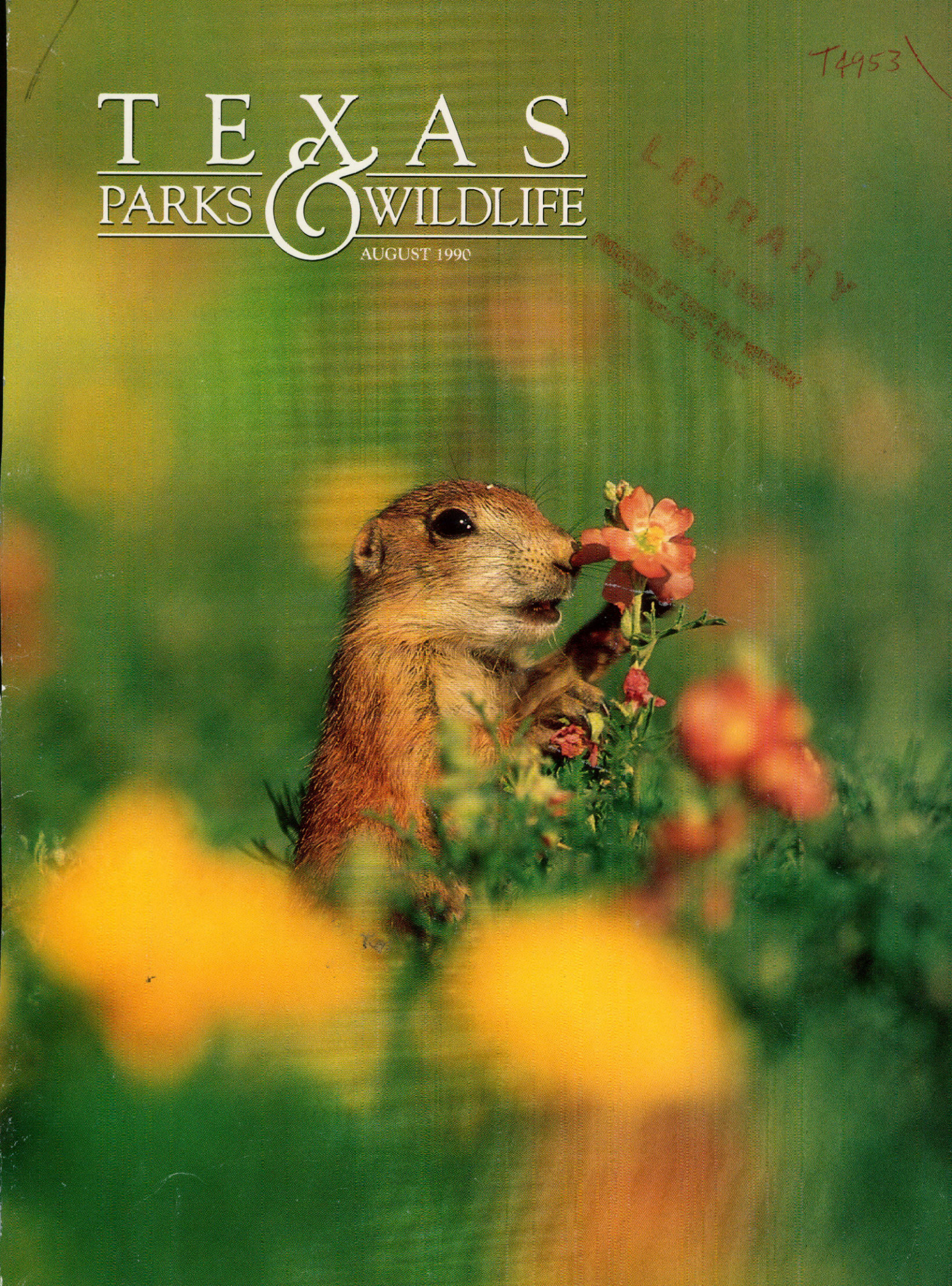


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# TEXAS PARKS & WILDLIFE

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# TEXAS PARKS & WILDLIFE

August 1990, Vol. 48, No. 8

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*Texas Parks & Wildlife* magazine (ISSN 0040-4586) is published monthly by the Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744. Circulation: 512-389-4830; Editorial Office: 512-389-4996; Advertising: 800-343-9783. Copyright © 1990 by the Texas Parks and Wildlife Department. No part of the contents of this magazine may be reproduced by any means without the permission of *Texas Parks & Wildlife*. The following are registered trademarks of *Texas Parks & Wildlife* and use of them is prohibited: At Issue, Outdoor Roundup, Picture This. The magazine is not responsible for unsolicited materials provided for editorial consideration. The inclusion of advertising is considered a service to subscribers and is not an endorsement of products nor concurrence with advertising claims. Subscription rates: \$10 for one year, \$18 for two years and \$26 for three years. Foreign subscription rates: \$12 for one year, \$21 for two years and \$30 for three years.

POSTMASTER: If undeliverable, please send notices by form 3579 to *Texas Parks & Wildlife* magazine, 4200 Smith School Road, Austin, Texas 78744. Second-class postage paid at Austin, Texas, with additional mailing offices.



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**COVERS—Front:** This young prairie dog seems to be enjoying a summer day on the Rolling Plains. Freelancer Wyman Meinzer used a Canon F1 camera, Canon 50mm lens and Fujichrome 50 film. Exposure was 1/250 second at f/5.6 **Inside Front:** The blue crab is the most plentiful and edible crab species on the Gulf Coast. For tips on catching and cooking them, turn to page 14. Freelancer Stephan Myers used a Nikon F2 camera, 105mm lens and Kodachrome 25 film. Exposure was 1/250 second at f/11.5.

# At Issue

Hardly a summer goes by when Texans in some part of the state aren't worrying about water—we either have too much or too little, usually the latter. This year is no exception.

The Edwards Aquifer in Central Texas is dipping to dangerously low levels, low enough for city officials in the community of San Marcos to ration water. Up in the Panhandle, where water is a precious commodity in the best of years, the shallow playa lakes are rapidly shrinking. These playas are valuable nesting and wintering sites for waterfowl and upland game birds. We will have a story on their importance in the October issue.

But the people who live along the Trinity River probably don't want to hear about the water shortages faced by most other Texans. Spring floods from Fort Worth to Wallisville have left both humans and wildlife homeless. Houses were washed away, ground-nesting birds such as quail and turkey had to move to higher ground and start their spring nesting all over.

Appropriately, many of our stories this month deal with water, mostly how to enjoy it. But the story about Wimberley's Cypress Creek carries some ominous overtones. Cypress Creek starts at Jacob's Well, an artesian wellspring near what is now the Woodcreek Resort. My grandfather used to own property that ran down to Jacob's Well. Some time back it was proposed to block

off or restrict access to Jacob's Well to keep any more divers from going down never to return. Nothing came of that but a barbed wire fence does restrict access to the surrounding property.

I suppose it's fitting that the mouth of Jacob's Well is restricted these days. Its waterflow certainly is restricted from the great gush of cold Hill Country water that I remember from years past. Grandfather Baxter worked in Houston's Gulf Building and would retreat to Wimberley's cedar-covered hills and the cool waters of Jacob's Well and Cypress Creek.

Some 40 years later, thousands more harried Texans from Houston, Austin and San Antonio have come to refresh themselves in the waters of Cypress Creek, and some have made the region their first or second home. Therein lies the problem.

Heavy spring rains notwithstanding, we are pumping out more water than percolates into the state's aquifers—the Edwards of Central Texas, Ogallala of the High Plains, Trinity of Dallas-Fort

Worth, Mesilla and Hueco of El Paso, Carrizo-Wilcox of the Rio Grande Valley and the Gulf Coast Aquifer. To some degree all of the state's major aquifers are in trouble. Such aquifers underlie more than half the state. They have long been the principal source of municipal and agricultural water.

The declining water table is forcing planners to look for more surface water in the form of impoundments. This agency and the U. S. Fish and Wildlife Service have just published a book called "Texas Water and Wildlife." In it are listed 44 reservoirs previously identified for construction in Texas between now and the year 2030. Size of these lakes will range from no more than 118 acres to a mammoth 99,500. They will flood or directly affect more than 851,000 acres of wildlife habitat, a third of which includes valuable bottomland hardwood forests and swamps. This riparian land is especially important to wildlife. Such forested river and creek floodplains have declined from an estimated 16 million acres historically to 5.9 million acres today, a loss of 63 percent of the state's prime habitat. Proposed reservoirs on the books could further cut into the remaining habitat.

How in the world can a state as large and diverse as Texas run low on productive wildlife habitat? Just as we are running low on water. The people in the Dallas-Fort Worth Metroplex demand water for their homes and industry, and the people along the Trinity River demand protection from any more spring floods, the likes of the ones they endured this year.

Who will help us speak up for the needs of wildlife? I hope you will.

Next month: Franklin Mountains State Park, a visit to the marshes of Sea Rim State Park and Murphree Wildlife Management Area, squirrel hunting at the new Keechi Creek Management Area and more, to include photos of an interesting encounter between an indigo snake and a rattler.

—David Baxter

*Access to Jacob's Well is restricted these days, just as its water flow is restricted from years past. Owners of property adjacent to the well control access to the popular spring. Jacob's Well is the main source of water for Cypress Creek.*

George O. Miller





# LETTERS

## Doing Fine

I got a kick out of Mr. Baxter's column in the June issue. A few years back I remember someone writing to complain that the magazine was filled with too many fish stories. Ain't it the truth that ya can't please all the people all the time?

You're doing a fine job. My eight-year-old daughter and I put together a beautiful and informative poster as a science project at Highland Park Elementary. She learned a bunch from that exercise, thanks to the fine work of *Texas Parks & Wildlife* magazine.

Minnie Pearson  
San Antonio

## The Iron Curtain Falls

I am a 36-year-old English and Geography teacher. Since the national uprising ousted the Communist Party and abolished the dictatorship in December '89, life has changed in many ways in Romania.

We are free now! We are free to gather with foreigners, free to talk to them. In the past, such behavior would be reported to the omnipresent secret police of Nicolae Ceausescu, the executed president. Now we can get in touch with other people. We are free to write to them, to know them better.

The year 1990 has marked the beginning, however precariously, of real democracy in our country. But the living standards are going to get worse before they get better. Inflation and unemployment are the price that will be exacted for the quickly transforming economics to free market systems. However, since the new government has inherited a disastrous financial situation from the ex-president, it is unlikely we will receive any foreign currency up to mid-1991.

A few days ago, thanks to the American Library in Bucharest that I was not allowed to visit in the past, I learned about your *Texas Parks & Wildlife* magazine. I am very fond of nature and have joined the newly created "Association for Environmental Conservation" in Romania.

I would be very happy to read your publication, and I ask that you enroll me on your subscriber

list during 1990 without payment obligation. Considering the new circumstances in our country, I hope you see my request as a historic record.

Dan Popa  
Bucharest, Romania

■ One of our readers has sent a gift subscription to Dan Popa, and we are happy to have him as a new subscriber. We are optimistic that environmental matters are on the way to becoming truly a global concern

## BMW Owner

What I thought would be an enjoyable event, reading my April issue, was destroyed after reading "At Issue."

I was offended by the remarks about BMWs. Yes, I drive one, and of the 103,000 miles logged on my vehicle at least half have been on trips to Texas State Parks and Big Bend. Safety, reliability and comfort were factors taken into consideration when I made this purchase and I assure you that "fashion" was not. It is comments like this that will continue to feed this narrow-minded way of thinking.

It is my understanding that this magazine is "Dedicated to the conservation and enjoyment of Texas wildlife, parks, waters and all outdoors." Let's stick to the program. I have enjoyed this magazine for many, many years and look forward to a new one each month. This is the first time I have ever been disappointed, not to mention angry.

Kathy Hellums  
Austin

## Irresponsible?

I think "Freewheeling in West Texas" (May) is irresponsible since it encourages riding bicycles on public highways in mountainous terrain.

We have just returned from Fort Davis, and we encountered a few cyclists on the roads around there. Cycling on any highway with a speed limit greater than 35 m.p.h. is hazardous for the cyclist and the motorists. Riding a bicycle up a steep grade is just as hazardous as walking in the highway. No logical person would walk in the highway, and it does not matter

one iota that a cyclist has a legal right to be there.

Several times I have been going downhill at 55 m.p.h. and rounded a curve to discover a car coming head-on in my lane, passing a cyclist inching up the hill at three m.p.h. Your article is going to encourage that scenario and people are going to get hurt or possibly killed.

C. F. Neill  
Wimberley

## Sierra del Carmen

Regarding the article "Mountains Across the River" in the April issue, "del" implies that a singular object of the preposition is to follow. I cannot think of any reason for adding an "s" to Carmen.

Malcolm Trimble  
San Miguel de Allende, Mexico



Mike Biggs

## Say What?

Okay readers, we hear you. *We loved animal crackers*, you said, *but what's the coyote on page 34 saying?* (June issue.)

Well, the truth is, we just couldn't think of anything all that funny. But it was such a great picture we used it anyway.

So here's your chance. *You tell us what the coyote's saying.* Send us your best lines, and we'll run some of them in a few months.

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

# Diving in the

**T**he asphalt ribbon of Interstate 10 cuts through the Chihuahuan Desert of West Texas, coaxing travellers toward a vague, distant point dancing under liquid waves of heat. Vehicles speed through a flat, scrubby terrain flowing in all directions, its monotony relieved only by the occasional creosote bush. Then, like a mirage, the Davis Mountains loom on the horizon. People from Arizona, New Mexico and Texas don't travel these distances only to explore the mountains. Many of them turn instead along the foothills, south to the jewelled vein of life that flows from ancient aquifers zigzagging among the porous rock formations far below.

Balmorhea State Park lies under the shade of cottonwoods and willows, its Spanish-tiled buildings fringing a canal system and the world's largest spring-fed swimming pool. At the bottom of the pool, San Solomon Springs bubble forth an amazing 26 million gallons of crystalline water every day, irrigating 10,000 acres of farmland, and feeding Lake Balmorhea two miles away. Before the Civilian Conservation Corps built the pool in the 1930s, this was a marshy oasis that attracted Mescalero Apaches, Spanish explorers, settlers and gold diggers. Now swimmers, snorkelers and divers come to revel in the water, drawn by the same qualities that attracted the weary, dusty travelers of history, as well as by the beautiful, hidden world that exists beneath Balmorhea.

---

Article by Barbara Dunn  
Photos by Stephan Myers/Collaborations



# Desert

*A beautiful, hidden world exists below Balmorhea State Park.*



*Thousands of three-inch Mexican tetras live in the pool. They have a voracious appetite, and go into a feeding frenzy when food is offered. Flour tortillas, since they don't fall apart in water, are good for feeding the fish.*

The concrete-rimmed, 1.75-acre pool deceives first-time visitors into thinking it is just another swimming pool. But put on a mask and fins, and you'll discover that the concrete ends four feet below the water surface. Under shafts of sunlight, algae-covered rocks continue downward to a depth of 30 feet, where the springs bubble forth at various points through sand and rocks. The circular pool has 80-foot visibility, and the large numbers of fish make it appear as immense as the open ocean.

"At least 100 divers can be in the pool at one time," says Darrel Rhyne, park superintendent. "Most of them come with classes. Divers from Texas Tech have been diving here for 20 years. I can't tell you what percentage of our 100,000 annual visitors are divers." Park rules strictly divide access to the pool between swimmers and divers in the summertime, so most diving occurs from September through May.

The constant 74 to 76 degrees water temperature makes year-round diving possible, and supports a variety of aquatic plants and animals specifically adapted to this ecosystem. No matter what time of year you dive, you can count on being accompanied by the most audacious and persistent denizens of the pool, thousands of three-inch Mexican tetras that latch onto divers, following them around the pool





like love-struck puppy dogs. If you take food down, the tetras go into a feeding frenzy, nibbling not only at the food, but every part of your body as well. A pair of legs and fins will be all that is visible of a diver in the midst of hungry tetras. Even after the food is gone, they follow your every movement, darting en masse in silvery-bronze clouds of energy. Tetras are so voracious, they even attack the sand particles bubbling from the springs.

Perch, minnows, catfish, crayfish and soft-shell turtles also live in the pool. The turtles and crayfish are best seen at night, although the numbers of crayfish have dwindled in recent years. "The pool has never been stocked with any fish," says Rhyne. "There used to be bunches of crawdads, but now it's hard to find them in any number. Some divers break them open to feed to the catfish. We haven't caught any of them in the act, but other divers have reported seeing it happen. I guess there's a few bad divers in every bunch."

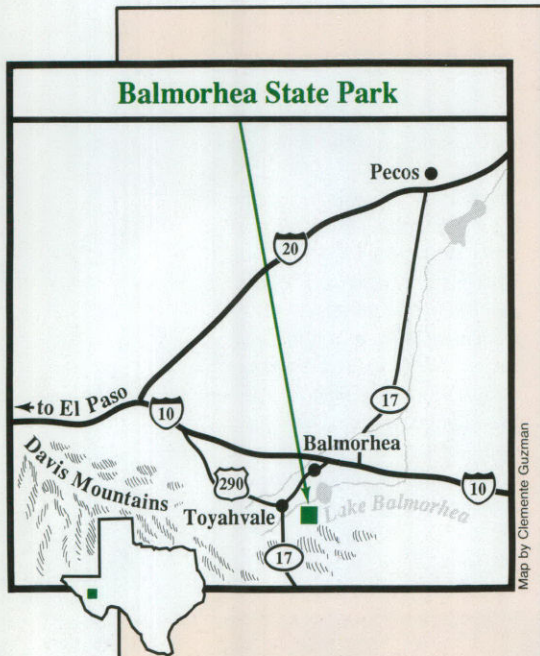
Two other small fish that live at Balmorhea are listed as endangered. The Comanche springs pupfish, *Cyprinodon elegans*, and the Pecos mosquitofish, *Gambusia nobilis*, find refuge in the canals, where diving and swimming are not allowed, but wander into the pool frequently. The flat-faced pupfish has a stocky, golden, two-inch body. It hides among the shallow, grassy areas

of the pool. The mosquitofish exists in smaller numbers than the pupfish, and closely resembles a golden minnow.

"The pupfish and mosquitofish have always been at Balmorhea," says Rex Wahl, a zoologist with the Texas Natural Heritage Program. "Before the pool was built, it was quite a desert spring ecosystem. Species differentiated as time went by and waterways became separated. A couple of rare snails that are only about one-eighth inch long live there, also." While Lake Balmorhea is stocked and connects with the pool through the canals, there is no interchange of water or wildlife because of the constant flow of the springs. In addition, two weirs iso-

*Surrounded by desert and with the Davis Mountains in the background, the surface of the Balmorhea pool offers little clue to the world below. A sample of the pool's residents include (bottom, from far left) a softshell turtle, aquatic snails, the endangered Comanche Springs pupfish and catfish. Below is the Pecos mosquitofish, another endangered fish. The pupfish and the mosquitofish stay in the canals most of the time, but they occasionally wander into the pool.*





To get to Balmorhea State Park, take Interstate 10 west past Fort Stockton to U.S. 290. The park lies four miles west of the town of Balmorhea on U.S. 290. Daily swimming rates are \$1 for adults, and 50 cents for children under age 13. Divers may swim and dive for the same fee. Summer hours begin on Memorial Day and last through Labor Day. The pool is open from 8:30 a.m. to 11:30 a.m. for divers, and noon to 8:00 p.m. for swimmers. Night dives may be arranged until 10:00 p.m. Winter hours begin after Labor Day and go to Memorial Day. During winter, divers may use the pool from 8:00 a.m. to sundown.

Facilities include modern bathhouses with hot showers and a concession in summer with food and refreshments. San Solomon Springs Court, an 18-unit complex, offers units with and without kitchenettes, with central air and television. Picnic sites, tent sites and trailer hook-ups with electricity are available.

For further information, contact the Park Superintendent, Balmorhea State Park, P.O. Box 15, Toyahvale, Texas 79786, or call 915-375-2370.

late a special segment of canal reserved for pupfish.

If you're not a certified diver, you can still see most of the pool and its wildlife by snorkeling at the surface. Even free diving will take you down far enough to get a close look among the rocks and grass. To protect swimmers and divers, the park strictly regulates activities at the pool.

From Memorial Day through Labor Day, divers may use the pool from 8:00 a.m. to 11:30 a.m., and night dives may be arranged with the superintendent. The rest of the day is reserved for swimmers. Winter diving hours last from after Labor Day to Memorial Day, when the pool is open from 8:00 a.m. to sundown for divers. Every diver must produce a logbook and certification card to show proof of experience. Balmorhea does not have a compressor, so you must bring your own air. The closest air is 100 miles away in Odessa. "I strongly recommend that divers call us in advance to check on current regulations," says Rhyne. "We offer a very controlled diving environment and don't make any exceptions. We hate to see folks drive

all the way out here without air or proof of expertise."

On Halloween and Easter, Innerspace Divers of El Paso hosts an underwater pumpkin-carving contest and an Easter egg hunt. "We have door drawings and give away dive equipment for prizes," says Joe Eddings of Innerspace Divers. "The proceeds go to the Muscular Dystrophy Association." Daredevils should come in May, when diving and skydiving clubs host a "Jump and Dunk Extravaganza." Activities include sky-jumping, children's races, dancing and a fish fry.

Whether you're diving or swimming, the beautiful waters and endearing wildlife of Balmorhea offer a memorable experience. "We offer the best diving within a 300-mile radius," says Rhyne. "I wasn't born with fins, so I figure I have no business trying to be a fish. But for the divers who come prepared, you can't beat our water." ★

*Here's another contribution by the Houston Collaborations team of writer Barbara Dunn and photographer Stephan Myers.*



*The colorful red crayfish has declined in recent years. Overzealous divers have been known to break them open to feed the fish. Interacting with the underwater life is enjoyable and permitted, but be careful not to harm any of the creatures.*

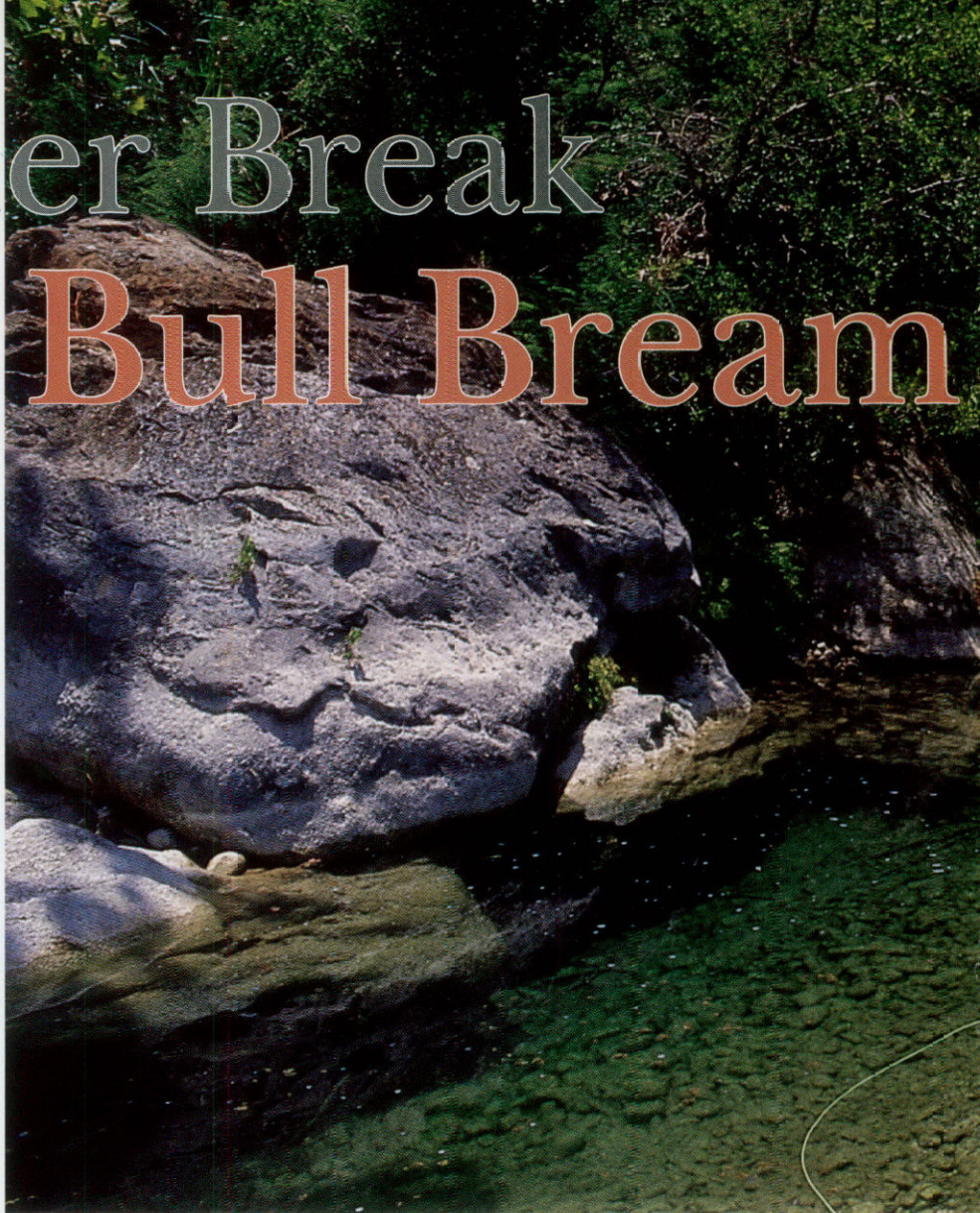


*An El Paso diving club hosts an annual pumpkin-carving contest on Halloween, not your everyday underwater activity! A sycamore leaf floating on the pool's surface captures the tranquility of this desert oasis.*



# Summer Break for Bull Bream

Article and photos  
by Buddy Gough



**T**he meltdown days of late summer can test the temper of anglers to the point of going nuclear, or at least panting for an escape from the searing sun.

Like shade, lots of shade, from the sunny skies above—that's one requirement for a furlough from fishing infernos. Water—cool, clear water—that's another.

And how about some fish that act more on the live side of sushi instead of the serving side of poached.

Well, you can get it all in the summer pursuit of sunfish.

Of all the freshwater species in state waters, sunfish or "bream" can be counted on to be the most active most often, no matter how high the temperature climbs. (Why do you think they call them sunfish?)

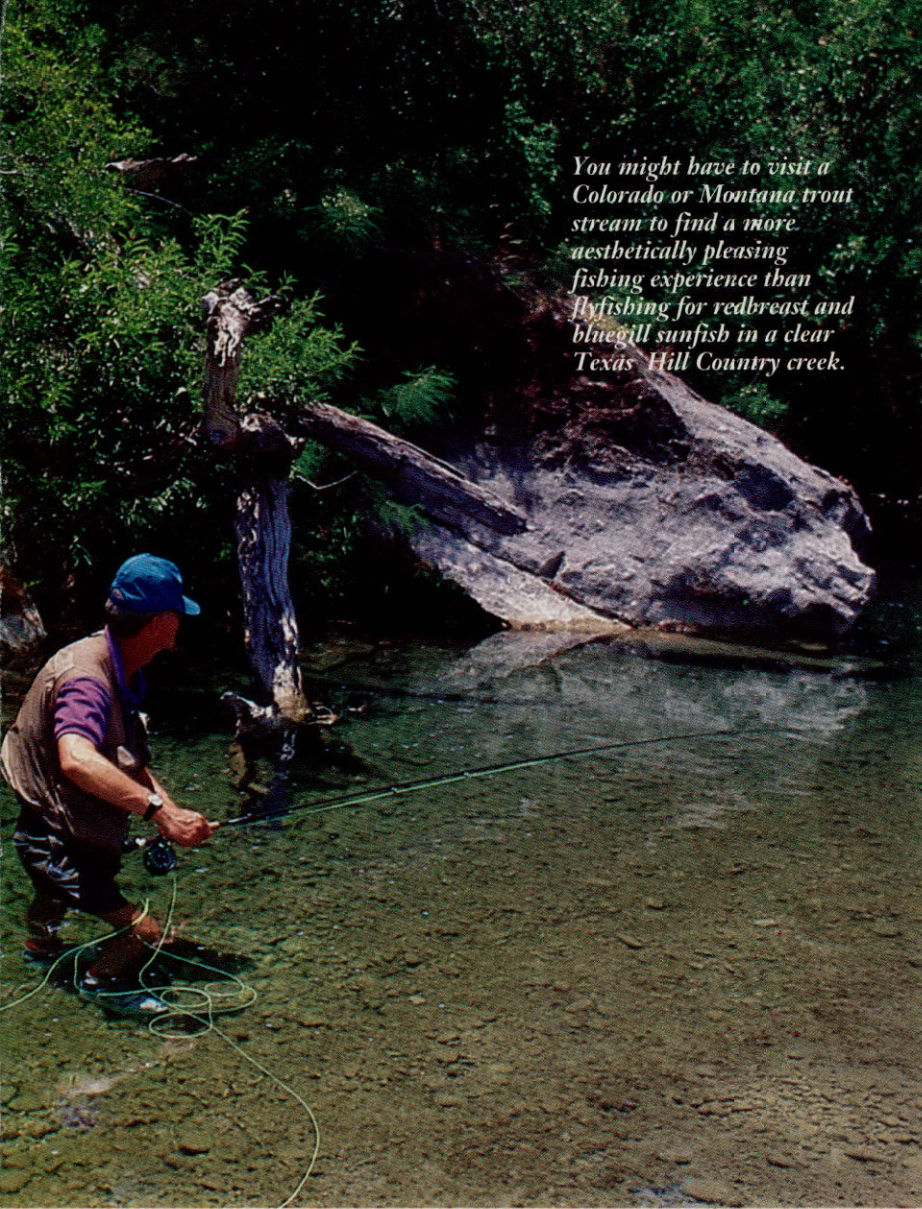
Sure, it's kid stuff if you're talking about small sunfish. Such species as the bluegill, redbreast (yellowbelly), green, longear, redear, and warmouth sunfish and the Rio Grande perch abound in waters throughout most of the state. Give a youngster a small hook, bobber and a can of worms, and he can have lots of action and good times along the shady shores of ponds, lakes and rivers. Many adult anglers got started that way. Large sunfish, however, are a different matter. Bull bream offer plenty of challenge for even the most skillful fisherman.

The whoppers, eight-inches-plus in length, don't get big by being dumb. So, going after the bulls is no different than plugging for trophy bass. But one of the best parts of the game is finding where the big ones are in Central Texas, and that's hiding out in the sparkling

little rivers of the Edwards Plateau. Which ones? Take your pick: the Blanco, Frio, Guadalupe, Llano, Medina, Nueces, Sabin and San Marcos Rivers.

Being spring-fed and tree-shaded, all provide wade and float fishermen with cool and soothing refuges from severe heat. Moreover, they all provide ideal habitat to grow big sunfish, having high-quality water, good cover and plenty of forage in the form of terrestrial insects and small aquatic creatures, according to Bob Bounds of San Marcos. Bounds, who recently retired from the Inland Fisheries Branch of the Texas Parks and Wildlife Department, has had a lifelong passion for fishing Hill Country rivers, with a specialization in large sunfish. "I've refined my methods down to catch the big ones," he said.

Just how big sunfish can get in Hill



*You might have to visit a Colorado or Montana trout stream to find a more aesthetically pleasing fishing experience than flyfishing for redbreast and bluegill sunfish in a clear Texas Hill Country creek.*

Country rivers might surprise many fishermen. The redear sunfish record for the North Llano River, for example, is 1.78 pounds, but it is not a particularly exceptional specimen, Bounds noted.

"During our (TPWD) stream samples we used to regularly turn up redears weighing 1-1/2 to two pounds, but the biggest one came from Manor Creek; I believe it weighed five pounds. It was humongous," he said.

For more common species, such as the yellowbelly, green and bluegill, the norm for the large ones is in the range of one-half pound to one pound. Such fish are relatively ancient, possibly as old as 10 to 15 years, Bounds said.

Besides good habitat conditions, there are other reasons riverine sunfish can reach large sizes. "A lot of people don't know they are there, and they don't

know how to fish for them," Bounds said. Specifically, many river fishermen go armed for bass, and use line too heavy and lures too large to catch the old and cautious sunfish.

But there is more to brutish bream than tips the scales. They are truly wild fish, produced not in some hatchery but by the ancient rule of the survival of the fittest. Living continuously in current and highly aerated waters makes them healthy and strong. Having to hold down a choice hole or lair against a host of their smaller cousins, not to mention bass, makes them fearless and determined in their attacks on prey. And if it looks you like, freshwater fish don't come any handsomer than brilliantly hued sunfish from gin-clear waters.

However, even if the fisherman knows where to look for bull bream and finds the terrain appealing, the key to catch-

ing the big ones comes down to tactics and tackle.

The first requirement is some ability to "read" stream habitat.

Typically, the winding course of a Hill Country river is a repetitive pattern where a stretch of shallow, swift water leads to a deeper pool of gentler current which in turn leads to another riffle and so on. A pool may be no more than a room-sized hole of dark green water around a couple of large boulders, or it may stretch as wide, long and deep as an Olympic model. The larger ones usually have a deeper side where an undercut bank is frequently lined with weeds and cypress or sycamore trees. Usually there will be large submerged rocks and sometimes beds of moss or other aquatic vegetation.

These pools, large and small, are the primary haunts of big sunfish, particularly at the upper ends where the swift water enters. Other good pool areas are around boulders, moss beds and cypress tree roots on the pool's deep side.

"They like to get in eddies behind structure, and they especially like cypress tree roots where there is usually a deep hole," Bounds noted.

The main characteristic of big bream is an association with a pool's deepest water, even if that depth is only two or three feet. "You almost always catch the bigger ones in the deeper water," Bounds said.

Bull bream may take lures near the surface at dawn and dusk, but they will usually do so close to relatively deep water or where there is submerged cover like a moss bed or surface cover like an overhanging tree limb. When the sun is on the water, the fish will be more likely to be hiding out in shade or shadows near the bottom, and that is where they are most likely to take a lure, Bounds explained.

The preferred ways to approach sunfish is by float tube or wading afoot. Many stretches of Hill Country rivers are ideal for either method during normal water flows typically encoun-



*Rio Grande perch (left) are one of several species of sunfish available to Texas sunfish anglers. Rio Grantes prefer the clear, spring-fed waters of Central and South Texas.*

*The bluegill (far right) is the undisputed king of Texas sunfish. It is found virtually throughtout the state, frequents shallow areas where it can be caught easily and is delicious.*

tered in later summer. Since the shoreline of most rivers is almost all private property, the conscientious fisherman needs to keep his feet wet to avoid trespass problems. Nevertheless, wading or float-tubing allows the stream angler to reach the more remote stretches where there is little habitation and limited access for shoreline crowds of swimmers, picnickers and bank fishermen. If you have any question about whether it's legal or not to fish an area

ask someone in the area and, if possible, the person who owns the adjoining land.

"Where there is a (river) crossing accessible to the public, I usually don't start fishing until 200 to 300 yards above or below it, because you're not going to find big fish where there is a lot of traffic on the shore," Bounds said.

Surface traffic by canoeists and rafters, on the other hand, is not necessarily bad news for big bream if the section is not also subject to heavy fishing pressure. "I've caught big sunfish right out from under rafts," Bounds said.

As a general rule, the more remote the stretch of river, the better the fishing. This is particularly true for the smaller, shallower rivers such as the Frio and Sabinal that are virtually accessible only

to wade or float tube anglers.

Bounds tends to prefer sections of rivers flowing down the edge of the Edwards Plateau where the drop of the river bed is steeper, creating shorter riffles and more numerous pools where big sunfish can be found.

From an angling perspective, wade or float tube fishing allow the fishermen to keep a low profile while quietly and cautiously approaching likely lairs of big sunfish. In the clear water, the sunfish can see quite well, and the large and wary ones will see and shy away from anglers at distances of 10 yards or more.

The wade fisherman has a special advantage because he can fish upstream and present a lure in an upcurrent fashion, bringing it head-on at sunfish. This is often more effective because the sunfish tend to face upstream, waiting to ambush prey coming down current.

In choice of tackle, anglers who would pursue large sunfish are essentially limited to two choices, ultra-light spinning tackle or fly fishing tackle, Bounds said.

"By ultra-light, I mean using line no heavier than four-pound test," he said, explaining that heavier line would spook the big ones.

He also disdains the small spinnerbaits favored by many stream fishermen. "I don't mess with spinnerbaits because they put so much twist in the line and catch so many little sunfish, and I shy away from crankbaits too," he said.

Instead, Bounds prefers to fish a small piece of plastic worm that will get down deep where the big sunfish hide. "I take a four-inch worm and pinch it off at the bubble, which leaves the head part about 1-1/2-inch long, and I rig it Texas-style on a long shank #12 hook, with a 1/16-ounce weight," he explained, noting that his favorite worm colors were motor oil, crawfish and strawberry. The bait is fished slow since the wary and deliberate bulls tend to take it on a slow fall or when it is practically stationary.



*Sunfish offer opportunity for anglers to break out alternative types of light tackle such as ultralight spinning gear or various combinations of fly tackle. The angler above is going after sunfish with a light-action bamboo flyrod.*



## Where to Catch Bull Bream

Other good bait choices for ultra-light tackle are small Getzits rigged to cover a tiny split shot and #12 short shank hook.

The absolute best tackle for bull bream, however, is fly-fishing gear. Bounds said nowadays he uses fly-fishing tackle exclusively, and he is just one more of a growing number of fishermen who have found the Hill Country rivers to be a fly-fishing paradise.

For catching big sunfish, a typical rig is a four-weight rod and matching reel. Fly line should be a weight-forward, floating line with a sink tip cut back to about five feet from the standard 10 feet; tippet choices are either 5X or 7X.

That will provide the angler with effective yet sporty tackle, which allows for natural presentation of flies from either upstream or downstream positions. From downstream, for example, the fly is cast ahead of where the angler suspects a big sunfish may be hiding and then is allowed to drift down to that location in a natural manner, Bounds explained. Good fly choices for getting down with big bream are tiny muddler and Wulff patterns, which look natural to even the pickiest sunfish.

Whether the sun-scorched angler chooses ultra-light or fly tackle to hunt trophy-class sunfish in late summer, he can count on one certainty: he has made a cool decision. ★

*Buddy Gough, outdoor editor of the San Antonio Light and periodic freelance contributor to our magazine, learned to appreciate the pleasures of "bream" fishing while growing up in East Texas.*

Part of the fun of fishing for big sunfish is locating accessible sections of scenic Hill Country rivers suitable for wading or floating. The major requirements beyond an adventurous spirit are county maps indicating the many public road crossings of the various rivers. One fly angler, for example, has found and fished 64 accessible sections of the rivers listed below.

Since almost all the property along the rivers is privately owned, wade or float fishermen are advised to keep their feet in the water and off the shore to avoid trespass. Fishermen may wish to consult the local county attorney concerning public access to any particular segment of a stream. Since even the smallest river can have pools more than six feet deep, wade fishermen are strongly advised to carry along some type of flotation device.

Because stream fisheries are relatively fragile, catch-and-release is encouraged. And, of course, littering or any degradation of stream habitats should be strictly avoided as these are some of the most beautiful and most unspoiled environments remaining in the Hill Country.

The following is a small sampling of access points for various rivers:

**Blanco River:** Two wade/float sections are located southeast of Blanco; from FM 2325 take County Roads 405 and 406. Another cluster of sections

is southeast of Wimberley; from Highway 12 take FM 3237 and turn right on 173 and left on CR 314, which crosses the river several times.

**Frio River:** One access is available from FM 337 between Leakey and Vanderpool, and several from farm-to-market roads off U.S. 83 south of Leakey, including FMs 1120 and 1050.

**Guadalupe River:** More suited to floating than wading in normal flow, but with easy public access at many points, including Kerrville State Park, Guadalupe River State Park above Canyon Lake and crossings along River Road between Sattler and Gruene. Best fished weekdays due to large weekend crowds.

**Llano River:** Access to wade/float areas located off FM 377 at four, 11 and 12 miles southwest of Junction.

**Medina River:** There are two public access points off State Highway 16 between Bandera and Medina, and one off FM 470 near intersection at State Highway 16 just north of Bandera.

**Nueces River:** Offers several access points on State Highway 55 between Uvalde and Barksdale, plus one off Highway 83 south of Uvalde.

**Sabinal River:** Several accessible crossings along Highway 187 between Vanderpool and Sabinal.

**San Marcos River:** Presence of many deep holes and steep banks make this river more suited for float fishing than wading. Major access points are southeast of San Marcos on farm-to-market roads off Highway 80. One is on FM 1979 west of Martindale, another on FM 1977 near Staples and a third on FM 20 west of Fentress.

# Going Mano a Mano with the Blue Crab

*Yee-e-e-ow!*

A second too slow or an inch too close bring yelps of pain and surprise when a finger strays within reach of a blue crab's claw. The three-inch clamp draws blood, and no amount of hollering, jumping or arm-swinging will convince that crab to let go. If you reach around with the other hand to pry off the claw, you'll most likely wind up with both hands in a crunch. Then just about the time a crabbing buddy with a pair of pliers comes to the rescue, the crab will drop and race down the pier, leaving its claw behind.

That's what makes crabbing so fun. What other form of fishing combines

the elements of surprise and danger, the adventure and finesse of the hunt, and the opportunity for a one-on-one battle with the prey? While other sea life puts up a meager flip-flop when drawn out of the water, this feisty crustacean puts up its dukes. Blue and red-streaked claws raise in a menacing arc, foaming bubbles spew from its mouth, and eyestalks waver with intense concentration. Standing absolutely still, the crab waits for the inevitable poke, then lunges with expert precision toward the nearest piece of flesh. It takes only one painful experience for novice crabbers to learn that the blue crab is a pugnacious, fearless fighter both in the water and on land.

The blue crab, *Callinectes sapidus*, is a member of the decapod family,

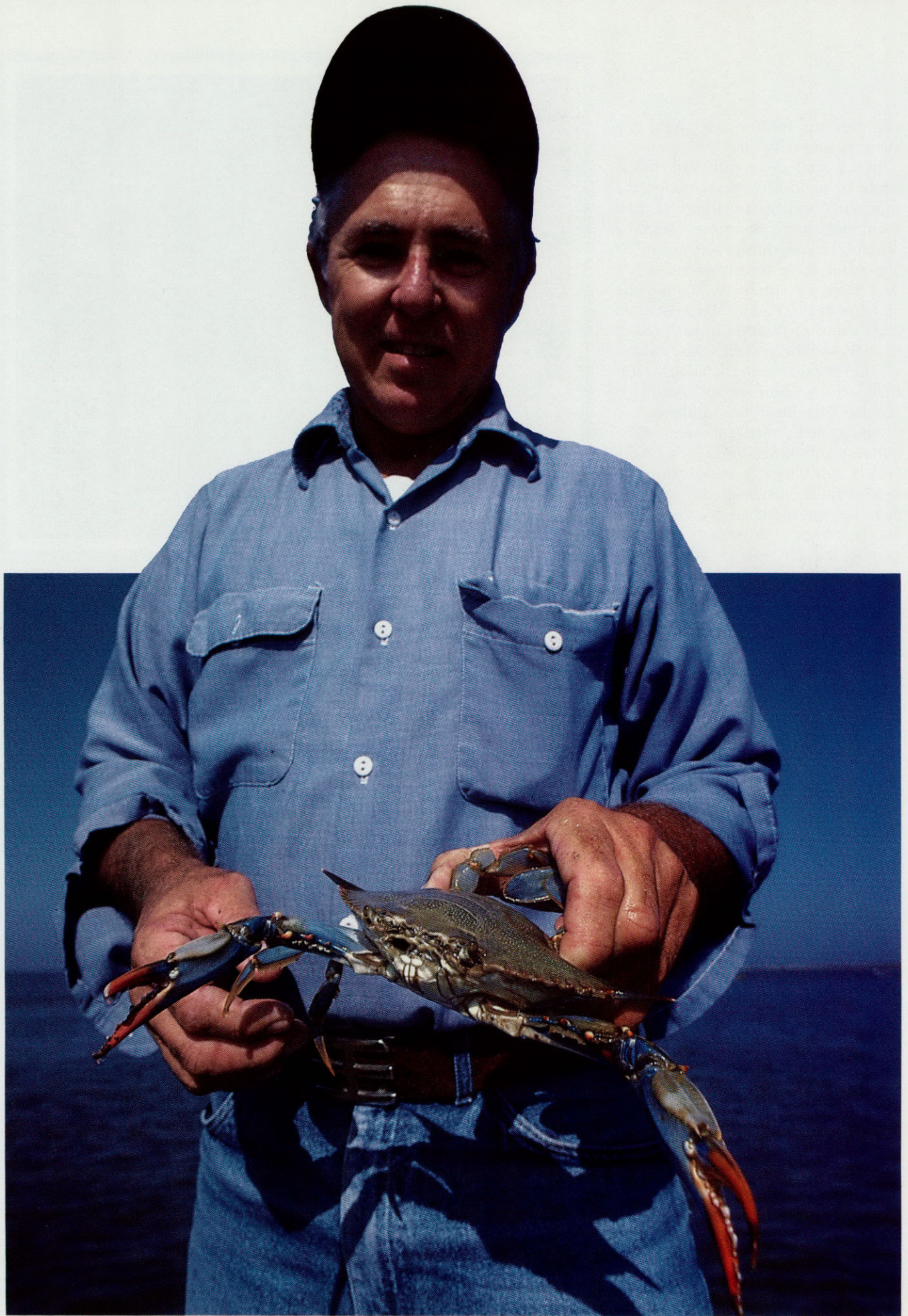
which includes more than 90 other 10-footed species of crab, shrimp and lobster. With two claws, six walking legs, a pair of swimming legs in the rear and the ability to regenerate appendages, the blue crab can move and protect itself with ease. Although many crab species live along the Gulf Coast, the blue crab is the most plentiful and edible.

The blue crab thrives in a variety of environments, from Gulf waters, estuaries and salt flats, to the mouths of rivers and in nearly freshwater river channels. It scavenges muddy bottoms for vegetation, fish and detritus. A seven-inch blue, brown or green upper shell (carapace) protects it from most predators, except during molting. In order to grow, the crab must shed its

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Article by Barbara Dunn, Photos by Stephan Myers/Collaborations





old shell and form a new, larger one about twice each year.

If you pull up a crab with black, white or pinkish-red lines within the thin outer and back margins of their swimming legs, you have caught a "peeler," a crab on the verge of molting. After these lines turn red a few days later, the carapace lifts slightly and the shell cracks. The crab then takes about 15 minutes to back out of its shell. For the next 48 hours, it exists as the popular and delicious "soft shell" crab. Then its soft, wrinkled skin hardens into a new carapace.

Along with hurricanes and mosquitos, crabbing symbolizes life on the Gulf Coast. Nary a child grows up here without spending lazy summer days on sun-bleached piers, waiting for slack lines to grow taut and move against the current as greedy blue crabs skitter off with rotten chicken necks. "I went crabbing almost every weekend as a child," says Debbie Timmerman, a lifelong Houston resident.



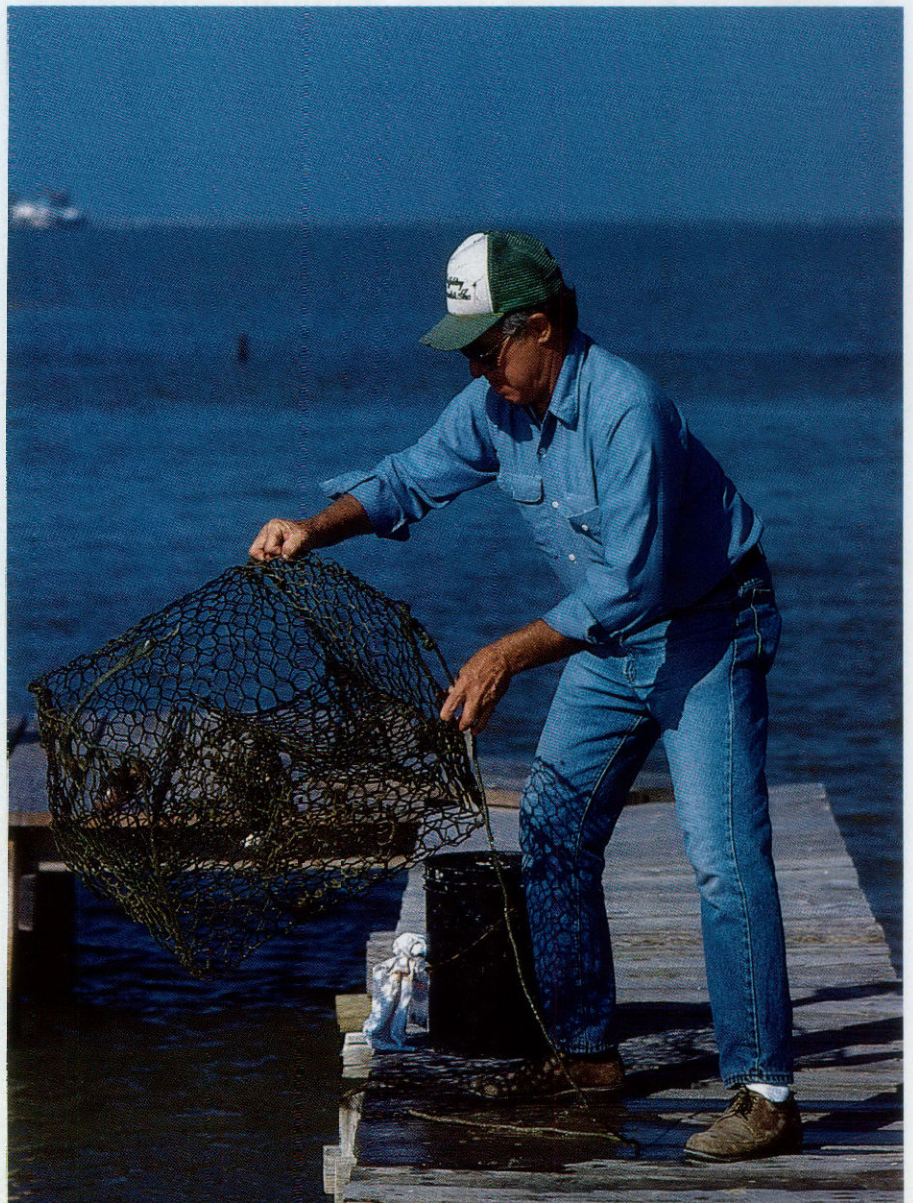
### TEXAS CRABBING REGULATIONS

Crabbers must possess a valid fishing license with a saltwater stamp.

It is unlawful to possess egg-bearing female crabs. These crabs hold egg masses on their undershell between the two swimming legs. The stone crab, a small brown crab with enlarged claw, may be caught only for the purpose of taking the large claw. The claw size must be a minimum of 2-1/2 inches from the tip of the immovable claw finger to the first joint behind the claw. The crab must be returned to the water after the claw is removed.

Crabs may be taken in any number in devices legally used for taking saltwater fish or shrimp and by crab line, umbrella net and crab trap. Crab traps may not exceed 18 cubic feet and must be attached to an orange, floating, visible buoy. A gear tag, valid for 30 days, must be attached to the buoy.

For further information, contact the Texas Parks and Wildlife Department at 1-800-792-1112.





“We’d spend hours setting up the lines and catching the crabs. Kids like to jerk the line out every two minutes because they’re so into the art and fun of crabbing.”

Yes, there is an art to crabbing. If you leave your line in the water after it becomes taut, you may pull up a few crabs on the same piece of bait, holding on with one claw and poking at each other with the other claw. The line needs to be pulled up slowly without jerking. When the crab is just under the water surface, dip your crab net underneath its body so that the crab falls into the net if it lets go of the bait. It’s easy to spot the experts, who lean half their bodies over the edge of the pier, backsides to the sun. Once it’s out of the water, immobilize the crab by putting it in an ice chest. This protects you and minimizes the chances of a crab war breaking out under the lid.

The crabbing season lasts from April to October, or the first cold snap. In winter months, blue crabs move into deeper water less prone to freezing temperatures. Bait shops along the coast have piers, and sell crab traps, nets and bait. “About 35 percent of our summer business is crabbers,” says Wayne Vinton, an employee at Sylvan Beach Bait & Tackle in La Porte. “It’s a great family sport because it doesn’t require a lot of skill or money.” All you need is a crab net, a line or trap, bait and an ice chest.

“The most popular crabbing devices are the throw line and drop net,” says Vinton. “I’ve been crabbing 25 years, and I think they like fresh chicken or fish bait best.” To use a throw line, attach one end to a pier or boat, then tie some bait and a small weight onto the other end and throw it in the water, giving it plenty of slack. An umbrella net is a non-metallic net on a rigid frame with strings. Place the bait in the middle of the net. When you pull up on the net, the crab comes with it.

At night, crabs move into shallow water or near grassy flats to feed. Waders use seines, gigs and dip nets. Commercial fishermen often use traps



*There are a number of ways to catch blue crabs. One of the most common methods is a trap with collapsible sides that lower when the trap settles on the bottom, then rise when it is pulled to the surface (top). Other traps are designed to be left out for several days (left). Both types of traps are baited, usually with chicken or fish. Seines can be used in shallow water (above).*

with buoys that can be left for a few days. One-way funnels make these traps "crab motels," so that crabs can enter, but not get out.

Only 14 percent of a crab is edible meat. It sits inside the shell next to the walking legs and swimming legs and in small chambers in the claws. Whether you like to catch your own crabs, or buy them whole from a bait shop or grocery store, the work is only half done.

Cleaning and picking crabs is a tedious process requiring patience, skill and tough fingertips. "The cooking

part isn't bad," says Debbie Timmerman. "It's the picking. It takes forever. You can spend two hours picking and eating boiled crab, and still leave the table hungry."

The most common method for cooking hard shell crab is to toss it into a pot of boiling water seasoned with bay leaves and crab boil. In 15 minutes, the crab turns bright red. Twist the claws off, and remove the carapace by inserting your fingertips under the shell at the back. To pick out the meat, use a small knife to slice the top off one side of the inner skele-

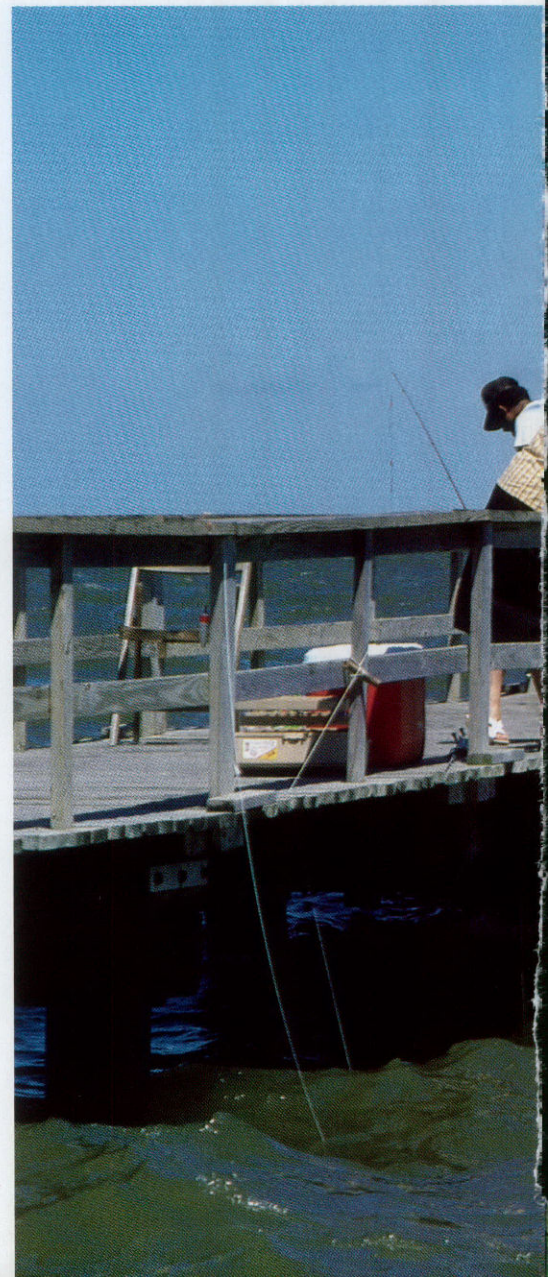
ton and expose the meat chambers. Use a mallet or nut cracker to open the claws. The meat can be eaten at once or used in a variety of dishes.

Preparing soft shell crabs is much simpler since there is no hard shell to open. When cooked, they have the consistency of french fries, crunchy on the outside with soft meat on the inside. From the ice chest, take off the top shell and clean out the organs that lie in the center. Break the crab in half down the middle with the legs and claws attached. They can be smoked or barbecued and eaten whole.

If you like spending lazy days in the sun and catching your own dinner, crabbing provides a day's worth of entertainment. If you're a big eater, don't count on a day's catch to fill you up. ★



*Crabbing is a good sport for children since it doesn't require a lot of skill or money. Youngsters should use crab tongs, and must be carefully supervised.*





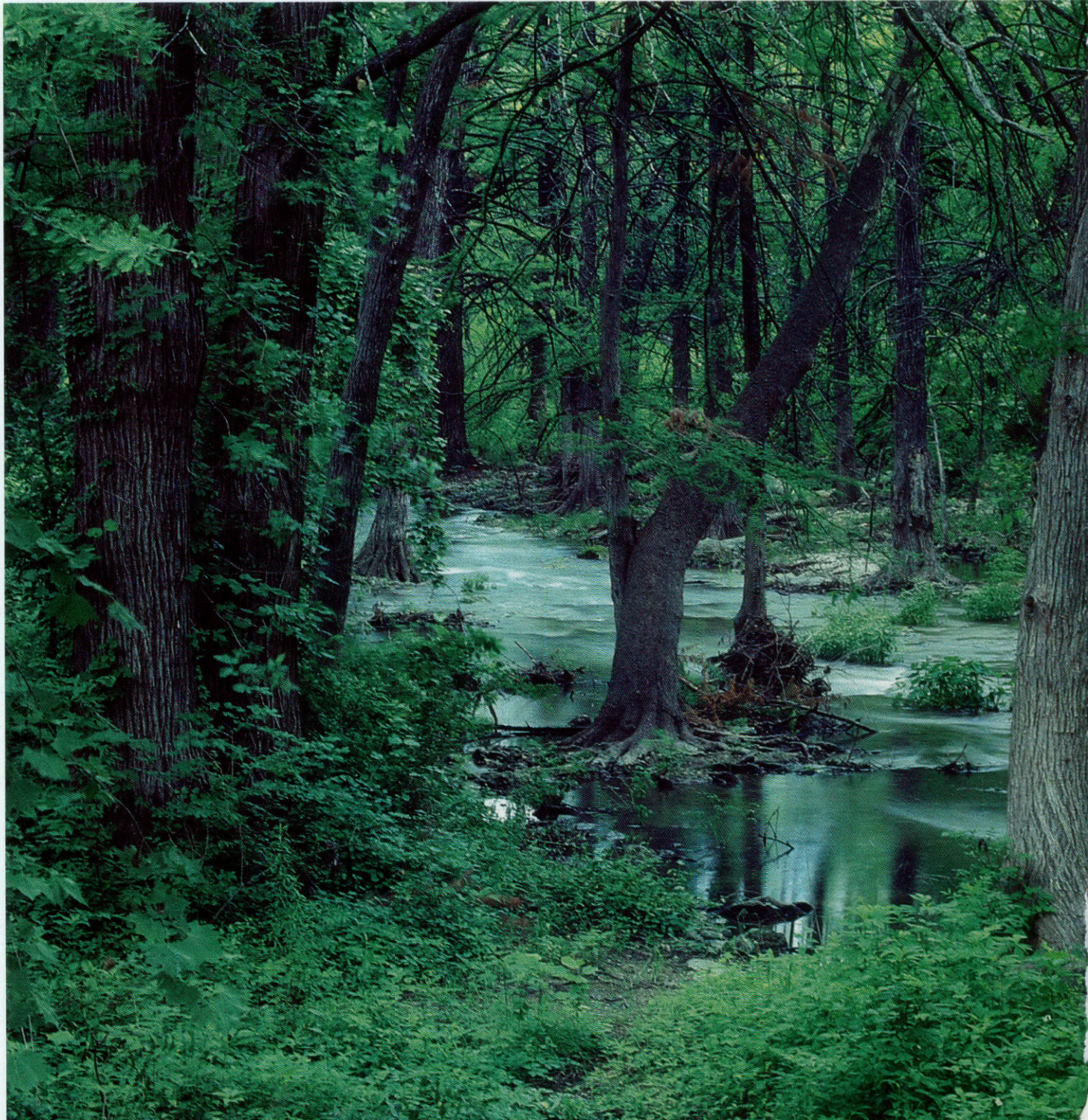
*Even though the crabbing season runs from April to October, summer is the time when most coastal residents and visitors set up their lines on piers (below). Blue crabs boiled with seasoning turn bright red in about 15 minutes (left).*



# SPRING

*How much longer will Wimberley's Cypress Creek flow?*

# POWER



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by Laurie E. Jasinski

Cypress Creek provides a sense of constancy to the Hill Country town of Wimberley. Ever since the pioneer days of the 1850s, the creek has been essential to the town's development. But the early days of plentiful resources are past,

and like many Texas creeks and rivers, Cypress Creek has suffered from reduced flow and may cease flowing altogether in the 21st century.

Today the spring-fed creek winds through downtown Wimberley past homes, restaurants and shops. Noted for its beauty, the stream and its banks are home to deer, opossums, raccoons, ducks and even beavers. Trees are abundant—sycamore, pecan, oak and the majestic bald cypress. Some cypress trees are several hundred years old.

In the 1850s pioneer life revolved around Cypress Creek. Settlers carried water by bucket or barrel. Some homes situated on steep bluffs used water trolleys—buckets attached to pulleys on lines that stretched from the home to the creek. On washdays women met by the stream to clean clothes. Early settler William Winters built a sawmill and gristmill powered by the waters of Cypress Creek. The village, originally known as Winter's Mill, became Wimberley's Mill when Pleasant Wimberley bought the land and mill in 1873 and processed grain, flour, lumber and shingles using creek water to power the turbine. Later another resident, John Henry Saunders, developed Wimberley's first waterworks with a hydraulic ram that pumped water into an elevated tank and into a system of pipes.

In "Cedarwhacker" (Eakin Press, 1988) author C. W. Wimberley wrote, "... like most streams, Cypress Creek began losing volume with the passing of the frontier..." By 1900 it was necessary to find alternate sources of power to turn the gristmill, "... a chore the lean flow of the Cypress could no longer perform."

Though Cypress Creek is supported by numerous springs along its banks, its main source is Jacob's Well,



Leroy Williamson

*Seen here from the RR 12 bridge near Wimberley, spring-fed Cypress Creek was the center of pioneer life in this Hill Country community during the 1850s. Like many waterways today, its future is uncertain.*

an artesian wellspring in the creekbed five miles upstream from its junction with the Blanco River. Cypress Creek was originally called Jacob's Well Creek. Located near the Woodcreek development on private property, Jacob's Well has tantalized divers with its submerged caverns that go as deep as 120 feet and beyond. Ten divers have died there.

The origin of the well's name has been the subject of some debate. One passage in "Wimberley's Legacy" (The Naylor Company, 1963) recounts the story of two early settlers in Hays County, William Winters and William Moon, who followed Cypress Creek until they found its source, which they described as an opening "like unto a well in Bible times." Other historians think the well was named for Jacob de Cordova, an early landholder and promoter in Texas who owned 1,280 acres in the Wimberley area.

Others believed the well was actually an old mine named after a prospector, Jacob, who drilled a deep shaft in search of silver. According to the legend, he drilled about 25 feet down and then turned at right angles until he struck water rather than silver. In the early 1930s, Earl Swift of San Marcos devised a diving apparatus and explored the well with his three brothers. Their homemade diving gear was awkward, to say the least. The helmet consisted of a tight wooden box with plate glass weighted with 60 pounds of lead. Someone manned an auto pump that supplied air through a garden hose attached to the helmet. The diver also wore lead-soled shoes to counteract the buoyancy. The boys made it to the first limestone ledge about 25 feet down and saw that the well extended far beyond. After that expedition the

*In the early 1930s, the Swift brothers of San Marcos explored Jacob's Well with homemade diving gear. The helmet (right) was a tight wooden box with plate glass weighted with 60 pounds of lead. Someone manned a pump that supplied air through a garden hose attached to the helmet. The diver wore lead-soled shoes.*



George O. Miller

*Jacob's Well is the main source of Cypress Creek's water. It is on private property and access is controlled by adjacent landowners such as the Resort Park at Woodcreek.*

ghost of old Jacob the prospector was laid to rest forever.

Historically, Jacob's Well was a popular park in Hays County. A nearby community of the same name had a school, and people can still visit Jacob's Well Cemetery. Local historian and writer Dorothy Wimberley Kerbow recalls the water's force. The current was so strong that stones swayed like feathers when dropped into the well. "It was like a fountain; the whole thing just surged. You could dive right into the center of it, and it would just bring you right back up. Oh that was a glorious feeling!"

Today she thinks increased pumping may restrict flow altogether. "All

the pumping out of the wells—it's lowering the water table of that spring. This underground spring, Jacob's Well, feeds Cypress Creek. When Jacob's Well dies, Cypress Creek dies. I predict that will happen during the next century. Unless our climate changes drastically, we will lose Cypress Creek, for we seem to be becoming a desert."

Don Dibble, a former navy diver and owner of the Dive Shop in nearby San Marcos, told the story of a relative who swam in the well. "As a boy he used to grab a great big rock and jump in. There's a shelf at 25 feet, and it was a big deal to go down to that level holding your great big rock. You got

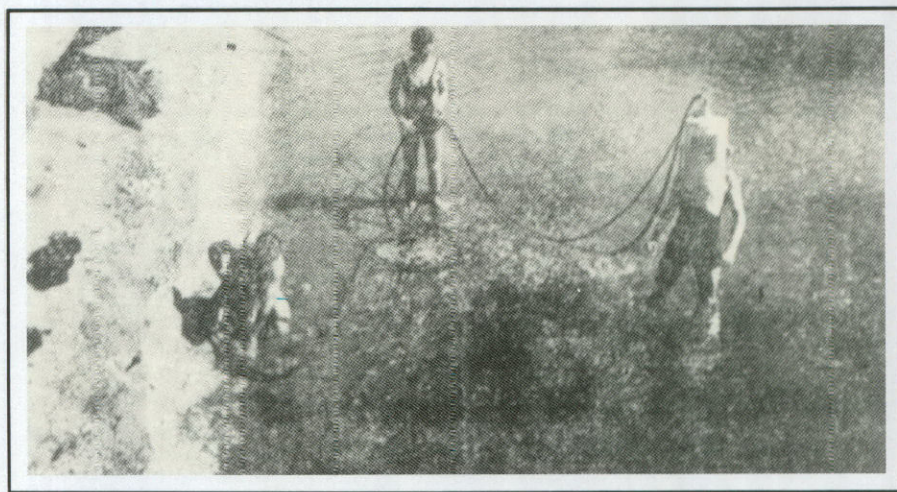


Photo courtesy San Marcos Record



down there and let the rock go into the rest of the cave.”

Dibble has a theory from diver reports that Jacob’s Well opens into a very expansive cavern connecting a vast underground network. Jacob’s

Well and Cypress Creek are supported by water from the Lower Glen Rose Formation in the Hill Country—not the Edwards Aquifer. However, the two are close together, and the level of one affects the other by seeping

through layers of limestone in the Balcones Escarpment.

Dibble, who has led recovery efforts for drownings in Jacob’s Well, has noticed an increasing amount of silt and gravel severely restricting the flow. “Floods on the upstream side of Jacob’s Well. . . wash the gravel downstream . . . so you’ve got a lot of gravel and silt built up that way. Because of a combination of overpumping and lack of recharge, there’s not enough flow coming out of the well. I can recall visiting the place 20 years ago where you could see that there was a turbulence on the surface caused by flow. One of the interesting things about Jacob’s Well,” Dibble adds, “is that you’ve never been able to put dye in there because the water comes out to the surface.”

Many scenic spots along the creek are open to the public. Resort Park in Woodcreek is a camping park operated by John and Jean Craft. Accommodations include a clubhouse, playground and rental units. Trailers, RVs and tents are welcome. The park is near Jacob’s Well, and swimming access to the well is limited. The surrounding Hill Country affords many breathtaking views.

Downstream is Blue Hole—one of the most popular swimming holes in Texas. Blue Hole is synonymous with Wimberley culture and has long been the site of human activity. Indian mounds have been found along the creek as well as arrowheads and other artifacts. Group baptisms occurred there around the turn of the century. In 1927 Jim Dobie agreed to open the spot when a friend offered to pay for clearing the land and building a road. The park opened in 1928 and has always been known as Blue Hole—either from the bluish color of the stream or the color of some swimmers in the cold water! The first facilities at Blue Hole were WPA projects, and during World War II it served as an R&R camp for soldiers on medical recovery.

The Dobie family sold the place to a

Leroy Williamson

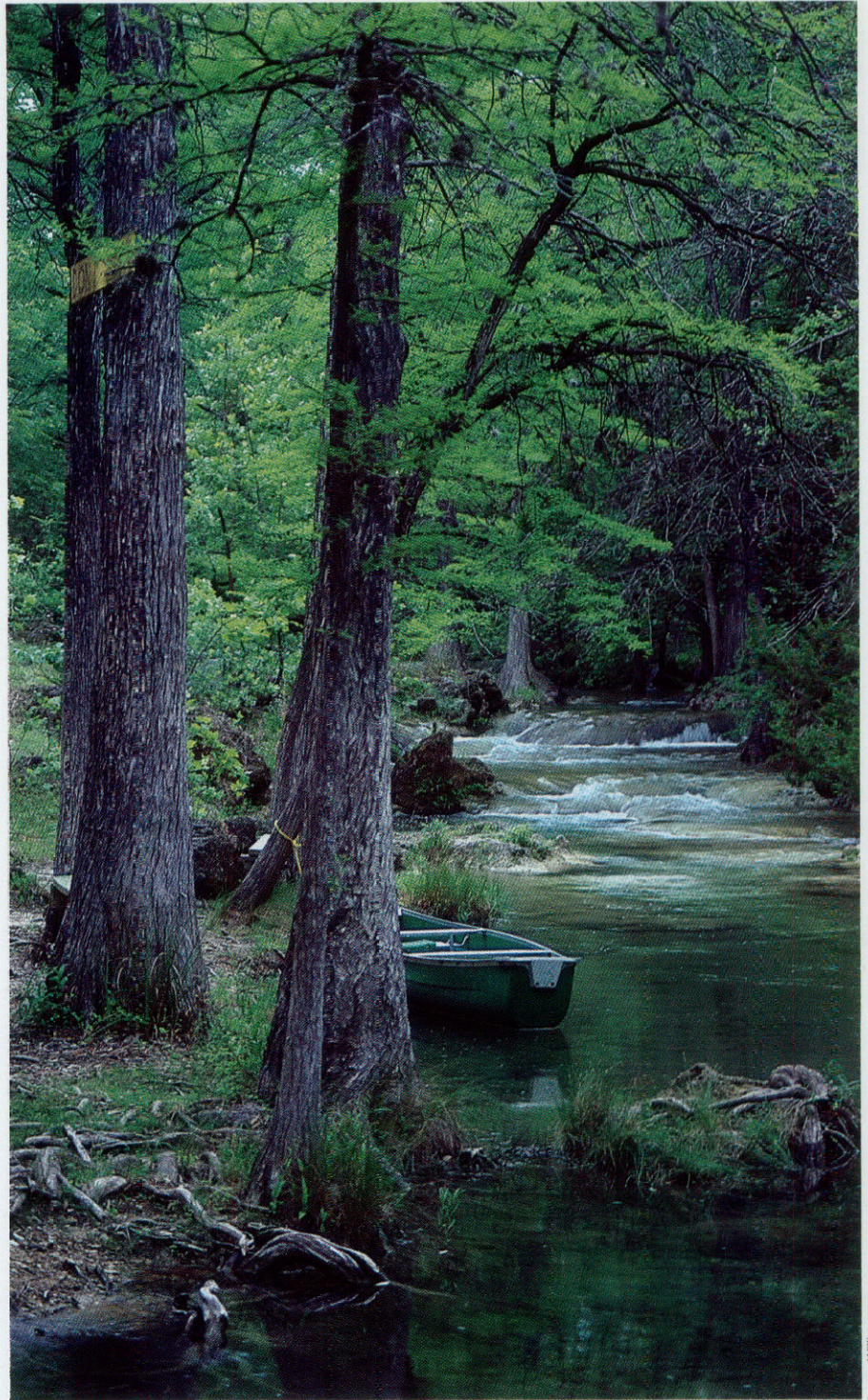


*The scenery at Resort Park at Woodcreek is enhanced by this section of Cypress Creek. Woodcreek, one of several tourist facilities along the creek, offers camping and rental units.*

group of Austin investors in 1975. In recent years it has appeared in the movies "Small Town in Texas" and "Honeysuckle Rose," and an inspirational spot for a segment of "The 700 Club" was filmed there.

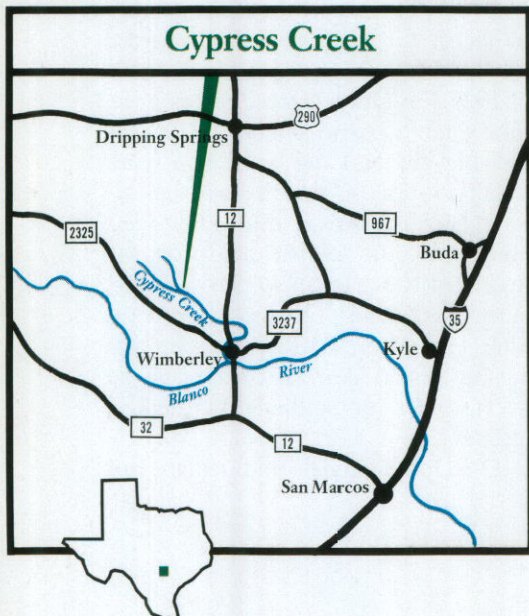
Ron Spangenberg manages Blue Hole and lives there with his family. He acknowledges the beauty of the creek but has also observed some change. Springs on the property are down from past years, and slower flow cannot carry away particles and sediment as easily. Increase in sediment impedes the flow of some springs and also forms a compact layer known as primitive limestone. In 1924, the swimming hole was 34 feet deep. Today it is about 12-1/2 feet deep due to increased sediment.

Few private parks remain open today because of the carelessness of some visitors. "Through the '70s and '80s," Spangenberg said, "a lot of things began to change because of the attitude of people. We lost things such as 150-year-old grapevines and beautiful cypress knots through destruction." In 1986, faced with rising property values, insurance costs and overcrowding, Blue Hole was changed to a private recreation club. "In changing over, we wanted to return to a simpler time. We would like to perpetuate more of a family atmosphere." Now visitors can buy daily, weekly and



Leroy Williamson

Near Hil-Cris Cabins, Cypress Creek flows from limestone ledges into waist-deep water that becomes deeper downstream. Canoes and inner tubes are available for rent.



seasonal memberships, and walk-in visitors are welcome.

Blue Hole offers a variety of camping facilities from primitive camping by the creek to an area with electrical hookups. A bathhouse is available to all campers. The Wimberley Gospel Music Festival is held annually at Blue

Hole the first weekend in October. Local and national musicians participate in a nondenominational celebration of gospel music. The event is open to the public at no charge.

A quarter mile downstream is Hil-Cris Cabins, a popular vacation spot owned by Jay and Charlotte Bollinger.

The cabins, open year-round, are within short walking distance to the creek. Cypress Creek cascades from limestone ledges into waist-deep water that becomes deeper downstream. Canoes and inner tubes are available.

Folks around Wimberley have never seen Cypress Creek go dry. However, the droughts of 1984 and 1988–89, along with increased use by man, have taken their toll. At Hil-Cris Cabins, Charlotte Bollinger often sees marked differences in the water level in relationship to nearby rocks. During the day the level drops with use

and then rises in the evening.

Greater emphasis on water conservation and recycling might ease the demand for water. "If we could recycle our water we could be able to maintain our springs, rivers and lakes," Ron Spangenberg observes. "The whole environment itself is a recycling environment. When you look at a tree, it's like looking at a recycling plant, changing carbon dioxide into oxygen. We take it for granted." Perhaps one alternative might be the use of gray water for watering lawns. Gray water is waste water that is not con-

*In 1924 Blue Hole was 34 feet deep. Today it is about 12½ feet deep due to increased sediment. Springs are down, and slower water flow cannot carry away sediment as easily.*



Leroy Williamson

taminated with human waste.

One Wimberley resident on Cypress Creek has long practiced commonsense conservation regarding her land. Sarah Penn Harris owns almost seven acres and 1,000 feet of waterfront in the heart of downtown Wimberley. She and her husband bought the land in 1941 from Clarence and Pansy Burdette who had developed a girls' camp called Camp Waloa (an Indian word for "growth"). The Harris' first camp opened in 1942, and they operated it in the summers during the 1940s and 1950s. Harris taught many youngsters to swim in the creek, and she still swims every day in warm weather. Her creek "pool" is about

2,000 feet long and ranges in depth from two to three feet where she gets in, to six to eight feet upstream near a diving dock.

Harris considers herself a conservationist and environmentalist and has been involved with an informal organization called the Cypress Creek Protection Agency, a group of local citizens who watch for unnecessary wastefulness or pollutants in the creek. "If anything occurs to alarm anybody," she says, "they discuss the matter and go to the right people."

Harris stresses the importance of organic matter and smart land management. The results of conservation are apparent on her property. "What

## CYPRESS CREEK TOURIST INFORMATION

Several scenic parks are open to the public along the five-mile stretch of Cypress Creek.

### RESORT PARK AT WOODCREEK

*Camping sites:* RV sites, trailers, tents, on-site rental units, bed and breakfast accommodations

*Additional facilities:* Clubhouse, playground, shuffleboard, tennis

*Rates:* Nightly and weekly

*Contact:* John and Jean Craft, P.O. Box 959, Wimberley 78676; 512-847-2243

### BLUE HOLE RECREATION CLUB

*Camping sites:* Rustic camping, RV camping with electrical hookups and water

*Additional Facilities:* Swimming, picnic tables, restrooms, bathhouse

*Rates:* Daily, weekly, monthly, seasonal memberships and daily usage fee; walk-ins welcome

*Contact:* Ron Spangenberg, Blue Hole Management Ltd., P.O. Box 331, Wimberley 78676, 512-847-9127

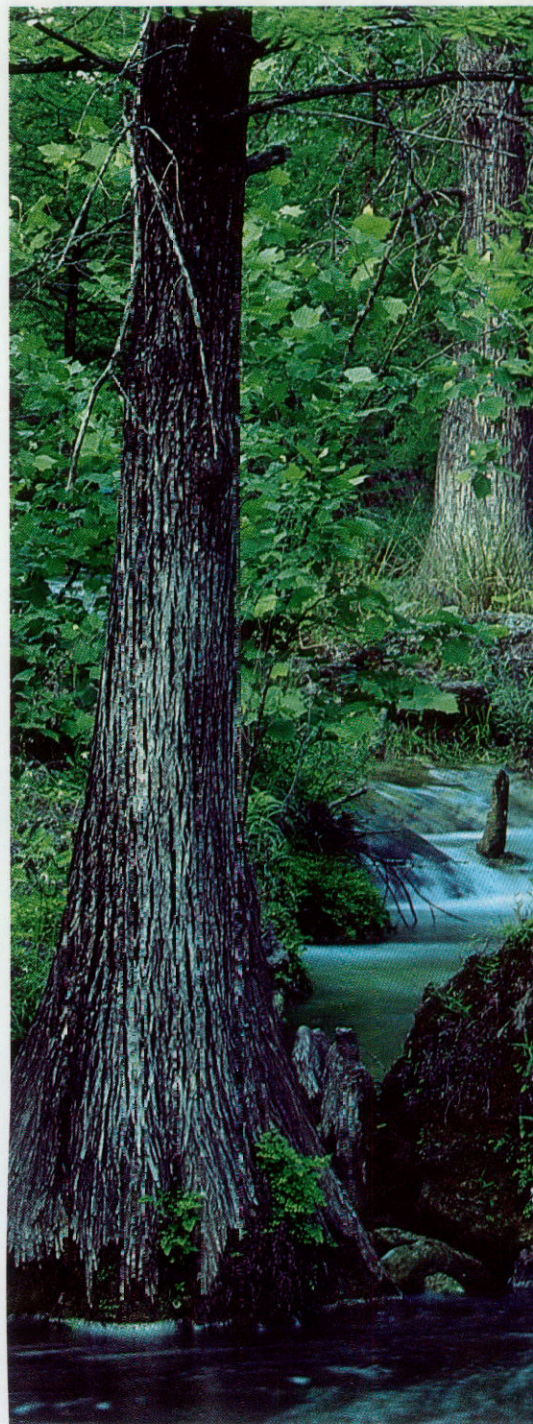
### HIL-CRIS CABINS

*Sites:* Eight cabins (bedroom, kitchen, bath, central heat and air, cable TV hookups)

*Additional facilities:* Picnic area, grills, playground, swimming (canoes and inner tubes available)

*Rates:* Daily, weekly, monthly; minimum reservation two nights

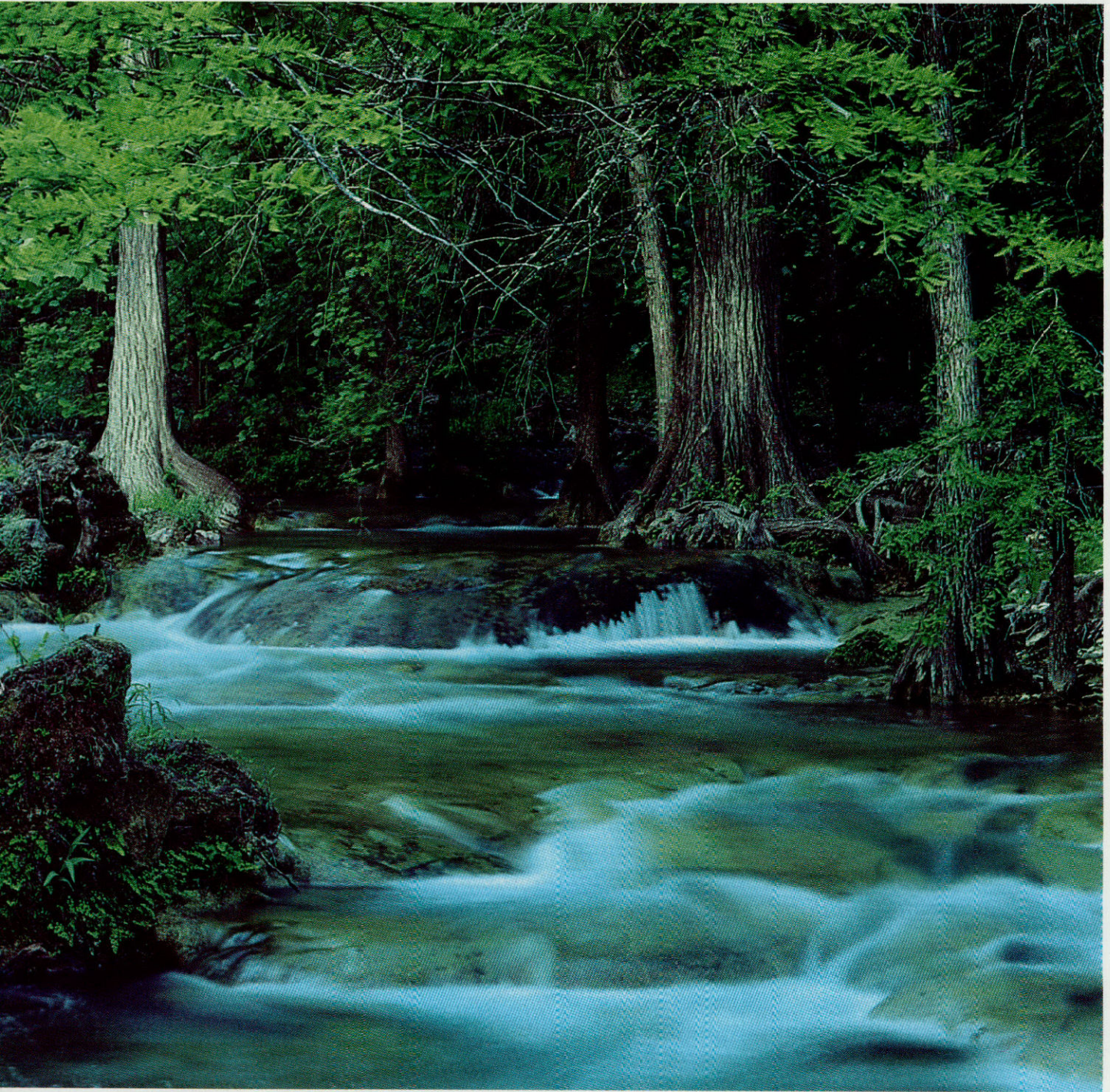
*Contact:* Jay and Charlotte Bollinger, P.O. Box 47, Wimberley 78676, 512-847-2231



Leroy Williamson

you do when you leave all the organic matter on the soil is you build up the insoak pattern, and of course, you're going to build up the underground water reserves because the rain, instead of running off, will soak in. No water ever runs off this property. If there were a law that everybody had to take care of their own runoff, and it would soak into the ground, we could have a much better situation." This also prevents erosion of the banks.

Harris does not need to water often, and she never waters the grass along



the creek. Her grandson mows carefully—leaving leaf particles. Fallen leaves and kitchen scraps act as a mulch on the grass and around trees. She recalls, “My mother laughed at the neighbors because they raked up their leaves and burned them in the streets. That was all the style back in the early part of the century.” She gets plenty of leaves from the sycamore trees she and her husband planted when they bought the place.

It is hoped that Cypress Creek will not meet an untimely end but will

provide enjoyment for generations to come. Ron Spangenberg sums it up when he thinks of his daughter’s future. “One fear I have is that Sarah may never get to enjoy the creek like we have.” It will take careful conservation and cooperation to ensure the natural flow of Cypress Creek and preserve it for Sarah and the future. ★

*Freelance writer Laurie Jasinski of San Marcos is working with the Texas State Historical Association on a revision of the “Handbook of Texas.”*

*Cypress Creek has never gone dry, but droughts and increased pumping have lowered the water level. Water conservation and water recycling might ease the demand.*

# Swimmin' Holes



**A**ugust in Texas is tough. If you are tired of being cooped up in an air-conditioned house and don't like the idea of sharing a condo in Colorado with your brother-in-law, we have a few ideas on how to make it through Labor Day.

Dress codes usually are relaxed in the summer and a swimsuit is about the most relaxed you can be this side of modesty. Last summer photographer Glen Mills made a survey of some of his favorite Central Texas swimming holes, camera in hand, fully clothed.

He hit the Devil's Waterhole at Inks Lake State Park, Llano Slab outside of Kingsland, Blue Hole in Wimberley, Hamilton Pool and Krause Springs. There are many more and probably a lot of folks would prefer we kept their favorite swimming spots out of the spotlight.

We are not sure how the Devil's Waterhole got its name. Perhaps the casually tossed granite boulders at the site inspired it, or the number of buzzards that usually hover overhead in the summer. The Waterhole is in Inks Lake State Park, with the usual entrance fees required. Their phone number is 512-793-2223.

See our story on Cypress Creek for more information on the Blue Hole; it's been a favorite for years. Access is by membership on a daily, weekly, monthly or seasonal basis.

A daily fee is \$5, phone is 512-847-9127.

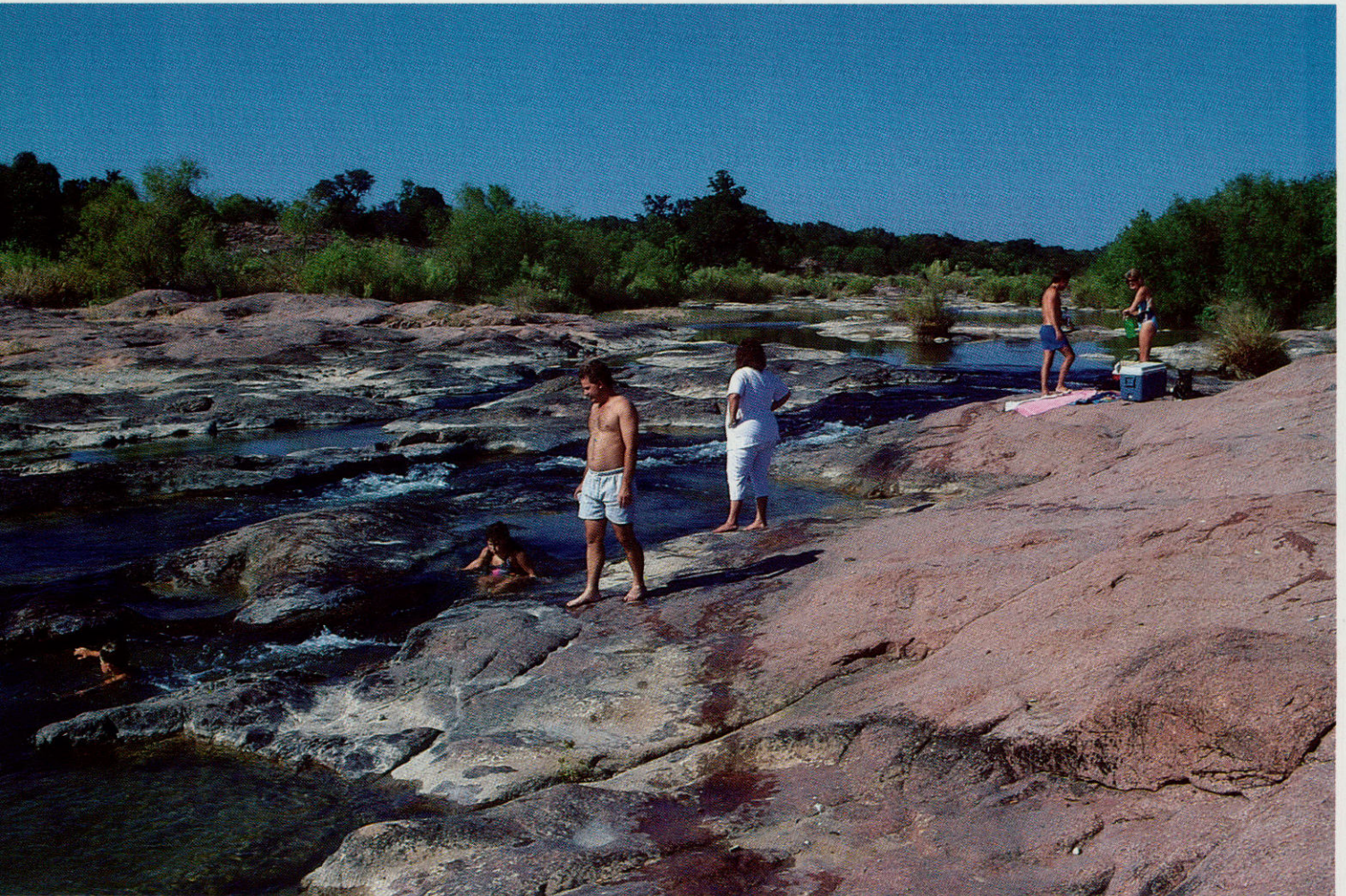
Travis County purchased Hamilton Pool and 232 acres of land in 1985. The pool and grotto were formed when the dome of an underground river collapsed thousands of years ago. The area has been drawing swimmers for 6,000 years. An entrance fee of \$2 per vehicle is charged. Since the parking lot can accommodate only 100 vehicles, park staff will shut the gates temporarily when they reach that limit. Call 512-264-2740 before you grab a towel and head for the park.

Krause Springs has been privately owned by Elton and Jane Krause for some 40 years. They have operated it as a business for the past 15 years, offering swimming, camping and picnicking. They have a regular swimming pool fed with spring water, and a natural springs swimming area below the pool. Call the Krauses at 512-693-4181 for more information.

The Llano Slab really is nothing more than where RR 3403 crosses the Llano River a few miles out of Kingsland. No phone, no reservations, just wet.

If you have a favorite swimming hole, call Glen and he'll see about working up a Swimming Holes '91 story. Meanwhile, enjoy.

*Text by David Baxter, Photos by Glen Mills*



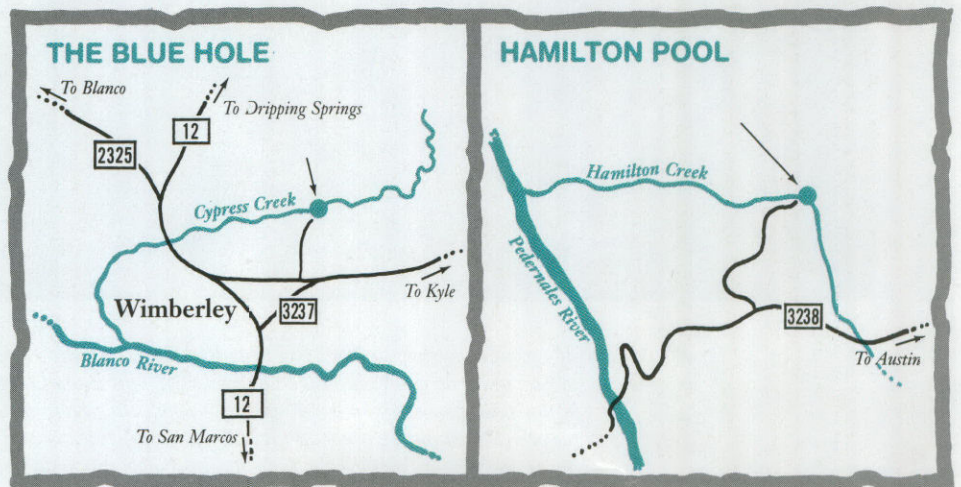


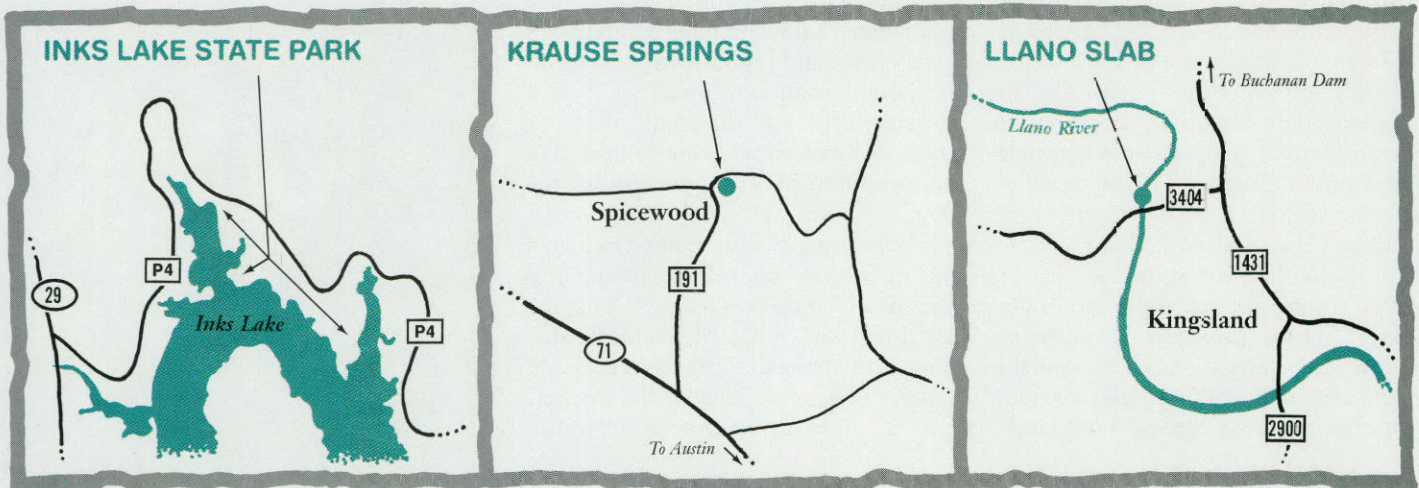
*If you find yourself on RR 3403 near Kingsland, look for the place where the road crosses the Llano River (left). This is the Llano Slab, a fine place to cool off on an August afternoon. Blue Hole on Cypress Creek (above) has been a local favorite for years. You can camp and picnic at Krause Springs, but the swimming hole (previous page) is the biggest attraction.*





Travis County residents have known about Hamilton Pool (above) for years. The pool and grotto are about as cool as it gets in Central Texas in August. Devil's Waterhole (right) is in Inks Lake State Park, one of the most scenic parks in the Hill Country. After spending a day at the waterhole, you might want to check out some of Inks Lake's other attractions.





# The Best Camera

by Leroy Williamson

Perhaps of all the questions I'm asked about photography, the most often heard is, "What is the best camera?" A simple, straight, to-the-point question should have a simple, straight, to-the-point answer, but that isn't the case. In fact, the question is impossible to answer without more facts.

For what purpose will the camera be used? Are you just taking snapshots or are you serious about photography? If you are serious, will you be specializing in macro subjects, scenics, wildlife, people, travel or all of these?

The most popular cameras are 35mm and they basically come in two configurations: the single lens reflex and the rangefinder models that include those wonderful point and shoots. For many, the point and shoot marvels are all they need to shoot great pictures. Of course, there are dozens of models available and it will take a little research to decide just which model is the right one for you.

The more serious photographer will likely opt for the single lens reflex to take advantage of interchangeable lenses and a myriad of other accessories that expand creative potential to endless bounds. With the proper accessories, a single lens reflex system is capable of handling practically any photographic situation, be it micro, macro, astro, general or super telephoto photography. The list goes on.

But which system is the best? Nikon, Canon, Minolta, Pentax, Leica and Rolleiflex are some of the big name cameras, but there are many other brands available. In addition, there are several models available from each manufacturer, and at widely varying prices. A camera body and a

normal lens can cost as little as \$150 or as much as \$3,000 or \$4,000. Is there a difference? You bet there is. The expensive cameras definitely have more features and make photography easier. Will the inexpensive models take pictures that are as good as the ultimate machines? You better believe they will. I'll challenge anyone who says they can look at a slide and tell whether it was made with an inexpensive camera or with the most expensive camera in the world.

The point is, it's possible to take good pictures with practically any equipment. Making the decision about which equipment to buy is purely a personal choice. Most professional photographers of the world apparently prefer Nikons. Does that make Nikon the best camera for you? Not necessarily. Many professional photographers prefer Canon, Minolta, Pentax, Leica or something else. Again, it's personal preference. The important thing is to find a camera you like, one that is comfortable in your hands, one that becomes an extension of your body and mind, easily recording the scenes you wish to record.

Familiarity with your equipment is important. Knowing your equipment's capabilities and limitations is far more important than how much you paid for the outfit, and the result of taking time to learn about your camera will be unlimited photo opportunities for you.

Photographic equipment is changing rapidly in this electronic age and the new "auto-everything" cameras are now a way of life. Mechanical cameras with manual focusing lenses are rapidly disappearing from the market. Changes are occurring so fast, the

latest model is practically obsolete when you purchase it. Indeed, these new cameras are electronic marvels, making photography easier than ever for the masses, as well as for professionals.

But easier doesn't necessarily mean better. When the camera does all the thinking, learning anything about photography becomes less important. But there are many times when knowing about exposure, lighting and all the other things that happen when the shutter clicks can be extremely important. As smart as cameras are, they will never be as intelligent as the human brain. It is important to learn enough about photography to know when the camera is doing what you want it to do, and when you need to override its program with some human input for creativity.

It's important to have good equipment, equipment with all the features you want. But the person behind the

Leroy Williamson





Leroy Williamson

*Once film has been processed, it's impossible to determine whether an expensive or inexpensive camera was used by looking at the picture. These young barn owls were photographed with a . . . well, it could have been anything from a point-and-shoot to one of the best professional cameras. Lighting, exposure and composition, as illustrated by the above photo, are more important than how much the camera cost. Expensive cameras have some nice features, but they do little more than a fully manual camera can do.*

camera is more important than the equipment. A good photographer will be able to take excellent pictures with any camera in good working condition, even an old box camera. A novice, or someone lacking in photographic ability or desire, may not be able to take good pictures even with the best equipment available.

If it's time for you to buy a new camera, whether it's your first or you're moving up to a better model, visit your camera store. Look at all the cameras you think you are interested in. Handle them. How do they feel? How do they sound? Are the controls in the right place for you? Listen to

the sales person's recommendations but don't let that person sell you a camera you don't like. If you know a photographer, get his opinion about cameras.

So do some homework before you buy a camera. Buy a book or two about picture taking—Kodak has an excellent series of books that should be available at your local camera shop. One of the most important books you will ever have comes with the camera. It is called an instruction manual and, by all means, it should be studied and even reread occasionally to refresh your memory concerning your camera's features. It is surprising how many people buy a good camera but will not read the instruction book.

Taking pictures is fun, but photography can be so much more rewarding if your photographs are better than average. Your rewards will be great if you learn some photography basics and get to know your equipment so well that you don't have to think about how to use it.

Now, go take some color slides and enter The Best of Texas Photo Contest. You have until August 15 to send us your best slides. ★

## Don't Forget the 'Best of Texas Photo Contest'

Your entries must be submitted by August 15, 1990, color slides only. No more than one photo per category from each entrant. Here are the categories:

**Wildlife**—Any native Texas species

**Scenic**—Pictorial scenes of Texas

**Recreational**—People enjoying the Texas outdoors

**Macro**—Close-ups relating to nature and the outdoors

Winners will be published in the December 1990 issue. See the February issue for full details or write to us:

The Best of Texas Photo Contest

Texas Parks and Wildlife Department

4200 Smith School Road  
Austin, Texas 78744



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by Ann P. White

# Daingerfield State Park

**F**ragrant pines grow tall in the dense East Texas forest. Sunlight, filtering through in speckled patches, accents dogwood blossoms in spring, spangling the woods with brilliant white. Summer brings myriad greens and autumn presents its own show. The verdant hillsides of Daingerfield State Park must look much as they did when Indians traveled on the nearby Caddo Trace.

The park's 551 acres have good reason for their almost pristine state today. To preserve the natural beauty of the area, generous individuals donated this land for a park in the early 1930s. The Civilian Conservation Corps constructed an earthen dam to impound the lake and built the park facilities; in 1938 the lake and woodlands were opened to visitors as Daingerfield State Park. Care and preservation over more than five decades have assured an untouched quality to its forests.

Our park has more native dogwoods than any place I know," said Kim Ochs, park superintendent. Visitors come in large numbers at the peak season to see

the masses of white blooms. The long downhill curve from the highway to the entry station is thick with white blossoms in late March or early April. Slopes along the trail around the lake look as if

*Where time  
stands still...  
or at least  
slows down*

a spring snowfall has loaded the branches.

In the fall, Daingerfield's hillsides blaze with warm, glowing hues, another major attraction. Maples and sweet gums present a fiery show, dogwoods turn deep crimson, sheltered by the dark

green pines, and oaks turn varying shades of burnished copper.

"The first year I was here it amazed me that people called in to ask about the autumn color," Ochs says. "I came from the Corpus area and couldn't visualize it. I didn't really know what they meant until I saw it for the first time."

Both spring and autumn put on brilliant parades, but the park's 80-acre lake with its warm-weather fun attracts the largest number of visitors. They swim, fish, canoe or ride the paddle boats. They come to soak up the sun on the broad, grassy slope that leads from the weathered stone bathhouse to the swimming beach. They scuba-dive in the spring-fed lake. In the surrounding woodlands, they come to ride bicycles up and down park roads. They hike the trails that circle the lake, study nature, or enjoy a picnic overlooking the water. They camp on the pine-needle carpet under the high canopy of hardwoods and evergreens. They come because they think it's a great place to relax and have fun.

"Daingerfield State Park has changed

*East Texas woodlands beckon on the long downhill curve from the highway to the entrance of Daingerfield State Park. Dogwood blossoms dapple the landscape in the spring; in autumn the maples and sweetgums turn shades of crimson and copper.*

very little since I first saw it about 40 years ago," says concessionaire Jack Atkinson, who operates the boat dock and park store.

More campsites have been developed and more boats are available for rent, but the park's serenity amid the forests and across the lake seems ageless. The stonework in retaining walls and in the open-air concession building maintains a mellowed, gracious quality.

At his concession, Atkinson rents canoes, paddle boats and flat-bottom rowboats. He also sells crickets, earthworms and mealy worms for bait. Visi-



Concessionaire Jack Atkinson (seated left), who operates the boat dock and store, says the park has changed little since the first time he saw it some 40 years ago.



Family groups make up the majority of visitors to the park, with warm-weather fun being the main attraction. Shady picnic sites are perfect for a midday break.

tors can bring their own motors for the rowboats, but because the lake is small, they must limit their speed to five miles per hour.

"In a lake this size, we don't want to create large waves," Kim Ochs explains. An enthusiastic fisherman, Ochs tells you in detail the kind of fishing the lake offers. "As part of Parks and Wildlife's 'put and take' program, we receive a supply of catchable-sized rainbow trout. Fishing is good all winter and spring."

The lake also sustains largemouth black bass, blue and channel catfish, crappie and a good supply of redear sunfish. Sunfish can be caught right off the pier, making it a great place to fish with children.

"One other variety of fish that's unique to this part of the state is the chain pickerel," Ochs adds. "These fish are very aggressive in the spring and can be caught on almost any kind of artificial bait, as well as with a small perch. You can fish for them from the bank because they are up in the lily pads in the shallows. I've seen many of them come out that are 18 to 20 inches long."

Canoes glide almost noiselessly in the small lake, and along with the rowboats, prove good for fishing. Paddle boats churn the area near the pier, and a launching ramp is available for your own boat, if you prefer. Small sailboats work well in the lake, too.

Around a bend in the shoreline from

the fishing pier, you'll find the swimming area with a platform out from shore for diving and swimming. A good supply of not-so-wild wildlife frequents this area. Noisy ducks and geese always seem ready for a handout of bread crumbs or any other leftover picnic food.

## *The park's serenity amid the forests seems ageless.*

Camping supplies, hot dogs, sandwiches, ice cream and soft drinks can be purchased at the small store in the concession building from April through October. Picnic tables and a children's playground near the boat rental attract day-use visitors, too.

Daingerfield is one of only six state parks with cabins—built, in addition to the concession building, by the CCC. Three of them cluster in the pines, and all find easy access to the lake—roughly 200 to 300 feet from the water. A large lodge contains five bedrooms for group use. It, too, sits only a few steps from



Ann P. White

*The park has three cabins built in the 1930s by the Civilian Conservation Corps (above). Clustered beneath the pines, they all have easy access to the lake. Swimmers and anglers enjoy the 80-acre lake (below). Largemouth bass, sunfish, catfish, crappie and chain pickerel can be caught in the lake.*

Jim Cammack

the water. Numerous families plan reunions around the time they can reserve the lodge.

The Big Pine and Dogwood camping areas lie close to the lake's edge with easy access for fishing and boating. Another, Mountain View, perches on a steep hill above the picnic area and playing field. An overflow camping area lies adjacent to it, creating an ideal location for large groups.

The woods across the lake and surrounding the campgrounds hold their share of wildlife, but most of the animals are not readily seen by visitors. The giant pines, oaks, maples and sweet gums—along with large ferns and shrubby undergrowth—make good cover.

"You can see white-tailed deer all year, but more often when the park is less crowded," Ochs says. "We also have





gray foxes, raccoons, opossums, armadillos and squirrels. Beavers are here, but since they come out mostly at night, you just see signs of them—trees they have cut down.”

Nutria, too, inhabit the lake’s edge. Turtles sun lazily on logs near the shore, and large blue herons fish in the shal-

## *Visitors come to soak up the sun on the grassy slope near the lake.*

low water. With numerous springs feeding the lake, the water stays clear and pleasantly cool, even in summer.

Circling the lake on the 2-1/2-mile hiking trail offers one of the best opportunities to absorb the tranquility of the woods and to listen to the birds—especially in the early morning. You might start at the Dogwood Campground where the sign directs you to the trail. As you head deeper into the forest area, flashy cardinals call, and

blue jays shrill their raucous cry. A large pileated woodpecker might hammer away at the bark of a decaying pine, and sometimes a red-cockaded woodpecker becomes visible along the trail.

If you pause at one of the moist seepage areas where a spring flows downhill, you will find beds of cinnamon ferns and mushrooms on the forest floor. In early April, you can look under the large sheltering leaves of the knee-high mayapple for its white hidden bloom. Later in the season the ferns grow up to five feet tall in the rich forest soil.

About midway through the woodland stretch, a side trail to the lakeshore branches off the main route. Along the main trail you walk above the shore, but you can see the water through the trees and ferns. On the far side of a wooden footbridge near the lake’s edge, you can choose one fork which rises steeply to the Mountain View campground—or you can continue to circle the shoreline around to the picnic ground.

Short stretches of the trail beyond make easy, leisurely strolls, but serious hikers make the full circle around the lake. Some regular walkers come out from town twice a day to walk.

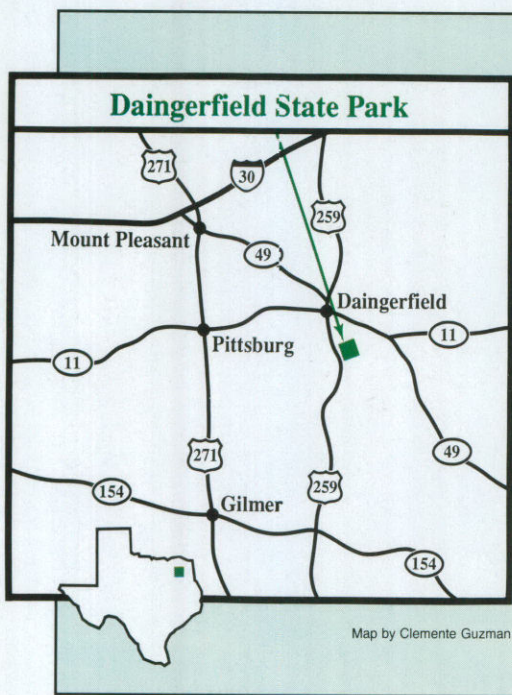
In the open spaces of the park, wildflowers in season brighten the fields and the picnic grounds near the boat and food concessions. Deep-red clo-



*Paddle boats, available for rent at the park, are fun for the whole family.*

ver, wild onion, Indian paintbrush, some bluebonnets and a few deep-forest blooms add their color.

Although individuals and families make up the majority of visitors, both for the day and/or overnight stays, some larger groups come, too. The park staff



Daingerfield State Park is located 23 miles southeast of Mount Pleasant and Interstate 30, via Texas Highway 49 through Daingerfield, three miles east of town.

Facilities include 52 campsites in three campgrounds—nine with water, electricity and sewer hookups, \$10 per night; 16 with water and electricity, \$9 per night; and the remainder with water only, \$6 per night. There is a \$2 entry fee per vehicle.

Three cabins include two that sleep four and one with two bedrooms that sleeps six. The lodge, a group facility, has five bedrooms and a maximum capacity of 20. Cabins rent for \$25 per night for the first two adults and \$5 for each extra adult, \$2 for each child 6-12 years old, and no charge for under age six. The group facility is \$75 per

night. Cabin and lodge occupants also pay the \$2 per vehicle entry fee plus an additional six percent state hotel tax.

Group lodge reservations are chosen in a drawing held each year in January. Reservations must arrive before January 11 at 10 a.m. when the drawing is held to choose reservations for the entire year. Cabins may be reserved 90 days in advance. Call the park office for additional information at 214-645-2921.

Boat rental fees are: paddle boats—1 hour, \$4, plus \$2 deposit. Rowboats—1 hour, \$4 plus \$5 deposit; 3 hours, \$6; 6 hours, \$7.50; 24 hours, \$12.50. Canoes—1 hour, \$4, plus \$5 deposit; 3 hours, \$8.50; 6 hours, \$11; and 24 hours, \$16. All rentals plus tax.

helps them work out arrangements.

“From summer through fall we get scout groups almost every weekend,” Kim Ochs reports. “They come from the immediate area, but also from Longview, Dallas, Garland, Richardson and other locations. They stay at the overflow camping area and work on their achievement badges, as well as just have fun camping.”

Gene Riggs of Elysian Fields, Texas, directs an annual summer camp weekend at the park for his region of the U.S. Tang Soo Do, a karate organization. “Groups of up to 100 come each year from a five-state region. We have workouts, fellowship, campfire programs and a Saturday night outdoor feast,” Riggs says. “They bring their own camping gear as well as food, and ‘kids from five to 55 years old’ set up



Jim Cammack

*Visitors may bring their own rowboats or rent one at the park. Motors are permitted, but the speed limit on the small lake is five miles per hour. A small wooded island sits serenely in the scenic lake (below). Come fall it will be ablaze with color, as will the whole park.*



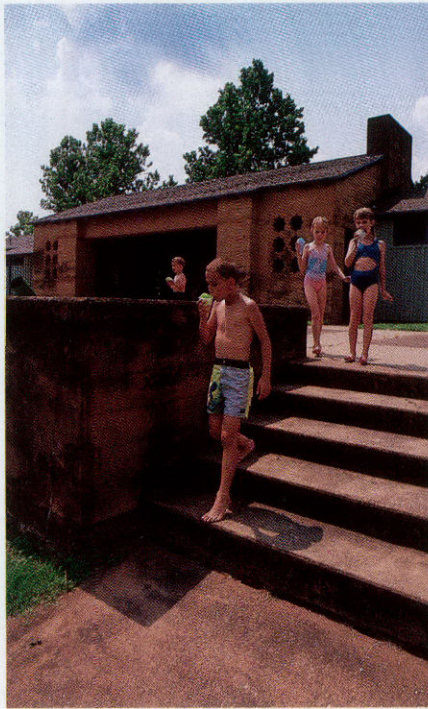
Ann P. White

camp in the overflow camping area. We feel one of our biggest benefits is helping to keep young folks off drugs. We give them something better to do and keep them busy in physical training, which they enjoy.”

Last summer a classic car show of the Morris County Street Rod Club held a two-day event at the park. “The broad lawn near the boat docks and the concession building held 129 antique autos that came from as far away as Houston,” reports Carla Rice of Daingerfield. Carla, along with her husband, Larry, has been a member of the group for a long time and they helped organize the event. Many attended, trophies were awarded and games took place all weekend for children and adults.

Still another large group comes for a six-day summer camp. Sponsored by the Lewisville stake of the Latter-day Saints’ Church, some 150 girls between the ages of 12 and 18 enjoy camp life in the Mountain View and overflow camping areas.

“Girls and counselors from each of the 13 wards represented set up their own camps,” says Duana Blakey, stake camp director. (In the Mormon Church, a stake is a division of ecclesiastical territory, consisting of a number



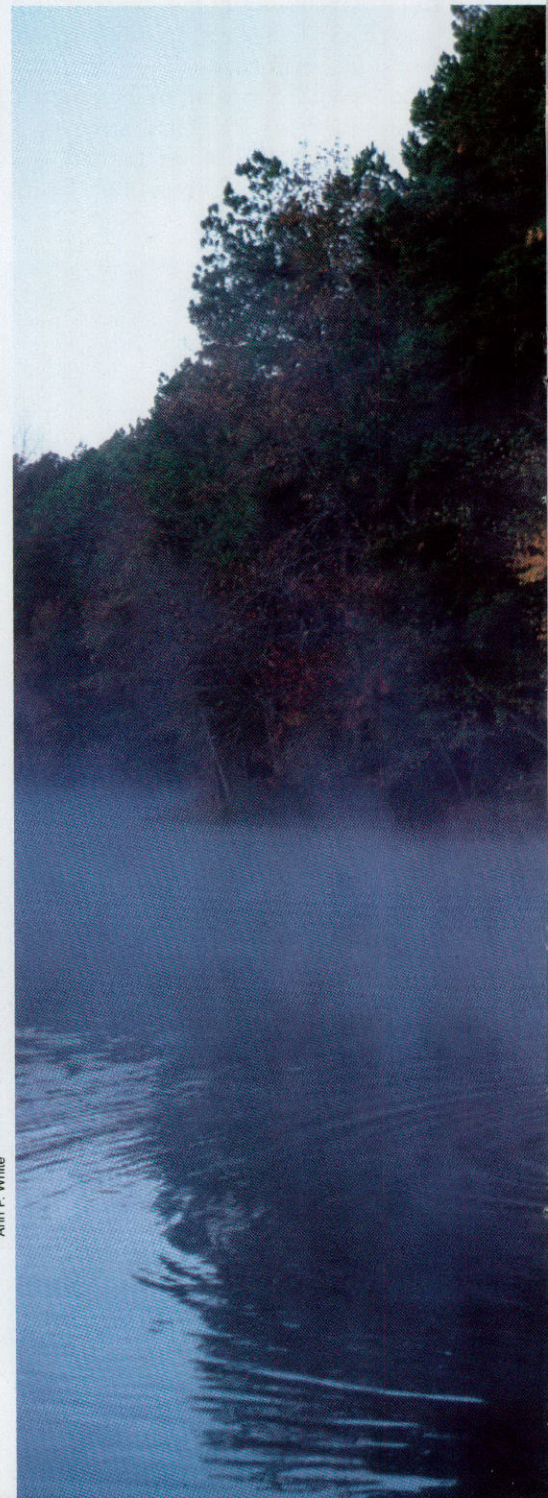
*The open-air concession building, built by the CCC, is a popular spot in the summer.*

of wards presided over by a president and two counselors.) “They bring their own tents and equipment and do their own cooking over open fires all week. They bring canoes, go swimming, and learn water safety and first aid. They earn special certificates of achievement

for each of four years. They also enjoy singing, crafts and nighttime campfire programs.”

Each fall when the park basks in the spectacle of autumn foliage, the nearby town of Daingerfield holds a festival called Captain Daingerfield Days—so named for the early settler, London Daingerfield, who fought the Indians in 1830. The town celebrates in late October with arts and crafts, a parade, a treasure hunt and a variety of contests

Leroy Williamson



*Beavers leave their mark on a tree near the lake (above). Waterfowl visit the lake on a crisp fall morning as the hardwoods begin to display their autumn brilliance (right).*

and games. In mid-May they hold another called the Spring Fling.

Other nearby towns hold a variety of special weekends, particularly in the spring at wildflower time and in the fall when the leaves change color. Hughes Springs, seven miles east of Daingerfield, holds a Wildflower Trails celebration each April. Winnsboro, 38 miles west, holds Autumn Trails events for several weekends in October.

The area enjoys its heritage of Indi-

ans, of Spanish explorers, French trading posts and early settlers. Its Caddo Trace was a well-traveled road for traders moving goods to market, for soldiers to and from several wars, and as part of a stagecoach line. It crossed three other early trails, creating a network that led in many directions. Daingerfield's Morris County Museum, built as a courthouse for the county seat in 1881, displays mementoes and artifacts of these earlier days.

The other heritage of towering pine forests, of flowering dogwoods and brilliant autumns, of spring-fed lakes and clear streams remains intact in capsule form for present and future enjoyment within the acres of Daingerfield State Park. ★

*Writer Ann White of Fort Worth told our readers about the "Texas" drama at Palo Duro Canyon State Park in the June issue.*



Dryland "islands" support  
a threatened tortoise

# Life on the Lomas

by Drs. Frank W. Judd and Francis L. Rose



Steve Bantzen

It's a warm spring morning in South Texas, and a female Texas tortoise begins to dig in hard-packed clay soil at the base of a prickly pear. Using her elephantine hind limbs with their strong, flattened nails, she scoops out a chamber in the hard soil.

After more than a half hour of hard work, the tortoise deposits three oval eggs, about 1 3/4 inches long and 1 1/2 inches in diameter. Then she uses her hind legs to cover them and stamp down the loose soil. The whole process has taken a bit more than an hour. On a September morning some 120 days later, two hatchlings emerge from the nest.

The Texas tortoise, *Gopherus berlandieri*, is one of only four living species of tortoises in North America. The survival of all four is threatened by habitat destruction and other human activities. Although not considered an endangered species, the Texas tortoise is classified as "threatened" by the Texas Parks and Wildlife Department and by the Texas

Organization for Endangered Species.

Since the 1920s, more than 95 percent of the original native brushland in the lower Rio Grande Valley, the tortoise's native habitat, has disappeared. In its place are agricultural and urban areas. That's why it is important for us to obtain information to manage this fascinating species if we want to keep viable populations.

Lands in Cameron County that have not been cleared for agriculture or other uses are largely low-lying areas of barren salt flats and marshes dominated by sacahuiste grass. Within this area of coastal marshes there are numerous low mounds known locally as clay dunes or lomas. These clay dunes are conspicuous along the coast, the largest ones rising about 30 feet above the surrounding flats. They have escaped clearing because they are unsuitable for farming.

Most of these clay dunes are completely encircled by the sacahuiste grasses. Tortoises live on the lomas,



Gilbert Palmer

but not in the dense stands of marsh grass and barren salt flats surrounding them. So the lomas are “islands” surrounded by intervening flats, and the tortoises on a given loma are largely isolated from tortoises on other lomas.

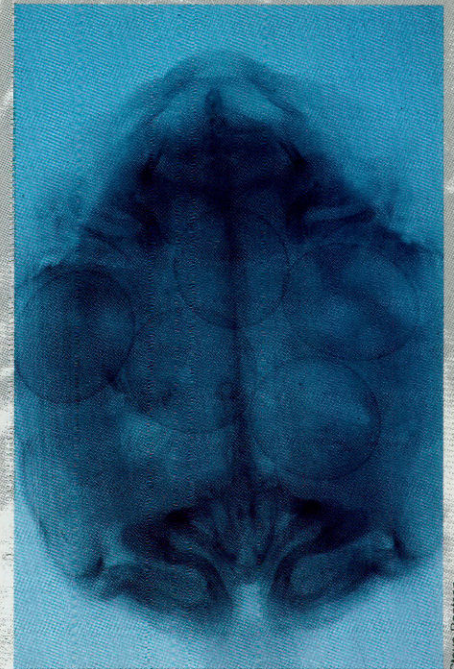
We have been studying the ecology of the Texas tortoise since 1972. In 1986 and 1987 our studies focused on egg production, work that was supported by the Center For Field Research. Some 77 EARTHWATCH volunteers from all over the United States and Canada helped with the field research. Frank Yturria and Wallace Reed granted permission for us to conduct our studies on their lands in Cameron County.

In earlier work, we examined females that had been killed on highways and found that there were from one to seven eggs in a clutch. But we didn't know how many clutches a female laid each year. One way of obtaining information on egg production in the wild is to recapture marked females periodically and weigh them. Changes in weight

can indicate when females have eggs and when they have laid them. A major problem with this approach is that a tortoise's weight does not indicate how many eggs she is carrying because eggs vary in size. Furthermore, if the tortoise fills up on water after a rainfall, it might confuse the pattern of weight change.

A second but unacceptable way of obtaining information on clutch size and frequency is to start with a large number of females and then kill and examine them at frequent, regularly spaced intervals throughout a year. The problem with this approach is obvious: it requires killing a large number of a protected species.

A third approach, and the one we finally used, is to recapture marked females at regular intervals throughout the year and X-ray them. The shelled eggs show up well in radiographs and the method is harmless to the tortoises. A pilot study showed that radiographing females with eggs did not cause the



Steve Bertisen

*Just 1-1/2 to two inches at hatching (top) the Texas tortoise grows to as large as eight inches, with a carapace as broad as it is long. Biologists capture marked female tortoises at intervals and X-ray them to determine the number and size of the eggs they are carrying (above).*



Steve Bertinson

*Biologists believe female tortoises lay their clutch of eggs at different intervals and in different locations. This would make the eggs harder for a predator to locate.*

young to be malformed, nor did it affect later egg production. We decided to X-ray adult females at two-week intervals to determine if they had eggs and, if they did, the number and sizes of the eggs.

We found females with shelled eggs from April to mid-July, and radiographed 33 females in 1986, and 44 in 1987. Approximately two-thirds of the females produced eggs and no female laid more than a single clutch of eggs; however, some females retained a portion of their eggs for up to 39 days. It seems that Texas tortoise females partition the laying of a single clutch. This probably reduces predation on the eggs since it would make a predator's task of locating the eggs more difficult if they were laid at widely spaced intervals and in different locations.

Clutch size ranged from one to five eggs in both years. Our captive, known-age tortoises take about 10 years to reach sexual maturity. It may require several more years of study before we have a definitive answer to how many of the eggs deposited in a given year hatch and survive to be reproducing adults.

The sexes are easy to distinguish once tortoises reach sexual maturity. An adult female is relatively round when viewed from above while an adult male is longer than he is wide. Males are significantly larger than females. Females rarely get to be 6 1/2 inches long, while the average length of males exceeds seven inches.

Both sexes have relatively permanent

home ranges and males have larger home ranges than females. Unlike its cousins, the Texas tortoise does not dig a burrow. Occasionally we have found tortoises in cavities longer than their shells, but usually they make shallow depressions or pallets about half the length of their shells. These pallets are located under shrubs or prickly pear and are occupied on a first-come, first-served basis. Texas tortoises do not have a "home" pallet that they return to each night.

The Texas tortoise is a vegetarian, but females eat snails, perhaps to obtain calcium for their egg shells. The red fruit of the prickly pear is a preferred food, and the prickly pear benefits because seeds that pass through the digestive tract of a tortoise have a ten-fold higher germination rate than uneaten seeds. The tortoises also disperse the seeds and increase the distribution of the cactus.

The Texas tortoise lives generally south of a line connecting Del Rio, San Antonio and Rockport. In Mexico, their range extends southward through eastern Coahuila and Nuevo Leon into the state of San Luis Potosi. Their low reproductive rate and the exploitation of tortoises by pet suppliers prompted the Texas Legislature in 1967 to establish a law protecting the species.

In 1977, the Texas tortoise was among 81 nongame species that received protection from taking, possessing, transporting, exporting, selling or

offering for sale. These prohibited actions apply equally to goods made from the species. Exceptions are permitted based on scientific and educational justifications.

Fortunately, much of the tortoise's range in Texas includes large ranches where entry is restricted and where there are few roads with little traffic. For now, it appears that the tortoise is not in immediate danger of extinction but remains threatened. However, habitat destruction in the lower Rio Grande Valley and in northern Mexico is taking a heavy toll on the tortoise, as are the roadway systems with their ever-increasing traffic.

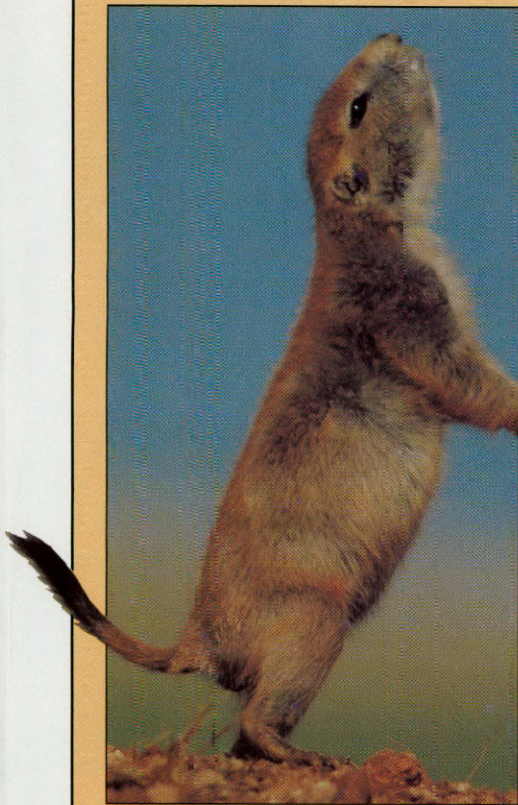
Our studies are focused on developing a life-table and a management strategy for this fascinating part of the Lone Star State's fauna. We are devoting our current work to assessing the extent of geographic variation in life history characteristics and in determining the percent of tortoises that survive to reproductive age. We are grateful to the Texas Parks and Wildlife Department for permits to do our research and to the Texas Nature Conservancy for financial support. ★

*Frank W. Judd is a professor and director of the Coastal Studies Laboratory at the University of Texas-Pan American University. Francis L. Rose is a professor at Texas Tech University's Department of Biological Sciences.*

# Introducing

## MAMMALS TO YOUNG NATURALISTS

*Ilo Hiller*



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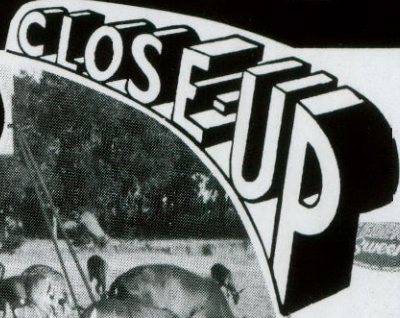
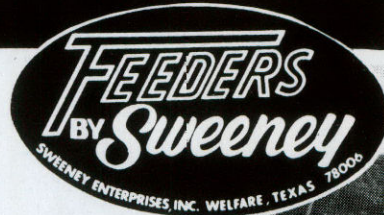
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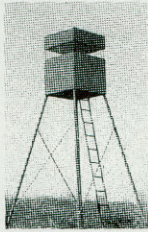
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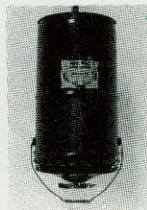
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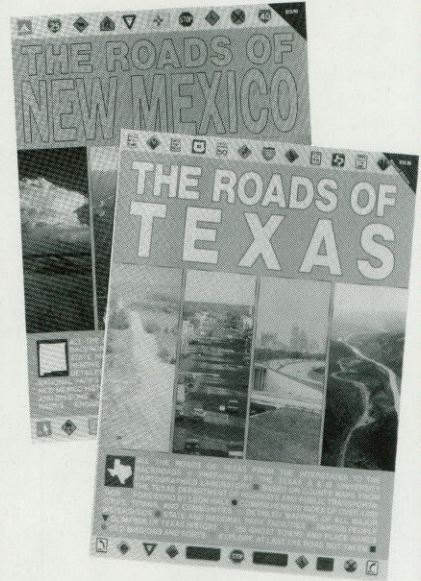


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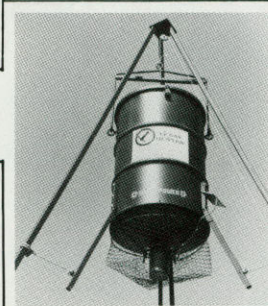
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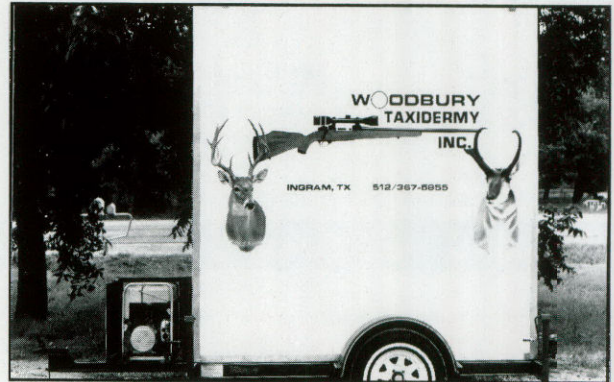
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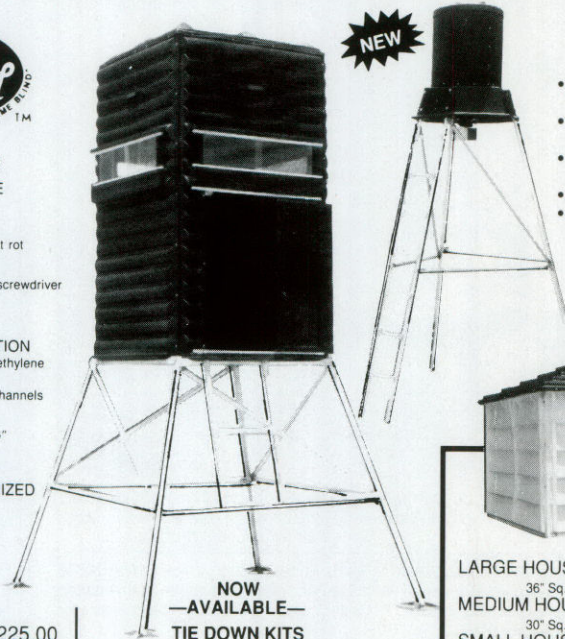
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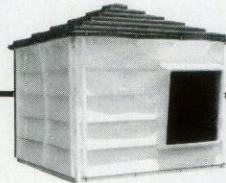
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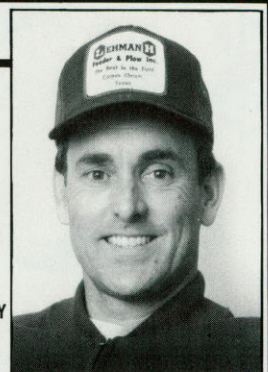
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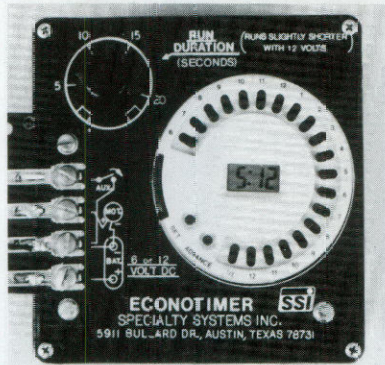
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## Commission Makes Changes In Hunting Regulations

Changes in archery deer hunting regulations, modifications to the antlerless permit system and a prohibition of running deer with dogs are among hunting regulations adopted by the Texas Parks and Wildlife Commission.

The commission voted unanimously to enact a statewide ban on hunting deer with dogs, a practice that was allowed in 10 East Texas counties during the last half of the 1989-90 hunting season. The ban, along with other hunting regulation changes, will be effective September 1, 1990.

Department officials cited a study showing that deer densities were lower in areas where hunting with dogs was permitted, compared to areas of similar habitat where hunting with dogs was prohibited.

The commission also adopted white-tailed deer archery season dates that will not conflict with general season dates, a situation that occurred last year because of calendar variations. This year's archery season will be October 1-31, and the general season is set for November 3, 1990 through January 6, 1991. The whitetail season in South Texas is set for November 10-January 13. The mule deer season for the Panhandle is November 17-December 2, and the Trans-Pecos season is November 24-December 9.

Officials announced a new concept in management of the antlerless deer harvest in all or portions of 14 counties. Informally referred to as "doe days," the system allows the taking of antlerless deer without landowner-issued permits on specified days during the hunting season.

In Gonzales, DeWitt, Wilson, Karnes and portions of Guadalupe, Lavaca and Colorado Counties, antlerless deer may be taken only during the first nine days and final nine days of the general season. In Caldwell, Bastrop, Lee, Fayette, Washington, Waller, Austin and portions of Guadalupe, Lavaca and Colorado Counties, antlerless deer may be taken only during the first two days and final two days of the general season. The commission also reduced the buck bag limit from two per season to

one in Gonzales, DeWitt, Wilson, Karnes and Guadalupe Counties.

The commission authorized a return to the landowner-issued antlerless permit system in eight counties and a portion of a ninth. These are Limestone, Freestone, Anderson, Robertson, Leon, Brazos, Madison, Grimes and the portion of Houston County west of State Highway 19. In Houston County west of Highway 19, the deer bag limit is four deer, no more than two bucks.

A nine-day general season for whitetails was authorized for Hunt County, which had an archery-only season last year. Hunters will be required to have all deer taken in Hunt County checked at a department check station. The commission also authorized a reduction in the buck bag limit from two to one in Taylor and Comanche Counties.

In addition to the archery season date change, archers also should be aware that the commission repealed the requirement for having the owner's name inscribed on hunting arrows, and legalized the use of retractable "punchcutter" style broadheads.

Mourning dove seasons and bag limits were adopted with little change from last year, except the winter season in the Central and South Zones was lengthened from 10 to 16 days in order to provide three full weekends of hunting. The extra days were taken from the end of the fall segment of the season.

## Trout, Crappie Limits Changed by Commission

The Texas Parks and Wildlife Commission has adopted changes in regulations that will affect fresh and saltwater anglers beginning September 1.

The commission set a statewide 10-inch minimum length limit and 25 per day bag limit on crappie in all public waters of the state except Lakes Toledo Bend and Caddo pending adoption of the same regulations on the Louisiana side of the lakes.

Officials said the length limit, which has been in effect on a number of Texas lakes, eventually will increase the number and poundage of crappie anglers

can harvest while allowing more fish to spawn before being removed from the population.

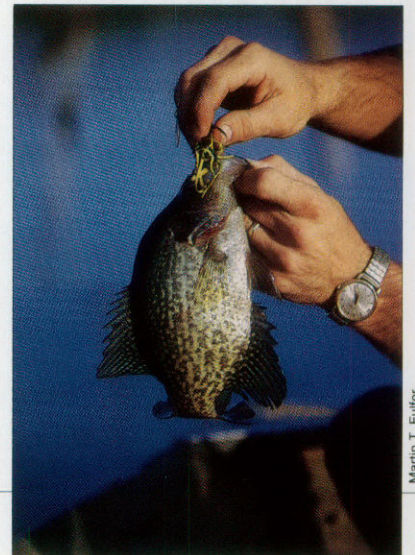
The commission also authorized a prohibition on the use of saltwater trotlines beginning the Saturday of Memorial Day weekend and running through Labor Day each year. However, commissioners voted to implement the prohibition in the summer of 1991.

The commission also prohibited the use of nets in Wright Patman Reservoir and in the Sulphur River in Northeast Texas, as well as in the fresh waters of Galveston and Chambers Counties. However, they moved the effective date of the regulations to September 1, 1991. A reduction in the legal length of minnow seines in fresh water from 60 feet to 20 feet also will become effective September 1, 1991.

Also adopted was a 14-inch minimum length limit for gafftopsail catfish, for both sport and commercial fishermen, and a nine-inch sport and commercial minimum length limit for pompano. The bag limit for snook was set at three per day with a possession limit of six, and only snook between 20 and 28 inches in length may be retained.

Several changes were made in bag and length limits of freshwater fish, including a bag limit of three largemouth bass per day and an 18-inch minimum length limit for Ray Roberts, Bastrop, San Augustine City, O. H. Ivie and Ca-

*Biologists believe new bag and possession limits adopted during May will eventually pay off in more and larger crappie.*



Martin T. Fuller

laveras Reservoirs, and a reduction in the bag limit of black basses at Lake Texoma from 10 per day to five.

The commission also set a daily bag limit of five flathead catfish, with a 24-inch minimum length limit, for Texoma and Bastrop. Also approved was a minimum length limit of 14 inches and a daily bag limit of five in the aggregate for channel and blue catfish in Lake Bastrop and all other lakes in state parks. Trotlines will be prohibited in Lake Bastrop.

## Type I Management Area Hunt Changes Made

Texas Parks and Wildlife Department officials have announced several changes in Type I Wildlife Management Area (WMA) public hunt regulations for the upcoming hunting seasons, including an increase in certain fees.

The changes were authorized in a meeting of the Parks and Wildlife Commission recently in Austin.

Fees for hunting deer, exotic mammals, antelope and alligators were raised from \$40 to \$50; fees for javelina, turkey and feral hogs increased from \$20 to \$25; white-winged dove hunts from \$10 to \$12, and squirrel, mourning dove, quail, waterfowl and other game birds rose from \$5 to \$6.

Hunting on Type I WMAs is offered under three systems. Special permit hunts require prior registration, with participants selected by public drawing and assessed a fee. Regular permit hunts require the hunter to report to a check station and pay a fee before hunting. Permission by registration hunts do not involve a fee, and hunters simply sign in and sign out at self-registration stations at area entrances.

A booklet listing Type I hunting opportunities will be available from department offices across the state in August.

The commission also approved a new \$120 tagging fee to be assessed successful alligator hunters who choose to sell the hide or other parts of an alligator taken on a public hunt.

Also approved were archery hunts for deer and exotic mammals by special permit on the Chaparral WMA in Dimmit and LaSalle Counties and the Kerr WMA in Kerr County.

Archery deer hunts on the Gus Engeling WMA in Anderson County and the Gene Howe WMA in Hemp-

## Outstanding Bird Art Collection on Display

The golden age of bird art can be seen at the Dallas Museum of Natural History's display, "Flights of Fancy: Treasures from the Mudge Library."

Museum officials said some of the most beautiful books ever produced about birds will be displayed. These books from the Mudge Ornithological Library contain hand-colored lithographs, copperplates and woodcuts from around the world, many of which were produced during the 19th century when there was a renaissance of interest in exotic flora and fauna.

The exhibit will continue through January 2, 1991. Museum hours are 9 a.m.-5 p.m. Monday through Saturday and noon to 5 p.m. Sundays. The exhibit will be located in the museum's Texas Bird Hall at Second and Grand Avenue in Dallas. Admission is free.

hill County were changed from special permit to permission by registration. The department also will offer archery hunts for javelina to be held concurrently with archery hunts by special permit for deer and exotic mammals on the Chaparral, Daughtrey, Buck, Elephant Mountain and Kerr WMAs.

The department increased the bag limit on exotic mammals during hunts by special permit for deer and exotic mammals on state parks to unlimited exotic mammals.

## White-winged Dove Season Reduced to Two Days

The U.S. Fish & Wildlife Service (FWS) has not approved a request by the Texas Parks and Wildlife Department to have a four-day white-winged dove hunting season in the Rio Grande Valley, but apparently will allow a two-day season on September 1-2.

The FWS, in its early-season migratory game bird hunting season public hearing held in Washington, D.C. on June 21, cited low numbers of nesting whitewings in the Valley as a reason for the two-day reduction in the season. A severe freeze in December 1989 reduced available nesting habitat in citrus groves.

Bobby Alexander, acting director of the department's Wildlife Division, said



Works such as this 19th-century English lithograph are part of the Dallas display.

he was disappointed in the two-day cut in hunting time, since there are an estimated 300,000 nesting whitewings in the Valley. There have been lower breeding bird counts nine times in the past 40 years, he said, and Texas has been allowed to have a whitewing season in five of those years. "I'm happy we are able to have at least a two-day season, however," Alexander said.

Hunters have enjoyed a four-day whitewing season in the Special White-winged Dove Area since 1985, Alexander said. The season was closed that year because of poor production, due to the 1983 freeze and storms during the nesting season.

The bag limit during the two-day whitewing season in the portion of the whitewing zone south and east of Del Rio will be 10 white-winged, mourning and white-tipped doves in the aggregate per day, not to include more than five mourning doves and two white-tipped doves. For the portion of the zone north and west of Del Rio, the limit will be 10 white-winged, mourning and white-tipped doves in the aggregate per day, not to include more than two white-tipped doves. Shooting hours will be noon to sunset.

Most regulations proposed by the department for mourning doves were approved by the FWS. The season dates are: North Zone, September 1-November 9; Central Zone, September 1-October 24 and January 5-20;



# OUTDOOR ROUNDUP



*The special early season for teal ducks will not be offered for Texas hunters again this year. Blue-winged teal (above) and other teal species have had poor production because of drought.*

South Zone, September 20–November 12 (ends November 10 in the Special White-winged Dove Area), and January 5–20. A departmental proposal to increase the number of white-winged doves permitted in the daily bag during the regular mourning dove season from two to five was under review by the FWS. The bag limit currently is 12 mourning, white-winged and white-tipped doves in the aggregate per day, not to include more than two white-winged doves and two white-tipped doves.

The FWS also did not approve a special early teal duck season requested by the department, continuing a closure that started in 1988. Poor nesting success due to drought in nesting areas in the northern United States and Canada was the reason given by the FWS. Prior to 1988, a nine-day season was authorized during early September to allow hunters to take advantage of the migration of blue-winged teal through the state prior to the opening of regular waterfowl seasons. FWS officials said during the public hearing that September teal seasons are an acceptable harvest strategy and the agency plans to resume the September seasons in the future as teal populations increase.

As in the past, a fully-feathered wing must remain on all dressed doves at all times in the South Zone and the Special White-winged Dove area.

Other early season dates and bag limits approved by the FWS were: rails, September 1–November 9; the daily bag and possession limits for King and clapper rails is 15 and 30 respectively, and for Sora and Virginia rails it is 25 and 25; the season for gallinules

(common moorhen and purple gallinule) is September 1–November 9, with bag and possession limits at 15 and 30 respectively. Shooting hours for rails and gallinules are one-half hour before sunrise to sunset.

## Mountain Lion Numbers May Be on the Increase

Changing land-use patterns and fewer predator control programs may be contributing to an apparent expansion of Texas' mountain lion populations, especially in the rugged Trans-Pecos region.

Bill Russ, a Texas Parks and Wildlife Department wildlife biologist stationed in Sanderson, said that before the 1970s, lion populations were held in check by livestock producers who considered the big cats a threat to livestock. Since that time, however, there has been a marked change in land-use patterns in areas where lion populations are highest. "Predator control efforts on these tracts have either been reduced or eliminated altogether," Russ said. "Lion populations appear to be responding to these changes."

To keep tabs on the distribution and population status of mountain lions in Texas, the department's wildlife and law enforcement personnel are conducting a survey of lion sightings and mortalities.

Russ said a total of 322 lion sightings was reported in 65 Texas counties from 1983 through May 1989, with the majority occurring in the Trans-Pecos. "The data show an apparent increase in populations, with stable numbers occurring in the west, central and southern regions of the state.

*Biologists say mountain lions have responded to lessened predator control efforts and are expanding their Texas range.*



Leroy Williamson

"From the mortality and sighting data it appears that mountain lions are slowly extending their range into the northern and eastern regions of Texas," said Russ.

Mountain lions in Texas are classified as nongame animals, and are not protected by state or federal law.

## More Wetlands Preserved With Duck Stamp Funds

The Texas Parks and Wildlife Department recently acquired two new wetland tracts with Texas Waterfowl Stamp funds. A 406-acre tract known as the "goose roost" was added to the Guadalupe Delta Wildlife Management Area (WMA) near Port Lavaca, according to Dr. Dan Moulton, program leader for waterfowl habitat acquisition and development.

Guadalupe Delta WMA now totals 4,668 acres of coastal wetlands, Moulton said. "This acquisition contributes to the goals of the Gulf Coast Joint Venture of the North American Waterfowl Management Plan (NAWMP) in which TPWD is a partner," Moulton said. The TPWD also is a partner in the Texas Bottomlands Initiative of the Lower Mississippi Valley Joint Venture of the NAWMP.

An acquisition of 1,860 acres of bottomland hardwoods on the Trinity River was recently completed, Moulton said. The tract, purchased from the Federal Deposit Insurance Corporation, is called Big Lake Bottom WMA and is located west of Palestine in Anderson County. Both of these tracts were bargain sales, Moulton said, purchased at less than the appraised value. The TPWD was reimbursed for 100 percent of total costs by federal aid, and the reimbursements were returned to the Texas Waterfowl Stamp Fund.

## BACK COVER

Sunrise finds two domestic ducks paddling the clear waters of Cypress Creek's Blue Hole in Wimberley. Read more about Cypress Creek on page 20, and find a feature about swimming holes, including Blue Hole, on page 28. Chief photographer Leroy Williamson used a Pentax LX, 70-210mm zoom lens, tripod and Kodachrome film. Exposure was 1/15 second at f/5.6.

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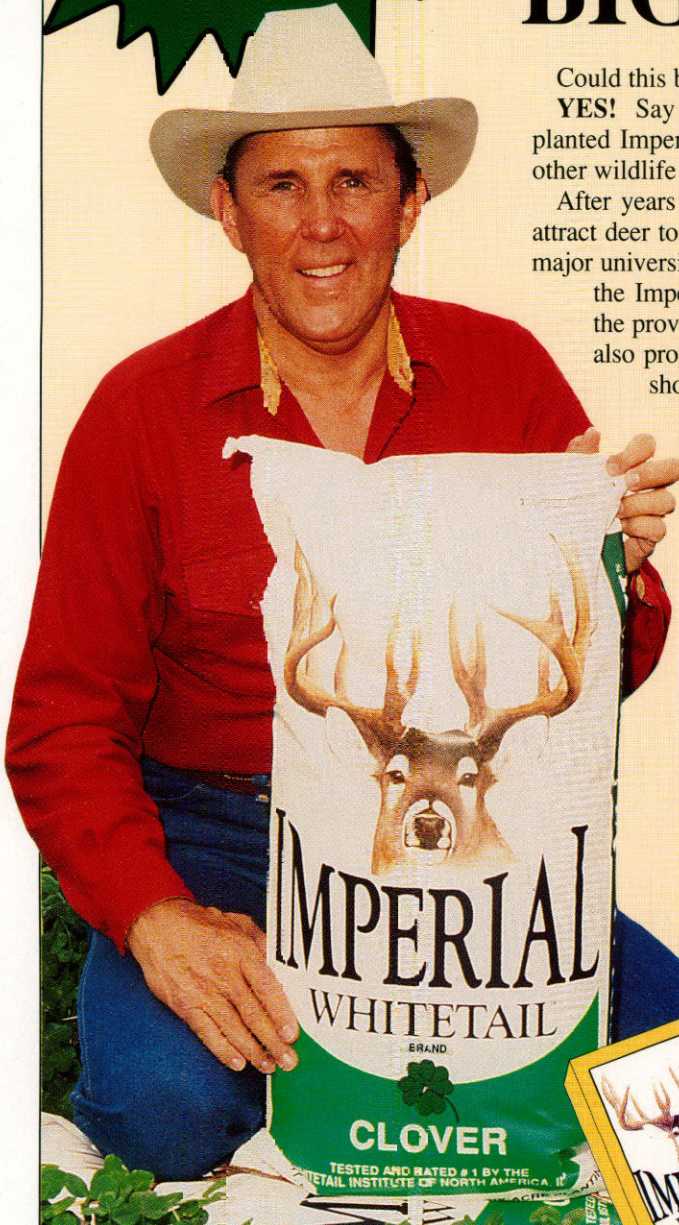
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