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Monster Cats ★ Matagorda's Historic Role ★ Bats Over Texas

Turbulence Over Clear Creek

Government Publications  
Texas State Documents

MAR 29 1999

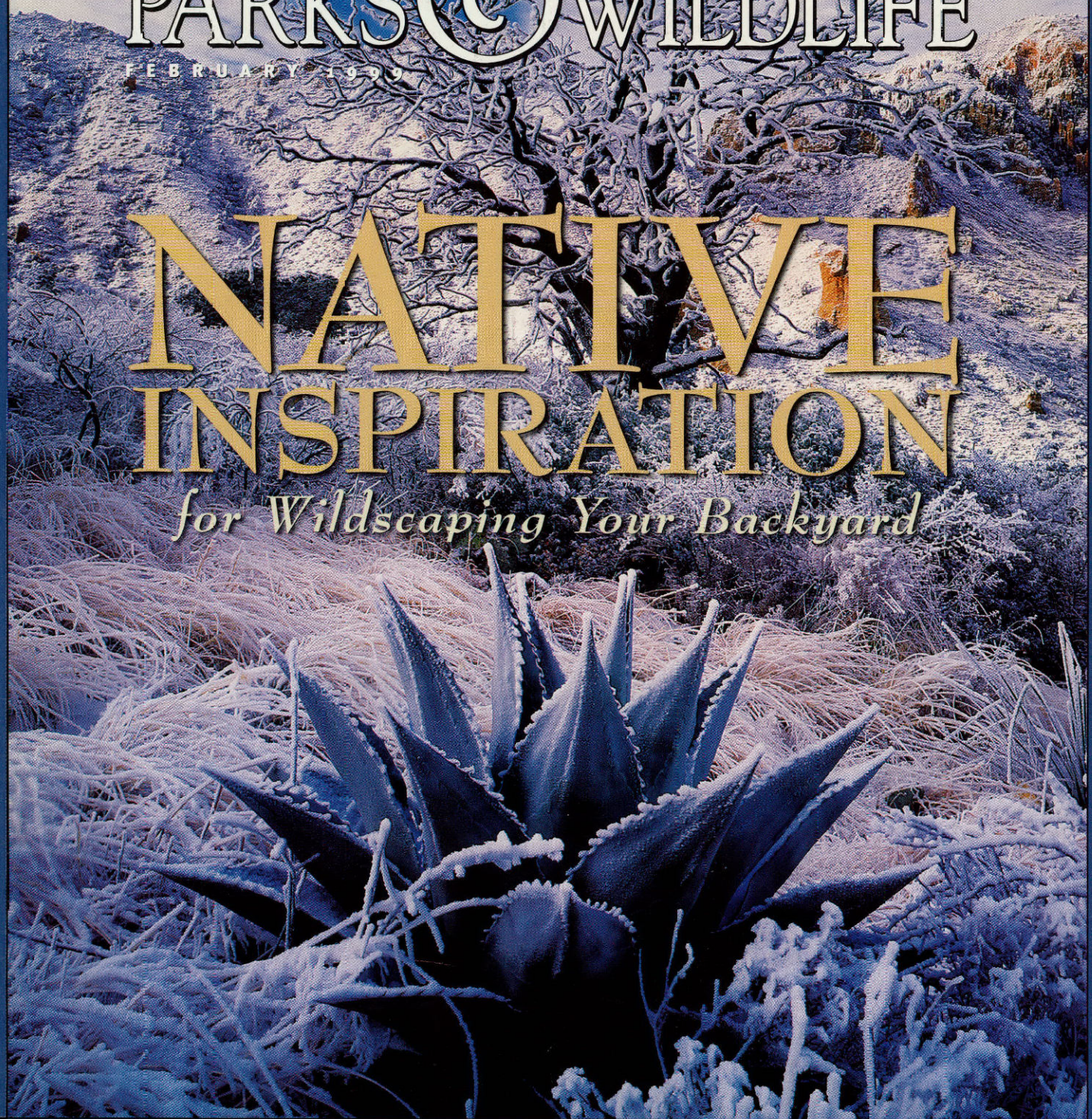
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FEBRUARY 1999

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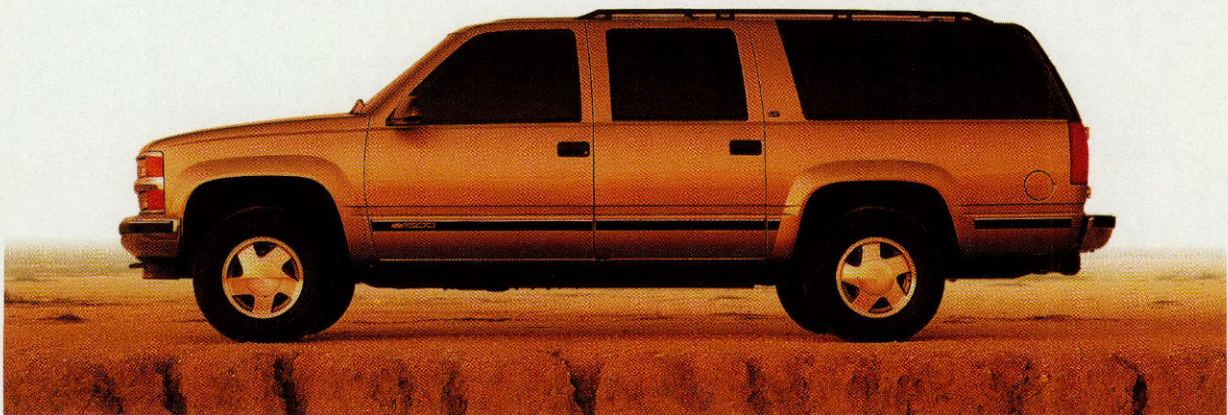
*Lotsee, Oklahoma. Holds nine.*

*(The name comes from  
the Indian word that means*

*"Bright Child.")*







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*(The name comes from  
the American word that means*

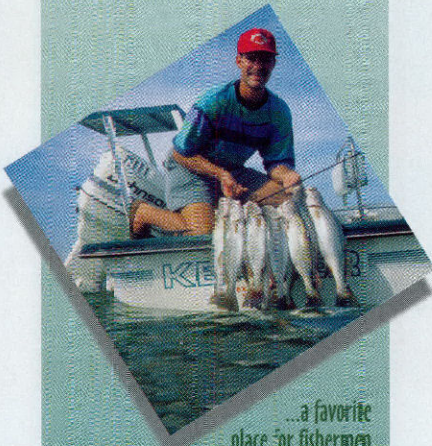
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# TEXAS PARKS & WILDLIFE

FEBRUARY 1999, Vol. 57, No. 2

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# TEXAS PARKS & WILDLIFE

February 1999

**12 Turbulence Over Clear Creek** One of Southeast Texas' few remaining unchannelized bayous has become embroiled in a tug-of-war over its future. Will it become a dredged earthen channel, or will it remain a richly forested stream?  
*by Wendee Holtcamp*

**20 In Native Harmony** Tired of weeding, watering and struggling with your manicured lawn? Landscaping with native plants is the path to a yard that is both pleasing to the eye and easy to maintain  
*by Susan Hanson*

**28 Keepers of the Night** Thanks to a successful battle against myths and superstitions, bats have gone from "eek" to "chic" as Texans have learned to appreciate their voracious appetite for insects.  
*by G. Elaine Acker*

**36 Mission at Matagorda** Nothing is left but the faint outlines of hand-dug trenches, but Matagorda Island was the site of skirmishes between the North and the South during the Civil War.  
*by Rob McCorkle*

**42 Big Cats on the Prowl** Texas anglers are discovering that rod-and-reel fishing for cats is a fun way to hook a tasty meal. With catfish you can have both the sport and the food, catch-and-eat, whether you fish in major impoundments, farm ponds or rivers.  
*by Russell Tinsley*

**48 Seven Things to Do After Hunting Season** Don't mope around because it's nine months until deer season opens again. Here are some tips that will help you pass the time in an enjoyable way.  
*by Russell A. Graves*

## DEPARTMENTS

- |                            |                                     |
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## COVERS

**Front:** Snow covers an agave and a juniper tree in Big Bend National Park. Plants that are native to an area do well in that area's climate and soil. Read about one homeowner's experience with native plant gardening, beginning on page 20. Photo © Richard Reynolds. Wista SP 4x5 camera, 90mm 6.8 Grandagon lens, 1/2 second at f/32, Velvia film.

**Back:** Spiderworts are an element of many Central Texas native plant gardens. Photo © Rusty Yates. Pentax 645 camera, 120mm f/4 macro lens, 1/4 second @ f/32, Velvia film.

For the latest and greatest parks and wildlife information, check out our website  
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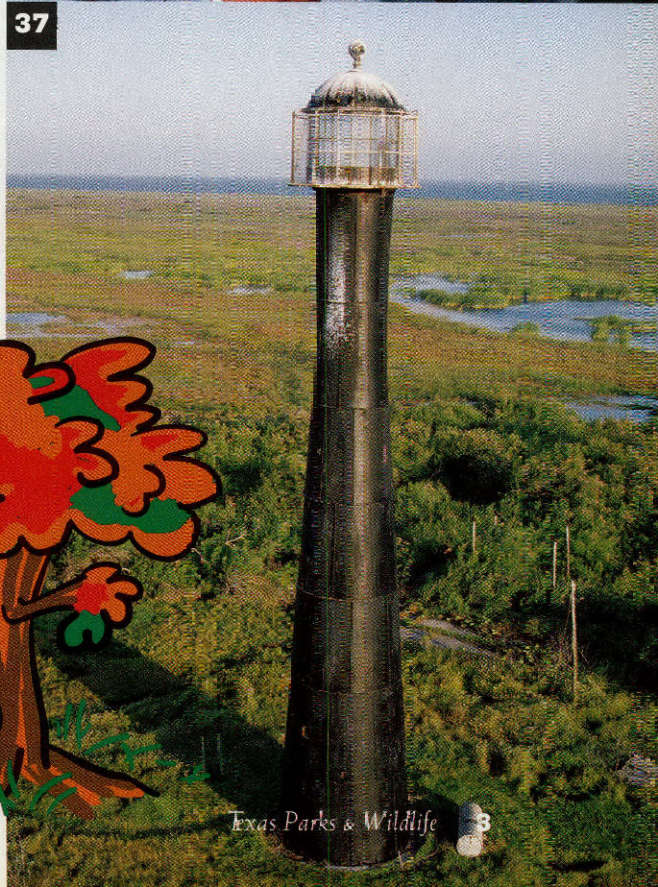
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EARL NOTTINGHAM



48



I came back to Texas in 1976 after having lived on the east coast for nearly a decade. One of the first people I met was Terry Hershey of Houston, a remarkable woman who has given her life, her formidable talent and her immense energy to the service of the environment. At that time, Terry, who later served as a Commissioner of Texas Parks and Wildlife, was battling to save the last remaining natural reaches of the intricate system of delicate and allowing waterways which gave the Bayou city its name.

First among these was the wild and beautiful Clear Creek which stretches through oil fields and subdivisions, farmland and the manned Spacecraft center, all the way from Fort Bend. County plans to convert Clear Creek from a meandering stream to a linear trench devoid of vegetation and wildlife were already ten years old. The desire to alter Clear Creek soon became acute when the punishing floodwaters of Hurricane Claudette in 1979 devastated some of the Houston/Galveston area's loveliest neighborhoods.

At the same time, persistent voices joined Hershey's, eloquently extolling the myriad values inherent in keeping streams like Clear Creek in their natural condition — not only alongside Galveston Bay but throughout the state. Across Texas there are more than 191,000 miles of streams and rivers which flow through fifteen

major river basins and provide nourishment to seven very significant estuaries.

These systems are the lifeblood of 7,600,000 acres of wetlands which not only provide critical habitat to one of the largest and most diverse wildlife populations in the hemisphere but create the setting for annual expenditures of \$6.4 billion in sportfishing alone, plus spectacular recreation opportunity for 1.4 million canoeists, kayakers, and rafters.

Today, the Clear Creek Plan is thirty years old and development has dramatically increased throughout the watershed, not only increasing deadly flood runoff but placing more structures in the path of rising water. Meanwhile, an even greater consciousness has developed that as precious places like Clear Creek disappear, the values, amenities, and assets that go with them are irreplaceable.

And so predictably, another study is to be done over the next three years and the stakes, along with the water, will continue to rise. Hopefully, a consensus will form in that time around alternatives to destroying Clear Creek which not only will preserve its beauty and natural diversity, but also satisfy community concerns. It can be done and Clear Creek is worth it.

Ask Terry Hershey. She is still fighting.

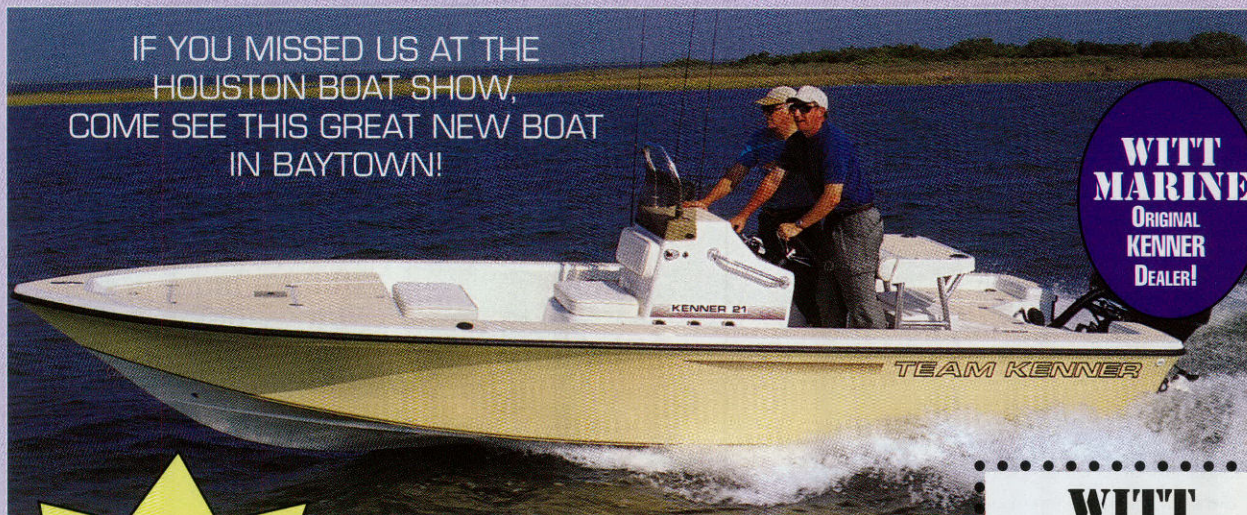
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ANDREW SANSOM, *Executive Director*

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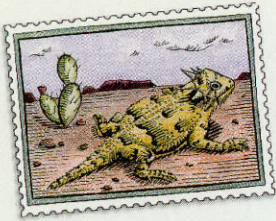
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RESPONSE AND RESPONSIBILITY

Thank you to all of you who took the time to participate in our 1998 Editorial Survey. We have had hundreds of questionnaires returned, and are tabulating your responses to guide our future endeavors. We do our best to serve various enthusiasts — hunters, anglers, park visitors, rock-climbers, hikers, canoeists, etc. — whose pursuits are not always compatible. We perform this delicate balancing act, and if we're leaning too much to one side, we count on our readers to let us know, so that we don't slip from the tightwire upon which we must walk.

Also, the letters we have received about the "(R)egrets in Carrollton" article have been educational for our staff, and have been the subject of more than a handful of spirited conversations within TPW. Of course, our agency's efforts are focused on not only *enforcing* hunting and fishing regulations, but *promoting* ethical and humane behavior in the field. Many, such as Harry Dell (letter below), certainly understand that as hunters, we are bound by both a legal code and an ethical one in our responsible management of our natural resources. No less should be expected of the rest of the population.

Where the responsibility for the Carrollton debacle will lie is being addressed at the federal level. The U.S. Fish & Wildlife Service is conducting the investigation; it can be reached at P.O. Box 6519, Fort Worth 76115, or at 817-334-5202.

We also have reports that the city of Carrollton is reviewing proposals to rededicate this site as a wildlife sanctuary, to be restored as blackland prairie. The magazine staff is monitoring this development with great interest.

As our world becomes more crowded and complex, it becomes all too easy, in pursuit of one outdoors interest, to ignore all others. Yet the ethical use of both natural resources and the creatures dependent on them is a responsibility for all of us, our legacy for future generations.

A FLAP OVER EGRETS

Your author, Carlton Stowers, does a good job of describing the clean-up and rehabilitation efforts, but completely missed the issue of criminal and civil liability for this disaster. Is the bureaucrat/politician who ordered this act, or those who knowingly condoned it, above the law? And this while hunters face hefty fines and even jail for shooting a dove over a so-called "baited" field.

Please follow up and report on this.

Harry Dell  
Boerne

I have been a subscriber to *Texas Parks & Wildlife* magazine for more years than I can remember; probably more than 40 years. Never have I been so disappointed and disgusted with an article in your magazine as the article entitled "(R)egrets" in your December 1998 issue.

I know that many of your readers profess to be bird lovers, but a nuisance bird such as the egret does not warrant such a display as you represented. If I remember correctly, the egret came to our shores about 25 to 30 years ago from Africa. The birds were starving in Africa and somehow migrated to our state to eat in our grain fields along the coast; competing with our ducks, geese, quail, doves and other game birds.

None of the above was mentioned in your article. Please, the egret is not a native bird and if a few hundred are killed, how is that a problem? Reducing the population will only leave more food for our native birds.

Mac Marney  
Hamilton

Thank you for having the courage to print "(R)egrets," your unflinching look at the heartbreaking destruction of the egret rookery in Carrollton. What a low point in our state's conservation history that deadly operation represents, but what a high point in *Texas Parks & Wildlife's* history your article is.

The killing and maiming of all those birds was a ugly — dare I say cowardly? — deed. It pained me greatly when it happened, and it pained me to read your unblinking report of it. Imagine the public outrage had the animals in question been puppies or kittens instead. Even though egrets are less cuddly, they have no less right to humane treatment.

Thank you, too, for being the voice of the thousands and thousands of us Texans who are horrified by the literal and figurative bulldozing of our wildlife and wild places. The decimation has become such a norm that we seem to not be able to muster outrage anymore. Well, we *are* outraged, and we will continue to look to *Texas Parks & Wildlife* to inform us, and to help us hold our state to the highest standards of conservation and environmental accountability.

All that is necessary for evil to triumph is for good men and women to do — and say — nothing. I applaud your bravery in speaking out, and your commitment to the great state of Texas and all its inhabitants: human, furred, feathered, gilled, winged, scaled and rooted.

Let some good come of this nightmare in Carrollton: Let us all wake up with a renewed understanding of the importance of preserving the wildlife and wild habitat of Texas.

D.J. Williams  
Roanoke

➤ Having read your article of "(R)egrets," I too applaud your actions in bringing this to everyone's attention. This is *not* a sensationalized sob story. This was the action of desensitized persons who truly are without passion and are blind to our natural world around us. We need to wake up and smell the roses or should I say the "stench" of brutal reality in our world today. Texas Parks and Wildlife should be committed to the public education and eye-opening sagas of our wildlife, however perilous the course may be. The ravage of the rookery moved volunteers and ourselves to action. Goodness knows, we all need a little (or big) kick in the shorts, now and then.

Since I was moved to personally go and give a few officials a (big) kick in the shorts, while helping rescue and mend little bodies, I personally appreciate the good job you've done! Thanks!

Cathy Brown

We love your publication and use it as an example of today's best work in the field. You merit our greatest respect for your thorough coverage of the destruction of the egret rookery in Carrollton. Many state magazines present only the happy news with regard to our environment, thereby shielding the public from the many



serious assaults on our wildlife and its habitat. Most people have no earthly idea how often venal economic concerns sublimate any "rights" wildlife may have of a place to live.

We suspect this tragedy may have had its roots in the myriad of misconceptions generally harbored by the average person, who imagines that wildlife should behave as it does in Disney films, and when it fails to do so, has the divinity-conveyed "right" to remove the offending varmints. There is no understanding of the serious future consequences of removing this or that species — i.e., rattlesnakes would be a good example because removal of these creatures equals a significant increase in the rodent populations on which they feed. Natural reduction of a wildlife overpopulation results from a diminished food supply, weakening of individuals, and an increased incidence of disease. Certain species of rodents serve as reservoirs for Hanta virus. Because increased rodent populations equals a higher likelihood of human/rodent contact, and transmission of Hanta virus, the "varmint" rattlesnakes serve to keep

that rodent population in check, and the incidence of human exposure to Hanta reduced.

Removal of a species is like occasionally removing just one rivet from an airplane wing. Initially harmless, the cumulative effect of such uneducated folly will, without question, be disastrous. Each day, the earth loses 104 species to extinction.

Most people destroying wildlife use Genesis as their spiritual shield; "God gave us dominion over the earth and the creatures thereof." Perhaps... but, then is destruction of said objectionable species telling the Almighty that He made an error when He created "varmint" species?

Nature functions quite well without man playing the Sorcerer's Apprentice.

Hope Anwyll and Thomas Nelson  
Co-directors, the Pennsylvania Raptor  
& Wildlife Association, Inc.

➤ If you did not publish the article, I would never have known that this occurred. I don't know the two publications mentioned in last month's "Letters;" I assume they are North Texas newspapers. The man who wrote in, from that area, seems to be

ashamed and wants the story to die.

The problem wasn't the birds, it was the people complaining. I'd be willing to bet the birds were there long before the houses.

It amazes me how governments — city, county, etc. — get away with that kind of slaughter.

Earlier this year, I caught a redbfish, one quarter-inch less than the proper size at that time. I mismeasured, and I paid a \$50 fine.

I haven't seen where the city of Carrollton has been fined. Why not? There should be no favorites.

W. Earl Nelson

The "(R)egrets in Carrollton" article in your December issue was one of the most hard-hitting examples of journalistic excellence I've read all year. I had tears in my eyes halfway through the article and was seething mad by the time I was finished.

Unfortunately, this sort of ecological abomination happens every day to our dwindling reserve of wildlife habitat. Water quality and habitat conservation will be two of the most important issues facing Texans over the next few decades. Thanks for helping to lead the good fight.

I've watched with admiration as your publication has evolved over the last year. Excellent writing, beautiful photography, artful layout, entertaining and informative content and a substantive editorial policy have combined to make you one of the most effective voices for resource conservation anywhere.

Dr. Gene McCarty, TPW chief of staff and one of my favorite people, once told me, "The secret to making this all work is in improving the conservation ethic of the people in Texas." Congratulations on become a leader in meeting this challenge.

Leslie Kelly  
Editor, *Saltwater Texas*  
Rockport, Texas

*Texas Parks & Wildlife* magazine welcomes letters to the editor. Please include your name, address and daytime telephone number. Our address is 3000 South IH 35, Suite 120, Austin, TX 78704. Our fax number is 512-707-1913.

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# Trail Mix

Edited by Mary-Love Bigony

## Native Texans or Transplants?

### WHAT IS A "NATIVE PLANT?"

Certainly no one would argue over the definition of native Texan. You've got to be born here. Then why would nurseries label as native a plant that grows in the wild only in Mexico? Are they just using a good marketing term, or are they unaware of the plant's origins?

Native plant societies have disagreed over the definition of native plants for years, and there certainly is no legal definition as far as plants are concerned. Various meanings have been put forth; most deal with a particular time and place (i.e., occurring in the area before the first European settlement, or first European contact). My favorite definition of native comes from the novel *The River Why* by David James Duncan, the story of a family of "fisherpersons." Gus, the main character, describes native as "...a plant indigenous to a limited geographical area—a space bounded and defined by mountains, rivers or coastline (not by latitudes, longitudes or state and county lines), with its own peculiar mixture of weeds, trees, bugs, birds, flowers, streams, hills, rocks, and critters (including people), its own nuances of rain, wind and seasonal change."

Thus even stating that a plant is native to Texas may often be too broad. It is more likely for a species to be native to east or west Texas, the Edwards Plateau, or even a particular mountain range.

Of course, most plants are native to areas larger than Texas, or a portion of it. They may be native to the Chihuahuan Desert, which goes from Central Mexico to West Texas and New Mexico, or to the prairies of the Great

Plains that stretch from Canada to Texas, or to the Gulf Coastal Plain Pineywoods from Texas to the southeast coast of the United States.

Plants with such broad distributions may be genetically different from, and locally adapted to, different parts of the range. Few natural entities fit the human perspective of national and local boundaries. Every species is native somewhere, with the exception of those plants that have been hybridized or selected to produce a particular flower color, leaf shape, sweeter fruit, etc. For example, tropical sage, *Salvia coccinea*, is normally red-flowered in nature. Occasionally pink-blooming plants are encountered. Crosses between these two flower color forms can produce a flower that is light and dark pink (above left photo). Do such plants occur in the wild? If they don't, then they aren't really native plants, only a product of human ingenuity.

So what's a concerned gardener to do? First, decide on your objectives. Are you planting for color, animals, restoration, water savings, etc.? Second, pick any plants you want as long as they fit within your objectives and are

neither invasive nor poorly suited to your local climate (don't waste water, fertilizer, etc.).

If you truly still want to go native, investigate what your local flora consists of, and use those plants, preferably collected nearby, not only for best results but also to avoid contaminating the genes of the wild plants growing nearby.

— Jackie Poole



The tropical sage, above, is an example of hybridization of a native species. The photo below shows native goldenrod looking much as it does in its native habitat.





## Bat Appreciation Begins in Austin

**A**s the “Official Flying Mammal” of the state of Texas, Mexican free-tailed bats are gaining celebrity status.

“Mass Fear in Air as Bats Invade Austin” was the 1987 headline announcing that bats had taken roost under the Congress Avenue Bridge by the thousands, sparking panic and a petition-signing campaign to have them eradicated. Over the years, however, fear has turned to fascination thanks to the educational efforts of Austin’s own Bat Conservation International (BCI) and its many local partners.

Mexican free-tailed bats, *Tadarida brasiliensis*, now enjoy celebrity status as one of the most popular tourist attractions in town. On summer weekends more than 1,000 bat-watchers line the shores of Town Lake. In fact, the bats have become so popular that area businesses sponsor BCI-trained “Bat Interpreters” to answer questions from the multitude of visitors. There also is a “Bat Hotline,” 512-416-5700, category 3636 — not the one used on the *Batman* television series to call Commissioner

Gordon — but for visitors to learn approximate bat emergence times. In addition, there are nightly bat-watching boat tours, convenient “bat-observation decks” at nearby restaurants, and even a new “lighted bat sculpture” (corner of Congress and Barton Springs) to pay tribute to the largest urban bat colony in the world!

Some astounding facts about Austin’s bats:

- 1.5 million bats call the bridge home during late August.
- They consume up to 30,000 pounds of insects nightly.
- Freetails can fly at speeds of 60 m.p.h. and as high as 10,000 feet.
- Baby bats are called “pups,” and when born weigh close to one-third their mother’s weight — the equivalent of a human mother giving birth to a 40-pound baby!

Freetails are just one of 33 different kinds of bats found in Texas — more than any other state.

To learn more about bats and bat conservation, visit the BCI Web site: <[www.batcon.org](http://www.batcon.org)>.

— Bob Benson



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## Zoo News

**U**rbanites who have lost touch with the wild, true Texas are going to have a no-sweat, non-chigger alternative thanks to a massive new project planned by the Fort Worth Zoo.

*Texas Wild!*, a \$30 to \$35 million, hands-on exhibit, was announced early in November by Ramona and Lee Bass, longtime supporters of the zoo. Lee Bass is chairman of the Texas Parks and Wildlife Commission.

*Texas Wild!* will use interactive exhibits to bring visitors up close and personal to the state’s ecologically diverse regions. The East Texas section will feature a sawmill camp among Pineywoods and bayous. To get a feel for the Texas Coast, visitors can reach into a tank filled with starfish and other critters. The West Texas section will have rattlesnakes crawling along a gulch. Falcons and hawks will soar over the South Texas exhibit, among the mountain lions, coyotes and bobcats. Feel the wind, rain and heat while watching a film on Texas weather.

Additionally, other exhibits will tell some of the state’s environmental success stories, such as the regeneration of alligators and bald eagles. The logo of the exhibit, in fact, will drive home the point of environmental care: a paw print over a human hand, representing the bond of humans and wildlife.

“This is about the legacy of Texas,” says Gary Lee, an architect who has been working for five years on plans for the exhibit.

Former Texas Ranger pitcher Nolan Ryan and singer Jerry Jeff Walker were among 500 zoo supporters who helped kick off the fund-raising campaign.

The exhibit is scheduled to open in the fall of 2000.

— Richard Haddaway



## Snapper Update

**I**n an action aimed at reducing economic hardship on Texas' offshore fishing guides and providing fishing opportunity for wintering Texans, TPW Executive Director Andrew Sansom has announced the opening of state waters (out to nine nautical miles) to the recreational harvest of red snapper beginning Jan. 1, 1999.

The current closure to recreational red snapper fishing in federal waters is anticipated to be extended through the end of February.

"We have a responsibility to conserve the viability of snapper stocks for the long term," says Dr. Larry McKinney, TPW's senior director for aquatic resources. "We also have a responsibility to accomplish that objective without creating social and economic chaos in the short term."

The Gulf of Mexico Fishery Management Council recently voted to reduce the bag limit for red snapper from five to four fish, except for the captain and crew of for-hire vessels, whose bag would be reduced to zero. The size limit for all fishermen would also be reduced from 15 to 14 inches total length.

"Snapper stocks are experiencing a recovery and we're not creating a biological crisis by keeping our fishermen in business," explains Hal Osburn, TPW director of coastal fisheries. Osburn points to several indicators of positive recovery for red snapper, including an upward trend in recruitment of juveniles, increasing numbers of older fish and expanding range of juvenile distribution. Creel surveys also have revealed increasing size of fish harvested and increases in catch rates in the fishery.

"We have the interest of the resource first," Sansom says of the decision to open state waters. "We will continue to closely monitor red snapper stocks and work with our state and federal partners to ensure our management approach is consistent with sound conservation practices."

For more detailed information, visit <[www.tpwd.state.tx.us](http://www.tpwd.state.tx.us)>.

— Steve Lightfoot

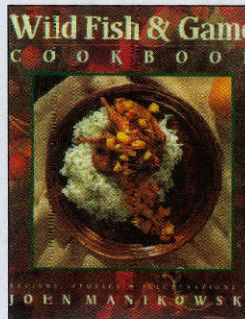
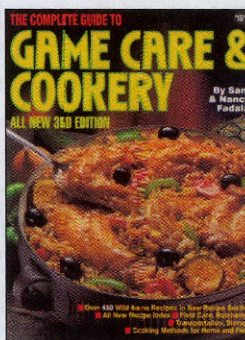
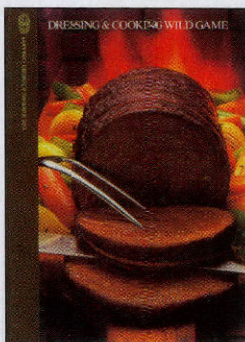
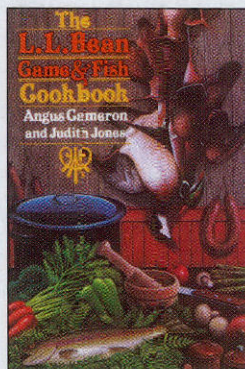
## February's Kitchen: THE EIGHTH WONDER

In this issue Russell Graves gives us seven things to do after hunting season. For me, the eighth thing happens in the kitchen, with a freezer stocked with wild game.

February is not only the aftermath of deer hunting season; it is also the end of the relentless food preparation season that begins with Labor Day picnics, children's Halloween feasts, family Thanksgiving gatherings, the Christmas dinners production, New Year's brunches and the inevitable Super Bowl party. I don't mind; still, February is a welcome respite.

In February, even with no big productions on the horizon until Easter, my kitchen is a hub of preparation. I devour cookbooks; work out of the freezer and make time to be creative. I size up the contents of my freezer and experiment with spices and condiments—and there's no one around to witness my occasional "backlashes and misfires!"

*The L.L.Bean Cookbook*, by Angus Cameron and Judith Jones, has served me well for the past 15 years because it personifies the hunter/gatherer in



the kitchen. Here you will find both the best recipes for freshly made curries and garam masala, and the anecdotal text from Cameron describing his experience camping with J. Frank Dobie along Devils River, complete with a recipe for the stew that Dobie made on that perfect night. That meal is a mighty way to handle your harvest; the reading itself is fine alone. I refer to this book over and over again. It has the chatty friendliness of a campfire conversation, and its recipe for pheasant tetrazzini has become a perennial family favorite.

The practical books I like include *Dressing & Cooking Wild Game*, published by Cowles Hunting and Fishing Library, and the third edition of *The Complete Guide to Game Care and Cookery*, published by DBI Books, Inc. In these, you will find information on storing and preserving your harvest in an easy to follow, step-by-step presentation, including drawing-and-quartering how-to detail that many wild game cookbooks try to gloss over. Both are great guides to preparing and storing meat. You will even find how to field-skin large game using a

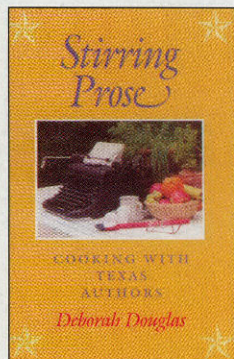
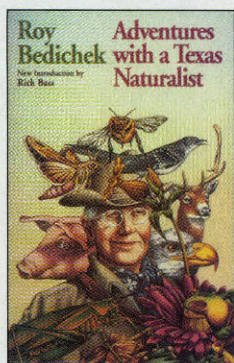
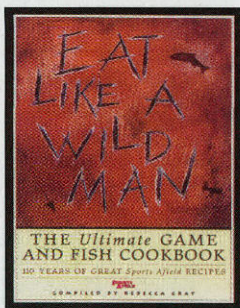


truck to do the hard work.

Wild game, like all fresh meat, begins to become rancid after four hours without refrigeration. Prepare for this when you go into the field and pack plenty of ice. Most often, gamy-tasting meat is a result of poor handling in the field. If you plan to prepare wild game harvested by others, inquire politely how it was field-dressed, prepared and stored. If you are not pleased with the answers, your efforts in the kitchen will be to no avail.

Now, after your harvest is put up — well — read more. Be imaginative. Try John Manikowski's *Wild Game & Fish*. If you don't put up your harvest, perhaps you'll enjoy the prose; if you like seeing your own game on your table, Manikowski gives grounds for new combinations of flavors. Even if you don't cook at all, his passionate, evocative wildlife illustrations are alone worth the price of the book.

Once you've tried a recipe or two from Manikowski, move on to *Eat Like A Wildman*, the ultimate fish and game cookbook. Here, Rebecca Gray, co-editor of *Gray's Sporting Journal* and longtime contributor to *Sports Afield*, has compiled more than a century of *Sports Afield's* best fish and game recipes, along with some engaging storytelling. Turn immediately to page four and five; read the story of Colonel J.G. Gee of the Trinity river bottom and then prepare "The Colonel's Crown" venison; afterwards, you will probably pass its recipes, stories and legends to the learners at your knee.



For the best Texas vegan feast, there's none better than Roy Bedichek's fireplace roast (*Adventures with a Texas Naturalist*, UT Press 1994) Not a strict vegetarian, Mr. Roy was practical enough to throw a few things on the fire while he was a-writing.

My current favorite in the kitchen is *Stirring Prose*, a collection of recipes from Texas writers compiled by Deborah Douglas, a San Antonio pathologist. Douglas delivers a cookbook that is an exacting and revealing study. Here, you'll find the culinary guilts of some of our best-loved outdoor writers, like John Graves' favorite gloppy bacon/peanut butter/rough bread and fresh tomato sandwich, and Laurence Parent's confession that he more often opens a can of Dinty Moore than labors in the kitchen. (For the book, Parent turned in a handsome East Texas stew recipe for either beef or venison.)

Try substituting in recipes. Remember that strong meat calls for strong seasonings; venison and goose can stand up to bourbon, brandy, mustard, tarragon and sage. Try freshly trimmed lavender, an oak-flavored Chardonnay, pecans and dried cherries with quail; apricot or quince with ground pepper, blackberry preserves and a dash of red wine on that javelina loin. Match a bright lemon hollandaise with chervil for speckled trout, or a tequila-and-jalapeno spiked ceviche to super-charge those redfish fillets.

Best of all, enjoy reading these great cookbooks —

and save February's kitchen for yourself. In this quietest of months is the freedom of solitude to truly enjoy the natural circle of the harvest, to experiment, and to create your own family traditions. — Susan L. Ebert

## DID YOU KNOW

Before the San Antonio River was included in a federally funded beautification program, which resulted in today's Paseo del Rio, or River Walk, some of the city's businessmen wanted to convert the downtown section of the river into a sewer and build a street on top of it.

More than 50 percent of all wetlands in the contiguous United States have been drained or filled since the time of European settlement.

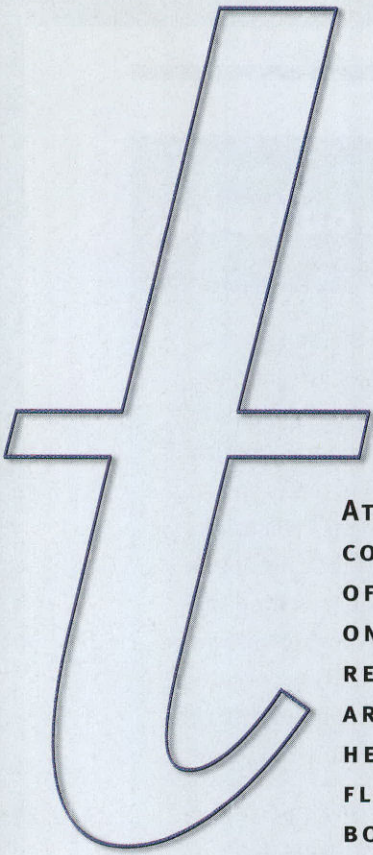
Birds save the timber industry tens of millions of dollars in timber damage each year by consuming wood-boring insects.

## WATER SAVING TIPS F E B R U A R Y

Verify that your home is leak-free. Read your water meter before and after a two-hour period when no water is being used. If the meter doesn't read exactly the same, there is a leak.

Repair dripping faucets by replacing washers. If your faucet is dripping at the rate of one drop per second you can expect to waste 2,700 gallons per year.





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**AT THE CRUX OF THIS DISACCORD IS A 27-MILE STRETCH OF CLEAR CREEK — ONE OF ONLY FOUR NATURAL BAYOUS REMAINING IN THE HOUSTON AREA — AND ITS ABILITY TO HELP OR HARM TIDAL SURGES, FLOODING AND THE NEEDS OF BOTH HUMANS AND WILDLIFE.**

Nestled between fast-paced freeways, crowded subdivisions and ever-encroaching urban sprawl lies a lushly forested, unhurried bayou that meanders 40 miles across the coastal plain and through Houston's southeast side before meeting the bay. Clear Creek, one of the area's few remaining unchannelized bayous, has become embroiled in a heated tug-of-war over its future. Will it become a dredged earthen channel denuded of forest and wetland? Will it remain a richly forested stream? Or will its fate fall somewhere in between?

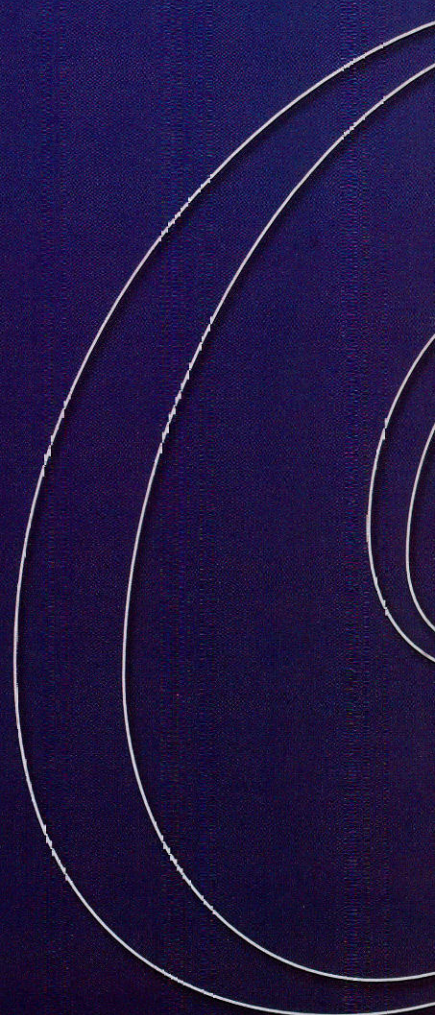
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BY WENDEE HOLT CAMP



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C R E E K





TPW biologist Woody Woodrow, a former environmental consultant in the private sector, shows me Clear Creek during a six-mile boat ride that begins at a boat launch in League City, close to where the creek spills into Clear Lake.

Woodrow has a tall, lean frame and a long salt-and-pepper beard. As he hands me a life vest, he asks me to keep an eye out for logs and 'gators.

The project to channelize Clear Creek is divided into three reaches — lower, middle and upper — with the lower reaches near the creek's terminus at Clear Lake, and the narrow, winding upper reaches in the northern section, around Friendswood.

We launch in the creek's southern reach. Oaks and green ash line the broad waterway. The trees arch over the

water, draping Spanish moss from their boughs. White shrimp jump from the water like grasshoppers on the prairie, and although it is broad daylight, a half moon slices the pale sky. As we troll upstream, we spot wood ducks, spotted sandpipers and ospreys. We pass by an artificial marsh built by the Houston Lighting & Power company as a demonstration project. Roseate spoonbills wade in a secluded corner and mottled ducks flush from its vegetation. Woodrow points out a red-shouldered hawk, a forest-dependent species, gliding overhead.

Bayous, tributaries and the floodplains that they lie within provide fish

and wildlife habitat, purify water, recharge aquifers and offer opportunities for nature and recreation tourism.

They also occasionally rise over their banks, terrorizing residents owning homes in the floodplain. In response to homeowners' concerns, in 1968 Congress authorized \$75 million to channelize Clear

Creek — deepening, widening and straightening it for flood control. Like many federal projects, the design phase moved slowly, taking nearly 30 years to complete. During the past two years, as construction neared, a number of citizens, communities and government agencies raised their voices in opposition to the project.

In this Upper Coast region, where nearly all naturally occurring streams have been channelized, there is much to be said toward preserving Clear Creek rather than altering it. "Houston may not have snow-covered mountains or white sand beaches, but the city is graced with an amazing natural network



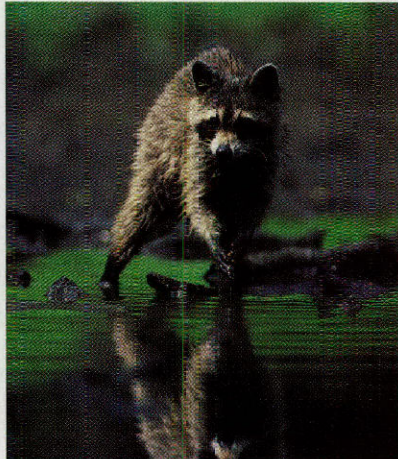
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Bayous such as Clear Creek provide habitat for myriad creatures, including bullfrogs, roseate spoonbills and raccoons. The original project to channelize Clear Creek, indicated below left as “Current Federal Project,” would expand it to 330 feet at its widest point. The updated proposal indicated below right as “Updated Federal Project,” would reduce the impact of channelization but still would eliminate 190 acres of forests and wetlands.

© NICOLE FRUGE

prevent the region’s torrential rains from flooding their homes. “When you’ve been through what we’ve been through,” says

designed a channel that would turn 27 miles of the meandering 10- to 80-foot-wide creek into a 330-foot wide, 15-mile-long, arrow-straight dredged channel.

of gullies, creeks and bayous. Clear Creek is a beautiful, living river that is a very important environmental and economic resource,” says Kevin Shanley, president of Houston’s Bayou Preservation Association (BPA). Mona Shoup, founder of the not-for-profit group Friends of Clear Creek, argues that, “It will flood worse if they channelize the creek.” Both Shanley and Shoup have become figures in the heated campaign to stop the project.

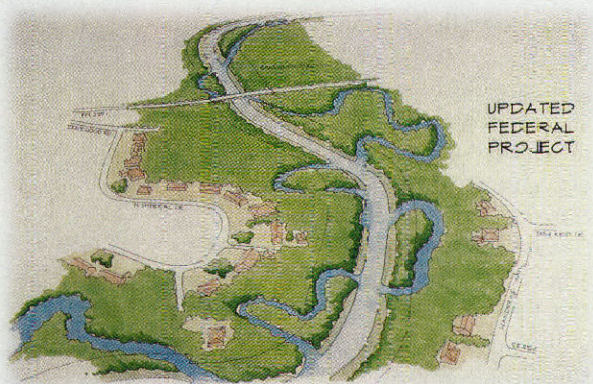
Friendswood resident and flood victim Gene Cock, “and a federally funded flood control project has been promised to you, anything else is just not acceptable.”

Since channelization brings more, faster-flowing water downstream, the project also includes constructing a “second outlet” between Clear Lake and Galveston Bay — the first being the lake’s natural outlet to the bay — to protect downstream communities from flooding.

### A Long and Winding Road

Congress authorized funds for channelizing Clear Creek in 1968, but the project didn’t move forward until after 1979’s Hurricane Claudette deluged Houston. At the request of Galveston County and Harris County Flood Control District (HCFCD), the U.S. Army Corps of Engineers (COE)

In 1996, as the second outlet neared completion, Nassau Bay resident Shoup stumbled upon a CCE memo about the impending channelization. Being a former environmental journalist, she was first interested from an ecological perspective. “I thought, ‘they’re going to destroy this beautiful creek,’” she tells







me. "And there are only four natural bays left in Houston."

As Shoup got more information about the project, she became concerned that its design was flawed. "The downstream communities can't handle any more water coming down the creek," she says. "The second outlet won't do any good during tidal surges, when bay water is higher than Clear Lake." She formed Friends of Clear Creek, which opposes the channelization — and started going door to door handing out flyers and talking with neighbors. Shoup later joined forces with environmental lawyer Jim Blackburn, who plans to challenge the channelization in court if the project moves forward.

Other citizen groups rallied to oppose the project, including the Houston Audubon Society, the Galveston Bay Foundation, the Houston Canoe Club, the League of Women Voters of Houston, all eight downstream communities, and even Galveston County — one of the channel's initial sponsors. The Corps of Engineers received letters voicing concern from the National Marine Fisheries Service, National Wildlife Federation, Texas Parks and Wildlife and United States Fish and Wildlife Service.

As opposition grew in mid-1997, HCFCD agreed to a six-month restudy,

to include forums for public input. After considering an impressive variety of flood-control alternatives—including proposals for voluntary buy-out of homes within the floodplain, rainwater detention ponds and bypass channels to circumvent sensitive fish and wildlife habitat—the district unveiled a new plan in December 1997.

The 1997 plan involves a narrower and shallower channel, reducing the loss of forest and wetland by 40 percent. It involves a five-mile bypass channel around the middle reaches, including Challenger 7 Memorial Park. The plan would create a large island between the creek and the bypass channel, which would be preserved as wildlife habitat.

The channel also would be maintained by boat, eliminating the need for grass-lined sides and access roads.

Many hailed HCFCD's alternate project as meeting flood-control needs while saving more habitat, but opposition hasn't ceased. Of the groups originally opposing channelization, only the Bayou Preservation Association gave its endorsement — and then with eight strong conditions. On its list the BPA called for preserving undeveloped land along the creek, improving the channel design and buying out homes in the floodplains.

When Shoup first heard the new plan, she says, "I felt betrayed. For six months, we put our trust in Harris





County Flood Control. We were accommodating and tried to work out a solution.” Shoup and other opponents were rankled that the alternative plan was still a channelization plan, just less wide than the original plan. “It still would destroy the creek, its wetlands, its estuaries and the riparian forest,” Shoup charges.

Another concern could stop the channelization project in its tracks: the Brio Refinery Superfund toxic waste site. Located along a Clear Creek tributary called Mud Gully, toxic chemicals that have leaked into the soil might endanger human and environmental health if disturbed. HCFCD’s project report states that Brio “presents a possible threat of contamination to Clear Creek . . . and that channelization would pose a risk of disturbing contaminated sediments.”

HCFCD in early 1998 helped form a Brio Citizens Advisory Panel, made up of concerned citizens and government officials. The panel hired an environmental consultant to test the soil and see what danger the toxic waste posed. John Koros, HCFCD’s environmental services manager, says contaminant levels found so far warrant serious further investigation.

Woodrow and I continue upstream in the TPW skiff, and the creek narrows considerably. In the upper reaches, we negotiate through tight logjams — a

TPW biologist Woody Woodrow, left, with Russ Wilkins, is closely watching the debate over the future of Clear Creek. In addition to providing habitat for dragonflies, damselflies and birds such as the roseate spoonbill, Clear Creek offers opportunities for nature and recreation tourism.



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result of flooding from Tropical Storm Frances two weeks prior—and the boat motor stalls. While letting the motor rest, I notice a middle-aged lady peering at us from the creek bank with a perturbed look on her face. I assumed she didn’t want us near her land, but she had flood control on her mind. “Do you see my house up there?” she asked. “I have over \$9,000 in flood damage from last week. The water was up to my windows. They are never going to get on with this flood control project.”

She had no way of knowing our excursion had any relevance to the recent flooding, and when I told her I was researching the channelization for *Texas Parks & Wildlife* magazine she rolled her eyes and said, “Oh, so you want to save the frogs.”

### What’s Good for the Frogs is Good for the People

The tragic Mississippi River floods of 1993 — deluges that killed 38 people, caused \$15 billion in damage, and left more than 100,000 people without homes — catalyzed a flurry of research

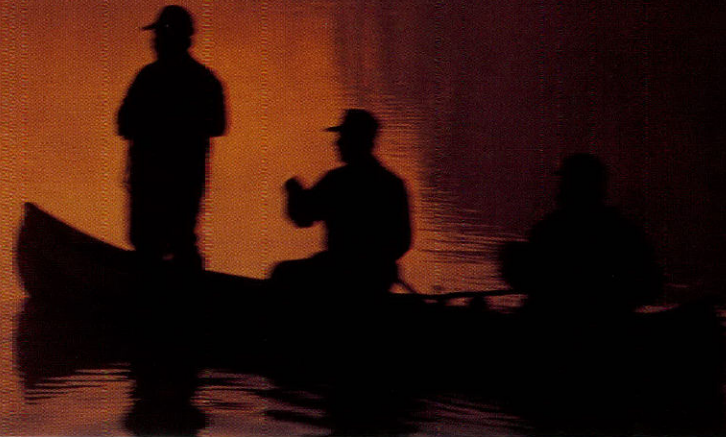
on our nation’s flood-control methods. One emerging truth was that what benefits people—getting them out of harm’s way and preserving more greenspace — also benefits fish and wildlife. That finding has spurred the National Wildlife Federation, World Wildlife Fund, Trout Unlimited and American Rivers, among others, to get involved in shaping the future of floodplain management and flood control.

After the 1993 floods, the Clinton Administration appointed an interagency committee to evaluate the state of floodplain management. The committee produced a document called the Galloway Report in 1994. It recommended the use of “non-structural” methods of flood control, rather than “structural” techniques that physically alter the stream, like channelization. Non-structural approaches — including rainwater detention ponds, voluntary buy-out of homes along the waterway and returning floodplains to their natural state — have proven more sustainable and cost-effective for the long-term, the report found.



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In several places throughout the nation, local COE Districts are ripping out dams and restoring channelized watersheds to their natural state — sometimes at costs greater than the original projects. In 1992 in Florida, for example, state agencies and the Corps of Engineers began a 15-year project to tear out concrete channels, reshaping the Kissimmee River and restoring its natural ecosystem. The project is expected to cost \$422 million — eight times the expense of the Kissimmee's channelization. With such precedents in mind, the Arlington, Texas, city council voted down a concrete-lined channel for Johnson Creek in favor of a greenbelt system that includes nature preserves, a riverwalk and, of course, flood management.

One reform from the Galloway Report is that FEMA (the Federal Emergency Management Agency) has increased funding for buy-out of homes in floodplains. Buy-out, usually done on a voluntary basis, means that the government pays fair market value for a home and helps relocate a family outside the floodplain. After material salvage, homes are bulldozed and the land is returned to nature.

Those opposing Clear Creek channelization strongly support the idea of voluntary buy-out of homes along the creek, but not everyone is satisfied with

the “fair market value” offered for his or her home, nor do many floodplain residents wish to relocate. “Nothing is said about the human cost of living in a home for 30 years and [having] to move,” says Friendswood resident Cook. Harris County has an active program funding voluntary buy-out, though not specifically attached to the Clear Creek project. “Buy-out is a valid tool in our toolbox,” says HCFCO Director Mike Talbot, “but alone, it doesn’t get us to the point where the other plan does.”

Also hailed by both the Galloway Report and those opposing Clear Creek channelization are “detention ponds” — spaces where rainwater is held until streams drain. Shanley explains that detention ponds can be made into grassy soccer fields with dips and hills, wooded parks or even constructed wetlands. Enhanced detention sites boost land values by providing recreational benefits for communities, he says. Enough detention could completely offset the need for channelizing Clear Creek, but the community could lose the federally authorized funding that was explicitly designated for channelization.

### What Good is a Bayou?

Woodrow explains that bayous like Clear Creek have both ecological and economic value. The slow-moving water

allows sediment to settle and, over time, vegetation filters out contaminants — ultimately affecting the quality of our water. Riparian forests bordering streams provide habitat and cover for waterfowl, migratory birds and other wildlife. Animals use the forested streamside corridors to move from one region to another. At the northern end of the project reach, says Woodrow, lies a 900-acre patch of “really nice forest” that will be lost to channelization.

“I can’t say that any species depends exclusively on this creek,” he admits, “but it’s an important habitat. If you channelize, it is the beginning of the end of all natural areas on the watershed.”

Although scientists have not studied how channelization will specifically affect the Clear Creek ecosystem, researchers have studied such impacts in other states. Virginia Tech ecology professor Fred Benfield says, “Straightening a stream goes against the physics of water: flow downhill, especially in unconstrained channels.” The natural course of flowing water — what Woodrow calls “wobble-wagging” — creates gentle curves called oxbows. The water dynamics create patches of fast and slow water, riffles and pools that fish and invertebrates use. In channelized streams, says Benfield, increased water velocity disturbs the substrate, causes erosion and changes the habitat



for aquatic organisms.

In Clear Creek alone, more than 50 species of finfish and three species of shrimp — including many that are commercially and recreationally important — use the habitat as nursery and feeding grounds. Substantial numbers of shrimp are commercially harvested where Clear Lake opens into Galveston Bay. Channelization might have a significant impact on fisheries, Woodrow warns.

Clear Creek also has value for nature and recreational tourism — both booming industries in Texas. Bird-watching enthusiasts — whose activity generated \$155 million in retail sales in Texas during 1997 — visit the Great Texas Coastal Birding Trail's Clear Lake Loop; it runs, in part, along the creek. Canoeists, boaters, and anglers also frequent Clear Creek.

"The greatest irony is that the large cost in dollars and in natural resources will yield only limited reduction in flood threat to the 10-year floodplain," Andrew Sansom, TPW executive director, wrote in a letter to COE's Galveston District. "Use of recently proven approaches would give greater protection, less impact to fish and wildlife resources, and almost surely at a lower dollar cost," he added.

### Now What?

Despite strong opposition, Harris County turned the alternate plan over to the COE for review in December 1997. With so many confounding factors, many question why the channelization project hasn't already been halted.

"We have a contract with the Corps of Engineers to do a channelization project," says Talbott. "It's a difficult position to say we spent \$40 million [on the second outlet] but now we want to do something different."

Supporters of channelization fear that if the project needs congressional reauthorization, the whole project might get rejected or, perhaps worse, drag on another 30 years. "If the project has to go back to Congress, we have to compete with all those other projects," says Talbott.

Others believe there's little chance Congress would reject a more effective and less ecologically destructive project. "Do you really think if we came up with a win-win plan, Congress would deny funding?" asks Woodrow. "If you have a bad project, people should be responsible and do the right thing. Just because you put your foot in the water doesn't mean you have to go swimming."

A spokesman for the COE Galveston District said the agency is expected to announce the start of a major restudy of the Clear Creek project in light of HCFCD's new plan and the various confounding factors. He concedes that the

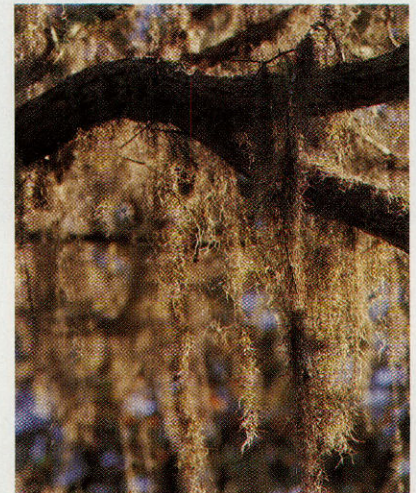
Part of the Great Texas Coastal Birding Trail's Clear Lake Loop runs along Clear Creek, where birders might catch sight of a green heron, below right, or a white ibis, below, probing the water for a crawfish. Riparian forests bordering the creek provide habitat, and animals as well as people use the stream as travel routes from one region to another.

restudy could take a significant amount of time.

Even with the channelization project temporarily immobilized, most wooded areas along the creek are available for development. "For every home we buy out, two more are built in the floodplain," says Diana Herrera of FEMA's National Flood Insurance Program.

As Woodrow and I make our way back downstream in the warm afternoon, we wave to fishing boats, admire egrets and pileated woodpeckers, frown at sporadic garbage strewn in the treetops from the recent flooding and wax philosophical about nature and politics. "It's not totally pristine, it's not wilderness, but it's what we have left," says Woodrow. "It's part of our natural heritage. And it seems foolish to get rid of it." ★

WENDEE HOLT CAMP is a freelance environmental journalist living in Harris County.



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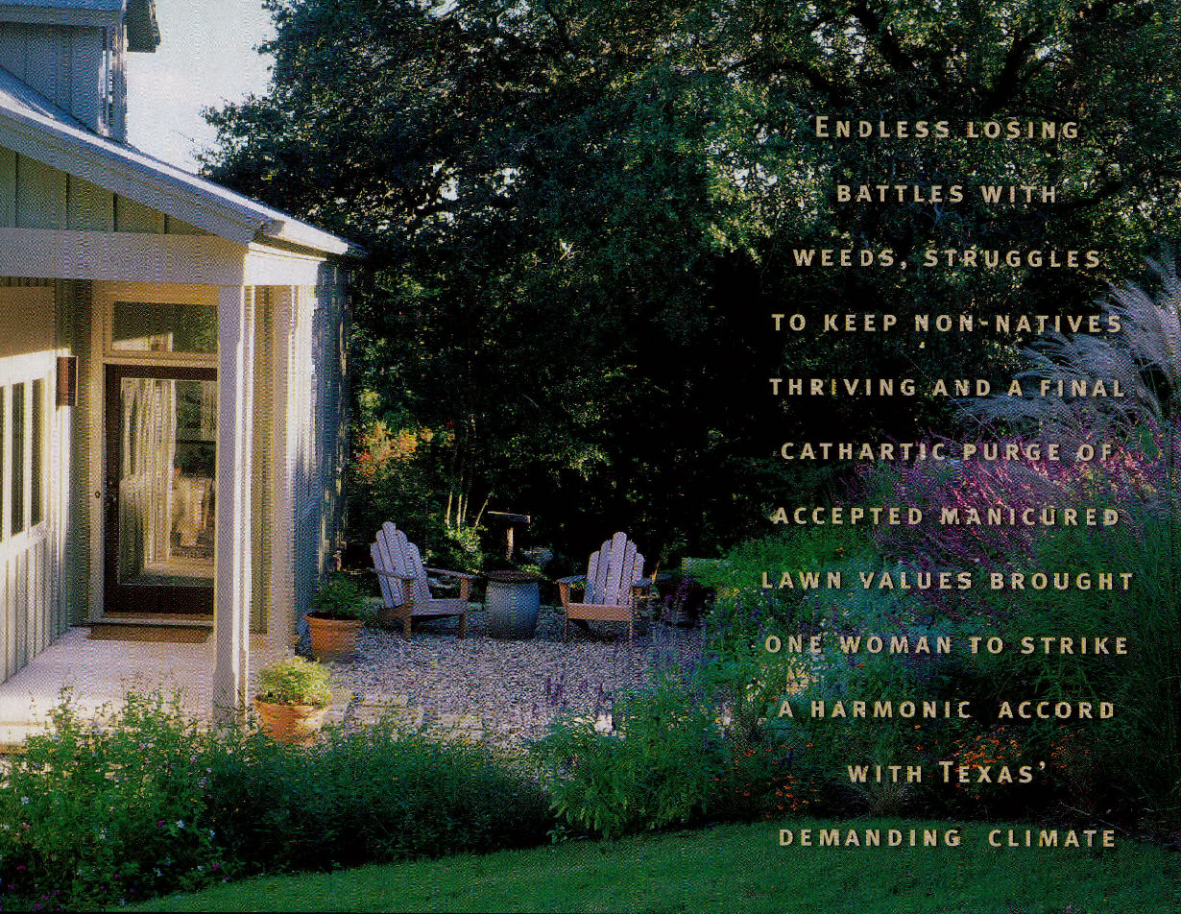


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ENDLESS LOSING  
BATTLES WITH  
WEEDS, STRUGGLES  
TO KEEP NON-NATIVES  
THRIVING AND A FINAL  
CATHARTIC PURGE OF  
ACCEPTED MANICURED  
LAWN VALUES BROUGHT  
ONE WOMAN TO STRIKE  
A HARMONIC ACCORD  
WITH TEXAS'  
DEMANDING CLIMATE



# I N N A T I V E



STORY BY SUSAN HANSON • PHOTOGRAPHY

20 February 1999







Getting out of her car, my friend stood at the edge of the driveway and stared. “It’s smaller than I thought,” she finally said, as if speaking to the lawn itself or to the gravel path that wraps around the trees.

# H a r m o n y



“From what you wrote, I imagined something — well, something larger.”

*Mea culpa*, I thought. I had led my friend astray.

For 15 years now, more



or less, this little patch of land has shown up regularly in a newspaper column I write each week. It has been the focus of countless ruminations on the meaning of life and death, endless encounters with alien insects and birds, myriad tales of coming to grips with weeds.

**A**nd in the process of celebrating this place, I suspect, I've embellished the truth just a bit.

For starters, this is no wilderness in any sense of the word. Neither backwoods nor rustic getaway, neither pristine nor truly wild, it's just an acre of suburban land — messy around the edges, but domestic nonetheless.

When we bought it 20 years ago, our house-in-progress was a typically small 3-2, nestled more carefully than one might expect in a motte of elbow-bush and oak. "We left this Mexican buckeye for you," the real estate agent announced when showing us the lot. I was impressed — not only with the fact that the otherwise thoughtless builder had done such a good job of situating the house, but also because our agent knew what things were called.

It was his comment, as much as anything else, that hooked me on native plants. My first resolution, that October of 1978, was to inventory what we had, to discover what things were before deciding what should go. The thought was heretical, of course, given the neighbors' penchant for cutting first and asking questions later, if ever. And it also ran counter to what I'd been taught as a child. Lawns, I had learned by example, were meant to be tidy, clipped, controlled. The wait-and-see-what-



Clockwise from above: spiderwort; Mexican bush sage, pink salvia and artemisia; azaleas in East Texas; goldenrod; Lindheimer muhly.







## WILDSCAPES

Established as part of the Texas Parks and Wildlife Department's Nongame and Urban Program in 1994, the Texas Wildscapes Program is designed to help establish and maintain habitat for wildlife in both residential and commercial landscapes. The program encourages and instructs participants in the use of native plants, as well as water and feeding stations.

"The idea works whether you've got a few square feet or a thousand acres," says administrator Kelly Bender. "We not only have home yards in the program but also apartment balconies, all the way up to large prairies."

Modeled after the National Wildlife Federation's program, the Texas Wildscapes program offers more site-specific information to its participants. "Texas is lucky enough to have 10 distinct regions," says Bender. "And each region presents distinct possibilities for planting for wildlife."

For a fee of \$15, participants in the program receive a Wildscapes packet which includes booklets on butterfly and hummingbird gardening, a book from the National Wildlife Federation entitled *The Backyard Naturalist*, a color booklet on Texas ornamental trees, information on feeders, nest box dimensions, regional lists of native plants and an application for certification. Certified applicants receive a certificate of recognition and a weather-proof display sign.

According to Kelly Bender, about 7,000 people have participated in the program since its inception, and 1,050 sites have been certified.

To request more information on the Texas Wildscapes Program, write the Texas Parks and Wildlife Department's Nongame and Urban Program at 4200 Smith School Road, Austin, Texas 78744.

## LADY BIRD JOHNSON WILDFLOWER CENTER

Learn more about Texas native plants and wildflowers by contacting the Lady Bird Johnson Wildflower Center. Located in southwest Austin at 4801 La Cross Avenue, the Wildflower Center offers not only tours of its facilities and demonstration gardens, but also materials on how to plant and maintain a native landscape.

"The living examples here would really be of benefit for people to see



firsthand," says staff member Patricia Alholm. "We have landscaped for color year around. A lot of people think the wildflower season is over May 1, but they will see that there is color after June."

As pleasing as they are to the human eye, the specially designed gardens at the Wildflower Center are equally attractive to wildlife, including butterflies, hummingbirds and songbirds. On the other hand, visitors also can learn how to plant a landscape that will be resistant to deer.

In keeping with its educational mission, the Wildflower Center makes information available to people around the country through its clearinghouse. Included in its Introductory Factpack is a recommended species list, a plant and seed source list, a native plant regional bibliography, information on gardening and landscaping with native plants, material on wildflower meadow gardening and wildlife gardening factsheets — all appropriate to the state where you live.

"We send out about 15,000 of these a year," Alholm says of the Introductory Factpacks, which cost \$5 for Wildflower Center members and \$10 for nonmembers. "They're just packed with all kinds of information."

Also available (\$5 for members/\$1.50 for nonmembers) are factsheets on bluebonnets, buffalograss, seed collecting, recreating a prairie, large scale and roadside planting and collecting and pressing wildflowers.

For a brochure listing other clearinghouse products, or to receive additional information on the Lady Bird Johnson Wildflower Center, write the Center at 4801 La Crosse Avenue, Austin, TX 78739.

The grounds of the Lady Bird Johnson Wildflower Center are open from 9 a.m. to 5:30 p.m. Tuesday-Sunday. Entrance fees are \$4.00 for adults; \$2.50 for students and senior citizens; children 4 years and under are free. Center members enter free.

## FOR MORE INFORMATION

Regardless of their expertise, most gardeners attempting to install or maintain a native landscape can benefit from the experience of others. Exchanging ideas, tracing plants and sharing tips on where to find a good source for native plants and seeds are more than ways to improve the chances of success. They're also a great deal of fun.

In Texas, native plant enthusiasts connect in several ways.

Since its founding as a nonprofit organization, the Native Plant Society of Texas has established chapters in more







Clockwise from top left:  
Lindheimer muhly;  
Mexican bush sage and  
zinnias; prickly pear;  
bluebonnets, phlox and  
prickly pear.



you-get approach of native gardening was contrary through and through.

But sensing how little I knew, and wincing when I saw more than one of my neighbors chain-sawing mountain laurels to the ground, I vowed to give the technique a chance. As ambitiously as I'd ever tackled Girl Scout merit badges as a child, I sent away for the National Wildlife Federation's *Backyard Habitat* material, began identifying the species of plants that grew on our scrubby lot, and took the pictures I would need to send away as proof I was doing right by this little patch of land.

Filling out the application when it came, I dutifully listed all the plants I assumed would provide food and shelter for wildlife. I noted, also, that we had installed a bird bath, created a pond of sorts, and left piles of brush and rocks for mammals and ground-nesting birds. Attaching eight photographs and a drawing of our lot, I at last slipped my application into an envelope, enclosed the \$2 enrollment fee, and waited for my official certification as keeper of a Backyard Habitat.

It arrived in no time at all.

Looking back at the list of plants I made, I now find it pitifully small. Not only were most of the species I named non-native, but some were downright useless when it came to providing food. Nevertheless, I had begun to get a sense of how varied the life on our property was. I had spotted the stand of toothache trees, for example, and the tangle of dewberries growing wild at the base of an oak. I had noted, too, the

prairie flameleaf sumac, its scarlet leaves glowing in the sun, and the many mountain laurels, whose scent our then three-year-old daughter described as simply "purple."

Still, some old habits remained. Happy as I was to leave certain clumps of brush alone — plants I later identified as Texas elbow-bush, Texas snakewood and la coma — I was also intent on putting in a "normal" lawn. And so, when the pallets of St. Augustine grass arrived, I dutifully pressed each square into our just-spread sandy loam, sat back, and waited for the winter rains to do their work.

"Oh, you're the one with the lawn," I remember one neighbor saying when we met the following spring. I beamed at the recognition I had earned. Indeed, while most of the other yards on my block were little more than plots of grass burs and dirt, mine was a carpet of green. I luxuriated in the act of mowing it, trimming it, watching it take hold. Through the summer and into the fall, I gloated in my success.

And then we had a freeze.



During our second spring in this house I changed my gardening habits for good. "From now on, it's survival of the fittest," I announced as I began grubbing out the dead and dying grass. "No more mollycoddling from me." Whatever couldn't make it on its own, I vowed, would simply go the way of all flesh — or, rather, the way of all gardenias and Chinese tallows and variegated pittosporums, all those plants I'd identified with "home."

What had finally become real to me, I suppose, was the fact that Central Texas wasn't the middle Texas coast, that what my parents were able to grow in their deep, black soil wasn't at all the sort of thing that would do well here. Moreover, I realized, if it was wildlife I wanted, it was their needs I had to consider, and not my own.

As the St. Augustine continued to die, and I continued to hack it out, I took up reading everything I could on native plants. I subscribed to Carroll Abbott's *Texas Wildflower Newsletter*, I studied Brother Daniel Lynch's *Native & Naturalized Woody Plants of Austin and the Hill Country*, I went to sleep at night with pamphlets I'd ordered through the mail. And the more I learned about them, the more I came to appreciate the wealth of life right outside my door.

Patience, I discovered, had served me well for once. Because I'd preferred to watch and see what those seedlings in the back yard were, I now had a pair of waist-high soapberry trees. And because I'd chosen to leave our little woods intact, I had not only the ubiquitous live oaks and hackberry trees, but also kidneywoods, evergreen sumacs, Texas persimmons and a single red yucca. Virginia creeper, argemone, aromatic sumac, mustang grape, spiderwort and dayflower — these, too, were native to this place. And it was with them, I realized, that my garden had to start.

Beginning with what I had, then, I introduced other natives as I could — pavonia, Turk's cap, Indian currant, sunflower golden-eye, salvias of various kinds, yellow columbine, white and coral honeysuckle, American beautyberry, Eve's necklace, guallijo, Texas pistachio, anacua, anacacho orchid, Mexican plum, anacahuite, and more. Put another way, what I have now, 20 years after moving onto this place, is not yard as such, and certainly not a lawn, but a *home* in the truest sense of the word.

To the friend who expected "more" when she saw it for the very first time, I have only this to say: Take a closer look. Watch for trails made by tiny feet. Listen for the chickadees and the cuckoos. Wait for the single brown thrasher who rustles through the leaves in winter. Remember that size is relative.

Be aware of eyes that watch you from the trees. ☆

*San Marcos resident SUSAN HANSON is a journalist and a member of the English faculty at Southwest Texas State University.*



Clockwise from above: Turk's cap from South and Central Texas; agave from West Texas and the Hill Country; spider lily from East Texas.







than 30 locations around the state. While many of these are in cities such as Houston, San Antonio and Dallas, there are also active chapters in smaller towns such as Fredericksburg, and even chapters that serve entire counties or geographical areas, such as the Trans-Pecos region of far West Texas.

Although members' interests may vary from place to place, all chapters share the goal of the Native Plant Society of Texas: "To promote the conservation, research and utilization of the native plants and plant habitats of Texas through education, outreach and example."

The following contact numbers represent just a sampling of the chapters that exist throughout the state:

**Austin: 512-836-4751**

**Corpus Christi: 512-852-6126**

**Dallas: 214-291-7545**

**Houston: 281-495-8144**

**Lubbock: 806-799-0464**

**Midland: 915-682-5970**

**San Antonio: 210-732-3450**

**San Marcos: 512-754-0060**

A more complete listing is available at the Society's web page, (<http://lonestar.texas.net/~jleblanc/npsot.html>). Additional information can be obtained from the group's state office: Native Plant Society of Texas, Box One Building, 1111 N. IH35, Suite 212, Round Rock, TX 78664, 512-238-0695.

County extension agents can also be helpful with points about organic gardening or xeriscaping. Contact information for county agents is available in telephone directories under "Government Offices – County," "Agricultural Extension Agents."

The Texas Parks and Wildlife Department provides information about native plants through its Texas Wildscapes program. The program's address is Texas Wildscapes Coordinator, TPW, 4200 Smith School Road, Austin, TX 78744, 1-800-729-1112 by telephone, or ([www.tpwd.state.tx.us/nature/plant/wildscape.html](http://www.tpwd.state.tx.us/nature/plant/wildscape.html)) on the web.

Gardeners in the Austin area may contact the Zilker Botanical Garden 512-477-8672 to find out details regarding groups that hold meetings there. Among these are Austin Organic Gardeners and the Xeriscape Garden Club of the Austin Area, which can be reached at 512-370-9505.

For information on Lady Bird Johnson Wildflower Center, write to 4801 La Crosse Avenue, Austin, TX 78739, or call 512/292-4100. The Center's web address is ([www.wildflower.org](http://www.wildflower.org)).

— Susan Hanson





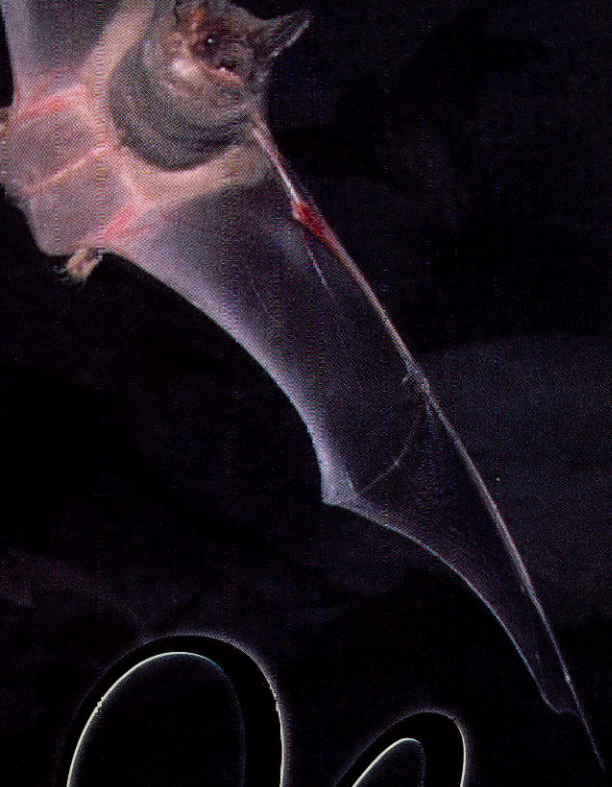
# KEEPERS OF THE

ONCE CONSIDERED HOPELESSLY UNPOPULAR,  
THESE LOWLY INSECT-RAIDERS NOW VIE FOR  
CONSERVATIONISTS' HEARTS ALONG  
WITH PANDAS AND WHALES

"Bats have gone from 'eek' to 'chic,'" says Pat Morton, wildlife diversity biologist with Texas Parks and Wildlife. "Thanks to Bat Conservation International's marketing efforts and outreach programs, the bats are successfully battling myths, superstitions and Hollywood."

B Y G . E L A I N E A C K E R





# Mi g h t





According to Morton, “We have 33 of 43 North American bat species here in Texas — more than any other state. No other state in the nation has an official flying mammal, but the Mexican free-tailed bat is the official flying mammal of the State of Texas. And we have the largest bat colony in the world here in Texas at Bracken Cave.”

Owned by Bat Conservation International, Bracken Cave is an important maternity cave, housing 20 million Mexican free-tailed bats, *Tadarida brasiliensis*, Texas’ most common species. “They weigh about ½ ounce, 11 or 12 grams, they tend to be dark grayish-brown in color, and

they have long, thin wings that are adapted to very high, fast flight,” says Morton. “They have a wrinkled, bulldog-type face and a little tail that extends maybe an inch and a half beyond their tail membrane, which gives them the name ‘free-tailed.’ They are crevice-roosting bats, and they like to crawl into tight places.”

Freetails migrate during late February and early March from their winter homes in Mexico to Texas. Here, they establish bachelor and maternity, or nursery, colonies. In early June,

the females bear one pup and the young roost in dense clusters with as many as 500 bats clinging together within a single square foot. Researchers once believed that female bats nursed the young at random, but since have learned that mothers, tracking scent and echoes, are able to locate their own offspring amid the throng. By August,

the juveniles join the adults in the spectacular evening flights that attract visitors and researchers from across the country.

Freetails have been clocked at 60 miles per hour and radar has shown that they fly at altitudes of up to 10,000 feet. Dr. Gary McCracken of the University of Tennessee at Knoxville wondered why.

As part of his research on the impact of bats upon such crop pests as corn ear-worm moths, McCracken’s research team launched hot air balloons filled with echolocation detectors, night vision scopes, insect traps and recorders. McCracken’s team tracked the bats’ foraging behaviors on Doppler radar and soon found that



The hoary bat, a rare migrant through Texas, frequents wooded areas where it roosts in the open.



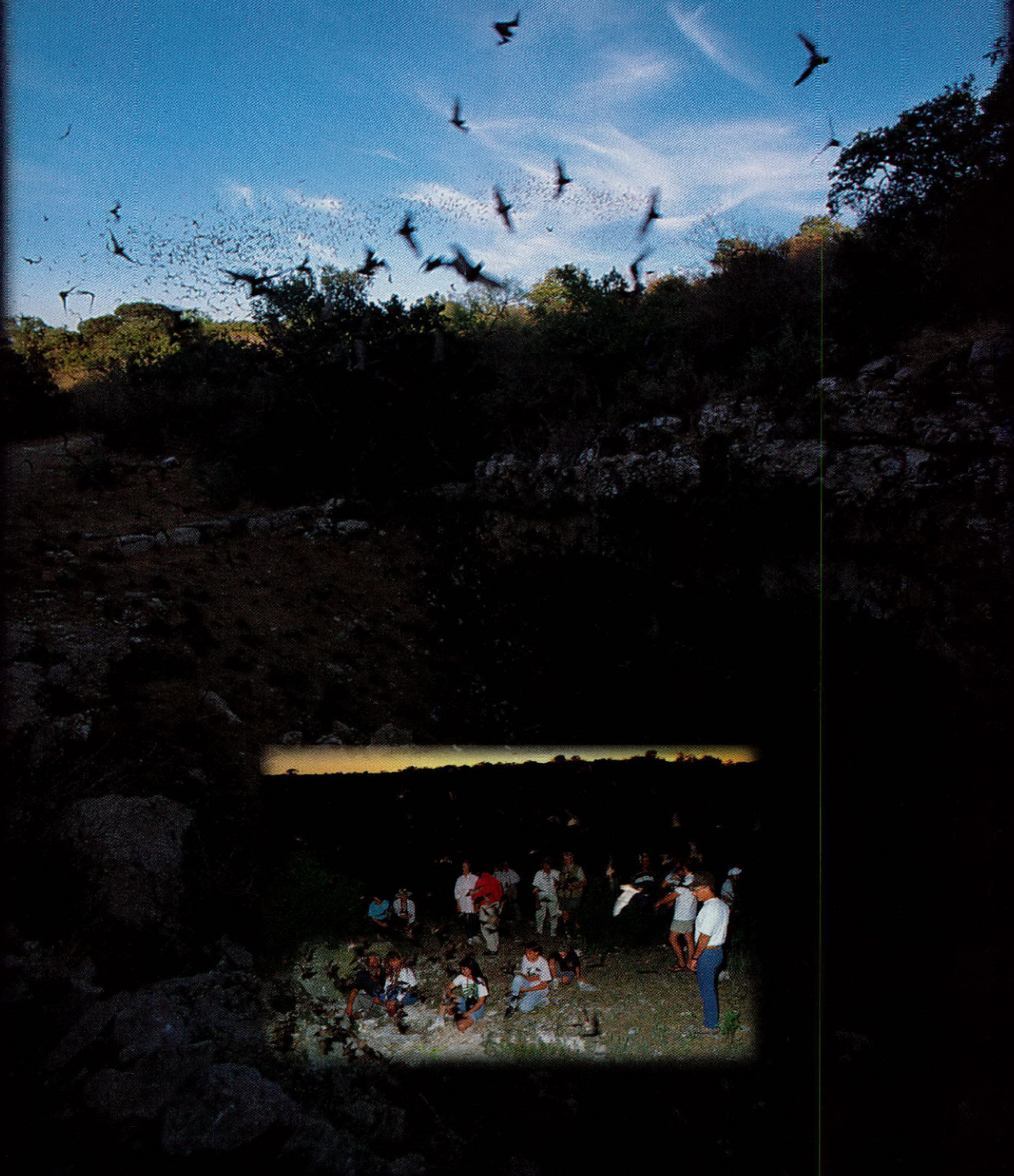
An uncommon bat, the northern yellow bat roosts in South Texas palm trees.



A forest dweller, the big brown bat also uses caves and crevices in buildings for daytime retreats.



Owned by the Nature Conservancy of Texas, the Eckert James River Bat Cave is open from May 15 through October 15. See page 33 for more information. Green Cave at Kickapoo Cavern State Park, inset, is home to one million Mexican free-tailed bats. This restricted-access park is open by appointment.



LARGE PHOTO BY: © LARRY D. HODGE. INSET PHOTO: GLEN MILLS



huge clouds of insects migrate at high altitudes, flying north to Texas from Mexico on prevailing winds. "Basically, his research says bats are a farmer's best friend, because the moths feed on staple crops such as corn and cotton," explains Bob Benson, public information officer for Bat Conservation International. According to McCracken, one million nursing bats eat about 10 tons of insects every night — a convincing economic argument for bat conservation.

Blanco County rancher and conservationist David Bamberger recently attracted international attention by constructing the world's first "chiroptorium," designed for a colony of more than one million bats. The word chiroptorium was coined by the Bamberger family to describe the unusual facility for housing and observing bats. "Chiroptera" is the scientific order for bats, and means hand-

wing," Bamberger explains. "And an 'auditorium' is described in the dictionary as a place to come and go of free will. The bats are free to come and go at will. A passageway from the outside leads to an observation room where there are three giant windows looking into the cave, allowing researchers and visitors to observe bat behavior without disturbing the bats. That's how my wife and son derived the name, 'chiroptorium.'"

Bamberger admits that the project raises eyebrows. "It's rather eccentric," he says. "There's no doubt about that. But more than 20,000 people have visited here and learned more about conservation. Right now, the reward is the attention it's focused on bat conservationists, raising the national level

of interest and awareness."

Construction was completed in August 1998 when the facility was covered with earth, creating the cave-like climate. "After covering the chiroptorium with earth, the temperature fell 30 degrees inside the habitat," he says. "A few bats came and stayed but it was too late in the season to build a colony. We're looking forward to spring. I feel very good that the project is serving in a role that stimulates creativity in man-made habitats, but it'll be a home-run when people assemble to view bat flights here the way they assemble near the Old Tunnel or



The large pallid bat has a varied diet of crickets, scorpions, grasshoppers, moths and beetles.



The cave myotis, abundant bat in the Edwards Plateau, hibernates in Central Texas caves during winter.



Found in the eastern third of the state, the evening bat frequents forested areas and watercourses.

**BAT CONSERVATION INTERNATIONAL (BCI)**

BCI was founded in 1982 by Merlin Tuttle, Ph.D. BCI supports conservation efforts through *Bats* magazine, published four times per year, catalog sales of gift and educational items, providing access to bat sites through exclusive tours, and by offering opportunities to participate in field projects.

Texans may learn more about bat research by logging onto the BCI website at [www.batcon.org](http://www.batcon.org). The site

includes 15 years of archives from *Bats* magazine, as well as information on constructing bat houses and the Adopt-a-Bat program.

Because bat-watching has become a national pastime, their website also makes available books such as *The Vacationer's Guide to Bat Viewing*, which lists all the current public viewing areas nationwide. Also available is a new *Discover Bats* video and curriculum guide geared toward educators. For more information, call 512-327-9721.

**BAMBERGER RANCH CHIROPTORIUM**

The Bamberger Ranch is located in Blanco County. Tours of the chiroptorium are available by reservation. For more information, call 830-868-7303.

**BAT WORLD SANCTUARY AND EDUCATIONAL CENTER**

Located 45 miles west of Fort Worth in Mineral Wells, the Bat World Sanctuary and Educational Center offers tours and school programs from September through June. Public tours are offered on the second Saturday and the third Sunday of the month, and reservations are required. Group tours and field trips are available during the week by prior arrangement.

Bat World's indoor habitat houses more than 100 bats of approximately 12 species that have been orphaned, used in research, confiscated from the illegal pet trade, or have been injured and cannot be released into the wild.

Admission fees are \$8 adults, \$4 children, and \$6 seniors. Children under three are admitted free. For more information call 940-325-3404, or visit the website at [www.saluki.com/bats](http://www.saluki.com/bats).

**BRACKEN CAVE**

Access to Bracken Cave is highly restricted. Owned by BCI, cave tours are offered to members only, four times per year, and reservations must be made well in advance. For membership information and a tour schedule, contact BCI: 512-327-9721.



Congress Avenue bridge.”

Austin’s Congress Avenue bridge has become a favorite roost for both bats and bat-watchers, but the story began as a nightmare rather than a fairy tale. BCI founder Merlin Tuttle moved his young organization to Austin in 1986, drawn in part by the fact that bats were generating negative publicity for the city. “Mexican free-tailed bats had just begun to move into crevices beneath the newly reconstructed Congress

Avenue bridge,” he writes. “Bold headlines claimed that hundreds of thousands of rabid bats were invading the city and attacking people. I reasoned that any place with so many bats and such access to the media should prove ideal for our purposes.”

“The bats now have a good home,



The aptly named red bat is one of the few North American bats that roosts in the open in trees.

#### CAPROCK CANYONS STATE PARK CLARITY TUNNEL

Clarity Tunnel is a 700-foot-long railroad tunnel situated along a 64.5-mile trail acquired through TPW and the Rails to Trails program. “The tunnel was built in 1927, and the last train went through the tunnel in 1993,” says Roy Welch, regional director of TPW’s wildlife division. “There had been a few bats in the tunnel prior to that time, but when the trains left, the population started to build. Now, although many of the bats still migrate to Mexico, there are free-tailed bats in the tunnel year around.”

“From the parking area, it’s 4.5 miles and visitors can hike, bike or horseback ride,” says Mike Knezek, site manager for Caprock Canyons’ trailways. Another access point offers a 12.5-mile route to the tunnel. Restrooms and water stations are available on both ends of the tunnel.

Maps are available through the Caprock Canyons State Park headquarters. Knezek recommends viewing evening bat flights from the southern end of the tunnel.

For information, call 806-455-1492.

#### AUSTIN’S CONGRESS AVENUE BRIDGE

Bats have become so popular in Austin that a bat-watching hotline offers daily updates for visitors. The Congress Avenue bridge across Town Lake is home to approximately 750,000 mother bats, and as the population swells with young pups late in the season, so do the crowds on the *Austin American-Statesman’s* lawn, at 305 South Congress.

Viewing is free, and from June through August, on Thursday through Sunday evenings, interpreters are available to answer questions.

For more information, call BCI: 512-327-9721, or call



An erratic flyer, the small eastern pipistrelle flutters and flits along watercourses like a large moth.

the bat-watching hotline: 512-416-5700 (category 3636).

#### DEVIL’S SINKHOLE STATE NATURAL AREA

Devil’s Sinkhole is located 50 miles north of Kickapoo Cavern, and nine miles northeast of Rocksprings. The sinkhole is a 150-foot-deep vertical cavern, and is a closed park site, not open to the public except by guided tour. Tours are scheduled during the months that bats are present. “The bats put on a good show,” says Park Manager Dave Stuart. “They spiral in a counterclockwise vortex, forming a column as they rise out of the earth.”

Tour cost is \$8 for adults and \$4 for children under 12. For information, call 210-563-2342.

#### ECKERT JAMES RIVER BAT CAVE

Located near Hwy. 290 southwest of Mason, the Eckert James River cave is owned by The Nature Conservancy of Texas. The cave serves as a maternity cave, and houses four to six million bats.

The site is open from

## MYTH VS. FACT

### Wildlife Diversity Biologist Pat Morton offers an important bat-reality check:

**MYTH:** Bats are blind.

**FACT:** All bats can see, and some can see extremely well.

**MYTH:** Bats are rodents, or “flying mice.”

**FACT:** Bats are mammals and are more closely related to humans than mice.

**MYTH:** Bats can get caught in a person’s hair.

**FACT:** Bats can find a gnat in complete darkness using their extraordinary navigational faculties and certainly will not blunder into human hair.

**MYTH:** Vampire bats are a threat in Texas.

**FACT:** There are three kinds of vampire bats, all found only in Latin America — not in the United States.

**MYTH:** All bats are rabid.

**FACT:** The incidence of rabies in bats is less than 1/2 of one percent in the natural population.

**NOTE:** “People have to understand that when there are one million of any species of animal in one place, there will be some sick ones,” says Morton. “That’s just a fact of life. Bats can die from starvation, can have injuries, and can have other infections and viruses. A bat that’s grounded is not always rabid, but no bat should ever be touched with bare hands. It’s important to teach children not to pick up or handle any animal they’re not familiar with.”





Home to 20 million Mexican free-tailed bats, Bracken Cave offers tours only to members of Bat Conservation International.

GLEN MILLS



roosting mostly over the river," says Pat Morton. "And because they perform magnificent emergences, they're a good attraction for the downtown area. People make dinner reservations at nearby restaurants just to sit and watch bats. And many of the wait staff

have asked for programs to learn more about the bats to be able to answer their customers' questions. They've become outreach specialists."

Together, BCI and TPW have established a new staff position that will be cost-shared between the agencies. "We're hiring a bat conservation specialist who will coordinate bat conservation activities and assist with outreach for schools and ecotourism opportunities," says Morton. "This is

our opportunity to combine BCI's technical expertise with TPW's network of contacts for conservation and education."

The specialist also will be working with Mexico to handle education and outreach in areas where Texas' free-tailed bats spend the winter. "If those sites aren't protected, the bats won't be coming back to Texas," says Morton. "As with all migratory species, the bats don't respect political borders. Conservation requires cooperative efforts on the part of both countries to protect these species." ★



A bat of the Deep South, the Seminole bat is closely associated with Spanish moss.



The fringed myotis is a bat of the Trans-Pecos. It roosts in caves, mine tunnels and old buildings.



The western pipistrelle begins foraging in early evening and remains active throughout the early morning.

May 15 through October 15, and admission is free. Preservation stewards on site provide introductory orientation sessions for visitors, and conduct question-and-answer sessions. For information, call the Austin headquarters of The Nature Conservancy: 512-263-8878.

**GREEN CAVE AT KICKAPOO CAVERN STATE PARK**

Located on the grounds of Kickapoo Cavern State Park, Green Cave is a 1,068-foot-long corridor housing approximately one million free-tailed bats. "This is one of the few places people can stand right at the entrance and have the bats fly around them," says park manager and biologist Dave Stuart. Stuart provides a casual interpretive program that encourages visitor participation and interaction.

Kickapoo is a restricted-access park, and appointments must be made prior to visiting the park. The facilities are primitive with

limited facilities (no restroom). Admission to the park is \$2 and bat tours cost \$5 for adults, and \$3 for children under 13.

Flashlight tours of Kickapoo Cavern also are available, and may be purchased in combination with the bat tour for \$7.

For information, call 830-563-2342.

**OLD TUNNEL WILDLIFE MANAGEMENT AREA**

The first trains passed through the tunnel in August 1913, and the line was abandoned in 1942 when the rails were sold as scrap to support the war effort. The 920-foot-long tunnel now houses more than one million Mexican free-tailed bats.

"We've been expanding our facilities at Old Tunnel and our visitation increases every year," says Roy Welch, regional director of TPW's wildlife division. "This year, we hosted about 14,000 visitors."

Improved facilities include a full nature trail

system, self-composting toilets, interpretive kiosks, bleachers and an observation deck. Bat viewing has been described as "phenomenal."

Interpretive tours are offered for Texas Conservation Passport (TCP) holders on Thursday and Saturday evenings. Without a TCP, the tours cost \$5, adults, \$2, children 6-16, \$3 seniors, and children 5 and under are admitted free. Special group tours also are available by prior reservation on nights other than Thursday and Saturday. The cost for youth groups is \$40, and the cost for adult groups is \$75.

The public is welcome any evening to view the bats from the upper-level observation deck at no charge. LBJ State Historical Park handles inquiries

about Old Tunnel. For information, call 830-644-2478.

**TEXAS ZOO**

Near the zoo in downtown Victoria, a colony of Mexican freetail resides in the shingle roof of an old, Tudor-style building. At the zoo, an exhibit constructed in a cave-like setting offers a rare glimpse at vampire bats. Feeding is at 3 p.m. daily.

The zoo is located at 110 Memorial Drive in Victoria, and is open year around. April through August, 10 a.m. to 6 p.m. and September through March, 10 a.m. to 5 p.m. The zoo is closed Thanksgiving, Christmas, and New Year's Day. Admission fees are \$2 for adults, \$1 for children, and \$1.50 for seniors. For information, call 512-573-7681 or visit the website at <www.viptx.net/texaszoo>.

BAT PHOTOS © JOHN AND GLORIA TITEN/KAC PRODUCTIONS





© GRADY ALLEN

The gulfside beach of Matagorda Island collects a fascinating jumble of marine life, shells and other flotsam. Dating to 1852, the now-closed Matagorda Lighthouse, facing page, remains the island's most visible antebellum landmark.

# Mission

**MATAGORDA ISLAND, TODAY BELOVED FOR ITS TRANQUILITY AND ISOLATION, ONCE WAS A HOTBED OF ACTIVITY AS A CIVIL WAR STRATEGIC CONTROL POINT**

Matagorda Island's lumpy sand dunes, saltgrass- and cordgrass-covered tidal flats and windswept stretches of beaches today disguise what 135 years ago was the site of skirmishes in the War Between the States.

**B**each erosion, shifting sands and Gulf hurricanes over the last century have all but eradicated any signs of the conflict between North and South that raged elsewhere, but dealt Texas only a glancing blow. No Civil War-era ruins or row upon row of sunbleached tombstones denote the battlefields of Matagorda Island, where in 1863 Union forces traded cannon and rifle fire with an outmanned Confederate garrison dug-in at Fort Esperanza, forcing its abandonment. Only the antebellum lighthouse, the faint outline of overgrown hand-dug trenches and a tiny 19th-century graveyard survive to remind modern vis-

itors of Texas' unheralded involvement in the most ignominious moment in the nation's history.

Today's visitor to Matagorda Island State Park, which occupies 7,000 acres of a 38-mile-long sliver of sand seven miles south

of Port O'Connor, can only imagine what this mostly deserted and tranquil island must have looked like 150 years ago. In those days, the town of Saluzia, perched on the island's northernmost tip across Matagorda Bay from the mainland, was dominated by the bustling seaport of Indianola and the sparsely populated Matagorda Peninsula.

According to the 1850 census, Matagorda Island supported a population of 164 (including 44 slaves), which would grow by half again by 1860. Mail and goods moved freely on three privately run schooners sailing the channels and bays between Matagorda Island and Indianola and Port Lavaca to the north, and Corpus Christi to the west. A stage line

B Y R O B M C C O R K L E





AT MATAGORDA

EARL NOVINGHAM





The overgrown Civil War trenches zigzagging across Matagorda Island are easily discerned in this aerial photo, but more difficult to see at ground level. A wooden boardwalk and platform erected over the wetlands, top, provides visitors with an advantageous view of the hand-dug line of defense.



connected Saluria to a village on St. Joseph Island, 60 miles to the south. But a storm was brewing, and it wasn't tropical in nature. On Feb. 18, 1861, only 15 years after joining the Union, Texas seceded. Two months later, the North would be at war with the South.

Unlike the war's marquee engagements at national landmarks like Shiloh, Vicksburg and Gettysburg, the Rebel-Yankee battles on Texas soil were less heralded, but nonetheless important chapters of our state's heritage. Most of Texas' Civil War battles took place along the coast or just inland as Union forces tried to capture key ports and cut off the Confederacy's seafaring trade. Matagorda Island and Indianola figured prominently in the North's war strategy where Texas was concerned.

"Texas became increasingly important toward the end of the war because it was one of the last holdouts and one of the last conduits of cotton — much of it moving through Mexico," says Texas historian Doty Freeman Smith. "The Federals' interest in cutting off that trade remained high throughout the war. That's why we had blockades of the Texas coast until early 1865."

Only five days after the first shots of the Civil War were fired in April 1861 at Fort Sumter, S.C., Col. Earl Van Dorn and a small Rebel force seized the Union transport steamer *Star of the West* anchored outside Pass Cavallo, where it waited to shuttle Union troops in Indianola off the mainland and out of harm's way. Indianola, in those days second only to Galveston as the state's busiest port, would suffer considerable privations in the coming years of the war, including naval bombardment and Federal occupation on two occasions. But to get to Indianola, a sheltered deepwater port, the North had to maneuver its gunboats and transports from the Gulf of Mexico through Pass Cavallo, protected by Fort Esperanza on Matagorda Island. Seizing the nettlesome earthen fort became of paramount importance to the Federals.

Fort Esperanza rose from the sand in December 1861, halfway up the frontage of the pass. Confederate Col. R. R. Garland had chosen the site after determining that old Fort Washington

on the extreme southeast corner of the island was too exposed. Fort Esperanza's location put the Confederates out of range of the guns on larger Federal vessels in the Gulf, but allowed them to command the channel with eight 24-pound and one 128-pound gun. Control of the channel, however, proved possible more in theory than reality. On Oct. 25, 1862, with Galveston already in the hands of the North, three heavily armed Union warships appeared off Pass Cavallo and bombarded the Rebel fortification, convincing the commander of the Indianola Artillery Guards that retreat would be prudent. Federal troops took over the fort. Union Capt. William B. Renshaw's navy continued up the pass unmolested and captured Indianola, pillaging stores and residences along the way. After a brief occupation, Renshaw withdrew his forces, shelled Port Lavaca on the way back to the Gulf, and then steamed away.

The North's attempt, almost a year later, to invade the state at the upper end of the Texas coast at Sabine Pass (see "The Irishmen Who Saved Texas," September 1994) failed miserably when Dick Dowling's tenacious cannoners thwarted a Naval invasion with deadly fire. And, with Galveston back in the hands of the Confederates, the Union decided in November of 1863 to try a major offensive up the Texas coast from Brownsville. It met with minimal resistance, taking Corpus Christi, crossing Mustang Island and surging across Aransas Pass onto St. Joseph Island, while Union gunboats took up position at Pass Cavallo to shell Fort Esperanza, which was occupied by about 500 soldiers. Only the defense of Matagorda Bay, the gateway to Victoria and Houston, stood in the way of the Yankees' march through Texas.

George Rhodes, chairman of the Calhoun County Historical Commission, picks up the story. "The Union army, some 8,000 strong, that landed on Matagorda knew the Confederates had a fort on the north end and had cannons, most of which were facing the pass. The army camped four or five miles south. The Confederates had built trenches in front of the fort to defend against a land assault."

## THE 'LIGHTS' OF MATAGORDA ISLAND

No less fervent in their zeal than Civil War buffs are itinerant lighthouse lovers.

"There's a whole group of people out there who travel hundreds of miles to see lighthouses," reports Matagorda Island State Park's Cathleen Veatch, who leads occasional historical tours of the island that cover its 5,000-year history through its World War II days as a bombing range. "Most participants are surprised to know we had Civil War activity here."

Upcoming history tours are scheduled Feb. 17 and April 17; call 512-983-2215 for reservations.

The history of Matagorda Island's lighthouse, or "lights" as beacons often were called in 19th-century parlance, dates from the days of the Republic of Texas. According to T. Lindsay Baker's book *Lighthouses of Texas*, the Congress of the Republic in 1845 appropriated \$1,500 to establish a lighthouse on the west side of Pass Cavallo, but to save money decided to await the Republic's imminent annexation into the Union. The U.S. Congress ultimately footed the bill for a Baltimore firm to erect a 55-foot-tall iron tower lined with bricks and topped with a reflector-type apparatus provided by Henry N. Hooper and Company of Boston. The beacon of the Matagorda Light Station beamed light toward Matagorda Bay for the first time around Christmas 1852. The height of the lighthouse subsequently was raised an additional 24 feet to make it more visible from Pass Cavallo and the light itself was upgraded in 1859 to a brighter, revolving, Fresnel lens.

During its early years, Mother Nature — storms, heat, errant birds and beach erosion — compromised the tower's structural integrity to some degree. But the Civil War delivered the *coup de grace* to the lighthouse. Under the scorched earth orders from defense-minded Confederate Gen. J. B. Magruder, Capt. John Brackenridge's cavalry from Indianola removed and buried the



lens, and tried to blow up the lighthouse with dynamite, succeeding only in slightly damaging its iron shell.

At the war's conclusion in 1865, the Lighthouse Board had a three-story temporary wooden tower, manufactured in New Orleans, erected on Matagorda Island near the old light. The makeshift lighthouse sufficed for several years until the board could make arrangements to buy more suitable acreage further inland, away from the eroding beachfront. Workers removed the iron plates from the old lighthouse and moved them by ox teams to the new site further up the pass. A yellow fever epidemic, off-site fabrication of new cast iron panels and other delays caused the project to drag on. The price of the refurbished and relocated lighthouse ultimately escalated to \$32,000. By 1873, work crews had topped the new, conical iron tower with a new third-order Fresnel lens that cast its beam seaward from 91 feet above sea level. In 1882, modern kerosene lamps replaced the old oil lamps in the lens.

Over the next century, the Matagorda Lighthouse weathered hurricanes, an effort in 1977 by the U.S. Coast Guard to abandon the lighthouse, and other historical vagaries, finally succumbing to the elements and obsolescence in 1995. Today's visitors to Matagorda Island State Park marvel at this towering cyclops from another era. The light stands dimmed but defiant, casting a shadow on tombstones marking the resting places of lighthouse keepers who walked the island before the turn of the century.

Few people outside of the most avid Civil War buffs, notes Rhodes, know that the South had a Port Lavaca man who had invented what was called a "torpedo mine" designed to float and sink enemy ships. Those same explosive devices were rigged with trip wire and placed in the trenches, while others were planted in the fields as rudimentary land mines.

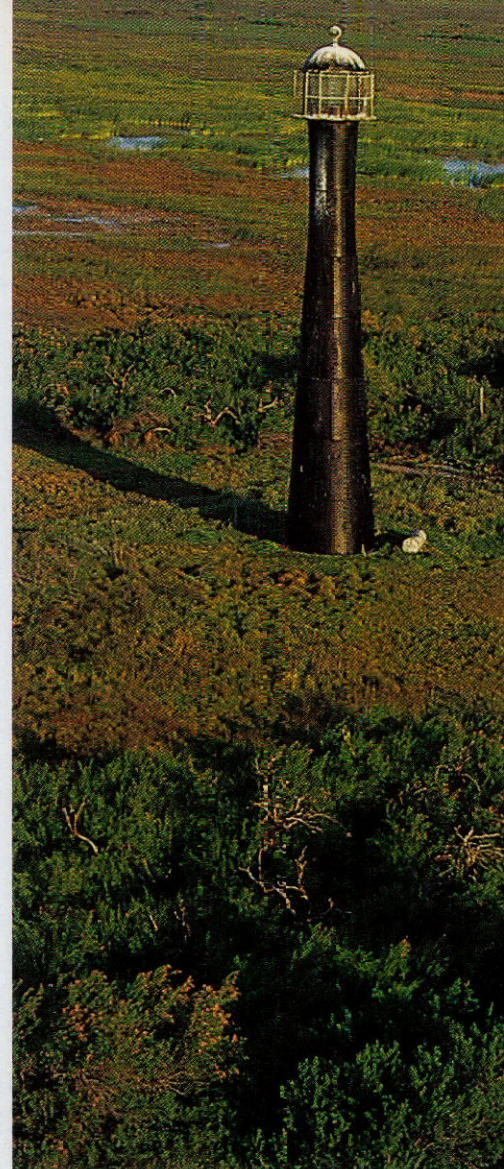
In their book, *A Naturalist's Guide – Matagorda Island*, Wayne and Martha McAlister describe in sketchy detail the layout of Fort Esperanza, constructed of sand and reinforced with logs held in place by shellcrete, a concrete-like substance made with pulverized seashells.

"To protect the fort from flank and rear assault by land, a series of 'fieldworks,' a quarter-mile line of rifle pits and crude redoubts, was dug from the pass to the nearby bayside marshes.... The overgrown zigzag line of knee-deep ditches extending from the Gulf beach across the uplands and to the bayside marshes at Lighthouse Cove, although popularly referred to as 'Confederate trenches,' is displaced nearly two miles from the fieldworks shown on maps of the time. This may be an outer perimeter hastily scooped out when the Confederates realized that the Union troops were advancing up the coast, or the trenches may have been dug by the Federals themselves." (These are believed to be the trenches, vaguely discernible today, that can best be seen from a raised observation platform built near Lighthouse Pond.)

After several days of skirmishing with ground forces superior in number and suffering heavy shelling from Union gunboats, the Rebel commander at Fort Esperanza ordered the cannons spiked and remaining ammunition blown up. Under cover of darkness, the Confederates slipped away, making their way across the bay to the mainland. The fort was in the hands of the Union once again. The South would retake the fort in the sum-

mer of 1854, after the Federal troops were withdrawn from the island to take one more shot at invading Texas. The Federals would be thwarted again, suffering a loss at the Battle of Mansfield in northwest Louisiana. Texas' Confederate forces, under the command of the wily and controversial Gen. John Bankhead Magruder, had triumphed again.

"Texans did a good job of defending the coastline and borders," offers Dr. Ralph Wooster, a history professor at Lamar University. "When the war came to an



© WILL VAN OVERBEEK

## TEXAS CIVIL WAR CHRONOLOGY

**FEB. 1861** – Texas secedes from the Union

**APRIL 1861** – Confederates capture *Star of the West* outside Pass Cavallo

**SUMMER 1861** – Union Navy blockades Texas coast

**DEC. 1861** – Rebels begin building Fort Esperanza further north on the pass

**FEB. 1862** – Maj. Caleb Forshey adds fortifications to Fort Esperanza

**OCT. 1862** – Union bombards fort and Rebels retreat to mainland; fort and Indianola occupied by North

**Nov. 1862** – Yankees withdraw from Indianola and fleet sails away





end, the only federal troops remaining were at the mouth of the Rio Grande.”

Although historians can't seem to agree on how many Texans went to battle in uniforms of the Blue or Gray, Wooster places the number between 60,000 and 90,000. “I am of the opinion,” says Wooster, “that Texans fought in more states and territories than troops from any other state. Texans were involved in every major Civil War battle except the Battle of Chancellorsville.”

Wooster adds that of the eight full

generals in the Confederacy, two — Albert Sidney Johnston and John Bell Hood (Hood's Brigade)—bailed from Texas. Texas soil also earned the distinction of being the place where the last battle of the Civil War — the Battle of Palmito Ranch in South Texas — was fought. It is no small irony that the Rebel victory at Palmito Ranch came a month after Confederate Gen. Robert E. Lee had surrendered.

Saluria, by the end of the war home to a little more than 100 hearty souls,

had been ravaged by the Federals and turned out by the Confederates during an ill-conceived “scorched earth” campaign ordered by General Magruder to slow down the Union offensive. Yellow fever and a lack of capital added to the misery. The ironclad lighthouse built in 1852 was listing. A hellish storm in 1868 claimed the remaining eastern walls of Fort Esperanza; the rest of the 20-foot-thick ramparts would follow a decade later, claimed by a relentless sea. ★

**SEPT. 1863** – Union invasion of Texas stopped at Sabine Pass

**Nov. 1863** – Union army invades Rio Grande Valley; takes Corpus and Aransas Pass; Yanks occupy Fort Esperanza after Rebels spike guns and retreat

**SPRING 1864** – Union troops withdraw from Matagorda Island

**JUNE 15, 1864** – Rebels reoccupy Fort Esperanza and hold it until war's end

**APRIL 1865** – Civil War ends

**MAY 13, 1865** – South wins the Battle of Palmito in South Texas



# BIG CATS ON THE

**BIGGER AND BETTER IN TEXAS? YOU BET!  
THE ONCE "BLUE-COLLAR" CATFISH IS MOVING  
UP TO CHALLENGE THE TOP-RANKING  
LARGEMOUTH BASS IN POPULARITY**

Catfish guide Dave Ross of Llano stays booked most of the year, and he makes no apologies that the cat is his fish of choice. In fact, he lets clients know "trash fish" are not allowed in his boat — trash being anything with scales.

more work than pleasure. Try catching bait and maintaining a trotline and you'll understand why rod-and-reel fishing is gaining favor. And a catfish tugging at the other end of your line puts up a stubborn bulldog-like fight.

With catfish, you can have both the sport and the food,

## TEXAS CATS

Catfish are second only to the largemouth bass in popularity among Texas anglers. The three species actively sought are channel, blue and flathead catfish. Bullheads are considered pests.

The channel cat is the most abundant of the catfishes, being found statewide in all our streams and rivers. It also has been widely stocked in private lakes and ponds. The channel is both a predator and scavenger, its diet ranging from fish, both alive and dead, to insects, mollusks and vegetative matter — just about anything it can find. But it is an ineffective predator and doesn't depend on

"M

ore and more fishermen are learning that catfish not only are delicious to eat, they are fun to catch on rod and reel," Ross says.

Unlike the black bass, the catfish grew up in a blue-collar neighborhood and found its way into sport fishing circles in a roundabout way. Until recently, most of the cats caught in the wild were taken by means other than rod and reel: juglines, droplines, throwlines and trotlines. A bass angler fished for sport and often released what he caught. But the catfish angler was more interested in food than sport. The means of catching was whatever it took.

It remains this way to some extent. Many fishermen still go after catfish using something other than rod and reel. But the "other" often involves

even in public waters not far from where you live. Catfish are found not only in major impoundments, but also in small public-access lakes Texas Parks and Wildlife keeps stocked in and near cities. They are in rivers and in farm and ranch ponds where channel catfish can be maintained by raising and feeding them like livestock. Most catfish caught in numbers on rod and reel are eating-sized channel cats weighing three pounds or less, often fish just slightly longer than 12 inches, those that Ross calls barely keepers — "They're barely out of the cooker before someone is eating them."

Almost all the bigger specimens — especially heavyweight flathead and blue catfish weighing more than 50 pounds — are taken on devices such as trotlines and juglines using big hooks and big baits because the whoppers are primarily nocturnal.

Eating-sized channels in reservoirs



© DAVID J. SAMS

B Y R U S S E L L T I N S L E Y



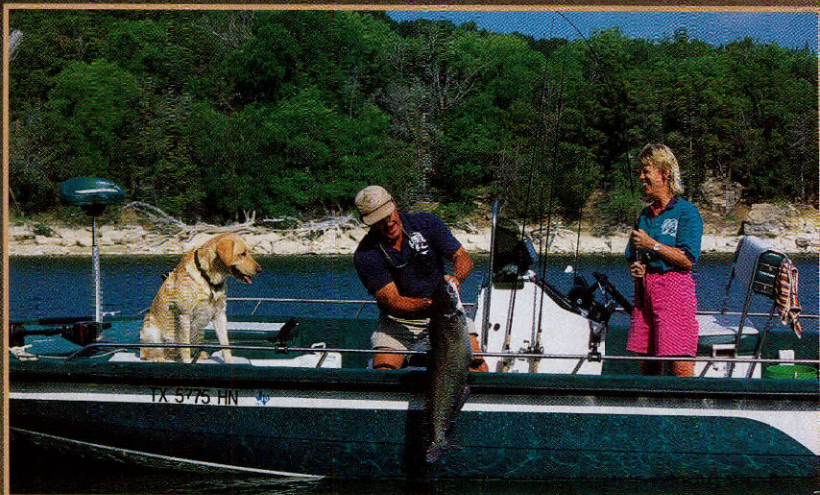
# Prowl



Blue and yellow catfish, opposite, along with channel catfish, are the three species sought by Texas anglers. While stinkbaits are popular with some anglers, others prefer to use baits a person can raise or catch, such as this fat grasshopper.

© Robert Liles





© Robert Liles

roam in loose schools; you usually can catch several in the same spot. Also, channel cats this size are more likely to cooperate in the daytime when most of us prefer to fish for them.

Catching them with any consistency, though, requires expertise. According to the late South Texas catfisherman Bob Fincher, former owner of Bob's Bait Company near Nixon, the state of rod and reel catfishing is about where bass fishing was back in the 1960s. "If a person wants to learn about bass fishing today, there are all kinds of educational materials to assist him," Fincher said. "But the catfisherman pretty much has to learn on his own by trial and error."

With catfish, as with bass, location is key. Unless there are fish where an angler puts his bait, everything else is moot. But the catfish angler doesn't have to chase all over a reservoir looking for fish; he can invite them to dinner, using chum to attract and concentrate channel cats in a specific area.

Ross chums with soured wheat. To prepare the chum, fill a five-gallon bucket with grain and cover it with water. Cover the bucket and let it age for a week or more until the grain begins to sour and smell. The fermenting process can be hurried by adding a can of beer to the water. Soured corn and grain sorghum also are effective.

To chum a spot, scatter the grain; don't put it in a sack or pour it in one place. Make the fish move around and pick it up one kernel at a time. A coffee can full is plenty. With too much grain the

fish will fill their stomachs and not be interested in your bait.

The chum doesn't cost much and is biodegradable. Cats and other fish like carp eventually will eat it.

Other than in the winter, when Amistad catfish go to depths of more than 60 or 70 feet, Ross will chum areas less than 10 feet deep. He chums near structure or cover: shallow water along a breakline such as a submerged creek channel, a flat around a grass bed or off the end of a point. He likes some wind action off points and islands so that the water gets slightly dingy; catfish are more skittish in clear water.

Structure and cover vary from reservoir to reservoir. They can range from brush and reed beds to rocks, those that occur naturally in a lake, or manmade structure such as riprap along a roadway or dam. Rocks and other structure have algae and moss growing on them and channel cats scavenge the green stuff when other food sources become scarce. There's not much a channel cat won't eat, which is why stinkbaits produce.

Ross typically will have three or four places where he has chummed. After about 45 minutes in one spot without action he will move to another location. Chumming multiple spots increases the odds of success.

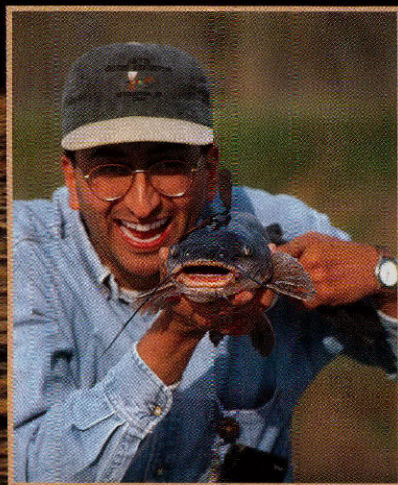
No special rod and reel is needed for catfish. But since channel catfish are not as line-shy as some other species, the tackle should be a little on the heavy side to handle any big fish that might make a surprise appearance. But don't

Since catfish spend most of their time on the bottom, the best way to fish usually is straight down. If you have to cast out from the boat go light on the sinker, since too much weight increases the chance of hanging up and breaking your line.

go too heavy. You'll be compromising success and sport. A rod about seven feet long with medium to heavy action, a medium-duty reel of any type, and about 20-pound line will take care of just about every need. If you get in a school of what Ross calls "barely legal" fish, averaging about a pound, you might switch to lighter tackle to enjoy the sport of catching.

Reg the tackle by putting a slip sinker on the main line, then tie on a barrel swivel. At the other end of the swivel add about two feet of leader with a hook. The type of hook will depend on the bait. A 1/0 single or a No. 6 treble are about right to catch eating-sized catfish—the treble works best for stinkbait to keep it on the hook.

Stinkbaits are popular with many anglers because of the convenience; you can buy them anywhere fishing baits are sold. A stinkbait usually has a main ingredient of blood or cheese, or a combination of both. Chicken livers and shrimp also are widely used. Anglers from the old school, though, still believe in the traditional baits a person can raise or catch: earthworms, nightcrawlers, catalpa worms, crawfish, hellgrammites, mussels, snails, grasshoppers or



© David J. Sams

© GRADY ALLEN





## TEXAS CATS

live fish for subsistence, especially larger forage fish.

Smaller channel cats are silvery in color and often are marked with numerous black dots along the sides. Older fish are darker and color along the back is more silvery-gray, shading to silvery-white along the belly.

The blue catfish, often called the humpback cat, has a body configuration similar to the channel. When both are young it is easy to confuse the two, although the blue cat tends to be more blocky with a larger head and longer anal fin. Both have forked tails. The most reliable way to identify the two species is to examine the anal fin, the long fin near the tail on the bottom of the fish. The blue catfish has an anal fin with a straight outer margin with 30 to 36 rays. The channel cat's anal fin is rounded with 24 to 29 rays.

The blue catfish, unlike the channel cat, does not frequent smaller streams, preferring instead the big, deep rivers with sluggish currents.

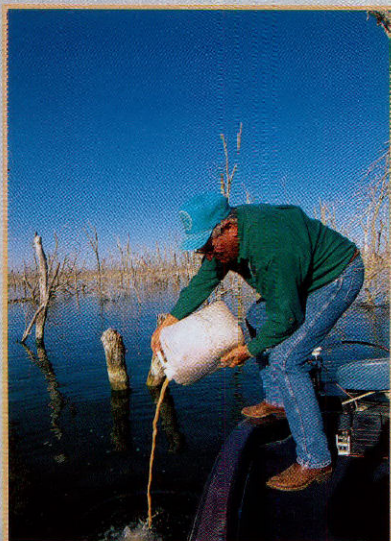
The blue cat also grows much larger. While any channel cat more than 10 pounds is considered large, blue catfish weighing more than 50 pounds are caught fairly frequently, especially on trotlines in large reservoirs.

The flathead catfish, more commonly called the yellow cat or Opelousas cat, is the mysterious member of the clan and the most highly sought by anglers who are after big fish. Its lifestyle, movements and feeding habits are totally unpredictable, although the greatest number of yellow cats are taken in spring and early summer as the fish are active while preparing to spawn. The flathead is found statewide in all major river systems and reservoirs and it does best in rivers and large reservoirs with a strong forage (fish) base.

The flathead has a projected lower jaw. The mouth is as wide as the head, the anal fin is short and the tail is not forked. Coloration can vary with water quality. In clear water the adult is olive-brown with brown, mottled markings on the sides; the belly is yellowish or creamy white. In murky waters it is lighter yellow, sometimes losing the mottled appearance.

Unlike its cousins, the flathead is an effective predator that prefers live food, or at least fresh. It also is more nocturnal than the other two. The larger specimens, 50-pounds-plus,





© GRADY ALLEN

might have to cast out from the boat. Go light on the sinker, if possible. Too much weight increases the chances of hanging up and breaking your line.

Casting is a must at night when catfish leave deep water and prowl the shoreline shallows in search of food. They often are in water no more than a foot deep. Fincher advised that as a basic rule, an angler should anchor shallow and throw to deeper water in the daytime, then at night reverse the pattern, anchoring in deeper water and casting shallow. "And use chum, no matter the depth you are fishing," he adds.

When day fishing in water seven feet deep or shallower, Ross uses a "cork."

reservoir, or where any water runs into a lake, maybe a creek, especially when rain runoff increases the flow and washes more food into the reservoir.

In a river, current dictates where fish will be. Learn to read the current. The fish stage in spots where they do not have to fight the moving water, yet some abnormality in the flow makes it easier to grab any food floating downstream.

The current can be deceiving. While it might seem to be hurrying along without interruption, this isn't the case. For example, where there's a sharp bend in a river, the current catches the lip of the bank, reversing the flow to create an eddy. If an overhanging limb falls into

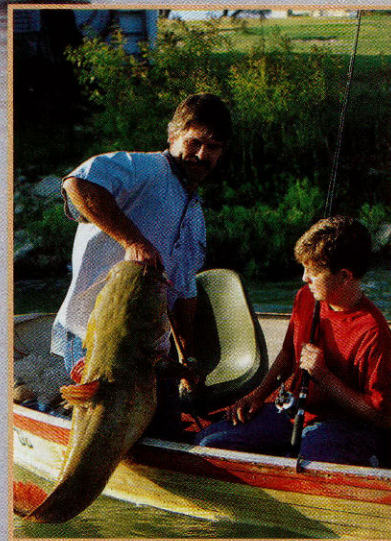
even minnows. Natural baits have a strong track record. But for channel cats, don't try to keep a minnow or shad alive. Thread it on a hook, puncturing it where body juices are released, the same way a worm is threaded on a hook. A catfish feeds more by smell than sight. The whiskers (or barbels) guide the fish to tastes and odors.

Catfish normally spend most of their time on or near the bottom and that's the place to start looking for them. The most practical bait presentation is to fish vertically, straight down from an anchored boat. If catfish are not found on the bottom, raise the bait a little.

In certain situations, however, you

He can adjust the float to the depth of water and cast the bait far enough to keep catfish from seeing the boat, if the water is clear, and any surface chop moves the float and the bait. "I like to keep a bait moving all the time," Ross explains, adding that a cork also is a point of reference for keeping the fisherman focused. "The cork makes fishing more fun because you can see a bite."

While catfish in a reservoir relate to structure—any abnormality of the bottom such as a dropoff or rockpile—they also are influenced by current, a throwback to their river ancestry. Thus, you might find them in or near the intake or discharge channel in a power-plant



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## TEXAS CATS

normally are caught on devices such as a trotline or limpline that is fishing constantly, night and day. A live sunfish is a favored bait.

Biologists never have been successful in hatching and raising flathead catfish in hatcheries for stocking purposes. That job is left to nature.

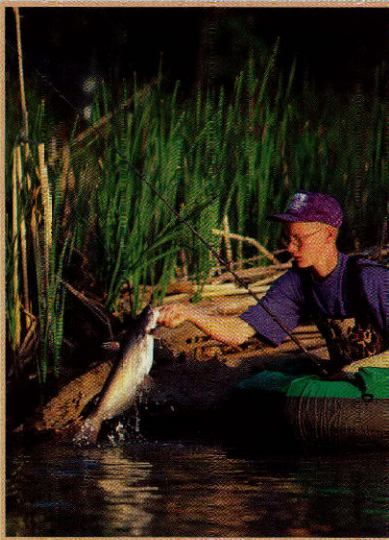
The bullhead is commonly called a polliwog or mud cat. That latter nickname tells a lot about its lifestyle. It mostly inhabits small lakes and ponds with murky or muddy water. The bullhead seldom weighs more than a pound and its flesh is soft and tastes like mud. It has been described as a fish with all mouth and guts and no brains.

Small flatheads and bullheads are somewhat similar in appearance. Both can be distinguished from channel and blue catfish by the absence of a deeply forked tail. Flatheads differ from bullheads by having a lower jaw that juts out beyond the upper jaw.

There are two bullhead species, the black and the yellow. Other than coloration, the two are pretty much the same fish, found statewide. Almost any kind of meat, fresh or rancid, will take bullheads. Since they are small in general size, they are no challenge to catch, and they are not fighters of note, so anglers try to avoid them. One exception is a youngster trying to catch his or her first fish. Even a "mud cat" can't be all bad.

## BAG AND LENGTH LIMITS

Statewide minimum length limits for channel and blue catfish are 12 inches. The daily bag is 25 fish, which can include any combination of channels and blues. For flatheads, the minimum length limit is 18 and daily bag is five fish. There is no length or bag limit for bullheads. There are a few exceptions to these statewide regulations. Most notable is that on community fishing lakes. The daily bag for channel and blue catfish is lowered to five fish while the minimum length limit remains at 12 inches. Consult a copy of the current Texas Parks and Wildlife Outdoor Annual for information on community fishing lakes and other regulations.



© ROBERT LILES

the water, current flowing through the obstruction slows, making it easier for catfish to capture food.

Fishing the bottom in the current breaks can be tricky. You probably will have to wade and fish up or downstream, pitching a bait right into a likely spot. Trying to fish across the current makes it difficult to hold a bait where you want it, even when using a rather heavy sinker. It is easier to fish with a float. You can cover more water. Also, any food riding the current downstream is suspended and catfish look for it above the bottom. Fishing a bait under a float is more realistic than anchoring it on the bottom. Let the float find its way naturally with the water flow, slowing when the current slows, the float being in a way its own fish

finder. And watch it closely. It can disappear in a blink of the eye.

Unlike reservoir catfish, river channel cats are more scattered. If in an isolated spot such as slack water behind a mid-current rock, a cat normally will bite quickly, if at all. Don't spend a lot of time in one spot. But if a place looks fishy, give it at least a courtesy test later as you return to your vehicle.

Catfish are not unlike other fish such as bass: they don't bite all the time. Sometimes they are not in the mood, for whatever reason, and whatever you try won't work. That's fishing. ★


RUSSELL TINSLEY of *Mason* is author of the book *Fishing Texas: An Angler's Guide*.



© GRADY ALLEN

The catfish angler doesn't have to chase all over a reservoir looking for fish. He can use chum to attract them and concentrate them in a specific area. Scatter the soured wheat; don't pour it all in one place. Catfish feed more by smell than sight; the fish's barbels, or whiskers, guide it to tastes and odors.





# Seven Things To Do After Deer Season

Opening day of deer season in Texas is, perhaps, one of the most anticipated single days on the calendar. Gear is checked, rifles are sighted, licenses are bought, camo is washed, and magazines are read to look for a new pointer that will give a venison hunter the extra edge in getting to use one of their tags.

In Texas, deer hunting is a billion-dollar industry. In 1996, according to numbers released by the National Survey of Fishing, Hunting, and Wildlife Associated Recreation conducted by the United States Fish & Wildlife Service, Texans spent \$1.3 billion on hunting. With approximately 913,000 hunters in the state, that figures to be \$1,423 that every hunter spent. Without a doubt, white-tailed deer hunting garnishes the lion's share of this figure.

However, it has been estimated that one's chances of taking a buck big enough to make the Boone & Crockett record book are literally one in a million. For many, the season ends on an anti-climactic note as the sun sets on the final Sunday of the deer season.

Therefore, there is little wonder that some hunters are "lost" as the season wanes.

Here is a list of things to do after deer season to help keep your skills honed and your longing for the wild lands of Texas alive.

## 1. Take a Kid Hunting

Although the deer season has closed, there are still some hunting opportunities available in the state.


Typically, quail season is still in full swing across the state. And the young hunter has several other types of game to hunt. Cottontail rabbits and fox squirrels are challenging game many adult hunters cut their teeth on as beginners.

Story by Russell A. Graves • Illustration by Bob Wilson









Taking young hunters in pursuit of these small game species is inexpensive because many landowners will let you hunt on their land for little or no charge. It also allows a young hunter to develop skills such as gun safety and appreciation for the outdoors that they will carry with them as they mature and, eventually, will pass on to younger hunters. In addition, small game give young hunters a chance to be successful and teach them lessons in patience and hard work.

## 2. Visit a State Park or Wildlife Management Area

They are everywhere. State-owned lands, in the form of state parks and wildlife management areas, dot every region of the state and give Texans a unique opportunity to see nature the way Mother Nature meant it to be.

For a small fee (\$2 for most state parks or \$10 per year for wildlife management areas, or an annual \$50 Conservation Passport), one can visit 123 Texas state parks and experience the wildlife, cultural and historical diversity that the Lone Star State has to offer. In addition, hiking and horseback trails are provided at many Texas state parks as well as aquatic recreation on the lakes that accompany many parks.

Want something a little wilder? Try a wildlife management area (WMA). Touted by the Texas Parks and Wildlife Department as the “uncut gems

of Texas,” WMAs offer visitors an opportunity to venture onto three-quarters of a million acres of state land that have been largely undeveloped. Known primarily for their hunting opportunities, WMAs also have many nonconsumptive activities to participate in such as hiking, birdwatching, photography and nature study.

Imagine, if you will, a weekend road trip where you can fish for bass at Cooper Lake State Park then see mule deer, longhorns and an abundance of other wildlife at Copper Breaks State Park near Quanah. In Texas, it can happen ...

## 3. Join a Conservation Club

Private conservation organizations are the backbone of the modern wildlife management movement, and their members help provide financial and in-kind support for many worthwhile conservation and education projects.

For starters, Quail Unlimited, Ducks Unlimited, The National Wild Turkey Federation, Pheasants Forever, Safari Club International and other organizations are available to interested sportsmen in many areas of Texas. By joining a conservation club, you can network with like-minded sportsmen in supporting habitat enrichment programs and educational ventures such as the Bobwhite Brigade, which spreads the good word about wildlife management and conservation in Texas.

## 4. Read *A Sand County Almanac*

This timeless environmental classic written by the father of wildlife management, Aldo Leopold, was penned in the 1930s and published in 1949 as a collection of essays on wildlife, nature, conservation and hunting. Although 50 years have passed since it first was released, Leopold’s words echo through the years with a simplistic clarity that applies now more than ever.

For outdoor lovers, Leopold’s observations of the natural world conjure up a primordial longing for the outdoors. For hunters, his words deliver thought-provoking topics that force intrinsic reflection.

In the section “Wildlife in American Culture,” Leopold challenges the reader:


*A particular virtue in wildlife ethics is that the hunter ordinarily has no gallery to applaud or disapprove of his conduct. Whatever his acts, they are dictated by his own conscience, rather than by a mob of onlookers. It is difficult to exaggerate the importance of this fact.*

*Voluntary adherence to an ethical code elevates the self-respect of the sportsman, but it should not be forgotten that voluntary disregard of the code degenerates and depraves him.*

## 5. Learn to Identify Plants

One of the best things you can do to improve your outdoor skills as well as your appreciation of nature is to learn to





identify plants in the area in which you hunt. Doing so can help you gain a more complete understanding of the game you hunt, as well as of nongame species that live in the area. In addition, it can help you realize the importance of plants many people consider merely weeds.

Do you know what Illinois bundleflower is? Bumelia? Partridgepea?

Ever heard of broomweed? What is it good for? If you know your plants, you will quickly extol the virtues of this often-maligned plant. In many parts of Texas, such as the Rolling Plains, broomweed is perhaps the most valuable plant for bobwhite quail. It provides seeds that are high in energy and because it grows from a single woody stem and branches out at the top, it also provides screening cover for bobs.

Under a canopy of pale green broomweed, a bobwhite can travel from loafing cover to feed without being seen by an avian or terrestrial predator. This fact is pretty important when you are only six inches tall and not a very good fighter.

To get started learning about plants, go to your local library, your county extension agent or a bookstore and look for references that will help you learn to identify the plants found in your area. The book *Texas Range Plants*, published by Texas A&M Press, is an excellent resource to start.

Now, get outside and start learning. The catclaw sensitive brier awaits you...

## 6. Take up Photography or Videography

If there is one way to preserve the memories of a hunt, spend more time outdoors and learn about nature, it is by looking through the lens of a still or video camera. Many hunters have expanded their enjoyment of the outdoors by toting along a camera during preseason scouting trips. By documenting happenings in the field, outdoor enthusiasts can capture those special moments, such as a fawn nursing, or a kid's first deer, on film forever.

Getting started is simple. Today's cameras, both still and video, are practically foolproof. Just about anyone can pick one up and produce optimal results without learning a master's degree worth of techno-jargon.

When choosing a video camera, pick one that is lightweight, yet durable enough to handle the rigors of toting it into the field. Also, choose one that has a 10X zoom.

Don't worry about the size of the video cassette. Most video cameras that use 8mm or DV format cassettes can be easily hooked into a conventional VCR and recorded to a VHS tape, so that you can take your big buck footage to a friend's house and watch it.

Choosing a still camera also is easy. Pick one that uses 35mm film and has interchangeable lenses. A good starter outfit would be a 35mm camera body, a 35mm-70mm zoom, a 70mm-210mm zoom and a couple of rolls of 400 speed film.

Lens power is measured by focal lengths and expressed in millimeters. A 50mm lens is equivalent to normal eyesight while a 200mm makes the subject appear four times closer. In hunting scope terms, a 50mm lens is the same as a 1X scope. A 200mm lens would give you the same magnification as a 4X scope.

## 7. Keep a Journal

Every time I go afield to hunt, photograph or just look, I carry along a journal. Immediately after the trip, while my memories are still fresh, I record everything. The sights, the smells and the sounds of nature, in my opinion, are more entertaining than any TV show that has ever been made. By keeping a journal, I can record my thoughts and feelings about the natural world.

Try starting your own journal by carrying a small, spiral-bound notebook into the field next time you go. Take notes on the weather, the animals you saw, the plants you identified and anything else you want to. The goal is to make an accurate record of that day in the history of your life. As you grow older you can bask in the memories of your trips afield and it will be an enduring record of your outdoor adventures you can pass on to your children. ☆

RUSSELL GRAVES is an agricultural science instructor at Childress High School and takes delight in spending time outdoors in search of nature's secrets.



# Prickly Pear

## PRIMER

BY RICHARD ZELADE

Owing to its thorny nature, the prickly pear cactus (genus *Opuntia*) has many detractors, but because it covers so much of Texas, and is arguably a natural resource, the Texas Legislature named it the state plant of Texas in 1995.

Members of the *Opuntia* genus are easily distinguished from other cactus genera by their jointed stems. The opuntias are informally divided into two subgroups: the dozens of species that have flattened stems, or “pads” are commonly referred to as “prickly pear,” while those with cylindrical stems are collectively called “cholla.”

Prickly pear and the other cacti that make up the Cactacea family are a young group (about 20,000 years old) that originated in the New World. Despite its tender age, the prickly pear has become one of the most successful plants in the world, having spread as far as the Mediterranean and North Africa. In Canada, the prickly pear is an endangered species protected by law; in Australia it's an out-of-control scourge.

Most cacti grow slowly and predictably. Not the prickly pear. It readi-

ly modifies itself to meet changing environments. Members of the same species often differ in appearance, depending, for example, upon which side of a hill they live. In poor situations, when most other cacti hunker down and forgo flowering and fruiting, the prickly pear just puts out smaller flowers and fruit. In some cases, a fruit will not ripen but instead convert to a stem and sprout out fresh pads — growths that appear to be, but aren't leaves of the prickly pear.

It's almost impossible to kill a prickly pear — when cut to pieces, each piece that lands on the ground will take root and grow, just like the broom in the “Sorcerer's Apprentice.” The spines in contact with the ground rapidly transform themselves into roots, dig in a bit and begin to spread out in a lacelike pattern. This sort of radical alteration is not found in the animal world. It is the equivalent of altering the development of bone cells to muscle.

The prickly pear's shallow, wide-

spread root system is ideal for soaking up large amounts of water in a very short time, a necessity in deserts, where rain usually is intense and short-lived with rapid runoff. Prickly pears absorb water through their roots, then draw it into stems and pads, whose thick, waxy surface minimizes evaporation. Both swell and shrink according to rainfall amounts and the plant's needs.

Cactus spines are believed to be highly modified leaves. Photosynthesis takes place in the pads. Prickly pears have two kinds of thorns: spines about half an inch long, and smaller spines called glochids, which grow in circular clumps (called areoles), which are about ½ of an inch long, hard to see and fine as hair. Opuntias run the gamut in thorniness, from the bristling little devil cactus, *Opuntia schottii*, to the smooth, aptly named flap-jack cactus, *Opuntia engelmannii*, var. *subarmata*, one of several “blind” species of prickly pear that have few, if any, spines. The sharp spines can protect more than just the cactus itself; wood mice and skunks seek refuge within stands of prickly pear and, for protection against predators, some quail lay eggs there.

Unappetizing to many human eyes, the prickly pear actually is a valuable source of food and moisture for dozens of species of animals. Deer, antelope and desert mountain sheep eat the pads and pear-shaped fruit, nipping off the spines as necessary. Rodents and birds relish the sweet, ripe tuna, or fruit.







The prickly pear has been a staple of human medicine chests and diets for thousands of years. Native Americans used the pads as a poultice for bruises and to dress wounds. A traditional cure for varicose veins involves the consumption of prickly pear, sage (*Salvia officinalis*), and lemon juice. The sticky juice from boiled and crushed pads was added to mortar or whitewash to increase adhesion. The spines also made good needles for sewing thir, tanned leather into clothes. Mexicans eat as much prickly pear today as Americans eat cauliflower. Nopalitos, as the cut-up pads are called, pack a lot of nutrition, including vitamins A and C, iron, phosphorus, carbohydrates and fiber, plus trace amounts of protein, thiamine, riboflavin and niacin. Practitioners of folk medicine prescribe nopalitos to diabetics.

The tinas of some species are eaten fresh or made into syrup, jelly and candy. They are a good source of fiber and iron, and a fair source of calcium and vitamin C.

Prickly pear pads often are dotted with small clumps of white fuzz that are home to the cochineal insect. Aztecs and Mayans used cochineal to produce a cosmetic and textile dye, scraping female insects off the cactus, drying them in the sun and crushing them into a crimson powder. In the 1550s, Spanish explorers brought cochineal to Europe, and it quickly became one of the most valuable products from the New World, along with gold and silver. Until synthetics displaced it during the 19th century, cochineal was used throughout Europe and North America to dye textiles, in cosmetics and in food coloring. The famous "Redcoats" worn by British

soldiers during the American Revolution were dyed with cochineal. In fact, along with the price of tea, American colonists also complained about how much cochineal cost.

The Texas Legislature chose the bluebonnet over the prickly pear flower as state flower in 1901, but any wildflower aficionado will agree that a stand of blooming prickly pear is the equal of any field of bluebonnets, sporting dozens, if not hundreds, of brilliantly colored, fragrant, roselike flowers. Bees and other insects luxuriate in the prickly pear's pollen and nectar. Some romanticists like to think that the cacti descended from the roses, that roses in the West Indies changed in order to adapt to more arid conditions. But you can always eat a cactus. Try doing that with a rose or a bluebonnet. ✪





# FEBRUARY

## PANHANDLE-PLAINS

- FEB. 13: **Petroglyph Tour**, San Angelo SP, San Angelo, 915-949-4757.
- FEB. 19: **Stargazing Party**, San Angelo SP, San Angelo, 915-949-4757.
- FEB. 20: **Dinosaur Walk**, San Angelo SP, 915-949-4757.

## PRAIRIES AND LAKES

- FEB.: **Historical Tour**, every Saturday and Sunday, Stephen F. Austin SHP, San Felipe, 409-885-3613.
- FEB.: **Kreische House Tours**, every first and second Sunday, Monument Hill & Kreische Brewery SHP, La Grange, 409-968-5658.
- FEB.: **Kreische Brewery Tours**, every weekend, Monument Hill & Kreische Brewery SHP, La Grange, 409-968-5658.
- FEB.: **Bald Eagle Tour**, every Saturday, Fairfield Lake SP, Fairfield, 903-389-4514.
- FEB. 4-6: **6th Trails Symposium** for trail advocates, planners, managers and users. Sessions on all aspects of trail use, design, funding, etc. Grapevine Convention Center, Grapevine, 817-410-3122.
- FEB. 6: **Bird House Day**, Fairfield Lake SP, Fairfield, 903-389-4514.
- FEB. 13: **Stagecoach Rides**, Fanthrop Inn SHP, Anderson, 409-873-2633.
- FEB. 27-28: **Texas Independence Day Celebration** at Washington-on-the-Brazos SHP, 409-878-2214.

## PINEYWOODS

- FEB. 6, 20: **Guided Nature Trail Hike**, Village Creek SP, Lumberton, 409-755-7322.
- FEB. 7: **Bird House Day**, Martin Dies, Jr. SP, Jasper, 409-384-5231.
- FEB. 13: **Herb Society Meeting and Educational Program**, Martin Dies, Jr. SP, Jasper, 409-384-5231.
- FEB. 15: **Big Thicket Tales, Unsolved Mysteries and Ghost Stories** Martin Dies, Jr. SP, Jasper, 409-384-5231.
- FEB. 14: **Take a Walk on the Wild Side**, Martin Dies, Jr. SP, Jasper, 409-384-5231.
- FEB. 20: **Canceing the Forks**, Martin Dies, Jr. SP, Jasper, 409-384-5230.

## GULF COAST

- FEB.: **Plantation House, Barn and Grounds Tours**, Wednesdays through Sundays, Varner-Fogg Plantation SHP, West Columbia, 409-345-4656.
- FEB. 6, 13: **Wild Boar Management Hunt**, Fennessey Ranch, Refugio, 512-529-6600.
- FEB. 6: **Valentine Dinner and Auction**, Fulton Mansion SHP, Fulton, 512-729-0386.
- FEB. 17: **History Tour**, Matagorda Island SP & WMA, Port O'Connor, 512-983-2215.
- FEB. 20: **Whooping Crane Bus Tour**, Matagorda Island SP & WMA, Port O'Connor, 512-583-2215.
- FEB. 21: **Beachcombing Tour**, Matagorda Island SP & WMA, Port O'Connor, 512-583-2215.
- FEB. 26: **Intracoastal Waterway Birding Tour**, Matagorda Island SP & WMA, Port O'Connor, 512-983-2215.

FEB. 27: **Winter Fitness Walk**, Fennessey Ranch, Refugio, 512-529-6600.

## HILL COUNTRY

- FEB.: **Birdwatching**, daily, Pedernales Falls SP, Johnson City, 830-868-7304.
- FEB.: **Wild Cave Tours**, every Saturday and Sunday, Colorado Bend SP, Bend, 915-628-3240.
- FEB.: **Gorman Falls Hike**, every Saturday and Sunday, Colorado Bend SP, Bend, 915-628-3240.
- FEB.: **Honey Creek Canyon Walk**, every Saturday, Honey Creek SNA, Spring Branch, 830-438-2656.
- FEB.: **Primitive Cave Tour**, call for dates, Kickapoo Cavern SP, Brackettville, 830-563-2342.
- FEB. 5: **But Not In Shame**, daily exhibit, Admiral Nimitz Museum & Historical Center SHP, Fredericksburg, 830-997-4379.
- FEB. 5-6: **Sam Bass Treasure Hunt/Mystery Game**, Longhorn Cavern SP, Burnet, 512-756-4680.
- FEB. 6: **Bird House Day**, Lyndon B. Johnson SHP, Stonewall, 830-644-2252.
- FEB. 13: **Adult Fly Fishing Seminar**, Colorado Bend SP, Bend, 915-628-3240.
- FEB. 20: **Admiral's Birthday Ball**, Admiral Nimitz Museum & Historical Center SHP, Fredericksburg, 830-997-4379.

## BIG BEND COUNTRY

- FEB.: **Fate Bell Cave Dwelling Tour**, every Wednesday through Sunday, Seminole Canyon SHP, Comstock, 915-292-4464.
- FEB.: **Native American Pictograph Tours**, every Wednesday through Sunday, Hueco Tanks SHP, El Paso, 915-857-1135.
- FEB. 3: **Legacy in Stone**, Barton Warnock Center SP, Lajitas, 915-424-3327.
- FEB. 6: **Bus Tour**, Big Bend Ranch SP, Presidio, 915-229-3416.
- FEB. 6, 27: **Pressa Canyon Rock Art Tours**, Seminole Canyon SHP, Comstock, 915-292-4464.
- FEB. 10: **Bats of the Big Bend**, Barton Warnock Center SP, Lajitas, 915-424-3327.
- FEB. 12-14: **Hiking Through Time**, Big Bend Ranch SP, Presidio, 915-229-3416.
- FEB. 17: **Star Party**, Barton Warnock Center SP, Lajitas, 915-424-3327.
- FEB. 24: **Edible, Medicinal and Useful Plants of the Chihuahuan Desert**, Barton Warnock Center SP, Lajitas, 915-424-3327.
- FEB. 26-28: **Guide Training Program**, Big Bend Ranch SP, Presidio, 915-229-3416.
- FEB. 28: **Panther Cave Tour**, Seminole Canyon SHP, Comstock, 915-292-4464.

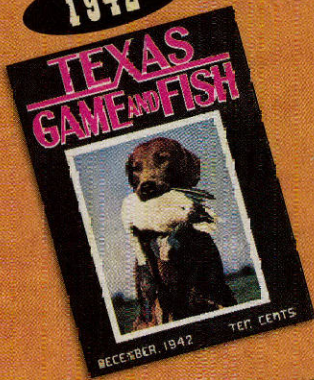
## SOUTH TEXAS PLAINS

- FEB.: **El Canelo Ranch Tour**, every other Wednesday, Bentsen-Rio Grande Valley SP, Mission, 956-519-6448.
- FEB.: **Kiskadee Bus Tour**, every Tuesday and Friday, Bentsen-Rio Grande Valley SP, Mission, 956-519-6448.
- FEB. 13, 27: **Bird Identification Tour** Choke Canyon SP/Calliham Unit, Calliham, 512-786-3868.

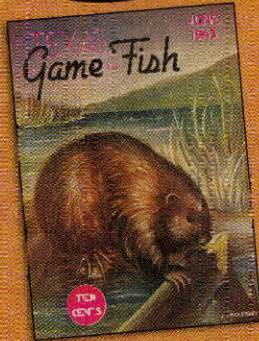


# THE EVOLUTION OF A TEXAS LEGEND

1942



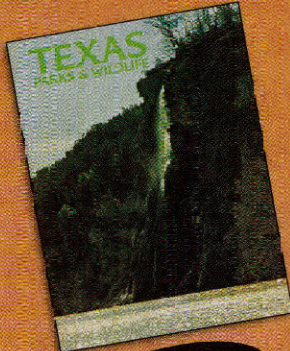
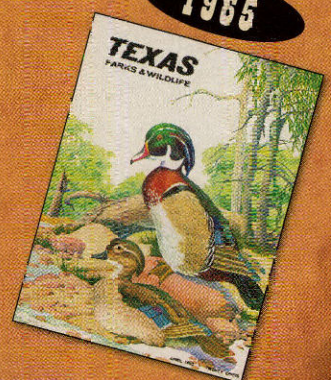
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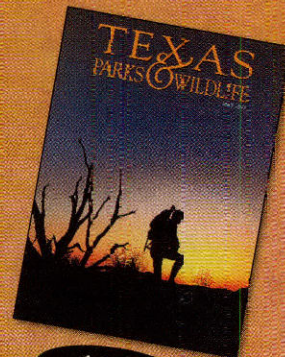
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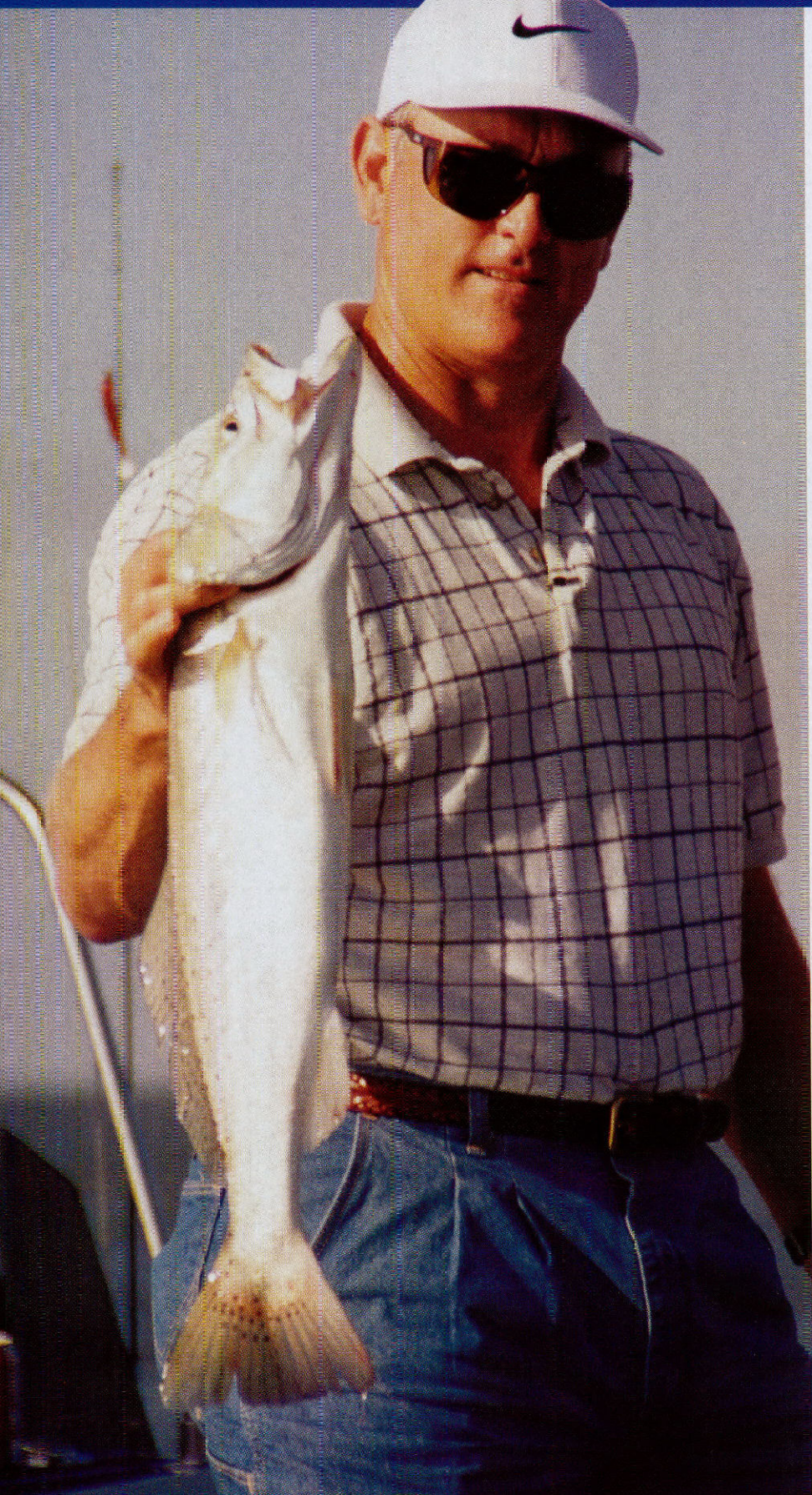
# COMING

**APRIL 1999:**

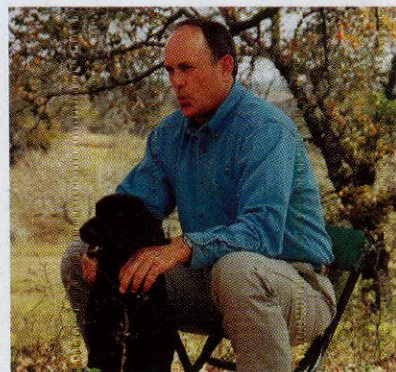
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# MARCH

## PANHANDLE-PLAINS

MARCH 6: **Macey's Ridge Hike**, San Angelo SP, San Angelo, 915-949-4757.  
 MARCH 20: **Petroglyph Tour**, San Angelo SP, San Angelo, 915-949-4757.  
 MARCH 27: **Dinosaur Walk**, San Angelo SP, San Angelo, 915-949-4757.

## PRAIRIES AND LAKES

MARCH: **Historical Tour**, every Saturday and Sunday, Stephen F. Austin SHP, San Felipe, 409-885-3613.  
 MARCH: **Kreische House Tours**, every first and second Sunday, Monument Hill and Kreische Brewery SHP, La Grange, 409-968-5658.  
 MARCH: **Kreische Brewery Tours**, every weekend, Monument Hill & Kreische Brewery SHP, La Grange, 409-968-5658.  
 MARCH: **Bald Eagle Tour**, every Saturday, Fairfield Lake SP, Fairfield, 903-389-4514.  
 MARCH 13: **Stagecoach Rides**, Fanthorp Inn SHP, Anderson, 409-873-2633.

## PINEYWOODS

MARCH 6, 20: **Guided Nature Trail Hike**, Village Creek SP, Lumberton, 409-755-7322.  
 MARCH 13: **Herb Society Meeting and Educational Program**, Martin Dies, Jr. SP, Jasper, 409-384-5231.  
 MARCH 13: **Cowboy Campfire Stories, Poetry and Songs**, Martin Dies, Jr. SP, Jasper, 409-384-5231.  
 MARCH 14: **Project WILD Activities**, Martin Dies, Jr. SP, Jasper, 409-384-5231.  
 MARCH 14: **Take a Walk on the Wild Side**, Martin Dies, Jr. SP, Jasper, 409-384-5231.  
 MARCH 19: **Crazy Hot Air Balloons**, Martin Dies, Jr. SP, Jasper, 409-384-5231.  
 MARCH 20: **Canoeing the Forks**, Martin Dies, Jr. SP, Jasper, 409-384-5230.

## GULF COAST

MARCH: **Plantation House, Barn and Grounds Tours**, Wednesdays through Sundays, Varner-Hogg Plantation SHP, West Columbia, 409-345-4656.  
 MARCH 7: **16th Annual Old Car Picnic**, San Jacinto Battleground SHP, La Porte, 281-479-2431.  
 MARCH 13: **Beachcombing Tour**, Matagorda Island SP & WMA, Port O'Connor, 512-983-2215.  
 MARCH 13, 27: **Spring Migration Tours**, Fennessey Ranch, Refugio, 512-529-6600.  
 MARCH 27: **Blue Moon Night Ride**, Fennessey Ranch, Refugio, 512-529-6600.  
 MARCH 27: **6th Annual Rivers, Lakes, Bays 'n Bayous Trash Bash**, San Jacinto Battleground SHP, La Porte, 281-479-2431.

## HILL COUNTRY

MARCH: **But Not In Shame**, daily exhibit, Admiral Nimitz Museum & Historical Center SHP, Fredericksburg, 830-997-4379.  
 MARCH: **Birdwatching**, daily, Pedernales Falls SP, Johnson City, 830-868-7304.  
 MARCH: **Wild Cave Tours**, every Saturday and Sunday, Colorado Bend SP, Bend, 915-628-3240.  
 MARCH: **Gorman Falls Hike**, every Saturday and Sunday, Colorado Bend SP, Bend, 915-628-3240.

MARCH: **Honey Creek Canyon Walk**, every Saturday, Honey Creek SNA, Spring Branch, 830-438-2656.

MARCH: **Primitive Cave Tour**, call for dates, Kickapoo Cavern SP, Brackettville, 830-563-2342.

MARCH: **Spring Break at X Bar Ranch**, call for dates, X Bar Ranch, 915-853-2688.

MARCH 20: **Annual Living History Day**, Fort McKavett SHP, Fort McKavett, 915-396-2358.

MARCH 20-21: **Introduction to Birdwatching**, Pedernales Falls SP, Johnson City, 830-868-7304.

MARCH 20-21: **Children's Festival**, Lady Bird Johnson Wildflower Center, Austin, 512-292-4200.

MARCH 27-28: **Plant Sale and Gardening Festival**, Lady Bird Johnson Wildflower Center, Austin, 512-292-4200.

## BIG BEND COUNTRY

MARCH: **Fate Bell Cave Dwelling Tour**, every Wednesday through Sunday, Seminole Canyon SHP, Comstock, El Paso, 915-292-4464.

MARCH: **Native American Pictograph Tours**, every Wednesday through Sunday, Hueco Tanks SHP, El Paso, 915-857-1135.

MARCH 6: **Bus Tour**, Big Bend Ranch SP, Presidio, 915-229-3416.

MARCH 10: **Home and Gardens for Bats**, Barton Warnock Center SP, Lajitas, 915-424-3327.

MARCH 12-14: **Desert Survival Workshop**, Big Bend Ranch SP, Presidio, 915-229-3416.

MARCH 13, 27: **Pressa Canyon Rock Art Tours**, Seminole Canyon SHP, Comstock, 915-292-4464.

MARCH 14, 28: **Panther Cave Tour**, Seminole Canyon SHP, Comstock, 915-292-4464.

MARCH 17: **Star Party**, Barton Warnock Center SP, Lajitas, 915-424-3327.

MARCH 20-21: **47th Annual Gem Show**, West Texas Gem and Mineral Society, Odessa, 915-362-3282.

MARCH 24: **A Geological Overview of the Big Bend**, Barton Warnock Center SP, 915-424-3327.

MARCH 31: **Edible, Medicinal and Useful Plants of the Chihuahuan Desert**, Barton Warnock Center SP, Lajitas, 915-424-3327.

## SOUTH TEXAS PLAINS

MARCH: **Kiskadee Bus Tour**, every Tuesday and Friday, Bentsen-Rio Grande Valley SP, Mission, 956-519-6448.

MARCH: **El Canelo Ranch Tour**, every other Wednesday, Bentsen-Rio Grande Valley SP, Mission, 956-519-6448.

MARCH 6, 20: **Nature Trail Tour**, Choke Canyon SP/Calliham Unit, Calliham, 512-786-3868.

MARCH 13, 27: **Bird Identification Tour**, Choke Canyon SP/Calliham Unit, Calliham, 512-786-3868.

MARCH 20: **Battle of Coletto Creek**, Fannin Battleground SHP, Fannin, 512-645-2020.

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 SNA STATE NATURAL AREA  
 WMA WILDLIFE MANAGEMENT AREA



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## TELEVISION

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<b>Amarillo</b> KACV, Ch. 2	Sun. 4:00
<b>Austin</b> KLRU, Ch. 18	Mon. 12:00 Sat. 8:00
<b>College Station</b> KAMU, Ch. 15	Thurs. 7:00
<b>Corpus Christi</b> KEDT, Ch. 16	Thurs. 7:30 Fri. 11:30
<b>Dallas/Ft Worth</b> KERA, Ch. 13	Fri. 11:00
<i>Also serving Abilene, Denton, Longview, Marshall, San Angelo, Texarkana, Tyler, Wichita Falls, Sherman</i>	
<b>El Paso</b> KCOS, Ch. 13	Sun. 6:00
<b>Harlingen</b> KMBH, Ch. 60	Sun. 12:50
<i>Also serving McAllen, Mission</i>	
<b>Houston</b> KUHT, Ch. 8	Sun. 5:00
<i>Also serving Beaumont/Port Arthur, Galveston, Texas City, Victoria</i>	

<b>Killeen</b> KNCT, Ch. 46	Sun. 4:00
<i>Also serving Temple</i>	
<b>Lubbock</b> KTXI, Ch. 5	Sat. 6:30
<b>Odessa</b> KOCV, Ch. 56	Fri. 1:30
<i>Also serving Midland</i>	
<b>San Antonio</b> KLRN, Ch. 9	Thur. 12:00
<i>Also serving Laredo</i>	
<b>Waco</b> KCTE, Ch. 34	Sat. 3:00
<i>Schedules are subject to change, so check local listings</i>	

### Look for These Stories in the Coming Weeks:

**January 31 - February 7:** Fishing with a custom-built rod; the enduring legacy of the Civilian Conservation Corps; using fire to restore a landscape.

**February 7 - 14:** The Rio Grande Valley's Fr. Tom Pincelli; Corpus Christi women having fun on the range; preserving East Texas bottom-land hardwoods.

**February 14 - 21:** The life of a commercial fisherman; how the dollars you spend help restore wildlife; recruiting a new generation of outdoor enthusiasts through the Outdoors Woman program.

**February 21 - 28:** The quail hunting tradition; how the Internet is bringing the outdoors indoors; a veterinarian whose patients include a rhino, a kudu and an egg.

## RADIO

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**Abilene:** KACU-FM 89.7 / 7:06 a.m. & 1:44, 6:01 p.m.

**Amarillo:** KACV-FM 89.9 / 9:20 a.m.

**Athens-Malakoff:** KCKL-FM 95.9 / 6:40 a.m., KLVQ-AM 1410 / 10:20 a.m.

**Atlanta:** KPYN-FM 100.1 / 4:30 p.m.

**Austin:** KUT-FM 90.5 / 1:58, 12:58 p.m.(F), KVET-AM 1300 / TBA  
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**Beaumont:** KLVI-AM 560 / 5:40 a.m.

**Brady:** KNEL-AM 1490 / 6:30 a.m. & 8:50 p.m., KNEL-FM 95.3 / 6:30 a.m. & 8:50 p.m.

**Brenham:** KWHI-AM 1280 / 6:50 a.m.

**Bryan:** WTAW-AM 1150 / 5:45 p.m.

**Canyon:** KWTS-FM 91.1 / 7:10 a.m.

**Carthage:** KGAS-AM 1590 / 6:46 a.m., KGAS-FM 104.3 / 6:46 a.m.

**Center:** KDET-AM 930 / 5:15 p.m.

**Comanche:** KCOM-AM 1550 / 6:30 a.m.

**Commerce:** KETR-FM 88.9 / 10:15 a.m.

**Corpus Christi:** KEDT-FM 90.3 / 5:34 p.m., KFTX-FM 97.5 / 5:35 a.m.

**Crockett:** KIVY-AM 1290 / 8:15 a.m., KIVY-FM 92.7 / 8:15 a.m.

**Dallas/Fort Worth:** WBAP-AM 820 / TBA. See Mesquite

**Dimmitt:** KDHN-AM 1470 / 12:31 p.m.

**Dumas:** KMRE-FM 95.3 / TBA  
KDDD-AM 800 / TBA

**Eagle Pass:** KINL-FM 92.7 / 7:15 a.m.

**Eastland:** KEAS-AM 1590 / 8:30 a.m., KEAS-FM 97.7 / 8:30 a.m.

**Edna:** KGUL-FM 96.1 / 8:15 a.m.

**El Campo:** KULP-AM 1390 / 2:05 p.m.

**Fairfield:** KNES-FM 99.1 / 6:49 a.m.



**Ft. Stockton:** KFST-AM 860 / 12:50 p.m., KFTS-FM 94.3 / 12:50 p.m.  
**Freeport:** KBRZ-AM 1460 / 10:15 a.m. & 7:45 p.m.  
**Gainesville:** KGAF-AM 1580 / 7:00 a.m.  
**Galveston:** KGBC-AM 1540 / 1:45 p.m.  
**Gatesville:** KRYL-FM 98.3 / 7:09 a.m.  
**Hallettsville:** KHLT-AM 1520 / 8:15 a.m., KTXM-FM 99.9 / 8:15 a.m.  
**Harlingen:** KMBH-FM 88.9 / 4:58 p.m.  
**Hereford:** KPAN-AM 860 / 2:50 p.m., KPAN-FM 106.3 / 2:50 p.m.  
**Hillsboro:** KHBR-AM 1560 / 9:30 a.m.  
**Houston:** KTRH-AM 740 / 11:40 a.m.  
**Huntsville:** KSHU-FM 90.5 / 11:55 a.m. & 2:55 p.m.  
**Jacksboro:** KJKB-FM 101.7 / 12:25 p.m.  
**Jacksonville:** KEBE-AM 1400 / 7:25 a.m.  
**Kerrville:** KRNH-FM 95.1 / 5:30 a.m. & 12:56, 9:56 p.m.  
**La Grange:** KVLG-AM 1570 / 5:45 p.m., KBUK-FM 104.9 / 5:20 p.m.  
**Lampasas:** KCYL-AM 1450 / 7:45 a.m.

**Liberty:** KSHN-FM 99.9 / 7:13 a.m. & 2:50 p.m.  
**Lubbock:** KFYO-AM 790 / Between 8-9 a.m.  
**Marshall:** KCUL-AM 1410 / 7:15 a.m., KCUL-FM 92.3 / 7:15 a.m.  
**McAllen:** KHID-FM 88.1 / 4:58 p.m.  
**Mesquite:** KEOM-FM 88.5 / 5:30 a.m., 2:30, 8:30 p.m. (M-Th), 5:30 a.m. & 4:45 p.m. (F)  
**Midland:** KCRS-AM 550 / 6:43 a.m. & 1:43, 6:43 p.m.  
**Mineola:** KMOO-FM 96.7 / 5:20 p.m.  
**Nacogdoches:** KSAU-FM 90.1 / 3:00 p.m.  
**Ozona:** KYXX-FM 94.3 / 12:09 p.m.  
**Palestine:** KLIS-FM 96.7 / 7:10 a.m.  
**Pecos:** KIUN-AM 1400 / 10:30 a.m.  
**Pleasanton:** KBOP-AM 1380 / noon hour, 5 p.m. hour  
**Rockdale:** KRXT-FM 98.5 / 5:04 a.m.  
**San Angelo:** KUTX-FM 90.1 / 1:58, 12:58 p.m. (F)  
**San Antonio:** KXPZ-FM 91.3 / 2:50 p.m.  
**Sonora:** KHOS-FM 92.1 / 12:09 p.m.

**Sulphur Springs:** KSST-AM 1230 / 4:45 p.m.  
**Texarkana:** KCMC-AM 740 / 12:15 p.m.  
**Uvalde:** KVOU-AM 1400 / 5:33, 8:30 a.m.  
 KVOU-FM 105 / 5:33, 8:30 a.m.  
**Victoria:** KVRT-FM 90.7 / 5:34 p.m.  
**Waco:** KBCT-FM 94.5 / 6:10 a.m.  
**Wichita Falls:** KWFS-AM 1290 / 6:15, 7:45 a.m.  
**Yoakum:** KYKM-FM 92.5 / 8:15 a.m.  
**"Passport to Texas"** is available at no cost to stations across the state. For information contact Donna Endres, affiliate relations, at 512-454-1922, fax 512-454-2552, or write to P.O. Box 5966, Austin, Texas 78763, e-mail <passport@io.com>

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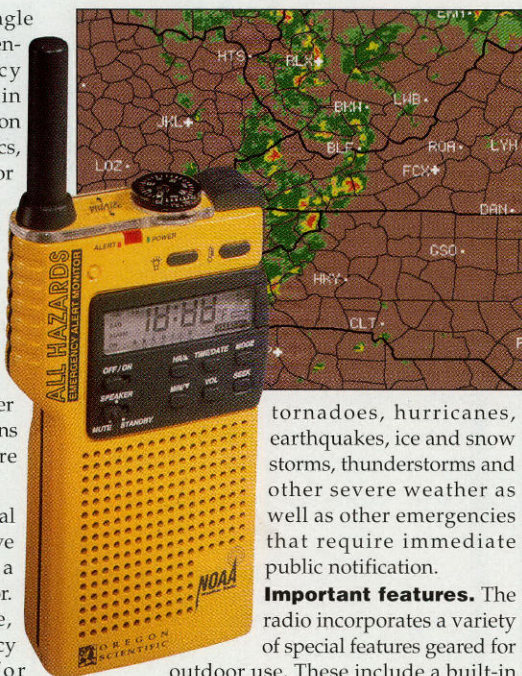
TECHNOLOGY UPDATE

# Could this radio save your life?

All Hazards Weather Radio provides continual weather and emergency monitoring and has a variety of helpful features.  
by Chris Murdock

Until now, there has been no single source for immediate, comprehensive weather and emergency information, available to the public, in advance of TV and radio bulletins. Oregon Scientific, a leader in personal electronics, has created a special radio that is ideal for traveling, as well as for campers, hikers and everyone who needs to be prepared for weather emergencies in the great outdoors. It monitors the U.S. Emergency Alert System and automatically seeks all seven frequencies used by the NOAA (National Oceanic and Atmospheric Administration) Weather Radio system. This network broadcasts 24-hour weather forecasts, weather-related travel conditions and warnings about imminent severe weather conditions.

**Automatic alert.** In the event of special warning broadcasts, the radio's innovative alert system automatically activates a loud tone and a flashing red LED indicator. If the radio is in silent standby mode, it even turns on the speaker. Emergency bulletins might include alerts for



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analog compass, ambient temperature display and an audible/visual Freeze Warning Alert. The digital display features a clock with alarm and snooze controls. A switch lets you turn the speaker to ON or MUTE, or you can set the unit to stand-by mode. The unit's water-resistant case is rugged and durable, and there's even a built-in belt clip and desktop stand. Its compact, lightweight design makes it ideal for almost any situation, and it operates on 3-AA batteries.

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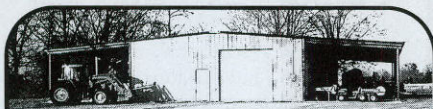
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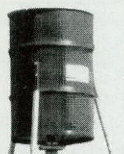
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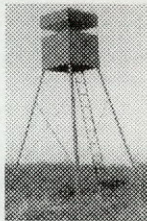
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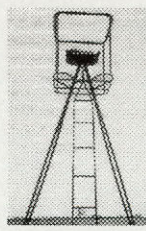
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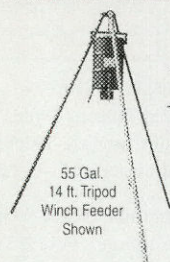
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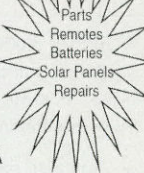
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