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JULY 1990

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TEXAS PARKS & WILDLIFE

June 1990, Vol. 48, No. 6

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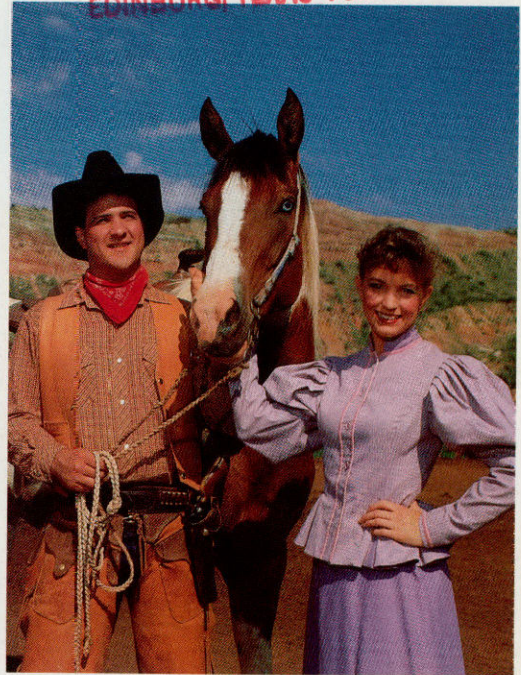


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COVERS—Front and Back: Read up on macro photography on page 36, then head out to Brazos Bend State Park as freelance photographer Stephan Myers did. You might see an American painted lady butterfly framed by the petals of a black-eyed Susan, a perfect subject for a macro shot. Read about the park beginning on page 4. Stephan shot this scene with a Pentax 6×7 using a 135mm macro lens at f/16, 1/30 second on Fujichrome 50 film. **Inside Front:** "I thought this suit had pockets." More animals speak on page 28. Freelancer Steve Bentsen photographed this jackrabbit with a Nikon and a 400mm lens at f/5.6, 1/500 second on Kodachrome 64 film.

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Don't Forget the Sportsmen

I was disappointed that your April issue did not have an article or even a note in Outdoor Roundup about spring turkey season, which opened April 7.

I sense a trend in the magazine away from your traditional coverage of hunting and fishing, which is fine, since I enjoy the broader range of articles and I understand the need to appeal to a wider readership. But please don't forget your old strengths and the readers that subscribe for the fine hunting coverage you've given us all these years.

Robert W. Killam
Dallas

Overall I enjoyed the March and April issues with their emphasis on the general outdoors, scenic beauty and backpacking, not to mention the flora and fauna. It was disappointing however, not to see mention of the spring turkey season with your fine pictures and narrative of this magnificent bird and the challenge of hunting.

Articles emphasizing the thrill of the hunt within the context of sportsmanship and sound game management have always been a cornerstone of your fine magazine, and I hope this trend will continue.

John W. Harris
Austin

As a displaced, but fiercely proud, native Texan, I have enjoyed your publication greatly over the years. Sadly, however, a subtle change has come over your magazine in the last few years. You formerly published a balanced combination of tourism, hunting and fishing articles. In view of the important role that hunters play in the management of game animals I believe this was a reasonable and enjoyable approach.

Hunting articles have now almost completely disappeared. I noticed an increase in anti-hunting letters several years ago but I am incredulous that you have forgotten your roots and responded to this. The city-bred do-gooders sending you these letters have little knowledge of the science of wildlife management, and they have contributed nothing but shrill protests while they enjoy their prime rib dinners and fish filets.

Since you evidently are forsaking your heritage and your greatest supporters, I am allowing my subscription to lapse after 14 years.

Gerald L. Walzel
Crownsville, Maryland

LETTERS

Texas Prairies

Thank you for the article on Texas prairies by David Diamond (March). We have a small ranch in Blanco County. For the past 12 years we have kept part of this place fenced off from livestock, and we have seen a remarkable recovery in native grasses.

I'm planning to dedicate more of our ranch to preservation and make it available to the local schools for outdoor education. You can check with your local 4-H Club or county extension office about a program they have on native and imported grass identification and management.

Good work, y'all.

David Gray
Blanco

How much grassland, how much brush country, in the days of the Lone Star Republic? Conventional wisdom takes an extreme position, saying that not only the South Texas Plains but even the Hill Country was grassland until overgrazing opened the door for an invasion of cedars and mesquites. David Baxter's editorial in the March issue repeats the usual line, saying "mesquite and cedar have only within the last 100 years spread over much of West and Central Texas."

The historical record suggests a mosaic of grassland and trees in South Texas well before the cattle industry made its mark on the landscape. In 1836, D. B. Edwards published an account of the "muskit tree . . . found throughout the whole of the gently sloping prairies." George Bonnell's 1840 description of Texas included "musquit prairies" named after a "species of locust." Sterling B. Hendricks found "mesquite which grew on every little stream" near the Nueces River in 1842.

Turning to the Hill Country, observers in the 1830s and 1840s were clear and consistent in describing its oak-cedar woodland cover. In Travis County the hills were "covered with Live Oak and Dwarf Cedar to their summits" (A. C. Horton Commission Report, 1839). There were "millions of cedar that cover(ed) the Comal hills like a mantle" (Victor Bracht, 1848).

Like Editor David Baxter, I am cu-

rious about Texas in the old days. Books are my time machines, and they tell me mesquites and cedars were important species in South and Central Texas much farther back than acknowledged by Texas folklore and conventional wisdom.

Kathryn Respass
Austin

No Cardinals Here

On page 21 of the March issue, a caption for the cardinal reads, ". . . found throughout the state."

I realize that the vast majority of Texas does not claim us, but we have Texas licenses on our cars and we vote in Texas elections. However, unless our cardinals are wearing little black tuxedos and disguising themselves as grackles, we just don't have any in this area. I did see a cardinal about 30 years ago, but he was alone and he only stayed one day.

Mrs. Eleanor Martin
El Paso

Turtle Festival

The article on Caddo Lake in the March issue was well written and factual and the photographs did justice to the region's beauty and mystique.

We at the Uncertain Chamber of Commerce invite your readers and subscribers to visit Caddo Lake, Caddo Lake State Park and Uncertain, Texas, any day of the year. We are here. Visitors may want to join us in the fun, food and festivities at our first annual Turtle Festival, June 9 and 10, 1990.

Dave Lomax
Uncertain

Note of Thanks

As a sportsman and taxpayer, I really appreciate all the hard work everyone puts into this great publication. The articles are interesting and well written and the photography is outstanding. Also, thanks to all the support people and staff that make this possible.

Joe Beaver
Austin

Between a Rock and a Hard Place

Just because the maple tree on page 20 of the April issue is growing between two rocks doesn't mean the tree split the rock. Most likely, the rock was broken and the tree came up between the two pieces. The gap might have been narrower than it is now, and the constant pressure against both sides no doubt pushed

the rocks farther apart, but a young, tender shoot could not have penetrated the solid rock.

Many similar situations can be found along the Colorado River with cedars, elms or wild persimmons growing in the cracks of rocks, but they didn't do the cracking.

Millard Richmon
De Leon

Love the Pictures

My stepfather has been getting *Texas Parks & Wildlife* for about six years. After he and my mother got married, I saw a stack of magazines in the cabinet and started looking through them. I was very impressed, and I love the pictures. I was very fascinated by the November 1985 issue. Last year I did a poetry notebook for one of my classes, and I got all of my illustrations from your magazine.

Jennifer Hutzler
Livingston

Topics of Interest

I am an out-of-state subscriber married to a native Texan. The top-12 subjects of interest listed in the February issue seem extensive enough for your publication, yet one subject was omitted—biographies of those Texans who participated in forming your great state.

I found the biography of the Hogg family in the February issue especially interesting and informative. Can we please have more of the same in future issues?

Mrs. Kathryn D. Fonteno
South Pasadena, California

My 70-year-old Chinese friend and I agree with the polled readers that scenic beauty is our top choice among the features in *Texas Parks & Wildlife*.

Articulate, gentle and kind Chang Pao-chien still teaches two days each week in a teachers' college in northern China. He reports to me that he greatly enjoys the splendid photographs in the magazine. Each issue reaches him about two months later than I receive my copy. Pao-chien and I join voices in saying, *shia, shia*.

Joe Tarpley
San Antonio

Dryland Gators

I enjoyed the article "Cactus Gators" in the March issue. We have alligators living in even drier country than the Rio Grande Valley. There is an old lake on the Nueces River in LaSalle County in mid-South Texas in which I have seen alligators on several occasions. One afternoon I was

padding my canoe quietly around the islands in the upper part of the lake taking bird photos with a telephoto lens. I drifted around a corner and an alligator was sunning itself on a bank. I got two good pictures before he went under the water. Measuring its size by the size of the canoe, I estimate it was 2/3 the size of my boat, or about 10 feet.

Dr. Dan Schmidt
Pearsall

Thoughts on the April Issue

Thank you for another great issue, especially the fine article by Laurence Parent about Mexico's Sierra del Carmen. This could be like the twin parks on the U.S./Canadian border.

The photography as usual is superb. Those in the springtime sequence are my kind of photos, anything to do with nature. But you blew it with the name of the butterfly on the inside back cover. This is a dog-faced butterfly, *Colias cesonia*, so called because of the black pattern on the forewing that looks like the head of a French poodle.

The 1990 nongame stamp print is a beautiful piece of work of one of my favorite birds. The A.O.U changed the name of this bird to Montezuma quail a few years ago, but I personally prefer the old name of harlequin quail. With the male's facial pattern it suits the bird much better.

Ralph Fisher, Jr.
Silver City, New Mexico

Wrong President

F.D.R. did some amazing things, but living past April 12, 1945, was not one of them. The end of World War II came on August 15 and the surrender was signed September 2, 1945. Harry S. Truman was president of the United States at that time. So if the president of Mexico met with the president of the United States ("Mountains Across the River," April), it was President Truman, not F.D.R.

We enjoy your magazine and wanted to set the record straight.

Mrs. Jack Coffman
Menard

Texas Parks & Wildlife welcomes letters to the editor. Please include your name, address and daytime telephone number. Our address is 4200 Smith School Road, Austin, Texas 78744. We reserve the right to edit letters for length and clarity.

At Issue

I'm going to cut short the column this month to make room for more than the usual number of letters, three of which bear pointing out. These three people have written to us about the editorial slant of *Texas Parks & Wildlife* magazine; they think we are not doing enough hunting-related stories. I will admit up front that we failed to mention the spring turkey season in the April issue, even in Outdoor Roundup; we should have done that and will not make that mistake again.

I said it in my January At Issue and I'll say it again, over the course of a year we strive to publish stories and photos that will appeal to all segments of an increasingly diverse readership. Now, that includes traditional hunting and fishing pieces, stories on our more than 100 state parks and environmental pieces.

In the words of that great philosopher, Darrell Royal, who urged everyone "to dance with who brung ya," I don't plan on forgetting our roots. I hunt, this agency advocates responsible hunting, and we will have stories on hunting in this magazine.

And having said that you will notice there is not a single hunting feature in this month's issue. It's June and time to get out in the parks. In July we'll have stories on Choke Canyon State Park, fishing for trout in Baffin Bay, the endangered Ridley turtle and a revealing story on so-called degradable plastics.

Last fall I visited our counterparts at the *Wildlife in North Carolina* magazine in Raleigh. One of their editors asked me about Letters to the Editor, he said they often have a hard time coming up with enough letters to publish. We either make more mistakes than the Tar Heels or our readers are less shy about taking pen and paper in hand. Keep those cards and letters coming, we'll get this magazine right, yet.

— David Baxter

Forests and wetlands meet at Brazos Bend State Park.

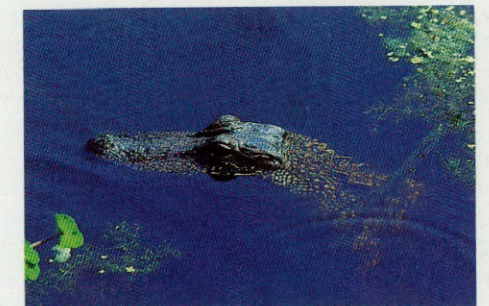
DELTA CROSSROADS

Article by Barbara Dunn, Photos by Stephan Myers/Collaborations

The stream of bubbles breaking the surface of 40-Acre Lake indicates the presence of a submerged creature. In the sultry, late afternoon air of Brazos Bend State Park, you let your fishing line hang limply in the dark water and peer over the rail of the wooden platform, looking for the source of the activity beneath the enormous leaves of the American lotus.

Heavy-lidded, periscope eyes suddenly pop up, followed by a long, bumpy snout. Like a submarine releasing its ballast, five feet of glistening alligator emerge from the depths. After a moment of mutual inspection, you and the alligator return to your individual tasks, sharing cool thoughts at a safe, comfortable distance.

Alligators have become one of Brazos Bend's most popular attractions, but at any given moment, a variety of activities occurs at this amazingly diverse natural area only 50 miles southwest of downtown Houston.



Pilant Lake (left), Brazos Bend's largest marsh, lies within the perimeter of an ancient oxbow. Is an alligator lurking here? There just might be; the big reptiles have become one of the park's most popular attractions.

From atop a three-story observation tower, a photographer captures the activity of wood ducks and black-bellied whistling ducks nibbling duckweed and water lettuce in the shallow, marshy waters of Pilant Lake.

Birders stand among cattails at the edge of Elm Lake, focusing their binoculars between the corn-dog tips to watch the antics of thousands of herons and egrets sharing a rookery on a black-willow island.

White-tailed deer roam forests and gingerly sniff about campsites, as turkey vultures soar above hiking trails with beautiful, unfettered freedom.

A group of amateur astronomers meets at the George Observatory, the highest point in the park, and prepares to gaze at the stars through the world's largest public telescope.

The area's beauty, diversity, and ecological importance prompted the state to purchase 4,897 acres in 1976. From farmlands on its western edge to more than three miles of Brazos River frontage on its eastern edge, the park's habitats encompass live oak forests, mixed hardwood bottomlands, wetlands, and tallgrass coastal prairies.

"We're at a crossroads here," says Dennis Jones, Brazos Bend's exhibit technician. "This park has more variety than is usually found at other state parks. With each ecosystem comes different kinds of wildlife and flora. In some areas, you can walk five or six feet and undergo a noticeable change in environment."

Like a picture from southwestern Louisiana, stately live oaks draped with Spanish moss greet visitors at the park entrance. From there, 15 miles of nature trails traverse a scenic collage of untamed landscapes. On the Red Buckeye Trail, hardwood forests along the Brazos River bottomland and Big Creek include water oak, pecan, elm, Shumard's oak and burr oak. The trumpet vine erupts in orange-red flowers around tree trunks, and in sunny, undisturbed areas, the purple passion flower emits a bitter scent that attracts scores of insects. Sycamore,

cottonwood and black willow trees form gallery forests above palmettos and buckeyes in flood-prone zones along the river, creek banks and bayous.

The prairies, vestiges of the millions of acres of prairies that once extended along the Gulf Coast Prairie Vegetational Region, swim green and gold with bluesem, tickle weed and goldenrod. Throughout the park, live oak woodlands follow the old meander escarpment of the Brazos River.

Born of massive river deltas, Brazos Bend lies on the Gulf Coastal Plain. Big Creek winds through the park between the forests and grasslands, forming sloughs, bayous and oxbows. Pilant Lake, the park's largest marsh, lies within the perimeter of an ancient

oxbow. With the supply of wetlands diminishing, Brazos Bend provides a safe haven for a variety of migratory waterfowl, shorebirds and wading birds. According to park officials, nearly 270 bird species have been documented. (A bird checklist is available at the park headquarters.)

The white-tailed deer heads a list of 23 mammals including raccoons, armadillos, rabbits, feral hogs, opossums and coyotes. The infamous alligator outshines the rest of the park's reptiles and amphibians, which include a wide array of frogs, turtles, lizards and snakes. To help protect the dwindling number of bats, Boy Scout volunteers have built nine houses to shelter the flying mammals (see *Texas Parks & Wildlife*, April 1989).



An observation tower looks out over 40-Acre Lake and the waterfowl and shorebirds these wetlands attract.



Live oaks are draped with Spanish moss (below), purple passion flowers emit a bitter scent that insects find appealing (above) and a white ibis picks up crayfish from the mud with its long, slender bill (left).



GEORGE OBSERVATORY



"This is a wondrous place," says Dennis Jones. "You never know what you're going to meet out here. I'll believe just about any story visitors have to tell about the wildlife they've seen, except once, when a visitor said he'd seen a black bear, and I figured it was probably just a Russian hog."

Black bears, cougars and red wolves once shared the forests and prairies with the Capoque band of Karankawa Indians who travelled freely along the Gulf Coast. As part of Stephen F. Austin's first colonial land grant from Mexico, settlers may have used Brazos Bend's strategic location along the Brazos River as a riverboat landing for cotton brokers in the mid-1800s.

Shortly thereafter, Houston and its surrounding towns began to prosper, gobbling up ever-increasing land areas to support businesses and homes. Wetlands and prairies dwindled, and many animals disappeared. At Brazos Bend, a piece of history and nature has been preserved for the benefit of both man and animal.

"We get about 500,000 visitors a year," says Joe Cochran, park superin-

The George Observatory sits on the highest point in Brazos Bend State Park, across Creekfield Lake from the Interpretive Center parking lot. The complex was opened in October 1989 as a satellite facility of the Houston Museum of Natural Science. Its three domes and Learning Center combine astronomy and nature with some of the finest facilities in the world, and provide a unique resource for amateur astronomy groups, schools, university astronomy programs, research astronomers and the general public.

The Research Dome houses a 36-foot wide, 10-ton professional meter-class research telescope which is an exact replica of the instrument at the Kitt Peak Observatory in Arizona. Purchased from Louisiana State University in March 1988, and refurbished for use at Brazos Bend, it is the largest telescope in the world open to the public on a regular basis. Lifted up to the eyepiece by a hydraulic floor, visitors may gaze at distant objects of the starfield: the Orion nebula, Titan (Saturn's largest moon) and ice caps on Mars.

Larger objects such as the planets are easily examined through the pier-mounted telescopes in two smaller domes adjoining the Research Dome. Under the direction

of the Fort Bend Astronomy Club, the Amateur Astronomy Dome provides one pier-mounted telescope. The Teaching Dome houses portable telescopes and two pier-mounted telescopes for nighttime and solar viewing.

The Astronomy/Ecology Learning Center fills the lower floor of the Research Dome with three educational areas. The Giants of Astronomy exhibit describes the life and works of Copernicus and Newton, and the Discovery Space provides wildlife in nature scenes for visitors to identify in tube viewers and mystery boxes. The Mini-Theater brings in live images of the sun through a heliostat, and offers optics magic shows, slide presentations and videos.

The George Observatory is open to the public from 3 p.m. to 10 p.m. each Saturday. The research telescope is open to public viewing from 7 p.m. to 10 p.m. Admission is free, but visitors need to arrive by 5 p.m. to receive passes to enter the Observing Deck. Groups are admitted at 30-minute intervals, with a four-pass maximum per individual.

Dwarf palmettos (right, thrive along the rivers and bayous. Fifteen miles of trails wind through the park (opposite), connecting Elm, Pilant and 40-Acre Lakes.





tendent. "Most come in March, April and May. The primary recreations are hiking and nature study, followed by fishing and birding."

On weekends, stop by the Interpretive Center at the beginning of your visit. As one of the finest in the state park system, it will provide an enlightening preview of what you'll experience while hiking and camping at Brazos Bend. The story of the park's wildlife, habitats and natural history is depicted with photographs and illustrations. Make sure you pick up the brochure on alligator etiquette.

An estimated 300 alligators live in the marsh areas of Brazos Bend. They hibernate during winter, often digging subterranean dens in the banks beneath black willows. They emerge with their young when spring brings warmer temperatures and a larger selection of prey. As you stroll along the trails connecting Elm, Pilant and 40-Acre Lakes, you'll likely see a number of them basking along man-made levees and among the leaves of the tall, yellow lotus. Remember these are wild creatures capable of unpredictable and quick movement. Never feed, antagonize or stray within 30 feet of an alligator.

A wooden platform and numerous

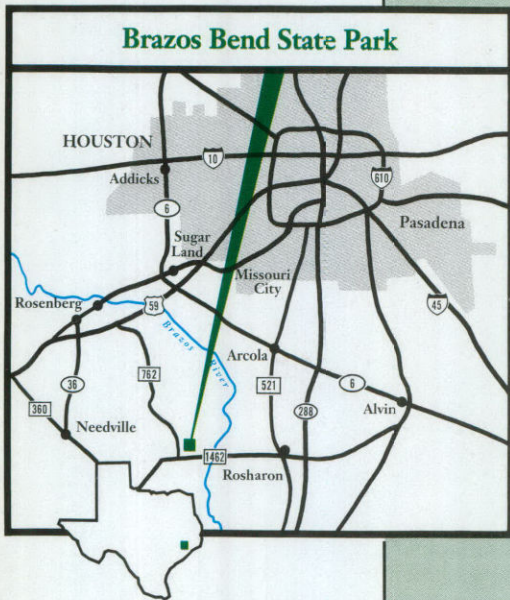


Several piers and a wooden platform offer places to fish while you watch for alligators and enjoy the water birds. Most frequently caught fish are bass, perch and crappie.

fishing piers provide a safe environment for fishing. Bass, perch and crappie are the most frequently caught fish. While you're fishing, you can enjoy watching the waterfowl that share the lakes with the fish and alligators. The sloping, slender bill of the white ibis allows it to pick up crayfish from the mud easily. Atop dense plant growth, the purple gallinule's enormous feet barely sink beneath the water surface as it nibbles among a va-

riety of aquatic plants. As the anhinga cruises through the water, you might mistake it for a snake. Unlike other waterfowl, only its neck and head remain dry, while its body sinks below the surface. When it finishes feeding, it flops upon a log and spreads its wings to dry.

The ecosystem at Brazos Bend is so balanced that even the mosquitos remain tolerable after sunset. Large numbers of predatory insects such as



Location: Brazos Bend State Park is on Farm Road 752 in Fort Bend County, 50 miles from downtown Houston. Take U.S. 59 south from Houston, then turn south on Farm Road 762. Also from Houston, take S.H. 288 to Rosharon, turn west on Farm Road 1462, then north on Farm Road 762.

Fees: \$2 entrance fee, \$12 per night for screened shelters, \$9 per night for water and electrical hookups, and \$6 per night for tents or water hookups only.

Facilities: Day use: Three areas with 20 picnic sites with restrooms nearby, two covered group picnic areas and an enclosed dining hall. Camping: 35 tent sites, 14 screened shelters with playground, 42 multiuse sites, 20 primitive

camping sites. All have sanitary facilities, and tent and multiuse areas have restrooms with showers. A trailer dump station is provided. The fishing pier and platform have fish-clearing tables and outdoor rinsing showers. Admission to the Interpretive Center is free.

George Observatory: Exhibits and dome open to the public every Saturday from 3 p.m. to 10 p.m. Passes to view through the research telescope given at 5 p.m. Groups view in 30-minute intervals with four passes maximum allowed per individual.

Reservations and Information: Call 409-553-3243, or write to Brazos Bend State Park, 21901 FM 762, Needville, Texas 77461.

dragonflies keep primitive camping an enjoyable experience even along the narrow stretch of land between Pilant Slough and Elm Lake.

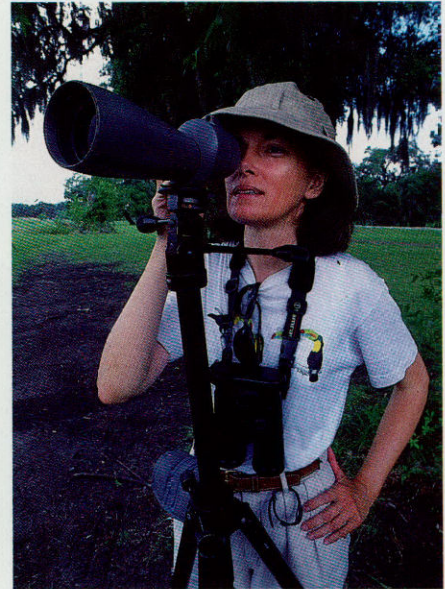
Other activities at the park include Saturday night slide shows and group nature tours. A group of 50 volunteers works year around to help maintain the park.

The George Observatory, Brazos Bend's newest attraction, opened in October 1989 as a project of the Houston Museum of Natural Science. Far from the city lights, the observatory's 36-inch telescope provides an opportunity for laymen to probe the far reaches of space and learn about

the history and technology of space exploration.

Whether you seek the discovery of galaxies millions of miles away, or the infinite variations of life on Earth, Brazos Bend offers unrivaled natural and technological facilities. Even if you're not in the mood to discover anything, come out and plant yourself under a live oak for an hour or a day, and let the natural inhabitants of Brazos Bend discover you. **

Our readers are becoming well acquainted with the Houston-based "Collaborations" team of writer Barbara Dunn and photographer Stephan Myers.



Birding is a popular activity at Brazos Bend (top), thanks to the 270 species that have been documented there. A bird checklist is available at the park headquarters. The sun sets over Elm Lake (above), bringing another day full of activities at Brazos Bend to a close.





Life Around the Mother Lagoon

Article by Barbara Dunn, Photos by Stephan Myers/Collaborations

The laughing gulls of the Laguna Madre know a good prospect when they see one. When snack time rolls around at Bird Island Basin, the crunch of a single potato chip brings scores of these opportunists gliding in from behind sand dunes and over water. Converging on the tidal flat, they await the inevitable handout with brazen stares, their impatience visible only by a casual shifting from one spindly leg to another. They seem to know the effect the Laguna Madre has on visitors; time passes slowly here, and the placid warmth and fresh sea air never fail to make folks feel generous.

The Laguna Madre stretches 100 miles between Corpus Christi and Port Isabel. From atop the Kennedy Causeway connecting Corpus Christi with Padre Island, her calm, shallow waters shimmer into the southern horizon beneath a hot coastal sun. The shadows of dense, subaqueous grassflats divide along the island-fringed Intracoastal Waterway that zips together her length. Her widest point is 10 miles across, and her great-

est natural depth only eight feet. The wind-tidal flats of the Land-Cut Area between Port Mansfield and Baffin Bay are so high that they sever her in two. Only the Intracoastal Waterway preserves an uninterrupted movement of water.

Countless species of fish, invertebrates, aquatic plants and birds live along the shores, islands and grassflats. Flowing behind the massive bulwark of Padre Island, the immense coastal ecosystem of this "mother lagoon" thrives only a couple of miles from the ravaging impact of the Gulf of Mexico.

Padre Island has protected the Laguna Madre since this barrier island system formed some 3,500 years ago. Averaging only 20 feet above sea level, the island's topography bears the wild, natural signature of the Gulf's energy. Southeasterly winds, which run at sand-carrying strength 85 percent of the time, pick up sand from the beaches and transport the grains across the island. The heavier grains fall from suspension onto high fore-island dunes, vegetational flats and

beautifully sculpted migrating dunes. Only the finest particles travel far enough to dust the wind-tidal flats of the Laguna Madre.

The same winds fill the sails of windsurfers at Bird Island Basin with the scents and sounds of the sea. Bird Island Basin lies in the Padre Island National Seashore, and provides the easiest access to the Laguna. The Seashore was formed in 1962 to conserve the natural beauty of Padre Island, and runs 80 miles to Port Mansfield. The National Park Service oversees the park which, except for the northern five miles, remains free from development. The 14-foot deep Intracoastal Waterway was completed in 1949, and at points forms the boundary of the Seashore in the Laguna Madre.

The smooth sand of Bird Island Basin runs toward the water with a barely perceptible slope, its surface veined with mats of dried seagrass, and dotted by entrances to the tunneled domains of fiddler crabs. In water only a few inches deep, children wiggle their toes into a sandy bottom heated to marshmallow consistency, while

Seen from the air, the Intracoastal Waterway slices through a patchwork of spoil islands as it runs the length of the Laguna Madre (left). Laughing gulls wheel in the air (above), eager for any bandouts the beachgoers may offer.

their parents lounge in chairs planted nearby. In some summers, these soft margin sands erupt with the activity of hundreds of thousands of blue-eyed scallops. Detecting the approach of waders or crabs, these two-inch bivalves have the unique ability to flee with swift, jet-propelled clapping movements. At other times, their abundant, empty shells provide children with treasures to take home.

To get a closer look, put on a mask and fins. About 100 yards from shore, the grassflats loom thickly in four feet of water. Here you'll find massive populations of bay scallops, snails, sponges and fish. If the sensation of

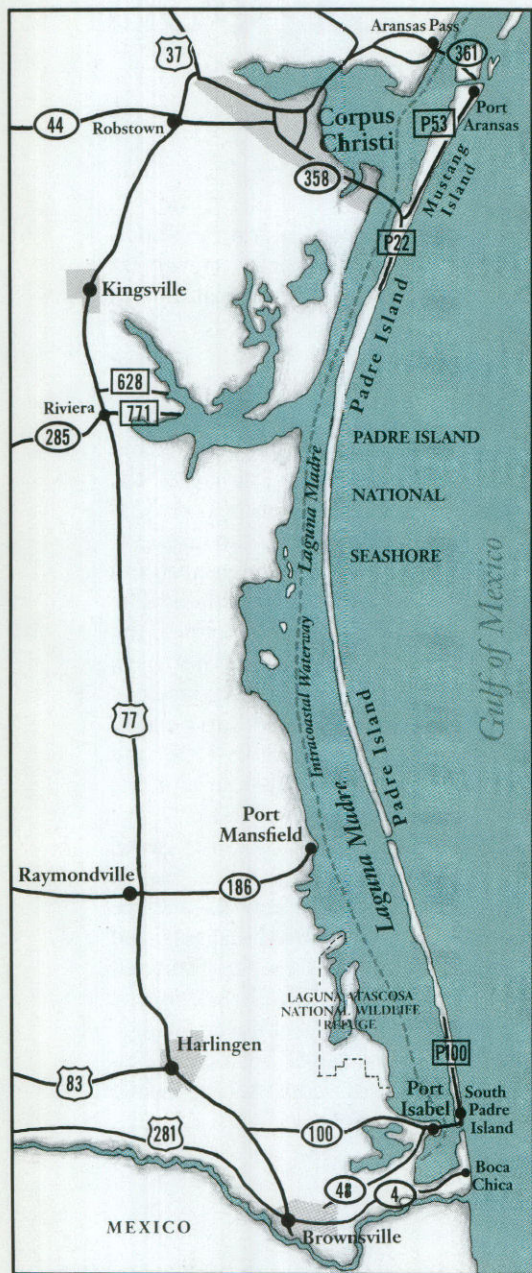
grass sliding across your legs makes you queasy, you can still find plenty to explore along the edges of the grassflats.

Stay alert to the presence of windsurfers. Calm, shallow waters make the Laguna Madre one of the top windsurfing spots in the nation. Every weekend afternoon, the water comes alive with bold-colored triangles zipping back and forth across the grassflats, trailed by frothy wakes. They may not be able to see you, and you probably won't detect their fast, silent approach.

If you're camping overnight, you may hear the yip of coyotes in the dunes, or even see them sniffing about the campsite. On the tidal flat, territorial male fiddler crabs attempt to attract females by rapidly tapping their



Clear waters allow snorkelers to enjoy the abundant marine life of the Laguna.



Access: Easiest access to the Laguna Madre is from Bird Island Basin at the Padre Island National Seashore. Take the Kennedy Causeway from Corpus Christi to Padre Island, take Park Road 53 south from Port Aransas. Both routes merge into Park Road 22, which leads directly to the Seashore entrance. Continue into the park and turn right at the sign for Bird Island Basin. The lower Laguna may be reached by driving east on S.H. 186 from Raymondville to Port Mansfield, or taking S.H. 100 or S.H. 48 east to Port Isabel.

Facilities: Primitive camping is available at Bird Island Basin. A campground with restrooms and showers is available 1/2 mile north of the Malaquite Visitor Center. Take Park Road 22 three miles south of the Bird Island Basin turn-off to reach the campground.

Fees: All incoming vehicles pay a \$3 entrance fee good for one week. Camping fee is \$4 per night at the campground.

Further information: Contact Padre Island National Seashore, 9405 S. Padre Island Drive, Corpus Christi, Texas 78418, or call 512-949-8068 to reach the Visitor Center and 512-949-8173 to reach the ranger station.

oversized claw onto the sand. In the presence of other males, or in the glare of a flashlight, these house-husbands wave the claw mightily, saying "Shoo!" to potential intruders.

One aspect of the Laguna becomes obvious to newcomers shortly after they emerge from the water. After the sun has dried the moisture on your skin, you'll scratch a bit at the crinkly feeling of salt particles coating your skin. Although the water is clear and warm, it can contain twice the salt concentration of normal seawater. Bring some fresh water to rinse yourself and your snorkeling equipment.

Corpus Christi Pass, Mansfield Channel and Brazos Santiago Pass provide the only exchange of water with the Gulf of Mexico, and very little fresh water flows into the Laguna from the mainland. In the semiarid climate found here, restricted circulation and high evaporation rates make the Laguna extremely saline. "Salinity increases from the southern end near Mansfield Channel to the northern end," says Dr. Terry Whitlege, senior research scientist at the University of Texas Marine Science Institute at Port Aransas. "Salinity can vary from 34 parts per thousand (ppt) at one end of the lagoon to 70 ppt at the other." Average oceanic salinity is 35 ppt, and levels have been measured as high as 100 ppt in the Laguna Madre.



Blue crabs (far left) and bay scallops are two Laguna Madre species with culinary appeal.

Survival for plants and animals in the Laguna Madre depends on their ability to withstand the hypersalinity. Most, like the seagrasses, are able to flush out excess salt from their systems. Shoalgrass is the most salt-tolerant and widespread grass, followed by turtlegrass, clovergrass, widegeorgrass and manateeegrass. The seagrasses grow in all sections of the Laguna Madre, but are most prevalent in the northern part of the Padre Island National Seashore and in a depressed area of the central Laguna called The Hole.

Despite the high salinity, large numbers of fish and invertebrates thrive in the intensely fertile grassflats. Finfish include spotted seatrout, red drum, sand trout, flounder, black drum, mullet and croaker. Blue crabs, clams and snails also share the grass-

flats. Carnivorous lightning whelks prey upon clams along the edges of the Intracoastal Waterway. Bittium, the smallest snails in the lagoon, grow no longer than a grain of rice. Numbering in the thousands per square meter, they comprise a large part of the grassflat food chain.

Sport fishermen often wade into the water beneath the causeway to gig the flounders that leave the lagoon at the first cold snap. Some use seines, and others toss cast nets to scoop up live bait. Although fishing is good in all areas of the Laguna, it is the Laguna's maternal role that makes her so important to commercial fishermen who trawl the open Gulf waters.

The Laguna's hypersalinity makes spawning in the Gulf more tolerable for young eggs. The spotted seatrout (speckled trout) is the only species that

spawns in the Laguna, and only in lower salinity areas near the channels where the eggs are also protected from cannibalistic adults that congregate in the central portions. "In summer, blue crabs, trout and white shrimp leave the Laguna to spawn," says Johnny French, senior staff biologist with the U. S. Fish and Wildlife Service. "The juveniles return a few months later to grow in the northern and southern areas of the Laguna, which are less saline. Red drum, brown shrimp and flounder leave in winter, and their eggs return in spring."

The half-inch long juveniles enter the Laguna with the tide. "They have the ability to ride certain tides," says French. "During outgoing tides, the larvae sink to the bottom of the water column, where currents are slight. With incoming tides, they move to the top of the water column, and take advantage of the free ride into the Laguna."

The sun and moon affect tides at the Laguna Madre, but winds generate the strongest tidal activity. As they force the Gulf against Padre Island, the water rises and flows through the channels into the lagoon. Water levels in the lagoon have been reported to vary by as much as 18 inches in one hour. In addition to the number of shallow areas of the lagoon, fishermen need to be aware of this added potential for stranding.

At North and South Bird Islands in the northern part of the National Seashore, the winds and water have produced small replicas of the barrier island system. Naturally built from sand, mud and shells, vegetation and

Shallow, warm waters and dependable winds lure windsurfing enthusiasts from across the country to the Laguna Madre.



sand dunes cover the tops of the islands, while their perimeters drop away with the same, soft sand of the tidal flats. The spoil islands have also become bird habitats. Some of the spoil islands have small cabins, but North and South Bird Islands are wildlife sanctuaries, and visitors are prohibited.

Throughout the year, birders may see up to 350 bird species along the islands and Laguna. Not all are nesting species, although many migratory waterfowl spend at least six months of the year here. "The piping plover arrives in early spring, and the peregrine falcon, an Arctic subspecies, arrives in early fall," says French.

White pelicans, terns and sanders are common, along with numerous great blue herons. Bright pink and white wings call attention to the roseate spoonbill, whose flattened beak smacks up crustaceans from shallow water. Watch for the dance of the reddish egret. To catch its food, it flits across the water, alternately swinging each wing to school fish into a single group before plunging its beak beneath the surface.

The Laguna Madre's position between Padre Island and undeveloped ranchlands on the mainland keeps development and threats to the ecosystem at a minimum. The Intra-coastal Waterway and a few oil production sites are the only man-made changes to the Laguna's natural state between Corpus Christi Bay and Mansfield Channel. Attempts were made in the early 1940s to open a pass in the middle of Padre Island. After four years of battling the forces of the Gulf, the pass remained open only 10

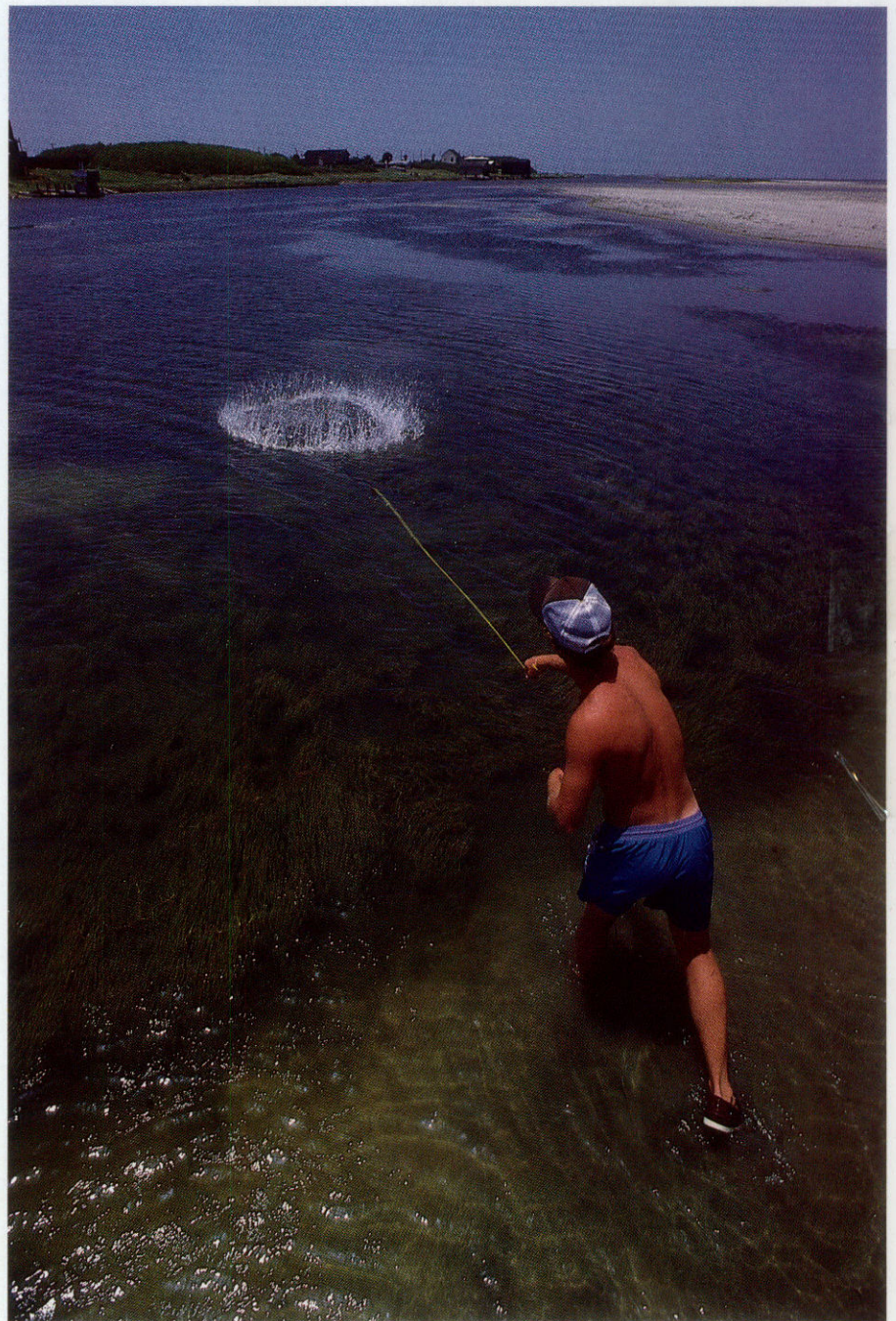
months. A final attempt in 1952 widened it to 60 feet, but within three weeks the Gulf's relentless currents narrowed the pass to a mere three feet. Yarborough Pass, as it's known, still exists, but only as an inlet on the Laguna where Seashore officials have provided picnic tables for fishermen.

The shallowness of the Laguna causes most of its water to be exposed to climatic changes on the surface. Wide temperature fluctuations can freeze water along the shores, and when this denser water sinks, it kills large numbers of fish and invertebrates.

The barrier system of Padre Island and the Laguna Madre represents the last in a long chain of islands that hug the Atlantic and Gulf coasts. Because of the protection afforded by the National Park Service, Padre Island remains the longest undeveloped beach in the United States. To the wildlife that live in the mother lagoon and the people who visit her shores, this coastal resource will always provide a unique legacy for Texas. **

Barbara Dunn and Stephan Myers of Houston are regular contributors to this and other magazines.

An angler casts for bait in the grassy area near the shore.





MAGIC CARPETS

Scooter boats opened the Laguna Madre to fishermen.

It's called the Laguna Madre—the mother lagoon—and it's a big mother, stretching south nearly 100 miles from Corpus Christi Bay to Post Isabel. Protected on the west by vast ranching empires and on the east by Padre Island, the Laguna Madre represents the last frontier for Texas inshore saltwater fishermen who prefer to be alone with a bent rod and raucous gulls.

The Laguna Madre is skinny water bordering on anorexic and, until the 1950s, it could just as easily have been the backside of the moon as the backside of Padre Island. Either place was inaccessible to most fishermen. Oh, the outboard powered skiffs did okay, chugging along with their displacement hulls, but the skiffs were mostly ferry boats, lugging a load of fishermen across the deeper waters in the middle of the Laguna to the shallows where fishermen without a boat could not go.

Once there, most fishermen stepped out of the boat and commenced to wade fishing, shuffling feet to ward off sluggish stingrays like a small boy whistles for reassurance as he walks alone past a cemetery on a moonlit night.

What they really needed, thought Forrest Peek, a lifelong devotee of the Lower Laguna Madre, was a magic carpet that skimmed just above the surface of the choppy flats. What they got was the same shape as a Persian rug, all right, but there was nothing magic about it.

Back in the 1950s the skinny water of the Lower Laguna gave birth to a whole new kind of boat, a Baby Boom boat that's gone full circle nowadays to become the plaything of upscale Yuppies who can dish out the \$20,000 or higher price tag for a craft that's iron-

ically called "scooter." Pretty good name for a boat born during the baby boom, huh?

The name of the man who thought up the scooter boat may be lost to historians but Peek remembers full well that the boat originated in Harlingen. Peek and longtime fishing buddy Fran Scheiner didn't have to see many scooters until they decided to build their own.

That's right—in those days, you built your own scooter or you hoofed it. Fortunately, the design was not overly complicated. At its lowest common denominator, the scooter was built from a single piece of marine plywood with a coat of fiberglass slapped on both sides to make it more waterproof. Back at the stern, recalls Peek, you built a sort of crude console that was more something to hold onto than the complex storage compartment and instrument panel of modern center console boats.

by Ray Sasser



A handrail was very important, you see, because you weren't riding in the boat—you were riding on it. Peek's early scooters lacked a fancy console because he didn't have a steering wheel, anyhow.

Picture a wide surfboard that does not rely on waves for power and you've got a pretty fair idea of how simple an early scooter really was.

"We'd build a little rise in the bow of the boat so it would keep you drier when you were running through the waves in deeper water, but you were seldom dry in one of those early scooters," says Peek.

"We didn't use a steering wheel. We had a tiller arm on the outboard but we'd mainly just lock the motor straight ahead and, when we wanted the boat to go left, we'd lean left. We'd run slow and use the tiller arm to steer when we got around the dock. The bay is so open that maneuvering wasn't really a problem. About the only obstacles you had to dodge were nets and trotlines. I knew several guys who didn't dodge quick enough and got jerked off the boat when they ran into a trotline. I never fell off my boat but it was a fairly common problem for others.

"Every so often, you'd see a scooter roaring out across the bay—they'd run fast when there was no weight—

and you knew someone had fallen off his boat."

Once a scooter ran amuck, there was nothing to do but track it down until it ran out of gas or, more likely, ran aground. Scooter pros learned to rig their boats with kill switches long before those safety accessories were popular on bass boats.

The early scooters were four feet wide by 10 feet long, but they were stretched to 12 feet long when a source for longer plywood sheets was available. Peek recalls attaching the upcurved bow with glue and corrugated boat nails. That bow helped to knock back some of the waves that would wash completely over the low-slung boat. A scooter would be a miserable boat in the rolling seas of deep-water Galveston Bay but the average depth of the Lower Laguna is two feet. How big can waves get when the water is only two feet deep?

Peek drilled a drain plug hole near the stern to check for leaks inside the sandwiched sheet of marine plywood. Most of those early scooters were powered by 10 to 15 hp outboards but Peek finally rigged one with 35 hp.

"Everybody said we were crazy for using that big a motor but we could go where other boats, even other scooters, couldn't go," recalls Peek. "With 35 hp, that boat would run 35

to 40 mph. The boat hull alone weighed about 200 to 250 pounds.

"The fishing in those days was fantastic. Not many people had scooters and we could get to a lot of fish that other fishermen couldn't get to. We'd usually just run the flats until we started seeing fish, then we'd get out of the boat and wade fish. We had some slow days but it usually wasn't a problem to catch all the trout and redfish we wanted. We'd get into redfish sometimes that we couldn't land with spinning tackle and trout weighing five to six pounds were common."

Those were the good old days and Peek, now 76, would like to have them back for a number of reasons, quality



While the basic principle of the scooter boat has remained unchanged for 40 years, designs have evolved with modern technology. Many of today's scooters retain the open style that allows fishermen to step off the boat for wading, while others have sides on the boat to provide a sense of security for fishermen and their gear.

of fishing not the least. Most of the scooter boat pioneers are gone now, on to the happy fishing grounds where, just maybe, the boats really are magic carpets and the fish are always hungry. The scooters you see roaring across the Laguna Madre today are high-tech hybrids of those early boats that evolved from the first commercial scooter built in 1958 by Russell Dargel, Sr.

Dargel was a marine architect who got into the scooter boat business when a growing number of envious fishermen kept asking him if he could manufacture such a boat for the mass market. He could and he did. A number of Texas companies followed suit.

Steve Ellis, a new wave Padre Island fishing guide, runs one of those new wave scooters, a custom Majek. At 15 feet, it's short by modern standards but Ellis specializes in sight casting to cruising trout and redfish in water that barely covers the fish and he needs a boat that can be manhandled by two people, if necessary.

"Once the boat is on plane," says Ellis, "it will run across three inches of water. It takes about 10 to 12 inches of water to get up on plane without tearing something up."

Ellis relies on a strategy used by Peek nearly 40 years ago in getting his new wave scooter on plane in a foot of water. He locks the steering wheel ei-

ther right or left and guns the 85 hp engine, bumping around in a tight circle until he hits the wake he has just created. That wake has just enough lift to plane the boat and away he goes.

While the basic principle of the scooter boat has remained unchanged for nearly 40 years, modern fiberglass technology has evolved scooter designs so that today's boats resemble the scooters of yore about like a new car resembles a Model A.

As with the automobile parallel, the modern scooter is a much better craft than its predecessor. Many of today's scooters have sides on the boat while others retain the wide-open surfboard style of the original design. That open



style allows fishermen to easily step on or off the boat for wading. A boat with sides provides a sense of security for fishermen and gear alike.

Most modern scooters rely on some modified vee or quadrihedral hull design in the forward portion of the boat to provide a drier ride than the old flatbottom design. They retain their shallow water capabilities with an aft tunnel and a jack plate. The jack plate is a hydraulic device on which the outboard is mounted. The jack plate vertically lifts the outboard higher than it would operate on a conventional boat.

The tunnel hull design, simply stated, compresses water into the tunnel portion of the hull. Turbulence in the tunnel allows water to reach the jacked-up outboard's water intake ports and keeps the engine cool. Running at full trim, half of the propeller is literally out of the water. A high-tech, cupped propeller is crucial to the proper operation of a modern scooter boat.

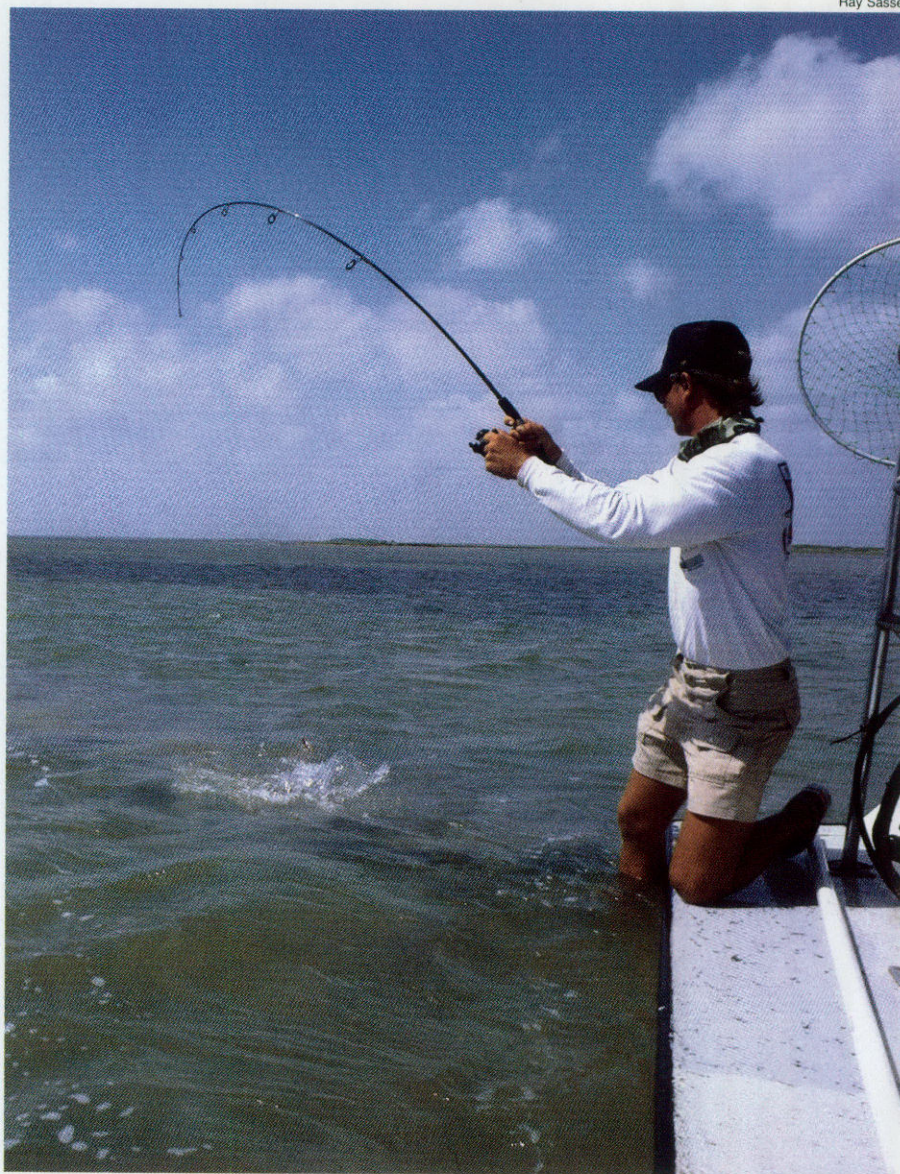
The limiting factor in how shallow the boat will run is how much of the engine's lower unit is in the water. With the jack plate and the tunnel, the answer is in inches.

In fact, about the only boats capable of running in less water than a scooter are airboats and hovercraft. Airboats are objectionably noisy and the aircraft engine they incorporate takes up too much space. Hovercraft may evolve into the scooter boats of the 21st century once that technology progresses a step or two further.

The advantage of a hovercraft is that it doesn't touch the water, much less the bottom. The outboard skeg of a scooter will drag bottom, plowing up turtle grass and the other delicate plant life that is vital for the Laguna ecosystem and creating a maze of "scooter tracks" readily visible in the clear water.

"It's a problem people must be aware of," says Ellis. "We have areas in the Lower Laguna where there used to be fish and now they're unfishable. I see people running scooters across the flats and they'll run all day, seldom stopping to fish. We need some form of education program to make people realize how important the vegetation is to the fishery."

Texas Parks and Wildlife coastal fisheries biologist Larry McEachron is



Padre Island fishing guide Steve Ellis specializes in sight casting to trout and redfish in water that barely covers the fish.

likewise concerned.

"The number of scooters has mushroomed in the last few years," says McEachron. "Our concern is what damage is being done to the seagrasses."

That's a question Don Hockaday is trying to answer. Hockaday is an educational assistant for University of Texas Pan American Coastal Studies Lab on Padre Island and he has begun comparing recent aerial photos taken of South Bay with photos taken two years ago.

"The boat trails are obvious but the questions we need to answer are how long does it take them to heal and does the disruption of grass, in fact, hurt anything?" says Hockaday. "Breaking up the sea grass beds and churning nu-

trients out of the mud may, in fact, be beneficial to some animals. We don't know what the long-term effect may be. From the air, the percentage of bottom visibly affected by boats is still very, very small."

The evolution of the scooter boat provided access to the most aesthetic saltwater fishing available along the Texas coast. It's an all-too-common paradox that the very innovation that enabled people to enjoy a rare stretch of water makes the same water less aesthetic than it once was. **

Veteran offshore and bay fisherman Ray Sasser, outdoor editor of the Dallas Morning News, has written numerous boating articles for national and regional outdoor magazines.



Steve Bornsen

A yucca-covered shoreline and white pelicans in flight capture the essence of South Texas flats fishing. The evolution of the scooter boat provided access to the most aesthetic saltwater fishing available along the Texas coast.



Steve Bornsen



Texas

A SILVER CELEBRATION

Late sunlight brings a rich glow to the fiery hues of Palo Duro Canyon and creates a silhouette of the two horsemen high on the rim. Plaintive strains of a bugle ring out, but change abruptly to a lively hoedown, and the Pioneer Amphitheatre stage becomes a whirlwind of action and color.

Join in the fun! You have come to see "Texas"—an experience as wide as the Panhandle plains. With the 600-foot-high canyon wall as a backdrop and the prairie sky as a ceiling, "Texas" has attracted more than two million visitors from all 50 states and 113 foreign countries. This year, from June 13 to August 25, the memorable pageant celebrates its 25th anniversary season with another summer of performances and several gala events, special prizes and new additions to the show.

"Texas" presents its feast of color, music, dancing and drama in the majestic red-rock setting of Palo Duro Canyon State Park. It invites you to relax, to absorb and enjoy the aura of this country 100 years ago. It tells a story of life and laughter, of struggle and care, of pioneers with enough courage to settle a land some called "uninhabitable"—the Texas Panhandle.

With the spectacular cliff as another stage, cowboys on horses gallop up the trails, Indians climb on rocks, performers scale the canyon walls, and a thunderstorm with a 500-foot bolt of lightning makes people reach for umbrellas. The tremendous variety of

color and types of lighting dramatize the setting, which even the production staff agrees is the real star of the show.

The people behind the story of the 25-year success of "Texas" combine some of the same qualities the pioneers exhibited. It all began with an idea and the vision of founder Margaret Harper on what a pageant in Palo Duro Canyon could be. It grew and came alive with the determination, perseverance and action of a group that six years later transformed it into reality—a group named the Texas Panhandle Heritage Foundation.

In 1960, Harper read a *Reader's Digest* article about Pulitzer Prize winner Paul Green, who had written several outdoor dramas. Each recreated the past in pageantry and music, and the setting was always an important element in the show.

by Ann P. White



Knowing that Palo Duro, too, was a spectacular setting, Harper wrote to the playwright about the possibility of doing such a show for the Panhandle's "glorious canyon." She urged him to come see it, which he did.

"We invited only canyon people to our barbecue in the canyon for Mr. Green, because we thought everybody else would laugh at us," Harper reminisces. "We had a big driftwood fire at the edge of the creek. I remember he

stood by the fire, and he looked up at the scene and said, 'I want to give this canyon a voice.'

"So then we started to raise the money," she continues. The Texas Panhandle Heritage Foundation was organized, and a small campaign in 1961 was followed by a full-scale drive the following year, which raised enough to build the seating area.

"We set up a speakers' bureau and went into 40 surrounding counties,"

said Harper. "We contacted the women's clubs in every county and got them to sponsor high school art contests. The winning entries, depicting each county, were later done in clay and now hang in the theater. We brought in Albany's show, 'Fandangle,' one year and in 1965 we opened with a show of our own, 'Thundering Sounds of the West,' which played to 36,000 that season." All of this helped people realize what the potential could be.

Bill Rhew



Paul Green's "Texas," presented beneath the cliffs of Palo Duro Canyon, marks its 25th anniversary this summer. A cast of 80 tells the story of the pioneers who settled in the Texas Panhandle.

"At first everybody thought we were crazy, and I think we sometimes thought so, too," she admits with a happy twinkle in her eyes. "I feel, in a way, it was good that it took us so long to raise the money, because we really had to get down to the roots of every Panhandle town. Now everyone feels a sense of ownership for the show, as they always have for the canyon."

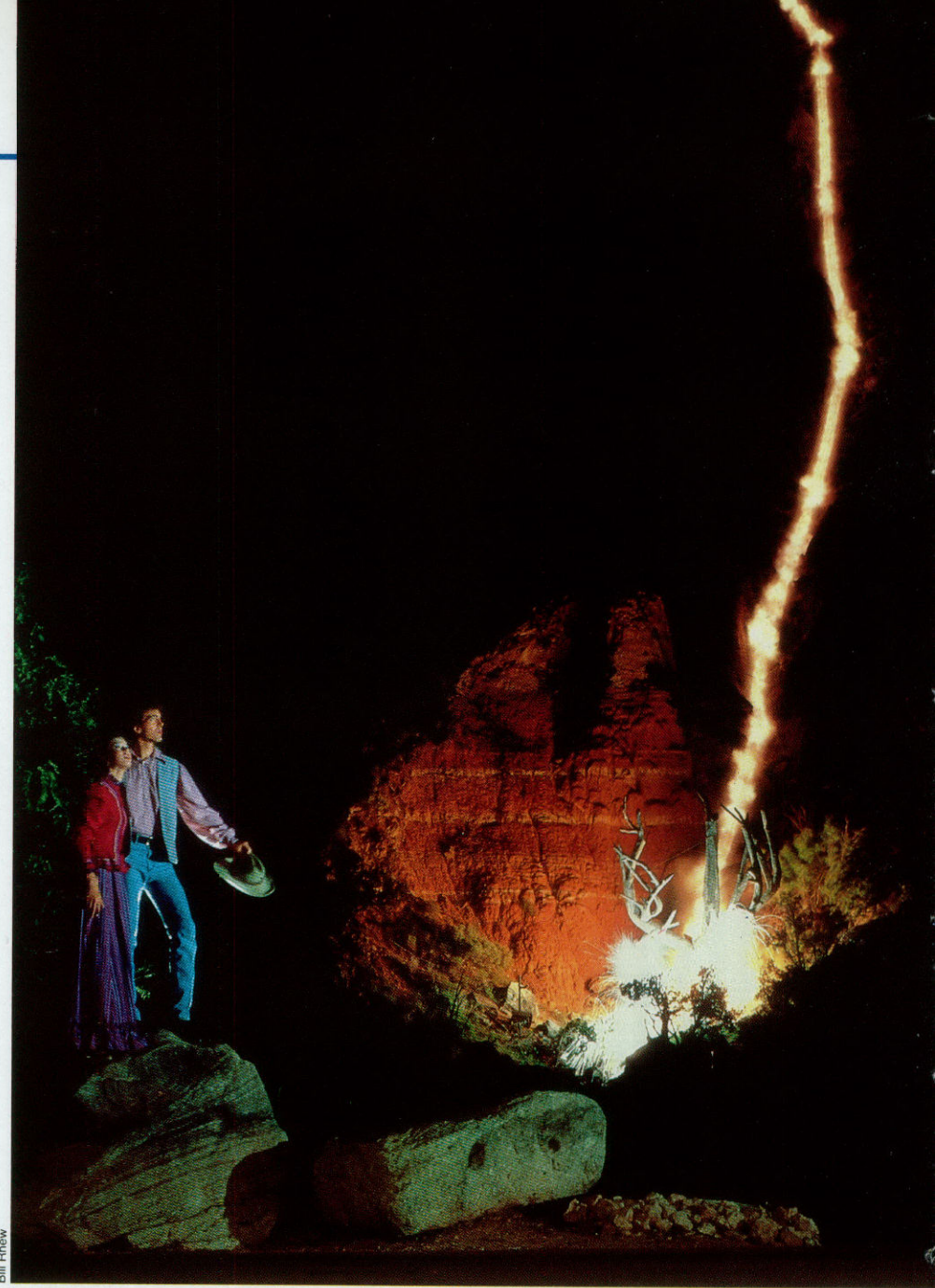
This interest has remained since the beginning and has proved to be a major asset. Although the operating expenses are covered by ticket sales, the many expansions and renovations that have continued through the years have been made possible by generous, loyal individuals and foundations.

Raymond Raillard, executive vice president until his recent retirement, remembers other aspects of the six-year development period.

"We sent the architect to North Carolina to go with Paul Green and visit a lot of other outdoor theaters. He was to study how they were set up and to analyze the faults and assets of each one," Raillard remembers. "The architect came back and sketched our plans. Someone had said it should run about \$120,000, but when we got the bid from the contractor we found it would run three times that!"

So they started cutting—dressing rooms and everything they could manage without and still open a show. Many individuals and groups helped, including the Texas Parks and Wildlife Department, which in 1966 built dressing rooms and concession buildings and later a box office. Operating under a cooperative agreement with TPWD, "Texas" pays a portion of its revenues each season to the state.

Harper gives much credit for their success to the founding directors, William A. Moore and his wife, Margaret, and their team who for years had been putting on "superb musicals" at West Texas State University in Canyon. For "Texas" Moore took with him that same team, which included choreographer Neil Hess and music director Royal Brantley. Hess continued to serve as choreographer for 19 years and in 1985 also became director of the show. Brantley had



Lightning has struck more than 1,000 times since 1966 at "Texas." The realistic thunderstorm makes the audience reach for umbrellas.

served as the show's second director preceding Hess.

The drama's romantic story, told in action and song, has been a success since its very first season in 1966 when 61,000 attended—in spite of a location which, although spectacular, was miles from large metropolitan areas of Texas. The 1989 season brought 101,000 visitors, an average of 1,600 per night.

"We run at a high 94 percent of capacity in our audiences," said Raillard. "Our climate helps, for we seldom are rained out—sometimes not once all season."

The "Texas" pageant has received national and even international acclaim. In November 1989, a partial cast represented the state at the World Travel Market in London, England, performing for 35,000 tour and travel agents. Last July members of the cast appeared on national television on "Good Morning, America." The production earned the George Washington Honor Medal from the Freedoms Foundation at Valley Forge as "an outstanding accomplishment in helping to achieve better understanding of the American Way of Life." In 1977 it was made an "Official Play of the State



SILVER ANNIVERSARY SEASON

June 15 through August 25, 1990

"Texas" plays nightly except Sunday at 8:30 p.m. at Palo Duro Canyon State Park's Pioneer Amphitheatre. The park is 23 miles southeast of Amarillo via IH-27 south or FM 1541 south, then east on Texas 217 (12 miles east of Canyon on Texas 217).

Tickets are \$10, \$8 and \$6 for adults \$10, \$4 and \$3 for children under 12. Group discounts are available.

Chuck wagon barbecue dinner at Pioneer Amphitheatre before the performance is \$6.

For reservations (recommended) or other information:

Write Texas, P.O. Box 268, Canyon, Texas 79015 or call 806-655-2181.

Tickets can be picked up before 4:30 p.m. at 2010 4th Ave., in the city of Canyon or at the Amphitheatre Box Office in Palo Duro Canyon from 6:00 to 7:00 p.m.

A good stop between 4:30 and show time is the Panhandle-Plains Historical Museum in Canyon (one block east of U.S. 87 on Fourth Avenue, 15 minutes south of Amarillo on IH-27). Summer hours: 9 a.m. to 6 p.m.

of Texas," and on two occasions it was named among the 20 top attractions in the United States.

A pageant of this scope takes major preparation and behind-the-scenes effort. In addition to the 80 cast members are 11 technicians, 8 costumers, 10 horses, a dog and six birds. Besides all these, stage manager Chris Laue sees that 125 lighting cues, 75 sound cues, 25 pyrotechnical cues and 35 set changes run smoothly.

Do the horses ever become jittery with all the sound and lighting effects? "No," said Raillard. "They learn their parts and nothing distracts them. When the late Robert Nail, 'Fandangle' writer and director, was here with their show, he told us that horses learn routines before the people do."

Auditions for the cast of 80 begin in January of each year in colleges throughout the southwest—Huntsville, Dallas, Phoenix, Stillwater, Oklahoma, Lubbock and Canyon. "Everybody auditions every year," said Raillard, "even those who have had a part for several years." This assures

continuing performances of the highest quality.

Last season the group of 140 students who worked the show represented 40 different colleges. In addition to the cast, 20 students serve backstage as technicians or costumers and 40 work out front as reservationists, concessionaires or ushers.

Three main characters in the performance have had enduring audience appeal. Jerry Williams will play his 23rd season as Tucker Yelldell. (He has been in the show since its beginning, but worked in another capacity the first two years.) Lois Kirkpatrick Hull begins her 15th season as Aunt Anna and Gene Murray his 12th as Uncle Henry.

The musical score moves with a quick-changing pace through the magic of many well-loved folk tunes and other songs written especially for the show—mostly by Paul Green. "We Invite You All to Come to Texas" and the stirring finale, "The Flags of Texas," will linger in your memory, as will melodies of the western prairie

such as "Skip to My Lou," "Turkey in the Straw," "Git Along Little Dogies," and "Home on the Range," to name a few. An orchestral group of five—a violin, double bass, banjo and two guitars—is reinforced with recorded music to achieve a rich musical background.

The dancing, the singing, the colorful costumes, the dramatic sound and lighting effects all blend with the many-hued setting as integral parts of

Bill Rhow



Indians perch on rocks and cowboys ride the range beneath Palo Duro's cliffs.

Paul Green's goal—to take people completely out of their everyday activities for a memorable theater experience. Costumes blend with colors of the canyon. More than 150 props and 20 set pieces add to the pioneer atmosphere. Wagons and surreys cross the prairie, a frontier town complete with windmill appears on stage, and even a train arrives in the finale.

Those who come early can get into the mood of the evening with the optional chuck wagon beef barbecue. Enjoy the hearty fare on the patio before the performance as you watch the light begin to wane, bathing the can-

yon walls with an ever-richer glow. You can even take a shuttle bus from any motel in Canyon or Amarillo.

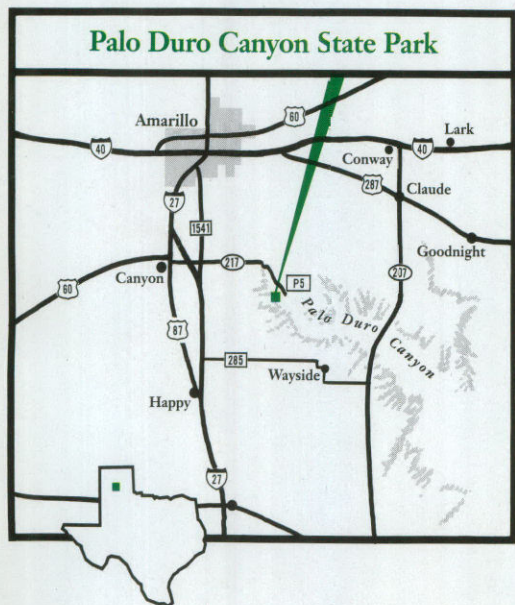
Publicity that heralds "Texas" each year is handled at the administrative office in Canyon. Some 650,000 brochures printed annually are distributed—150,000 are mailed and the other 500,000 are sent out to Amarillo and other convention and visitors' bureaus, the Texas Welcome Stations, travel agents, tour agencies and a variety of other locations.

"We do no ads," Margaret Harper says, "but we make available fine photos, press releases, tapes and even

videos on a lending basis for use of groups and interested parties. Eighty percent of our audiences come from more than 100 miles away." Visitors from England, Germany and Japan and even from such far-away locations as Australia and India come every year.

As you watch the horses gallop across trails with riders carrying the six flags of Texas, you become caught up in the rousing finale and the words of one of the production's favorite songs ring out again: "We invite you all to come to Texas,

We expect you all to come to Texas,



The 16,403-acre Palo Duro Canyon State Park represents only a small part of the canyon which at times runs 800 feet deep and stretches southeast for more than 100 miles. The Prairie Dog Town Fork of the Red River, a usually placid stream, flows along the canyon floor. The park's eight-mile scenic drive crosses it six times in four miles, as it winds past cliffs of varying hues.

In addition to the "Texas" drama in the Pioneer Amphitheatre, the park offers an interpretive center, the two-mile Sad Monkey Train Ride, the Goodnight Trading Post for snacks, souvenirs and camping supplies, and horse rentals for trail rides. Other facilities include hiking trails, picnic areas and campgrounds for both tent and trailer camping with tables, electrical hookups, cooking grills, shade shelters and rest rooms.

Camping fees are \$6 a night per site, water only; \$9 with water and electricity. Campsite reservations can be made by calling 806-488-2227 or by writing: Park Superintendent, Palo Duro Canyon State Park, Route 2, Box 285, Canyon, Texas 79015.

Reactions of first-time visitors to Palo Duro Canyon often include overwhelming surprise. Having driven for miles across the almost flat Panhandle plains, they suddenly look down into a different world—a western red-rock setting of cliffs peppered with juniper, of mesquite and grassland, of wildflowers in season and a canyon with 250 million years of geologic history reflected in its rocky walls.





If you feel inclined to roam,
Or you've got to flee from home,
There's no better place to come
than Texas."

The "voice" that Paul Green promised for Palo Duro Canyon has come alive with "Texas." In its 25th anniversary season it has good reason to celebrate. **

Ann White is editor of a magazine published by the Parker Resource Foundation in Fort Worth. She has had articles published in Trailer Life and Texas Highways, and last fall she told our readers about Abilene State Park.



Bill Fhew

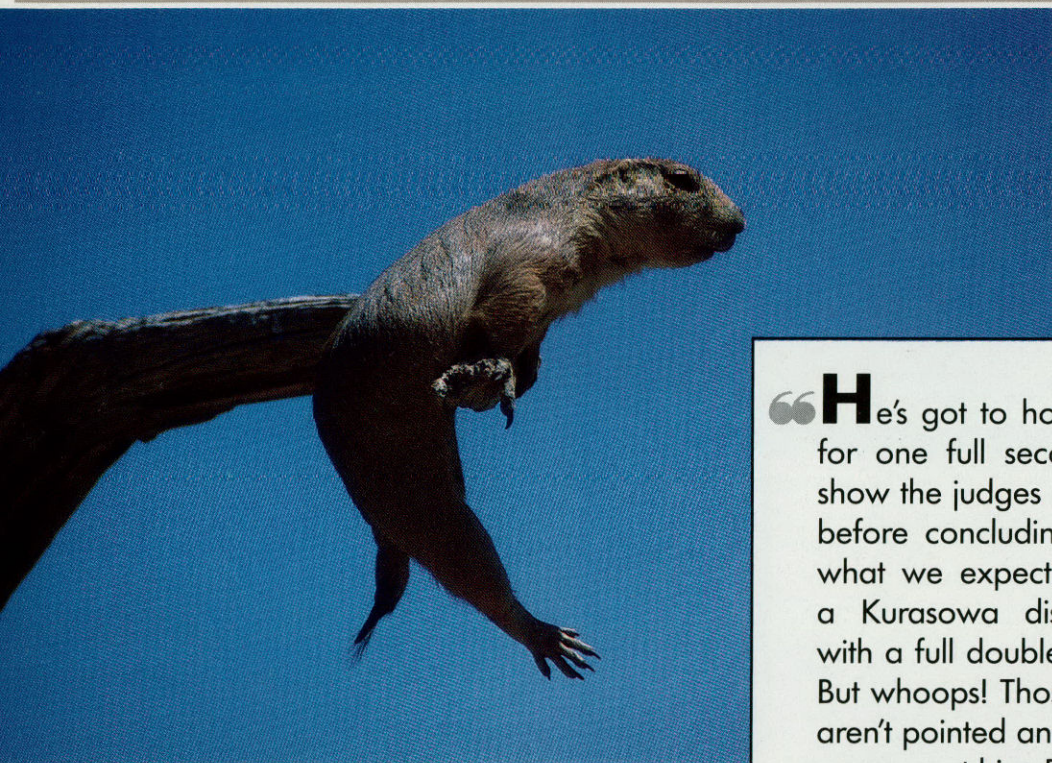
The drama's romantic story, told in action and song, has been a success since the first season in 1966. Palo Duro Canyon State Park (below), at more than 16,000 acres, represents only a small portion of the dramatic and scenic canyon.



Ann P. White

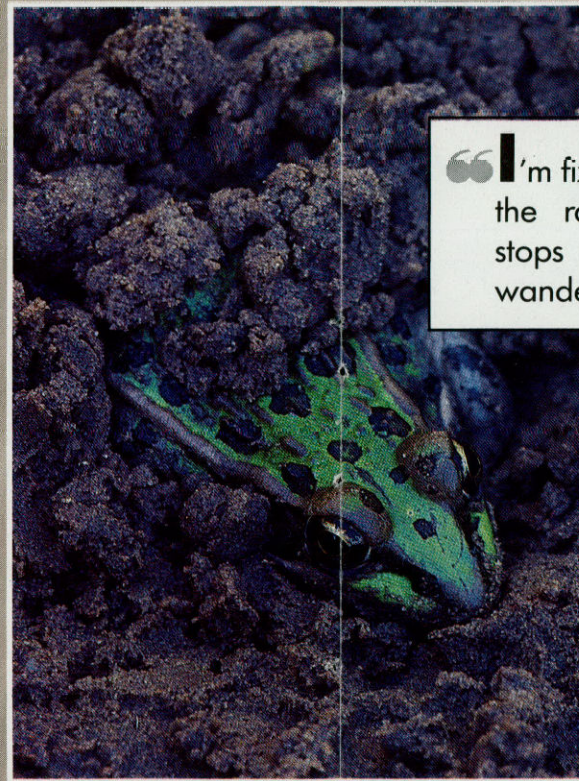
ANIMAL CRACKERS II

THEY'RE BACK!



George O. Miller

“He’s got to hold that for one full second to show the judges control before concluding with what we expect to be a Kurasowa dismount with a full double back. But whoops! Those toes aren’t pointed and that’s gonna cost him, Frank.”



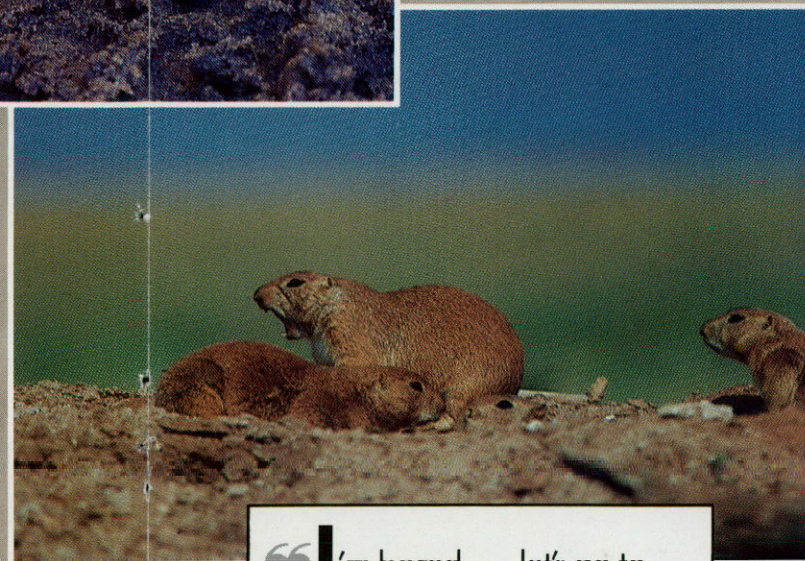
John Prestak

“I’m fixing a hole where the rain gets in and stops my mind from wandering...”



Grady Allen

“I gotta be meee, I’ve got to be me!”



Wyman Menze

“I’m bored... let’s go to the mall.”

Since summer seems to be the time for sequels, we thought we’d jump on the bandwagon. Those of you who were with us back in 1987 might remember “Animal Crackers,” when we put words in the mouths of a select group of our wildlife friends.

Well, since that brief taste of celebrity they’ve been clamoring for more, until we could contain them no longer. (Our photographers and resident wits, of course, not the animals; they merely tolerate us.) Special thanks to Lee Smith of our video department, who provided many of the irreverent captions.

So here you’ve got it, Animal Crackers II. Will there be Animal Crackers III? Who knows? Stay tuned.

ANIMAL CRACKERS II

Mike Biggs



“I’m the state bird and I’ll perch where I please.”

“I don’t care, I saw her first!”

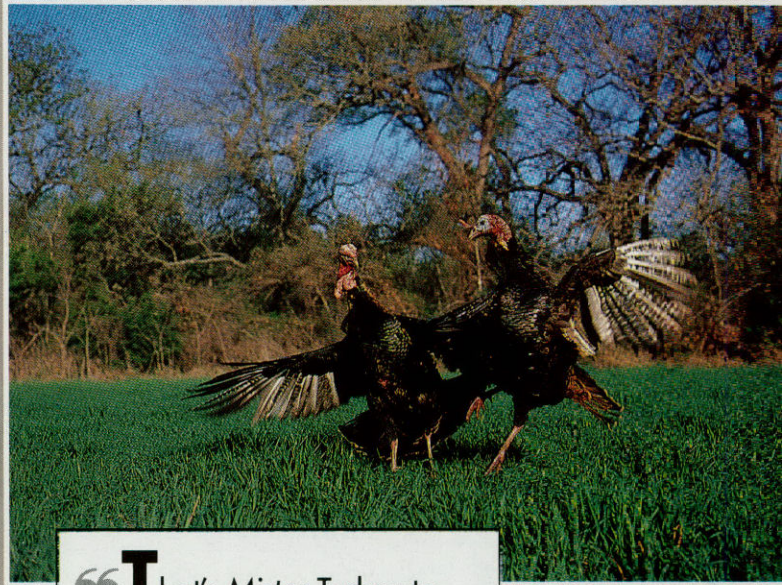


Jim W. Grace

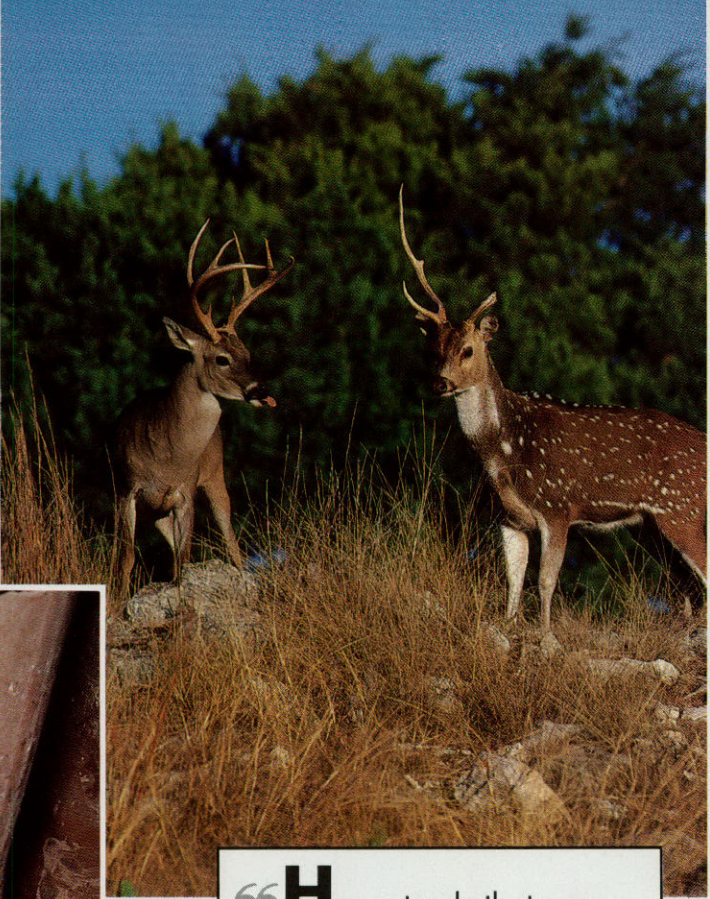
“You do the hokey pokey and you turn yourself around, and that’s what it’s all about!”



Grady Allen



“**T**hat’s Mister Turkey to you, Bub.”

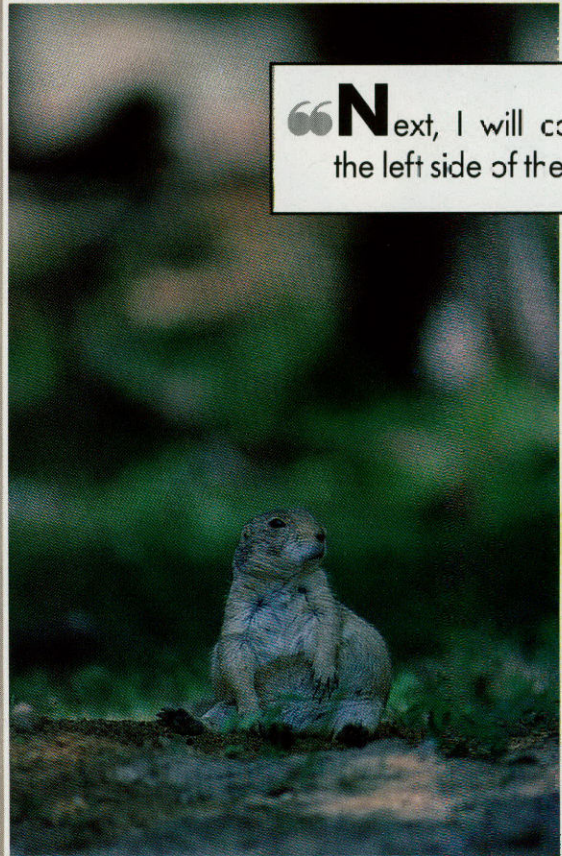


Mike Biggs

“**H**a, not only that, you got more spots on your right side too!”

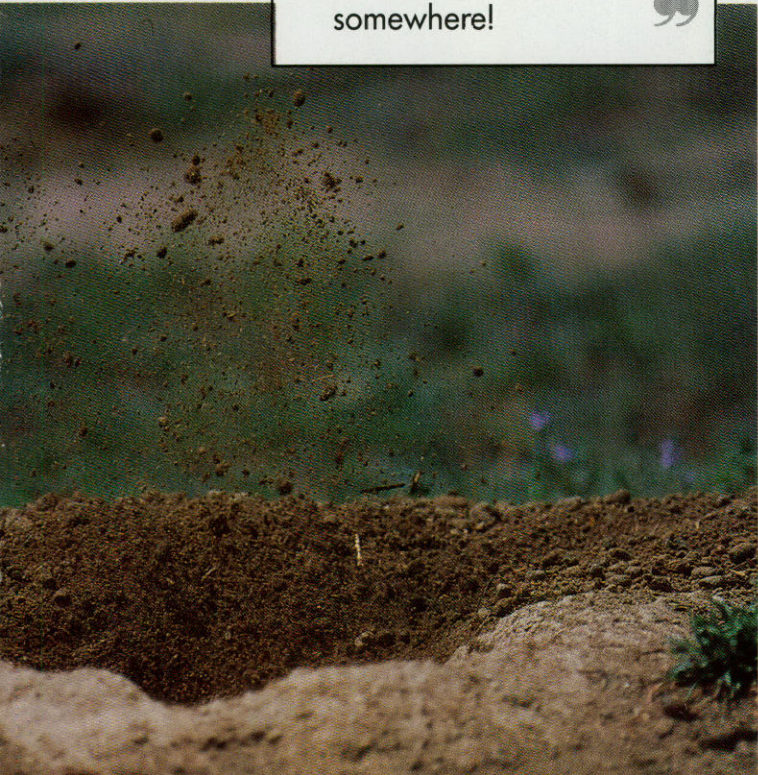


“**I**t’s just gotta be here somewhere!”



Joe Cole

“**N**ext, I will consider the left side of the menu.”



Mike Biggs

“The group was shocked to hear Myron’s views on reir carnation.”



John Peslak



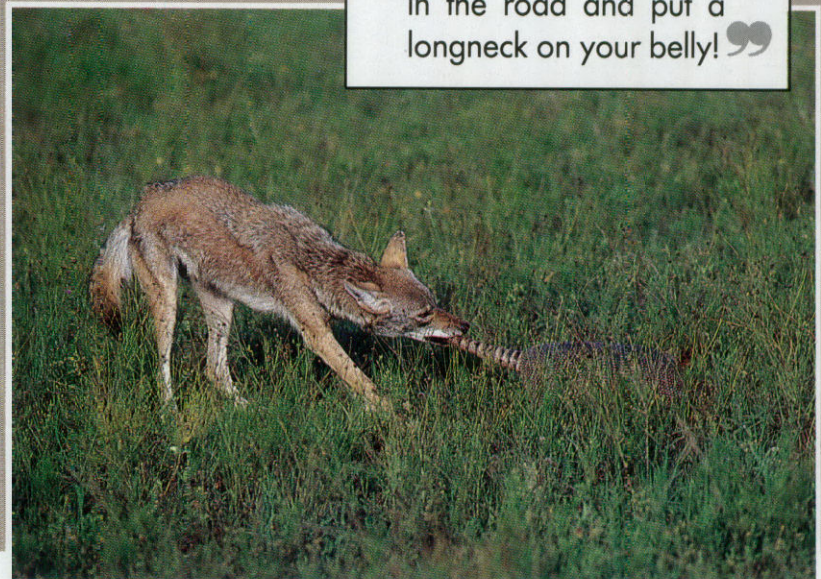
“There was no closet space and the wallpaper was tacky.”



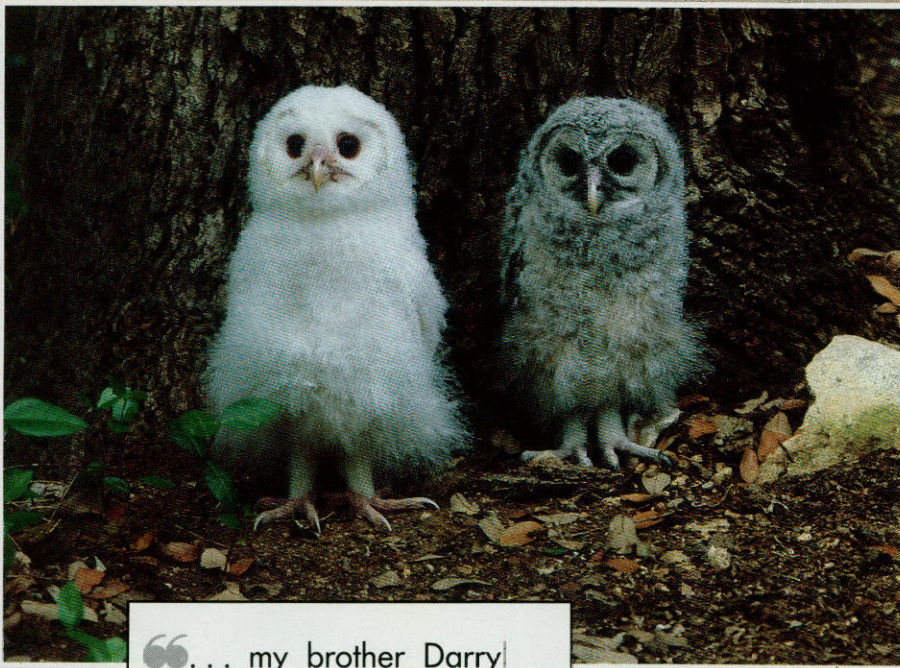
Mike Biggs

“Nobody prances across the road anymore.”

“I’m gonna drag you out in the road and put a longneck on your belly!”



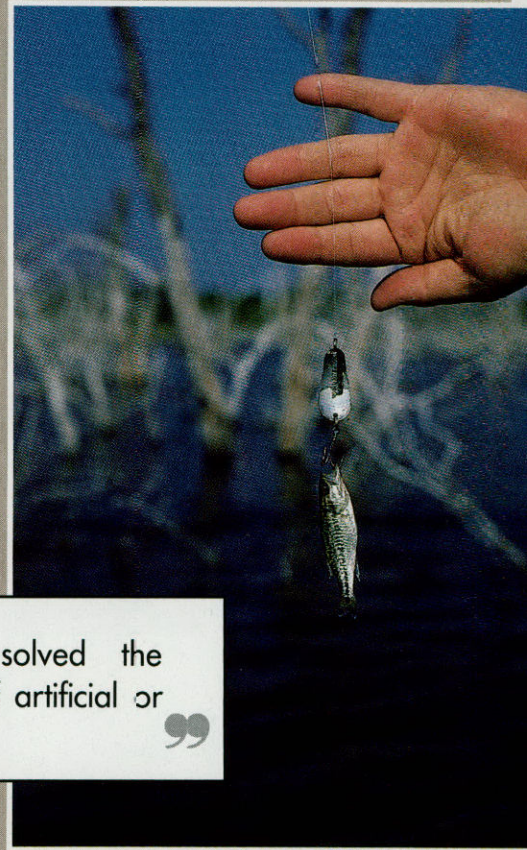
Mike Biggs



Mike Biggs

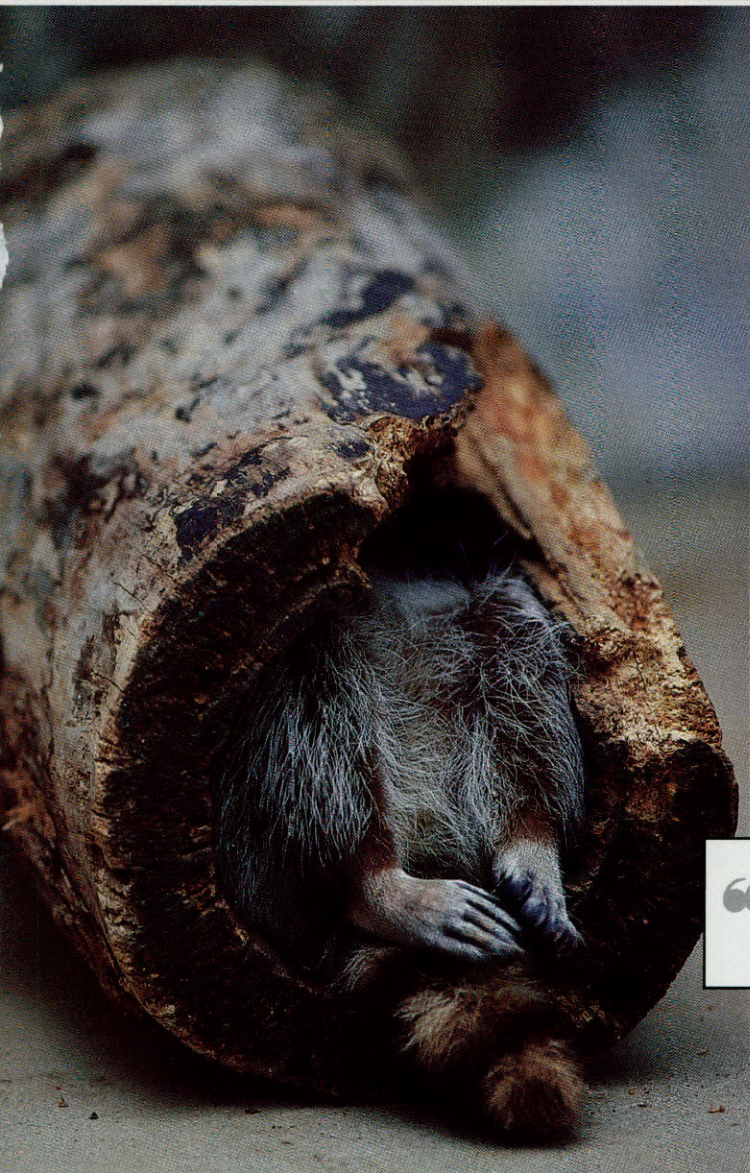
“... my brother Darryl and my other brother Darryl.”

Charlotte Kidd



“Walter solved the dilemma of artificial or live bait.”

Leroy Williamson



ANIMAL CRACKERS II

“If you lived here you'd be home now.”



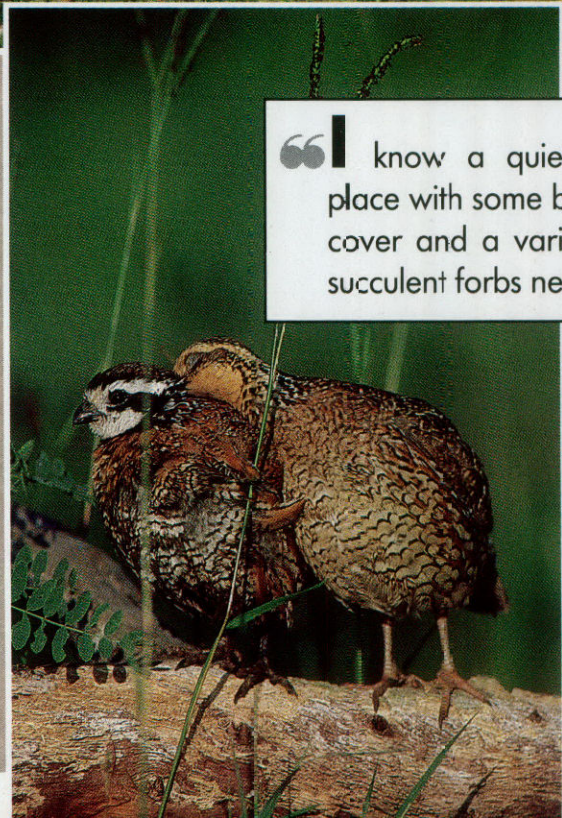
Steve Bentson

“Hey, what can I say, I’m from South Texas and that’s what I think of Hill Country racks!”



Grady Allen

“We are the world! We are the children!”



“I know a quiet little place with some broken cover and a variety of succulent forbs nearby.”

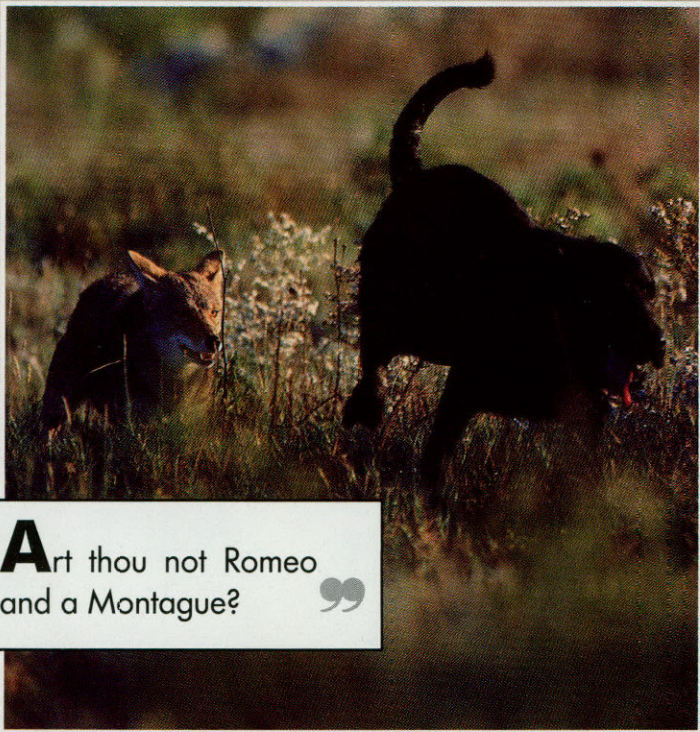
Grady Allen



Steve Bentsen

“I’d walk a mile for a carrot!”

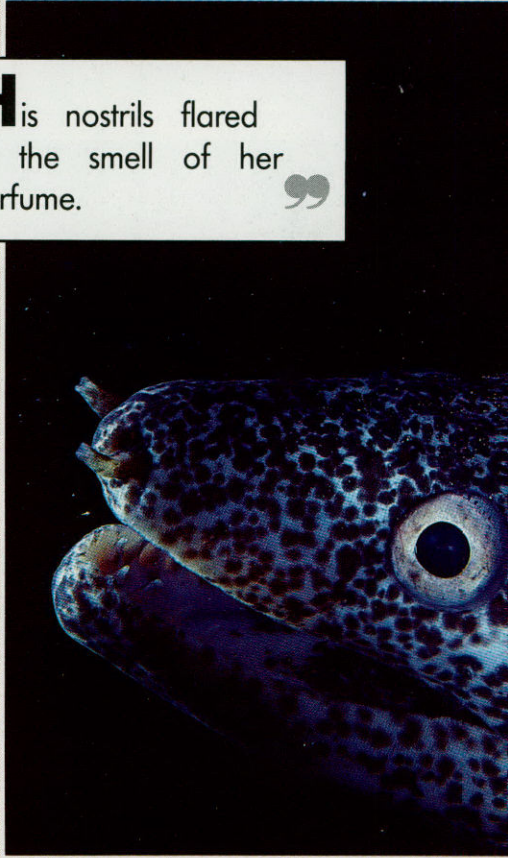
ANIMAL CRACKERS II



“Art thou not Romeo and a Montague?”

Wyman Meinzer

“His nostrils flared at the smell of her perfume.”



Stephan Myers



“Watson is the ball carrier and he’s all alone out there!”

Jim W. Grace

PICTURE THIS

The Close-up World of MACRO PHOTOGRAPHY

by Leroy Williamson

One of the most fascinating fields in photography is macro—the photographing of small objects from 1/10 to larger than life size. Macro photos reveal details that few people take the time to see. In fact, when subjects are enlarged, they may be difficult or impossible to identify at all.

Any photographer with a 35mm single-lens-reflex has the ability to enter the glorious world of macro pho-

tography. The easiest way to get there is through a macro lens. A macro lens usually has the ability to focus as close as one-half-to-one without any additional attachments, and as close as one-to-one (life-size) with an extender. A 50mm, 90mm or 100mm macro lens will become one of those indispensable items in the camera bag. Macro lenses focus to infinity, so they can be used for general picture taking in addition to those wonderful close-

ups. Personally, I prefer the 90mm or 100mm for the added distance between camera and subject.

The least expensive way to get close is with a set of close-up lenses that screw onto your regular lenses like filters. These lenses normally come in a set of three, +1, +2 and +3 or +4. Each stronger lens allows focusing closer, and the lenses may be used in combination to create even stronger ones. For example, a +4 and a +2

Leroy Williamson





Leroy Williamson

A macro lens or a normal lens and extension tubes allow close-ups of subjects such as this scorpion and its babies. Off-camera flash used for lighting, camera hand-held.

make the equivalent of a +6. However, using more than two of these lenses in combination is not recommended because picture quality will deteriorate. Although these lenses are inexpensive, they work well and can create some amazing pictures. However, they won't do the wonders that other methods will.

For greater magnification, get a set of three automatic extension tubes for your camera. The extension tubes are different lengths and may be used individually or in any combination to control the amount of magnification. Although there is some light loss when the tubes are added, your camera will adjust the exposure accordingly.

If you want to magnify the subject even more, the next step is to obtain a bellows extension. The bellows will give even greater magnification than all three extension tubes used together. If you decide to purchase a bellows, be sure to get an auto-bellows system if your camera has through-the-lens metering so you can concentrate on the subject and not worry about exposure. With a bellows, any lens may be used, including wide-angle lenses, which give greater mag-

nification than longer focal lengths.

An inexpensive way to get into macro photography is to purchase a lens-reversing ring for approximately \$5. This reversing ring allows putting two lenses together for great magnification. The ring screws into the filter threads of the lens mounted on the camera and the second lens screws onto the ring in reverse. If lenses of different focal lengths are used, the longer lens must be mounted to the camera body and the shorter lens mounted to the longer lens. Again, there will be some light loss but automatic cameras will handle all exposure adjustments.

Of course, one of the problems in macro photography is depth of field. As you might imagine, depth of field is minimal and for optimum results, a small aperture is required. Minimum apertures on macro lenses vary from $f/16$ to $f/32$. Usually, it is desirable to work at the smallest aperture available. The problem now becomes one of lighting. The farther a lens is extended from the film plane, the more light loss there is. Photographing with available light may require long exposures, which in turn require a stationary subject.

Using a flash or a multiple flash setup (two or more) will provide plenty of light, and exposure can still be automatic with dedicated flash units. Your flash-to-subject distance will be measured in inches instead of feet. For photographers with non-automatic systems, a one-roll test will be necessary to determine proper exposure. Take notes detailing flash distance, aperture, lens, extension tubes used or



Leroy Williamson

A long lens used with extension tubes or bellows will fill the frame from several feet away (left). Available light, camera hand-held. A common wolf spider takes on new proportions when photographed close (right). Normal 50mm lens and bellows, off-camera flash.



The Best of Texas

PHOTO CONTEST

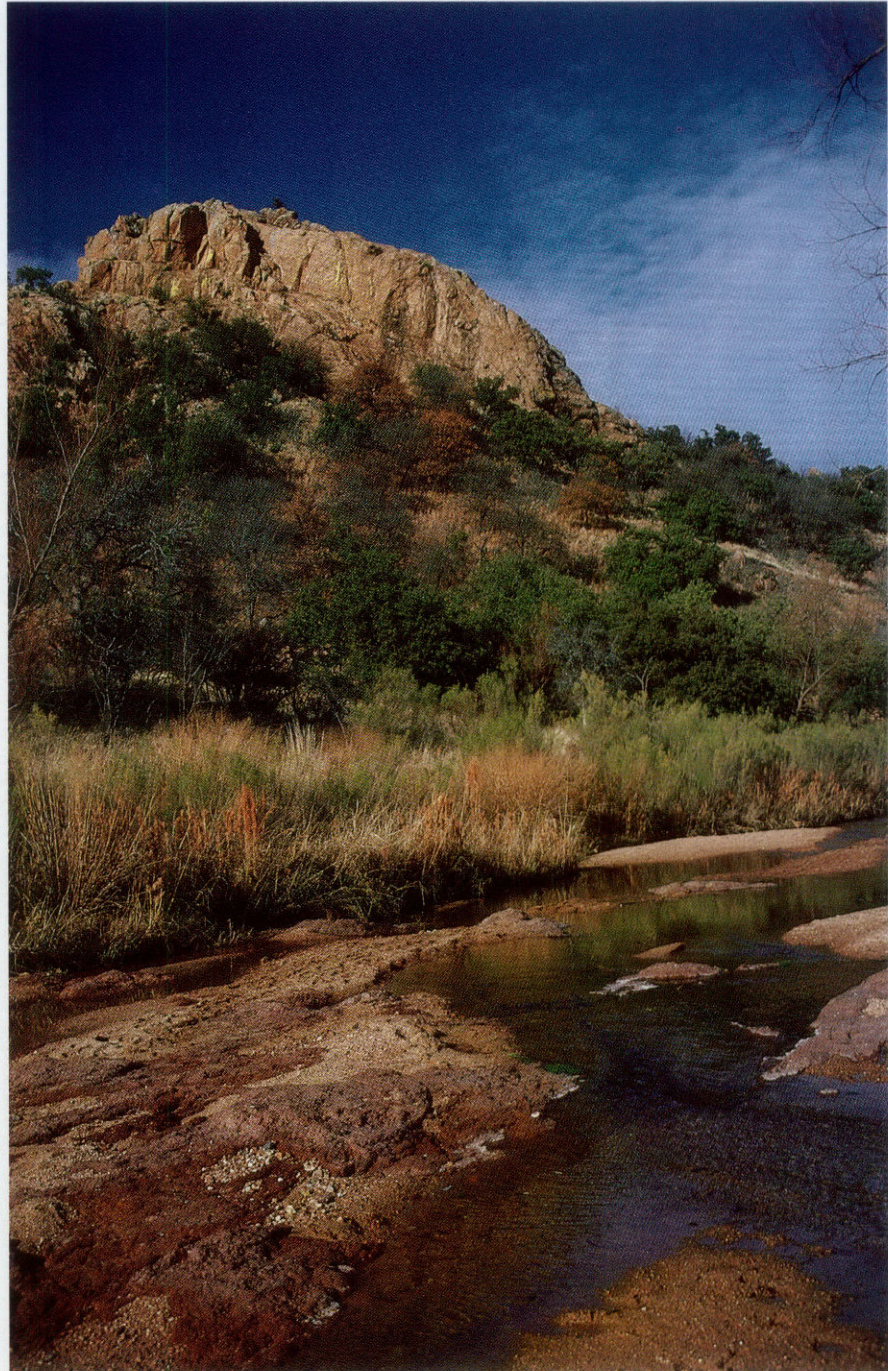
length of bellows extension, and do some exposure bracketing. To maintain maximum depth of field by using the smallest aperture, simply move the flash closer to or farther from the subject to vary exposure. When your film is processed, select the best exposures and review your notes to determine the best procedure. From now on, although a little thinking is required, you become the automatic brain for your camera.

Macro photography opens a whole new world to you. Close-ups of insect eyeballs, the inner parts of flowers, wing patterns of butterflies and moths, spiders in webs and thousands of other subjects make stunning pictures.

Another piece of equipment that is highly recommended and often required for success in macro photography is a tripod. Anytime the subject is magnified, whether through long telephoto lenses or working close, so is camera movement. A sturdy tripod will be required to hold the camera rock-steady. If the tripod can be easily adjusted you can put the camera where you want it, be it ground level or above.

With bellows or extension tubes, there is another wonderful way to get close to butterflies on flowers and other subjects while using non-macro lenses. Simply use a 100mm, 200mm, 300mm, or a zoom lens in the 80–300mm range in conjunction with extension tubes or a bellows, and you can have some frame-filling close-ups from several feet away. Your focusing range will be limited, but the results are terrific.

Using any or all of these methods to get close to the subject will open a world most people never see except in pictures. But getting good macro photos requires much more work than snapshotting. It takes time to get the camera and tripod set up. It takes time to decide where to place the flash. It takes much more time to compose and focus. There will be times when you will decide that the result is not worth the effort, but don't give up. Just think of all the people who won't have a chance to see what you are seeing unless you get the picture. **



Scenic

Leroy Williamson



Leroy Williamson

Macro



Leroy Williamson

Wildlife

Entries are coming in, but there is still lots of time to enter The Best of Texas Photo Contest. This contest is open to all readers of *Texas Parks & Wildlife* magazine except department employees, their families, and freelance contributors who have sold pictures to the magazine.

COLOR TRANSPARENCIES (SLIDES) ONLY will be accepted. These may be 35mm or larger. The photos must have been taken in Texas and be available to the magazine on a first-rights basis. Previously published photos will not be eligible. PLEASE, NO PRINTS, EITHER COLOR OR BLACK & WHITE!

THE DEADLINE is August 15. Entries received late will be returned immediately.

THE CATEGORIES ARE:

Wildlife—Any native Texas wildlife.

Scenic—The beauty of Texas outdoors.

Recreational—People enjoying the outdoors.

Macro—Close-up photos of anything relating to nature and the outdoors.

NO MORE THAN ONE PHOTO PER CATEGORY WILL BE ACCEPTED FROM EACH ENTRANT.

HOW TO ENTER—Each entry must contain an 8 1/2 by 11-inch data sheet with your name, mailing address, area code and telephone number, category, subject of photo, where and when taken, camera model, film type and exposure information, if available. Also print your name and address on each 35mm slide mount, or on an attached label for larger transparencies. Please include a stamped, self-addressed envelope for the return of your entry(ies).

Send all entries to:

THE BEST OF TEXAS
PHOTO CONTEST
TEXAS PARKS AND
WILDLIFE DEPARTMENT
4200 SMITH
SCHOOL ROAD
AUSTIN, TEXAS 78744

Winning photographs will be published in the December 1990 issue of *TEXAS PARKS & WILDLIFE* magazine. Winners will receive a one-time publication fee in the following amounts:

- The Best of Contest—\$200
- First Place, Each Category—\$150
- Second Place, Each Category—\$100
- Third Place, Each Category—\$50



Leroy Williamson

People

All winners will receive certificates of achievement and six complimentary copies of the December 1990 issue.

So get those entries in. We need your help to make the contest a success and to make the December issue bright and colorful.



A Capital Park:

Austin's McKinney Falls

by Paul Anthony Prause

A spectacular volcano erupted here millions of years ago when this was an ancient sea, forming a tropical island complete with various rock formations. Today bobcats, gray foxes, white-tailed deer, coyotes and songbirds roam the banks of a scenic creek that flows over two beautiful waterfalls. Historic ruins of a house, gristmill and horse trainer's cabin built by the man who helped found Galveston and finance the Texas Revolution also are present here along Onion Creek in southeastern Travis County.

McKinney Falls State Park is located approximately 13 miles southeast of the State Capitol at the confluence of Onion and Williamson Creeks. The natural beauty of the area is the result of ancient geological processes beginning about 80 million years ago, when a broad, shallow Cretaceous sea covered the Central Texas area. When the sea was blasted by violent volcanic explosions, the debris was hurled for miles. As the ash settled to the ocean floor it formed a low island. The now-inactive volcano, called Pilot Knob, is located just south of the park.

The two waterfalls are the highlights of McKinney Falls State Park. The Upper Falls (left) can be seen from the deck of the Visitor Center. A variety of trees contribute to the park's beauty.

Ground shell fragments accumulated around the island shore as a result of wave action. Limestone beach rock formed as the shoreline deposits were compressed by more marine sediment that eventually buried the island. Some 20 million years later, the sea began to retreat and more land became exposed to the ravages of erosion. "As the water began to recede into the ocean, it formed the grassy areas and the woods and enabled the plants to come in," said Scott Galaway, an interpreter at McKinney Falls.

The earliest inhabitants in the area date to nearly 8,000 years ago, when

small bands of Indians lived by hunting and gathering along streams like Onion Creek. Approximately 2,000 years ago, rockshelters or overhangs became favored camping spots in Central Texas. The Smith Rockshelter, on Onion Creek in the park, was inhabited from the late archaic period to historic times according to evidence uncovered during archaeological investigations at the site.

Among the most recent native Americans to live in the area were the Tonkawa, a nomadic tribe. They had no fixed homes and relied on small, squat brush huts for shelter. Few in



Leroy Williamson

number, the Tonkawa were no match for the Comanche, with whom they competed for scarce buffalo. The loss of their hunting grounds impoverished the Tonkawa and forced them into exile.

The first landowner in the McKinney Falls area was Santiago del Valle, a resident of Saltillo, Mexico. In 1832, he bought 10 leagues (more than 44,000 acres) along the Colorado River from the Mexican state of Coahuila y Texas. But the park is named for the first owner to live on the land, Thomas F. McKinney, who bought nine of the del Valle leagues from Michel B. Menard in 1839. McKinney came to Texas from Missouri in 1824 as one of the original 300 colonists recruited by Stephen F. Austin. McKinney's successful firm at the mouth of the Brazos River supplied aid and support of critical importance to Texas in her struggle for independence from Mexico.

Cypress trees line the banks of Onion Creek as it winds through the park (right). Ruins of Thomas McKinney's gristmill can be seen near the lower falls (below).



Stephan Myers



Stephan Myers

"He was a very influential man back during the fight for Texas independence from Mexico," said Galaway. "One of the co-founders of Galveston, he was also the father of the Texas Navy." McKinney and his wife Anna moved to the site of the park about 1849.

"He moved to Austin in his retirement years hoping to become just a gentleman farmer. But his main interests were horses," said Galaway. McKinney raised pedigree horses and had a race track on his land. The remains of his horse trainer's cabin still stand at the park. He also operated a water-powered gristmill, the ruins of which are visible at the park near the lower falls, named McKinney Falls.

"He ground flour at the mill, and it was one of the first mills around here," said Bruce R. Bunn, park superintendent. "A big flood in the 1860s took the mill out, so all that remains is some of the rock foundation." Large steel spikes remain embedded in the rock edges of the lower falls as remnants of a dam constructed to divert water to the gristmill.

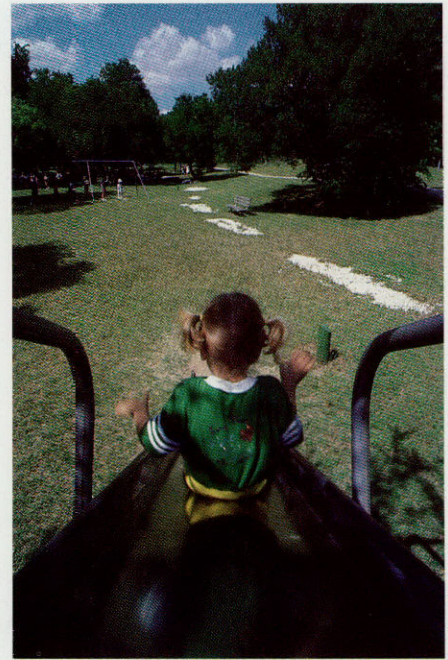
McKinney's homestead, at the junction of Onion and Williamson Creeks, also can be viewed at the park. "It's in ruins now. The archaeologists stabilized it to preserve the structure, but it has not been reconstructed," said Bunn.

Although once a wealthy man, McKinney lost his fortune because of his financial involvement in the Civil War and by speculative investments in the cotton market. He died in 1873 at the age of 72 and is buried at Oakwood Cemetery in Austin. "He died poor and Mrs. McKinney sold the land to satisfy creditors," said Galaway.

James Wood Smith, a county judge and a long-time area resident, bought the McKinney homestead in 1885. While Smith and his family owned the property, they grew cotton and corn in the open fields and grazed cattle on the sloping creek lands. The land passed through the family from generation to generation until it ended up in the hands of James' grandchildren, J. E. "Pete" Smith and his sister Annie Smith.

Pete Smith continued to graze cattle and farm, but he also enjoyed occasional family picnics along the creek and decided to open this area to the public. As head of the State Banking Board in the 1940s and 1950s, Smith was an influential, wealthy man. But neither he nor his sister had any heirs, so they donated the land to the state for a park.

Park development brought changes to the land. The property was no longer used for agricultural production, and many new facilities would be required for recreational demands.



Stephan Myers

Children flock to the playground, while older visitor: enjoy studying the many patterns in the park that were created by the forces of erosion (below).

Stephan Myers



The natural and historical features in the new park were given careful consideration in the planning process.

The park is just a small portion of the land McKinney owned in the 1800s. "It was a very good donation because Onion Creek is one of the most picturesque creeks in the state. We feel it's historically and naturally significant," said Brent Leisure, assistant park superintendent.

The park, which opened to the public in 1976, has a variety of natural and recreational areas. Onion Creek winds through the park, over a solid rock bottom. There are two waterfalls, known as the Upper Falls and lower McKinney Falls.

"The highlights are the falls themselves," said Galaway. "The Upper Falls is just outside the visitor center, so you can view it from the deck. And the actual McKinney Falls is farther downstream. You can fish in the park anywhere along the creeks as long as you have a fishing license."

"So many of the animals in the park you don't see. You may not see one wandering through the campground, but go by the creek and you'll see the tracks. Some of the animals you just don't see unless you're out at night," said Bunn.

The park attracts a variety of birds during spring and fall migrations. "Near the winter we see a lot of water-

fowl, and in the spring and summer we see a lot of songbirds," said Galaway.

An organization known as Wildlife Rescue has helped the park by taking in injured animals, rehabilitating them and then releasing them. "The program included the release of two screech owls and two little armadillos," said Bunn.

The park has many different types of trees including bald cypress, Texas oak and pecan, which grow near Onion Creek. "Along the creek you'll also have a lot of sycamores growing. And then as you move up further, you'll have live oaks and elms. We have a lot of hackberry in the park," said Bunn. In the more arid upland



areas of the park, mesquite, cedar, live oak, agarita, grasses and cactus abound.

One of the park's newest special events is Wildflower Day, held each April. "Since we get so many questions about wildflowers we decided to have one day devoted to them," said Bunn.

The Smith Rockshelter Trail allows visitors to view the many plant species in the park, and the path leads through one of the limestone shelters once used by the nomadic Indians. "You can actually walk under the rockshelter," said Galaway. Leisure added that there are several rockshelters throughout the park along Onion Creek.



Stephan Myers

A quiet pool on Onion Creek invites reflection (left). Fishing is allowed anywhere along the creeks (below); just don't forget your fishing license. Prickly pear cacti thrive in the drier upland areas of the park, a contrast with the cypress-lined creeks.



Stephan Myers

There is also a hike-and-bike trail more than three miles long, and visitors are welcome to explore all regions of the park. "I would encourage people to see areas of the park that aren't developed per se that don't have trails going through them," said Leisure.

McKinney Falls State Park is a spe-

cial place where young and old can enjoy the wonders of nature. "I've worked in several regions around the state—East Texas, North Texas and now down in Central Texas—and this is definitely one of my favorite spots," said Leisure.

"I've worked with the department for more than 14 years now and this is

my seventh park," said Bunn. "And really, McKinney Falls is my favorite."

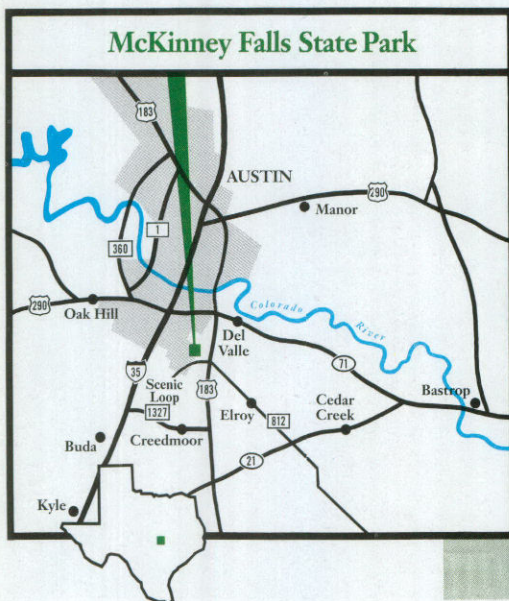
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Paul Prause is news editor of the Schulenberg Sticker. A 1989 journalism graduate of the University of Texas, Paul also received a bachelor of science degree in psychology from Texas A&M University in 1988.



Stephen Myers

Indians used this rockshelter on Onion Creek (above) from the late archaic period to historic times, according to archaeological evidence. Geological processes beginning about 80 million years ago created areas such as the one at right near the Upper Falls.



Location: Thirteen miles southeast of the state capitol building. From Austin, take U.S. 183 south to Scenic Loop Road. Travel two miles west of U.S. 183 on Scenic Loop to the park entrance.

Facilities: 84 campsites, most with water and electricity, six screened shelters and a dining hall that seats 75 and has a full kitchen, restroom facilities and a large outdoor barbecue pit. A recreation area along the banks of Onion Creek has more than 100 picnic sites equipped with tables, grills, easily accessible

restrooms, drinking water and play areas for children. In addition, a sponsored youth group area offers primitive camping for any organized youth group.

Fees: \$2 entrance fee; \$6 for tent sites; \$9 for campsites with water and electricity and \$14 for screened shelters.

For information and reservations: Call 512-243-1643 or write McKinney Falls State Park, 7102 Scenic Loop Road, Austin, Texas 78744.



Stephan Myers



The Least of Terns

Article by Lee C. Miller, Photos by Leroy Williamson

The dive-bombing began as soon as the survey team landed on the small rocky island and began their meticulous search for nests. The attack by the fearless little birds defending their nests was similar to a scene from Alfred Hitchcock's movie "The Birds." However, the survey team completed the nest count and escaped without a single injury, since these birds always pulled out of the dive an instant before striking the intruders. This is the defense behavior of adult interior least terns to discourage predators (man or beast) from ravaging their nests of eggs and young.

The least tern is the smallest North American tern. It is about nine inches long with a wingspan of about 20 inches. Adults weigh less than two ounces. These water birds have a white forehead with a black cap and a bright yellow bill. The body is gray on top with white underparts. The legs are orange, the tail is deeply forked and the leading primaries of the wings are black.

The interior subspecies of least tern was classified as endangered in the United States in 1985 and also is pro-

tected under the Migratory Bird Treaty Act. It is one of three recognized races of least terns in North America. The California least tern, a West Coast race, also is endangered. In 1985, the U. S. Fish and Wildlife Service estimated there were only 1,400 to 1,500 interior least terns breeding in North America. As many as 700 adults may breed and nest in Texas in a given year.

This tern feeds on small fish it captures by hovering over the water and plunging suddenly to grasp its prey. They may also feed on aquatic crustaceans and insects when available.

The interior least tern has been found breeding as far north as North Dakota and wintering as far south as Venezuela. However, its wintering range is poorly known.

Wildlife Division personnel of the Texas Parks and Wildlife Department performed field investigations on the interior least tern between 1984 and 1987 and found nesting colonies as far north as the Canadian River in the Texas Panhandle and as far south as the Rio Grande in South Texas. Seventeen colony sites were identified

with a breeding population between 500 and 550 terns, well above any previous estimates.

The species nests in colonies that may contain from five to 75 breeding pairs. These colonies generally are located within 500 yards of water where there is a plentiful food source. Salt flats, sand bars, barren shorelines, gravel or rock pads and other disturbed sites relatively void of vegetation are used as nesting sites.

In Texas, the tern usually nests on a sandy-gravel substrate on rivers or reservoirs. This substrate may be in the form of sandbars, peninsulas or islands which are formed by the flow of river water or the rise and decline of reservoir levels. The nest is a shallow, unlined scrape where one to three eggs are deposited. Incubation takes an average of 21 days. The young venture away from the nest when they are four to five days old, but they are unable to fly until they are about 20 days old. Both the male and female incubate the eggs.

Historically, the least terns nesting on the Rio Grande and other major Texas rivers depended on low water

levels to expose suitable nesting sites such as sandbars and islands. This is still the case on the Canadian and Red Rivers in the Texas Panhandle. However, since the Rio Grande has been controlled by dams, the terns now depend on islands, peninsulas and shorelines of reservoirs impounded by these dams. There is little if any suitable nesting habitat on the Rio Grande.

The loss of nesting habitat is probably the reason for the decline of the interior least tern in North America. This tern has evolved to nest on a particular type of substrate and depends on the flow of rivers to create and maintain these sites. Impoundments now control the flow of water on these rivers, allowing vegetation to grow on islands and sandbars. This makes them unsuitable for nesting terns and other species that require similar habitat.

Survey techniques for interior least terns in Texas since 1984 include surveys from helicopters, fixed-winged aircraft, boats and the ground. Helicopter and fixed-wing aircraft surveys were useful in locating tern colonies along major river systems because of the large area to be examined. The actual number of adults breeding in the colonies was difficult to estimate using these techniques and a follow-up ground count was necessary to obtain a more accurate estimate of colony size. On the reservoirs surveyed along the Rio Grande, boat and ground surveys were the best methods. The best survey period was found to be the first two weeks of June. During this time most eggs have been laid and few young are hatched.

Care was taken during ground surveys when young were in the nests because disturbance caused the adults to abandon the nests temporarily, exposing the young to hot temperatures. For this reason, visits to breeding sites during this period by casual observers are discouraged. Permits are required

to enter these tern colonies since the birds are an endangered species.

The number of adult terns on a particular river or reservoir varies from year to year. Location of colonies also may change. Reasons for these variations appear to be related to changing water levels from year to year. If water levels are too high to provide suitable nesting habitat, it is not known where the terns go to nest. In some cases they seem to be able to delay nesting until water levels recede. Interior least terns also have shown the ability to re-nest at a particular site when the first nesting attempt fails because of flooding or when nests are lost to predators.

Interior least tern surveys in Texas since 1984 have revealed more breeding adults and nesting areas than were previously known. These signs are encouraging but this dainty water bird is

still endangered and will require conservation measures at its known nesting areas for it to remain part of Texas' wildlife resources. Texans can help conserve this species by protecting its nesting areas from disturbance and by contacting department biologists if they need other recommendations for maintaining its breeding sites. The terns can be appreciated from a distance while you conserve a beautiful and important component of Texas bird life.

For more information on the interior least tern in Texas contact the Endangered Resource Program, part of the Resource Protection Division of the Texas Parks and Wildlife Department. **

Lee Miller is a wildlife biologist with the Texas Parks and Wildlife Department.



The smallest North American tern, the least tern nests in colonies near rivers or reservoirs. The nest is a shallow, unlined scrape on a site with little vegetation.

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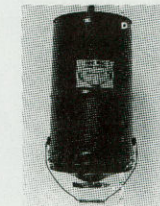
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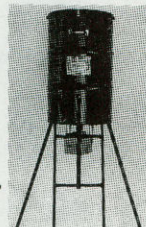


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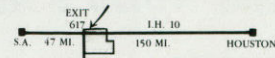
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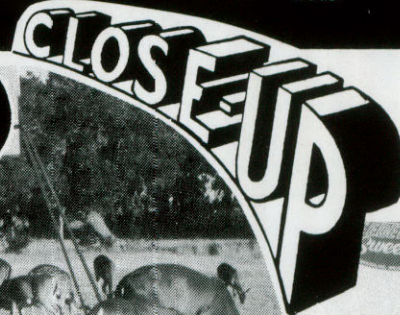


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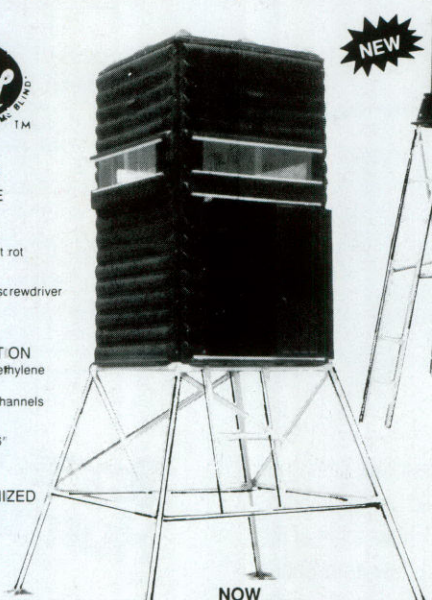
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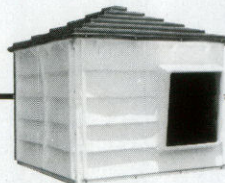
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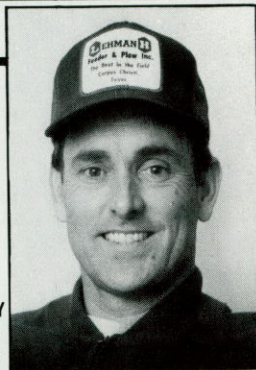
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OUTDOOR ROUNDUP by Jim Cox

Bass Tournament Earns Money for Lunger Program

A bass tournament organized by an Irving boat dealer has resulted in a \$20,000 donation to the Texas Parks and Wildlife Department's Operation Share A Lone Star Lunger program.

Kurt Kalkomey, owner of Irving Marine, underwrote expenses for the tournament which was held at Lake Fork east of Dallas during March.

All entry fees paid by 231 two-member teams for the one-day tourney were donated to the Operation Share A Lone Star Lunger Hatchery Fund. Prizes valued at more than \$60,000 were donated by merchants in the marine and fishing industries.

Kalkomey said he viewed the tournament as an opportunity for the marine industry. "An event like this may help the boat industry be aware of the need to put something back into the industry and support fishing and conservation at the same time," said Kalkomey. "The best part about this particular tournament was that it was a true benefit tournament, with all funds going to the lunger program." Kalkomey added that he hopes to make the tournament an annual event.

Bill Rutledge, hatchery chief for the department, said the members of the Lone Star Lunger Foundation will decide how the funds will be used. The foundation is supported by corporate members Lone Star Brewery, HEB food stores, Jungle Labs and *Honey Hole* magazine. The lunger program invites anglers catching 13-pound-plus largemouth bass to lend their fish to the department for research and hatchery use. Participating anglers receive fiberglass replicas of their catch, and the fish normally are returned alive to their lake of origin after spawning.

Hunting Accidents Were Fatal to 12 in Texas

Hunter education officials said 12 persons were killed in hunting accidents in Texas during 1989, the same number of fatalities recorded in each of the two prior years.

Steve Hall, hunter education coordinator for the Texas Parks and Wildlife De-

partment, said while the number of fatalities remained the same, the total number of hunting-related accidents increased from 70 to 78.

Hall said the 10- to 19-year-old age group accounted for 26 of the reported accidents, or 33 percent of the total. Next was the 20- to 29-year-old category with 16 accidents (20 percent).

Rifles were involved in 38 of the accidents, shotguns in 33 and handguns in six. There were nine fatalities involving rifles, three with shotguns and none with handguns. One hunting accident involved an airgun.

Deer hunters had more accidents than

those hunting other game. They had 35 reported accidents, followed by dove with 15 and quail hunters with seven accidents.

"As always, most of the reported accidents involving firearms or archery resulted from carelessness or ignoring the basic rules of hunter safety," said Hall. "Most of them could have been easily prevented."

All accidents are serious, Hall noted, but hunting actually is less dangerous than some other popular sports. "According to National Safety Council statistics, hunting averages 1.06 fatalities per 100,000 participants. Compare that to scuba diving at 4.5 deaths, hang gliding at over 43 deaths and

Two Traditional Hits Featured at Galveston

Two of Broadway's most popular musicals will be featured by the Galveston Island Outdoor Musicals this summer at the Mary Moody Northen Amphitheatre in Galveston Island State Park.

A new production of Meredith Wilson's "The Music Man" and a return of Rodgers and Hammerstein's award-winning "South Pacific" will play on alternate nights during the season June 9-August 24. "The Music Man" will be performed nightly from June 9-29, and on alternate nights from July 3 through August 24. "South Pacific" will play on alternate nights from

June 30 through August 25. The theatre is closed on Sundays.

The musicals are supported by grants from the Moody Foundation and the Texas Commission on the Arts, the National Endowment for the Arts and corporate and individual sponsors. The amphitheatre, which seats 1,780, is located at the western end of Galveston Island adjacent to Galveston Island State Park.

Group discounts for groups of 20 or more are available. Call Cindy Rodriguez, 409-737-1744 for information. For individual reservations call 409-737-3440.

Rodgers and Hammerstein's "South Pacific" will return to the Galveston Island Outdoor Musicals this summer. Playing on alternate nights will be a new production of "The Music Man."



parachuting at 72.5 deaths per 100,000 sky divers," said Hall.

Hall pointed out that volunteer instructors and teachers across the state conduct the department's hunter education course. The course was made mandatory starting June 1, 1988, and by September 1, 1990, will be required of those hunters born during the period September 2, 1971 through August 31, 1974. The course focuses primarily on the prevention of accidents as well as the enhancement of hunting and outdoor values, Hall said.

Hall reminds those hunters affected by the law to carry proof of certification while hunting. Proof is not needed prior to purchase of a hunting license. For more information regarding hunter education requirements, call a department office or the Hunter Education Section in Austin at 512-389-4999.

Ceremony Salutes Donation by Lubbock Attorney

Lubbock attorney William D. Armstrong was honoree at a recent ceremony recognizing him as the first private landowner to donate land under the Playa Lakes Joint Venture, a five-year, \$1.3 million program to protect waterfowl habitat in the Playa Lakes Region of Texas, Oklahoma, Kansas, Colorado and New Mexico.

Representatives of the Texas Parks and Wildlife Department (TPWD) and Phillips Petroleum Co. honored Armstrong during a sign dedication ceremony on Armstrong's farm about 12 miles southwest of Dimmit in the Texas Panhandle.

"Landowner participation is integral to the success of the joint venture, because 99 percent of the playa lakes are privately owned," said John Yoss, Phillips Petroleum regional manager for exploration and production and member of the Playa Lakes Joint Venture Steering Committee, which directs the program's activities. "That is why Bill Armstrong's donation is so important. It sets a precedent and creates a standard for other landowners to follow."

The nine joint venture partners—Phillips, the U.S. Fish and Wildlife Service, the National Wildlife Federation, the five state wildlife agencies and Ducks Unlimited, Inc.—launched the program in January and are working with landowners and other wildlife agencies to implement programs within each of the five states.

Anderson granted a conservation easement that allows the TPWD to manage his entire 640-acre farm for wildlife habitat. In addition, he leased the 160-acre area



Glen Mills

The department has been granted a conservation easement to manage a 640-acre tract, including a playa lake, near Dimmit. Playa lakes such as this one provide vital feeding and resting areas for waterfowl.

that encompasses his 52-acre playa to the department which will maintain it as a waterfowl sanctuary.

Under terms in the easement, Armstrong has agreed to limit development and grazing on his land and maintain water levels on the playa lake.

The Playa Lakes Region, comprised of 84 contiguous counties connecting five states, contains approximately 25,000 seasonally wet basins called playas. These lakes serve as a crossroads for 32 species of ducks, geese and swans during their regular fall and spring migrations through the Central Flyway.

Under terms of the Playa Lakes Joint Venture, Phillips will donate \$125,000 annually through 1994, which will be matched collectively by Texas, Oklahoma, Kansas, Colorado and New Mexico. Ducks Unlimited will match Phillips' cumulative \$625,000 cash donation, and will contribute the funds in Phillips' name for waterfowl enhancement in Canada.

TPWD officials said Phillips' contribution is the largest single private cash donation to date for any wetland conservation project under the auspices of the North American Waterfowl Management Plan, adopted by the United States and Canada in May 1986 and signed by Mexico in 1988.

Trumpeter Swans Make Historic Texas Visit

A chain of golf course lakes at a suburban country club may seem an unlikely place for a significant wildlife restoration story. But the midwinter visit of seven endangered trumpeter swans to the Plantation Resort in Plano was cause for quiet celebration among wildlife biologists in several states.

The big birds' migration from Wiscon-

sin is believed to be the first appearance by the species in Texas in more than a half-century, and the 900-mile flight was the longest made by any of the birds produced in a captive breeding program in Wisconsin.

Research biologist Mike Mossman of the Wisconsin Department of Natural Resources said the swans flew from Crex Meadows Wildlife Area in Wisconsin, where they were part of a complicated restoration effort for the species. The birds were hatched from eggs obtained in Alaska, and the young swans were "imprinted" to life in the wild through the use of life-sized models of adult trumpeters.

Trumpeter swans once ranged across much of the northern United States, Canada and Alaska, but their numbers were reduced by market hunting in the late 1800s. Mossman said restoration efforts have been slowed by the swans' susceptibility to lead poisoning from ingesting spent lead shot from hunters' guns. "The swans often eat seeds and tubers they pick up from wetland bottoms," he said, "and it only



David J. Sams

The appearance of seven trumpeter swans in a Dallas suburb last winter is believed to be the first visit of the species to Texas in more than a half-century.

OUTDOOR ROUNDUP

Continued

takes one or two lead pellets to sicken or kill a trumpeter swan."

The use of lead in shotshells is being phased out across the nation, and a ban on the use of lead already is in place statewide for Wisconsin waterfowl hunters. Non-toxic steel shot is the replacement for the toxic lead loads. In Texas a majority of waterfowl habitat already is included in a steel shot zone, and a statewide prohibition on the use of lead shells for waterfowl hunting will be in effect for the 1991-92 seasons.

The trumpeters arrived in Plano on December 26, 1989, and six of the seven departed in late March. A seventh was held for treatment of a fish hook injury. Three of the swans arrived in a Minnesota marsh area on April 21, Mossman said, only 65 miles from Crex Meadows.

The all-white trumpeters are the nation's largest waterfowl, with seven-foot wingspreads. All swans released in Wisconsin have yellow collars marked with individual codes. Anyone seeing one of the birds should contact the Texas Parks and Wildlife Department or other state or federal conservation agency.

Bastrop State Park Has Good Fishing Lake

If you're looking for a place to camp and also enjoy some small-lake style fishing, Bastrop State Park Lake may be the place to go.

Texas Parks and Wildlife Department biologist Charles Munger said the diminutive lake nestled in the famed "Lost Pines" area near Bastrop contains a surprising population of largemouth bass and sunfish.

"This lake is a great place to take a kid fishing," Munger said. In addition to year-round fishing for bass and sunfish, the department stocks catchable-sized rainbow trout there each winter.

The lake is good for bank fishing, as there is good access to most of the shoreline. Munger said the lake normally covers 10 surface acres, but recently dry conditions have dropped it to around four acres.

Recent electrofishing samples indicate the lake has a good population of small largemouth bass. However, seven percent of the bass collected that were eight inches or longer also were longer than the 14-inch minimum legal length.

Sunfish were collected at a rate of more than 1,200 per hour. Munger said bluegill and redear sunfish were the most numerous, and the redears had the largest average size.

For information or campsite reservations at Bastrop State Park, call 512-321-2101. There also are two other fishing lakes within a short distance. Buescher State Park, which is adjacent to the Bastrop Park, has a 15-acre lake that has good fishing for bass, catfish, sunfish and a wintertime trout fishery. Just across State

Highway 21 from Bastrop State Park is 900-acre Lake Bastrop, a power plant reservoir owned by the Lower Colorado River Authority (LCRA).

Beat the Drum for the Croaker Clan

Many Texas coast anglers are aware that spotted seatrout and some other saltwater trout species are related; they also probably figure that red drum (redfish) and black drum are relatives.

But how many realize that all these fish, plus the aptly named croaker, are all members of the same family?

They are all members of the Sciaenidae family, which is comprised mainly of drum and croakers. The family is noted for the characteristic drumming or croaking sounds some of them make with their air bladder muscles, according to Texas Parks and Wildlife Department fishery biologist Norman Boyd of Port O'Connor.

Red drum, black drum, spotted seatrout (speckled trout) and Atlantic croaker are especially noted for this noise-making behavior.

In numbers of species this is the largest family of fish inhabiting the coastal waters of Texas, with as many as 17 representatives, and it also includes the freshwater drum, or gaspergou.

Boyd said that from an angling standpoint the Sciaenid family is the most important on the Texas coast. "Creel data indicate that members of this family account for five of the top seven fish most frequently brought in by Texas fishermen," Boyd said. Red drum, black drum and spotted seatrout are among the most sought after sport fish, and Atlantic croaker attract large numbers of anglers to jetties and passes each fall during their annual migration to offshore spawning areas.

INSIDE BACK COVER

Wind off the tidal flats of the Laguna Madre fills the sail of this windsurfer near Padre Island National Seashore. Read about life around the Laguna Madre beginning on page 12. Freelancer Stephan Myers shot this scene on a Nikon EL2 with a 20mm lens at f/5.6, 1/250 second on Kodachrome 25 film.



Glen Mills

This small lake at Bastrop State Park is typical of many state park lakes that offer excellent fishing recreation.