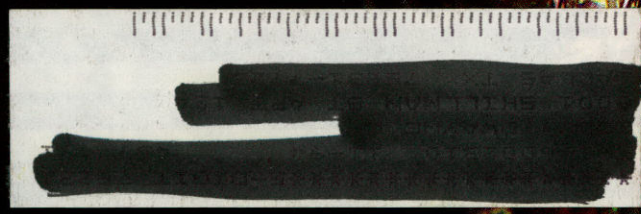


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14 WHITE BASS FISHING HOTSPOTS

TEXAS PARKS & WILDLIFE

MARCH 1994





TEXAS PARKS & WILDLIFE

- 4 LAKE OF PROMISE** Lake Ray Roberts got off to a promising start in the mid-1980s, only to fall on hard times due to weather and other factors. But things finally seem to be looking up for the 29,350-acre reservoir north of Denton. *by Mark McDonald*
- 12 TOP DOGS** Field trials began as a way for hunters to spend time afield with their hunting dogs after the hunting season was over. Today field trials are aimed at improving the dogs' hunting abilities as well as enhancing the trainers' skills. *by Gary Enkowitz*
- 20 TREE OF THE BACKWATERS** Specially adapted for life in a highly saline environment, the black mangrove is one of the few plants able to withstand the harsh and unstable conditions of Texas marshes. *by Janet R. Edwards*
- 26 BLUEWATER LABORATORY** A petroleum production platform in the Gulf of Mexico is the focus of an innovative partnership between science and industry. Located near the Flower Gardens Reef, this structure is one of the most unusual and spectacular artificial reef systems in the Gulf. *by Janet R. Edwards*
- 38 FESTIVAL OF WHITES** White bass fishing becomes especially exciting during the spring spawn, which begins in late March or early April and usually lasts only a few weeks. Here for your spring fishing enjoyment are 14 white bass hotspots. *by Bud McDonald*
- 46 THE CAJUN CRUSTACEAN** Crawfish provide a tasty meal for fish, turtles, snakes, a variety of mammals and, not incidentally, humans with an affinity for Cajun cooking. *by Deborah Timmerman*



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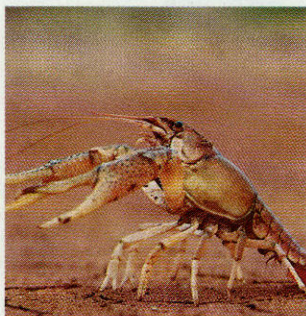
PAGE 26

C O V E R S

Front A reef butterfly fish is one of the many colorful tropical species found around a petroleum production platform in the Gulf of Mexico that serves as an underwater research station. See story on page 26. Photo © Stephan Myers. Housed Nikon F2 camera, 55mm micro lens, f/11 at 1/60 second, Fujichrome Velvia film.

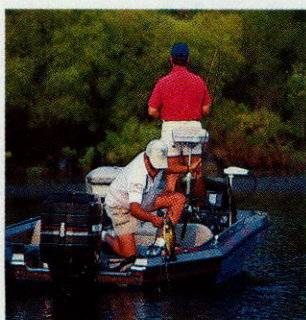
Inside Front Spring turkey season opens April 2. Turn to page 24 for an unusual turkey hunting adventure. Photo © Grady Allen.

Back Habitat loss and unregulated hunting drove the wood duck to the brink of extinction at the turn of the century, but management efforts including nesting boxes have helped the species. Photo © Joe Mac Hudspeth. Nikon FE2 camera, Nikor 500mm f/4 lens, f/4 at 1/125 second, Kodachrome 64 film.



© WYMAN MEINZER

PAGE 46



© GRADY ALLEN

PAGE 4

D E P A R T M E N T S

- 2 AT ISSUE** **3 LETTERS**
- 10 PARKS & PLACES TO GO** Isle du Bois State Park. *by Ann P. White*
- 18 STATE OF NATURE** Mending the land through restoration ecology. *by Kevin Good*
- 24 WOODS & WATERS** Reining in spring turkeys. *by Larry L. Weisbubn*
- 36 PICTURE THIS** State parks photo contest.
- 44 OUTDOOR DATEBOOK**
- 56 PARTING SHOT**

AT ISSUE

A number of years ago, I had the opportunity to hunt with my son on the Hill Country ranch of Houstonian Hugh Goodrich. The Goodrich Ranch, located between Utopia and Vanderpool, represents one of the earliest and best examples of ecological restoration that can be seen on any Texas holding, public or private.

Hugh's mother was one of Texas's first supporters of nature preservation along with sisters Margaret Wray and Nina Culliman. Mrs. Goodrich was a steward of the land in the highest and best sense of the word, and she and her son painstakingly undertook to restore it to its condition prior to European settlement of Texas.

As settlers began to arrive in Texas from Tennessee, North Carolina, Central Europe and elsewhere they found the Edwards Plateau to be an ocean of grass speckled only by occasional mottes of oak. This native savannah was maintained by seasonal grazing by herds of bison and periodic natural fires that swept through the region. Our ancestors "tamed" this wilderness by controlling the fires and introducing great numbers of domestic livestock. The savannah was destroyed and replaced by dense cedar brakes in less than a generation, and by the time of the Great Depression it was the most economically depressed region in America.

Today, efforts are growing to restore the Edwards Plateau's natural vitality and beauty on private lands such as the Goodrich Ranch, on preserves managed by the Texas Nature Conservancy and on public refuges such as the Kerr Wildlife Management Area. One of the best places to see this healing process is at Pedernales Falls State Park, which is featured in this month's State of Nature department in an article by Kevin Good. Superintendent Bill McDaniel, his colleagues and hundreds of volunteers have carefully begun to restore a Texas that has all but vanished. This is not simply an exercise in aesthetics, but an enlightened management strategy that brings measurable benefits to wildlife, ground water, soil conservation and economic viability.

Such management now is considered to be the leading edge of ecological stewardship, and thanks to the vision and commitment of landowners such as the Goodrich family and a growing number of others, it has survived intense challenges through the years and provides us today with one clear pathway to leaving the Texas landscape better after we are gone than when we arrived.

—Andrew Sansom, Executive Director



© ROBERT W. FARVIN

In April...

The Rio Grande empties into the Gulf of Mexico almost 900 miles from where it enters Texas in El Paso County. This legendary river is the focus of our special On the Border issue next month. Join us in April as we explore the natural resources, culture, history and recreational opportunities along this international border.

March 1994, Vol. 52, No. 3

TEXAS PARKS & WILDLIFE

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

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LETTERS



Prairie Chickens

"Vanishing With the Prairie" (November) brought back memories of when I was a boy in the late 1920s and early 1930s and my dad would take me chicken hunting. Dad became a game warden in 1925, and in 1938 he initiated the closing of the (Attwater's) prairie chicken season. About this time my dad, Tom Waddell, began working on getting a prairie chicken refuge. The Colorado County Attwater's Prairie Chicken National Wildlife Refuge now has 7,980 acres.

Tom Waddell dictated a story about the rise and fall of the Attwater's prairie chicken about a year before his death in 1982 at age 92. The story was interesting, especially the part about how he called up two male chickens who drummed all around his truck while Mr. Roy Bedichek watched and took pictures.

Congratulations to all those who work to save this beautiful bird. My dad's bird collection is in the Colorado County refuge.

William R. Waddell
Houston

Deer Populations

"Pecos County's Late-season Bucks" (December) correctly identified several problems with white-tailed deer populations. These include overpopulation, a high buck-to-doe ratio, spike bucks and small body size. The conclusion, however, that "...an aggressive and effective predator control program virtually [has] assured a good future for whitetails" is utter nonsense. The absence of large predators is in fact the primary cause of the excessive number of small deer, and is exacerbated by the human tendency to selectively remove the largest bucks. Until land managers recognize the benefits of natural predators, the symptoms noted above will continue.

Fred Wills
San Antonio

Big Game Awards

Each member of my family, which includes a seven-year-old daughter and an 11-year-old son, looks forward to *Texas Parks & Wildlife* magazine. My son and I especially enjoy the great articles on hunting and fishing.

One such article by Larry D.

Hodge in the October issue covered the Texas Big Game Awards. This program deserves all the publicity it can get since it recognizes the animal, hunter and wildlife manager equally. However, Mr. Hodge stated that the 145 2/8 typical white-tailed deer taken by Katrina Jackson in Terrell County was the top-scoring buck for Region 1, which encompasses far West Texas. Although it may be true that Ms. Jackson's deer was the top typical buck, the 177 4/8 net nontypical buck I harvested from a family ranch in Upton County was the top-scoring buck for Region 1 of the Texas Big Game Awards.

William F. Smith
Midland

A Better Grade

Thank you, thank you for making my life better. Thanks to your January issue, my History Fair project on Big Bend National Park is better than it was before it had photos from your magazine. This letter may not mean much to you, but it had a big effect on my history grade. From now on I'm going to read all your issues, just to help me learn more.

Lauren Sublett
Houston

Snipe Hunting

Kudos for your informative article "Jacks are Wild" (December), which detailed the art of hunting that underrated Texas gamebird, the jacksnipe. This little bird, rarely exceeding five ounces in weight, may indeed be the most competitive target a shotgunner will ever encounter and certainly is the most entertaining. Even enthusiasts like me are frequently humbled by the erratic flight of an alarmed jacksnipe. Such treachery!

I, too, have concluded that the only way to bag these clever little

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birds is to gather a large group of dedicated jacksnipe hunters and form a line, each gun about 40 yards apart, and softly walk across a freshly cut rice field. Even with this type of preparation the hunters need a lot of luck. Your insightful article has earned the praises of the true jacksnipe sportsmen of Texas.

Don Ray Boyd
Jacksnipers of Texas
Bellaire

Another Country Heard From

We receive your excellent and interesting magazine from our friends the Rutledges in Carrollton. The vast range of subjects and the superb color photographs are indeed beautiful and informative.

We can't understand why so many of your readers' letters are nothing but complaints and do nothing but criticize. The hunting mob bicker about the conservationists. The adventure- and fun-seekers moan about the rights of access and the protectionists howl about everyone else. Why? Your magazine seems to cater to every interest.

Your moaners should all come over and live in Scotland. We are such a small country in comparison to your vast state and although we do have our moaners and clashes of interest we also have a thousand times the pressure on our natural resources because of our lack of space. Yet we seem to be a bit more tolerant and rub along reasonably happily even though we don't have such a versatile magazine as yours to please all aspects of the great outdoors. Come on, you readers, stop carping and enjoy what to us is a fantastic thing to drop through the letter box every month.

Before we saw your magazine Texas to us was a vast area that had only one star in the sky, tons of oil and lots of beef. We now have seen in your pages so many of your hidden delights and wonders, and we feel we know something about you.

On a lighter note, I must complain about one of the ads you frequently feature for a hummingbird feeder, guaranteed to attract hummers. Well, I got one and it doesn't work. Maybe, however, the fact is that so far, hummingbirds don't live in Scotland.

John and Sue Murray
Stoneyburn Bathgate, Scotland



Lake of Promise

After a shaky start, fishing on Lake Ray Roberts should just get better.

Like most public puddles in Texas, Lake Ray Roberts has a nearby café where locals join friends and visiting anglers. They gather together, at separate tables, to share a strong, hot mixture of coffee and gossip.

by Mark McDonald

The waitresses have two first names—Verna Sue or Dcris Mae—and you don't have to ask for salsa or Tabasco sauce on your eggs. It's already on the table.

Biscuits and gravy will be a staple item on the menu. Our lunch special? Chicken fried fill-in-the-blank.

But food is not the main attraction. It's the debate over sterile grass carp,

the bag limit on crappie, catching bass on the spawning beds. At Lake Fork, this café is called Fisherman's Cove. On the Rio Grande, it's Amistad Lodge just out of Del Rio. Hang a sign over these doors: "Fishing spoken here."

Here at the Wagon Wheel, a long cast from Ray Roberts, the morning regulars are coaching their beloved



Ray Roberts Reservoir and Isle du Bois State Park (left) offer a wealth of fishing and camping opportunities within easy driving distance of Dallas/Fort Worth. The 29,350-acre lake is situated mostly in Denton and Cooke Counties just north of Denton.

Pilot Point Bears to the state football title, calling plays for Troy Aikman and dogging the Corps of Engineers about boat ramps. Typical merrymaking crowd. Get that hay in yet, Billy?

Against the wall, Forrest Fritcher and Bill Wilcox sip coffee with visitors, talking about, you guessed it, their favorite lake. They talk about Lake Ray Roberts with a mixture of nostalgia,

whimsy and wonder, as if the six-year-old reservoir were the Brazos, or some other ancient fixture in the North Texas landscape with a deep and storied past.

Truth is, Ray Roberts was impounded in 1987. Most folks here in the rolling countryside north of Denton have pickups older than that. Given its checkered past, the lake just seems old.

“This place has gotten more praising and cussing, from the same people, than any lake in Texas,” said Wilcox, a professional guide and regular at the cafe. He and local plumber Forrest Fritcher have fished the lake, or tried to, since before it actually was a lake.

“Within five years, Lake Ray Roberts will end up getting the kind of recognition Sam Rayburn gets, the kind Fork gets—I really believe that,” Fritcher said. “But the way things have gone, this lake has cured me of trying to guide.”

Never has a Texas lake opened with such intense planning and high optimism, then gotten off to such a promising start, only to fall on hard times. In baseball, Ray Roberts would be the rookie who arrives at training camp with the big reputation and lots of talent, but pulls a hamstring in the first workout and shows only flashes of greatness.

“This lake actually started with 14 nursery ponds in 1985,” said Texas Parks and Wildlife Department district biologist Bruce Hysmith, stationed in nearby Pottsboro. “We had threadfin shad, channel catfish and Florida bass. We also had some adult brood bass that had been used in the hatchery. I’m talking about four- to six-pounders here. Then there were maybe two dozen other ponds that had native bass in them.”

Instant fish factory. Just add water.

“When the Corps closed the gates in July 1987 and inundated some of those ponds, we had a fully developed fishery long before it normally would have happened,” Hysmith said. “Boom! Ray Roberts is there.”

But for every peak, there was a downside. At the early stages of Lake Ray Roberts’s development, bad news—high water, flooded parking lots and “closed for repair” signs—were just as much a part of the patchy

résumé as fisheries management strategy, brood ponds and eight-pound bass with the vivid, dark green markings of a new dollar bill.

In mid-1993, for instance, the Corps of Engineers lowered the water level almost 15 feet to take pressure off the dam while they fortified it with rip-rap. It is expected to remain low until summer 1994. And this was only the latest episode in a continuing saga. Lake Ray Roberts was closed three times, for weeks at a stretch, due to safety precautions. In between, the lake produced high standards for lake records and offered some of the best fishing to be found in Texas, especially for white bass, crappie and largemouth bass.

The shortage of boat launch and recreation facilities has been relieved by the opening of Isle du Bois State Park with campgrounds, picnic sites, a six-lane boat ramp and lighted parking. (See page 10.) Also open now are five small satellite park units with boat ramps, parking and restrooms at sites constructed by the Corps of Engineers and now operated by the TPWD. They are the Sanger, Jordan and Pond Creek Units in Denton County, Pecan Creek in Cooke County and Buck Creek in Grayson County. A second Grayson County unit is expected to open soon, according to Randy Bell, superintendent of Isle du Bois State Park. A sixth unit, Elm Fork, is located below the dam. It has no boat ramp, but does have facilities for fishing the tailrace area in the Trinity River. Maps of the entire area are available at Isle du Bois.

It's fitting this 29,350-acre reservoir be named for the late statesman, public servant, gentleman and sportsman from nearby Denton. Beloved as he was, this is the same Ray Roberts, a former aide to Lyndon Johnson, who one day admitted the LBJ camp would have formally protested allegations of ballot box-stuffing in losing a senate race to W. Lee (Pappy) O'Daniel . . . had LBJ, at Roberts' behest, not violated the limit set on campaign spending.

Years after the fact, Ray Roberts chuckled at his own admission, savoring the memory of what must have been a frustrating experience at the time. Forrest Fritcher and Bill Wilcox see the same mixed blessings in their

favorite reservoir.

At times, Lake Ray Roberts has made them feel magic, as if every cast would bring a four-pound bass. Then they might go hours without a strike, or be banned from the lake outright. Call it Lake See-Saw.

Here's a look at the Lake Ray Roberts roller-coaster through the eyes of Fritcher and Wilcox, two regulars who have seen the young/old lake on her best/worst behavior:

- Mid-1985—The Texas Parks and Wildlife Department begins raising Florida largemouth bass, channel catfish and threadfin shad in brood ponds and a borrow pit in the main lake basin of what someday will be Lake Ray Roberts. "We had some dynamite fishing in my neighbors' ponds and stock tanks long before the department started raising their fish," said Fritcher. "It's just real fertile water."

- Summer 1986—Quietly, local residents are launching their boats from private property and catching dozens of healthy bass in the main river channels. Years later, Fritcher said he once caught 30 bass weighing three pounds or more.

- July 1987—Corps of Engineers authorities, faced with growing demand for launch facilities and landowner complaints about trespassing, ban the use of outboard engines on the fledgling lake. Fritcher and Wilcox enter via land owned by friends and neighbors and continue to catch bass weighing up to five pounds.

- May 1988—Months of excellent fishing from kayaks, innertubes and canoes comes to a grinding halt when Roberts catches 25 feet of runoff in one week. Crappie were moving out of the shallows into their summer haunts, and Fritcher was there to intercept them, catching "a thousand in one week" on light tackle.

- January 1, 1990—At long last, the lake officially opens to outboard-powered boating traffic. Anglers get in line at dusk the day before to be among the first to launch. Anglers from as far away as Lubbock and Amarillo have pulled their boats to Roberts for the official debut. Wilcox and Fritcher spend the night in their truck waiting for safe light the next morning.

Faced with water temperatures of 37

degrees, the anglers meet with instant disappointment, especially those bass fishermen who have not fished the lake as much as Wilcox and Fritcher. Wilcox catches a four-pound bass in the first two hours of fishing, then goes nine days without a strike.

"You got a bite nine days later?" Fritcher said. "I caught one that first morning, then I got my next bite 17 days later."

- March 1990—Lake record white crappie (3.09 pounds) caught by Michael Loyd.

- April 1990—Spring rains send the water level soaring. During one six-hour period, the level rises six feet.



© DAVID J. SMAS

With water running two feet deep over the Highway 377 bridge, Corps authorities, citing safety precautions, close all recreational facilities. Out fishing that morning, Wilcox returns to the boat ramp to find water lapping at the floorboard of his pickup.

- June 1990—The Corps reopens boat ramps, parking lots and other facilities. Water is still so high, boaters can hardly drive under the road bridges without ducking.

- September 1990—The Corps opens new boat ramps and parking at Jordan Park and Sanger access area. The additional ramps help relieve some of the strain on overloaded ramps



© GRADY ALLEN

Florida-strain largemouth bass (left) have been stocked in Ray Roberts since before impoundment, and biologists say the big lake could develop into one of the state's better bass fisheries in the future.

Abundant brush and timber in the lake's bed and fertile water are expected to provide good fishing for catfish (below) as well as crappie, white bass and sunfish.





Ray Roberts Reservoir is expected to attract heavy fishing pressure because of its proximity to large population centers in North Texas, but with sensible bag and size limits and continued participation of anglers in catch-and-release fishing, biologists believe the big lake will provide good fishing on a permanent basis.

by Thomas Duncan of Sherman. In January 1993, the Corps finished construction on Isle du Bois State Park and turned it over to the department to run. It opened in March 1993.

For more optimism, Hysmith points to the fishing quality: mild winters and high water have combined to produce staggering numbers of bait fish for the base of the food chain; the lake is rich in standing hardwoods and other fish habitat; the spirit of catch-and-release is alive and well, protecting bass brood stock and keeping all fish populations in balance; the lake, like nearby Lewisville, Bridgeport, Lavon and Weatherford, lies at the upper end of the Trinity River watershed, thus water quality is not likely to suffer.

"Is a 15-pounder possible? Definitely," Hysmith said. "The shad population has gone crazy, especially threadfin. There is so much out there for bass to eat, all they have to do is open their mouths."

For some frustrated anglers, it may be too much of a good thing. "People complain about tough fishing, but that's because the predators in Ray Roberts are not always aggressively feeding," Hysmith said. "Their bellies are full from the natural food supply."

Fritcher claims his home lake may one day rival Lake Fork in producing trophy bass. Who's to argue? Thick with timber, Ray Roberts receives relatively light fishing pressure for a lake its size, and its potential is undeniable. Somewhere up there, Ray Roberts himself must be smiling. ★

Mark McDonald is outdoor editor of the San Antonio Express-News.

elsewhere. At the urging of sportsmen, the TPWD tightens the bag limit on bass from five fish and minimum length of 14 inches to three bass, 18 inches minimum.

- December 1990—Lake record white bass (3.12 pounds) caught by Paul Foster.

- Winter 1991-92—After a rather peaceful year, more flooding forces Corps authorities again to close all facilities. Fritcher, a busy guide by now, must cancel 67 guided trips at \$200 a day. Wilcox limps through the winter, taking regular customers to Lake Monticello instead.

- February 1992—Ramp facilities are limited to the old highway road bed for Farm Road 455. It's a nightmare. On weekends, launching a boat requires two hours and patience. But free from boating traffic, the bass population has grown large and gullible. On February 22, Fritcher uses a spin-

nerbait in shallow water to catch and release 10 bass that, on hand scales, weigh a total of 57 pounds. He estimates his best three weighed 22 pounds.

- March 1992—With waters receding to more normal levels, facilities are reopened. The Corps builds ramps and parking at Buck Creek on the lake's northeast side, to be operated by the TPWD, giving the reservoir five launch areas—Jordan, Pecan Creek and Buck Creek Parks and Sanger and Pond Creek access areas. Lake record channel catfish (16.3 pounds) caught by Eric Sauls.

- April 1992—Lake record flathead catfish (40.9 pounds) caught by Eric Sauls.

True, Lake Ray Roberts has a checkered past. But, looking ahead, her regular visitors see nothing but promise. In July 1993 the lake record largemouth bass (14.06 pounds) was caught



The highest point of forest in this rolling North Texas countryside became a landmark to early settlers in the 1800s. They called it Pilot Point. Grassy fields of native bluestem, broken by dense stands of oak and hickory, sloped gently to the Trinity River and Isle du Bois Creek below. Today this basin holds the spacious new Ray Roberts Lake, abundant with fish and edged with wooded peninsulas reaching out from shore—a great setting for a new state park.

In the last century Pilot Point guided immigrants and travelers on the Butterfield Stage on its route to the west. “The settlers traveled to Sherman by train, purchased buggies and wagons and followed the telegraph line southwest to Pilot Point and west to the Texas forts,” said Clifton Irick, local historian and resident of Pilot Point for all his 73 years. “In 1854 a townsite was platted, and it became an important trading center for cotton and wheat farmers of the Blackland Prairie to the east and fruit growers of the sandy Cross Timbers country to the west.”

Now, 150 years later, the travelers are outdoor enthusiasts who head for the lake and the new Isle du Bois unit of Ray Roberts Lake State Park on the southeast shore just west of Pilot Point. The Cross Timbers forest, grasslands and water that attracted bands of Kiowas and Caddo Indians, as well as early settlers, combine with a waterfront setting to make an ideal location for the new state park. Extending into the lake on a large peninsula, Isle du Bois looks out over an inviting expanse of water from four of its five campgrounds. Some 1,397 acres sprawl along an 11-mile shoreline and another 290 acres lie below the dam as a day-use area along the original channel of the Elm Fork of the Trinity River. Campsites



© ANN F. WHITE

Isle du Bois State Park

cluster on the various peninsulas with lake access just a few steps away.

“Development of recreational facilities around the lake is a cooperative effort of the cities of Denton and Dallas, the U. S. Army Corps of Engineers and the Texas Parks and Wildlife Department,” said Randy Bell, superintendent of Ray Roberts Lake State Park. “The Corps handled the construction, with Parks and Wildlife assisting in the master plan.”

Unlike some other Corps of Engineers lakes, the total 48,000 acres—29,350 surface acres of water and 18,568 acres of surrounding land—is under the management of the Texas Parks and Wildlife Department, either for development of parks, satellite-park lake-access sites, or for wildlife management. None of the land is privately owned.

“The protected area, surrounded by 225 miles of fence, includes parts of three counties—Denton, Cooke and Grayson,”

said Bell. Four outlying boat ramps, in addition to those at Isle du Bois, assure access at various parts of the lake. Some 4,200 acres have been designated for state park facilities, including later development of the Johnson Branch unit of Ray Roberts State Park, across from Isle du Bois.

At Isle du Bois, you can camp beside the water and sleep with the sound of waves lapping the shore. You can bring your own horse and park your rig at the Bluestem Grove campground, especially equipped for such an outing. If you enjoy more natural surroundings, you can walk a short distance with your tent and other gear for a quieter lakeside setting in one of the walk-



© FRANK MOSTER

Swimming and horseback riding are two of the many activities available at Isle du Bois State Park, located on the southeast shore of Lake Ray Roberts. A 12-mile multiuse trail designed for horseback riding winds through the woods near the lakeshore.

in campgrounds. If you choose Hawthorne, your walk-in brings you to a campground almost completely surrounded by water. At Deer Ridge your lake view includes a nearby scenic island.

In the water-edged, shaded day-use area, you can relax on a sand beach and swim in its protected curve, or enjoy a picnic with your family under the trees. You can launch your boat in the six-lane launch, then search for fish for supper. Or you might take advantage of a fresh, forest-scented breeze to sail in uncluttered waters, or slice the wind behind your craft on water skis.

Others might prefer to hike or bike the new paved 4 1/2-mile trail that winds through dense woods along the lakeshore. This wide trail leads through a canopy of oaks, elms and hickories, with cottonwoods and willows near the shore. In the spring you might see a redbud, wild plum or dogwood through the woods, or blackberry vines close to the forest floor. In the fall the cottonwoods and willows turn brilliant gold and hardwoods bronze and red.

An additional 12-mile, multi-use trail extends the hiking potential considerably. It also is

designed for horseback riding. This trail winds through the woods near the shore all the way to the Jordan Park launch site. In the other direction, it extends to the Elm Fork section of the park along the Trinity below the dam. From here the river flows to Lake Lewisville, a few miles south. The Corps of Engineers currently is acquiring land on both sides of the river as a future greenbelt with plans for it to extend all the way to Lake Lewisville.

As you enter the park gates just east of the Ray Roberts dam, you immediately feel the pleasant, spacious quality of Isle du Bois. Park headquarters looks out across broad grassy spaces to woodlands on either side. A scattering of tall pines, planted by earlier residents, mixes through the woods near the entrance. Wide expanses of meadows provide sunlight for spring wildflowers, while deep forest is habitat for wildlife. Campground names—Hawthorne, Wild Plum, Bluestem Grove, Deer Ridge and Quail Run—all reflect the setting.

In the Cross Timbers woods you might see squirrels, cottontail rabbits, raccoons, armadillos and white-tailed deer—or a beaver or nutria along the water's edge, especially early in the morning. A wide variety of birds abound, from egrets and great blue herons to the familiar cardinals, blue jays, mockingbirds, quail and doves.

Ray Roberts Lake with its plentiful population of game fish remains the largest attraction at the new park. It has been stocked with Florida-strain largemouth bass, in addition to having a good variety of native fish. Fort Worth *Star-Telegram* reporter Bob Hood wrote, "Ray Roberts has one of the greatest fisheries in North Texas, and not just for largemouth bass. The lake has stout populations of crappie,

white bass and channel catfish, too."

The two large arms of Ray Roberts Lake vary in surrounding terrain, but the arm of Isle du Bois Creek on the east is larger and deeper, surrounded by heavy timber, with more points and breaks along the shore and more creeks feeding into the lake.

Named Isle du Bois by early French settlers (pronounced "Zilla Boy" by local residents), the creek that leads into the lake from the north has combined with the Elm Fork of the Trinity to create an outstanding lake and recreation ground for North Texans and other visitors.

Located some 50 miles north of Fort Worth and a few miles closer to Dallas, Isle du Bois Park's wooded shores, peninsulas jutting out into the lake, planned facilities for 184 campsites and many other amenities will assure its ranking as a popular and well-loved outdoor destination. And Pilot Point, four miles east, endures as a landmark for travelers.

by Ann P. White

Isle du Bois State Park

To reach Ray Roberts Lake State Park's Isle du Bois unit, take State Highway 455 east from Sanger about 10 miles. (Sanger is located approximately the same distance north of Denton on Interstate 35.) Continue on Highway 455 across the dam to the park entrance on the east side. Highway 455 also can be reached from U. S. 377, turning west about two miles south

of Pilot Point.

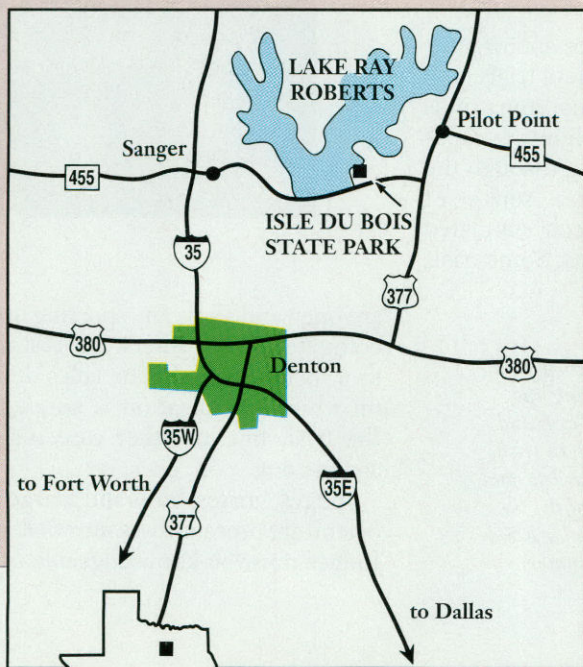
Camping fees include:

Quail Run and Deer Ridge, water and electricity, \$12 per night on weekends and \$10 weekdays.

Bluestem Grove, Hawthorne and Wild Plum, water only, \$9 on weekends and \$7 weekdays.

Daily entrance fee per vehicle, \$5 per day and \$3 on weekdays, in addition to camping fee.

For information call 817-686-2148.



MAP BY DEBRA MORGAN

Four State Parks Featured on TV Show

Four Texas state parks will be featured on the "Texas Country Reporter" television series during March. The dates for each park's segment are: Caprock Canyons near Quitaque, March 5-6; Caddoan Mounds in Harrison County, March 12-13; Washington-on-the-Brazos at Washington, March 19-20, and Longhorn Cavern near Burnet, March 26-27. Check local listings for broadcast times in your area.

TOP DOGS

Field trials challenge dogs and trainers.

by Gary Enkowitz

Even in the early morning light it was easy to distinguish the silhouettes of the numerous vans, pickup trucks and other vehicles parked at the edge of the field. People huddled around them engaged in lively conversation and an occasional outburst of laughter.

The back of every vehicle contained at least one, and often more, dog carriers, and some of the pickups were

outfitted with custom kennels. The glistening noses and bright eyes of the eager occupants shone from inside each enclosure.

Excitement filled the air as the people scurried around in preparation for the day's events. The dogs were anxious too, for they were the ones to be challenged during the day's field trial.

It has been widely accepted that field trials originated in England, but they have a rich and long history in Texas dating back to the late 1800s. Initially hunters participated in these events as a way to spend more time afield with their canine companions after the end of the hunting season, but field trials later evolved as a way to improve dogs' hunting abilities.

Numerous clubs and organizations conduct field trials, and their common denominator is to challenge the hunting capabilities of each dog through the presentation of a series of increasingly difficult simulated hunting conditions. Some trials

are open and allow any sporting dog to compete, while others are restricted to a specific breed. The rules depend on which organization is conducting the trial, but in either case it's dog against dog.

Judges, horses, birds and a large area of land are prerequisites for a field trial. Judges must be knowledgeable of the



Pointers and setters are popular breeds for quail hunting and field trial events in Texas and across the Southwest. An Irish setter is in the photo at left, and above right is an English pointer, the most popular breed among Texas quail hunters.





breed and of the sanctioning organization's guidelines to determine the qualities of each dog. They donate their time and have reached their status through experience and dedication to the sport.

Riding horseback helps the judges keep up with the dogs in the field, since the trial may cover hundreds of acres,

and gives them a higher vantage point. Pen-raised birds often are used since many trials are conducted outside the hunting season.

There are as many different types and styles of field trials as there are hunting dogs, on both the amateur and professional levels. During the trials, each dog is tested equally through a

process of elimination. Points are awarded to the top three dogs at each trial. The number of points awarded is determined by the number of dogs competing in the trial and their finishing place. The accumulation of points is required if the dog is to progress from competition in local clubs to competition in state and, finally,

national trials. The field of competitors is strong and a dog either moves up in the standings or is eliminated.

There are many benefits to field trials. For some, the emphasis is not on competition, but on participation. The individual hunter may not have the time or money to enter on a national or professional level, but by taking part in field trials can enhance his bird dog training skills.

For the professional trainer, competing successfully in field trials means prestige and financial rewards. The achievement signifies that the trainer has an in-depth knowledge of the breed and knows how to bring out desirable qualities. It demonstrates his ability to train the dog and fine-tune its instincts. Trainers whose dogs place in the standings are in high demand.

Field trials are conducted for each of the various breeds of sporting dogs to test their particular hunting traits. The pointing dogs, those that stop and point when they scent a gamebird, dominate the field trial circuit. They include Brittany spaniels, English pointers, English setters, German shorthaired pointers, German wire-haired pointers, Gordon setters, Irish setters, vizslas, weimaraners and wire-

haired pointing griffons.

When working thick cover, where birds tend to sit tight, flushing dogs take the lead. Spaniels eclipse all others in this arena and this group at one time included Brittanies in addition to cockers, English springers and Irish water spaniels. However, in 1982 the classification of the Brittanies was changed since they are generally trained to point.

Field trials for retrievers differ from those for the pointing breeds. Rather than running through the fields to find birds, the retrievers are graded on their retrieving ability.

Retrievers do exactly what their name implies—retrieve game downed by a hunter, whether on land or water. Labradors and goldens are the most popular, but Chesapeake Bays, curly

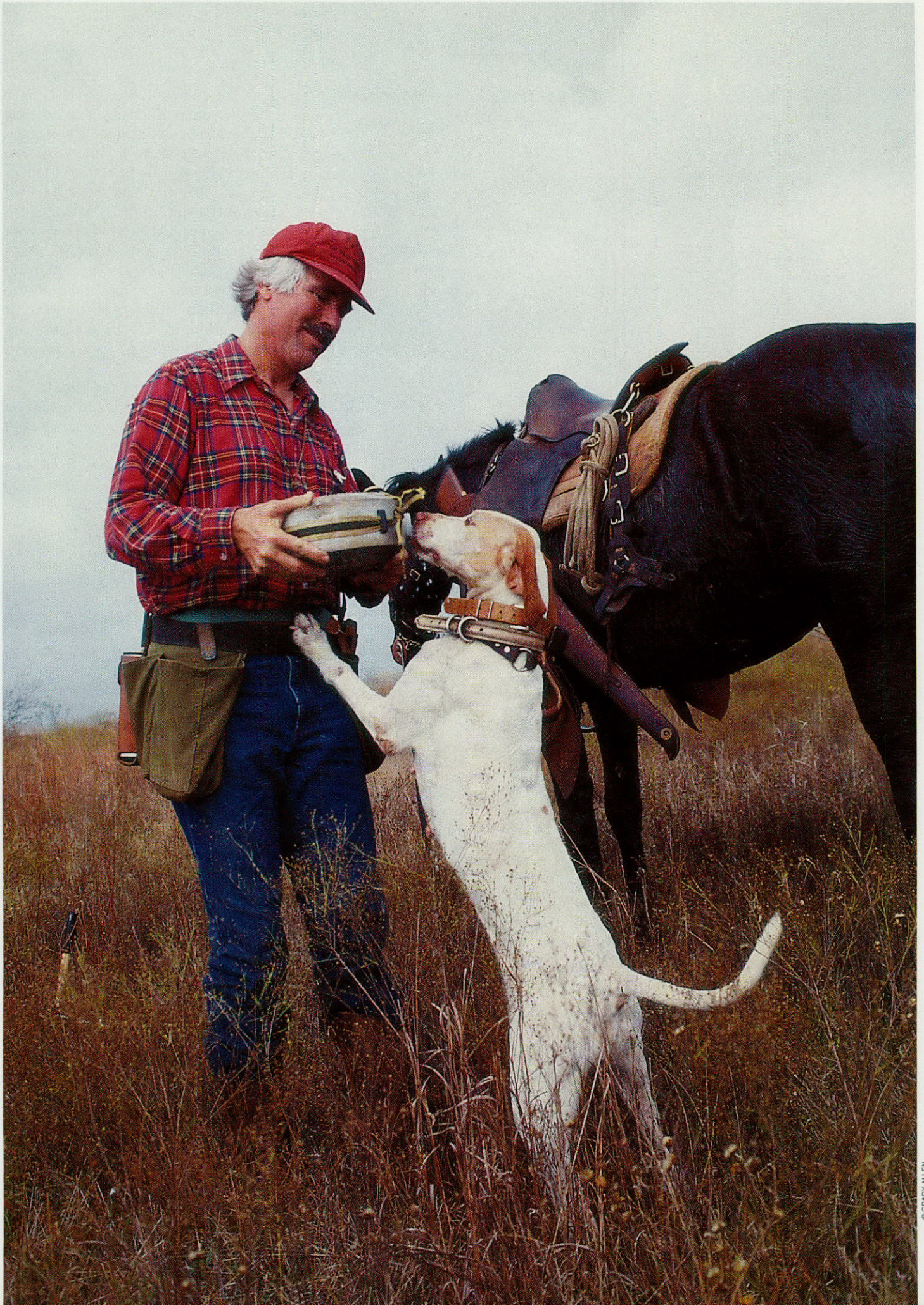


GLEN MILLS

Field trials provide opportunities for pointing dogs, pictured on this page, and retrievers to receive extra training outside normal hunting seasons. Trainers also can polish their skills and enjoy the competition. Below, judges on horseback prepare to follow pointing dogs at the start of a field trial event.



GLEN MILLS





and flat-coated retrievers also have their devotees. Each dog is challenged by having to mark birds set out and then retrieve them to their handler. There also is a blind retrieve, where the dog must find and retrieve a bird without having any prior knowledge of its location, aided by hand signals from the handler. To further test the dog's ability, retrieves may be on land, from water or a combination of both. As the competition stiffens the number of marks, distances to be covered and degree of difficulty for each retrieve is increased.

A recent addition is the hunt test, in which each dog is graded against a standard rather than dog against dog. During a hunt test a dog can be eliminated, but it cannot be placed one, two

The English pointer at left displays the "point" to indicate the location of a quail during a field trial. Pointing dogs are trained to locate, but not flush, the hiding birds until the hunter or field trial judge arrives.

SPORTING DOG ASSOCIATIONS

Amateur Field Trials of America
360 Winchester Lane
Stanton, TN 38069

American Kennel Club
51 Madison Ave.
New York, NY 10610

American Brittany Club
Rt. 1 Box 114BP
Aledo, Texas 76008

American Pointer Club
8275 36th Ave.
Hudsonville, MI 49426

American Spaniel Club
846 Old Stevens Creek Road
Martinez, GA 30907

English Setter Association of America
114 S Burlington Oval
Chariton, OH 44024

German Shorthaired Pointer Club
of America
1101 W. Quincy
Englewood, CO 80110

German Wirehaired Pointer Club
3838 Davison Lake Road
Orionville, MI 48462

Golden Retriever Club of America
21 Holloway Drive
Lake St. Louis, MO 63367

Gerdon Setter Club of America
6330 N. Territorial Rd.
Plymouth, MI 48170

Irish Setter Club of America
1617 Ledge Falls
San Antonio, TX 78232

Labrador Retriever Club
9630 Wilson Mills Rd.
Chardon, OH 44024

National Amateur Retriever Club
P.O. Box 828
Cohasset, MA 01741

National Bird Hunters Association
P.O. Box 1186
Van Horn, TX 75798

National Shoot-To-Retrieve
Field Trial Association
226 North Mill Street
Plainfield, IN 46168

North American Versatile Hunting
Dog Association
P.O. Box 520
Arlington Heights, IL 60006

Texas Independent Bird Hunters
Association
1930 HiLine Drive
Dallas, TX 75207

Texas Quail Unlimited - Texas Council
1400 Avenue L
Anson, TX 79501

Vizsla Club of America
15744 Hampshire Avenue
Prior Lake, MN 55372

Weimaraner Club of America
P.O. Box 110708
Nashville, TN 37222



GLEN MILLS

or three as in field trials. Here the dogs are graded on competency in the field. Field trials award the top three dogs through a process of elimination, but in hunt tests the number is determined by the number of entrants that successfully complete the course.

In Texas, the number-one upland game bird is the bobwhite quail and the most widely used pointing dog is the pointer. They are well-suited to this task because they tend to range widely, a trait that is important in Texas's wide open spaces. Deciding what breed of dog to obtain often is determined by the game being sought, the type of terrain to be hunted and what the hunter wants from the dog. Some breeds make excellent family pets while maintaining their enthusiasm for the field. The Brittany has achieved widespread acceptance as a versatile dog for the upland bird hunter. It will readily hunt dove, quail, pheasant, grouse, woodcock or chukars and also retrieve waterfowl.

By late afternoon, the field of dogs had been put through their paces. Those who earned the top three places knew it had been accomplished through hard work and dedication. The others had a sense of satisfaction for a job well done and knew there would be another trial when it might be their turn to have the top dog. ★

Gary Enkowitz is outdoor editor of the Denton Record-Chronicle.

Field trials for retrievers (right), include retrieving on land, water, or a combination of both. The Gordon setter above is holding on point with a bobwhite quail in the foreground.



GLEN MILLS

Mending the Land

For many visitors to Texas state parks, one of the main attractions is the opportunity to escape the man-made vistas of urban areas and enjoy the natural environment. However, those who do so may be unaware of the efforts necessary to maintain natural ecosystems.

"What could be more simple than keeping a park or natural area in a natural state?" you might ask. "Isn't it just a matter of letting nature take its course?"

But managing the natural resources of the state park system is not such a simple matter. Parks have become islands in a sea of development and alterations to the natural terrain. The wild hand of nature that swept across the countryside in the past has been tamed by human actions. The broad strokes that once renewed and invigorated the land have been restricted or eliminated altogether, causing unforeseen impacts on native habitats.

Before settlement by the pioneers, floods, violent storms and fires were instruments of renewal for the land. Fires were essential for the maintenance of grasslands and were a part of many forest ecosystems. Periodic floods nourished the bottomland forests, wetlands and oxbow lakes near rivers and streams.

In its efforts to preserve pieces of the state's distinct natural environment, the Texas Parks and Wildlife Department is replicating some of these natural processes of the past and intervening in other ways to maintain the historic natural plant and animal communities found on our public lands. This activity, known as restoration ecology or conservation biology, is a relatively new field. It involves taking an active and sometimes aggressive role in land management. Often, an area has been

so altered that intensive restoration efforts are necessary before an ongoing management program can begin. The tools of the resource manager may include fire, chainsaws, shovels, selective herbicides and even bulldozers.

Another term for this approach is "ecosystem management" because of the intensive and broad-scale efforts used to modify existing communities. In a general sense, ecosystem management strives to understand the forces that under natural conditions shape a plant and animal community. The resource manager also may have to deal with plants or animals introduced from other parts of the world that have found a home on our public lands.

The first step in a natural resource management program is to determine what the "natural" landscape is. This is one of the most difficult tasks, because there are few places on earth that have not felt the impact of modern man's activities. Biologists must look at the existing plant community, historical records and the regional context for clues to the past. Sometimes remnant plant communities can be found in native hay fields or in areas that were difficult for humans or domestic livestock to get to. "The goal of such an assessment is to determine what would occur naturally on a given tract under current climate conditions, with given soils and topography," said David Riskind, head of Texas Parks and Wildlife's Resource Management Program of the Public Lands Division. Often, the entire physiognomy, or structure, of an ecosystem has been altered. In the case of brush infestation on native prairies or unmanaged regrowth juniper in the Texas Hill Country, many years of work may be necessary to restore the historic natural landscape.

After ecologists determine what an area would have been like without human-caused disturbance, they develop a plan to restore and maintain this natural community. It is not always possible or even practical to replace every single component in the system to have a functioning community. An analogy often is drawn between these efforts and a jigsaw puzzle; not every piece of the puzzle has to be in place in order to know what the picture looks like.

An example of natural resource management by the Public Lands Division is the restoration of the savannah landscape at Pedernales Falls State Park. From historical accounts, ecologists know that when settlers came to the Hill Country, they found a land dominated by little bluestem, grama grasses and Indiangrass. Ashe juniper, commonly called cedar, was found mainly on steep hillsides, where it grew to maturity mixed with other trees. The oaks of the region normally occurred in mottes, or clumps of trees. The solid cover of juniper often found on level terrain today would have been very unusual 200 years ago.

The historic landscape was shaped and preserved by wildfires which, with few natural barriers, burned their way across miles of

open grassland. The oak mottes created a "micro-environment" beneath the trees by shading out grass. This deprived the fire of fuel and spared the oaks from the flames. Fires also bypassed the rocky scarps and canyon slopes where Ashe juniper prevailed. The fire had a cleansing and invigorating effect on the grasslands. Savannah grasses were well adapted to fire, losing only one season's growth and quickly sending up new greenery. Woody plants attempting to become established did not fare so well, however, and often would be killed or reduced in number by the passing flames. This maintained the open range that attracted early settlers.

The random occurrence of the grassfires assured that the regional landscape had areas in different stages of succession at any given time. When an area escaped the flames for a number of years, brush such as persimmon, agartita and juniper began to grow and compete with the grasses for light and nutrients. Eventually, during prolonged dry periods when the grass was withered, or during a cold winter when previous growth had died, a lightning strike on a hillside would ignite the ready-made fuel and fire would spread across the land, once again permitting a new



Biologists are attempting to reclaim native grasslands in some state parks where past land uses have altered the habitat. The grassland and oak savannah area above is at Pedernales Falls State Park.

© DALE LINENBERGER

cycle of growth.

The management plan for Pedernales Falls is recreating this pattern on a small scale. Because of the suppression of fires from the area, the land had become dominated by a closed canopy of juniper. Therefore, the first step in implementing a restoration management plan for the park was the removal of much of the juniper from areas that historically would have been grassland. Left intact, however, was the mature cedar, which provides nesting material for the endangered golden-cheeked warbler. With the removal of the closed canopy of juniper, grasses that had long been absent were able to begin to colonize the open land once again.

Three years after cutting much of the juniper, a prescribed burn was conducted on the area, setting fire to the newly established grass. This killed many of the juniper seedlings trying to become reestablished on the site. Some large stacks of the previously cut juniper also were burned, creating small bonfires that left sterile patches of soil. These would wait for seed to be planted by man or nature.

The Public Lands Division's resource management program then turned to the public for assistance. Volunteers burned the piles of cut Ashe juniper. Then, where each pile had been, the bare soil was planted with native grass seed. The stage was set for other plants to begin to establish themselves. Within weeks, a great diversity of annual and perennial forbs as well as woody plants had begun to recolonize the site, attracting deer, quail and turkey. This marks the first in a series of successional stages that gradually will transform this section of the park.

As nature is allowed to proceed unaltered for a time, the grass cover and forb diversity will increase, stimulated by the fire and with little competition from



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A volunteer clears small trees from a restoration site at Pedernales Falls State Park in Blanco County.

juniper. Some of the brushy species such as agarita and persimmon will begin to resprout after their tops are killed by the passing flames. As the brush grows, it becomes available to browsing deer. When it reaches a height of three to six feet, it has the potential to become nesting habitat for the endangered black-capped vireo. Eventually, a mosaic of open grasslands, oak mottes and brush will develop, vital to the specialized requirements of the vireo.

If allowed to continue unmanaged, however, this process would result in the site once again being dominated by a thick cover of juniper. The vireos would disappear when the balance of brushy plants and open range tips too heavily on the side of brush and trees. The nature of vireo habitat is transitory, coming into being in one area, then growing past usefulness after a number of years, as it gains height and loses diversity. If the juniper canopy were permitted to close in, the deer population also would suffer due to a lack of food.

To avoid this, the resource manager must step in again to simulate the hand of nature. A team of conservationists will set another grass fire to sweep across the restored savannah, killing many of the woody plants and pruning the rest. This measure

will protect the initial ecological investment and renew the cycle of succession.

At Pedernales Falls a mosaic similar to that which occurred in the past will be established by dividing the park into sections and alternately burning each area on a rotational basis. Some sections will be native grasslands, while other areas will have brushy plants of various heights. Other sites, such as the mature oak-juniper woodlands, will remain completely untouched. By establishing such a pattern, the land will support a wide range of species. Different animals are adapted to each stage in the changing mixture of plant species. It is the goal of the management plan to provide for the needs of the wide range of animals adapted to various habitats found on the Edwards Plateau.

The restoration effort at Pedernales Falls is a long-term process, requiring ongoing maintenance efforts. It may take a generation before the land begins to resemble its appearance of two centuries ago. As resource management biologist Matt Wagner said, "It took many years for the land to degrade into what it is today. We need at least part of that time to get it back to what it was." This is a large expenditure of effort, but the result will be a refuge for wildlife and a restored landscape that Texas can treasure forever.

by Kevin Good

You Can Help

There are opportunities to become involved in restoration programs such as those described in this article. Restoration programs similar to Pedernales Falls are underway at Guadalupe River, Honey Creek and Colorado Bend. Other large restoration and resource management programs in need of volunteers include McKinney Falls,

Brazos Bend and Caprock Canyons. In addition, most parks have smaller sites in need of volunteers to rehabilitate areas suffering from visitor use. There are projects for short and long term volunteers and one need not be a skilled biologist to participate. If you would like to participate in conservation efforts contact the park of your choice or call 1-800-792-1112. Public involvement in these programs is encouraged and appreciated.

TPWD Acquires Tract In Sabine Bottomlands

The Texas Parks and Wildlife Department is now owner of 4,937 acres of prime Sabine River bottomlands in Smith County.


The tract was purchased by the Parks and Wildlife Foundation of Texas with \$1.3 million derived from sales of state waterfowl and turkey hunting stamps. The remainder of the total \$2.7 million price was provided by Ducks Unlimited, the National Fish and Wildlife Foundation and local supporters. The transaction was completed in December.

The tract, known as the Anderson tract, borders the Little Sandy National Wildlife Refuge north of Tyler. Both sites are within the 14,000-acre Middle Sabine Bottoms, an area given a high priority for conservation by the U.S. Fish & Wildlife Service.

"This acquisition of the number-one bottomland hardwood site in Texas has not only state but national significance," said Ed Cox, Jr., of Athens, foundation chairman. "It's a fitting cap to a very successful year for the foundation in fund-raising and conservation in Texas."

Department officials said the agency will protect the area's natural resources while also providing public opportunities for hunting, wildlife viewing and other outdoor recreation.





Tree of the Backwaters

The black mangrove is important to Texas marsh ecosystems

Article by Janet R. Edwards, Photos by Stephan Myers

Silt covers a gentle sandy slope rising from a seagrass bed in the Laguna Madre's shallow waters. Beneath a dark tangle of narrow limbs and branches, the air is stale and damp. Snails crawl down to graze on clumps of seaweed that swirl about in a rising tide, while crabs snatch tiny shrimp seeking refuge in the undergrowth of vertical roots and leaf litter. In the canopy above, insects buzz among clusters of flowers and slender leaves crusted with crystallized salt.

The black mangrove is one of few plants able to withstand the harsh, unstable conditions of the Texas Gulf Coast intertidal zone. Well adapted to both tidal immersion and exposure to air, the plant may reach a height of three feet or more on the Texas coast, but can exceed 60 feet in tropical regions. Also called the blackwood, limewood and olive mangrove in other parts of the world, the black mangrove takes its common name from the color of the bark on its sea-soaked trunk.

The term mangrove actually can refer to one of several different types of plants, which range in size from small shrubs to tall trees. According to the "Ecology of Mangroves" by Patricia

Hutchings, "approximately 80 species of plants belonging to about 30 genera in over 20 families are recognized throughout the world as being mangroves."

Yet the word mangrove also is used to describe the habitat created by one or more species of mangrove plants in a particular area. No two mangrove communities are identical, due to varying salinities, tidal fluctuations and sediment composition. Because sizable black mangrove colonies are relatively rare along the Texas coast, we can better understand their ecological function by examining a parallel community.

"In an ecological discussion, we generally equate a mangrove swamp to a salt marsh," said Dr. Wes Tunnel, professor of biology and director of the Center for Coastal Studies at Texas A&M University at Corpus Christi. "Although a salt marsh can be found in both warm and cold climates and a mangrove swamp is confined to temperate or tropical areas, both habitats serve as wetlands—nursery grounds for juvenile fish, crustaceans and other marine life. Both habitats also occur in areas of relative stability and low wave activity, where lots of fine sediment and organic materials can be deposited over time."

All mangroves are salt-tolerant, specially adapted to life in highly saline, semi-aquatic, temperate or tropical environments such as those found in lagoons, estuaries (regions where salt

Able to tolerate the harsh and unstable conditions present in Texas bays, black mangroves form colonies in the Texas Gulf Coast intertidal zone where they grow to a height of three feet or more.

and fresh water mix), the leeward side of barrier islands or swamps near a river mouth. Four species commonly occur along southern portions of the Gulf of Mexico: the red mangrove, black mangrove, white mangrove and buttonwood. Seedlings of the red mangrove occasionally take root along lower sections of the Texas coast, but only the black mangrove is present in significant numbers. As adaptable as they are, all of these species nevertheless have an Achilles heel—low temperatures.

“A hard freeze in 1989 virtually wiped out mangrove colonies up and down the Texas coast, including black, red and white species along Rio Sota La



To keep salt within tolerable limits, the black mangrove has special salt-secreting glands on its leaves (top). Seeds, which develop singly within a flattened capsule, often germinate while they are still attached to the parent plant (above).



Marina (near La Pesca, Mexico), the northernmost area where you'd see all three species growing together," said Tunnel. "However, the black mangrove seems to possess a slightly greater tolerance for cold, as evidenced by the survival of a few colonies, like those on Harbor Island near Port Aransas. Maybe next go-round, there will be even more individual plants with a greater resistance to low temperatures."

The source of this plant's tenacity is found under the mud. Long cable roots sprawl out and anchor the mangrove. If the plant suffers a killing freeze, these cable roots may survive and eventually generate new shoots.

"Once you have a large, well-established mangrove colony, chances are you always will have a mangrove colony in that location," said Paul Carangelo, envi-

Vertical aerial roots called pneumatophores help the black mangrove survive in its waterlogged environment (above). These roots can reach a height of 12 inches. Mangroves are specially adapted to the saline, semi-aquatic environment around lagoons, estuaries and the leeward side of barrier islands.

ronmental consultant for Island Botanic in Corpus Christi. "Barring some catastrophe, the black mangrove will persist. This gives the impression that the mangrove stands we see today may be quite ancient."

The cable roots also help the black mangrove cope with waterlogged, oxygen starved sediments by sending up vertical aerial roots called pneumatophores. These leafless, finger-like projections have spongy, porous struc-

tures called surface lenticels that exchange gases with the atmosphere. They also have fine rootlets that absorb nutrients from the mud.

Unlike red mangroves, black mangroves lack the support of aerial prop roots needed to set foot directly into the sea. However, the plant's densely matted trunk, branch and root structures actively trap sediments and organic debris. As the fertile soil rises above

sea level, the more terrestrial conditions favor secondary plants such as the white mangrove and buttonwood, prompting the black mangrove to pioneer new growth farther seaward. This process helps compensate a little for erosion along beaches exposed to waves.

The black mangrove's ability to collect and consolidate sediments also helps ensure a suitable habitat for offspring. Seeds develop singly within a

flattened capsule 1½ to two inches in diameter, which often germinate and develop to an advanced stage while still attached to the parent. When released, the seedlings stand a good chance of taking root before being washed away in the tide. Waterborne dispersal also is common, since the unopened seeds can float.

The black mangrove lives in a virtual desert, even though it is surrounded by moisture. The problem is salt. Some salt must be taken in to prevent complete dehydration, since water naturally moves from an area of higher concentration (the plant) to an area of lower concentration (the sea). However, salt may interfere with enzymes that control respiration, photosynthesis and protein synthesis and must be kept within tolerable limits. This task is carried out by special salt-secreting glands located on the aerial pneumatophores and leaves. Certain ions, such as potassium, actually can be stored within the plant's tissues, making it one of the most salt-tolerant of all mangrove species.

Despite having so many adaptations for life in a highly saline environment, the black mangrove is not a salt-loving plant. "It actually does quite well in fresh water and is generally happy at salt concentrations of 45 parts per thousand or less, although it can survive levels as high as 130 ppt," said Carangelo. "The reason you don't often see this plant farther inland is that it grows more slowly than other species and can't compete. The rings develop in response to growth, not an annual cycle, so you can't tell the plant's age by counting them. But you can get some idea of the age by comparing range of growth to number of rings.

"Water birds don't commonly nest in black mangrove colonies, but herons, egrets and other species often roost in the branches," Carangelo added. "Although we usually picture it in terms of its natural habitat, it's fairly easy to cultivate and makes an appealing contribution to native plantings. It certainly deserves our appreciation and preservation as an integral part of the Texas coastal marsh habitat." ★

Janet R. Edwards is a regular contributor to the magazine.





© TOM NOTL

Reining in Spring Turkeys

A cool rain fell softly on our broad-brimmed hats, creating a country rhythm reminiscent of raindrops falling on a tin roof. Cupping his hand to his mouth, one of the horse-mounted riders yelped loudly with his diaphragm call, sounding like a young turkey hen. In the distance a gobbler responded, announcing to all within his Hill Country realm that he truly was the king and on the prowl.

The scene would have fitted easily into a Larry McMurtry or Zane Grey novel. It even smelled the part, with wet horses and saddle leather. From a saddle horn hung a long-bearded Rio Grande turkey gobbler taken earlier in the day, when the morning had been young but no less gray. Another seductive yelp, and again the distant gobbler responded. My partner looked over his shoul-

der and pointed toward the sound with his chin. Bringing his index finger to his lips, he motioned to be quiet, then pointed to a flowering redbud tree about 300 yards distant. Pantomiming a strutting gobbler, he dropped his hands to his side to imitate the bird. Again he pointed in the direction of the redbud, then started leading his horse in that direction.

Following his lead, I led my mule down the trail toward the edge of the creek bottom, which lay before us like a verdant serpent. Somewhere below in the mixture of oak and underbrush was a tom, gobbling at the slightest stimulation. We decided if we could get within about 75 yards of him, we could easily coax him into shotgun range.

After tethering our mounts to a low-hanging branch we head-

ed toward where we last had heard the gobbler. Stopping occasionally, my companion yelped softly. Before the gobbler could respond, a mockingbird started imitating the sound of the hen call. The mockingbird's imitation was followed by a thun-



© GRADY ALLEN

derous gobble only about 40 yards away. We quickly set up in preparation for the gobbler's approach. While the caller moved behind me, I found a spot in front of a gnarly oak and sat with my back against the trunk to break my outline. A small juniper screened me from the front.

Moments later, the gobbler strode into view. His stately appearance was a bit bedraggled by the rain, and his iridescent plumage appeared almost black. Unsuspecting, he came forward, tail fully spread, wingtips scraping the wet leaves. My knees started trembling. Moments later the gobbler's neck stretched forward and he gobbled. A chill ran the full length of my spine.

Few sounds in nature can excite a hunter like the call of a big gobbler at close range. The next few moments were almost mechanical, although no less emotional. When the crosshairs of the shotgun scope settled on the gobbler's neck I squeezed the trigger. Moments later I attached a spring gobbler tag to the bird's leg. After taking photos and spending considerable time familiarizing my long-eared steed with the bird, we hung it from my saddle horn and headed toward camp.

In the spring, the yodels of gobblers fill Texas hillsides and valleys. These sounds excite both local turkey hens and serious turkey hunters. The first spring turkey season was established in the early 1970s, and since then the number of turkey hunters has grown dramatically. And with good reason, because spring turkey hunting is a quality outdoor experience. The season occurs during the spring when

Turkey hunters believe calling up a strutting Rio Grande turkey gobbler (above and left) is one of the prize experiences in the Texas hunting scene. This year's season is April 2-May 1.



© LARRY L. WEISBUHN

most hunting seasons are closed, making it a sure cure for cabin fever.

This hunt was unusual because it employed horses and mules in a hunting strategy more associated with elk or deer hunts. The idea was hatched around a campfire on the Nail Ranch near Albany, which hosts western-style white-tailed deer hunts complete with horses, wall tents, a chuckwagon and cast iron cookery. A spring horse and mule turkey hunt seemed to be a natural way to follow up the successful fall deer hunt.

Our hunt took place on a rugged piece of real estate between Junction and Kerrville with a fair Rio Grande turkey population. Hunting wild turkeys by using horses and mules to traverse rough country, as well as using them as decoys, is not a new idea. Early settlers often used horses not only to ride to hunting areas, but also to get within shooting range of turkeys. Turkeys are used to seeing live-

stock, and hunters of that era used this to their advantage. Remember, however, that using livestock to hunt migratory game birds is illegal.

A century or so ago, most hunters used rifles to collect their turkey dinners. It was not until after Indian raids ceased that turkey hunters switched from rifles to shotguns. Texas is one of the few remaining states where Rio Grande turkeys can be hunted in the spring season with rifles and handguns as well as shotguns.

Earlier in the day, a hunter from Colorado and I had spotted a gobbler doing his best to impress four hens in an open field near a creek. We decided the best way to get close was to dismount and walk next to our horses and mules, hoping the turkeys would not know how to court a horse's legs. The maneuver worked to perfection. A short time later, we called the gobbler to within easy shotgun range.

By the time we finally head-

Pursuing tom turkeys with the help of horses and mules (above) brings an Old West flavor to the traditional springtime sport.

ed back to camp that morning, soaked to the bone, three gobblers hung from our saddle horns. Talk around the campfire that night revolved around horses, mules and spring gobblers.

by Larry L. Weisbuhn

Red Drum Outlook Rosier All the Time

The amazing turnaround in fishing success on the Texas coast now is a matter of record. As evidence, just try booking a motel room or fishing guide for a weekend this spring or summer. The improved fishing reaches from the shallow flats and bays, where red drum and spotted seatrout have made impressive gains, to offshore waters where red snapper, ling and other pelagic species are on the

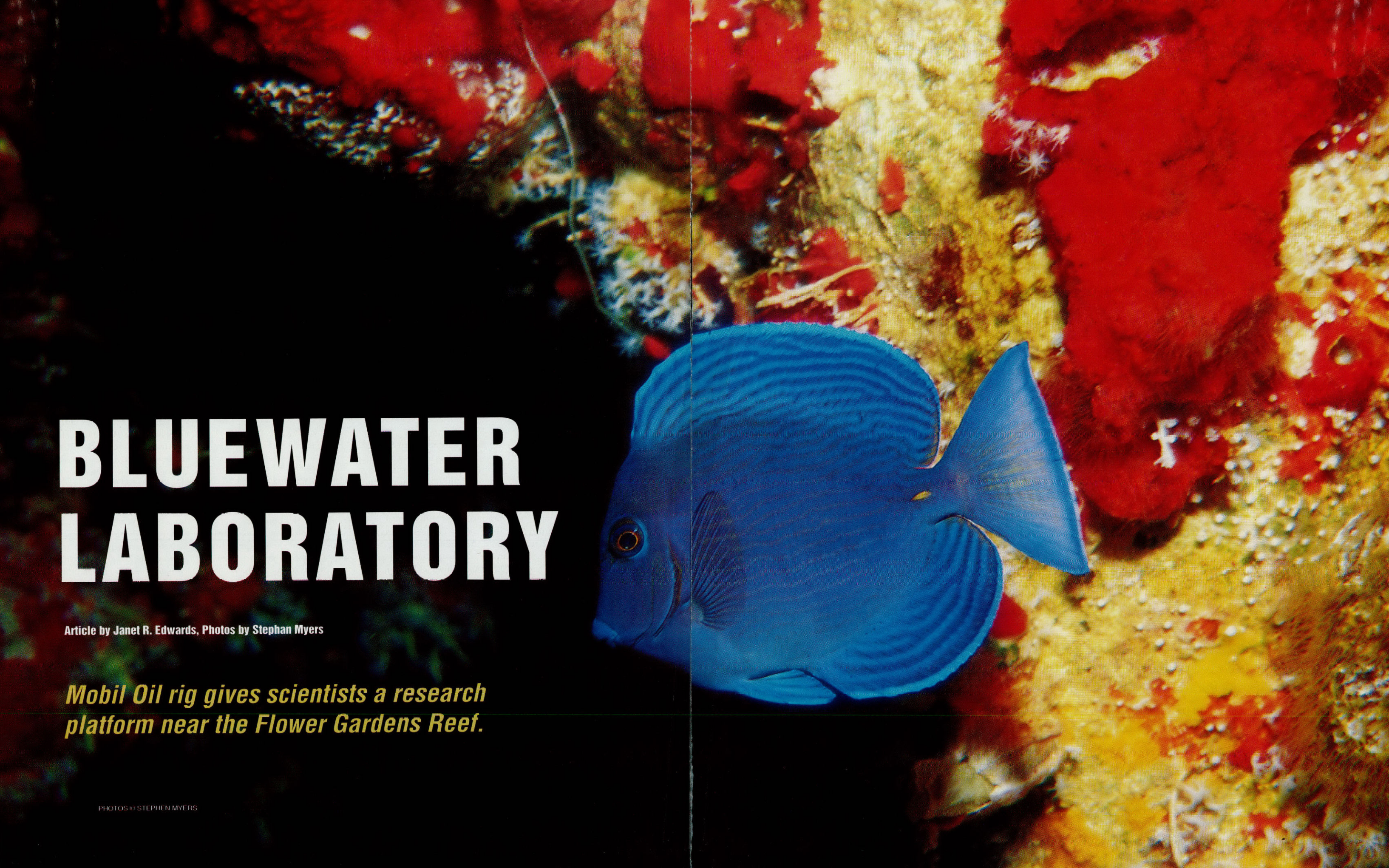
upswing.

There are numerous reasons for this phenomenon, including changes in commercial and sport fishing regulations, effective law enforcement and, at least for inshore species, the absence of killer freezes since 1989.

But in the case of red drum, or redfish as it is called by most Texas anglers, there is another factor that may have played a role in the resurgence. During 1993, a record 32 million redfish and 1.9 million speckled trout fingerlings were stocked in coastal waters. This brings the total number of redfish fingerlings produced by Texas Parks and Wildlife Department saltwater hatchery facilities since 1983 to around 140 million.

During the first years of this unique stocking program, questions were raised about the effectiveness of the releases. How many hatchery fish would it take to improve existing populations, and how would we know if it did? Biologists have been able to identify stocked fish collected in bag seines by their size, since they are produced and released at times of the year other than the wild redfish's spawning cycle. Also, comparing gill net catches from stocked bays to those from unstocked bays was another method.

Results indicate that redfish produced at the GCCA-CPL Marine Development Center and satellite ponds at Dow Chemical's Freeport plant have enhanced natural red drum populations by approximately 20 percent coastwide, according to biologist Larry McEachron of Rockport.



BLUEWATER LABORATORY

Article by Janet R. Edwards, Photos by Stephan Myers

Mobil Oil rig gives scientists a research platform near the Flower Gardens Reef.



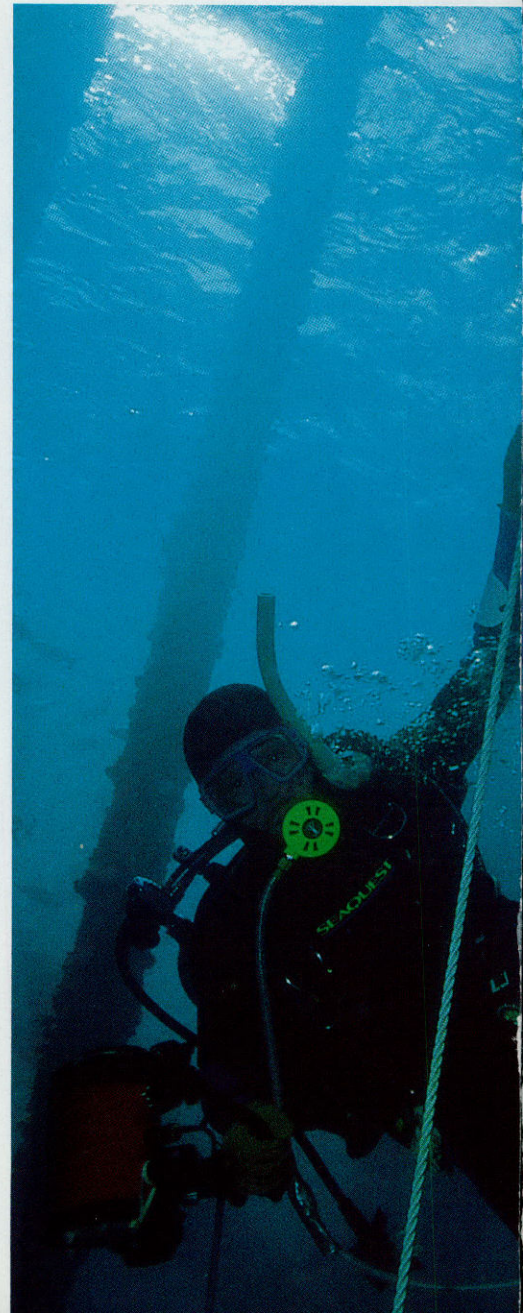
Within its depths, the ocean dresses the barren steel of petroleum platforms' massive underwater frameworks with what could be called living artificial reefs. Each year, thousands of Texas divers travel hundreds of miles to visit the underwater communities found on some 3,800 operating oil/gas production platforms scattered across the Gulf of Mexico. Below the splash zone grows a complex mixture of encrusting organisms dominated by barnacles, which in turn attracts a variety of marine life including sea cucumbers, bryozoans,

A

giant tinker-toy.

That's what it looked like from the back deck of the *Norman McCall*, a 150-foot oilfield service boat. But this island of steel was no plaything. Situated in the Gulf of Mexico 125 miles southeast of Freeport, Mobil HI A389A was built like a metallic iceberg. High above, hydraulic cranes bristled from a three-tiered platform, while monstrous cylindrical support legs stretched down to the seabed some 410 feet below.

A masterful blend of art and science, this 150- by 75-foot natural gas production platform has far exceeded its original design and purpose, inspiring an unprecedented spirit of partnership between private industry and the academic research community. To find the source of this evolving symbiosis, we must look to the sea.



crabs, damselfish and a host of larger fishes.

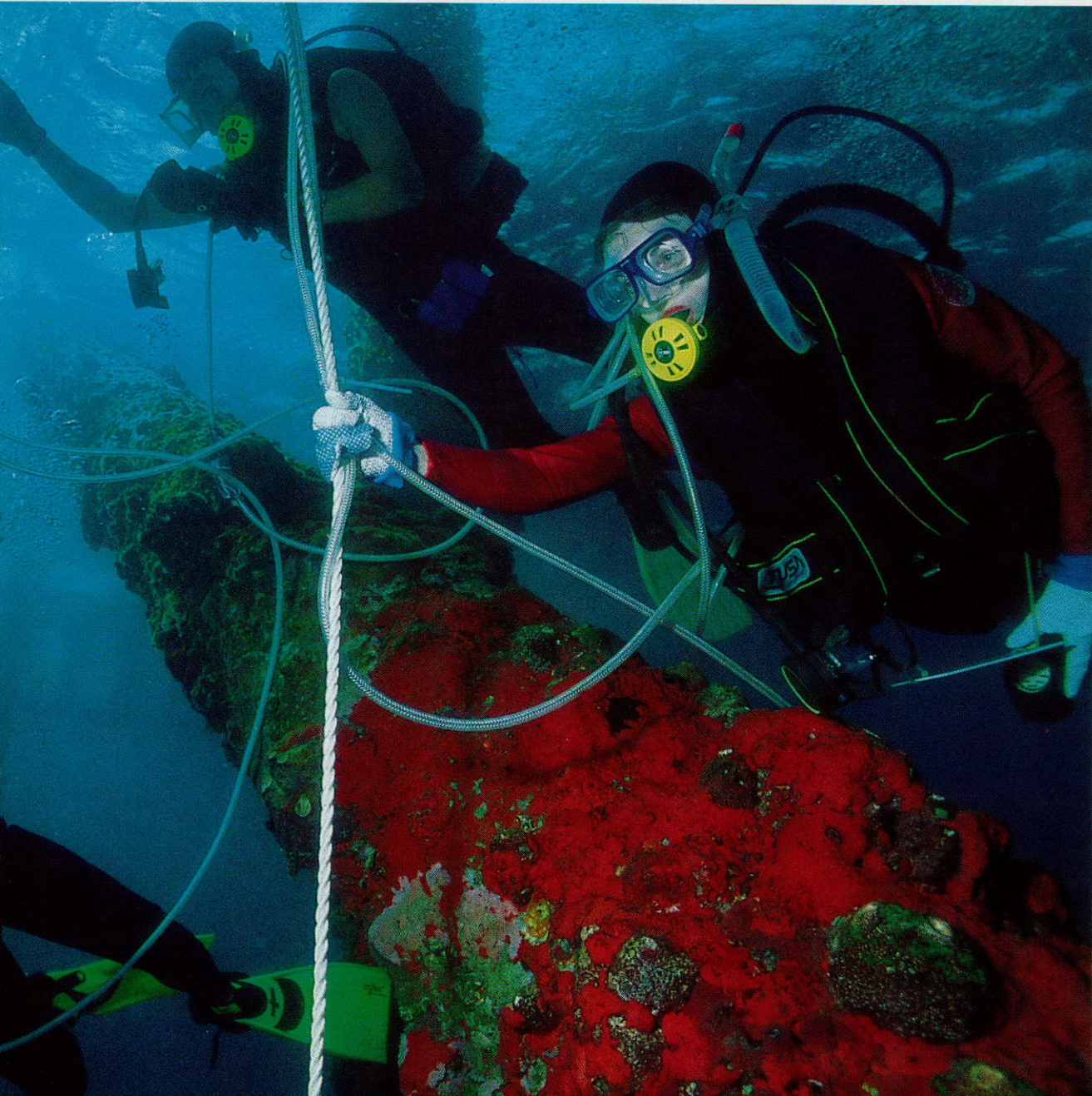
But Mobil High Island A389A, located less than a mile from the Flower Garden Banks National Marine Fisheries Sanctuary, is different. Incredible sponge development highlights a highly productive, distinctly tropical, bluewater reef environment. Scientists believe it is the platform's

proximity to the Flower Garden Banks, coupled with the influx of Caribbean currents, that contribute to making it one of the most unusual and spectacular artificial reef systems in the Gulf of Mexico. This platform is also the focus of the Flower Gardens Ocean Research Project or FGORP, an innovative venture that promises to set a new benchmark for cooperation between science

and industry.

Through FGORP, Mobil invites participation from a variety of academic and resource management agencies in Texas and Louisiana interested in supporting and conducting research in the Northwest Gulf of Mexico. These include Texas A&M University at Corpus Christi, University of Texas Marine Science Institute, Texas A&M University at College Station, the Interior Department's Minerals Management Service, National Oceanic and Atmospheric Administration

Mobil HI A389A (left) stands in 410 feet of water 125 miles southeast of Freeport. Colorful sponges and other marine organisms cover the structure beneath the water's surface (below).



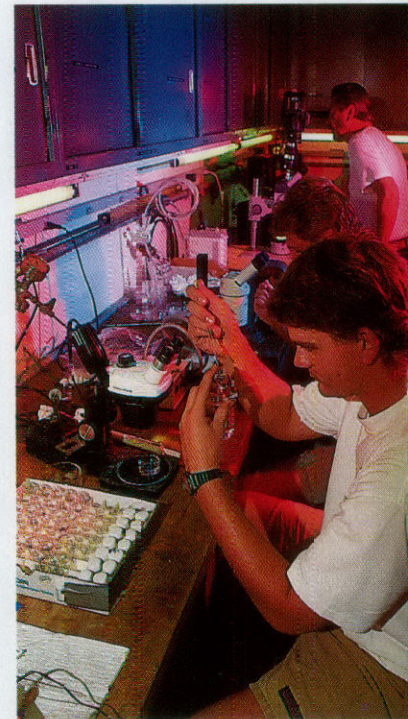
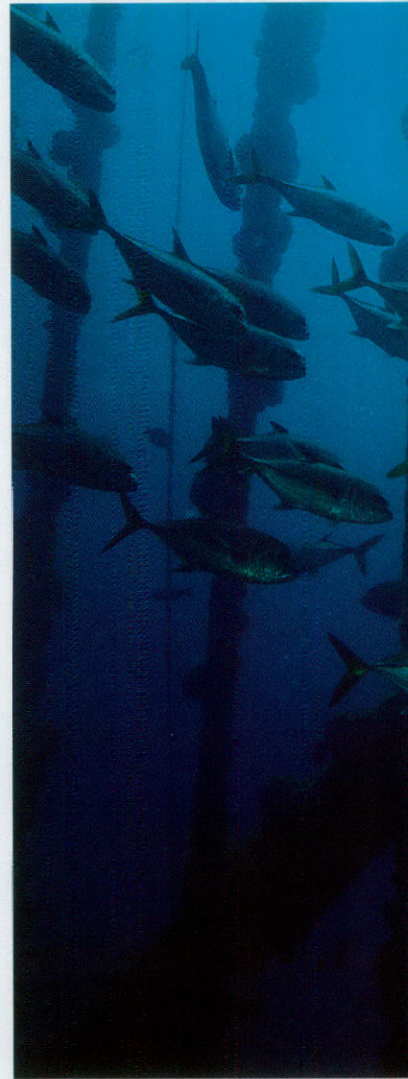
(NOAA) National Marine Sanctuary Program, Texas A&M Sea Grant College Program, Environmental Protection Agency, Texas State Aquarium and Louisiana Universities Marine Research Consortium.

Through FGORP, the oil company provides room and board, lab facilities and transportation to and from land for research teams like ours who wish to study the platform's unique ecology and learn more about the environmental factors that affect the Gulf and its coastline.

"Since FGORP began in 1990, studies of larval recruitment, artificial reef productivity, audio/video survey technology, and continuous real-time monitoring of sea level have been conducted on Mobil HI 389A," said Dr. Quenton Dokken, marine biologist, coordinator of FGORP and associate director for the Center for Coastal Studies at Texas

A&M University at Corpus Christi. "We also are able to offer graduate students and field technicians intensive training in underwater technologies such as visual surveys of fish populations.

"Through FGORP, Mobil Oil is making a very significant contribution to marine research," Dokken continued. "Typically, the cost of using a marine research vessel runs between \$2,000 and \$6,000 a day, which means we can afford to collect data only a few times each year. But when we conduct research from a platform, we save 60 percent or more of our program funds, allowing us to spend a greater portion of our budget on personnel, tasks and equipment. With a platform, we also can mount recording devices and collect environmental and water quality data every eight minutes, 24 hours a day, 365 days a year, regardless of weather conditions and without





having any gaps in our data.”

As if to illustrate FGORP’s aggressive, technology-based approach to ocean research, the platform’s 15-ton crane sprang to life. Fitted with a giant hook and a steel cable, the lattice boom swung a cone-shaped Billy Pugh basket over the second tier railing to lift us up to the living quarters and research labs some 80 feet above the water. After

a breathtaking ascent, the eight of us—six visitors and two Mobil employees, Hector Gutierrez and John Reeves—scrambled about beneath the sweltering gaze of a summertime sun. There were tanks to fill, gear to check and an air compressor to set up. Fresh supplies of food, drinking water and other necessities for a week of life in the middle of the Gulf awaited our attention, as well. Once we settled in, the Mobil employees conducted a detailed safety orientation and tour of the platform, issuing hard hats for everyone and careful instructions about how to live on an 11,250-square-foot steel platform without bringing harm to ourselves, the environment or Mobil’s daily business operations.

After dinner I retired to my bunk, bone-tired but wide-awake. I still could recall the enthusiasm in the voice of our project leader, Dr.

Quenton Dokken. “At night, it’s fascinating to imagine what’s going on in the 400 feet of water beneath the platform,” Dokken had said. “Certainly, it’s a life and death struggle down there. Large predators are wreaking havoc on schools of small fish, which are in turn feeding on still smaller fish. While we are resting, a 15-foot hammerhead shark, or anything else that swims in the Gulf of Mexico, could be circling within 100 feet of us at any time. Even though I live right on the coast, I’m never so aware of the ebb and flow of life as I am when I visit Mobil HIA389A. We’re right in the middle of the most fluid and dynamic ecosystem on earth. Besides that, it’s just downright fun out here.”

The next morning, I discovered firsthand why this platform merits the attention of the Flower Gardens Ocean Research Project and why it could change the standard way of conducting marine research in the Gulf of Mexico. Splashing down a few yards beyond the rig’s outer jacket, I beheld the realm of an underwater cathedral; a gigantic jungle-gym of elaborately decorated crossbars, horizontal struts and vertical columns.

As I descended through the inner maze, globular red and orange sponges interspersed with giant acorn barnacles and dainty hydroids spread a banquet table for the eyes. Spiderlike brittle stars slithered in and out of crevices in the fragile, undulating grillwork. Tropical fish of vivid hues and patterns darted among criss-cross shadows. Amberjacks and barracudas hovered about in loose-knit schools, looking for their evening meal among thousands of chubs and schooling jackfish.

Ironically, the story behind the origins of Mobil HIA389A is as complex and intriguing as the underwater habitat it now supports, and they are related. The connection lies less than a mile away at the Flower Garden Banks National Marine Sanctuary, the northernmost coral reef system in the con-

Researchers are lowered 80 feet from the top deck to the water’s surface in a Billy Pugh basket (far left). Coral larvae collected during spawning were taken to a lab on the platform for immediate study (left). Schools of two-foot-long horse-eye jacks frequently pass through the underwater structure (above).

tinental United States. Located some 125 miles southeast of Galveston, this rare, luxuriant landscape flourishes atop a pair of dome-shaped salt intrusions that rose from the sea floor some three million years ago. Nourished by warm, clear Caribbean currents, 18 species of microscopic coral larvae and a host of other sea creatures established colonies about 20,000 years ago. At depths ranging from 60 to 120 feet, these delicate, reef-building animals provide the foundation for a marine community that includes 80 species of algae, 253 macroinvertebrates and more than 175 species of fish.

But trapped beneath this tropical paradise lies another type of treasure—substantial deposits of oil and natural gas. In 1974, Mobil developed a plan to tap these energy reserves without damaging the environment. Strict drilling and production safeguards, waste disposal precautions and a continuous reef monitoring program before, during and after production began in 1988 help ensure the health of the fragile Flower Garden habitat. Since that time, the oil company has received several national safety and conservation awards in recognition of these efforts.

“Essentially, the environmental monitoring studies at the Flower Gardens have shown that there haven’t been any changes in such indicators as coral populations, coral reproduction processes or coral growth rates from prior to the drilling operations up to the present,” said Dr. Thomas Bright, professor of Oceanography at Texas A&M University at College Station.

Extending this environmental awareness to all activities in and around the Flower Garden Banks (which became America’s 10th National Marine Sanctuary in January 1992), oil company employees keep an eye on watercraft that enter the sanctuary area and report any dumping, anchoring or fishing violations.

The Flower Gardens provide the link between the original purpose of the plat-



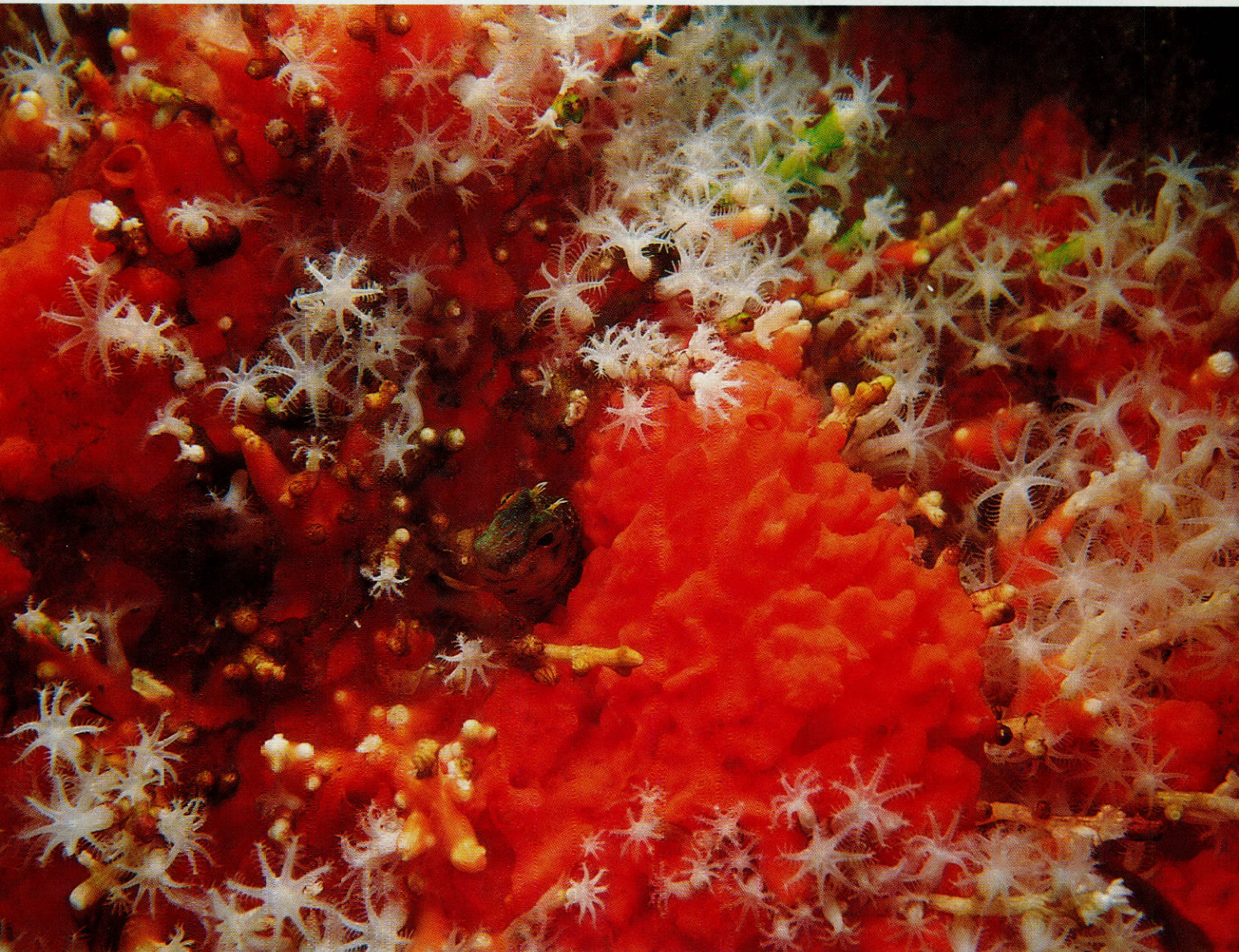
form and the community of life it now supports, yet the connection gets more complicated when considering the influence of the Caribbean reefs off the Yucatan Peninsula. Did the pancake-sized brain and branching corals recently discovered on the platform originate from the Flower Gardens, the Caribbean or both? Could the encrusting, ball and tube sponge colonies that dominate the platform mimic an early stage in the ecological succession of the Flower Garden reefs and perhaps even those

Scientists believe it is the platform’s proximity to the Flower Gardens, coupled with the influx of Caribbean currents, that make this one of the most unusual and spectacular artificial reef systems in the Gulf of Mexico.

in the Caribbean? Why are the sea whips, soft corals and sea fans found in the Caribbean missing from both the Flower Gardens and this platform? These and many other intriguing questions remain to be answered.



A Spanish hogfish (left) is one of the many colorful tropical fish divers see around the platform. A blenny swims among the octocorals and sponges (below).



But first things first. This research mission would be dedicated to collecting baseline population data for selected fish species commonly seen around the platform. We added a low-tech, but highly efficient pencil and slate to our standard diving gear and got to work. Two teams carried cut horizontal transects at 50 foot intervals, counting amberjacks, crevalle jacks, blue runners and barracudas. My task was to conduct a survey of blennies, a tiny reef fish, starting at a depth of 120 feet. Selecting one of the platform's large inner columns, I began a slow, upward spiral. The job became more like a game of hide and seek, with each polka-dotted charmer snuggled down in an empty barnacle shell or concealed in a bed of red sponges.

Attempts to keep clear of oncoming horizontal struts and maintain my equilibrium in a two-knot current certain-

ly put the odds of camouflage in the blennies' favor. Nevertheless, I felt good about my small, layman's contribution to the scientific cause and tallied my results.

Too soon, it was time to rejoin my dive companions and decompress on the oxygen down-lines that dangled at 15 feet below the surface. Awaiting our turn to go up, we fluttered horizontal-

ly like laundry hung in a stiff breeze. Just as I prepared to swim out to the Billy Pugh basket, I found myself in the close company of a four-foot silky shark. Sporting a short, broad snout and a streamlined body, the shark cruised slowly back and forth, watching me. I returned the courtesy, reminding myself that I probably looked a bit scary myself, and ascended unharmed.

SEA TURTLES

Offshore fishermen long have been aware that oil platforms in the Gulf of Mexico are excellent fish attractors. The massive legs and cross beams of oil rigs become encrusted with marine organisms, creating ecosystems approximating, on a smaller scale, those found on natural coral reefs. The small fishes and invertebrates act as magnets, drawing popular sport fish such as red snappers, barracudas, amberjacks and king mackerel.

Researchers with the U.S. Department of the Interior's Minerals Management Service recently discovered that oil rigs off the Texas coast also may act as convention centers for sea turtles, including loggerheads, a threatened species.

The turtle project was initiated during summer 1993 when Forest Oil Co. officials reported to the MMS that crews on their High Island A20A rig often noticed sea turtles swimming around the structure. A crew of 11, including five divers, was dispatched to the oil rig 27 miles out of Galveston to gather information on the turtles.

The MMS leases federal lands for offshore mineral exploration and development, and it also has responsibility for monitoring the impact of these activities on the marine environment and enforcing the

Endangered Species Act of 1973.

MMS officials said the divers saw no turtles in the initial daylight dives, so a night dive was planned. Oddly, the divers again failed to see any turtles, but observers on the boat witnessed a large group of turtles, unofficially identified as loggerheads, swimming lazily in the glow of the rig's lights. Dr. Ann Bull, a marine biologist with the MMS, speculated that the turtles were feeding on crabs, flying fish and shrimp that were attracted to the platform lights.

A dive at another nearby platform the next day was more rewarding for the divers, who were able to closely examine a napping loggerhead at the platform's base.

Bull said sea turtles face a variety of threats, including loss of beach nesting habitat, accidental entrapment in commercial fishing gear and pollution. However, new regulations, including changes in shrimp trawling and procedures for dismantling oil production structures, may be having beneficial effects on sea turtles. "We don't know how many loggerheads might be living in that part of the Gulf of Mexico," Bull said, "but there is no doubt that some of them take up residence, at least briefly or seasonally, around offshore platforms that offer shelter, overhead protection and a spectacular menu at night."

by Jim Cox



Spiny brittle stars move across the encrusted legs of the platform at night (above).



The inflatable porcupine fish blends in with its underwater surroundings (above). Colorful one-inch tube worms are often seen around sponge colonies (below).



Considering the limited life span of a natural gas production platform in the shark-infested waters of economic reality, what long-term goals does FGORP hope to accomplish on Mobil HI A389A?

"As well as supporting research while still producing natural gas, Mobil A389A is uniquely situated to be converted to a full-time research and training station once it ceases natural gas production (perhaps within the next four years)," said Dokken. "An offshore research facility could become a cornerstone in the efforts to study and manage the Gulf of Mexico. As a training facility, the platform could be used to entice students into the study of the oceans, which face monumental threats and challenges from a dramatically growing world population with a high demand for marine resources.

"Through the existence of a marine research consortium, duplication of effort is reduced, funds are better utilized and projects better designed to

look at the comprehensive 'big picture.' A full-time research station in the Gulf also could enhance public awareness of the importance of marine resources, a factor that often is overlooked but may well determine how these natural assets are studied and managed.

"Four important challenges must be dealt with before this can occur: precedent, legislative statutes, legal liability and financial liability," he continued. "Certainly in a time of billion-dollar deficits and budget cuts, everyone is feeling the pinch. However, it is in our best interests to utilize our vast and fragile oceans in a manner that preserves their long-term health. The Flower Gardens Ocean Research Project has tremendous potential. It's just a matter of energy, commitment and persistence."

To what could we look for a better example of these essential qualities than the sea itself? ★

Janet Edwards is a regular contributor to the magazine.

STATE PARKS PHOTO CONTEST

Pack your camera and some extra rolls of film when you and the family head out this spring and summer to one of Texas's more than 100 state parks. *Texas Parks & Wildlife* magazine is sponsoring a photo contest for visitors to our state parks system. Each photo submitted must have been taken in a state park; there is no time limit on when the photos were made, or the number of photos each entrant can submit. Here are the particulars:



Parks across the state offer opportunities for scenic photos. This scene is in Pedernales Falls State Park.



Enter photos of owls and other birds in the wildlife category.

CATEGORIES

1. **Scenics:** Panoramas, wildflowers, historic buildings, weather.
2. **Wildlife:** Birds, mammals, reptiles, amphibians.
3. **Activities:** Camping, hiking, swimming, historic reenactments, fishing, boating.

These examples are guidelines. Use your judgment about which category to enter if your photo is not one of the subjects listed here.

RULES AND REGULATIONS

Each entrant must certify that the photos submitted were taken in a Texas state park. Photocopy the statement on page 37, fill it out and sign and mail along with your photos. Each photo submitted must have information as to which park it was taken in and when (no time limit on when the photos were taken). Photos may be either prints or slides. **We will return them only if you provide a self-addressed, stamped envelope.** Each photo must have the entrant's name, address and phone number printed either on the slide mount or back of the print. Employees of the Texas Parks and Wildlife Department and their relatives, *Texas Parks & Wildlife* magazine or magazine suppliers are not eligible to enter. Entrants must not have had any photos published.

PRIZES

Four prizes will be awarded: Best Overall and best of each category.

The photo selected as best overall will earn a \$350 prize, and those selected as best of each category will earn \$250 each. The winners, along with some other photos selected for awards of merit, will be published in the January 1995 issue. Judges will be members of the *Texas Parks & Wildlife* magazine staff. Decision of the judges will be final.

Deadline for Entries: September 15, 1994.



© ROB CURTIS

Pack your photo equipment and plenty of film when you head to McKinney Falls or any of the more than 100 other state parks.



© WYMAN MEINZER

Fishing and a variety of other outdoor pursuits offer opportunities for photos in the activities category.

Name _____

Address _____

City _____

State _____ ZIP _____

I certify the photos submitted were taken in the Texas state parks indicated on the photos

(Signature)

Please sign and send along with your submission

Festival



of Whites

by Bud McDonald

14 WHITE BASS HOTSPOTS



With only a few minutes remaining before dawn would break over the dam at Lake Amistad, fishing guide Glenn McGonagill stood in his 18-foot boat and scanned the choppy surface with binoculars for the telltale flashes of white water and swooping seagulls that indicate schooling white bass.

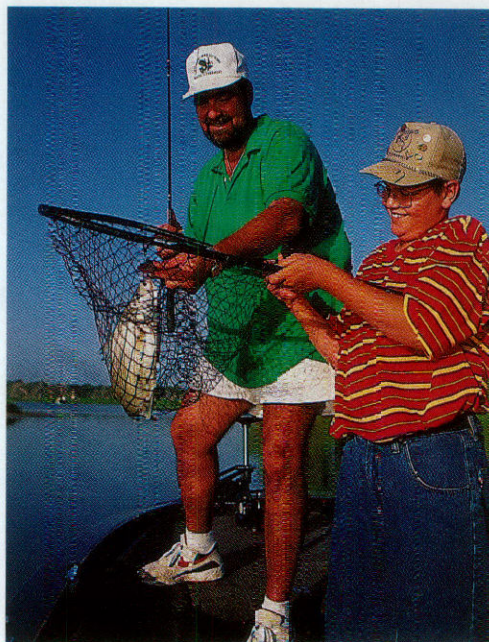
Located on the Texas-Mexico border just west of Del Rio, Lake Amistad is probably better known to anglers for striped and largemouth bass. However, those who measure success in catch rates rather than pounds of individual fish know the lake as one of the best producers of white bass in the state. McGonagill, who has guided fishermen at the lake since shortly after its impoundment, usually has no trouble locating the feeding schools no matter what the season or weather. This morning was no exception as he suddenly jumped into the driver's seat, cranked the big outboard and shoved the throttle to the firewall.

The bass boat barely had reached planing speed when McGonagill cut the motor and dropped the electric trolling motor over the bow. His target was clearly visible about 30 yards downwind as an acre of frothing water indicated feeding white bass. By the time we began throwing lures in the direction of the school other boats were taking up positions on the fringes of the white-water action. My first cast with a clear Zara Spook caught the attention of a feisty white, while Glenn's rod was bobbing with a fish on. For the next several minutes the morning stillness was shattered by the whoops of excited fishermen until the school sounded. Almost immediately, however, the gulls began hitting the water about 100 yards away. In a repeat of earlier action the boats raced to the new location and fishermen again were loading their coolers with white bass.

After sounding and resurfacing several times the whites vanished as quickly as they had appeared. With forlorn cries the gulls finally left the area to take up their search elsewhere. Glenn and I checked the cooler to find a total of 25 whites caught in about 15 minutes. Before the sun was overhead we had found another school to fill our two-person limit of 50 fish. The standard bag limit for white bass is 25 per day, with a possession limit of 50 and a 10-inch minimum length limit. However, in some waters of Texas, including Lake Livingston and the Trinity River above the lake, the minimum length limit is 12 inches. Check the Texas Parks and Wildlife Department's free 1993-94 Texas Fishing Guide for complete fishing regulations. The booklet also features illustrations that can help in the identification of white, striped and hybrid striped bass.

Topwater action occurs when large schools are feeding in packs. The circling white bass herd schools of baitfish (usually small shad) to the surface, then attack them. With nowhere to go, the desperate baitfish sometimes leap clear of the water as the whites slash into them. The frightened and wounded baitfish provide an easy meal for seagulls, which in turn alert fishermen to the action.

The spring spawn is another time of



© GRADY ALLEN

The abundance and widespread availability of white bass in Texas make them a great target for the beginning angler.

tions become right for spawning, the males begin swimming upstream. After a week or two the females join them.

Some of the fish will stop at the first rapid, but others may continue upstream until stopped by a barrier such as a dam. White bass are random spawners, not nest builders. After the free-floating eggs are fertilized, they begin washing downstream.

With so many predators roaming a limited amount of space in the rivers and streams, the available food supply can be depleted quickly. The hungry whites hit everything from silver and gold spocns to topwater plugs and even minnows. Live bait often is an unnecessary expense, as the fish generally will strike whatever looks like a bait fish.

In fact, on Lake Livingston and other East Texas reservoirs and streams, white bass fishermen often remove two of the tines of a lure's treble hook and even flatten the barb on the remaining hook to reduce the amount of time needed to unhook fish and get the lure back into the water.

White bass, which are sometimes confused with striped bass, also are called "sand bass" by many fishermen. The major difference between whites and stripers is that the latter commonly reach weights of more than 35 pounds in fresh

water while the state record white bass tips the scale at a relatively puny five pounds, nine ounces and the average white weighs two pounds or less.

The differences in appearance are much less noticeable when whites and stripers of similar size are encountered. In this case, the white bass's body is flatter than the striper's and it has a humped back beginning just behind the head. For absolute proof, white bass have a single tooth patch (looking like a single dark spot) at the base of the tongue while stripers have two.

Since white bass occupy almost every major body of water in the state, picking a fishing spot is largely a matter of preference. Here is a list of reservoirs and rivers that are considered premier by many white bass fishermen:

AMISTAD - About 67,000 surface acres located on the border between Texas and Mexico at Del Rio. Amistad was built as a joint irrigation and flood control project by the U.S. and Mexico. White bass usually are good year around, with the best topwater schooling activity during winter. Spring spawning activity takes place on both the Rio Grande and Pecos River, as well as the Devils River arm.

BUCHANAN - At about 23,000 surface acres, Lake Buchanan is the uppermost and largest of a chain of seven impoundments on the Colorado River northwest of Austin. Good topwater fishing in mid-summer and mid-winter, with springtime spawning action upriver from mid-March through April.

CANYON - A good white bass run generally occurs in the Guadalupe River above 9,000-acre Canyon Lake, located 30 miles north-northeast of San Antonio off U.S. 281. Best white bass fishing generally is from January through March as the whites gather at the mouth of the Cuadalupe River and head upstream.

FALCON - Similar to Lake Amistad, Falcon also dams the Rio Grande

PICKING A WHITE BASS FISHING SPOT IS LARGELY A MATTER OF PREFERENCE

year when fishing for white bass becomes especially exciting. Spawning normally begins in late March or early April and usually lasts a few weeks, although on some lakes the run might last a month or more. There is no guarantee from one body of water to another when a spawning run will occur, but if the right conditions come together the fish can be plentiful as ants at a picnic.

Just before the spring spawn, schools of white bass gather at the mouths of creeks and rivers that feed the main lake. If water temperature and flow condi-

between Texas and Mexico. At conservation level the lake covers some 86,000 acres about 80 miles south of Laredo off U.S. Highway 83. Good catches of white bass are made during the summer and late fall by trolling the main lake or watching the birds for schools. The annual spawning run at Falcon begins in mid-February when the fish begin moving up the Rio Grande and Rio Salado on the Mexico side.

LIVINGSTON - This 82,600-acre water supply for the Houston area is probably the state's most consistent producer of large white bass. Whether you're using slab spoons in the summer, chasing schools in the fall or following the spawn up the Trinity River

in the early spring you usually can count on a fast limit. Lake Livingston is about 75 miles north of Houston off U.S. Highway 59.

MEREDITH - Fishing holes are few and far between in the Panhandle, but this 22,000-acre reservoir furnishes great fishing for those who know about it. With its rocky banks and deep, clear, cold water the lake is better known as one of the top walleye and smallmouth bass lakes in the country. However, it also is good for white bass during the late spring and early summer. Lake Meredith is about 40 miles north of Amarillo on State Highway 136.

SPENCE - One of the oldest and

best of Texas's striper lakes, this 15,000-acre West Texas reservoir is similar to Amistad for white bass fishing. Surfacing schools of whites often are mixed with stripers. Spence is situated on the Colorado River 30 miles north of San Angelo off U.S. 208.

TEXOMA - Located about 50 miles north of Dallas, Texoma is considered by many to be the premier striped bass lake in the nation. However, like most reservoirs with good supplies of stripers, Texoma has plenty of their smaller white bass cousins.

TOLEDO BEND - With a whopping 181,000 surface acres, the largest of the Lone Star State's reservoirs also produces the most diversified fishing. As is the case with other large lakes, open-water fishing for white bass is done by following feeding gulls. During the

There are numerous ways to fish for white bass, but many anglers believe trolling, below, is the best way to locate feeding schools. Shad-colored crankbaits and crankbaits with jig trailers are effective trolling lures.



© GRADY ALLEN

spring spawn anglers head for the Sabine River on the north end of the lake. Toledo Bend is on the Texas-Louisiana border about 50 miles west of Nacogdoches.

WHITNEY - This 23,550-acre reservoir draws fishermen from all over the Southwest to sample its populations of stripers and whites. Open-water fishing for white bass is good around Big Island on small jigs fished under popping corks and by trolling spinner lures or spoons. During the spring spawn the fish run up the Brazos, evidenced by armadas of boats and bank fishermen standing elbow to elbow.

ANGELINA RIVER - This deep East Texas river begins in Rusk County and flows 119 miles into Sam Rayburn Reservoir, then an additional 25 miles to its confluence with the Neches River at B.A. Steinhagen Reservoir. Since the river is mostly narrow and turbid above Sam Rayburn, good white bass spawning runs are not encountered except in the cleaner waters just above the lake. Due to frequent releases from Sam Rayburn, white bass fishing below the dam is good to excellent.

COLORADO RIVER - From its meager beginning in Dawson County just northeast of Lamesa, the Colorado River provides several areas of flowing water ideal for white bass spawning runs. Lesser runs are found above the river's

mouth at Lake E.V. Spence near Robert Lee, although the preferred area is above Lake Buchanan. Depending on spring rains, the whitewater rapids begin just below Bend in San Saba County, and continue to Colorado Bend State Park several miles downstream. Primitive camping is available at the park, which is located four miles south of Bend.

Depending upon how adventurous you are, there are three ways to fish the Colorado above Buchanan; you can stay at one of the public or private fish camps

along the banks, go upstream by boat from the main lake to the first rapid just above Colorado Bend, or use a canoe or raft to drift downstream.

White bass fishing during the spring run often is excellent on the Colorado River below all the dams on the Highland Lakes chain, including Buchanan, Inks, LBJ, Marble Falls and Travis.

RIO GRANDE - Both the Rio Grande and Pecos Rivers above Amistad Reservoir provide excellent white bass

© DAVID SAMS



© DAVID SAMS

You can fish for white bass deep or shallow. An electronic chart recorder, above, is effective for locating schools in deep reservoirs. In summer and fall, whites can be caught on topwater lures, including poppers cast with a fly rod, right.



© DAVID SAMS

fishing during the spring run. On a lesser scale and depending upon rainfall, the Devils River on the lake's northern reaches also is good.

When the spawning run starts, the schools of white bass often are interspersed with stripers just above the main lake on the Rio Grande. Using a heav-

ier spoon instead of a surface plug will allow the bait to sink below the whites into the schools of stripers that lie waiting below to catch the wounded baitfish.

The Rio Grande in the upper reaches of Falcon Reservoir consistently produces a good white bass run. (See "Headstart Bass," *Texas Parks & Wildlife*,

December 1993.)

TRINITY RIVER - The Trinity has a reputation for being polluted, but various elements are at work to slowly clean it up. Clear Fork, above Benbrook, provides good white bass runs occasionally, although the most spectacular white bass runs are found much farther downstream in the stretch above Lake Livingston.

Hiring a professional fishing guide is recommended in the Livingston area due to the large amount of fishing water. A small public boat ramp is available at State Highway 19 near Trinity in the upper end of the lake.

There are other, maybe lesser known white bass hotspots throughout the state where local fishermen rake in the bounty. All it takes is some clear, moving water, access to the river and the time to look for the schools. In any case, a successful trip to the white bass spawning run is one of the most memorable experiences in the Texas fishing scene. ★

White bass are small, usually two pounds or less, but they make up for their lack of size with abundance and aggressiveness. The couple below found white bass schooling action on Lake Texana near Edna.

Bud McDonald is outdoor editor of the San Angelo Standard-Times.



© GRADY ALLEN

OUTDOOR DATEBOOK



© BOB PARVIN

Colorado Bend State Park will be the site of a flyfishing short course and demonstration on March 5.

M A R C H

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

March: * Bird-banding observation each Tuesday, Thursday and Saturday, Davis Mountains State Park near Ft. Davis, 915-426-3337

March: * Houston toad tour every Tuesday and Saturday, Bastrop State Park at Bastrop, 512-321-2101

March 4: * Marine life tour, University of Texas Coastal Studies Lab on South Padre Island, 210-350-4490 or 210-350-4491

March 5: * Flyfishing short course and demonstration, Colorado Bend State Park near Bend, 915-628-3240

* 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.

March 5: * Migratory waterfowl viewing, Fort Parker State Park at Mexia, 817-562-5751

March 5: * Bird walk and wildflower identification, Cedar Hill State Park at Joe Pool Reservoir, 214-291-3900

March 5: * Bus tour, Fort Leaton State Historical Park at Presidio, 915-229-3613

March 5: * Twilight boat tour followed by a taste of tilapia, Fairfield Lake State Park near Fairfield, 903-389-4514 or 903-389-2216

March 5: * "Ducks at Dark," migratory waterfowl observation, Ray Roberts Lake WMA, 817-637-2290

March 5, 10: * Bird-banding observation, Kickapoo Cavern State Natural Area, 210-563-2342

March 5, 19: * Border birding, Black Gap WMA in Brewster County, 915-376-2216

March 5, 12, 19, 26: * Nature walk, Pedernales Falls State Park in Blanco County, 210-868-7334

March 5, 12, 19, 26: * Nature tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

March 6, 12: * Whooping crane tour, Matagorda Island WMA, 512-983-2215

March 6, 13, 20, 27: * Black powder/muzzleloading beginner's course, McKinney Falls State Park at Austin, 512-243-1643

March 6, 13, 20, 27: * Birdwatching at Pedernales Falls State Park in Blanco County, 210-868-7304

March 9, 23: * Discover South Texas wilderness areas, Bentsen-Rio Grande Valley State Park, 210-585-1107 or 210-585-0902

March 11-13: * Rock art field trip, Big Bend Ranch State Natural Area, 915-424-3327

March 12: * Desert bird banding, Black Gap WMA in Brewster County, 915-376-2216

March 12: * Kids' wilderness survival course, Choke Canyon State Park near Three Rivers, 512-786-3868

March 12: * Montezuma quail workshop, Kickapoo Cavern State Natural Area, 210-563-2342

March 12: * "Babysitting Our Bass," Jasper State Fish Hatchery at Jasper, 409-384-2221

March 12: * Birding and hatchery tour with slide show, GCCA-CPL Marine Development Center at Corpus Christi, 512-939-7784

March 12: * "Wings on the Wind," Fairfield Lake State Park at Fairfield, 903-389-2216

March 12, 26: * Nature/ecosystem boating tour, Caddo Lake Wildlife Management Area, 903-679-3743

March 13: * Cactus of the Lower Chihuahuan Desert, Black Gap WMA in Brewster County, 915-376-2216

March 13: * Photography tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

March 13: * Horseback tour of Hill Country State Natural Area near Bandera, 210-796-3984 (Running R Ranch)

March 16: * Waterfowl/wetlands habitats of the High Plains, Lubbock Lake Landmark State Historical Park at Lubbock, 806-765-0737

March 16: * Fish hatchery tour, Perry R. Bass Marine Fisheries Research Station at Palacios, 512-972-5483

March 17-20, 24-27: * Photography workshop with Leroy Williamson and Jim Carr, Big Bend Ranch State Natural Area, call Texas Adventures toll-free 1-800-792-1112, or direct, 512-440-8050

March 19: * Penn Farm Agricultural History Center tour, Cedar Hill State Park at Joe Pool Reservoir, 214-291-3900

March 19: * Geology tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

March 19: * Kids' wilderness survival course, Richland Creek WMA near Fairfield, 903-389-2216

March 19: * Bus tour of Big Bend Ranch State Natural Area and Barton Warmock Environmental Education Center, 915-424-3327

March 19: * Nature walk, Pat Mayes WMA near Paris, 903-884-3833

March 19: * Conservation gardening fair, Fossil Rim Wildlife Center near Glen Rose, 817-897-2960

March 20: * Nature walk, Caddo Grasslands WMA near Bonham, 903-884-3833

March 20: * "Plants in a Desert Canyon," Black Gap WMA in Brewster County, 915-376-2216

March 20: * Beachcombing and shelling tour,

Matagorda Island WMA, 512-983-2215

March 23: * Birdwatching, Las Palomas WMA in the Lower Rio Grande Valley, 210-383-8982

March 25: * Interpretive tour and bat flight observation, Devil's Sinkhole State Natural Area near Brackettville, 210-563-2342

March 25-26: * March Plant Sale, Mercer Arboretum in Humble, 713-443-8731

March 26: * "Blossoms In the Brush," Chaparral WMA near Artesia Wells, 210-676-3413

March 26: * Archeology tour, Dinosaur Valley State Park near Glen Rose, 817-897-4588

March 26: * Primitive tour of Kickapoo Cavern, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

March 26: * Bat flight observation and interpretation at Green Cave, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

March 26: * Kids' wilderness survival course, Keechi Creek WMA in Leon County, 903-389-2216

March 26: * Bird and nature tour, Lake Tawakoni State Natural Area, 903-425-2332

March 26: * "Skip a Generation" fishing clinic, Fairfield Lake State Park near Fairfield, 903-389-2216

March 27: * Historical tour of Matagorda Island, Matagorda Island WMA, 512-983-2215

March 27: * "Lichens or Not," Fairfield Lake State Park near Fairfield, 903-389-2216



© GEORGE L. HOSEK

Celebrate spring at a photography tour of Honey Creek State Natural Area on March 13 and April 17.

A P R I L

April: * Houston toad tour every Tuesday and Saturday, Bastrop State Park at Bastrop, 512-321-2101

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

April: * Bird banding observation each Tuesday, Thursday and Saturday, Davis Mountains State Park near Fort Davis, 915-426-3337

TEXAS PARKS & WILDLIFE

TELEVISION SCHEDULE

Watch for our companion television series, "Texas Parks & Wildlife." March is pledge month at many PBS stations and schedules are subject to change. So check your local listings.

In stereo where available

CITY/STATION	DAY	TIME
Amarillo KACV, Ch. 2	Sunday	4:00
Austin KLRU, Ch. 18	Saturday	5:00
College Station KAMU, Ch. 15	Tuesday	7:30
Corpus Christi KEDT, Ch. 16	Thursday Friday	7:30 10:30
Dallas/Ft. Worth KERA, Ch. 13	Friday	6:30
<i>Also serving Abilene, Denton, Longview, Marshall, San Angelo, Texarkana, Tyler, Wichita Falls, Sherman</i>		
El Paso KCOS, Ch. 13	Sunday	7:00
Harlingen KMBH, Ch. 60	Tuesday	8:00
<i>Also serving McAllen, Mission</i>		
Houston KUHT, Ch. 8	Saturday	4:30
<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
<i>Also serving Laredo</i>		

Programming schedules are subject to change, so check your local listings.

Look for these stories in the coming weeks

FEBRUARY 27–MARCH 6: Flash flood and high-water rescue, ruby-throated hummingbirds, and the heritage and culture of East Texas.

MARCH 6–13: A train ride through the Hill Country, looking for mountain lions in the Trans-Pecos, and swimming holes.

MARCH 13–20: Parrot smuggling, a new field companion to help you get closer to Texas wildlife, and nature photographer Wyman Meinzer.

MARCH 20–27: A Texas Adventures tour in the Chihuahuan Desert, sandhill cranes, and flyfishing.



TEXAS CONSERVATION PASSPORT TEXAS PARKS & WILDLIFE

SM

April: ☀ April Folk Weekends each Saturday and Sunday, Washington-on-the-Brazos State Historical Park at Washington, 409-878-2214

April 1-30: Wildflower celebration sponsored by the DeWitt County Wildflowers Association, Cuero, 512-275-5622 or 512-275-2112

April 2: ☀ Desert bird banding, Black Gap WMA in Brewster County, 915-376-2216

April 2: ☀ Shorebird banding tour, Richland Creek WMA near Fairfield, 903-928-2251

April 2: ☀ Bus tour, Fort Leaton State Historical Park at Presidio, 915-229-3613

April 2: ☀ Mountain bike ride, Dinosaur Valley State Park near Glen Rose, 817-897-4588

April 2: ☀ Native prairie and birding walk, Cedar Hill State Park at Joe Pool Reservoir, 214-291-3900

April 2-3: Free wildflower show sponsored by Highland Lakes Birding and Wildflower Society, LCRA Headquarters at Buchanan Dam, 512-793-2044

April 2-May 1: Statewide Rio Grande turkey hunting season.

April 2, 9, 16, 23, 30: ☀ Nature tour, Pedernales Falls State Park in Blanco County, 210-868-7304

April 2, 12, 19, 26: ☀ Nature tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

April 3: ☀ "Fat Tire Fandango," Fairfield Lake State Park near Fairfield, 903-389-2216

April 3, 10, 17, 24: ☀ Birdwatching tour, Pedernales Falls State Park in Blanco County, 210-868-7304

April 6, 13, 20, 27: ☀ "Dance With the Chickens," Gene Howe WMA near Canadian, 806-323-8642

April 3, 10, 17, 24: ☀ Black powder/muzzleloading beginner's course, McKinney Falls State Park at Austin, 512-243-1643

April 7, 14, 23: ☀ Cavern tour, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

April 7, 14, 21, 22, 23: ☀ Interpretive tour and bat flight observation at Green Cave, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

April 8-17: Wildflower Celebration, Eagle Lake, 409-234-2780

April 8: ☀ Marine life tour, University of Texas Coastal Studies Lab on South Padre Island, 210-350-4490 or 210-350-4491

April 9: ☀ "Wildflowers of Choke Canyon," Choke Canyon State Park Calliham Unit, 512-786-3868

April 9: ☀ Bird house project, Cedar Hill State Park at Joe Pool Reservoir, 214-291-3900

April 9: ☀ Bird banding observation, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

April 9: ☀ Migratory waterfowl viewing, Fort Parker State Park near Mexia, 817-562-5751

April 9: ☀ "Slithers and Such," Richland Creek WMA near Fairfield, 903-389-2216

April 9: ☀ Birding and hatchery tour with slide show, GCCA-CPL Marine Development Center at Corpus Christi, 512-939-7784

April 9, 23: ☀ Nature/ecosystem boating tour, Caddo Lake WMA, 903-679-3743

April 9, 30: ☀ Interpretive tour and bat flight observation, Devil's Sinkhole State Natural Area near Brackettville, 210-563-2342

April 10: ☀ Spring birding bike ride, Matagorda Island State Park, 512-983-2215

April 10: ☀ Horseback tour, Hill Country State Natural Area near Bandera, 210-796-3984 (Running R Ranch)

April 10, 17: ☀ "Plodding the Pease," Matador WMA near Paducah, 806-492-3405

April 12: ☀ Electrofishing observation, Eisenhower State Park at Lake Texoma, 903-465-1956

April 13: ☀ Artifact photography, Lubbock Lake Landmark State Historical Park at Lubbock, 806-765-0737

April 13, 27: ☀ "Discover South Texas Wilderness Areas," Bentsen-Rio Grande Valley State Park, 210-585-1107 or 210-585-0902

April 14: ☀ Fishing clinic, Bonham State Park at Bonham, 903-583-5022

April 16: ☀ Earth Day celebration, Eisenhower State Park at Lake Texoma, 903-465-1956

April 16: ☀ Heritage Days Festival, Varner-Hogg Plantation State Historical Park at West Columbia, 409-345-4656

April 16: ☀ Migrant shorebird tour, Candy Cain Abshier WMA at Smith Point, 409-736-2540

April 16: Bluebird Festival sponsored by Wills Point Wilderness Society, Wills Point, 903-873-3252

Continued on page 54

THE CAJUN CRUSTACEAN

by Deborah Timmerman

I can clearly recall my first encounter with an enraged crawfish, its pincers raised and ready to strike. Thirty years later, it still makes me laugh as I eagerly await my daughter's first crawfishing experience. Chicken necks, old panty hose and string in hand, we travel on our maiden voyage to the nearest swamp. We pass the time quickly with embellished stories from my youth.

As a child growing up in the Gulf

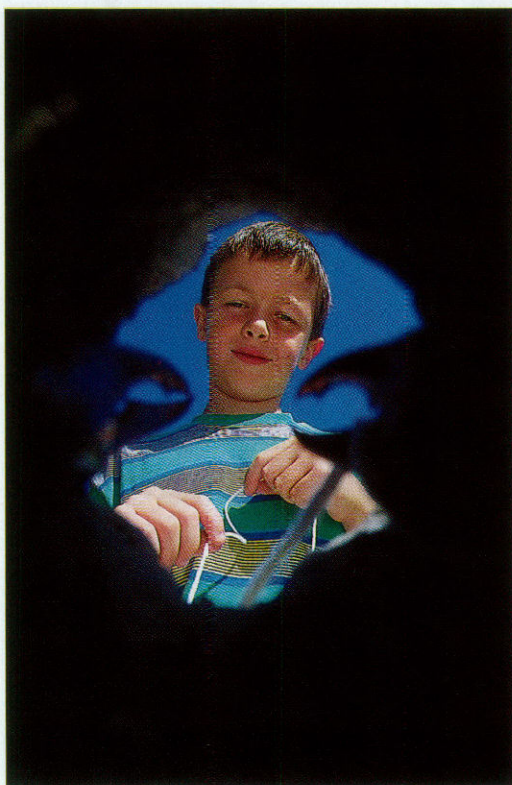
Coast area, I spent many mornings with my brothers trying to entice a crawfish out of its mud chimney. All we needed was a piece of raw bacon, a yard of string and a lot of patience. The three of us would spend hours hovering over our carefully selected mud chimneys, perfecting our unique styles. Sometimes the slow and deliberate method worked, but my preference was a favorite uncle's technique. He taught me to wait until

I felt the string vibrate and then yank like the dickens, sending string, crawfish and all hurtling into the air. After a short pause to watch the crawfish silhouetted against the sky, there would be a mad scurry to catch it after it landed on the grass. Then the real dilemmas began: what to keep it in, when to free it, and how to convince Mom we wouldn't let it go in the house.

This crustacean is known by many names: crawfish, crayfish, crawdad or mudbug. No matter what you call it, crawfish

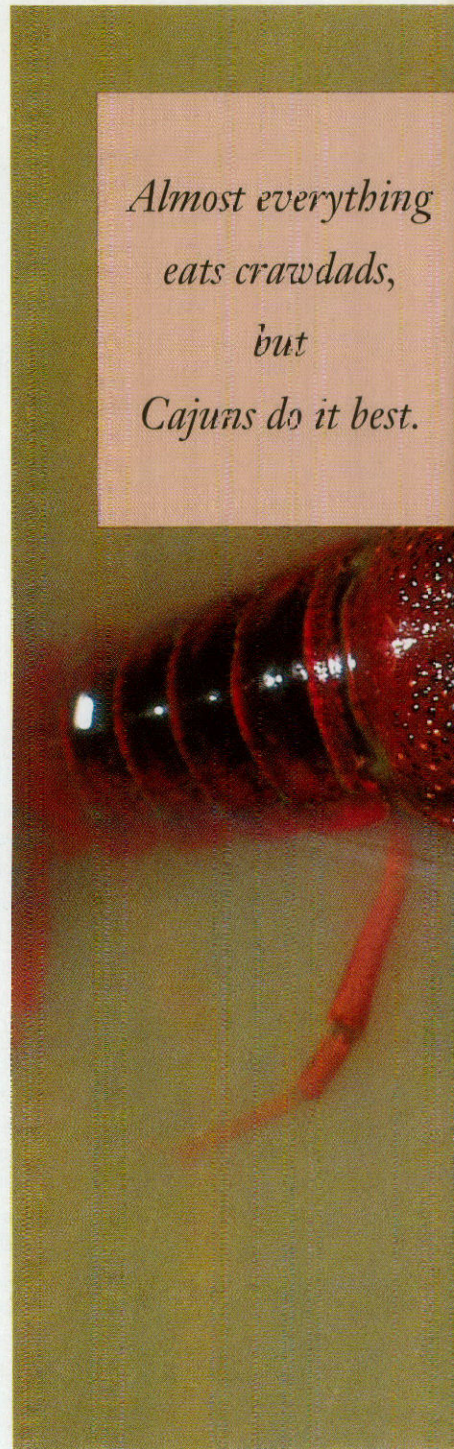
inhabit every continent except Africa and Antarctica, living primarily in fresh water. The crawfish comes in a variety of colors, such as white, pink, brown and blue. Length extremes are one inch to almost 16 inches for an Australian variety, although the most common species average three inches. An exoskeleton covers the crawfish's body like a suit of armor and protects the soft body tissues. It is a prehistoric-looking creature with five pairs of legs, the two

*Almost everything
eats crawdads,
but
Cajuns do it best.*



© STEPHAN MYERS

All you need to catch crawfish (left) are a piece of string, raw bacon and patience. These prehistoric-looking crustaceans have five pairs of legs, with the two in front bearing pincers used in feeding and defense (above).





© STEPHAN MYERS

in front bearing pincers used to grab food or repel an enemy.

Our most common North American crawfish, *Cambarus virilis* and *Cambarus bartoni*, are an important part of aquatic ecology. Resting by day, these nocturnal garbage disposals feed mostly on the bottom of lakes and ponds, searching for dead animals, insect larvae, plants and small fish. Crawfish are not the least bit picky, and much like the late-night snacker, they spend their

nights rummaging for food.

The crawfish exoskeleton does not expand to accommodate growth. Therefore, the adult sheds, or molts, its old shell twice yearly; young crawfish molt about every two weeks. During this vulnerable time they usually hide under rocks or other shelters until the new shell hardens. After the molt, the crawfish begins taking in extra water, puffing its body up. It maintains this expansion, which stretches the new

shell until hardening occurs, thus providing growing room until the next molt. Many species will eat the old shell, speeding the calcification (hardening) of the new exoskeleton.

Crawfish have the power of regeneration: if a pincer, leg or other appendage is severed, its body quickly shuts down the blood flow to the affected area. Soon, the crawfish's body begins to manufacture the replacement. The new limb is partially formed

by the next molt and increases in size with each successive molt. Eventually, it will reach full proportions, matching its counterpart.

A crawfish will display its aggressive nature if startled, and it will valiantly protect itself or any meal in progress. When threatened, it brandishes its pincers, claws open, in a showy display of bravery. It even may try to fend off much larger animals such as river otters, opossums or raccoons, all of which consider the crawfish a tasty meal. Crawfish are an important food source for game fish, especially largemouth, smallmouth and spotted bass. Other crawfish predators include birds, water snakes and turtles. If its menacing display fails to discourage an enemy, the crawfish is capable of beating a hasty retreat by contracting its powerful abdominal muscles and propelling itself swiftly backwards.

Another component in the crawfish's arsenal of defensive weapons is its compound eyes. Mounted on moveable stalks on the sides of its head, these eyes collect mosaic images of objects with-

in range. Efficient at detecting the slightest movement, compound eyes help the crawfish seize an opportunity or avoid a predator.

Thanks to its other highly evolved sensory organs, the crawfish is able to monitor its surroundings constantly. Tactile hairs connected to sensory nerves help the crawfish feel, taste and smell potential meals. Its two sets of antennae are constantly moving, acting much like an early warning system. When food is detected by any of the antennae, mouth parts or other sensitive areas, mouth parts begin to vibrate in excitement, and the crawfish homes in on the food source.

The female controls reproduction. After the male deposits sperm into receptacles on the female's abdomen, she stores it until food and water conditions are favorable, usually in spring. Then she will release 200 to 400 eggs that will pass over the seminal receptacles and become fertilized. The eggs then adhere to appendages on the underside of the tail section, called swimmerets. A fanning motion of her swimmerets keeps the eggs aerated, which is essential for their survival. They hang like grapes until hatching about five weeks later. She protects her eggs and offspring by curling her tail up under her body like a shield.

Young crawfish remain attached until they molt a second time in about a month. For several days after separation, they remain close, then they swim off, no longer dependent. The young are replicas of adults, except for their transparent hue. Only half may survive their first summer. By late autumn the young are about two inches long and will have established their own retreats.

Many species of crawfish live in burrows dug into the mud. Burrows range in depth from 18 inches to 40 inches and have a water-filled cavity at the bottom. Mud excavated by this subterranean inhabitant creates their trademark, the chimneys commonly seen dotting the



© GRADY ALLEN

When threatened, a crawfish brandishes its pincers, claws open (above). Farmers are discovering that crawfish can be a good rotation crop. Rice farmer Boyce Ward (below) has been farming crawfish since 1977.



© STEPHAN MYERS

Crawfish create their trademark mud chimneys when they excavate burrows that can range in depth from 18 to 40 inches.



© STEPHAN MYERS

surface of fields and meadows. Crawfish raise the ire of farmers when their burrowing habits destroy tender vegetation and weaken levees. Some non-burrowing species seek refuge under rocks or bottom debris in ponds, lakes, ditches or other slow-moving waters. Wherever it resides, the crawfish always faces the entrance ready to move out quickly if danger or the possibility of a meal is imminent.

Crawfish prefer the firm clay soils found throughout the Texas Rice Belt. Many farmers struggling to survive falling prices on the world rice market have discovered crawfish to be an excellent rotation crop. One such enterprising rice farmer is Boyce Ward who, along with his wife Sharon, operates The Crawdad Farm located in Mauriceville, proclaimed by local boosters the "Crawfish Capital of Texas." Ward, a

rice farmer since 1973, turned to commercial crawfish farming in 1977. The rice-growing season is June through August, with pond flooding for crawfish beginning in early September. By using the same land, levee system and water, Ward is able to make the most of his investment and resources.

The most common species grown for commercial production are the red crawfish and white crawfish. These species grow to market size in roughly 90 days, and are well acclimated to the Southeast Texas environment. To produce sufficient yield, a farmer must provide plenty of aerated water approximately 18 inches deep and food sources, such as algae, rice plants or other vegetation.

The Texas Department of Agriculture, Texas A&M Agricultural Extension Service and the Texas

Crawfish Farmers Association are some of the sources offering guidance and information to anyone interested in pursuing commercial crawfish farming.

Crawfish aquaculture is reported in 13 Texas counties with the bulk of production located in Chambers, Jefferson, Liberty, Orange and Wharton Counties. The estimated value of the Texas crawfish crop in 1989 was \$1.6 million. If the industry continues to develop its processing and marketing, by the year 2000 the value could increase to \$4.6 million, according to TDA reports. Crawfish sold at the wholesale and retail levels yield higher profits for the farmer than crawfish sold to processing plants, Ward said.

A large portion of live crawfish sold at the retail level are served at "crawfish boils." Best held outdoors where everything including the guests can be



Crawfish are prey for a number of animals, including raccoons, river otters, opossums, snakes, turtles and fish.

© GRADY ALLEN

hosed off afterward, these traditional Cajun soirees have their own dress code and etiquette. Wear only what you don't mind throwing away, and remember that juice running down your arms is a compliment to the host.

How do you eat a crawfish? Any self-respecting Cajun will tell you, "You squeezes de tail an' sucks de haid." It sounds bizarre, but for generations of Southeast Texans, it's as common as eating barbecue. It takes a great deal of effort for a novice to pry the small amount of meat out of the tail section, not to mention the courage required to suck the head, but it's worth it. Real contenders in a crawfish eating contest can devour about 25 pounds in a flurry of flying shells and dripping juices.

Before commercial crawfish farms made acquisition simpler, the desire for fresh crawfish inspired many unique methods of snaring these elusive creatures. One of my family's most successful techniques consisted of using chicken necks and old panty hose. Crawfish attempting to seize the bait would become tangled in the hose. The swampy areas around Wallisville provided our most memorable adventures. There among the rotted remains of wrecked rowboats and cypress trees, we'd begin our quest. Our squeals of delight echoed through the swamp as we snared another mudbug. In a few quickly passing hours, we'd slosh our way out lugging a bag of wriggling crawfish. Our trip home would be filled with wild stories and anticipation of sitting outside peeling our catch.

Trying to impress upon my daughter how important the time spent crawfishing was to my childhood, I think of the distant future, when perhaps she'll tell lively crawfish stories to her children. Thanks to modern farming techniques, they may not have to wade around in flooded fields or swamps to acquire a bag of fresh crawfish, but I hope they will have the same kind of experience I had, and recall it with the same fondness and excitement. ★

Deborah Timmerman is a freelance writer living in Houston.



CRAWFISH RECIPES

BOILED CRAWFISH

1 sack of live crawfish (35-40 pounds)
2 (26-ounce) boxes salt
6 medium onions, halved
1/2 (4-ounce) bottle Cayenne pepper
8 lemons, halved
3 pods garlic, halved
4 ounces liquid crab boil or 2 boxes crab boil mix
10 gallons cold water

Always wash crawfish and pick out dead ones before cooking. Place water and seasonings in a 30-gallon pot. Cover and bring to a full boil. Lower heat and add crawfish. (A metal colander makes a good "scooper.") Some cooks add potatoes and corn to the pot during boiling. Return to a full boil and continue boiling for 5-8 minutes. Turn off heat and soak covered for 10-15 minutes. Remove from water promptly to prevent overcooking and heap onto paper-covered table. Peel and enjoy. Serves five to six.

CRAWFISH FETTUCCINE

1/2 cup butter
1 pound crawfish tails
1 teaspoon soy sauce
1 medium onion, chopped
2 cloves garlic, chopped
Salt and pepper
5 ounces fettuccine noodles, cooked and drained
2 tablespoons butter, melted
1/2 cup Parmesan cheese

Melt 1/2 cup butter in a saucepan. Stir in crawfish, soy sauce, onion, garlic, salt and pepper. Sauté until onions and garlic are wilted. Toss fettuccine with 2 tablespoons butter and Parmesan cheese until nicely coated. To serve, mound warm noodles on a plate and spoon the crawfish mixture over it. Serves four.

A. J. Judice (above) of Groves digs into a plate of boiled crawfish, a Cajun cuisine favorite.

"Eyes in the Mist"
 In full color on fine porcelain
 Shown smaller than actual
 diameter of 8 3/4 inches
 ©1993 W. S. George



BRADFORD
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If the eye is the window to the soul, then the riveting amber gaze of these majestic timber wolves offers a thrilling look into the very spirit of the wilderness.

Now the hypnotic beauty of the elusive lords of the north has been captured by artist Daniel Renn Pierce and re-created with great drama on a fine porcelain collector's plate. And like exceptional collector's plates that command hundreds of dollars on the plate market, "Eyes in the Mist" appears to have what it takes to go up in value once the edition closes.

Some exceptional plates appreciate in value; some plates go down, and many remain at or near issue price. But the edition of "Eyes in the Mist" is strictly limited to a maximum of 95 firing days, and demand is expected to be strong. So to obtain this plate at the \$29.50 issue price, act now. To order your plate—fully backed by our unconditional 365-day guarantee—send no money now, simply complete and mail the coupon.

THE BRADFORD EXCHANGE

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 March 31, 1994

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YES. Please enter my order for "Eyes in the Mist." I understand I need SEND NO MONEY NOW. I will be billed \$29.50* when my plate is shipped.
Limit: one plate per order.

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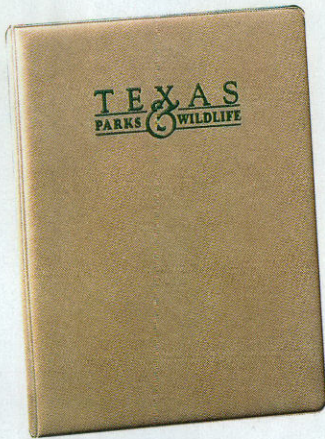
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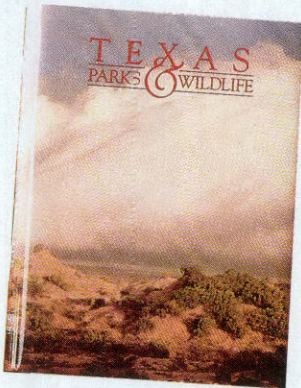
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500 miles from nowhere, it'll give you a cold drink or a warm burger...

NASA space flights inspired this portable fridge that outperforms conventional fridges, replaces the ice chest and alternates as a food warmer.

Recognize the ice cooler in this picture? Surprisingly enough, there isn't one. What you see instead is a Koolatron, it replaces the traditional ice cooler, and its many limitations, with a technology even more sophisticated than your home fridge. And far better suited to travel. Plus, the innocent looking portable refrigerator before you is also a food warmer.

NASA inspired portable refrigerator. Because of space travel's tough demands, scientists had to find something more dependable and less bulky than traditional refrigeration coils and compressors. Research led them to discover a miraculous solid component called the thermo-electric module. The governing module, no bigger than a matchbook, actually delivers the cooling power of a 10 pound block of ice.

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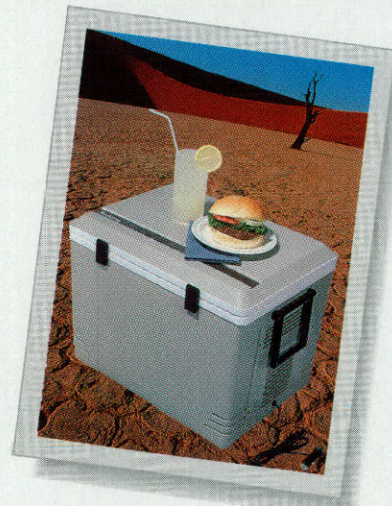
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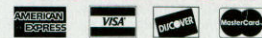
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Continued from page 45

April 16: Sebastopol Historical Festival, Max Starke Park in Seguin, 210-379-4833

April 16: * Birdwatching tour, Guadalupe Delta WMA near Victoria, 512-576-0022

April 16: * Bus tour, Big Bend Ranch State Natural Area and Barton Warmock Environmental Education Center, 915-424-3327

April 16: * History tour, Penn Farm Agricultural History Center, Cedar Hill State Park at Joe Pool Reservoir, 214-291-3900

April 16, 17: * Desert bird seminar, Black Gap WMA in Brewster County, 915-376-2216

April 17: * Birdwatching, Honey Creek State Natural Area near Bulverde, 210-438-2656

April 17: * Photography tour, Honey Creek State Natural Area near Bulverde, 210-438-2656

April 17, 23: * Spring bird walking tour, Matagorda Island State Park, 512-983-2215

April 21: * Bird banding observation, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

April 22-24: * Desert survival workshop, Big Bend Ranch State Natural Area, 915-424-3327

April 22-24: Arbor Daze, Euless, 817-685-1426

April 23: * Earth Day activities, Honey Creek State Natural Area near Bulverde, 210-438-2656

April 23: * Bird watching tour, Mad Island WMA in Matagorda County, 512-576-0022

April 23: Earth Day nature photography show and contest, Palmetto State Park near Gonzales, 210-672-3266

April 23: * Nature walk, Pat Mayes WMA near Paris, 903-884-3833

April 23-24: March For Parks Fun Run, Fossil Rim Wildlife Center near Glen Rose

April 24: * Nature walk, Caddo Grasslands WMA near Bonham, 903-884-3833

April 27: * Birdwatching, Las Palomas WMA in the Lower Rio Grande Valley, 210-383-8982

April 30: * Bird watching tour, Peach Point WMA near Bay City, 512-576-0022

April 30: * Bird watching tour, Jasper State Fish Hatchery, Martin Dies, Jr., State Park and Sam Rayburn Dam, 409-384-9965 or 409-384-2221

April 30: * Mountain bike ride, Matagorda Island State Park, 512-983-2215

April 30: * Nature tour, Honey Creek State Natural Area near Bulverde, 210-433-2656

April 30: * Sphagnum peat bog interpretive tour, Gus Engeling WMA in Anderson County, 903-928-2251

April 30: * Native flora tour, Kickapoo Cavern State Natural Area near Uvalde, 210-563-2342

April 30: * Wildflower tour, Dinosaur Vally State Park near Glen Rose, 817-897-4588

April 30: * Birding tour, Kerr WMA near Kerrville, 210-238-4483

April 30: * Nature and birdwatching tour, Lake Tawakoni State Park, 903-425-2332

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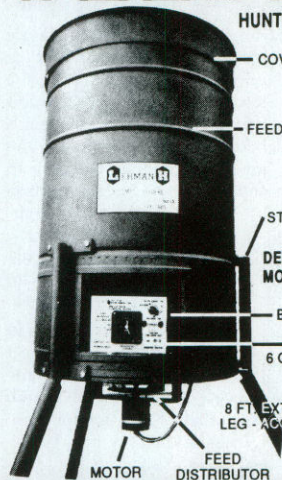
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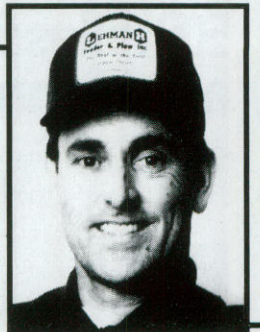
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PARTING SHOT

Freelancer Tom Browning's coyote and bobwhite quail photo adds yet another chapter to coyotes' reputation as opportunists. Browning said coyotes on his hunting lease in the Hill Country west of Austin have learned that quail and other small animals are attracted to corn-spewing deer feeders, and they show up at dawn and dusk to catch a meal when the feeders are programmed to turn on. A catholic diet that ranges from grapes and watermelons to carrion and stray cats may be a major reason coyotes are so widespread and populous.



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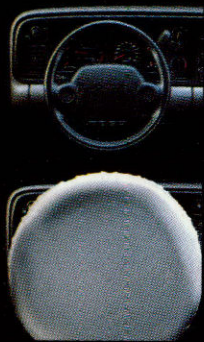
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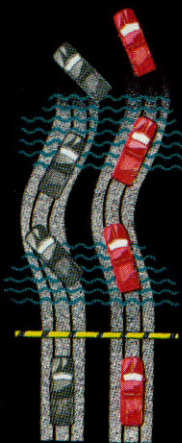


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