Texas Parks & Wildlife* magazines that had accumulated since my last visit. Since they are timeless magazines, it made no difference to me that I was reading one that was several months old. I just devoured them anyway and enjoyed them immensely. However, the last two trips to the dentist have involved no waiting time whatsoever. In desperation, I have extracted a subscription blank from one of his magazines and given myself a two-year subscription.

Naomi S. Kring
Corpus Christi

Mule Deer or Whitetail?

I have enjoyed your magazine for 30 years and rate it with or above any other state game commission publication. It has given me many hours of enjoyment.

I think you have made a mistake in identifying the picture of the animal on page 3 of the November issue, however. Instead of a young mule deer, I feel sure this is a photo of a mature whitetail buck.

John W. Reagan, M.D.
Beeville

■ We also took a second look at the photo before selecting it. Our main reason for agreeing on its being a mule deer is that it was photographed in the desert portion of Big Bend National Park. The size of its ears also identifies the buck as a muley. There are whitetails in parts of Big Bend, the Carmen Mountains whitetails, but they are relatively small animals.

BACK COVERS

Inside: A mockingbird amidst brightly colored berries maintains the spirit of the holiday season just past. One of the best known birds in Texas, mockingbirds are masters of their own neighborhoods and often confront birds even larger than themselves. Photo by Leroy Williamson.

Outside: An inhabitant of the woodlands, the red fox lives in underground burrows, crevices and rocky outcrops or cavities under boulders. Sometimes the fox takes over the burrow of another animal, such as the badger, and remodels it to suit itself. Photo by Tom J. Ulrich.