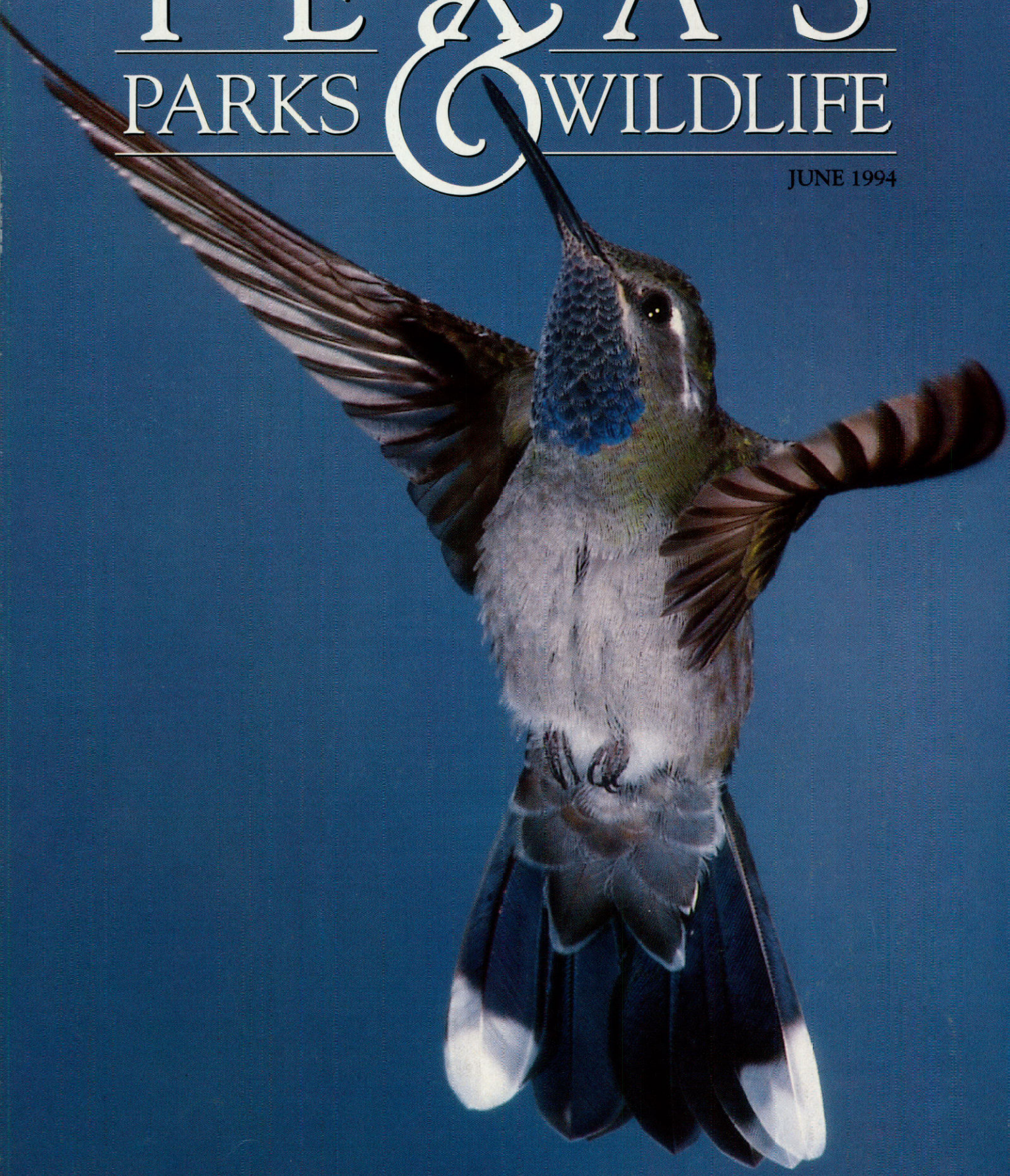


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4 BATTLESHIP TEXAS'S NORMANDY DIARY This year marks the 50th anniversary of the Allied invasion of Normandy, the first stage of the invasion of Western Europe that would bring about the end of World War II on that continent. The Battleship *Texas* played an important role in this historic event. *by Barry W. Hutcheson*

12 FRENETIC FLIERS Nothing matches the hummingbird for beauty, energy and aerobatics. Unusual musculature and efficient metabolism are among these birds' unique features. *by Kristi G. Streiffert.*

20 SEA CAMPING Not your typical summer camp, Sea Camp in Galveston gives youngsters the opportunity to learn about the coastal environment. During the week-long program, campers get an up-close look at marine life, study oysters and birds, learn sand casting and more. *by Gail Dunn*

26 LAURENCE PARENT PORTFOLIO A look at Texas through the lens of a longtime and frequent contributor to the pages of this magazine.

36 BEST STATE PARK FISHING HOLES, PART II This month we visit 18 state parks with small lakes—a half-acre to 600 acres in size—some of which can rival fishing on the big public reservoirs. *by Jim Cox*

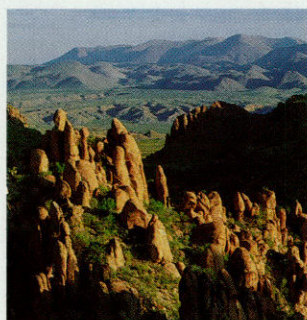
44 PAPER CASTLES Living together in well-organized communities, paper wasps chew plant fibers to make paper, then use their mouths and legs to build cone-shaped cells that make up their modular homes. *by Janet K. Edwards*



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C O V E R S

Front A blue-throated hummingbird hovers below a columbine blossom. Hummingbirds bring a flash of brilliance to backyard feeders each summer. See story on page 12. Photo © Sid and Shirley Rucker, Nikon F-4 camera, 300mm 4.5 Nikkor lens, f/22 at 1/250 second, Fuji 100 film.



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Inside Front Paper wasp nests are a familiar sight across Texas. See story on page 44. Photo © Stephan Myers, Nikon EL-2 camera, Nikkor 55mm macro 3.5 lens, f/22 at 1/60 second with two strobe flashes, Fuji Velvia film.



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Back This photo of a wind-gnarled live oak at the Aransas National Wildlife Refuge is one of hundreds contributed through the years by Austin freelancer Laurence Parent. See more of his work beginning on page 26. Photo © Laurence Parent, Linhof Technika 4X5 camera, Nikkor 150mm 5.6 lens, f/22 at 1/4 second, Fuji Velvia film.

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AT ISSUE

A while back I was in Fredericksburg and spent some time at the department's Admiral Nimitz Center, which is the leading interpretive museum in the United States for the Pacific War. As I browsed through the exhibits depicting the life and times of one of history's greatest military leaders, I heard a child ask her father if Chester Nimitz was a girl. She was understandably confused by a 19th century photograph of Nimitz as a small child wearing a fancy gown, like all pampered toddlers of the day wore, regardless of gender.

It occurred to me later that the man and his daughter left that day with a new and shared understanding not only of a culture long since disappeared but of the unique life and times of a remarkable American. Today, our generation has assumed responsibility for a world freer than at any time in human history because of the contributions of the previous generations whose culture seems so different from our own. We at Texas Parks and Wildlife take this responsibility seriously, as Barry Hutcheson's piece on the Battleship *Texas* reveals.

This is an expensive commitment. During the past several years the department has spent more than \$14 million on the battleship to ensure that its hull will last until the next generation, and to preserve and interpret the ship to a standard worthy of its place in history.

In the coming years at the Nimitz Center, a new Gallery of the Pacific War will take shape and will bear the name of former President George Bush, who served under Nimitz and was a hero of that conflict. Much more funding will be necessary for our work at the Nimitz and the battleship. Contemporary Texas leaders including Marshall Steves and Admiral Chuck Grojean of San Antonio have joined forces with Baine Kerr, former president of Pennzoil, to raise private funding for the George Bush Gallery of the Pacific War.

Although the Cold War is over, the world still is troubled. The insights to be gained on the bridge of the Battleship *Texas* or in Fredericksburg alongside an A-1 Avenger like that flown by George Bush over the Pacific 50 years ago help us understand what we are dealing with today and the character of those who made it possible for us to be here at all.

—Andrew Sansom, Executive Director

In July...

Next month we'll visit several interesting places, including Palmetto State Park in the beautiful Ottine Swamp environs of Gonzales County, Indian Lodge in Davis Mountains State Park and Guadalupe Mountains National Park in the Trans-Pecos, right. We'll also go bow-fishing for gar, fish for largemouth bass from kayaks and explore the best fishing spots at state parks located on major reservoirs.



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TEXAS PARKS & WILDLIFE

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

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On the Border

Thanks for the attention to the Rio Grande in your April issue. Having lived adjacent to the river in the Upper Valley of El Paso for a number of years, walked its banks in New Mexico, fly-fished its waters in Colorado, hunted doves in fields abutting it from Fort Hancock to Presidio and floated on it through Mariscal Canyon, I love the river and its romantic name and feeling. At times, however, the Rio Grande is so depleted that Will Rogers once quipped, "It is the only river I have ever seen that needed irrigating."

I also smile when I think of a regional meeting once held in Albuquerque at the Airport Marina Hotel overlooking the Rio Grande and the sand hills to the west that extend for miles and miles. The speaker, a new officer of the Federal Home Loan Bank of Washington, D.C., said this was his first trip west of Dallas. After reflecting on the view from his window he said, "I believe you folks are a little short on water for your marina, but you have one hell of a beach."

William A. McAlpine, Jr.
Roswell, New Mexico

Your April issue was of great interest to me since I have strong feelings for Big Bend National Park and the surrounding area. All the articles were good, and "Two Nations, One Land" by Jean Hardy was enlightening and interesting.

I have been to Big Bend National Park at least once a year for the past 10 years, some years more than once. I have hunted deer on the Black Gap Wildlife Management Area and have been to Big Bend Ranch State Natural Area twice. (It is great to be retired and have the ability to travel as I wish.) On my last trip in March of this year I included a visit to Davis Mountains State Park to watch Superintendent Kelly Bryan catch and band birds, then release them under his supervision.

Enjoy your magazine very much, no matter what subject you choose.

Austin J. Six
Irving

Ann White's article on Big Bend National Park was great. However,



the description of the South Rim as being 2,500 feet above the desert floor (a figure also used by the National Park Service) is misleading. The desert floor in Big Bend National Park, according to the literature and maps I have studied, lies somewhere around the 2,000-2,100-foot elevation line (although the desert community does extend to higher elevations). The edge of the South Rim averages about 7,200 feet in elevation, while the South Rim formation itself tops out at a little over 7,400 feet in elevation. It would seem that a more accurate characterization of the view from the South Rim would read something like, "The South Rim of the Chisos Mountains, towering more than 5,000 feet above the Rio Grande, provides the hiker with sweeping views of the Sierra Quemada, the low desert and mountain peaks in Mexico, some of which are more than 80 miles away."

At any rate, the Trans-Pecos and the Rio Grande corridor are really fascinating areas and I enjoyed all the articles.

Phillip R. Coker
Seattle, Washington

A Vanishing Breed

You had a very good letter in the March issue from William R. Waddell about his father, Tom Waddell, and the Colorado County Attwater's Prairie Chicken Refuge. I certainly can confirm that he was the prime mover in the designation of this area as the Attwater's Prairie Chicken Refuge. Not only that, Tom undoubtedly was the best game warden I have ever known. He was one of the vanishing breed that really believed in

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protection of our game and wild-fowl. It seems that the emphasis now is on accommodation of the hunters rather than the protection of the wildlife.

During his more than 50 years of service, Tom Waddell helped lay the foundation for the large herd of deer in the Post Oak Prairie region around Colorado County—a true live monument to his memory.

C. Gus Glasscock, Jr.
Houston

In Defense of the Coyote

As an avid outdoorsman and bird hunter, I want to compliment you on your magazine. I have had many wonderful hunting experiences in the great state of Texas.

Your "Parting Shot" in the March issue had a beautiful photograph from freelance photographer Tom Browning that purported to show a coyote with a bobwhite quail. As a trial lawyer, I would advise Mr. Coyote to plead not guilty. While the photograph certainly depicts a coyote with a bird in its mouth, it most certainly is not a bobwhite quail. In fact, I would use the photograph as defendant's exhibit No. 1 in the defense of the coyote.

Ken Spears
Lake Charles, Louisiana

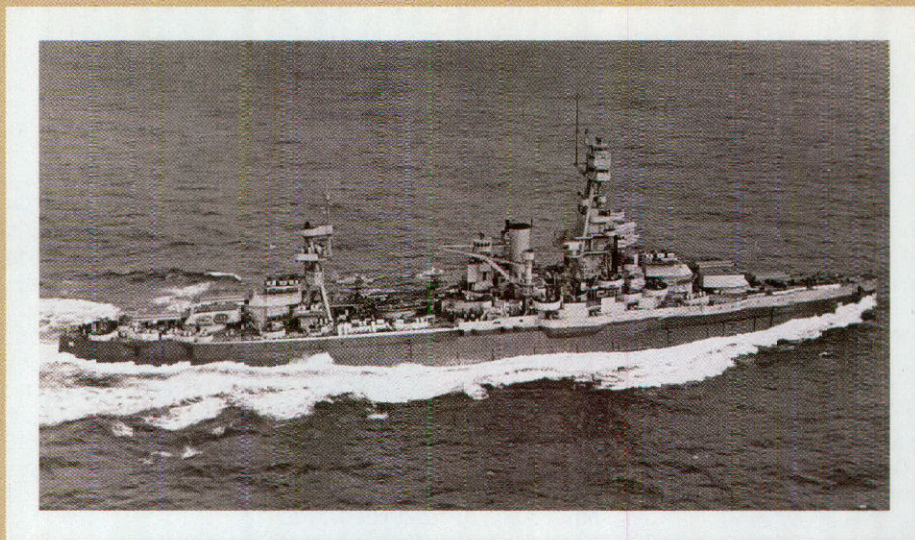
■ Guy Luneau of Kilgore also wrote in about the photo, and said that he believes the bird is a mockingbird. We called the photographer before the photo was published, and he said it was a quail. It's impossible to tell for sure from the silhouette.

Proud

My husband and his family are lifelong residents of Texas and I have enjoyed calling Texas my home for the past 14 years.

In addition to enjoying your magazine in our home each month we have given it as gifts to members of my family in Pennsylvania and Florida. With their responses such as, "My coworkers wait their turn to read it," and "We never knew how beautiful Texas is," you can imagine how proud I am to share Texas because of your magazine.

Susan Jackson
Clear Lake



Battleship *Texas*'s

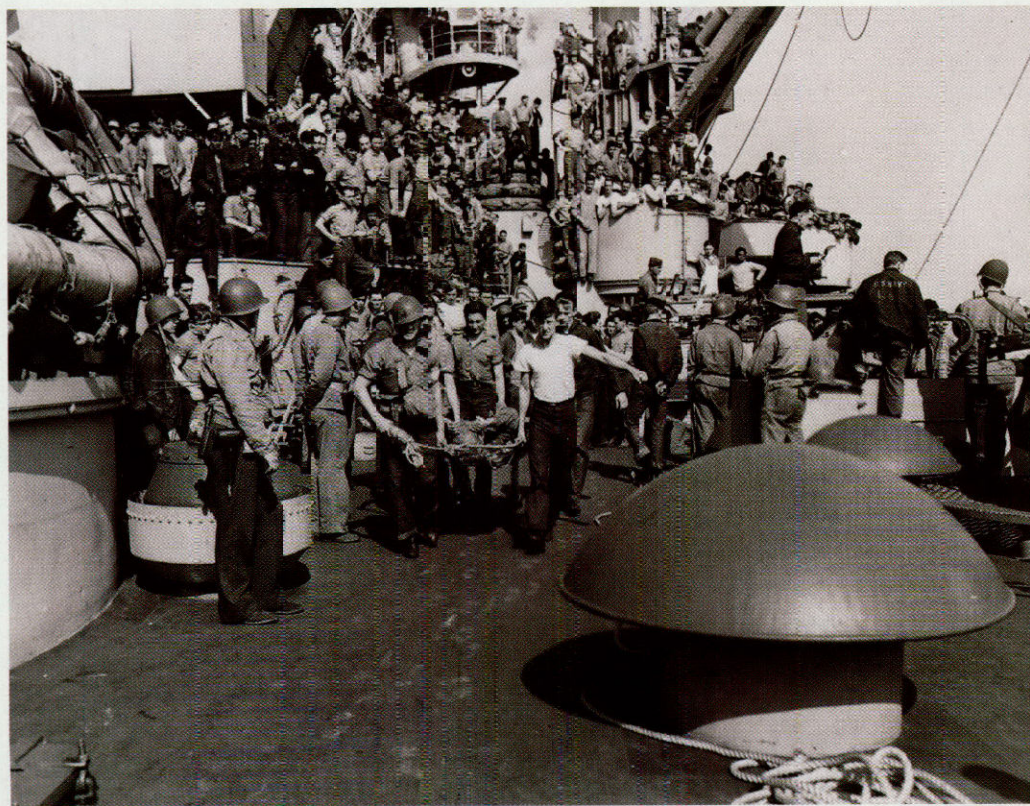
by Barry W. Hutcheson

History is hindsight. We now know that in early June 1944 the end of the European phase of World War II was less than a year away. We know the Allied forces that began splashing ashore on French beaches that cold morning of June 6 eventually would push their way into the heart of Europe and bring about the fall of the German Third Reich. We know now; those who fought and died then could only fight—and hope.

This year marks the 50th anniversary of the Allied invasion of Normandy, an operation guided by the most complicated plan written for such an assault. General Dwight D. Eisenhower, Supreme Commander of the Allied Expeditionary Force, coordinated the combined elements of the largest amphibious operation in history. The summary of the naval portion of the attack alone numbered some 800 typed pages.

SALVOS FROM THE *TEXAS*'S GUNS HELPED
ALLIED FORCES GAIN A FOOTHOLD AT OMAHA
BEACH 50 YEARS AGO DURING THE WORLD'S
LARGEST AMPHIBIOUS ASSAULT.

Normandy Diary



Battleship Texas crewmen carry a wounded Army Ranger across the deck of the Battleship Texas during the Normandy Invasion on June 6, 1944. On the opposite page, an aerial photo shows the Texas rigged for battle shortly before participating in the largest amphibious military assault in history.

The invasion would take place on five beaches located on a 60-mile stretch of the Normandy coast. The three eastern beaches—Sword, Juno and Gold—were assigned to British and Canadian forces; the two western ones—Omaha and Utah—were the targets for American troops. The American Naval Force, commanded by Rear Admiral Alan G. Kirk, included three battleships: *Nevada* was assigned to provide fire support for Utah beach; *Arkansas* and *Texas* would move toward Omaha.

The success of all the planning and preparation, all the secrecy and deception, all the efforts of amassing men,

vehicles and supplies rested on the accuracy of a weather forecast. Tidal conditions and moonlight were right for a very short time. A low tide would help the ships and landing craft of the invasion fleet avoid mines near the coast; moonlight was necessary for successful air drops behind the coastal fortifications.

The invasion first was scheduled for dawn on June 5, but high winds, rough seas and low clouds—unusual for June—moved in, and Eisenhower postponed the assault. Predictions of a brief window of opportunity for the morning of June 6, combined with the fact that the invasion force already had been at sea

since June 3 and could not reassemble after a second delay, caused Eisenhower to order the attack. A total of some 2,700 ships in 59 convoys moved toward Normandy in well-planned patterns.

Conditions onboard the *Texas* had become increasingly tense during the long wait before the attack. Since May 19, at anchor in Belfast harbor, the crew had known that they were about to be involved in something big. At noon that rainy day, Kirk and Eisenhower boarded the *Texas*. They addressed the crew, announcing the significance of the pending operations and wishing them luck. From then on, routine anti-aircraft practice, damage control drills and

Restoration and Refurbishing of the Battleship *Texas*

The *Texas* is unique among the memorial ships in the United States. She is the last of the Dreadnought class of ships which originated in the late 19th century and, for a brief time after she was commissioned in 1914, she was the most powerful ship in the world. She also is the only existing warship that participated in both world wars.

The *Texas* was decommissioned in 1948 and brought to Texas to become a state memorial. The official ceremonies included remarks by Admiral Chester W. Nimitz, previously commander-in-chief in the Pacific and a native Texan. For 40 years thereafter, thousands of people, young and old, annually visited the Battleship *Texas*.

The first major restoration work on the ship began in 1988 following five years of planning by the Texas Parks and Wildlife Department. In December six tugboats pulled the *Texas* from her berth and towed her to Todd Shipyard in Galveston to undergo extensive hull

Extensive restoration work funded by the U.S. Navy, the State of Texas and donations from companies and individuals have made it possible for the Battleship Texas, to look much as she did during World War II.

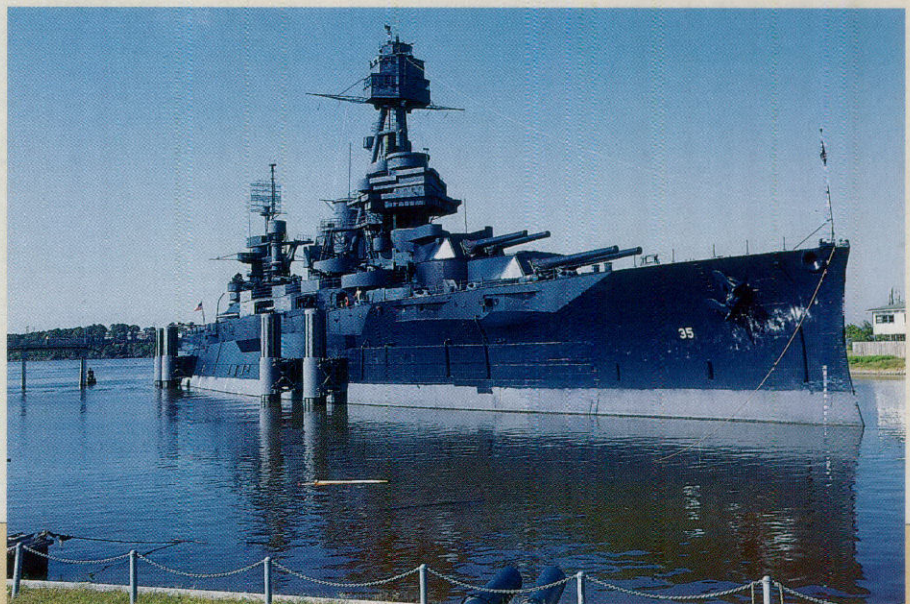
and deck restoration.

After months of work, she returned to her San Jacinto berth in 1990 and officially reopened in September with great excitement and fanfare. The restored Battleship *Texas* now appears much as she did when she served in the Pacific Theater during World War II.

Current projects underway on the ship will provide the public more information about the *Texas* and her role in naval history. Tour routes and associated displays guide visitors through the complex maze of compartments on the ship.

Some living and work spaces have been refurbished in great detail to help create a sense of the conditions that faced sailors and Marines on board in spring 1945. Eventually, some spaces never before seen by the public will be open by special tours.

Much of this effort is made possible by documentation, research and planning. Work orders for the restoration of individual compartments contain paint and fixture details discovered through careful investigation. Information provided by former crew



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The 1944-vintage photo at left shows a gunnery crew manning an anti-aircraft battery on the deck of the Battleship Texas around the time of the invasion of France's Normandy Coast during World War II.

members of the *Texas*, their photographs, documents and memoirs, are extremely helpful in restoring interior settings. Research of historical records produces artifacts and prototypes from the historic period for installation in the compartments. The final results justify the efforts.

Completion of the work planned for the battleship is a long-term goal. More than half of the funds for the exterior restoration work came from the U.S. Navy. Continuing interior restoration, refurbishing, maintenance and operation of the ship will be supported by public and private donations and by state funds. The completed project also will include a new visitor center on shore to provide administrative, exhibit and concession areas for the ship.

Battleship *Texas* currently is open Wednesday through Sunday from 10 a.m. to 5 p.m. There is an admission charge of \$4 for adults and \$2 for students. Group rates are available and can be arranged by contacting the ship's offices: Battleship *Texas*, 5327 Battleground Road, La Porte, Texas 77571, 713-479-2431. For a recorded message with directions to the battleship and other information, call 713-479-2411.

loading supplies only partially helped pass the time for the crew.

On May 22, Captain Charles A. Baker, who had assumed command of the *Texas* in early March, ordered the crew to strip the ship for action. A floating crane came alongside to help remove the ship's catapult. The crew also removed as much unnecessary gear as possible to lighten the ship and reduce flying debris during an air attack. Meanwhile, the ship's bakers baked almost 3,000 loaves of bread and stored them away to make sandwiches for use at battle stations during the invasion. Nine days later on May 31, Captain Baker ordered the ship sealed: no shore leaves and no communications off the ship would be allowed until the D-Day attack began. The crew did not know the exact time set for the invasion, but they suspected that it was close.

By studying large relief maps brought on board, the *Texas* crew learned some of the details of the coming assault. The four-mile (7,500 yard) western end of Omaha beach, they learned, was the assigned area for the *Texas*, supported by the British cruiser *Glasgow*. The *Arkansas* and French cruisers *George Leygues* and *Montcalm* drew the east end of the beach. Together the ships

formed part of assault force "Oboe."

The first targets for the *Texas* were the Germans' heavy gun emplacements at Pointe du Hoc, which were located on a 115-foot cliff and were protected by 15 feet of concrete and sand. Following four hours of heavy aerial bombing, *Texas* and her accompanying ships were to fire on the emplacements for 40 minutes. This would clear the defenses and allow troop landings to begin. The task seemed simple enough on the maps; it would prove more difficult in execution.

On Friday, June 2, the crew painted the decks of the *Texas* dark gray for camouflage purposes; they were ready for D-Day. At 0220 on the morning of June 3, the *Texas* left Belfast Lough, Northern Ireland, and sailed along the western coast of England toward the English Channel and France. When word came that the H-hour was delayed 24 hours, the *Texas* and her group reversed course for 12 hours and then turned to start again.

By 1128 on the night of June 5, the *Texas* entered her assigned mine-swept channel and moved toward her target area. At H-minus four hours, *Texas* lay about nine miles (17,000 yards) from Omaha beach. The bombing of the Normandy coastline already had begun. The crew ate their rations of sandwiches and coffee and prepared for the coming battle. Thirty minutes later, the ship dropped anchor to await the next move.

From this vantage point, some of the sailors on the *Texas* could watch the fireworks. Gunners Mate 3rd class Glenn Longendelpher, who manned one of the five-inch guns in the port aircraft, noted in his written account of the attack, "It's just like the fourth of July. The tracers of anti-aircraft on the beach and from our ships are all colors and fill the whole sky around us." Another 6th Division crewman on the portside five-

inch battery was Seaman 2nd class Marvin Kornegay, the youngest man aboard the *Texas*. As he watched the American bombers pound the coastline, he was overheard saying, "Maybe I'll be afraid, but not any more than those other guys, and I'm looking forward to showing 'em. Bring on the battle." Down below decks, crews in the gun magazines, boiler rooms and engine rooms could not see what was happening. Instead, they followed the progress of the invasion through the reports of Chaplain C. LeGrande Moody who described the action over the ship's loudspeaker system from his station on the navigating bridge.

The heavy bombing continued as H-hour approached, but the *Texas* and her accompanying ships lay silently in position. Then, as the sky began to lighten, British fighters arrived on the scene to provide air support for the assault. The *Texas* moved to her bombardment position within seven miles of the shore and prepared for a portside salvo of her 14-inch guns. At H-hour minus 40, the big guns opened fire on the cliff-top emplacements, and her five-inch guns fired at machine gun nests and pill boxes nearer the beach. For the next 40 minutes, all ships of the support fleet rained shell after shell on the German positions. About the only visible enemy fire was aimed at the Allied spotter planes.

H-Hour! The orders came at 0630 to cease fire, and hundreds of landing craft made their way to the beaches. The *Texas* had fired 262 rounds of 14-inch shells and 206 rounds of 5-inch shells at her first target area but now had to stand by until the gunnery officer could establish contact with her shore fire control party. In the meantime, the crew watched as landing craft moved to the beaches and back and saw return fire from the surviving German shore installations hit the landing boats and some of the support ships. They also noticed men swimming or floating in the water; some were rescued alive, others already were dead. At 0730, the fire control party for the *Texas* assigned her a second target, and she scored 17



direct hits with 14-inch rounds.

Action continued throughout the day, with the *Texas* delivering fire on call. Word was passed at mid-morning for all stations to draw chow, the first break in hours. At noon the *Texas* moved to within two miles (3,000 yards) of the beach. Now she could shell the coastal town of Vierville-sur-Mer, as well as observation posts, anti-aircraft batteries, ammunition dumps, village crossroads and houses farther inland.

By 2030 on the evening of June 6, the largest obstacles confronting the landing troops in and around the Omaha area had been cleared. The beachhead at Omaha was considered well-established.

Shortly before midnight came the first real air attack against the invasion forces, an attack that had been anticipated since dawn. The best of the aircraft spotters on the *Texas* was Steward's

A German prisoner of war boards the Battleship Texas during the Normandy Invasion. The battleship's shelling of the French coastline was an important factor in Allied troops gaining a foothold for pushing German forces out of France.

Mate 2nd Class Clarence E. Roper. He had acquired his skills in aircraft identification from his model airplane hobby and had been assigned a spotter's station high on the admiral's flag bridge. Roper had spent much of D-Day watching the sky for enemy aircraft. The attack finally had come at night. About 20 aircraft flew through the darkness over the *Texas*. Two of the planes were shot down by a landing craft, while *Texas* held her fire to avoid disclosing her location.

Officially, D-Day ended for the *Texas* with a warning of another air attack that never materialized. But the invasion was far from over. Fighting continued until the key port at Cherbourg finally fell

to the Allies on June 26, 1944.

During the long hours of D-Day, some 155,000 Allied troops had landed over the length of the Normandy coast. In the American sector, Utah beach proved to be a relatively easy assault. Omaha, on the other hand, was characterized by chaos and confusion. Difficulties in navigation, winds and cross tides caused some landings to be delayed, some to miss their assigned spots. At one point, one of the destroyers fired on a section of improvised road being used by the landing forces to move tanks and trucks off the beach. The

Rangers who made the initial landing were hit heavily by enemy fire and pinned down for hours. *Texas* would remain on call in support of the continuing battle until June 9 before steaming back to England for replenishment.

The *USS Texas* had played an important role in this first stage of the invasion of Western Europe. Before returning to England for fuel and ammunition, she fired 638 of her 14-inch shells at enemy positions, some at targets located nine miles inland. She also fired 237 of her 5-inch shells at shore targets. In many instances, the

accuracy of her fire meant the difference between life and death to those struggling to maintain their footholds on Omaha beach. As one of the ship's spotter planes radioed back after one successful salvo on D-Day, "GOOD SHOOTING, *Texas*." And the lucky ship had not yet been touched by enemy fire. ★

Barry Hutcheson is a planner in the Interpretation and Exhibits Branch of the Parks and Wildlife Department's Public Lands Division and recent project coordinator for Battleship Texas restoration.

Celebration to Commemorate Normandy Anniversary

Sights and sounds of the year 1944 will return to San Jacinto Monument State Historical Park on June 4-5 as the "D-Day + 50 Commemorative Celebration" salutes the role played by the Battleship *Texas* and her crew in the Allied landing on the Normandy Coast of France 50 years ago.

The *Texas*, moored a short distance from the San Jacinto Monument east of Houston, will be the centerpiece for two days of stage shows, military hardware displays, parades and ceremonies organized by the Texas Parks and Wildlife Department and the nonprofit D-Day + 50 Years, Inc. Corporation.

Among the thousands of visitors expected at the two-day festival will be numerous crewmen who were aboard the *Texas* when she shelled German emplacements during the largest amphibious assault in history—an operation that led to the downfall of the German Reich in World War II.

The D-Day + 50 organization, made

up of local veterans' groups, has been granted concession rights for the weekend, and all profits from sales of souvenirs, food and drinks will be donated to the battleship's restoration fund, according to Dale Martin, special projects superintendent at the San Jacinto complex. Admission to the grounds will be free, Martin said, but a fee of \$4 for adults and \$2 for students is charged to board the ship. He added that a shuttle bus system is being planned, and veterans' organizations are urged to charter buses to facilitate parking.

Sponsors said the celebration will have

national significance, as it is one of four major D-Day commemorative events to be held that weekend, the others being in Washington, D.C., Virginia and Salt Lake City, Utah.

Veterans of the Battleship *Texas* will be in Houston for their annual reunion that weekend, and other veterans' groups are encouraged to register and occupy tents that will serve as headquarters for the various military outfits.

A stage to be erected near the starboard bow of the *Texas* will be used for continuous shows from noon to 8 p.m. on Saturday and noon to 5 p.m. on Sunday, featuring bands, dancers and other entertainment of the 1940s era. A parade and commemorative ceremony will be held at the stage at 6 p.m. on Sunday to recognize D-Day veterans, followed by a flyover by World War II aircraft, a band concert and possibly a fireworks show.

San Jacinto Battleground can be reached from Houston by driving east on State Highway 225 (Pasadena Freeway/La Porte Freeway) and turning north on Battleground Road. The park's telephone number is 713-479-4414. Veterans' groups or others interested in participating should call the D-Day + 50 organization's number, 713-470-9462.

The Battleship Texas's resting place on Buffalo Bayou west of Houston is adjacent to San Jacinto Monument State Historical Park. The complex attracts more visitors annually than any other facility in the state park system. This photo was taken prior to the ship's restoration.



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Hunters and Anglers Get Regulatory Bonus

Larger turkey bag limit, trophy tags for tarpon and redfish and a new muzzleloader season highlight 1994-95 regulation changes.

Commission Authorizes Tarpon, Red Drum Tags

After August 31, Texas coastal anglers lucky enough to catch a trophy-sized red drum (redfish) or tarpon will be able to keep their prize.

The Texas Parks and Wildlife Commission during March adopted a regulation establishing special tags that will allow a limited harvest of fish longer than the current maximum length limits—28 inches for redfish and 80 inches for tarpon.

Officials said opening a limited take of oversized redfish was made possible by the remarkable recovery of the species, which was at an ebb in the 1970s and 1980s. Tighter law enforce-

ment, a ban on commercial fishing, stricter bag and length limits, hatchery stockings and favorable weather apparently combined to bring reds back to abundance in the bays and Gulf of Mexico.

The 1994-95 fishing licenses will include a free redfish tag authorizing the license holder to retain one redfish longer than 28 inches. If the angler sends the tag to the TPWD with required information filled in, he or she will receive a bonus tag in the mail authorizing another trophy

red. A legally tagged oversized redfish will not count against the angler's daily bag limit of three redfish (which must measure between 20 and 28 inches for retention).

Unlike the redfish tag, the new trophy tarpon tag will cost \$100 and may be purchased beginning September 1. Good for one year, the tag allows an angler to retain one tarpon longer than 80 inches during the license year. Anglers have been prohibited from retaining tarpon caught in Texas waters since 1991, as biologists attempt

to learn more about the species which is believed to have increased somewhat in numbers in recent years.

The commission also adopted a bag limit of five per day and 16-inch minimum length limit for largemouth bass on Lake Granbury and approved minor changes in bag and length limits on bass for several other reservoirs. Consult the department's 1994-95 Fishing Regulations Guide, available sometime in August, for all changes going into effect September 1.

In other saltwater action, the commission responded to surveys indicating that overfishing is depleting numbers of immature shrimp in Texas bays by increasing the required mesh size for shrimp trawls to 1½ inches and extending the closure period for trawling, effective September 1, 1995.



Port Aransas fishing guide Wally Mayer measures a redfish that is within the 20- to 28-inch size for legal retention (right). Beginning September 1, anglers will be allowed to keep a red over 28 inches long by using a tag from their fishing license. New regulations, including larger mesh size for trawl nets, will affect shrimpers (above).



Changes Made In Turkey, Black Powder Regulations

A larger bag limit and two-zone setup for spring turkey hunting were authorized by the Texas Parks and Wildlife Commission during its March meeting.

During spring 1995 the 37-day North Zone season will open April 8, and the South Zone opener will be April 1, also for 37 days. The changes were an effort to make the spring seasons coincide with peak gobbling



© GARY KRANER

The season bag limit for Rio Grande turkeys (above) has been increased by the Texas Parks and Wildlife Commission to four in most Texas counties. The daily bag limit for pheasants (right) was increased from two cocks to three for the 1994 season.

activity by male turkeys.

The yearly bag limit was raised from three birds to four, meaning a hunter may use four turkey tags from the hunting license during the license year in any combination. Gobblers only are allowed to be taken during the spring season, but hunters should check the department's 1994-95 Hunting Regulations Guide, available in August, to determine bag limits in specific counties during the fall season. Some counties are assigned either-sex turkey bag limits.

The commission voted to close down the limited spring season for eastern turkeys in portions of six East Texas counties while efforts continue to restock



BILL REAVES

the eastern birds in their ancestral range.

A proposal to lengthen the Panhandle pheasant season was bypassed, but the commission raised the daily bag limit from two cocks to three.

The commission authorized a special muzzleloader season for white-tailed deer in 26 Edwards Plateau counties for January 7-15, 1995.

LAMPS Lights Up Deer Management

Summer is a time for fishing and camping in Texas, but landowners in East Texas should start planning to improve their deer habitat for the fall hunting season by enrolling their land in the Landowner Assisted Management Permit System (LAMPS), according to the Texas

Parks and Wildlife Department.

Scot Williamson, big game program leader, said prospective participants should call the LAMPS hotline, 512-389-4334, beginning in July for details of the system, which helps landowners better manage habitat and determine harvest rates.

During fall 1993 a total of 3,190 landowners controlling more than 2.8 million acres in the Pineywoods and Post Oak Savannah ecological regions of Texas enrolled in LAMPS. "We succeeded in getting some people to take notice that they need to do something to improve habitat in order to have deer," said Williamson.

One benefit of LAMPS to landowners is that in counties with "bucks only" regulations, operators of lands under a management plan often are issued antlerless permits because of the habitat and stable deer populations. Last year only 11,479 such permits were issued, or about one for every two hunters. "LAMPS was not meant as a way to issue a lot of permits," Williamson said, "but a way to allow some antlerless harvest in one-buck counties and to get people thinking about the habitat."

In that regard, LAMPS exceeded expectations, he said. "Of those people who called our hotline, more than 200 said they would rather have a management plan written for their property. As a result, we signed up more than a million acres in management plans."

Williamson added that of the 34,000 hunter observation cards sent out with LAMPS permits, more than 9,000 have been returned. "That's some good data we can use. The hunters reported observations of more than 100,000 deer and gave us some verification to help us adjust issuance rates in the future," he said.

A mazing aerobatics are just a part of hummingbirds' remarkable résumé.

by Kristi G. Streiffert and
Nancy Newfield

"They sneer at gravity, laugh at physics, and humble the colors of the rainbow," said Pete Dunne, bird-writer extraordinaire. And all we have to do to enjoy them is set out some sugar water. These tiniest of birds, seven of which—according to Dunne—could be mailed from Austin to Amarillo for 29 cents, can fly upside down, backward and even hover in place. Hummers seem to embody boldness: they are fearless toward humans and warlike toward one another.

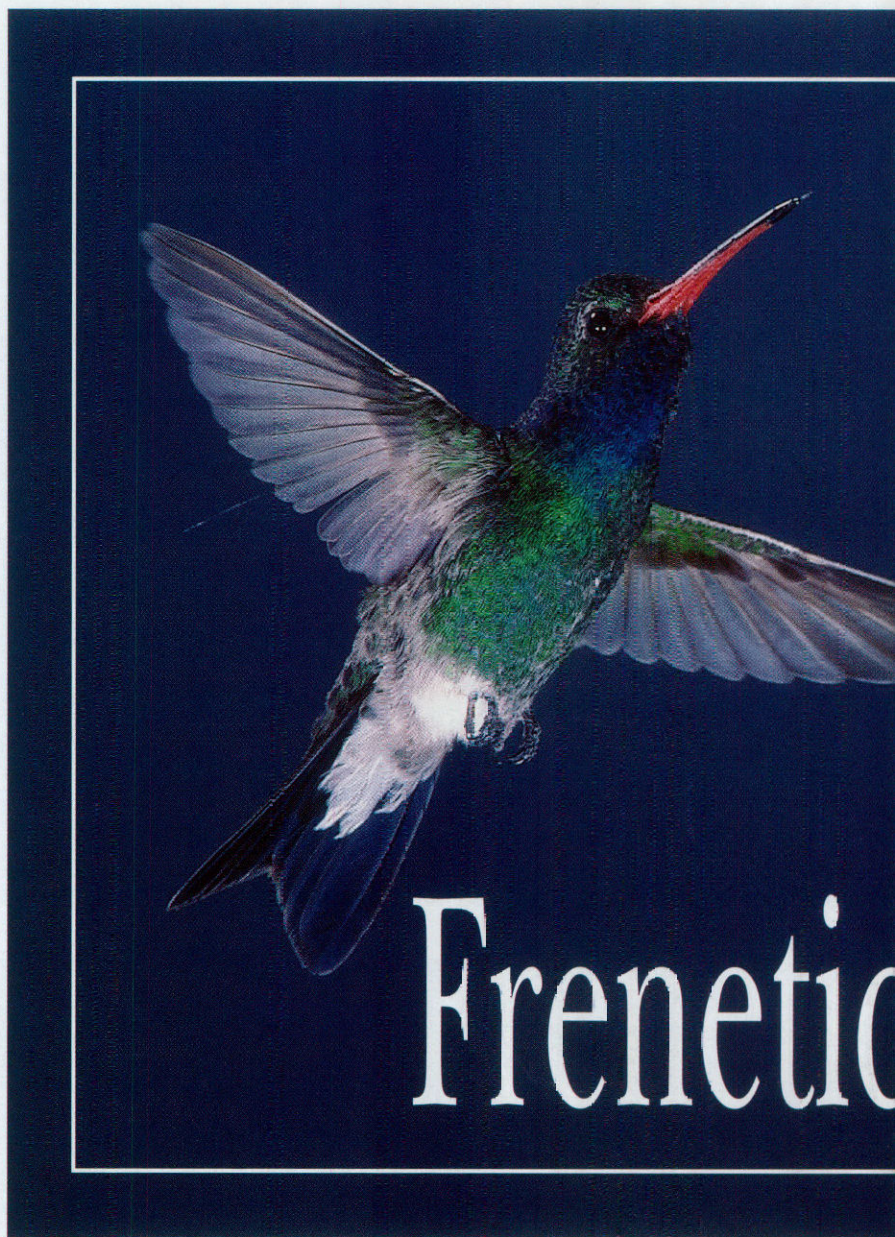
How can so much life be packed into such a tiny bundle? Biologists have been investigating the life histories of the hummers to find out. The hummingbird's unequalled flight capabilities are the result of unusual musculature (flight muscles make up 30 percent of its body weight), supple joints and amazing feather control. The hummer specializes in hovering, which is accomplished by moving the wings in a figure eight, allowing the downstroke to cancel out the upstroke and leaving the bird motionless.

Naturalist Edwin Way Teale characterized the hummer as "a bird in a hurry." Hummingbirds have such a high metabolic rate that during active periods they must eat every 10 minutes or so. If a human were to eat proportionately as much in a day as a hummer, he'd eat more than 100 pounds of food. (Humans normally eat about two or three pounds a day.) A busy hummingbird might consume its own weight in food each day. Hummingbirds need not only flower nectar, but also the protein of insects that abound in

and around flowers.

If hummers have to eat so much so often, how do they migrate 500 miles across the Gulf of Mexico in a nonstop flight? Like other birds preparing to migrate, they store fat to serve as fuel, adding to their weight by 50 percent or more.

At night, hummingbirds slow down their expenditure of energy during sleeping. In addition, they have developed the ability to become torpid during cold temperatures. This means the temperature of the hummingbird falls



Fliers

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The broad-billed hummingbird (left) is a Mexican species whose range extends into the low desert areas of Trans-Pecos Texas. Also a Mexican species, the buff-bellied hummingbird (below) can be found in South Texas. The broad-tailed hummingbird (above), is a bird of the Rocky Mountains and far southwestern Texas that resembles the ruby-throated hummer.



© ROB CURTIS

to nearly air temperature. Hummers may remain torpid during the day if it is very cold and if they are experiencing an energy deficit.

A torpid hummingbird cannot fly and, if held by hand, will chirp and move feebly. In the morning, the hummer may take several minutes to emerge from torpor.

The social lives of hummers seem designed as much to impress humans as to accomplish the tasks of courtship, breeding and territory-patrolling. With electrifying arcs, loops and hovers,

hummingbirds write love letters and territory definitions. The male's jewel-like throat feathers (gorget) are made for flashing in the face of the female, as if he were trying to blind her with his glitter. Songs and calls composed of chips, squeaks and chatters vary among hummingbird species. Most species of hummers can be differentiated by their calls, but not all species have a well-known song.

Female hummingbirds construct nests that are about the same size as themselves, using spider webs and lichens to secure and cement the soft fluff and seed down inside. She invariably lays two eggs. Hummers sometimes nest in locations that are accessible to human eyes, so an observer should watch for signs of concentrated hummingbird activity and might be privileged to watch a nest being built. One early observer of hummingbird nests wrote, "The female molded the nest like a potter, twirling tremendously around the sides, sometimes pressing so hard she ruffled the feathers of



© GREG W. LASLEY

A mostly Mexican species, the lucifer hummingbird breeds in the Chisos Mountains of Big Bend National Park.

her breast.”

The cup-shaped nest is said to open “like a flower bud, [expanding] until the little birds, all but ready to take flight, remain resting upon the full-blown corolla.” Nestlings hatch looking like pale caterpillars, but by the end of three weeks they are fully feathered and nearly ready to fledge. Mothers continue to feed their young for about three weeks after fledging, but consider them competitors after they become independent.

Texans can look forward to enjoying the company of at least one of the 10 or so hummer species that visit or

nest in the state. The ruby-throated hummingbird and the black-chinned hummingbird are the two most commonly found. The black-chinned hummingbird with its purple gorget (throat band) is a western species usually found west of the Balcones Escarpment. The glittering ruby-throated hummer nests abundantly in the eastern half of the state. The shimmering green and chestnut buff-bellied hummingbird haunts thickets and tropical gardens in the lower Rio Grande Valley, while the mountains of the Trans-Pecos host elegant broad-tailed hummingbirds and several others, including the blue-throat-

Continued on page 16

Almost everyone loves hummingbirds. Thousands of Texans watch these feisty creatures spring through fall, and some even during the winter. Most hummingbird watchers also feed hummingbirds. This allows an up-close, almost eye-to-eye view. The Texas Parks and Wildlife Department wants to use all these eyes and channel this interest into a backyard survey.

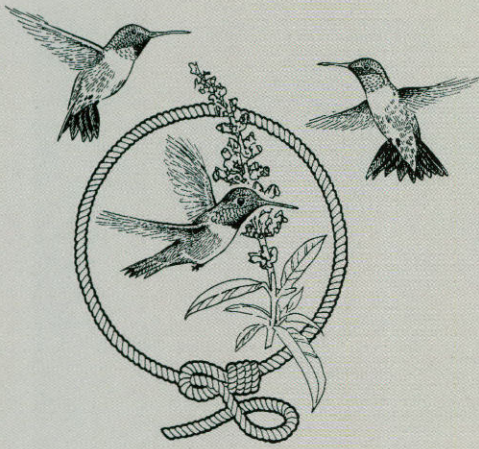
The Texas Hummingbird Round-Up is a volunteer survey designed to collect information from Texans on their backyard observations. Data will be collected on feeding, migration dates, behavior and habitat preferences for our 10 most common species. Also through this statewide effort, interested citizens can provide information on the seven “not so common” hummingbird species, as well as help us identify those birds that overwinter here. In return, the department can pass on helpful information such as feeding tips and show how surveyors can produce better habitat for these tiny creatures.

Volunteer participants will receive a package that includes the survey form, other educational tools and Texas wild-

Scientists will use information provided by Hummingbird Round-Up volunteers to augment information they have gathered from other sources, such as weighing and measuring captured birds (below). A well-planned garden (right) can attract hummingbirds to residential yards.



© BETTY BAKER



Hummingbird Round-Up

by Madge Lindsay

flower seeds that will grow into plants to attract hummingbirds next spring. The survey form has information on attracting hummingbirds to your backyard, Texas hummingbird diversity and unusual sightings to help citizens identify no-so-common birds. There also is a distribution map for the "Texas Ten"

showing where the rare and unusual species have occurred.

1994 is the first year of the five-year backyard survey and participants can volunteer year-to-year. This year's participants already have signed up and are hard at work gathering information. After this year's results are collected and tallied, the 1994 participants will receive a newsletter in early 1995 with the '94 results, along with a Round-Up decal. It's not too early to sign up for the 1995 survey.

All you need to be part of this study is a keen interest in hummingbirds, a bird identification guide and some time to watch your feeder. The birds will do the rest.

Conservation Note

Many hummingbirds are members of a larger group of birds collectively known as neotropical migratory birds. This group historically migrates to North America in the spring, where they breed, and returns to Latin America in the fall, where they winter. Neotropical migratory birds include many other bird families such as warblers and tanagers, as well as larger birds, including some species of hawks. Scientists are concerned about many neotropical migrants because these birds are losing habitat



Hummingbird researcher Nancy Newfield advocates using native plants to attract hummingbirds

on both their nesting and wintering grounds. Although it is not certain that hummingbirds are declining, little is known about our Texas birds and this study will provide additional data. This new awareness can contribute to their conservation and, we hope, allow us to enjoy them for years to come.

Sign-Up

To sign up, send a legal-sized, self-addressed stamped envelope, along with your name, address, county and a voluntary \$5 donation (to help cover the costs of the survey). This information and donation (payable to the TPWD Nongame Fund) should be mailed to:

Hummingbird Round-Up
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744.

Madge Lindsay is outreach program leader for the Nongame and Urban Program, Fisheries and Wildlife Division



Continued from page 14

ed, lucifer and white-eared. The rufous hummingbird, a native of the Pacific Northwest, brightens many areas on its southward journey through the state.

An offering of sugar water may draw hummers to your doorstep. As they lap nectar, you easily can scrutinize their tiny feet, useless for walking, and their flashing colorful garb. To mix sugar-water, boil one part sugar in four parts water. Allow the mixture to cool. Change the mixture and wash your feeder every three to five days to prevent molds from growing. Molds can make hummers sick. Food coloring, vitamins, minerals and protein are not necessary.

Better yet, plant native flowers known



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TEXAS PARKS AND WILDLIFE COLLECTION

Special gifts for Hummer lovers –

Our summer gift collection highlights hummingbirds – offering unique feeders, colorful informative books, details on our Backyard Habitat Program and the Hummingbird Roundup – not to mention the exclusive necklace and earrings shown here.



7015 Necklace, \$43

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TEXAS PARKS AND WILDLIFE

Proceeds are helping to protect and preserve our natural resources.



5C03 Feeder, \$12

Buff-bellied hummingbirds use lichens, moss, spider webs or whatever the female can find to build a nest that expands as the fledglings grow. These hummers breed nowhere else in the United States except the southern tip of Texas.

to attract hummers in your region. In 1925, bird observer George Finlay Simmons noted that the black-chinned hummingbird fed on the “laterally clustered pink flowers of the Texas buckeye, pink flowers of the Texas redbud and the rich purple and overpoweringly perfumed flowers of the Texas mountain laurel.” Planting native species also attracts the minute insects that the hummers love to pursue and snatch. Some of the best native plants for hummers are tropical sage, which grows just about anywhere, turk’s cap for the coastal areas, ceriza (“Texas Ranger”) for drier climes, and horsemint. Trumpet creeper, which blooms abundantly

The Sought-after Hummers of Texas

Some of the less often seen hummers of Texas include:

Buff-bellied hummingbird, a mostly Mexican species, is found in gardens and at feeders in South Texas and is known to nest as far north as Kingsville. The buff-bellied has a green back and throat and a chestnut tail. You can guess the color of its belly. The sexes look alike.

Broad-tailed hummingbird, the hummer of the Rocky Mountains, is found in Texas where the Rockies taper off into Mexico. Although this bird looks somewhat like the ruby-throated, the males are larger than ruby-throated hummingbirds and produce a unique loud metallic sound with their flight feathers.

Lucifer hummingbird, another mostly Mexican species, haunts agave and penstemon blossoms in the desert washes of the Chisos Mountains during nesting season. These hummers are distinguished by

At 5 1/4 inches, the magnificent hummingbird is one of the largest hummers in North America.

their long, downcurved bill. The male sports a vivid violet gorget.

Broad-billed hummingbird, found in the desert canyons of the Big Bend area, is fond of ocotillo blossoms. The mostly red bill and glittering blue throat feathers identify the male.

Green violetear, a species native to the highlands of Mexico sometimes is found at feeders in the Hill Country. This large, elegant hummer is mostly green with a blue tail and violet ear fans.

Blue-throated hummingbird also breeds in the streamside habitats of the Chisos Mountains, although most of its range is in Mexico. Its large size (4 1/2 to five inches) sets this bird apart from other local hummers.

Magnificent hummingbird, one of the largest hummers of North America at 5 1/4 inches from top of head to tip of tail, is found in the high mountain meadows and canyons of the Big Bend area and south into Mexico. Male shows purple crown and metallic green throat.



© SID AND SHIRLEY RUCKER

A female black-chinned hummingbird displays its remarkable flying skills by hovering underneath a coral bean flower.

dantly in late summer and fall, produces copious nectar to fuel southbound migrants. ★

Kristi Streiffert is a freelance writer living in Arlington, Virginia and a frequent contributor to the magazine. Nancy Newfield is a hummingbird researcher living in Metairie, Louisiana.



© GREG W. LASLEY

The Hummer/Bird Celebration

Each September the Rockport/Fulton Area Chamber of Commerce hosts a weekend of hummingbird revelry, featuring field trips, lectures and demonstrations. The 1993 celebration included workshops, bird banding demonstrations, slide shows from world-renowned ornithologists and more. To register for the 1994 Hummer/Bird Celebration (September 8-11), call 1-800-242-0071, or 1-512-729-6445.

The Beauty of Black and White

by Leroy Williamson

With the invention of photography, black and white film was king for more than 100 years. Kodachrome was introduced in the 1930s, and in the 1940s color negative films hit the market.

Early color films and processing were more expensive than black and white so, like many other photographers, I continued using only black and white film. It was 1950 before I bought my

first roll of Kodachrome film. As fascinating as it was, I saved color for special occasions and used black and white most of the time.

True, the world is in color and modern color films capture it magnificently. But the world in black and white is dazzling also. There are many subjects that black and white renders more effectively than color films.

Chances are, if you were born after 1950, you never have had a roll of black and white film in your camera. Color is the way of photography in the world today. Even the expense is reversed. Color now is less expensive than black and white, and finding a good black and white lab gets more difficult every day.

In black and white photography, taking the picture was only half the fun.



© LEROY WILLIAMSON



© LEROY WILLIAMSON

The other half was processing and printing your own pictures—watching the image appear magically as the print developed. Creative techniques in the darkroom made it possible to further enhance an already good negative, or save a negative that wasn't so good.

Black and white photography is becoming a lost art, although many scenes can be beautifully reproduced through this medium. Red, yellow, green and polarizing filters can be used to produce special effects. In the San Gabriel River photo above, a polarizing filter was used to darken the sky, and some additional darkening (burning in) was done in the darkroom.

In the photo at left, a photographer kneels to capture a scene on the San Gabriel River. A 25A (dark red) filter was used, but it had no effect in darkening the overcast sky. If the sky had been blue, the red filter would have darkened it considerably. By contrasting highlight and shadow areas, a greater illusion of depth is achieved.

For country folks who didn't process their own film, wrapping their roll of black and white film in a mailer with the proper payment (for a long time it was a quarter) and dropping it in the mail was all that was necessary. In a few days, postcard-sized pictures arrived at your door by return mail. City dwellers had no problem at all finding a black and white lab. Even small towns often had more than one black and white lab.

Filters made especially for black and white films can improve the finished prints dramatically. There are three basic black and white filters. Yellow provides the most accurate tonal correction for outdoor scenes, slightly darkens skies and makes clouds more visible. Green is especially useful in landscapes where foliage, flowers and natural sky are desired. It also records more appealing flesh tones in outdoor portraits. Red creates dramatic sky effects (almost black sky with fluffy white clouds) and simulated moonlight photos. These filters all are available in varying degrees of color, from light to dark.

Polarizing filters, primarily used with

color film, work equally well with black and white. This filter darkens a blue sky, enhances clouds and eliminates reflections. For dramatic black and white photos, use a polarizer in conjunction with a dark red filter.

It is more difficult to obtain good black and whites from color slides. To go from slides to black and white requires a copy negative on black and white film and then normal black and white processing. Making black and white prints from slides often leaves much to be desired in the way of quality. Contrast is difficult to control in the process and the resulting black and white prints

are missing the tonal range necessary for excellent prints.

By far, the best way to take excellent black and white photos is to use black and white film. Many black and white films are available, ranging in ISO/ASA speeds from 25 to 3200. As in color films, the slower the speed, the finer the grain. Any of the black and white films can be exposed at higher than rated speeds and processed with good results.

Breathtaking color is all around us and it's marvelous that we have so many color films available to record our colorful surroundings. But those who learned photography using black and white films hold a special fondness for a medium that is in decline.

While fewer people are using the medium, black and white photography definitely is not dead.

After viewing these black and white photographs, perhaps you will forgo color once in a while and try something new with an old technique. ★

Leroy Williamson is a freelance writer and photographer based in Bartlett.

Sea Camping

Article by Gail Dur



Children love spending summers at the beach or at summer camp, so what could be better than a combination of the two? For about two months each summer in Galveston there is just such an opportunity for children, called Sea Camp. A project of Texas A&M University at Galveston (TAMUG) and the Texas Sea Grant College Program, this week-long camp offers children between the ages of 10 and 16 the opportunity to learn about marine life and environments.

On a typical week of Sea Camp 52

children arrive in Galveston on Sunday and settle in for activities that begin on Monday. The participants are divided into four groups, each led by a counselor, normally a teacher earning continuing education credit. Camp director Judy Wern said the groups rotate among four activities the first two days so each group does one field and one classroom activity each day. Wednesday, all groups combine for a trip on an oyster boat. Thursday brings environmental studies and sand-casting in the morning with a workshop on dolphins

and whales in the afternoon. Friday is for shopping and working on group projects before the awards ceremonies that night.

The evenings are full, too. One night could be a pizza party with swimming and tie-dyeing T-shirts. The next night could offer a kickball tournament and scavenger hunt followed the next evening by games such as trying to form a pyramid and catching raw eggs in a basket. The week is capped off on Thursday with a beach cook-out and sand sculpting contest. Awards are on

Photos by Mario Gonzalez



*There are no ponies
or baseball diamonds
at this summer
camp, but a week
exploring Galveston
Bay's aquatic life
proves irresistible for
young campers.*

than recreation. They begin their activities as soon as they arrive on Sunday and participate in marine work such as setting crab traps, specimen collecting, fishing and environmental studies. They conduct surveys on fish and crabs and study various area marine habitats.

Sea Camp was founded by Dr. Sammy Ray, professor emeritus at TAMUG. Initially the Sea Camp program com-

bined with the Gifted and Talented program at the college each summer and drew from their experiences. The two groups shared the dormitories and college cafeteria during the summer months. Scholarships were provided by the Children's Center and the Kempner Foundation last year for children who were homeless or from substandard housing. Sea Camp also was offered on Saturdays in October for the first time in 1992. Youths from the Galveston area were able to participate on a weekly basis and cover the same activities as the summer camp. Dr. David Schmidly, campus dean, said "Sea Camp is one of our priority programs in youth education. We're fully committed to it." He added that interest in the Sea Camp program has skyrocketed recently and said parents as well as children seem pleased with what the campers learn during their stay.

Sea Camp is seen best through the eyes of the kids. While some had a bout of homesickness Sunday night, they seemed to be over it when all four groups gathered on the research vessel Roamin' Empire for a group picture Monday morning wearing their Sea Camp T-shirts. After the picture one group remained with the boat for their excursion.

Campers waded out into a salt marsh and pulled a seine back toward shore (above). Then they examined the variety of creatures that were caught in the net (right), which included shrimp, pinfish, drum, crabs and anchovies.

Friday. On Saturday new friends return home with promises to write and meet at Sea Camp again next year.

There is a Sea Camp II for youths 14 to 16, and it's designed for those who previously attended sea camps and want more emphasis on education





sion and the other three climbed into vans to journey to their first activity of the day.

As the campers donned life jackets, Captain Ron eased the boat from the dock and began the journey. The group saw ships being unloaded in port and the restored sailing ship *Elisa* in her slip. The first stop was near the Yacht Basin to learn the use of a secchi disk to measure the clarity of the water. Then a bottom grab was used to sample sediment from the bay floor. The sediment was rinsed through a screen and students looked for marine worms or polychaetes and other organisms. These were placed under the microscope for closer observation and then returned to the water.

After picking up some sargassum weed and examining the creatures it contained, the graduate student teachers deployed a trawl. While the trawl was being pulled behind the boat to collect specimens, it attracted a pod of dolphins that jumped and played as if posing for pictures. After about 20 minutes the net was brought aboard and the specimens

were sorted.

"Look at this," said Phillip Ellis, displaying a two-inch anchovy. "You'd think he has a pretty small mouth, but look." He demonstrated by spreading the enormous jaws wide. The sample contained hermit crabs, anchovies, cone jellyfish, a stinging sea nettle, a sabre fish and a large crab with an egg sac attached.

Returning to the campus dock, it was time for lunch and the afternoon of fish dissecting—optional for those who

After leaving the marsh the campers rode across Galveston Island to the beach and tried the same seining technique in the Gulf of Mexico waters (above). Upon examining their catches (right), they discovered that they caught fewer creatures in the pouring surf than they had in the marsh.

were squeamish—and fish printing on T-shirts.

The Sea Campers were up early the next morning to try their hands at seining in a salt marsh. Scott Sweet, a doctoral degree candidate, conducted the marsh and beach trips. The children waded out hip deep in the marsh and pulled the long nets back toward shore, then examined the different creatures they caught. Two pulls netted shrimp, pinfish, drum, crabs and anchovies, many of which the campers identified unassisted. Sweet pointed out differences among the species of fish and male and female crabs. He explained how sea grasses survive salinity changes, and he encouraged the students to taste the salt the plants expelled through their surface.

SEA CAMP

Sea Camp is held on the campus of Texas A&M University at Galveston during the summer months. Regular Sea Camp is offered for children ages 10 to 16. Sea Camp II is for children ages 14 to 16 and admission requires the approval of the Sea Camp director. For more information contact TAMUG Sea Camp Director, P.O. Box 1675, Galveston, Texas 77553-1675, 409-740-4525.



their release.

On Wednesday the groups met in the dormitory lounge for a brief lecture on oysters from Ray, an oyster expert who clearly loves his topic. From there the kids piled into the vans for the trip on the Bolivar Ferry across Galveston Bay to Smith Point. There they boarded Captain Joe Nelson's oyster boat for a trip on the bay.

Once underway, the children searched the still waters of the canal for alligators. Several were spotted. The campers had learned that temperature, predators, diseases and salinity affect oyster production. Ray used a salinity meter to illustrate how to determine the salinity, but Nelson demonstrated a simpler method by tasting the water and matching the meter to within one part per thousand each time.

As the boat reached Nelson's oyster lease and began to bring up the oysters the children watched the crew sort and shuck them before attempting to open some themselves. Some of the more courageous campers even ate a few raw oysters. On the return trip the boat cruised close to an island sanctuary and Ray pointed out many different species of his other love—birds.

Thursday morning the groups worked on projects and did environmental studies. Then they learned the art of sand-casting from local artist Kathy Love, making molded pictures they could keep as souvenirs. In the afternoon they attended a lecture on dolphins and whales by Dr. Bernd Wuersig. Using skulls and whale baleen to illustrate the size of some of these

marine mammals, he managed to keep an entire classroom fascinated—not an easy task with youngsters. He touched on the various marine mammals from polar bears to sea otters and explained the differences in various species of whales and dolphins. He finally was forced to stop answering questions so the group could get to the beach cook-out.

Friday the group went shopping on The Strand. They returned to the campus to finish projects for presentation Friday night. Each camper kept a notebook during the week with notes from the various activities, and each counselor chose one exceptional notebook from his group for an award. The teachers who earned credit for their participation as counselors finished their required lesson plans designed to share what they learned at Sea Camp.

In the evening campers received awards for participation and their group pictures along with any other special awards they earned. The winning sand sculpture group also was announced. Then it was back to the dorm to pack up and say good-bye to new friends.

Wern said she happened to enter a Galveston school in the fall and saw pictures of the students' favorite summer activities. One of them was Sea Camp. The best measure of success, however, is probably the children themselves.

Luke Pearson from Woodlands said, "I'm going to come here every year until I'm too old. I'm going to be a marine biologist." He also believed what he learned will help him earn a Boy Scout oceanography merit badge. Allison Koontz from Colorado learned about Sea Camp from her science teacher and wanted to attend. Amanda Longtain attended for the second time. She said, "I really liked the marsh, that and the beach party. The sand sculpture contest is a lot of fun."

Perhaps Vanessa Alvarez summed it up best. She said, "Sea Camp is fun. On a scale of 1 to 10, I give it a 15!" ★

Gail Dunn is a freelance writer based in Houston.

After examining the catches from the marsh, the campers rode over to the beach and tried again. They immediately noticed the difference in quantity as the nets were emptier in the pounding surf.

After lunch the group attended a talk on sea turtles and learned the various species of turtles and why some sea turtle species are classified as endangered. Graduate students explained the types of tags used on turtles and the efforts to establish colonies of Kemp's Ridley turtles on Texas beaches. After the lecture, they walked to a sea turtle hatchery and viewed young Ridelys being given a head start on growth before



Sea Camp wouldn't be complete without a trip into Galveston Bay (left). The students learned about measuring water clarity and sampling sediment from the bay floor. They picked up some sargassum weed and examined the creatures living in it, and deployed a trawl to catch marine specimens.

Watch Your Step

Stingrays are shy, docile creatures, but they can cause misery for the careless swimmer or wader.

"If you wait for it to swim below your hand, you can reach down and touch it as it passes by."

Trusting the advice of Jim Prapis, director of animal husbandry for the Texas State Aquarium, I rolled up my sleeve and reached down into the cold, salty water. Seconds later, my fingers brushed across a flat, disc-shaped object that looked more like a flying saucer than a fish. Undisturbed, the stingray swam on, pectoral fins undulating in graceful waves down the length of its body.

"With their barbs clipped back, they're safe enough for us to keep in a touch tank here at the aquarium," said Prapis. "But you don't ever want to step on one in the wild. As more than one unlucky wade fisherman will tell you, they can ruin your day."

The source of this concern?

"A spine strong as iron, able to pierce armor like an arrow. Driven into its root, would cause a tree to wither," is the tribute paid by the Roman naturalist Pliny, to the stingray's venomous weapon. Used only for defense, the swordlike spear located near the base of its long, whiplike tail makes the stingray perhaps the most feared and fascinating of all ocean bottom-dwellers.

Stingrays belong to class

Chondrichthyes, which includes sharks and skates. Although they have an internal skeleton of cartilage instead of bone, the stingray and its relatives are classified as vertebrates because of their well-developed nervous, muscular and reproductive systems.

According to "A Color Atlas of Dangerous Marine Animals" by B.W. Halstead, marine stingrays are distributed within six families: butterfly rays, stingrays or whiprays, devil rays or mantas, cow nosed rays, round stingrays and eagle rays. Commonly found in tropical, subtropical and warm temperate seas, most of these fish are capable of inflicting severe wounds.

At least six species of stingrays are known to occur in Texas waters, and two are common, according to "Shore Ecology of the Gulf of Mexico" by Joseph C. Britton and Brian Morton. The Atlantic stingray has a broad, spadelike shape, a pointed snout, color that ranges from tan to brown and is six inches to a foot wide.

Frequently found in bays and nearshore waters of the Gulf of Mexico during the spring and summer, the Atlantic stingray moves into deeper water (seldom exceeding 400 feet) during the late fall and winter. It can tolerate a wide range of salinities, even almost fresh waters at the mouth of rivers.

In contrast, the southern stingray is more kite-like in shape, with an angular snout and a long, more prominent fin fold on the lower (ventral) surface of the tail. Slate gray to brown in color, it has a pale blotch on its mid-forehead.

Lacking the tiny, toothlike

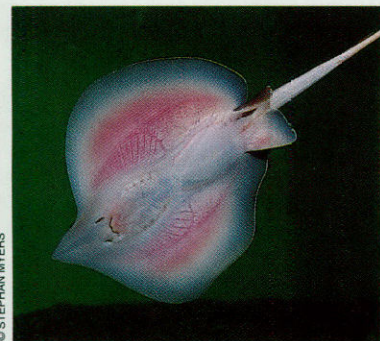
denticles embedded in the skin of their shark cousins, both of these species are silky smooth, with the exception of a row of thorny spines along the upper midline of the body. Normally shy creatures, stingrays spend much of their time buried in the sand or mud in shallow waters along Gulf beaches and bayshores. With such habits, swallowing water through the mouth to breathe (as most fish do) would quickly clog the gills of bottom-dwelling sharks and rays. Gill openings located just behind the eyes prevent this, allowing water to be sucked into the gill chamber for oxygen absorption and released through slits on the ventral surface behind the mouth.

Other adaptations allow stingrays to feed on worms, crabs, shrimp and mollusks that hide along the murky bottom. Pitted organs in the head and fins can detect weak bioelectric fields generated in water by other living organisms. A pair of wide jaws



Stingrays' camouflaged coloration and tendency to lie on shallow bay bottoms make them a hazard for unwary waders who can be struck by the ray's poisonous tail spine.

© GRADY ALLEN



The underside of a stingray reveals mouth parts containing rows of blunt teeth that allow the ray to feed on worms, crabs, shrimp and mollusks it picks up off the bottom.

on the underside of the head are fitted with blunt teeth. Arranged in rows like parking lot speed-bumps, these rigid plates have earned this fish the well-deserved nickname “clam crusher.”

The stingray’s electroreceptive organs serve a reproductive purpose as well. From late February to early March, females often announce their readiness to mate by swimming at sunrise into shallow waters and layering themselves in piles like stacks of hotcakes. Homing in on the signal, a male must grab a female’s pectoral fin with his teeth, pull her away from the pile and slip beneath her for successful fertilization, which occurs internally. Even reluctant females, who may hide themselves in the sand, can’t escape detection from the keen sensory abilities of persistent males.

Once mating occurs, the sexes resume separate, asocial lives, a trait that probably helps protect the offspring from predation. Stingrays give birth to live young, unlike some sharks, skates and rays which lay eggs that hatch outside the mother’s body. The embryos develop in the uterus within eggs that contain only a small amount of yolk. Forcibly to hatch at an early age, they receive

nourishment from hair-like extensions of the intra-uterine lining. Birth occurs later, when the young are large enough to fend for themselves.

Settling to the bottom with only its eyes, spiracles and a portion of the tail exposed above the sand, even young stingrays prefer camouflage over aggression as a primary defense against predators. However, if ambushed by a larger fish, an unwary boot or bare foot, the stingray whips its powerful tail from side to side. The slightest touch from the tail’s needle-sharp spine can cause a deep laceration. Made of a hard, bone-like material called vasodentine, the spine may range from less than an inch in length in a juvenile ray to six inches or more in an adult.

Serrated edges along the spine provide a “fish hook” effect, so that each violent thrash of the tail drives it deeper into flesh, often causing the barb to break off in the wound. Adding chemistry to mechanical injury, glandular cells within a pair of grooves along both edges of the spine (called a sheath) secrete a toxic mucous. This venom ruptures red blood cells and releases hemoglobin into the blood. This damage generates excruciating, throbbing pain and immediate swelling of the injured area and nearby lymph nodes.

If you are stung, let the wound bleed for a few moments to flush out as much poison and sand as possible. Then immerse the injury in hot water for as long as 30 minutes. Research studies indicate the toxin quickly breaks down under heat. Next, apply a mild anesthetic and seek immediate medical attention, because bits of remaining spine or sheath material can trigger a nasty infection. A physician often will begin

treatment by injecting a local anesthetic, since the pain alone can send a victim into shock. Next, the wound is thoroughly cleansed and pieces of spine (if present) surgically removed. Once the wound is properly dressed, a tetanus booster and cortisone shots are given, along with a prescription of oral antibiotics.

Although rare, death has occurred in cases where a spine implanted in the abdomen paralyzed heart muscles. Some 1,500 stingray injuries occur yearly in U.S. waters, but such accidents can be avoided. Experienced fishermen and water-sports enthusiasts know to use waders and slowly slide their feet along the sand or mud when walking in shallow waters. Given prior warning from a gentle touch or noisy splashing, the fish simply will scoot out of harm’s way.

Are stingrays good to eat?

That all depends on whom you ask. Considered “trash fish” by some, others appreciate the coarse, ivory-colored meat as a substitute for scallops. Cut away the upper and lower portions of the “winglike” pectoral fins as close to the midline of the body as possible. Then remove the skin by filleting or peeling and trim off the strip of bitter-tasting dark red meat that runs along the back.

To cook, cut the meat into bite-size chunks and deep fry with or without batter until lightly brown. Drain, salt and serve immediately as an appetizer or light meal. Another option is to broil larger sections of meat. Then season to taste and serve with lemon and melted butter. As with any other type of fish, stingray meat should be consumed or frozen quickly to prevent spoilage.

Although most fishermen do

not relish the idea of catching one, they end up having a good time anyway.

“I’m mainly a shark fisherman,” said Davey Wright of Corpus Christi, who caught the state record stingray in 1993 about 50 yards offshore at Padre Island National Seashore. “But we catch stingrays all the time, especially when they migrate during September and October. They’ll bite on whole or cut whiting and put up a real good fight. The southern stingray I caught last September weighed 239 pounds and gave me about a 2½-hour battle. They like to stick to the bottom, but they’re still a lot of fun to bring in.”

Although sometimes targeted by more adventurous fishermen, the stingray’s main predators are sharks, evidenced by stingray spines sometimes seen protruding from the head and jaws of captured lemon, bull, spinner and hammerhead sharks. I thought of this as I watched the stingray circle back around the aquarium tank that afternoon. The only thing this fascinating animal might have to fear from me was a bad case of stage fright. I couldn’t take my eyes off it.

by Janet R. Edwards

Marsh Restoration Project To Benefit Wildlife

State and federal officials and a national conservation group have formed a partnership to regulate water salinity and provide increased fish and wildlife habitat management capabilities on about 60,000 acres of coastal wetlands near Port Arthur.

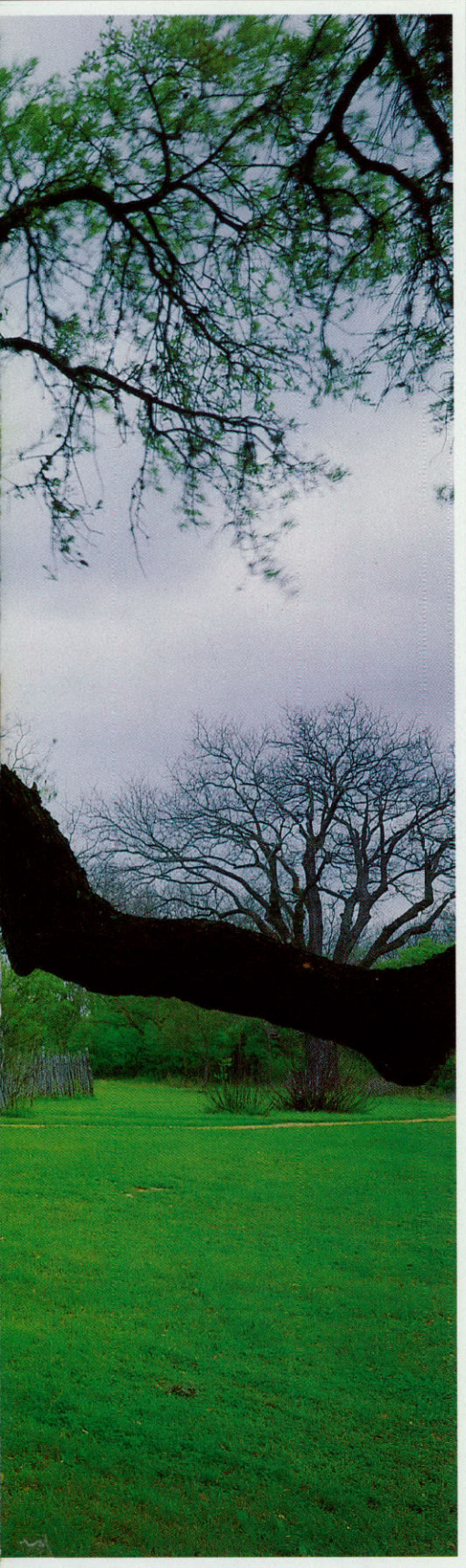
The Texas Parks and Wildlife

Continued on page 54



PHOTOS © LAUFENCE PARENT

Above, the Sam Ealy Johnson Cabin at LBJ National Historical Park. Right, one of the seven



LAURENCE PARENT

P O R T F O L I O

Were it not for the oil industry bust, the photos of Laurence Parent might never have graced the pages of this magazine. Armed with a petroleum engineering degree from the University of Texas, Laurence worked the oil patches for six years, putting aside seismograph charts and picking up a camera full-time in the late 1980s.

His dad was a park ranger at Carlsbad Caverns and did much of the photo work for the park service there and at Guadalupe Mountains, possibly how the son came by his love of photography.

Most of these photos were taken with a 4x5 large format camera. Knowing that Laurence carried around 40 pounds of camera gear all day should help us appreciate his work even more.

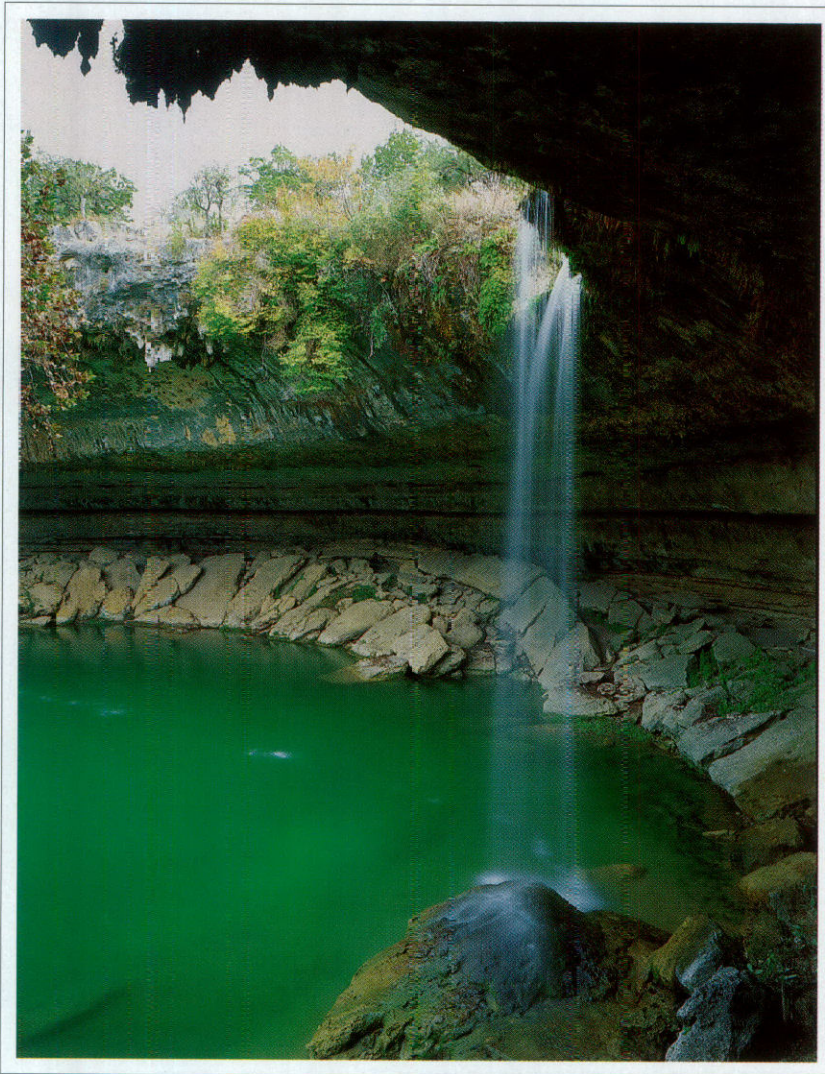


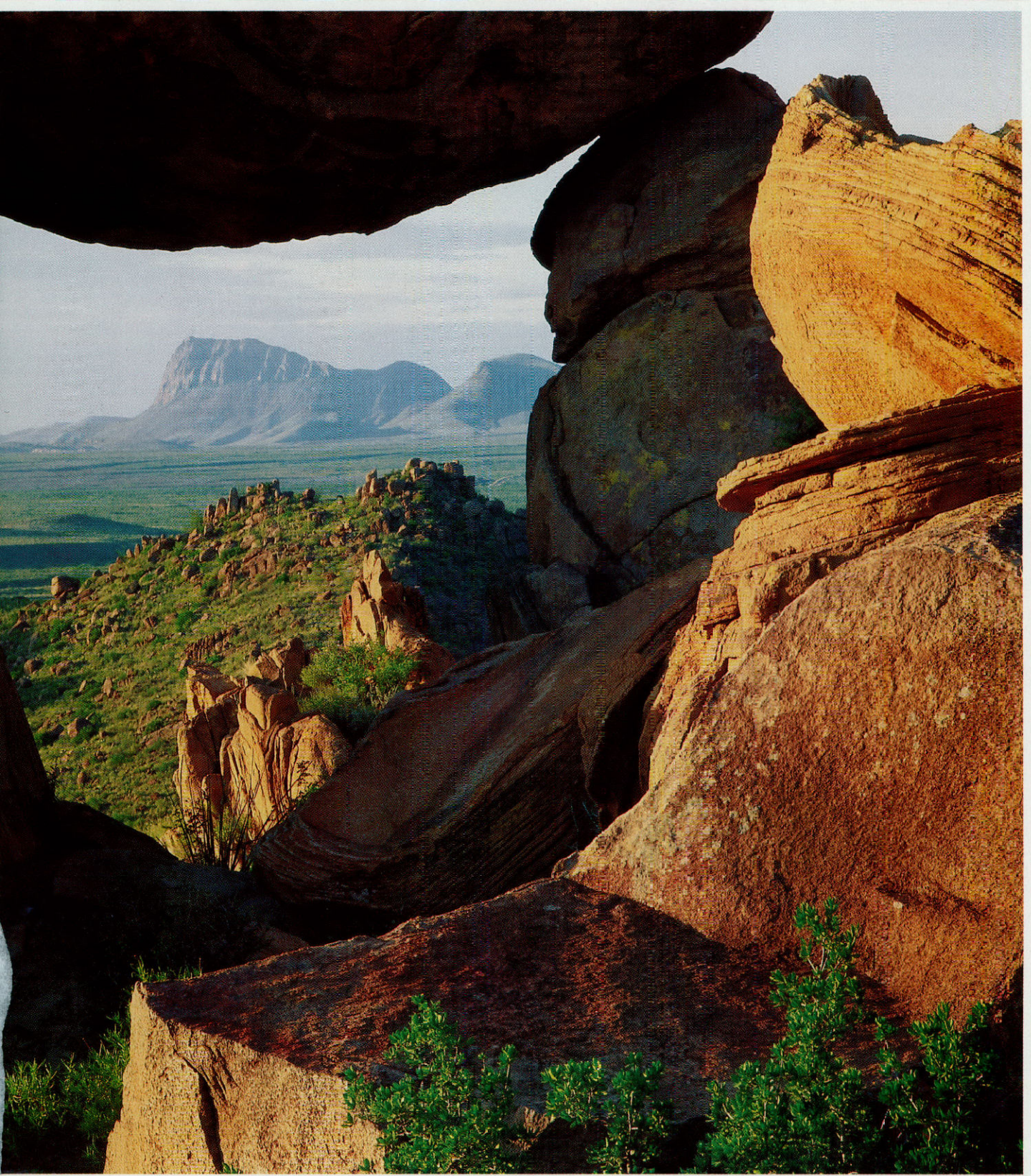
iradores that line Ocean Drive in Corpus Christi.



L Laurence had to slog through marshes to get this sunrise shot of one of the few remaining live oaks on Padre Island National Seashore (left).

Hamilton Pool waterfall outside Austin (below) has cooled down many an overheated UT engineering student. At right, the arch in Big Bend National Park's Grapevine Hills.







A little bit of Vermont along the Sabinal River in Lost Maples State Natural Area northwest of San Antonio.

LLAURENCE **P**PARENT
P O R T F O L I O



*O*fficers' quarters lined up dress-right-dress at Fort Davis National Historic Site in West Texas (left). Mammatus clouds of a passing storm (below) catch the sunset near Laurence's home in Hays County.



The day begins over a deserted *Bryar Beach State Park* near *Freeport* on the upper *Texas* coast. Below, a view of the *Devil's Sinkhole* near *Rocksprings* from the inside out. *Laurence's* spelunking skills were acquired while growing up at *Carlsbad Caverns*.





The spring beauty of Indian blanket and coreopsis is our reward for Laurence's enduring chigger and fire ant bites while down on all fours taking this bucolic shot.



© BILL REAVES

that a state historical marker be erected on the site to commemorate the name Thompson's Island. "It's a beautiful spot. The stones used in building the dam were brought by ox cart from the Blanco River and they're still in place. Before there was air conditioning, families used to camp

Remnants of an old water-powered mill can be seen at the John J. Stokes Sr. San Marcos River Park in San Marcos. Water spills over a dam (left) where water power was used to grind grain and gin cotton beginning in the 1850s. Below is a gear that was part of the mill's machinery.



© BILL REAVES

Down by the Old Mill Stream

The land is historic, but the park is new.

Five and a half acres of San Marcos riverfront, a portion of which is known locally as Thompson's Island, now is the John J. Stokes Sr. San Marcos River Park. Donated to the Texas Parks and Wildlife Department by Stokes and his wife, Fraye, the acquisition will help the City of San Marcos protect the river from development and provide a public canoe and water recreation access point.

"Even though the land was privately owned, most people thought it was a park and we never stopped them from using it that way," said Fraye Stokes. "We've been acutely aware of the ecological responsibility connected with the area and wanted to preserve its beauty and keep it open to the public rather than having it commercially developed. My husband was a general contractor, real estate developer and

hunter. He was so conscious of the environment. This park is an appropriate memorial."

Although it is a state park, its day-to-day operations will be handled by the City of San Marcos's Parks and Recreation Department as part of Texas Parks and Wildlife's Partnerships for Parks program. "This initiative evolved two summers ago in response to budget constraints and complaints that the department was not responsive to local communities," said Laird Fowler, Texas Parks and Wildlife regional director.

Located across from the Texas Parks and Wildlife Department's A. E. Wood State Fish Hatchery, the site is important in the history of Texas milling. In 1850, William Alexander Thompson, a Caldwell County planter, decided to build a mill along the river. Slaves dug a ditch and wasteway by hand. An irrigation system of hollow cypress log pipes, sever-

al head gates and a large waterwheel were constructed. They generated power for a wheelhouse and a millhouse.

In 1867, Thompson's son, William Alexander, Jr., constructed a new dam. Following his death in 1913, the complex was sold to John Matthew Cape. The entire machinery plant was rebuilt and a 55-horsepower steam plant was installed to supplement the power supply during periods of low water. Known as the Cape Gin Company, Cape used the water to irrigate 300 acres, grind grain and gin and bale cotton. In 1914, the complex burned. It was rebuilt and sold but burned again in 1936. In 1942 the gin was converted to electrical power, ending the need for water power.

"The mill's original purpose was to provide flour and corn meal for the settlers," said Kathryn Thompson Rich, a descendant who has requested

and picnic there. It's always been a popular place to fish and swim."

The only remaining structure on the site is an old warehouse. However, the waterfall created by the old mill remains a central feature of the park. It is open, free of charge, for day use only, closing at 11 p.m. No amenities are available.

To get to the John J. Stokes Sr. San Marcos River Park from Austin, take I-35 South to the Seguin exit, State Highway 123. Turn left under the interstate for approximately one block then left on River Road.

by Christina Leimer

“Summer of the Wild Plum Moon” Scheduled for Copper Breaks in June

Once again this summer, Copper Breaks State Park near Quanah will present “The Summer of the Wild Plum Moon” on three weekends in June.

Written and directed by area native Jerry Ayers and sponsored by the Comanche Breaks Heritage Foundation, the play is set in the mid-19th century and is a dramatic retelling of local myths and legends, featuring music from traditional sources. Among the characters is a young Indian princess who tells a poignant tale of survival and the pioneers she encountered who came to settle the untamed land that today is part of the state park.

The play’s title is taken from the first full moon of May, which marks the beginning of summer and is said to be the color of ripe wild plums.

“The Summer of the Wild Plum Moon” will be presented at 8:15 p.m. on Friday and Saturday, June 10–11, 17–18 and 24–25. Tickets are \$8 for adults and \$5 for children, and admission to the park is free for those attending the play. Barbecue will be served before the production begins, with proceeds benefiting the Shriners Children’s Hospital. Soft drinks and souvenirs will be available.

For information call the park at 817-839-4331. Camping facilities—including equestrian camping—are available at Copper Breaks State Park. To reserve campsites at Copper Breaks or any other state park call 512-389-8900.

Caddo Lake State Park to Celebrate 60th Anniversary

Caddo Lake State Park will celebrate its 60th anniversary with a two-day celebration July 3 and 4.

Among the events scheduled are a trail ride from Marshall to the park, a bicycle tour from Jefferson to the park, a fun run and canoe races. The Post Office will offer a special stamp cancellation in the park on July 4.

Caddo Lake State Park was dedicated in July 1934. Members of Civilian Conservation Corps Company 857 worked in the park from 1934 to 1938 building the cabins, recreation hall and many other facilities still in use today. Parks superintendent Tom Pritchard is looking for members of CCC Company 857 to participate in the celebration.

Call Pritchard at 903-679-3351 if you are an alumnus of CCC Company 857.

For information about the anniversary celebration call the park at 903-679-3351.

New State Park Reservations System

State park visitors now can call one telephone number—512-389-8900—to make reservations for campsites and other facilities at any park in the system. Operators are on duty Monday through Friday, 8 a.m. to 5 p.m. Individual state parks no longer can accept reservations, with two exceptions: to reserve rooms at Indian Lodge in Davis Mountains State Park, call 915-426-3254; to reserve a seat on the Texas State Railroad call 1-800-442-8951.

Missing Some Issues?

Believe it or not, there are a few TEXAS PARKS & WILDLIFE subscribers who have kept every issue since the inaugural one published in December 1942. Your collection may not go back that far, but if it’s missing some issues you still can fill the gaps by calling toll-free 1-800-937-9393.

Here a few examples of back issues that contain articles and photos that are just as interesting now as they were when first published.

March/April 1986

The special hard-cover Sesquicentennial issue celebrates Texas’ 150th birthday with essays and photos chronicling the changes in land, wildlife, waters and people during the state’s first century and a half. — \$8

August 1990

Diving in the Desert... Spring Power – Wimberley’s Cypress Creek... Texas Swimming Holes... Daingerfield State Park... Life on the Lomas – The Threatened Texas Tortoise — \$5

December 1992

This 96-page Golden Anniversary issue salutes our 50 years of publication with an essay by the renowned writer John Graves and pictures from the state’s foremost nature photographers. — \$8

May 1993

Springtime Pyrotechnics – The Beauty of Spring Storms... Neotropical Birds in Trouble... Gorman Falls... Colorado Bend State Park... Backyard Camping — \$5



Part Two

BEST STATE PARK

FISHING HOLES

by Jim Cox

*Sample the delights of small-lake
angling in our state parks.*

State parks offer more than picnics, campouts and scenery. When you pack your picnic basket and cot, better toss in some fishing tackle as well, because some of Texas's small state park lakes offer fishing opportunity far out of proportion to their size.

In fact, the state park system's smaller lakes (600 acres down to a half-acre or so) can rival fishing on the big public reservoirs if the angler is willing to downsize his or her methods to fish the small waters.

Some of these smaller lakes have boat ramps, but limit boat speed; others have crude launch areas or require hand-launching of small craft. Still others are best fished from the bank or from an innertube float. Many have special fishing regulations, such as catch-and-release-only for largemouth bass or more restrictive catfish limits, to give the average angler a shot at catching a bragging-sized fish. Most of them offer wintertime fishing for hatchery-reared rainbow trout.

Best of all, about 20 of these freshwater fishing holes are scattered across the state, so chances are there's one or more near where you live.

You may get information from the parks by calling the telephone numbers given, but to reserve camping facilities in any state park call 512-389-8900.



© DAVID J. SAMS

Small lakes in many of Texas's state parks provide fishing opportunity far out of proportion to their size, but in some cases anglers must downsize their techniques to fish the smaller waters. Motorboats are permitted on Purtil Creek State Park Lake, but the flyfisherman at left preferred to wade the shallows for largemouth bass. Some park lakes are best fished with small aluminum boats, float tubes or from the bank.

THE BEST OF STATE PARK LAKE FISHING

The sport of fishing is highly subjective. What's best to one angler is far down another's list. But let us not mince words about state park lakes. The absolute best, especially if largemouth bass are your favorite, is **Purtis Creek State Park Lake** near Athens. The 655-acre lake in fact may be the only lake in the nation where catching a record-class largemouth bass is possible in a state park setting.

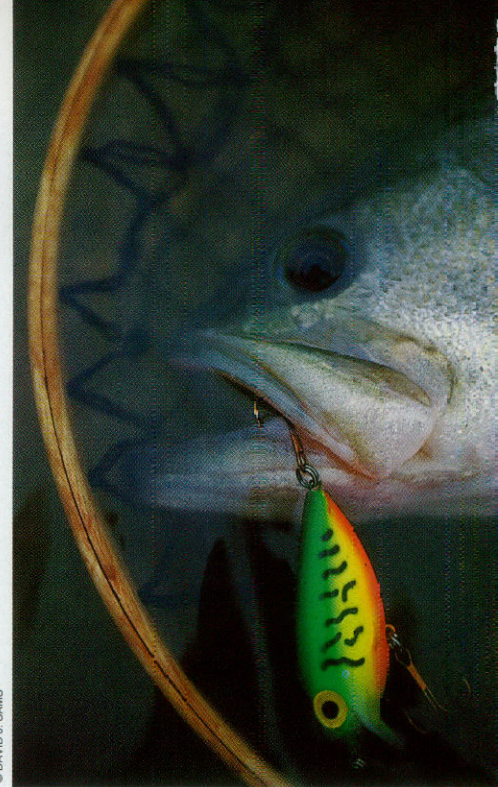
The catch, of course, is that you cannot keep your catch. And that is precisely why Purtis Creek's future is so bright. The lake was built during the early 1980s while the surrounding park lands were being designed and developed, and virtually none of the hardwood timber and brush in the lake bed was cleared. Thus the lake was built

entirely for fish and fishing. Being entirely within the park boundaries, the lake gave the department's Fisheries and Wildlife Division an opportunity to conduct a grand experiment. You cannot retain any bass you catch, but if you boat one measuring 22 inches or longer, you can bring it to a lakeside weigh station for weighing on certified scales to see if it qualifies for a Lunker Catch and Release certificate. If the fish is 13 pounds or over and caught during the spring, it could be donated to the Parks and Wildlife Foundation's Share a Lunker program. And, as far-fetched as it may seem for such a small lake, a new state record bass conceivably could be caught there, certified and then released.

So how has this test of the catch-and-release fishing ethic turned out? "Catch rates for bass at Purtis Creek are about double the statewide average, even though fishing pressure (angler-hours spent on the lake per acre of water) has been about 10 times the statewide average since the lake opened in 1988," said fishery biologist Richard Ott of Tyler. "The fishermen have embraced the program, almost without exception."

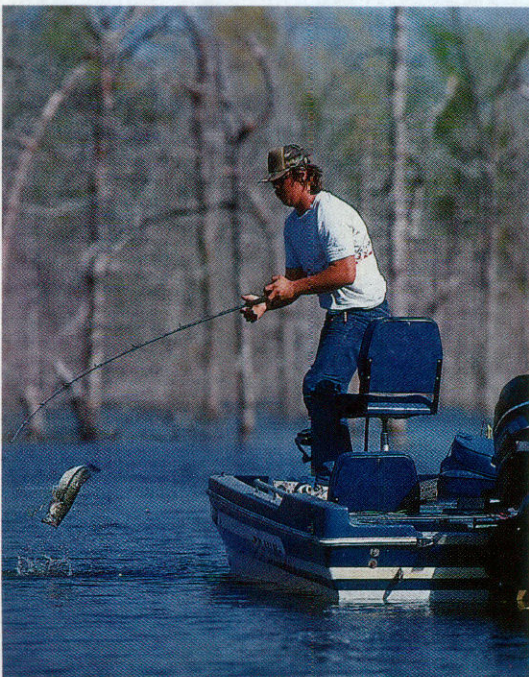
Lunker Catch and Release program catches have become commonplace at Purtis, and the possibility of true world-class fish in the near future is not unreasonable, Ott believes. "Surviving bass from the original stockings are just now getting old enough to move into the 13- to 15-pound class, so I expect to see some monsters caught at Purtis in the next few years," he said.

Purtis Creek is not one-dimensional in its fishing offerings. An excellent fishery exists for channel, blue and flat-head catfish and crappie. And if your idea of a trophy fish is a one-pound-plus bluegill, this is the place. An exper-



© DAVID J. SAMS

The best state park lake for trophy bass is Purtis Creek near Athens (above), where a catch-and-release-only rule is in effect for largemouths. A weigh station at lakeside allows anglers to earn certificates for big bass they catch and release. If fishing in attractive surroundings is what you desire, Daingerfield State Park Lake (right) offers beautiful East Texas scenery plus better than average angling for bass, catfish, chain pickerel and rainbow trout in winter.



© DAVID J. SAMS

If largemouth bass are your favorite quarry, there are several lakes you should try, including Purtis Creek State Park, Lake Raven at Huntsville and Tyler State Park Lake.

imental seven-inch minimum length limit and 25 per day bag limit on sunfish at Purtis is the only one of its kind in Texas waters.

A wintertime fishery for hatchery-reared rainbow trout in small ponds below the dam, excellent camping facilities and beautiful surroundings could be called icing on the cake. The park is located off FM 316 about 15 miles northwest of Athens. The park's telephone number is 903-425-2332.

In South Texas between San Antonio and Corpus Christi, Choke Canyon Reservoir has come into its own as a top fishing reservoir. But perhaps few who visit the lake and the excellent state park facilities there realize that one of the state park system's best small fishing lakes is located within the Callinam Unit of the park. The 90-acre Callinam Lake was built while the park lands were being developed. Stocked with Florida largemouth bass beginning in

1987 and channel catfish in 1989, the lake was opened to bank fishing only when the park opened. To protect bass from overfishing, a catch-and-release-only regulation was, and continues to be, in effect. However, the rule prohibiting boats was changed in fall 1993, and the lake now is open to boats of 14-foot length or shorter. Outboards cannot be used, but electric motors are allowed, according to Park Superintendent Lee Escamilla. A concrete ramp is available.

Fishery surveys indicate the lake has an excellent population of largemouth bass, along with crappie, sunfish and channel catfish. Regulations for sport fish other than largemouths are consistent with those on Choke Canyon Reservoir. Escamilla said the no-kill regulation, and excellent cover in the form

of flooded brush and timber, give anglers a legitimate chance to catch a trophy-sized largemouth. About a dozen fish-attracting brushpiles have been sunk in the lake and marked with buoys, he said, and fish feeders on the fishing pier attract catfish. The park is located off State Highway 72 between Three Rivers and Tilden. Both the Calliham Unit and the nearby South Shore Unit offer full camping and recreation facilities, including boat ramps. The Calliham Unit's telephone number is 512-786-3868.

Your chances of catching a big fish may be slimmer at **Daingerfield State Park Lake** in Northeast Texas, but the fishing ambiance can't be faulted. A clear, spring-fed, 80-acre reservoir nestled in rolling hills covered with silverleaf maple, sweetgum, oak, hickory and

pine trees make this one of the prettiest fishing spots in the park system. Superintendent Kim Ochs said the lake sometimes yields good catches of largemouth bass, sunfish and catfish. Also, Daingerfield is one of only a handful of places in Texas where you can catch the small but aggressive chain pickerel. They become active from mid-winter to early spring, and are an exciting supplement to the popular winter rainbow trout fishery.

Ochs said boating is allowed on the lake, with a five-mile-per-hour speed limit. The park is located three miles east of Daingerfield off State Highway 49. The telephone number is 903-6452921.

Another East Texas spot that combines good fishing with pleasing surroundings is **Tyler State Park Lake**



LEROY WILLIAMSON

Bastrop State Park and adjacent Buescher State Park both offer excellent camping facilities amid the famous "Lost Pines" of Bastrop County. Fishing is good in the 10-acre lake at Bastrop (right) and 30-acre Buescher Lake just down Park Road 1 from the Bastrop park. Both lakes are stocked with rainbow trout during the winter.



© ROBERT W. PARVIN

near Tyler, where a 65-acre lake surrounded by pine and hardwood trees has largemouth bass, catfish, crappie, sunfish and trout in winter. Because of its potential as a producer of big bass, the department has established a 14–18 inch slot limit. Three largemouths per day may be retained, but those measuring between 14 inches and 18 inches must be released. The lake has good access for bank fishing and ramps for boaters. A five-mile-per-hour speed limit is the only boating restriction. There are two fishing piers, one of which is lighted. An invasion of the nuisance aquatic weed hydrilla has been controlled chemically, but plenty of native vegetation remains for fish habitat. Superintendent Steve Powell said largemouth bass up to 13 pounds have been caught. The park is located seven miles north of Tyler's Loop 323, or two miles north of Interstate Highway 20. The telephone number is 903-597-5338.

About 40 miles south of Tyler is what

might be one of the hottest of the undiscovered bass fishing hotspots in the state park system. Rusk State Park is widely known for housing the depot for the Texas State Railroad, an excursion train that travels between Rusk and Palestine. But 19-acre **Rusk State Park Lake** is brimful of largemouth bass in the four-to-eight-pound class, according to TPWD fishery biologist Richard Ott of Tyler. "Our electroshocking surveys turned up an incredible number of good-sized largemouths and some nice crappie as well," Ott said. Most fishing is from the bank or by wading, Ott said, although light craft such as canoes can be hand-launched. The spring-fed lake has clear water and good stands of aquatic vegetation for fish habitat. The park is located four miles east of Rusk off State Highway 84. The number is 903-683-5126.

And speaking of attractive fishing spots, two diminutive fishing lakes in the Lost Pines region of Bastrop County

have better than average fishing to go along with their scenery. By the time you read this, **Buescher State Park Lake** should be refilled with water. The dam was washed out by record rainfall in January 1991, shrinking the lake from its normal 30 surface acres to little more than pond size. Infusions of well water kept the lake from running dry while the dam was being repaired. Fishery biologist David Terre said the largemouth bass population, always a strong suit at Buescher, survived the low water and should bounce back when the lake fills. He said a stocking of large (eight- to 10-inch) channel catfish was planned as well. The lake also is a popular winter trout fishing spot. Park Superintendent Corky Klaerner said when the water returns to normal level small boats can be launched at a crude dirt ramp. Buescher's telephone number is 512-237-2241.

Just up the park road from Buescher is **Bastrop State Park Lake**, a 10-acre

gem that has a surprisingly good population of largemouths, sunfish and catfish, plus trout stocked each winter. Most of the shoreline is accessible for bank fishing, but there is no boat ramp and small craft must be hand-launched. No motorized boats are allowed, according to Brent Leisure, superintendent. Both Bastrop and Buescher have full camping facilities and rustic cabins built by the Civilian Conservation Corps in the 1930s. The state park lake should not be confused with Lake Bastrop, a 900-acre power plant reservoir located just across State Highway 21 from the park. We will cover Lake Bastrop's considerable fishing resources in next month's article on state parks located adjacent to major reservoirs. The telephone number at Bastrop State Park is 512-321-2101.

A four-acre pond at **Palmetto State Park** is a nice spot to fish from the bank or from a canoe for catfish and sunfish, according to Park Ranger Donald Jackson. The park is known for its marshy Ottine Swamp environs, making the pond and adjacent San Marcos River a pleasant place to wet a hook. Anglers can put canoes or small boats in the river and float about six miles to County Road 232, or put in at Luling and take out at the park. The park is located off U.S. Highway 183 between Luling and Gonzales. The number is 210-672-3266.

Houston-area anglers have three nearby parks with interesting freshwater fishing opportunities. One of the most unusual is **Brazos Bend State Park**, where four marshy lakes offer plenty of bank and pier fishing, according to Park Superintendent Jerry Bartel. "We don't allow boating of any kind, partly because of a large alligator population, but during the spring and fall fishing can be excellent from the bank," Bartel said. The best fishing spot is Forty Acre Lake, a shallow reservoir of just that many acres. "Forty Acres and Elm Lake, which is about 100 acres, are best fished in the spring and fall because the lotus, lily pads and other vegetation get pretty thick during the

summer," Bartel said. Anglers tossing weedless plastic worms or other snag-proof lures often catch largemouth bass up to the six-pound class, and one 10-pounder was confirmed. Fishing also is good at times for crappie and three species of catfish (channel, blue and flathead). Two oxbow lakes adjacent to the Brazos River are deeper than the other lakes, and sometimes have excellent bass and crappie fishing.

Brazos Bend is located near Needville, roughly 50 miles southwest of downtown Houston. To reach the park from Houston, take State Highway 59, exit at Crab River Road, go south one mile to FM 762, then proceed straight (south) on that road 18 miles to the park entrance on the left. The telephone number is 409-553-3243.

An even closer fishing hole for Houstonites is **Sheldon Reservoir**. Although operated by the department as a wildlife management area and education center rather than a state park, the lake offers excellent fishing with a parklike ambiance. The area was featured in the July 1993 issue of the magazine. The 1,200-acre lake is located just east of East Sam Houston Parkway on the city's northeast edge. Sheldon has good to excellent fishing for large-

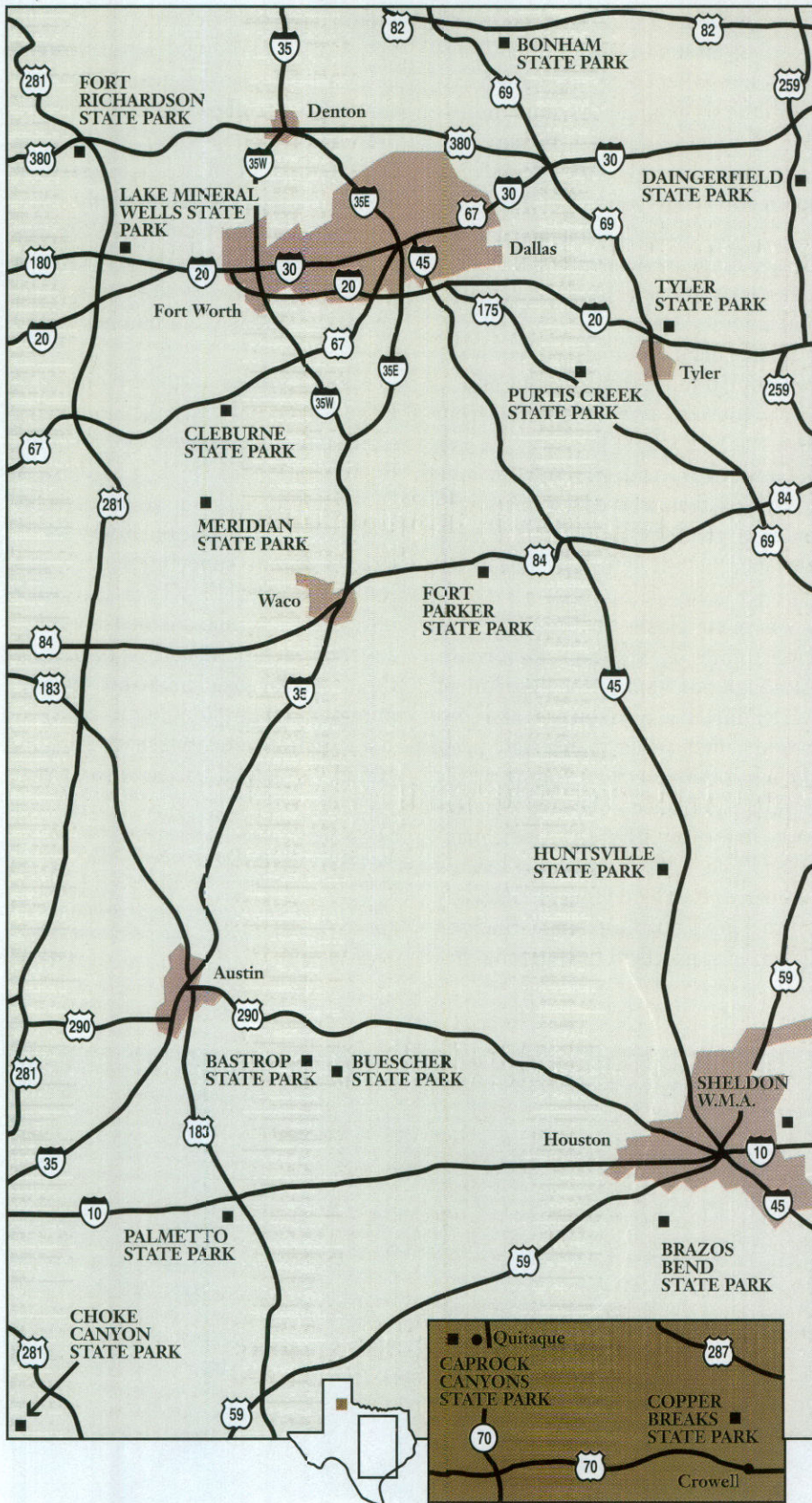
mouth bass, with some topping the 10-pound mark, sunfish and catfish. Boating is allowed every day from March 1 through September 30, but motors are limited to 10 horsepower. (Boats with larger motors are allowed as long as they are not cranked up.) To reach the area, drive east on Interstate Highway 10, north on Beltway 8 and then turn right on Garrett Road. No admission fee is charged. The telephone number is 713-456-9350.

About 75 miles north of Houston is **Lake Raven** in Huntsville State Park, a 210-acre reservoir with a long-standing reputation for yielding big bass. A 13.48-pound largemouth caught in 1988 is the current lake record. Wilburn Cox, assistant superintendent, said Raven is a typical East Texas lake, with off-color water, pine-studded shoreline, aquatic vegetation and lots of bass. A three-per-day bag limit and 18-inch minimum length limit are in effect to assure that the quality fishery is maintained. Crappie and sunfish fishing also

Classic East Texas bass fishing is available at Huntsville State Park, where Lake Raven (below) has produced one bass over 13 pounds and many others exceeding the 10-pound mark. Outboards are permitted, but there is a no-wake speed limit.



© DAVID J. SAMS



is good, and one lucky angler caught a 65-pound blue catfish while fishing from one of the lake's two piers in March 1993, Cox said. A concrete boat ramp is available, and there is a no-wake rule for boating. Full camping facilities are available. The park is located off Interstate Highway 45 six miles south of Huntsville. The number is 409-295-5644.

Ft. Parker State Park Lake just south of Mexia in Limestone County is undergoing a five-year dredging project, so fishing in the main portion of the lake is a doubtful proposition. However, if you have a boat, try motoring up the Navasota River for some outstanding scenery and good fishing for largemouth bass, catfish and crappie. The lake backs water into the river basin for about three miles, keeping the channel at a more or less constant level, according to Tom Fisher, superintendent. Also, three-acre **Lake Springfield**, adjacent to the state park lake, is spring-fed and clear. It has some surprisingly large bass, and during the winter it provides a popular trout fishery. The park is eight miles south of Mexia off State Highway 14. The number is 817-562-5751.

Dallas/Fort Worth area residents also are not without small state park lake fishing opportunities. Just a short distance south of Fort Worth, **Cleburne State Park Lake** boasts a 116-acre spring-fed lake whose dam was constructed by the Civilian Conservation Corps in the 1930s. Despite its age, the lake still produces quality fish such as an 11-pound, nine-ounce largemouth caught in January 1992 and a redear sunfish that was the state record until 1993. A boat ramp is available, and the only boating limitation is a five-mile-per-hour speed limit. Trout are stocked each winter in the lake, which is surrounded by rolling hills covered with post oak and juniper. To reach the park, take U.S. Highway 67 west out of Cleburne and turn left at the state park sign. The telephone number is 817-645-4215.

North of Dallas is **Bonham State Park Lake**, where the main attraction



Good fishing holes are fairly scarce in the Red River country west of Wichita Falls, but 65-acre Copper Breaks State Park Lake (left) offers good fishing for bass, catfish and crappie. The park is located south of Quanah in Hardeman County.

© WYMAN MEINZER

is catfishing in the 65-acre reservoir, although largemouth bass and crappie also are caught. A new lighted pier is open, according to Laura Norris, accounting clerk at the park. About 75 percent of the shoreline is accessible for bank fishing, she said. The park is located just south of Bonham off State Highway 78 and FM 271. The number is 903-583-5022.

About 70 miles northwest of Fort Worth is Ft. Richardson State Historical Park, where eight-acre **Quarry Lake** produces largemouth bass, catfish and sunfish. With deep, cool water and excellent bank access, the lake is a fine place to catch stocker trout during the winter, according to Max Peterson, superintendent. Small, hand-launched craft are allowed, but perhaps not necessary. The park is two miles south of Jacksboro off U.S. Highway 281. The number is 817-567-3506.

Lake Mineral Wells, located in the park of the same name and four miles east of the city of the same name, almost doesn't qualify as a small state park lake, having almost 650 surface acres. Clayton Cox, assistant superintendent, said the lake is a popular spot with local bass clubbers who catch plenty of largemouths. Crappie fishing also is seasonally good, he said. The

lake has no boating restrictions, and the shoreline is fairly rugged and covered by mesquite, juniper and post oak trees. Full camping facilities are available. Bank access is only fair because of the terrain. The park is off State Highway 180. The number is 817-323-1171.

Just a few miles west of Lake Whitney, west of Hillsboro, is a smaller body of water, but one worth checking out. **Meridian State Park Lake** in Bosque County is a 72-acre, spring-fed lake in the rolling, juniper-covered hills west of Meridian, which is southwest of Fort Worth. The lake has been stocked with Florida largemouth and smallmouth bass, crappie and channel catfish. Robert Williams, a park ranger, said largemouths are the most sought-after species in the lake, and bass up to 12 pounds have been caught. The lake also is a popular spot when rainbow trout are released each winter. A boat ramp is available, and a five-mile-per-hour speed limit is posted. The park is two miles west of Meridian off State Highway 22. The number is 817-435-2536.

Moving farther west, **Copper Breaks State Park Lake** has produced largemouth bass in the eight-pound class, plus good catches of crappie and catfish. The 65-acre reservoir has a boat ramp and a five-mile-per-hour speed

limit for boats. A 10-acre pond also has been stocked and offers good bank fishing. Trout are stocked in the larger lake each winter. The park is located 13 miles south of Quanah off State Highway 6. The number is 817-839-4331.

Caprock Canyons State Park in Eriscoe County offers spectacular canyon scenery similar to that of Palo Duro Canyon, which is about an hour's drive to the northwest. Caprock also offers **Lake Theo**, a 120-acre fishing hotspot populated by smallmouth and largemouth bass, crappie and catfish, according to Russell Sargent, superintendent. The deep, rocky lake is open to boating, with a no-wake regulation and boat ramp. Access is good for bank fishing and a lighted fishing pier is available. Sargent said anglers also should not overlook a 40-acre lake called **Dry Creek**. No boating is allowed there, but anglers report consistent catches of largemouth bass and crappie. The park is just north of Quitaque off State Highway 86. The number is 806-455-1492. ★

NOTE: RESERVATIONS FOR ALL STATE PARK FACILITIES MUST BE MADE BY CALLING 512-389-8900.

PAPER CASTLES

Article by Janet R. Edwards
Photos by Stephan Myers



The paper wasp is a colonial insect like bees and ants. It builds its multi-chambered nest under protected areas such as overhangs around homes. The nest hangs from a papery, stem-like structure called a pedicel.

Roused from hibernation in a hollow log, paper wasps emerge into the warmth of the morning sun, ready to assume their role as fertile queens: mothers-to-be of the next generation of paper nest architects.

But first, they must eat. Using tongue-like mouthparts, the wasps lap sweet nectar from the blossoms of nearby dandelions. Rejuvenated, they set off alone (sometimes in small groups) to look for a good place to build a nest. They need two things: a plentiful supply of plant or wood fiber and a surface (usually shielded) situated above ground. Weathered fenceposts, old barns and dry grasses provide a rich source of raw material for a paper nest. The wasp might build her modular home on a stem or branch of a larger tree, under the eaves of a house or patio, a rock crevice or even a barbed wire fence.

Having made her selection, the foundress queen perches parallel to the grain of a board or woody plant stem and bites off tiny chunks with strong mandibles. Vigorously chewed and mixed with saliva, the tough fibers form a soft, round pellet in her mouth. Back at the nest site, she applies a dab of pulp and draws it into a stemlike structure called a pedicel, which later will support the weight of the entire nest.

Gathering a second spit-wad of pulp, the paper wasp uses her legs and mouthparts to sculpt a cone-shaped cell that hangs upside down from the tip of the pedicel. Then she lays a single egg inside the cell, having just fertilized it with a sperm cell kept in safe storage within her body since last autumn's mating season. Thanks to a sticky outer coat-

ing, the egg can keep a firm grip on its overturned cradle.

Wasps belong to the insect order Hymenoptera, along with their close relatives, ants and bees. Most members of this order have two pairs of rigid, transparent wings; a narrow, flexible "waist" that connects the thorax (middle segment) to the abdomen and a

Like their honeybee relatives, wasps build homes that are monuments to teamwork.

stinger or poison-ejecting structure located on or near the end of the last body segment.

The term paper wasp actually may refer to any one of 4,000 species of wasps in North America that construct nests of paper. Classified in the family Vespidae, paper-making wasps include yellowjackets, hornets and hover wasps. However, members of subfamilies Polistinae and Polybiinae are those commonly given the name paper wasp.

Most Vespid wasps (along with all ants and many bees) are social insects, living together in well-organized communities.

"Paper wasps are eusocial insects, the highest of six levels of social behavior

in insects," said Ray Huffman, Extension Agent-Entomology for Nueces, Jim Wells, Kleberg and San Patricio Counties in South Texas. "There's a reproductive division of labor; a reproductive caste (the queen) lays the eggs and a worker caste (usually non-fertile females) obtains food and cares for the young. An overlap in generations allows the offspring to assist the parent queen in the work of the colony." Once the foundress queen lays an egg in the first cell of her new nest, she immediately constructs another chamber, lays an egg and builds yet another. A single-tiered, rounded cluster gradually develops, consisting of individual hexagonal cells that share adjoining walls. This design, coupled with the amazing tensile strength of paper, provides a home that is amazingly light, yet durable. A paper wasp nest lacks the paper envelope that hornets and yellow jackets make to cover their nests.

Within two weeks, the eggs begin to hatch. Emerging as larvae, the fat, wormlike creatures have no wings or legs. This is the first in a four-stage process called metamorphosis. Paper wasp larvae must be fed generously and often, and while flower nectar can supplement their diet, meat is a must. So the queen turns predator. Beetle grubs, moth caterpillars and other insect larvae are not stung unless they return the attack, but are torn apart and delivered piecemeal to the nest. Even adult insects of other species may fall victim.

The queen prechews each meal and feeds the black-faced young by tapping her head against the edge of each chamber, signaling them to grab a mouthful. Because of their inflexible outer covering, wasp larvae molt (shed their skin) several times as they grow. The

queen must continually add more pulp to the chamber walls to accommodate them.

After four molts, a larva stops eating and begins to spin a silk cap above its head and along the inner walls of the cell. Sealed within its chamber, the larva molts one final time and enters the pupal stage. During the next three weeks, larval tissues gradually are broken down and rearranged to form the eyes, wings and legs of an adult paper wasp.

By late spring or early summer, the pupae complete their development and join the foundress queen. All females, this first generation of paper wasps soon becomes the workers of the colony, taking over the task of nest building and repair, food collecting and caring for the young. The queen then can devote herself to eating and laying more eggs, controlling the activities of the hive with her superior strength and chemicals called pheromones. By the end of summer, the nest is a buzz with activity, containing as many as 250 chambers.

Worker wasps drink nectar and juices from crushed and rotting fruits. They also share captured prey among themselves before feeding their wormlike sisters and often nibble the mouthparts of the larvae, prompting them to regurgitate a drop of sweet fluid.

Unlike bees, paper wasps don't gather pollen or make honey. With smooth, hairless legs and abdomens, their role in plant pollination probably is limited. However, they are an important natural control for insects, including those that menace crops and home gardens.

Using their abdominal stingers, which are capable of multiple injections, workers actively defend the nest against predators such as hornets. Nevertheless, these larger, more powerful cousins often carry away paper wasp larvae and pupa to feed their own offspring.

Paper wasps seldom attack people, but will defend their nests if threatened. Nests constructed near windows and doorways, or in areas frequently used by small children or the elderly, probably should be removed. Their sting



The nest and young are tended primarily by adult females, but only the foundress queen is allowed to lay eggs. Developing larvae are fed chewed-up insect parts. These adults will not hesitate to defend their nest from danger, including men.

causes searing pain initially, then a burning sensation that lasts 15 to 20 minutes. The wound becomes red and swollen, often throbbing for several days. The site may itch for a week or more, taking a full month to six weeks to return to normal.

People with allergies to insect venom must take precautions against anaphylactic shock, a condition that can bring

about coma and death within as little as 10 minutes after a sting. An emergency kit containing injectable antidotes should be available at all times and an emergency medical identification bracelet or pendant should be worn so that proper treatment can be obtained immediately.

During hot weather, worker wasps must add climate control to their list of nest duties. When temperatures rise beyond safe limits for developing larvae and pupae, the workers collect and sprinkle drops of water on the nest. Then they alight and fan their wings to increase the rate of evaporation.

Toward the end of summer, wasp

behavior in and around the nest begins to change. Recently hatched adults ignore the responsibilities of food gathering, nest building or caring for the young. These are reproductive males and females, the generation needed to ensure survival of the species for another year.

Males develop from eggs the foundress queen allows to pass unfertilized from her body. Distinctively



When an adult is ready to emerge from its cell (below) it uses powerful jaws to open the chamber from inside. Multi-faceted, compound eyes (above) give paper wasps clear vision. The three spots atop its head are simple eyes that respond primarily to changing light.

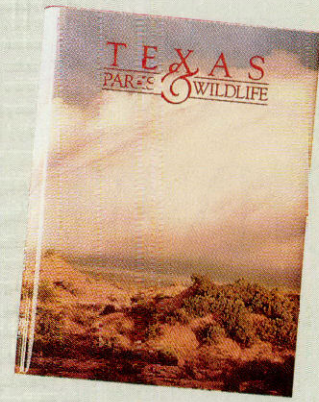


marked with yellow faces, their sole purpose in life is to mate with the new reproductive females. By late summer, the queen stops laying eggs altogether and the number of larvae dwindles. Food supplies become more scarce for the entire colony, prompting workers to forcibly eject both larvae and pupae, leaving them to die on the ground below.

Squabbles over food increase, followed by the death of the foundress queen, her purpose in life accomplished. The workers soon chase away the males, which huddle in small groups near the nest awaiting the departure of the reproductive females. When all adults finally abandon the nest, mating takes place in flight. Without stingers to defend themselves, the males usually perish from predators. Cold and hunger claim the rest, including the worker wasps.

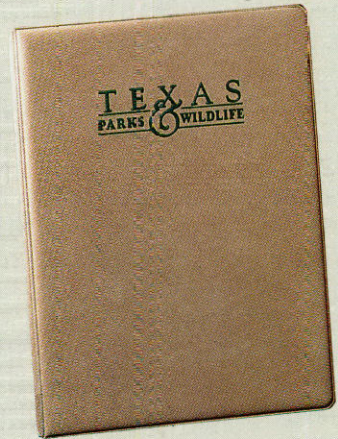
Clustered together in a sheltered spot, the fertilized females endure the chill of winter in a state of hibernation, their body temperatures falling as low as zero degrees. But when the longer, warmer days of spring return, the new generation of foundress queens awakens, ready to resume their time-honored task of paper-making. ★

Corpus Christi freelance writer Janet Edwards is a frequent contributor to the magazine. Freelance photographer Stephan Myers also is based in Corpus Christi.



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JOHN WESLEY TUNNELL:

Hooked on Discovery and Science

by Val Waisanen

Dr. John Wesley Tunnell grew up in the small town of Taft, only a half hour or so from Corpus Christi State University where he's been a biology professor and director of the Center for Coastal Studies since 1983.

Both of his parents were physicians (his father delivered 9,642 babies during his career), and the country doctors offered sound advice about their son's career choice. "My dad had two criteria: choose something you like to do and then do a good job of it."

Tunnell didn't listen, however, focusing instead upon the financial rewards of dentistry, and completed a year of pre-dental studies before transferring to Texas A&I University in Kingsville in 1964. At A&I he studied biology with Dr. Allan Chaney, the now-retired, widely respected biologist and teacher.

Tunnell credits Chaney with banishing his already waning interest in dentistry and firing his passion for shells. Tunnell became a malacologist, earning his undergraduate and master's degrees at A&I.

But dentistry played an important role in his life one more time. It began when Tunnell and his friend Billy Causey were working on their master's theses, studying the mollusks and fishes (respectively) of the Seven and One-Half Fathom Reef, a small patch reef off the coast near Port Mansfield. Tunnell was scouting the seaward side of the reef and spotted an unusual "rock." Its size, shape, and longitudinal grooves marked it for something other than reef rubble.

But it was Causey, not Tunnell, who first realized it was a tooth, one of the giant, well-worn molars of a prehistoric mammoth. More dives netted another seven mammoth teeth as well as the remains of a prehistoric camel, bison and mastodon.

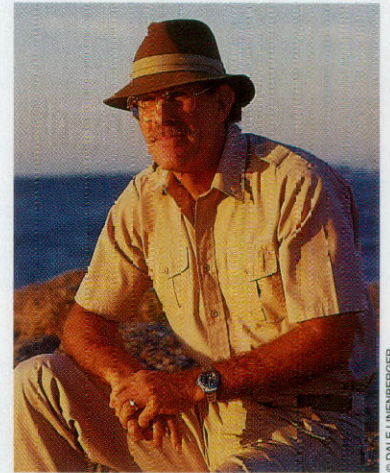
"Neither Billy nor I could believe what

we had found. We were elated, jumping up and down and hollering. Then we started to piece together how it got out there." Tunnell's and Causey's research established that the reef is the submerged remnant of an ancient watering hole. During the last Ice Age it was surrounded by dry land. As the Ice Age waned and released water back into the world's oceans, it gradually was covered by rising seas.

Tunnell was hooked on discovery and hooked on science. He went on to earn his doctorate at Texas A&M University and begin his teaching career. He's taught everything from marine biology to invertebrate paleontology, and the popularity of his classes is a testament to his accessibility, enthusiasm and hands-on style. He says teaching and research are his favorite occupations, but he's also an effective administrator. He inaugurated the Center for Coastal Studies with a \$4,000 grant in 1984. Today the Center's yearly research grants approach the half-million dollar mark.

At the heart of the Center for Coastal Studies' success are cooperative agreements with state and federal agencies. Students work for pay on a wide variety of field studies "commissioned" by agencies needing reliable scientific information about Gulf of Mexico habitats, animals and conditions. Both the biology master's and the new environmental science master's programs benefit. Students gain valuable experience and the financial assistance many of them need to finish school.

The discovery of Pleistocene fossils on the Seven and One-Half Fathom reef helped explain the evolution of our coast; a more recent discovery reveals the possibility of a costly and dangerous threat. At the heart of the mystery is a lovely brown and burgundy-streaked marine mussel.



Only three inches long, it doesn't appear dangerous or unusual until one realizes that it doesn't have any business this far north of Venezuela. Tunnell and CCSU graduate student David Hicks found the unfamiliar mollusk in January 1990. Since then it's spread south all the way to Mexico.

Hicks and Tunnell suppose the mussel hitchhiked from Venezuela in the bilge or ballast systems of tankers, much as the infamous zebra mussel traveled to Lake Erie from the Black and Caspian Seas. If the Venezuelan mussel multiplies and spreads as did its northern counterpart, it can clog water intake systems, damaging and shutting down water plants and other utilities.

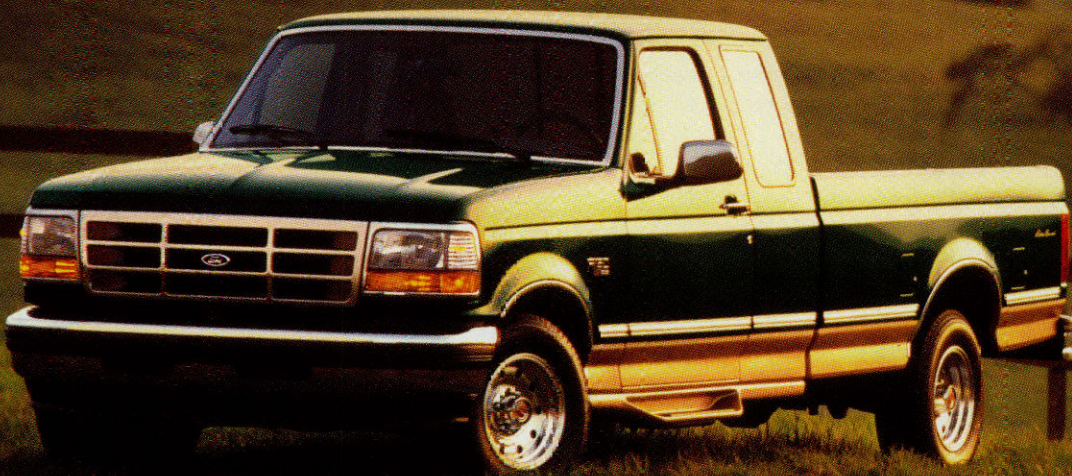
Because the Venezuelan mussel is edible, unregulated and subject to the same contaminants of other popular shellfish, it also may pose health threats to consumers. The Center for Coastal Studies sought and received funding from Sea Grant to determine its impact on the natural ecology of the region.

The study will provide information about the opportunistic hitchhiker from the south. It also will give Tunnell opportunities to leave his crowded office and take his father's advice. It's in the field that it becomes apparent that Tunnell is doing something he loves to do and does very well. ★

Val Waisanen is a freelance writer and zoological exhibit developer living in Corpus Christi.

HOW TO TURN A WORKHORSE INTO A THOROUGHBRED.

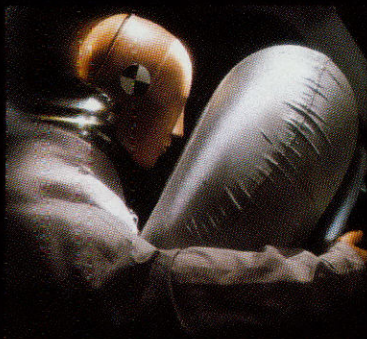
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THE BEST NEVER REST

OUTDOOR DATEBOOK

JUNE

June: * Bat emergence tour each Thursday and Saturday, Old Tunnel WMA near Fredericksburg, 210-868-7304

June: * Lower Edwards Plateau ecosystem tour each Saturday, Honey Creek State Natural Area near Bulverde, 210-438-2656

June: * Gorman Falls tour each Saturday and Sunday, Colorado Bend State Park near Bend, 915-628-3240

June: * Wild cave tours each Saturday and Sunday, Colorado Bend State Park near Bend, 915-628-3240

June: * Nature walks and sunset tales, each Saturday, Big Spring State Park at Big Spring, 915-263-4931,

June 1: * Flora and fauna of the Southern Plains, Lubbock Lake Landmark State Historical Park at Lubbock, 806-765-0737

June 1: * Photo contest, Abilene State Park at Abilene, 915-572-3204

June 2: * Bat flight and interpretation at Green Cave, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

June 3-5: Frontier Festival living history presentation, Fort Richardson State Historical Park, Jacksboro, 817-567-3506.

June 4-5: D-Day + Fifty, the 50th anniversary of the invasion of Europe. Battleship *Texas* at San Jacinto Historical Complex, LaPorte, 713-479-2431.

June 4: * Birdwatching, James E. Daughtrey WMA at Choke Canyon Reservoir, 512-786-3868

June 4: * Photography tour on Caddo Lake, Caddo Lake State Park and WMA, 903-884-3833

June 4: * Birdwatching tour, Caddo Lake State Park and WMA, 903-884-3833

June 4: * Texas horned lizard and tortoise tour, Chaparral WMA near Artesia Wells, 210-676-3413

June 4: * Bus tour of Fort Leaton and Big Bend Ranch State Natural Area, 915-229-36131

June 4: "Back to Rath's Trail" historical festival, Hamlin, 915-576-3493 (days) or 915-576-2325 (evenings)

* The activities marked with this symbol are available to people who have a Texas Conservation Passport, which may be purchased for \$25 at most state parks, Parks and Wildlife offices, Whole Earth Provision Co. locations in Austin, Houston and Dallas and REI in Austin.

June 4: * Heart of the Hills tour, Heart of the Hills Fisheries Research Station near Kerrville, 210-866-3356

June 4: * Aquatic ecology tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

June 4-5: Texas Endangered Species Conservation Convention, Fossil Rim Wildlife Center near Glen Rose, 817-897-2960

June 4, 18: * Observation of sinkhole and bat flight, Devil's Sinkhole State Natural Area near Brackettville, 210-563-2342

June 4, 18: * Lost Pines bus tour, Bastrop State Park at Bastrop, 512-321-2101

June 4, 9, 18, 23: * Boat tour of coastal marsh, Sea Rim State Park near Sabine Pass, 409-971-2559

June 4, 11, 18, 25: * "Calling All Predators," Eisenhower State Park at Lake Texoma, 903-465-1956

June 4, 11, 18, 25: * Painted bunting tour, McKinney Falls State Park at Austin, 512-243-1643

June 4, 11, 18, 25: * Nature trail tour, Abilene State Park at Abilene, 915-572-3204

June 4, 11, 18, 25: * Nature walk, Pedernales Falls State Park in Blanco County, 210-868-7304

June 5: * Hills Sport Shop bike race, Palo Duro Canyon State Park near Canyon, 806-488-2227

June 5: * Colonial waterbird tour, J. D. Murphree WMA at Port Arthur, 409-736-2551

June 5, 12, 19, 26: * Birdwatching tour, Pedernales Falls State Park in Blanco County, 210-868-7304

June 8: * Explore Las Palomas WMA in the Lower Rio Grande Valley, 210-585-1107

June 11: * "Redfish, an Inland Oddity," Fairfield Lake State Park at Fairfield, 903-389-4514

June 11: * Bird walk and hatchery tour, GCCA/CPL Marine Development Center at Corpus Christi, 512-939-7784

June 11: * River hydrographics, Guadalupe River State Park near Bulverde, 210-438-2656

June 11: * Mountain bike ride, Ray Roberts Lake State Park Isle du Bois Unit, 817-686-2148

June 11: * Natural insect repellents for pets, people and plants, Landmark Inn State Historical Park at Castroville, 210-538-2133

June 11, 25: * Ecosystem boat tour, Caddo Lake State Park and WMA, 903-679-3743

June 11, 25: * Bird tour, Balmorhea State Park and Phantom Cave Springs at Balmorhea, 915-375-2370

June 12: * Horseback tour, Hill Country State Natural Area in Bandera County, 210-796-3984

June 16: * Seining demonstration, Lake Ray Roberts State Park Isle du Bois Unit near Denton, 817-686-2148

June 16: * Fisheries survey techniques, Lake Ray Roberts State Park Isle du Bois Unit near Denton, 817-686-2148

June 17: * Bus tour, Big Bend Ranch State Natural Area, 915-424-3234

June 18: * Ride the horse trails with the Randall County Sheriff's Posse, Palo Duro Canyon State Park near Canyon, 806-488-2227

June 18: * Photography seminar, Caddo Lake State Park and WMA, 903-884-3833

June 18: * Beachcombing and shelling tour, Matagorda Island State Park, 512-983-2215

June 18: * "The Nature of Fire," Fairfield Lake State Park at Fairfield, 903-389-4514

June 18: * Wildlife track identification, Choke Canyon State Park Calliham Unit, 512-786-3868

June 18: * Penn Farm Agricultural History Center tour, Cedar Hill State Park at Joe Pool Reservoir, 214-291-3900

June 18: Bird walk, Lake Brownwood State Park at Brownwood, 915-784-5223

June 18: * Bus tour, Big Bend Ranch State Natural Area, 915-424-3327

June 18: * Insect identification, Honey Creek State Natural Area near Bulverde, 210-438-2656

June 25: * "Trot and Drop," Martin Dies, Jr., State Park at Steinhagen Reservoir, 409-383-0144

June 25: * Geology tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

June 25: * Bird and nature tour, Lake Tawakoni State Natural Area, 903-425-2332

June 25: * Marine ecosystems tour, Matagorda Island State Park and WMA, 512-983-2215

June 25: * "Canyon Rumbblings," Caprock Canyons State Park near Quitaque, 806-455-1492

JULY

July: * Lower Edwards Plateau ecosystem tour each Saturday, Honey Creek State Natural Area near Bulverde, 210-438-2656

July: * Bat emergence tour each Thursday and Saturday, Old Tunnel WMA near Fredericksburg, 210-868-7304

July: * Gorman Falls tour each Saturday and Sunday, Colorado Bend State Park near Bend, 915-628-3240

July: * Wild cave tours each Saturday and Sunday, Colorado Bend State Park near Bend, 915-628-3240

July: * Nature walks and sunset tales each Saturday except July 2, Big Spring State Park at Big Spring, 915-263-4931

July 2: * Brush identification, Choke Canyon State Park Calliham Unit near Three Rivers, 512-786-3868

July 2: * "Talkin' Turkey," Fairfield Lake State Park near Fairfield, 903-389-4514

July 2: * "Roosting Waders," Martin Dies, Jr., State Park at Steinhagen Reservoir, 409-383-0144

July 2: * Painted bunting tour, McKinney Falls State Park at Austin, 512-243-1643

July 2: * Hatchery tour, Heart of the Hills Research Station near Ingram, 210-866-3356

July 2: * Bus tour of Fort Leaton and Big Bend Ranch State Natural Area, 915-229-3613

July 2, 30: * Ecosystem boat tour, Caddo Lake State Park and WMA, 903-679-3743

July 2, 7, 16, 21, 30: * Boat tour of coastal marsh, Sea Rim State Park near Sabine Pass, 409-971-2559

July 2, 9, 16, 23, 30: * Nature walk, Pedernales Falls State Park in Blanco County, 210-868-7304

July 2, 16, 30: * Lost Pines bus tour, Bastrop State Park at Bastrop, 512-321-2101

July 3: * "The Deer of Fairfield Lake," Fairfield Lake State Park near Fairfield, 903-389-4514

July 3, 10, 17, 24, 31: * Birdwatching,

Texas Conservation Passport holders who enjoy birding will have a large variety of outings from which to choose during June and July, including birdwatching tours at Pedernales Falls, Caddo Lake, Brownwood and McKinney Falls State Parks.



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Great blue herons are one of many species of wading birds Texas Conservation Passport holder likely will see on a colonial waterbird tour at the J.D. Murphree Wildlife Management Area at Port Arthur on June 5.

Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

July 21, 23: * Bat flight and Green Cave interpretation, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

July 23: * Indian heritage program, Eisenhower State Park at Lake Texoma, 903-465-1956

July 23: * "Lena's Believe It or Not!", Martin Dies, Jr., State Park at Steinhagen Reservoir, 409-383-0144

July 23: * Binocular astronomy, Cleburne State Park at Cleburne, 817-645-4215

July 23: * Children's nature activity, Honey Creek State Natural Area near Bulverde, 210-438-2656

July 23: * Twilight nature hike, Ray Roberts Lake State Park Isle du Bois Unit, 817-686-2148

July 23: * Ride the horse trails with the Randall County Sheriff's posse, Palo Duro Canyon State Park near Canyon, 806-488-2227

July 23: * Beachcombing and shelling tour, Matagorda Island State Park, 512-983-2215

July 23: * "Canyon Rumbblings," Caprock Canyons State Park near Quitaque, 806-455-1492

July 30: * Jelly cooking with native plants, Honey Creek State Natural Area near Bulverde, 210-438-2656

July 30: * Bird and nature tour, Lake Tawakoni State Natural Area, 903-425-2332

July 31: * Comanche Warrior Triathlon, Big Spring State Park at Big Spring, 915-263-7641

Pedernales Falls State Park in Blanco County, 210-368-7304

July 6: * Explore Las Palomas WMA in the Lower Rio Grande Valley, 210-585-1107

July 7: * Fisheries survey techniques, Lake Mineral Wells State Park at Mineral Wells, 817-328-1771

July 7: * Seining demonstration, Lake Mineral Wells State Park at Mineral Wells, 817-328-1771

July 9: * Birdwatching, Pat Mayse WMA near Paris, 903-884-3833

July 9: * Observation of sinkhole and bat flight, Devi's Sinkhole State Natural Area near Brackettville, 210-563-2342

July 9: * Birding and hatchery tour with slice show, GCCA/CPL Marine Development Center at Corpus Christi, 512-937-7734

July 9, 23: * Birdwatching tour, Caddo Lake State Park and WMA, 903-884-3833

July 9-10: * Marbleized painting class, Landmark Inn State Historical Park at Castroville, 210-538-2133

July 9, 17: * Marine ecosystem tour, Matagorda Island State Park and WMA, 512-983-2215

July 9, 23: * Bird tour, Balmorhea State Park and Phantom Cave Springs near Balmorhea, 915-275-2370

July 10: * Horseback tour, Hill Country State Natural Area near Bandera, 210-795-3984

July 16: * Nature walk, Caddo Lake State Park and WMA, 903-884-3833

July 16: * Wildlife track identification, Choke Canyon State Park Callham Unit near Three Rivers, 512-786-3868

July 16: * Penn Farm Agricultural History Center tour, Cedar Hill State Park at Ice Pical Reservoir, 214-291-3900

July 16: * Bus tour, Big Bend Ranch State Natural Area, 915-424-3327

July 16: * Star Party Extravaganza, Big Spring State Park at Big Spring, 915-263-4931

July 16: * Stargazing, Guadalupe River State Park near Bulverde, 210-438-2656

July 18-21: * Nature Camp 1994, Eisenhower State Park at Lake Texoma, 903-465-1956

July 21, 23: * Primitive tour of Kickapoo Cavern,



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<i>Also serving McAllen, Mission</i>		
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<i>Also serving Beaumont/Port Arthur, Galveston, Texas City, Victoria</i>		
Killeen KNCT, Ch. 46	Tuesday	3:00
<i>Also serving Temple</i>		
Lubbock KTXT, Ch. 5	Saturday	7:00
Odessa KOCV, Ch. 36	Saturday	7:30
<i>Also serving Midland</i>		
San Antonio KLRN, Ch. 9	Thursday	12:00

Look for these stories in the coming weeks

MAY 29–JUNE 5: Comal Springs; an unusual sports tournament; mountain rescue.

JUNE 5–12: Texas Conservation Passport tours; rehabilitating birds of prey; Elder Hostel bird-watching tours.

JUNE 12–19: Quail hunting with dogs; winter fishing; a ranch that is preserving a Texan way of life.

JUNE 19–26: Historical structures along the Texas/Mexico border; life in a prairie dog town; whooping cranes.

JUNE 26–JULY 3: A day in Texas: some of the best moments our cameras have captured; catfish; prehistoric remains at Amistad Reservoir.

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A new partnership among government agencies and Ducks Unlimited will make it possible to improve salinity regulation in about 60,000 acres of marshlands in Jefferson County. The \$1,945,000 Salt Bayou project is expected to benefit all species of marsh wildlife.

Continued from page 25

Department, the U.S. Army Corps of Engineers and Ducks Unlimited have signed a partnership agreement for the Salt Bayou restoration project, which includes the McFaddin National Wildlife Refuge, Sea Rim State Park and the J. D. Murphree Wildlife Management Area, all in Jefferson County.

The Salt Bayou project, the third largest in the nation, will provide for construction of the second of two graded concrete water control structures. The first was built in 1990 about 13 miles west as part of the Taylor Bayou flood control project.

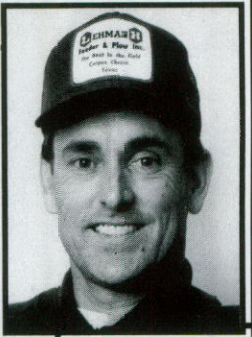
Estimated cost of the Salt Bayou project is \$1,945,000. The TPWD will provide about 25 percent of the funding, or \$486,000, with a portion from Ducks Unlimited. The project is important to the goals of the Gulf Coast Joint Venture of the North American Waterfowl Management Plan and has been included in the Coastal America program.

"This is a very important project for the future of waterfowl and wetlands management in Southeast Texas," said Vernon Beville, TPWD's migratory wildlife program director. "The large water control structure will help manage the saltwater and freshwater interchange in the Gulf Intracoastal Waterway."

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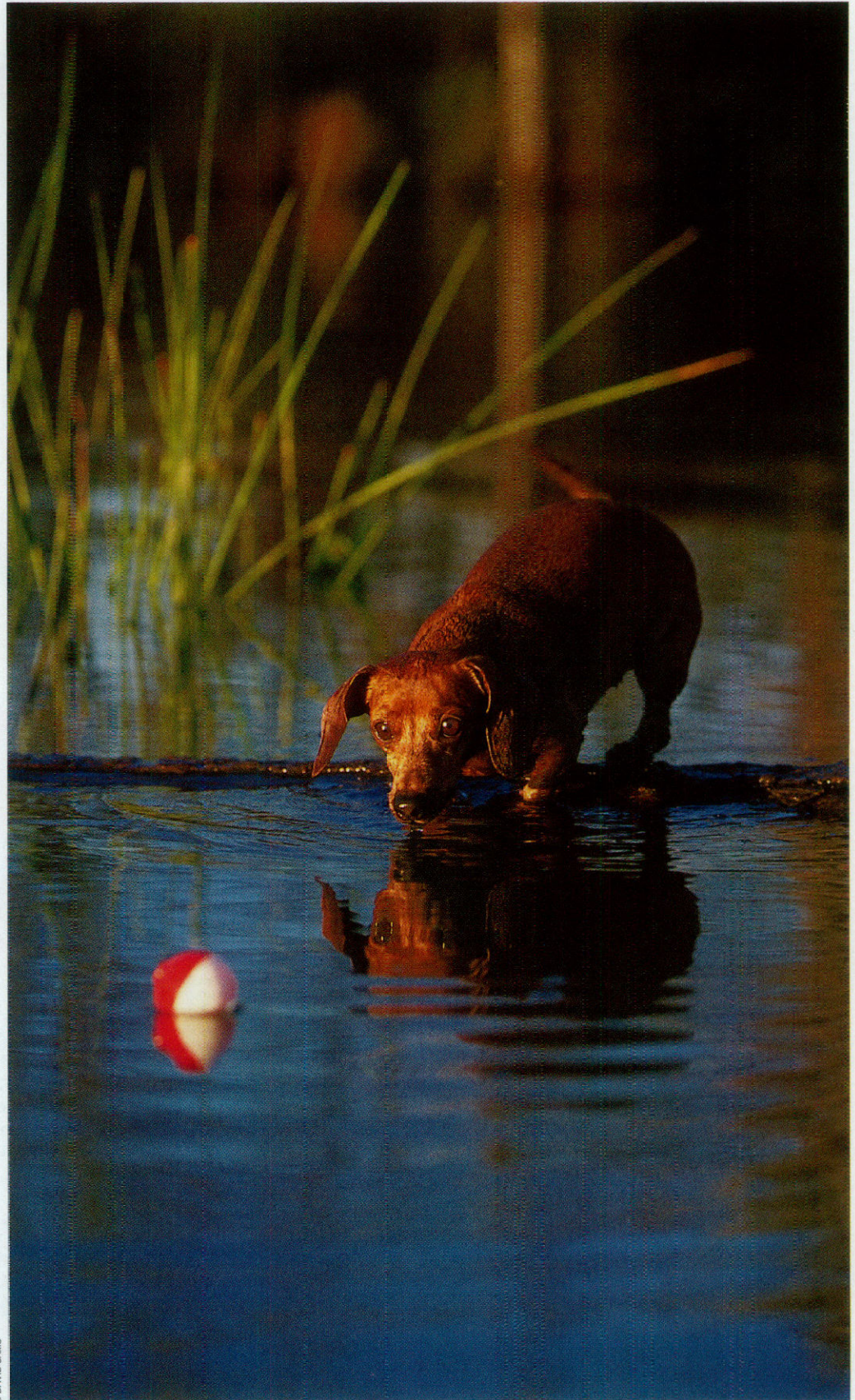
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