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TEXAS PARKS & WILDLIFE

MARCH 1992





TEXAS PARKS & WILDLIFE

March 1992, Vol. 50, No. 3

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MAGAZINE

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

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Page 13

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Page 6



Page 28

- 6 **TURKEY TERRITORY** Texas hunters have embraced the spring gobbler season. *by Janet R. Edwards*
- 12 **WHERE TEXAS WAS BORN** The village of Washington was the first and last capital of the Republic of Texas. *by Sue Winton Moss*
- 18 **WHEN LIZARDS LOST THEIR LEGS** There was a time when snakes had big heads and stumpy legs like lizards. *by Alca Tennant*
- 24 **O.H. IVIE ARRIVES** Snakes, lawyers and politicians were among the problems that plagued this new West Texas reservoir. *by Bud McDonald*
- 28 **THE DESERT IS NO PLACE FOR PANSIES** Wildflowers flourish out in the arid Big Bend region. *by Jo Leu Spleth*
- 38 **BACK TO THE WILD** Learn what is involved in caring for injured or sick wild animals. *by Janet R. Edwards*
- 48 **PROM NIGHT FOR THE HOUSTON TOAD** Biologists study these endangered toads at their breeding ponds in Bastrop County. *by James C. Godwin*

DEPARTMENTS

At Issue	2	Picture This	36
Letters	3	Outdoor Roundup	54
50th Anniversary	4		



COVERS—Front and Back: Purple blooms of a tree or cholla. See more desert flowers beginning on page 28. Photo by Lynn A. Herrmann. Wista field camera, Schneider 150mm lens, 1/2 second at f/45, Fuji film. **Inside Front:** Agave and stipa grass in Chisos Mountains, Big Bend National Park. Photo by Laurence Parent. Linhof Technika 4x5 camera, 90mm lens, 8 seconds at f/32, Ektachrome 100 plus film. **Inside Back:** Spring turkey season opens April 4. See story on page 6. Photo by Grady Allen. Nikon F3 camera, Nikkor 600mm f/4 lens, f/8 at 1/125, Kodachrome 64 film.

At Issue

March is the time of Texas Independence. This month Sue Moss, one of our state's most accomplished managers of historical resources, brings life in the little town of Washington into your homes. Responsibility for the birthplace of constitutional government in Texas is one that we take very seriously, along with our stewardship of other surviving cultural remnants of the life and times of Texas.

These sites are important windows to our past and they are significant contributors to present-day economies in Texas. Our colleagues at the Texas Department of Transportation tell us that the most frequently asked question by visitors entering Texas is "Where are the restrooms?" But the second most

common inquiry is about historic sites that may be open to the public.

In recognition of the growing interest in the places of our history, historical areas managed by the department have been added to the list of opportunities available at no charge to holders of the Texas Conservation Passport. Thus, passport holders now will have an even wider array of outdoor experiences from which to choose along with the knowledge that they are making an investment in Texas conservation.

This investment is critical as more and more Texas communities come to grips with demands for greater state efforts to protect both cultural and natural resources. Responding to this rapidly escalating demand, the Speaker of the Texas House of Representatives has

called for an interim study on capital financing for Parks and Wildlife projects. Governor Richards has called for a celebration of the 20th anniversary of the Texas State Parks Fund which, through taxes on cigarettes, has made our parks system one of the finest in the country.

Meanwhile, Congress ponders increased funding for parks, wildlife areas and historic sites through the land and water conservation funds that have been all but withheld from the states as a funding source.

So whether our observance of Texas Independence this year is limited to insights gained from the pages of this magazine or experienced directly on the banks of the Brazos at Washington or the San Antonio River at Goliad, we need to focus on strategies to make sure these places are still there when we are gone.

They are gifts to our children from our time. ★

—Andrew Sansom, Executive Director



In April...

Freelance photographer Wyman Meinzer has spent many an hour observing roadrunners, and as a result he has what perhaps is the most extensive collection of roadrunner photos in the state. Next month we'll see some of them and share some of Wyman's observations about the birds. Also in the April issue are articles about backpacking, San Jacinto and getting started in birding.



LETTERS

Worth a Thousand Words

I enjoy the pictures in your magazine and most of the articles. I especially like the picture on the inside front cover of the September 1991 issue. It shows the complete faith the young man and his dog have in each other, the anticipation of the hunt and the alertness of the beautiful animal.

I don't approve of guns, but the picture is a classic.

Merle Crawford
Port Angeles, Washington

Water Projects

The article about the coastal plains in the December issue described my favorite haunts—the coastal prairies and marshes. I live for November and the opening of waterfowl seasons. Is there life after duck season? Barely.

I thought a statement in the article was especially appropriate in light of the pending construction of the Wallisville Reservoir project: "The creation of water impoundments or reservoirs has been particularly damaging to wildlife in the coastal plains, as these impoundments can limit the flow of fresh water into bays and estuaries as well as destroy brackish marshes and their wild inhabitants."

There is another project similar to the Wallisville project. It is called Lake Anahuac. It also is a mud puddle created by placement of a low relief dam across the outflow of what used to be called Turtle Bay, a sizeable water body and marsh in the Galveston Bay estuary. The cooling pond at HL&P's Cedar Bayou Plant also permanently inundated hundreds if not thousands of acres of prime coastal marsh.

I have been hunting and fishing the Wallisville Project area for 15 years. I felt like I was kicked in the stomach when I heard construction was start-

ing back up. Thousands of acres of wetlands will be lost if the project is completed and my favorite duck hunting spot will be under four feet of water, all so metropolitan Houston can secure a minute percentage of its future surface water needs.

I urge your readers to contact the Galveston Bay Foundation at 713-334-3665 and request a list of elected officials, agencies, river authorities and drainage districts. Write to these people and organizations and ask them not to support this project. The money is better spent elsewhere.

Jim Gregory
Sugar Land

Credit to Sportsmen

I am a senior at Robert E. Lee High School in Tyler. I have subscribed to your magazine for the past three years and have thoroughly enjoyed it.

As a hunter, I want to congratulate you and your staff for helping to preserve the heritage of hunting in our state. Your magazine makes people realize that there are responsible hunters who are doing everything they can to help wildlife conservation. Many people do not understand that much of the income generated by sportsmen is used for the benefit of wildlife in Texas. Texas Parks & Wildlife magazine never fails to give sportsmen the credit they deserve.

I hope other sportsmen realize how much help you give them. Without responsible hunters there would be a lot less wildlife for the enjoyment of everyone.

Brad Schilhab
Tyler

All He Needs

Texas Parks & Wildlife is the only hunting and fishing magazine I am now subscribing to. At my age you kind of get tired of the "macho" hunting and fishing stories. I find your magazine is all that I need. It keeps me up-to-date with all the hunting and fishing laws

and it has enjoyable wildlife information. That beautiful white-tailed deer photo by Kevin Painter on the back of the December issue is the best I've ever seen.

"The Wild West is No Barren Wasteland" in December was excellent. The Trans-Pecos will always be dear to me.

Joseph W. Mahan
Tomball

He'll Take Spring

It appears from Andrew Sansom's editorial in the November issue that he has never been any place but Texas in the fall. He cannot have walked down Summit Avenue in Saint Paul when the sun is shining through the yellow elm leaves, or been up in the White Mountains of New Hampshire where the yellow of the birches is polka-dotted with evergreens. He cannot have flown over West Virginia, where the golds and reds of the leaves would make you believe it is almost heaven.

The weather in October is beautiful in much of America, but here in Texas all we can rightfully expect is some relief from the stifling heat of September. The leaves turn brown and pile up in our yards. We even are deprived of the pleasant aroma of burning them.

It is the other end of the year, in the spring, when Mother Nature rewards us for living here. The weather is temperate for months—in much of America spring lasts only weeks, in some places only days. Every part of the country is treated to spring flowers, but nowhere that I know of in the profusion and variety that we have them here.

Gary D. Jensen
Lake Jackson

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

Texas Parks & Wildlife

Dedicated

to the conservation

and enjoyment

Magazine

of Texas wildlife,

parks, waters and

all outdoors.

Celebrating Fifty Years



For years Texans have dreamed of the Big Bend country of the Rio Grande becoming a national park. The dream is now approaching realization. Park-minded Texas, with its Legislature's appropriation of \$1,500,000, has completed the purchase of the necessary lands which will be deeded by the State of Texas to the United States Government. The Congress has already authorized the Secretary of the Interior to accept them, and the Secretary is further authorized, upon acceptance, to designate the area as the Big Bend National Park.

"Big Bend Park Soon a Reality"
JANUARY 1943

Texas wildflowers can supply the fisherman with the needed enticement to get his family outdoors with him in the spring. While Dad and the boys fish, Mom and the girls can enjoy nature's exquisite blossoms.

"Wildflower Time in Texas"
APRIL 1957

When your husband shakes his head and says, "How can you ever find anything in that purse?", investigate his tackle box. This little box could be a new source for verbal ammunition in the friendly battleship of the sexes.

"Classified Chatter"
SEPTEMBER 1962

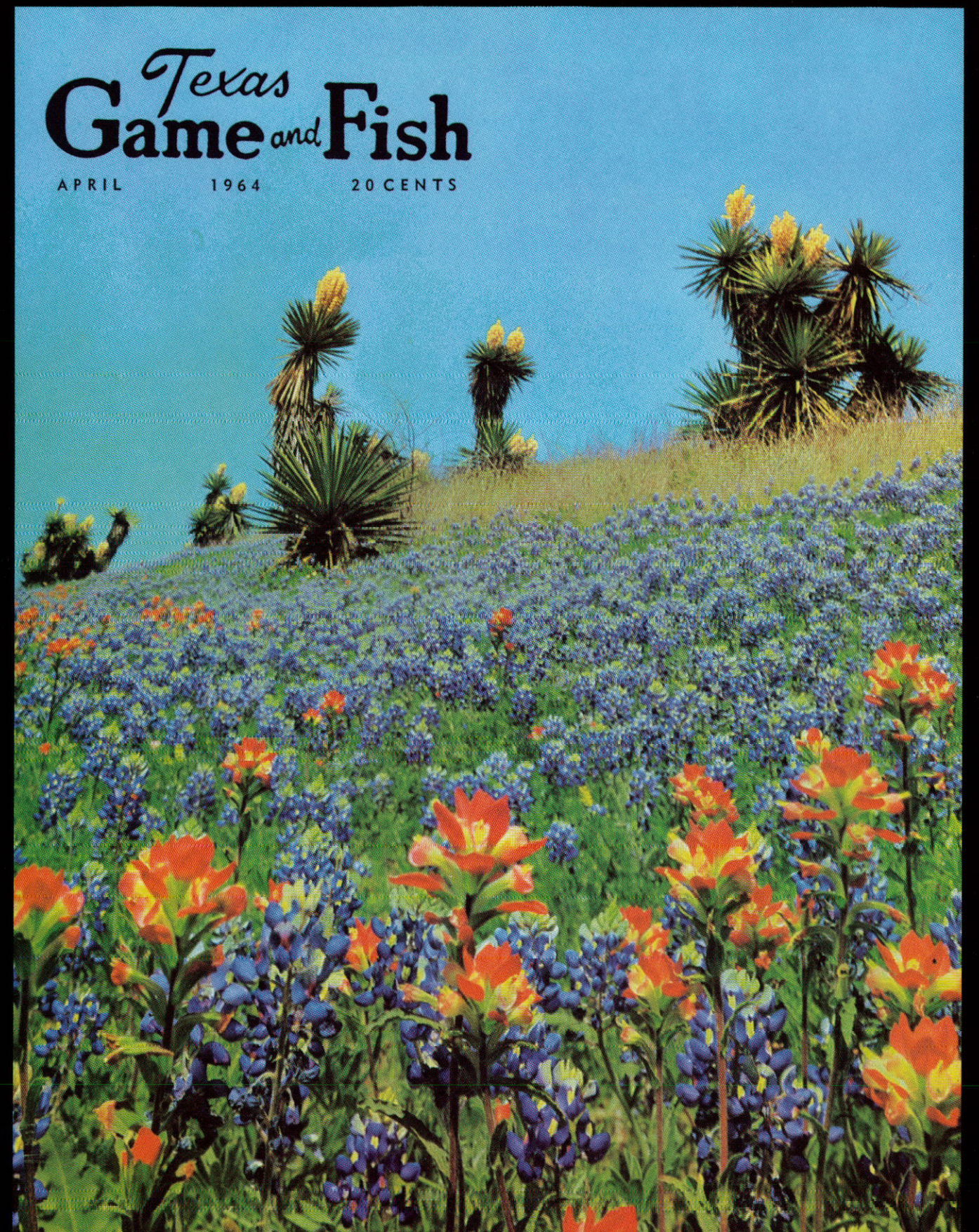
One year ago, Texans for the first time in 36 years were able to hunt wild turkeys during the spring in East Texas. For nine days last April eastern turkeys were legal game in portions of Tyler and Polk Counties in a contiguous area of some 150,000 acres. The last spring season on the birds was held in 1941.

"Gobblers in the Pinewoods"
APRIL 1978

A group of prominent Texas sportsmen, alarmed about the proliferation of outlaw hunters and fishermen, reason that a problem spawned by economics must be dealt with by economic means.

Therefore, they approached the 67th Texas Legislature and secured passage of House Bill 1421, establishing "Operation Game Thief" in the state. The bill authorized establishment of a system for rewarding citizens for turning in game law violators.

"Operation Game Thief"
NOVEMBER 1981



Turkey Territory

by Janet R. Edwards



Ray Sasser

Guided by sounds and smells, the pattern of twig litter beneath his boots and slight fluctuations in the temperature of the breeze on his skin, a lone figure moves silently through the chilly, pre-dawn shadows. Carefully balanced in the crook of his arm, his shotgun seems to light the way as its barrel tip passes over the earth.

In the distance, he catches a glimpse of their silhouettes, perched like giant apples in a large oak tree, still asleep. He holds his breath, hoping he is the only one who hears the sudden pounding in his ears.

To the hunter's left sprawls the outline of an old mesquite with a fairly clean skirt he'd scouted out the evening before, a good open place to sit and try to blend in with the scenery. Farther on lies a grassy area. This

clearing, like so many across the range of the Rio Grande turkey, is no ordinary savannah. For several weeks it has served well as the stage for an annual courtship ritual to rival the likes of a five-star wedding.

With trembling hands, the hunter pulls a camouflage head net down over his face, puts on a pair of camouflage gloves and stretches a camouflage sock over the barrel of his gun. Taking a deep breath to calm himself, he moves on toward the big mesquite, hoping to conceal himself before the sun comes over the horizon.

Just as he settles down, the first rays of an early April dawn reach up to warm the sky and the big birds begin to stir. *Obble-gobble, obble-gobble-gobble.* The gobblers' throaty challenge reverberates across the landscape. Soon they will leave the safety of the trees and move to the grassy clearing, where more gobbling and the flash of tail feathers spread like colorful fans may lure a willing female from the brush.

Though still unfamiliar to many Texans, the spring gobbler season is the fastest-growing hunting activity in Texas. "During the spring season of 1989-90, an estimated 100,000 hunters bagged 56,000 birds, bringing the total year's harvest to 100,000. This was more than the state's estimated wild

turkey population in 1945," said Don Wilson, small game program leader for the Parks and Wildlife Department. "Restoration of the wild turkey in Texas, particularly the Rio Grande, is a great success story."

Five subspecies or strains of wild turkey exist in the U. S., with three commonly found in Texas: the Rio Grande, eastern and Merriam's. Due to vigorous conservation and restocking efforts coordinated by Texas Parks and Wildlife officials, the Rio Grande has bounced back from low numbers to a current statewide population estimated at around 600,000.

"The Rio Grande thrives within a long and narrow band that runs from South Texas up through Central Texas into the Panhandle and, ultimately, up into Kansas,"

explained Wilson. "The range is only about 400 miles wide but it's about 1,200 miles long."

By contrast, a small population of Merriam's turkeys is confined to the mountains of West Texas and the Davis Mountains. The eastern turkey, though its numbers have sharply declined, can be found in the Pineywoods and Post Oak regions of East Texas.

"We have 23 million acres of potential habitat for the eastern turkey," said Wilson. "As far as we know, our efforts to reestablish this population, now estimated at 4,000 birds, represent the biggest, most ambitious wildlife restoration effort currently underway in the nation."

To understand the growing popularity of



Ray Sasser

Spring turkey hunters should avoid hunting too close to a turkey roost, opposite page, but being near one may increase the chances for success. The characteristic courtship display of Rio Grande gobblers, above, provides one of the spring season's most exciting moments.

a game bird with a profile only a turkey could love, several notable features of this auspicious avifauna must be pointed out.

"The wild turkey is the largest North American game bird, with the average gobbler weighing between 18 and 22 pounds. It's also the fastest upland game bird, clocked at speeds of 55 mph flying and 15 mph running," said Wilson.

"Turkeys can assimilate what they see eight times better than man and can hear at least as well or better than man. They can distinguish colors and seem to be extremely alert to changes in visual patterns, even the arrangement of sticks on the ground."

The wild turkey is unique to the North American continent. Unregulated harvesting and loss of habitat resulting from

deforestation and agriculture brought about the bird's extinction in 18 of the 38 states in its ancestral range. However, as proof of the bird's resourcefulness, intelligence and tenacity, as well as the value of hunting regulations, the wild turkey now occupies every state except Alaska.

Considering these outstanding qualities, it isn't difficult to understand why Benjamin Franklin, our most sensible statesman, actively campaigned for the naming of this distinguished bird as our national emblem rather than the bald eagle.

Perhaps because of its impressive size, the wild turkey prefers to trot or run from danger. But should the occasion demand it, he can take to the wing with a fury and flutter that leaves most predators choking in dust.

Faced with such acute senses and quick reflexes, how can the hunter hope to get close enough even to identify the bird as the proper sex (only the male is legal during the spring season), much less manage to take it home to say grace over?

"The ability to move quietly and unobtrusively through the woods and brush, to see and hear things that escape most people, is important for spring turkey hunting," said Larry Morgan, outdoor editor of the *Corpus Christi Caller Times* and a recent convert to the sport.

Garbed in camouflage from head to foot, the hunter can disguise himself, matching the earth-tone coloration that conceals many wild species from predators and prey alike. However, changing a hunter's or wildlife observer's physical appearance is the easy part. He also must relearn how to think and behave.

The spring wild turkey hunting season, like many other hunting intervals, partially coincides with the breeding season. For this reason, cultivating a working knowledge of wild turkey mating behavior is a sure way to help shorten the shot in the hunter's favor.

As the days begin to grow longer in late February and early March, winter flocks begin to break up into smaller groups. The natural increase in activity and exercise brought on by more daylight hours provides the prime stimulus for wild turkey mating behavior, which normally extends from mid-

TURKEY CALLING DEMONSTRATION

Calling a wild turkey gobbler to within camera range is a tricky proposition, but about 30 Conservation Passport holders will learn how to do it this March 28-30.

Department wildlife biologist Joe Herrera, champion turkey caller and talented photographer, will conduct a calling and photo seminar at the James Daughtrey Wildlife Management Area, located on the shores of Choke Canyon Reservoir in South Texas. This activity is one of numer-

ous special programs being conducted across the state for purchasers of the department's \$25 Texas Conservation Passport (TCP). In addition to tours, seminars and other activities conducted by department personnel, the TCP entitles the holder to free entry at state parks, discounts on campsites and other facilities and a discount on *Texas Parks & Wildlife* magazine subscriptions.

Herrera will explain the challenge of turkey calling, with emphasis on camouflage, types of turkey calls, preferred photographic equipment and other considerations for getting a prized photo.

You are not required to have a hunting license or one of the new \$5 turkey stamps to go on a turkey photographing mission. However, if you enjoy this resource you might wish to buy a stamp, since proceeds from stamp sales help turkey restoration efforts in Texas.



You can purchase the Texas Conservation Passport at any state park, many wildlife management areas or Austin headquarters. For further information about Herrera's calling seminar, call the Daughtrey WMA at 512-786-3868.



Department wildlife biologist Joe Herrera will show Conservation Passport holders how to use calls and camouflage to get exciting photos of wild turkeys.

Glen Mills



Grady Allen

Selection of an area for calling is important in spring turkey hunting. Sitting next to a tree trunk breaks the hunter's outline and helps him blend into the background.

James E. Daughtrey Wildlife Management Area and champion turkey caller. (See page 8.) "The sport of it is to match wits with an old, wary gobbler. Of course he's kind of crazy, since it's the breeding season, but the beauty of it is to see if you can fool him and call him in close."

The hunter's calling techniques are based upon an intriguing irony: creating an irresistible situation for the turkey tom by doing just the opposite of what happens in nature.

During the breeding season, the male expects the hen to come to him. As the number of available hens declines, he may be enticed, despite his natural suspicion, to leave the display grounds and seek out a female, particularly if he thinks he hears her alluring cluck. However, if the hunter is skilled enough, all that clucks isn't kosher.

"Believe it or not, most professional turkey callers sound better than real turkeys themselves," said Herrera. "But it takes a lot of practice. You'll end up scaring them off if you don't know what you're doing."

The curious components of a turkey

hunter's "calls," devices that mimic a turkey's voice, are exceeded only by the eccentricity of turkey talk itself. There are box calls and mouth diaphragm calls, tube calls and slate calls, cackle calls and bone calls, each capable of making one or more specific sounds.

But before you venture out into turkey territory, it's a good idea to try and master a few phrases. Though there are many turkey calls on the market, a well-prepared hunter will choose carefully according to the season.

"The easiest call for the novice spring hunter to mimic is the plain hen yelp," explains Herrera. "It's a general call used by turkeys within sight of each other. A second choice is the plain cluck, a soft "pfut" sound that's definitely an attention getter. A third choice is the cackle call, which is hard to do but almost always will get a gobble. As a last resort, you can use a gobble call."

"For the more experienced caller, the mouth diaphragm call is the most versatile device overall, because it leaves both hands free. However, the diaphragm is difficult to learn to use and many people

March to mid-May.

Shortly after daybreak, groups of males, which include gobblers hatched the previous summer or "akes" and mature gobblers, fly down from large roost trees along stream drainages to leks or display grounds. The participation of all turkey toms in the show and tell seems necessary to attract the hens, but only one dominant gobbler actually breeds them.

Part of a rigid and fiercely defended hierarchy, the other nonbreeding gobblers act as "seconds" or bodyguards, protecting their dominant gobbler from dominant males of other groups.

The spring turkey season, April 4 to May 3, 1992, in most counties, is biologically sound because the best time to hunt a spring turkey is after the hens have left the breeding grounds to prepare their nest sites. Not yet ready to call it quits, the gobblers often hang around the lek. It is during the lingering weeks of this breeding period that the hunter can best test the quality of his woodsman'ship.

"The spring hunt is the grandest hunt of all," said Joe Herrera, manager of the

Ray Sasser



Red wattles on the head, a chest beard and fanned tail feathers remove any doubt that this is the spring gobbler the hunter is seeking.

RECIPES

Mesquite Smoked Wild Turkey

We suggest using a water pan charcoal cooker or, as an alternative, a 55-gallon oil drum cooking grill with the fire at one end, water pan in the middle, and wild turkey at opposite end in a disposable roasting pan. In this latter case, keep the turkey covered in foil for the first three hours or so, then uncover to brown. Wild turkey dries out easily.

1 wild turkey with skin left on
butter or substitute
1 tablespoon Tabasco sauce
2 tablespoons Galliano
seasoning salt
Greek seasoning or lemon pepper
2 onions, quartered
celery stalk
dry white wine
thyme

PREPARATION

1. Start mesquite fire.
2. Rub turkey skin with butter or substitute.
3. Mix Galliano and Tabasco. Smear on skin of turkey.
4. Dust skin with seasoning salt.
5. Coat inside with butter, rub with thyme and Greek seasoning or lemon pepper.
6. Place stalk of celery and quartered onions in cavity.
7. Place turkey on grill above water pan or away from fire in roasting pan if using an oil drum cooker.
8. Add water and white wine to water pan to fill.
9. Chunks of mesquite, soaked in water, may be added to fire to create more aromatic smoke.
10. Cook until legs pull away easily. We usually let it cook all day, allowing the fire to burn down gradually.

Cornbread Dressing

Cornbread:

1 1/2 cups yellow corn meal
1 1/2 cups all purpose flour
1 teaspoon salt
1 teaspoon baking soda
1 tablespoon sugar
2 teaspoons baking powder
1 1/2 cups buttermilk
2 tablespoons peanut oil
1 egg, beaten

Dressing:

1 cup chopped celery and leaves
1 cup chopped onion
2 cups chicken broth
2 eggs, beaten
1 teaspoon poultry seasoning

PREPARATION

1. Preheat oven to 425 degrees.
2. Mix dry ingredients. Stir in buttermilk, peanut oil, and one beaten egg. Mix well.
3. Pour batter into greased nine-inch cast-iron skillet and bake for 20 minutes.
4. After cornbread has cooled, crumble enough to fill six cups.
5. Cook chopped celery and onion in broth for five minutes. Stir in the two beaten eggs, seasoning, and cornbread. Mix lightly but well.
6. Bake in cast-iron skillet at 325 degrees for 30 minutes.

Note: When cooking a turkey in a covered grill we recommend that you don't stuff it with dressing; you need to allow the heat and the aromatic smoke to enter the cavity.

Recipes courtesy of "The Sportsman's Guide to Texas" by Dick Bartlett and Joanne Krieger.

gag on it since you have to keep it inside your mouth," said Herrera.

Some upscale sporting goods stores retain on staff an experienced hunter who can demonstrate the proper use of the various types of calls and advise you which to use. Excellent cassette tapes also are available by mail order for practice at home. Hunting magazines, flyers and newspapers in some areas of the state may provide information about calling workshops offered by experts before and during both the fall and spring hunting seasons.

As important as calling is to a successful turkey hunt, the trickiest part may well be learning what to do before and after you hear one running up to answer you.

If you must choose between a rifle and a shotgun, bring your shotgun. If you really enjoy a sporting challenge, bring a bow and arrow.

"The real cause for concern with the rifle is that some people will shoot them outside the effective range for determining sex," said Bill Brownlee, program director for small game with the TPWD.

Between fall and spring seasons, hunters are allowed a combined limit of three turkeys with no more than two permitted in either season. Legal shooting hours are 30 minutes before sunrise to 30 minutes after sunset.

Under ideal conditions, try to locate a gobbler roost in the early evening before the hunt by using a barred owl hoot. For reasons that are unclear, the gobbler almost always will respond to this call with a gobble.

Arrive an hour or so before daylight. Then select a large tree at least 150 yards away from the roost. The tree should have little or no undergrowth around its base, with a flat space large enough to sit down.

"Never get too close to a roost. You don't want the birds to associate hunting activity with their roost or they'll abandon it," said Wilson.

Make sure that every square inch of your skin is covered with camouflage, so that you can hunt in the open without obstructions, yet blend in perfectly with your surroundings.

To accurately identify a mature gobbler, you must consider relative size, color, feather luster, behavior and, to



A wild turkey gobbler is one of the most alert and keen-sighted animals in the wild, making it a challenge for spring turkey callers. Turkey hunters are reminded they need the new \$5 Turkey Stamp in addition to a valid hunting license. A \$75 nonresident spring turkey hunting license is available to those coming to Texas for the spring season.

“It is vital for neophyte turkey hunters to be able to identify their quarry, both to avoid breaking the law and to protect the females that are producing and caring for the birds of the future,” said Morgan.

But if you know it’s a male and the sound of his gobbling tells you he’s coming in, you’ve got some quick thinking to do. Being careful to avoid jerky movements, align your body at a 90-degree angle to the turkey’s path. In this position, only a slight upward movement of your shotgun is needed as he comes within range, avoiding a wide barrel swing.

Just to keep things interesting, gobblers may not always give a vocal response to your calls.

“You’ve got to watch out for those subdominant gobblers. Sometimes they’ll come in for a call, but they won’t make any noise. If you’re not careful, they may come up behind you and scare you half to death,” said Joe Herrera.

“Turkey hunting in the spring is the ultimate hunting experience,” said Paul Hanser, president of the Texas Chapter of the National Wild Turkey Federation. “You become involved in the whole process of nature. You become very disciplined, very patient. You can’t afford to make any mistakes. You are communicating and interacting with a very cautious animal. The thrill of it comes in being able to bring a bird in close. I never shoot a bird more than 20 yards away. It’s a matter of principle.”

Perhaps during this spring season an even greater number of wild turkey hunters will have cause to pause and give thanks—for the challenge of the call, for the tasty bird in their freezer and for the fact that old Ben Franklin didn’t always have his way. ★

Janet Edwards is a regular contributor to the magazine.

some extent, the presence or absence of the trademark breast beard and heel spurs.

Mature gobblers normally have rather prominent beards. However, feeding amid thorny brush may cause excessive wear and tear on his hairy necktie, making it shorter than that of hens, which also occasionally have beards. The presence of spurs on the legs is no guarantee either, since it is also a possible feature for mature members of both sexes.

The average male weighs more than a hen, but trying to discriminate between a young jake and a hen by size alone may be difficult.

“Color is also not a strong identifying characteristic, because there is likely to be some variation even between animals of the same subspecies,” explained Brownlee. “The gobbler probably will

be a glossy black, while the hen often is a dull, grayish or blackish brown. A novice would have a hard time telling them apart, especially if different sexes are not seen together at the same time.”

However, the sight of a gobbler’s head and neck, particularly during the spring breeding season, is difficult to miss. Reminiscent of an erupting volcano, his head is quite bare, illuminated by wattles or bumps in mottled shades of red and blue that turn bright crimson as they cascade down his neck. The hen’s head is more bluish and may be partially feathered.

Train your eye to look for a combination of gobbler traits: dark, shiny plumage, crimson head and wattles, a bolder, more aggressive strut, a puffed, protuberant chest and the peacock spread of tail feathers.

Grady Allen



Archives Division - Texas State Library

WHERE
TEXAS
WAS BORN

Washington-on-the-Brazos is best remembered by thousands of Texans as the seat of Texas independence. It was at this tiny hamlet in March 1836, that Texans declared themselves free from the tyranny of Santa Anna's Mexico and wrote a constitution. Fewer people realize, however, that the first capital of the Republic also was the last. The town became the Republic's capital again in

1842 and it was here that the final arrangements and negotiations for annexation and statehood were concluded.

March of 1836 was busy and exciting at Washington (as it was known then). Delegates to the convention of 1836

occupied every spare bed in the town, and many threw a bedroll on the floor. Their work was quickly done, however, and independence was declared on March 2, the day after they convened. Work on the new constitution took a little longer, but was speeded up by news of the fall of the Alamo and Santa Anna's march east. With a constitution in hand, the newly formed government and the citizens of the small town joined

by Sue Winton Moss

the Runaway Scrape and left town on March 16.

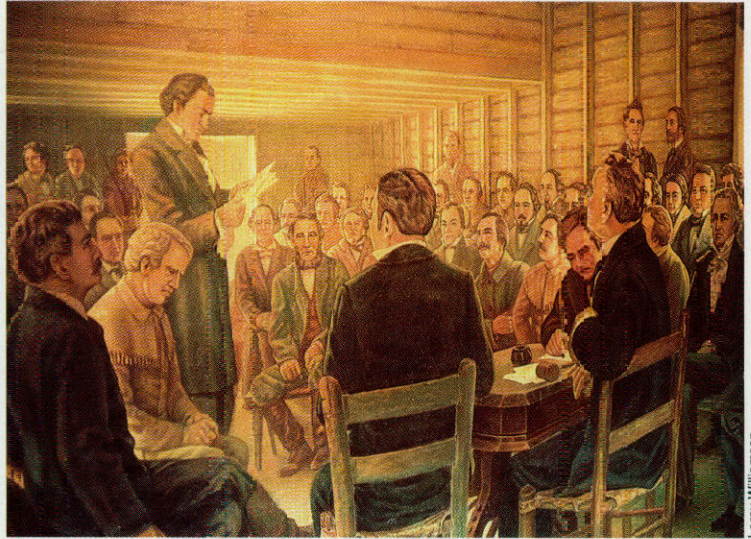
When Washington's inhabitants returned after the victory at San Jacinto, they found the town little altered—still a small cluster of half-finished houses at a major crossing of the Brazos River. By 1839, however, the population had grown considerably. According to Asa Hoxey, the town's primary champion, it had a good well and spring water, mail and stage connections and a population of 400 people. Two sawmills, a large brickyard and deposits of sandstone gave it excellent potential for growing even larger.

Hoxey promoted the town in competition for the new Republic's capital and offered to give land for the government buildings. In spite of his generosity, the town received just two votes from the Texas Congress, which selected a site near Bastrop. The government was meeting in Houston at the time, however, and President Sam Houston favored his namesake town. The capital remained there until October 1839, after Mirabeau B. Lamar's election, and another congressional vote moved the seat of government to Austin.

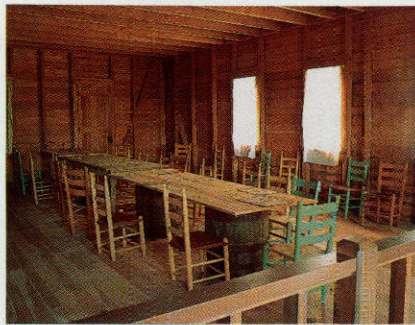
Washington continued slow, steady growth during the early years of the Republic. Like most other Texas towns, it had a diverse citizenry. A number of Republic army veterans, many of them rather young, were waiting to collect their land bounties for service in the war and had little to do but hang around saloons, gamble and play practical jokes.

But there were others who were dedicated to building a civilization in what had been a fair-weather ferry landing. Z. N. Morrell, a famous itinerant preacher, organized the first Baptist church in Texas there in 1837. Methodist prayer meetings were conducted in David Ayres's home in the late 1830s, and acclaimed Baptist minister Rufus Burleson (who later baptized Sam Houston) also preached in Washington. Education also was important in Washington. The Washington Academy, a boys' school, was started in 1839 under the direction of L. P. Rucker, and in 1842 the Washington Female Academy was organized.

The town had become decidedly commercial by 1839. Immigrants on their way west crossed the Brazos River at Robinson's ferry and brought a good business to the commercial establishments as well. The *Texas Emigrant*, the



Leroy Williamson



Leroy Williamson

Delegates to the convention of 1836 (above), which was held in the tiny hamlet of Washington, declared Texas's independence from Mexico and drafted a constitution. The meeting place was an unfinished frame building (shown on the opposite page in the late 19th century). Today a structure commemorating Independence Hall (left and below) stands in Washington-on-the-Brazos State Historical Park.

WASHINGTON WAS THE FIRST AND LAST
CAPITAL OF THE REPUBLIC.



Leroy Williamson



The Brazos River, which later contributed to Washington becoming a commercial center, also saw Texans fleeing Santa Anna's army in 1836. This painting by Nola Montgomery, on display at the park, depicts the Runaway Scrape, when large numbers of settlers moved east ahead of the Mexican army after the fall of the Alamo.

local newspaper, carried advertisements for the Washington Hotel and the Planters Hotel, one attorney, three doctors and two watch repairmen. Even though this was in the middle of the post-war depression and more than 100 miles from Galveston, the four general merchandise stores offered two kinds of coffee, "champagne wine," three kinds of sugar, codfish, raisins, spelling books, dry goods, ready-made clothes, boots and allspice.

By the beginning of 1842, however, Washington was declining rapidly. The depression, fueled by land speculation, valueless paper money and scarce hard money, had deepened throughout Texas

and everyone was suffering. Adolphus Sterne, traveling through the town in January 1842, remarked that Washington was a "fine Place, but all the fine Stores and dwelling Houses, most all (were) deserted." This was the scene just as Sam Houston, the man many Washingtonians considered Texas's greatest hero, was elected to his second term as president in 1841.

Houston wanted to move the capital away from Austin, a town closely associated with his opponents and Mirabeau B. Lamar. The Mexican capture of San Antonio in March 1842 seemed to give him just that opportunity. He had not counted, however, on the tenacity of

WASHINGTON GREW STEADILY DURING
THE EARLY YEARS OF THE REPUBLIC.

the two houses of congress convened in December 1842, they were in separate buildings. The house of representatives met in the city's courthouse and the senate in an abandoned general store. The house of representatives also may have met in what formerly was a gambling hall over Hatfield's Saloon. The saloon itself was said to have been too important to the community to give up to the government. Anson Jones, secretary of state, had his office in an old wood shop, and the Republic's post office headquartered across the street. The British chargé d'affaires, Charles Elliott, noted that the diplomatic corps were reluctant to leave Houston to go to "Washington on the Brazos, where there are 12 or 13 Wooden shanties." Even President Houston, he had heard, "finds things at Washington rather raw and as He has been accustomed to the elaborate comforts and luxuries of an Indian Wigwam, I Presume He must be living in a commodious excavation."

In the beginning, there was only one operating hotel, so private homes were pressed into service to house government officials and the diplomatic corps. Contrary to Elliott's speculation, Houston and his wife boarded at the home of

Judge John Lockhart and later moved to a small house near his office. Joseph Eve, representing the United States, had rather primitive accommodations, even by the local standard: "There are two taverns, Capt. Elliott (the British envoy) and myself were put into a room, not ceiled or plastered, without a fireplace or stove and without windows, with four other persons to sleep in the same room."

Congressman Sam Maverick from San Antonio found the situation improved in December 1843 and wrote his wife that he was "very well lodged." He shared a room with only three other men; it had a good fire and seven chairs, and he had his own bed complete with mattress, quilts, coverlets and sheets.

Despite the austere accommodations, the government's tenure at Washington lasted through 1845 and witnessed some of the most critical business ever conducted by the Republic. The most important issues of the time were related to Texas's independence. Despite the overwhelming victory at San Jacinto

The home of Anson Jones, last president of the Republic of Texas, was relocated to the park in 1967 and refurbished.



Leroy Williamson

the citizens of Austin who were determined to hold on to the Republic's government and their reason for existence. After six months of negotiations that eventually escalated into the "Archives War," President Houston and Austin (the city) reached a compromise: The General Land Office and its records would remain in Austin, and congress and the executive office would sit in Washington.

So the Republic's government moved back to its birthplace in the fall of 1842. Offices and meeting halls in Washington were furnished free to the government, although the accommodations again left something to be desired. When



Leroy Williamson

on April 21, 1836, Texas still was prey to incursions from Mexico. In 1842 San Antonio again was occupied by Santa Anna's troops. The Republic's tenuous financial condition made it difficult to protect what she considered to be her

boundaries and to act as a sovereign state. It became very important to gain recognition from and establish diplomatic relations with the United States, Great Britain, France and, of course, Mexico. Establishing a boundary and

treaty between Texas and Mexico was of paramount importance, but in the end proved impossible.

Texans, by and large, favored what they saw as the ultimate solution to the problems with Mexico—annexation to

WASHINGTON-ON-THE-BRAZOS STATE HISTORICAL PARK

No one is quite sure when the town became Washington-on-the-Brazos, but that is how it is known today. The historic town now exists in a small community and in the state park that commemorates the birthplace of Texas independence. The Texas Parks and Wildlife Department operates the scenic park on the banks of the Brazos River, dedicated to preserving the history of the old townsite and the legacy that it witnessed.

A structure commemorating Independence Hall marks the spot where the Declaration of Independence was signed on March 2, 1836. The home of Anson Jones, the last president of the Republic, has been moved to the park and refurbished to illustrate the Jones family era. The history of the Republic's founding is told in an award-winning film shown at the park's interpretive center, and exhibits display the artifacts and history of the Republic.

Every year, the Washington-on-the-Brazos State Park Association sponsors the Texas Independence Day celebration at the park on the weekend closest to March 2. This year's festivities will be held February 29 and March 1.

TEXAS INDEPENDENCE DAY CELEBRATION

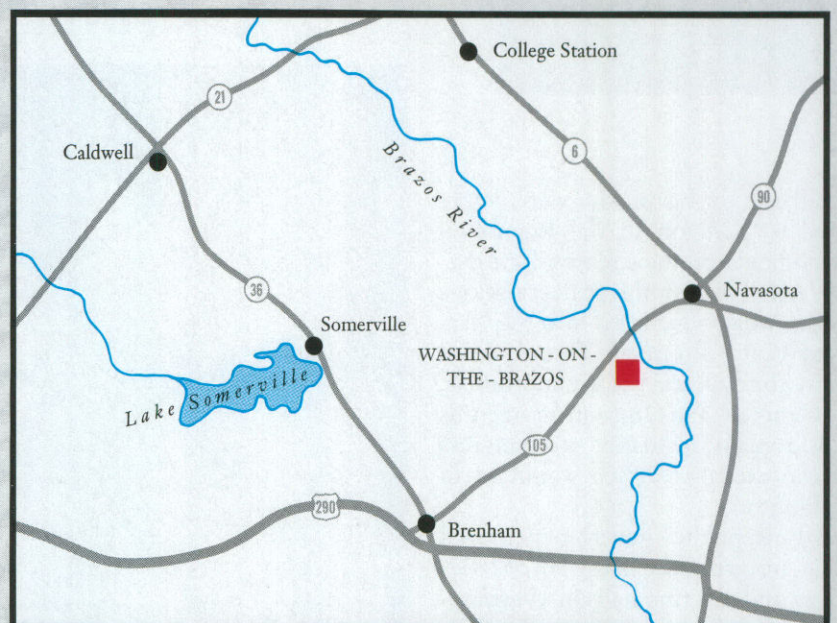
**FEBRUARY 29
AND MARCH 1**

The Republic's anniversary will be marked on Sunday, with a special birthday party in the amphitheater at 2 p.m. Houston television personality Ron Stone will preside over the program, which will climax in cutting a Texas-sized birthday cake. Folk music and crafts from the Republic period are featured throughout the two days and include dulcimer music, goose-plucking, weaving and spinning, and a blacksmith exhibit. Demonstrations by the Texas Army and the Brazoria Militia also are on tap, along with music by the Texas A&M University Jazz Band. An Arts and Crafts show with 50 exhibitors and plenty of food booths will round out the weekend's activities.

Also at the park, the Star of the Re-

public Museum, administered by Blinn College, will open a new exhibit during Independence Day celebrations. "Native Americans and the Republic" examines the experiences of Texas Indians during the 1830s and 1840s. This exhibit is part of an extensive, year-long examination of Texas Indians and their heritage developed by the museum. On Sunday, March 1, the Alabama-Coushatta tribe from East Texas will perform their traditional dances, and public programming will emphasize Texas Native American folkways.

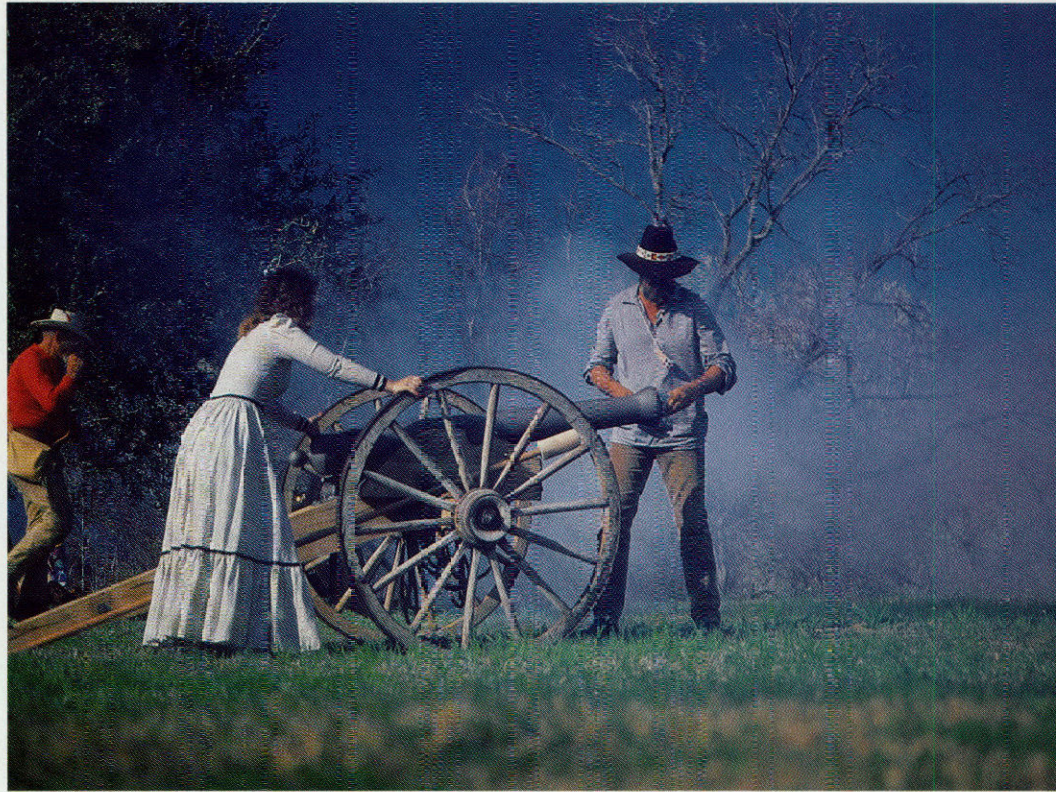
For further information on the Independence Day celebration, contact the park at 409-878-2214 or on the Texas Indians exhibit, contact the museum at 409-878-2461.



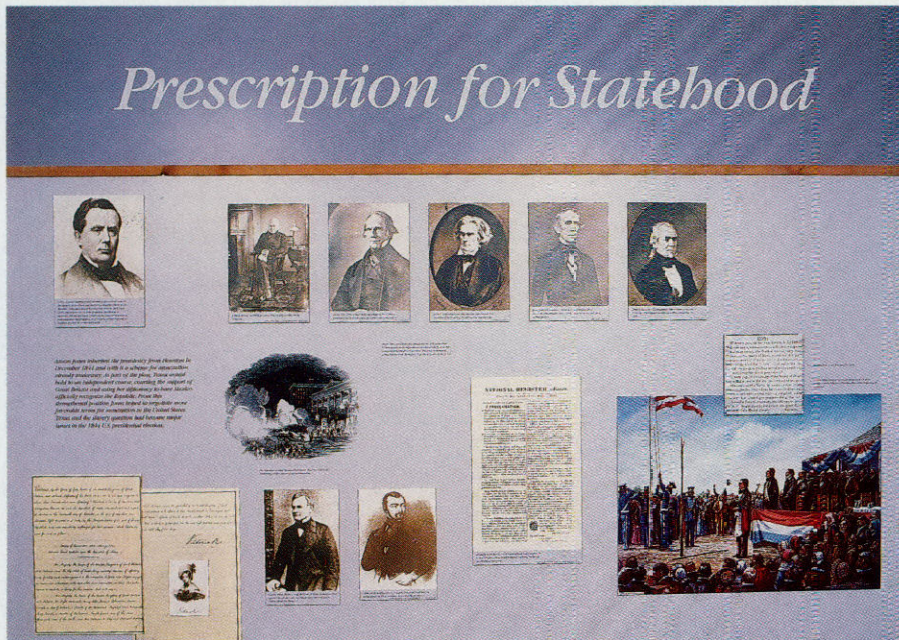
the United States. In a series of complicated negotiations with the United States, that goal finally was achieved, and Texas was offered annexation by a joint resolution of the U. S. Congress on February 27, 1845. The annexation convention met on July 4 and overwhelmingly voted in favor of the terms offered—Texas was to be admitted as a state rather than a territory; she was to keep her public debt, but also could keep her public lands; Texas might be divided into as many as five states; and, most important, the United States would settle boundary disputes with foreign powers. A new state constitution was written and adopted by Texas voters in the fall, and on December 29, 1845, Texas officially joined the Union, opening a new chapter in the history of Texas, the nation and the continent. The state's capital moved back to Austin, still the officially designated seat of government. ★

Sue Winton Moss is a historical preservation consultant and has done extensive research on Old Washington.

Leroy Williamson



Historical reenactments are part of Texas Independence Day celebrations at the park. This year's festivities are scheduled for February 29 and March 1.



Leroy Williamson

Washington had a broader-based economy when the government moved back to Austin in 1846. Agriculture was becoming big business in Texas by the mid-1840s, and the fertile lands surrounding the town encompassed some of the new state's most productive cotton plantations. The city grew and prospered even more during the 1850s with the rise of the cotton culture and steamboats plying the Brazos. But that's another story...

Washington again became the Republic's capital—its last—in 1842. It was there that final arrangements for annexation and statehood were concluded.

When Lizards Lost Their Legs

Article by Alan Tennant, Photos by D. Craig McIntyre

Suppose you're an alien. Not some plain old run-of-the-mill cosmic invader, but a specialist: a trained intergalactic zoologist. A Martian with a mission, sent here to observe earthly life forms, you'd get tired of human beings in a hurry. Mammals are ordinary and abundant. There are lots of birds, but all built on pretty much the same body plan. Same for reptiles, except the ones they call snakes.

Why that long, tubular shape, you'd ask yourself, bearing in mind the universal biological maxim that every living thing is put together the way it is because its lifestyle and environment have sculpted its genes to produce exactly that body. (Of course worms are tubes, too, you'd discover, although extremely simple ones: mouth, long skinny gut, anus.) But snakes obviously have evolved far beyond that simple setup. They share elaborate skeletal and neuromuscular systems with the higher vertebrates—their cousins the lizards, crocodillians and turtles—as well as with their younger kin, the birds and mammals.

So why, you would ask, have these advanced creatures adopted that old-time worm shape? If you were able to dig back into the fossil record (or perhaps, in the interest of time, could manage to slip unnoticed into one of those humans' museums) you'd find that snakes used to look like more conventional reptiles. Some 60 million years ago, back in what Earth people call the Early Cretaceous, snakes' predecessors had short,

squat bodies, big heads and stumpy legs like lizards.

They weren't just like lizards, they *were* lizards, big ones that resembled the tropical monitors of today. Then, with the ascent of the dinosaurs, other reptiles' fortunes declined. As ever more numerous species of rapacious saurian hunters evolved, some lizards, like the geckos, became nocturnal, leaving the day to the dinosaurs.

Others, including snakes' monitor ancestors, made a more radical change. Desperate to evade the hungry jaws of terrible, fast-moving little dinosaurs such as *Deinonychus*, they shrank their legs and went underground—a process evident today in backyard leaf-litter skinks and the legless lizards of the Texas coast. Feeding on worms and insects, they squeezed through subsurface crevices and tunneled through loose soil, gradually growing smaller and slimmer, and eventually taking up an entirely subterranean existence. It was a



Despite a lack of external legs, the slender glass lizard (above) is a true lizard and may be similar to a stage in the evolution of snakes. The Texas patch-nosed snake (right) is a fast-moving lizard eater found in Central and South Texas.





cataclysmic survival strategy, a last-ditch tactic that seemed almost unthinkable to the humans who first chronicled the lizards' transformation. But it kept them alive, safe from the predatory holocaust that devastated their surface-dwelling kin.

Living below ground, little by little the monitors changed. The dirt-gathering orifice of their ears sealed shut, their heart and lungs elongated—becoming less efficient in the interest of streamlining—and that ordinary lizard's skeleton gave up its pelvic and shoulder girdles to gain a supple, multiple-vertebrated spinal column. Long before the end of the age of the great reptile predators, the subterranean monitors had ceased to be lizards at all. What the dinosaurs had created was snakes.

It was a new life form able, with the ultimate demise of dinosaurs, to emerge from its burrows at the dawn of the Cenozoic into a world of newly available opportunity. Among the first things these tiny creatures needed was to be able to see. Snakes' eyes, useless in the underground gloom, had atrophied into vestigial dots of ocular pigment. They



Skinks, such as the five-lined skink above, are a successful, widespread example of the many small lizards that have evolved attenuated legs in response to the constricted micro-environments they often inhabit.

now regenerated. Though they never regained the focal clarity of their lizard forebears, advanced genera such as the vipers developed compensatory features, including vertically slit pupils that allow the widest possible range of night-and-day light gathering.

Having learned below ground to do without the traditional vertebrate's sturdy skeletal platform, back on the surface serpents became ropelike creatures whose suppleness gave them advantages possessed by no other land animal. They could compact themselves

EVOLUTION OF SNAKES

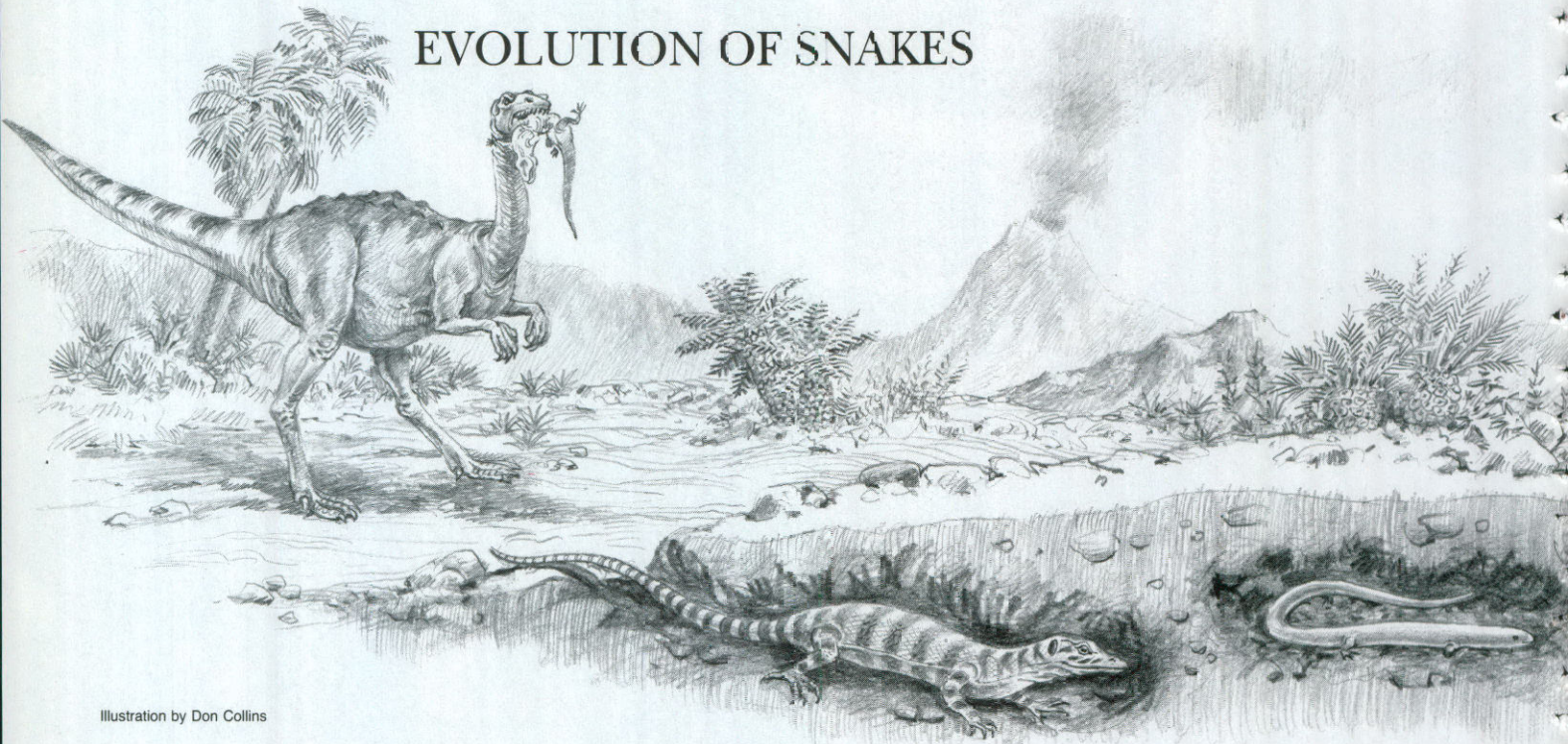
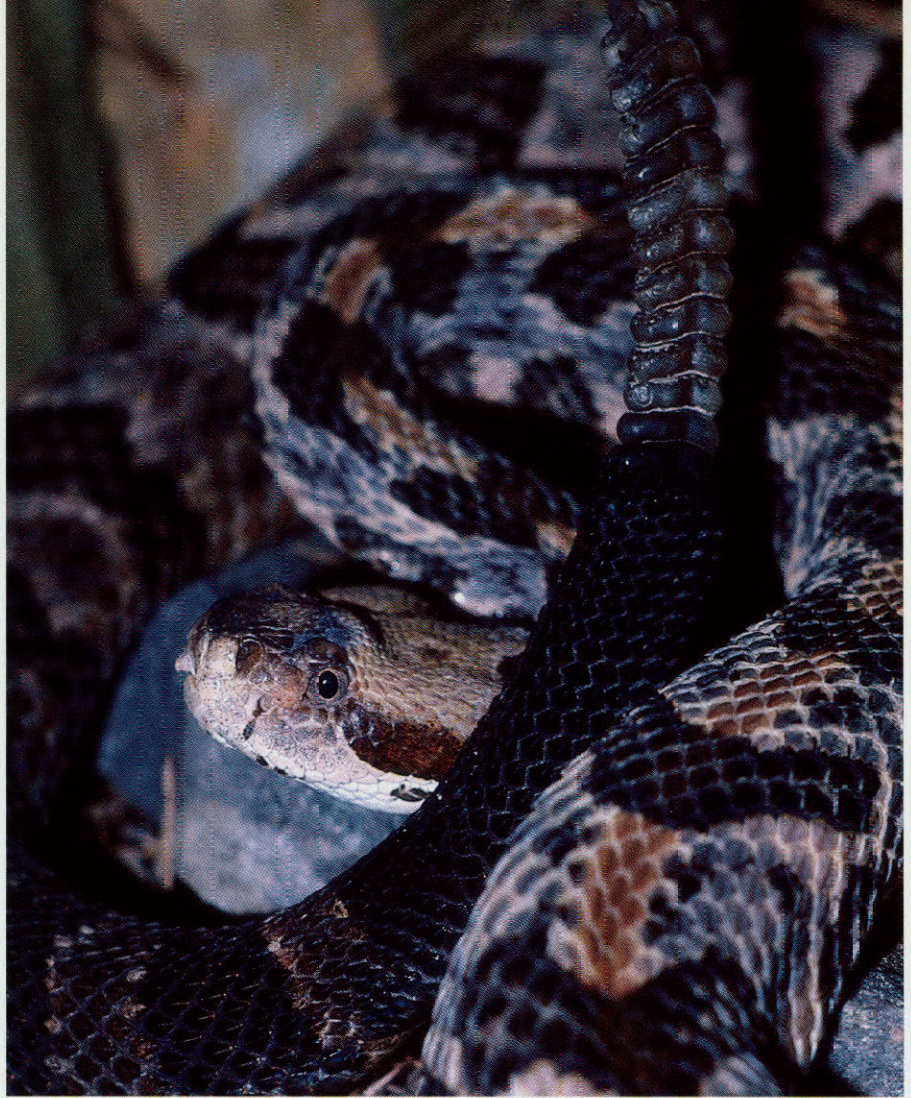


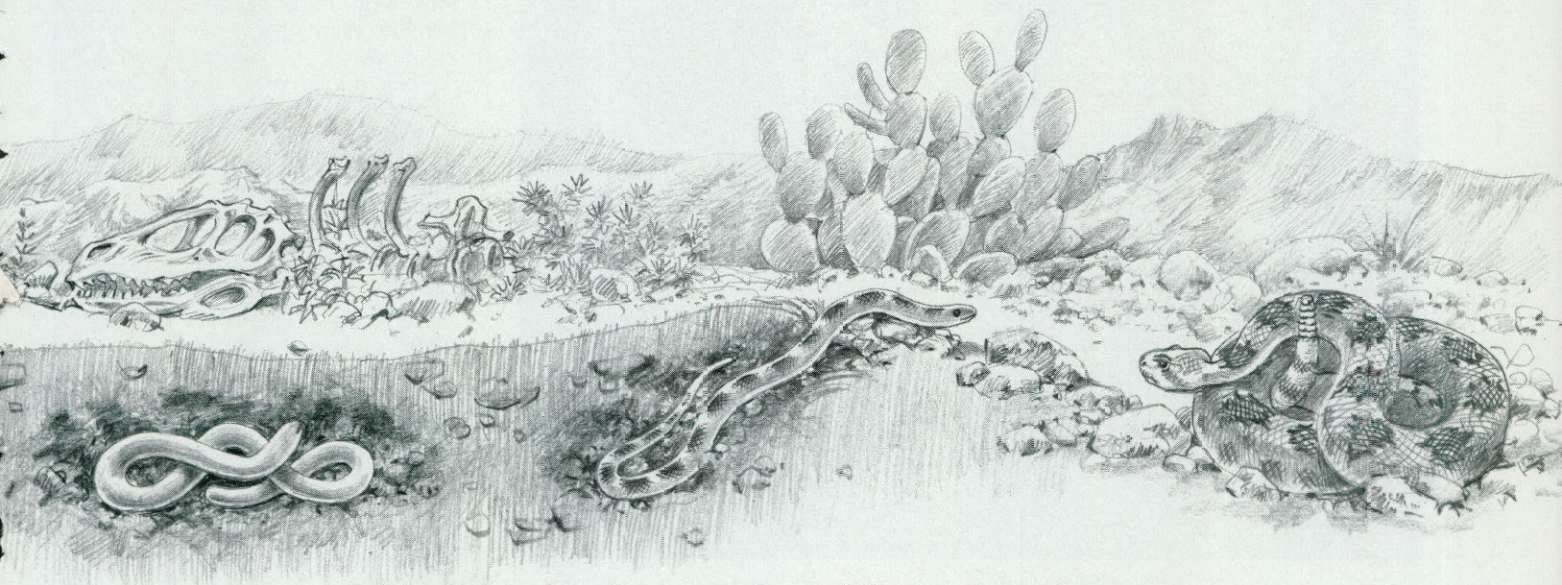
Illustration by Don Collins

like looped cables to find shelter in places inaccessible to other sizable creatures and then, uncoiled, slide the largest possible bodies through narrow crevices and down burrows in search of rodents that depended on the restrictions of their tunnels to exclude conventionally shaped predators. The old limits of the rigid, limb-supporting rib cage no longer prevented snakes from employing an even more unusual predatory tactic: expanding themselves to engulf animals two or three times their own diameter.

Because the chewing teeth of their lizard forebears had been lost, the only way to acquire the big block of energy available in each lumpily proportioned mammalian kill was to swallow it whole. Snakes therefore had to expand, which called for the development of an elastic skin that would allow the ribs—now



The mottled dorsal patterning of the timber rattler, one of the state's declining species, helps to camouflage it among the dappled shadows and leaf-covered woodland floor of its East Texas forest habitat.



It is thought that under predatory pressure from small, fiercely carnivorous dinosaurs, many terrestrial lizard species were driven into aquatic habitats or underground. There they lost their legs and elongated into the ancestors of modern snakes.

freed from the vanished sternum—to flex so far sideways that serpents were able to become expandable-collapsible animals. Having nosed its way down a burrow to seize a sleeping rodent, a snake that earlier had collapsed its body to shrink from predators beneath a rock or log could reverse the process, distend, and draw itself over its prey like a sock.

Before engulfing these creatures, serpents first had to get the carcasses past their narrow skulls and jaws, for small heads were an essential part of their tight-placed survival strategy. The old expansion joints that had let the ancestral monitors partially dislocate their jaws spread into more elaborate sutures that ultimately allowed the lower skull virtually to come apart on elastic, cartilaginous hinges.

Eventually, snakes were able to disengage each lateral half of their long lower mandibles, separately pivoting each side on its own loosely joined linkage of bones. Connected only by a band of flexible cartilage at the chin and aided by recurved teeth designed to slip for-

ward over inward-bound prey, right and left jaw segments then could alternately advance in a series of ratchetlike steps, gradually drawing the serpent's head over a mouse or rat several times thicker than the unhinged skull itself. For a major small mammal-eater such as a rat snake or bull snake, this happens up to 200 times every year, making these reptiles a major factor in controlling a rodent population that, unchecked, would devour the world's resources in a matter of months.

Pretty remarkable creatures, snakes, you'd likely note, folding away your cosmic-zoologist's logbook deep in that Earthling library. Heading back to your starship rendezvous, you would wonder why snakes, the most successful of the Earth's reptiles with more than 2,000 species worldwide, are in major decline at the hand of man.

This is the case even in Texas. With the obliteration of the Rio Grande Valley's native Tamaulipan thorn thicket, most of the tropical serpents that ventured north into South Texas as recently as the 1960s have vanished.

Rattlesnake roundups continue to destroy thousands of beneficial reptiles and poison the subsurface with gasoline. Most of those who value nature decry this poisoning and the brutal public spectacle that follows—snakes slung about, crushed underfoot, even beheaded by kids whose parents pay \$5 for the privilege. However, Texas Parks and Wildlife Department biologists contend there is inadequate data to indicate rattlesnake roundups disrupt the balance of nature or cause a decline in snake populations.

Still, snakes survive. They are among the few wild terrestrial vertebrates that persist even in the heart of the urban world. Small brown, lined, earth, and ground snakes still can be found in parks and vacant lots. They are simple connecting threads to the vast, intense biological world with which their parents almost entirely have lost the sense of their own continuity. ★

Alan Tennant is the author of "Snakes of Texas," and "A Field Guide to Texas Snakes."



*The Texas rat snake, *Elaphe obroleta lindheimeri*, was named in honor of pioneer Texas botanist Ferdinand Lindheimer. Like other serpents, the rat snake can stretch its jaws apart on cartilaginous hinges, allowing it to gradually swallow prey larger than its own diameter.*

PROTECTED SNAKES

Eight Texas snakes are listed as threatened and five are listed as endangered, affording these 13 species protection by the Texas Parks and Wildlife Department.

The penalty for taking or possessing one of these protected species is \$25 to \$500 per snake, according to Captain Wayne Chappell of the Texas Parks and Wildlife Department's Law Enforcement Division.

The eight threatened species are the timber rattlesnake, black-striped snake, Big Bend blackhead snake, northern scarlet snake, Texas scarlet snake, Texas indigo snake, Texas lyre snake and Brazos water snake.

The five endangered species are the speckled racer, Louisiana pine snake, Concho water snake, western smooth green snake and northern cat-eyed snake.

A hunting license is required of any person hunting or collecting snakes. They may not be hunted or collected from a motor vehicle on any public road.



Like the milk snakes, the northern scarlet snake (left) has developed a brightly hued back, probably in partial imitation of the coral snake's similarly vivid yellow, red and black banding. Copperheads (below) are pit vipers, the most recently evolved Texas snakes. But copperhead venom is less potent than the venom of their more developed relatives, the rattlesnakes.



O. H. Ivie Arrives

by Bud McDonald

On April 24, 1990, as the floodgates were closed at S. W. Freese Dam and the water of O. H. Ivie Reservoir began inching its way over the flat countryside, a project that had been more than 50 years in the making finally was realized in the West-Central Texas counties of Concho, Coleman and Runnels.

As early as 1938 a spot for a reservoir was tentatively selected by the U. S. Army Corps of Engineers near the confluence of the Concho and Colorado Rivers. Through the years support for the project alternately rose and fell as those for or against the dam clashed with each other and government regulations. In June 1965, a report from a consulting engineer indicated that a reservoir near the small settlement of Stacy was "the best solution to the future water supply problems of the Upper Colorado River Authority and the upper basin."

In October 1967, a water study commission made up of federal and state

officials recommended the construction of 30 reservoirs by 1975, including "the Stacy Reservoir in Coleman, Runnels and Concho Counties." However, it wasn't until 10 years later that the Colorado River Municipal Water District filed a permit application with the Texas Water Commission to construct the dam and reservoir.

For the next 11 years the permit was challenged in court by several groups. In 1984 the Stacy permit was reversed by the Texas Supreme Court, prompting Governor Mark White, Lieutenant Governor William Hobby and Speaker Gib Lewis to urge the Lower Colorado River Authority to meet with the CRMWD to settle the Stacy question. After representatives of the two factions met in Austin and signed an agreement to settle their differences, the Texas Water Commission on April 25, 1985, granted the CRMWD a permit to impound 554,000 acre-feet of water on the Colorado River at Stacy. Two months later the cities of San Angelo, Midland and Abilene each approved a contract for 16.5 percent "safe yield" of the water from Stacy Reservoir.

At that point the Stacy project seemed a certainty. The next year, however, the Concho water snake reared its head and threatened to put a damper on the entire project.

Actually a subspecies of Harter's water snake, *Natrix harteri*, the Concho water snake, *Natrix h. paucimaculata*, was known only to the Concho-Colorado River system in Central Texas. Named for Philip Harter, a snake fancier and collector from Palo Pinto County, the small, brownish water snake is found in fast-flowing rocky streams or in bushes or grass along the shores.

On April 3, 1986, the Corps of Engineers held a public hearing in Ballinger on a proposal by the U. S. Fish and Wildlife Service (USFWS) to place the Concho water snake on the agency's threatened species list.

A few weeks later Senator Lloyd Bentsen and Representative Charles Stenholm introduced legislation to force the Corps of Engineers to make a decision on issuance of the Stacy permit before November 30, regardless of any impending threatened species listing. The plot thickened in July, when the Fort Worth office of the USFWS recommended that the CRMWD be denied a permit for the dam because the project would endanger the snake.

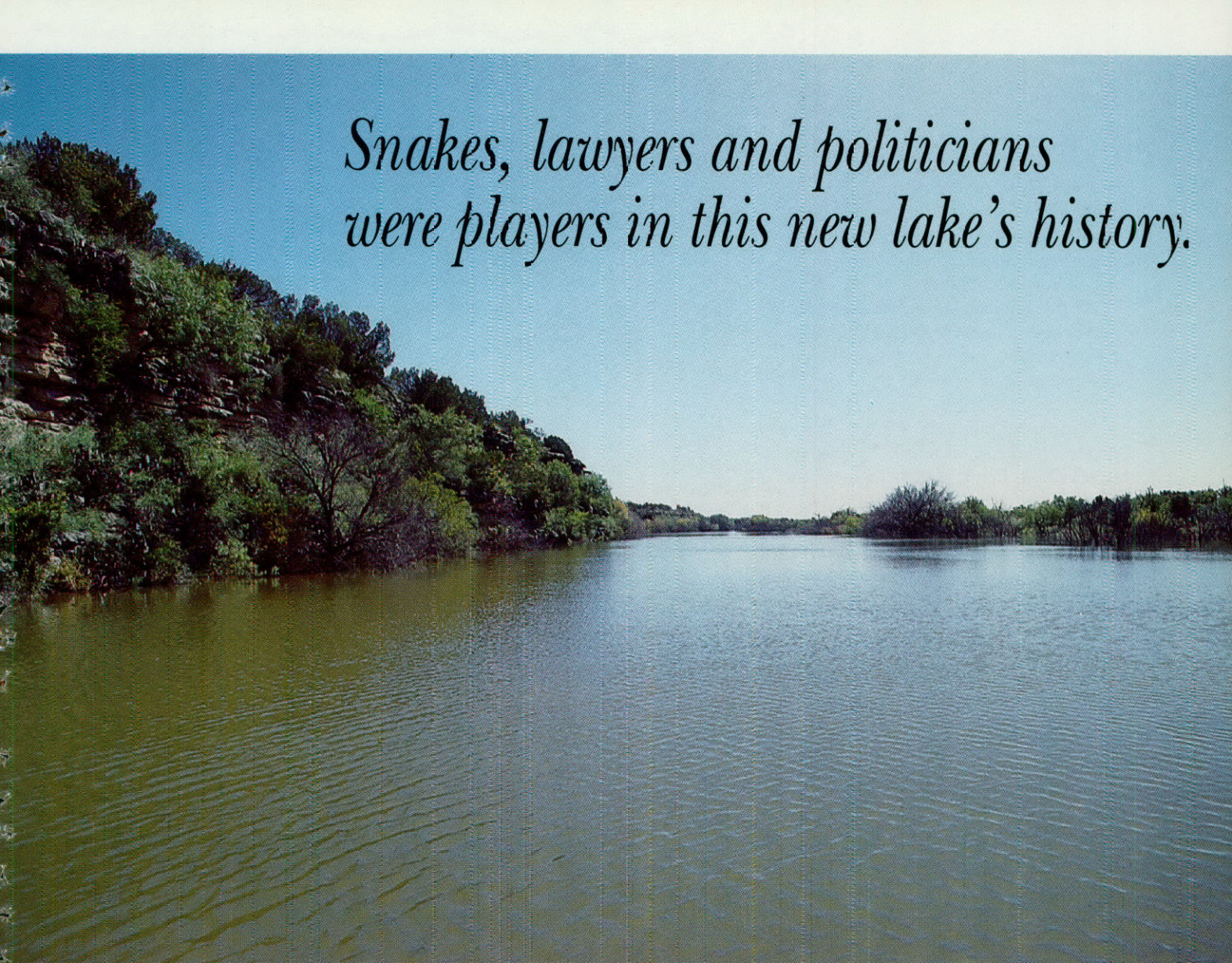
In September the USFWS listed the Concho water snake as threatened in the Federal Register and it seemed the Stacy project was back at square one. However, a few months later representatives of the Corps of Engineers, CRMWD and the USFWS reached an agreement on steps to insure protection of the Concho water snake. The CRMWD agreed to hire a biologist for 10 years to study the snake, create artificial habitats and capture and transport the snakes to improved, restored or newly created habitats. However, a later report found that the Concho water snake had at least 131 square miles of critical habitat, thus relaxing the problem somewhat.

Although the area that eventually would be inundated by the Stacy project is sparsely populated, it is a region rich in Texas history and dear to those who lived in and around the small settlements. People who moved away but still had friends or relatives buried in the area of inundation were faced with the fact that remains interred in the Gann and Coffee family cemeteries, plus a cemetery with the unlikely name of "Trigger Boothill," would be moved to other cemeteries in the area. Under-



D. Craig McIntyre

The Concho water snake threw a scare into the dam builders, but the reptile's range turned out to be larger than the lake basin area.



Snakes, lawyers and politicians were players in this new lake's history.

Water district officials thought it might take four years to fill O. H. Ivie, but heavy rains during December 1991 brought the lake to 56 percent of capacity. At conservation pool level the West Texas reservoir will cover about 20,000 surface acres and average 40 to 50 feet in depth.

Glen Mills

standards, this caused concern, but at least the pioneer families would have the name "Stacy Reservoir" to serve as their monument.

Then in December 1989, CRMWD officials dropped a bombshell when they announced their intent to name the reservoir "O. H. Ivie," in honor of the water district's general manager, and the dam "S. W. Freese," to honor the Fort Worth engineer whose firm had engineered every CRMWD reservoir and major project since 1949.

Actually, the "Stacy" designation for the reservoir was clouded from the beginning, as the tiny settlement located on maps at a bend in FM 503 consists only of a road sign, cemetery and defunct U. S. post office. It is even uncer-

tain for whom the settlement was named, with some claiming it was known for early pioneer Jesse B. Stacy while others argue that the name honored his son, Morgan J. Stacy. In reality, the settlement originally was known as Brown Town (Brown Town), for a pioneer cowman who had started a small drugstore.

Jesse Braswell Stacy and his wife, Nancy Carline Leonard Stacy, are buried in the old Stacy Cemetery some four miles southeast of the dam. Morgan and his wife Lula were more prominent in the community, but disappeared from history in a series of moves beginning in 1912.

Stacy once thrived on trade from ranches such as the Gould-Busk spread to the east, the Day Ranch and others.

However, hard times brought on by drought and a dwindling cattle market apparently caused the community to wither and eventually vanish.

What might have been a more suitable remembrance of the area of inundation is the community of Leaday, named by the remarkable Mabel Doss, the "Cattle Queen of Texas." This settlement is now, or soon will be, covered by the waters of the reservoir.

Doss, who was married to William H. Day in 1879, was widowed and left with huge debts a few years later at the age of 26 when her cattle-baron husband died of gangrene brought on by a riding accident. In 1889, Mabel married Captain Joseph C. Lea, another cattleman who died within five

years of their marriage.

Doss founded the community of Voss in southeast Coleman County in 1905 and Leaday (named for her two husbands) in 1906. Mabel (Day Lea) Doss died that same year, on the eve of paying off all her indebtedness.

At the dedication of Ivie Reservoir and Freese Dam on May 19, 1990, Senator Stenholm tactfully acknowledged the presence of a small band of disgruntled protestors.

"Controversy will always follow progress," the senator said. "While the (CRMWD) board acted in a legal and appropriate way, the main purpose of this project is not simply to honor individuals but to assure that generations to come after us will enjoy a good drink of water."

Of nearly equal significance with drinking water in the arid land is the new reservoir's importance as a recreational area. At conservation pool, Ivie Reservoir will cover about 20,000 surface acres. Water depth probably will average 40 to 50 feet, with the deepest point reaching 116 feet just south of the flood gates in the old river channel.

Under average rainfall conditions CRMWD officials estimated it would take Ivie Reservoir about four years to fill. Recognizing the public's interest in



The O. H. Ivie project, originally named for the community of Stacy, had to overcome several controversies, one of which was the relocation of several cemeteries located in areas that were to be inundated by the S. W. Freese Dam.

Glen Mills

the new lake and anglers' desires to try the fishing there, the CRMWD agreed to open the reservoir for limited recreational use when the water level reached 50,000 acre feet. Under normal conditions this probably would have occurred in about a year; however, weather is anything but normal in West Texas.

After unseasonable rains hit the lake's

large watershed, more than 15,000 acre-feet were deposited in the lake within a few days after it began impounding water. Several more rainstorms during the summer sent high water thundering down the Concho and Colorado Rivers. On September 29, with the water level standing at slightly more than 84,000 acre feet, the water district hurriedly opened two of the lake's four recreation sites to boaters and onlookers.

That day more than 1,000 people visited the Concho Recreation Site on the south shore and the Padgett Site on the north shore. Two other recreation sites, Kennedy and Leaday, will open sometime in the future. A fifth site may be opened if needed, although a name has not been selected.

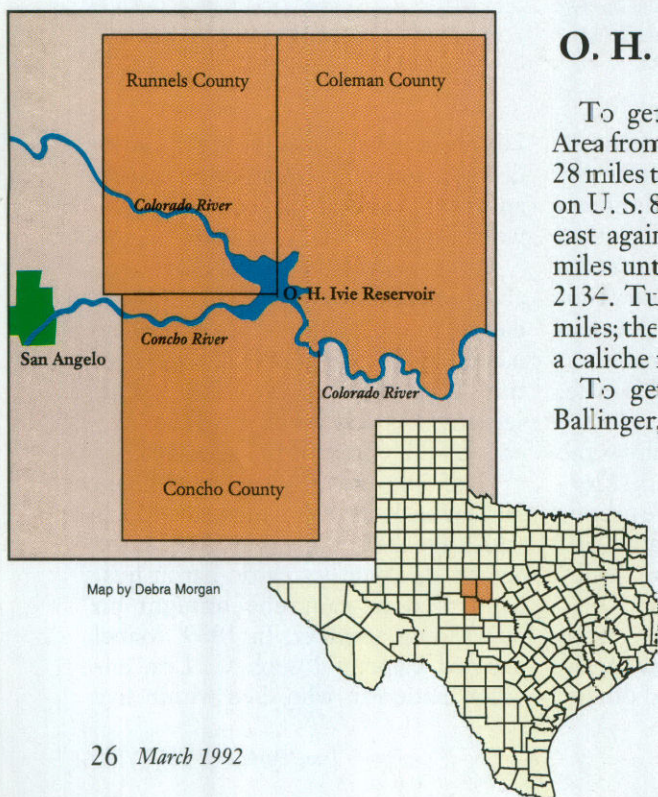
Those first-day fishermen who braved the unfamiliar waters of Ivie Reservoir found that after launching from the exceptionally long and steep concrete ramp they still had to negotiate a narrow channel for more than eight miles to get to open water. Only a few legal-sized catfish were caught on opening day, although fishermen reported catching and releasing scores of small largemouth bass.

At various times the Texas Parks and Wildlife Department stocked more than 500,000 Florida largemouth bass and 300,000 smallmouth bass fry and fingerlings in the lake, along with quanti-

O. H. IVIE RESERVOIR

To get to the Concho Recreation Area from San Angelo, take FM 380 for 28 miles to Paint Rock, then turn north on U. S. 83 for about three miles. Turn east again on FM 1929 for about 10 miles until the road dead ends at FM 2134. Turn northeast for about three miles; the Concho Site is a left turn onto a caliche road at the sign.

To get to the Padgett Site from Ballinger, take U. S. 67 east to Valera and turn south on FM 503 for 10 miles to Voss. One mile south of Voss turn west on FM 2134 and follow the signs to the site.



Map by Debra Morgan

ties of channel, blue and flathead catfish, plus other species such as crappie and striped bass. However, it will be some time before many fish reach legal size. In accordance with a regulation adopted by the Parks and Wildlife Commission, Ivie joined eight other Texas impoundments as of September 1, 1990, for more restrictive 18-inch minimum length and three-per-day bag limits on black (largemouth, smallmouth and spotted) basses.

Even with the special bass limits, Ivie

Reservoir is expected to become one of the state's premier fishing lakes. Joe Pickle, information officer with the CRMWD, said that in deference to fishermen and requests by the TPWD, brush clearing at the new reservoir involved only the lake's main basin.

"We cleared about 10,000 acres and left about 10,000 acres intact," he said. "Most of the clearing was done from the Leaday crossing to the dam, with other clearing mostly in Coleman County."

The water district was somewhat

unprepared for the early opening of Ivie Reservoir, but temporary facilities are provided at the two sites and overnight camping is allowed. Recreation use fees are \$2 per person per day, with permits available from area businesses. A season pass may be obtained for \$20, while a \$50 boater's pass that covers all boat passengers from January 1 through December 31 may be purchased. ★

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



West Texas fishermen already are enjoying O. H. Ivie's offerings, but biologists say it will be several years before the big reservoir reaches its potential. Most of the smallmouth, largemouth and striped bass stocked in the new lake are still well below legal size for retention by anglers.



The Desert is No Place for Pansies

Most people would deem the desert and spring wildflowers—especially bluebonnets—incongruous concepts. Who would expect a place that usually receives less than 10 inches of rain a year to produce anything but dust storms? Yet, while the Texas Hill Country mops up tourists' dollars with massive banks of bluebonnets, the Big Bend area may be even more appealing. Vibrant hues of blue, pink and yellow wildflowers are set against a backdrop of rugged desert mountains, the tender petals defying a landscape that seems more life threatening than nurturing.

The desert's floral presentation is subtle, but what it lacks in quantity it makes up for in quality and distinction. For instance, the Big Bend lupine (the species of bluebonnet indigenous to this area) dwarfs its

Article by Jo Lou Spleth
Photos by Laurence Parent



*Wildflowers
flourish
in arid
Big Bend.*

south-central Texas relatives. Growing up to four feet tall, its massive stalk may hold 12 inches of flowers.

And what could be more distinctive than a brown flower? Some might wonder why nature even went to the effort when there are so many other colors to choose from, but that takes all the fun out of spotting a brown-flowered cactus blooming in the midst of its brown surroundings. After all, focusing on a single bluebonnet is no trick, but there's something of a treasure hunt in finding a brown blossom.

David Riskind, director of resource management for the Texas Parks and Wildlife Department's Public Lands Division, agrees that most people aren't prepared for what they'll see when the desert blooms. "It's not the kind of display people expect, especially if they're used to the Hill Country," says Riskind. "The desert actually blooms all the time, but it's not always that perceptible. You don't always see the tiny flowers."

Riskind suggests that we are culturally biased in our perceptions of the desert, often believing that the only growing plants are cactus, sagebrush and greasewood. But it isn't just cacti that bloom in the desert. There are hundreds of blooming plants that look as if they could be found in more temperate locales. The Wright verbena's purple blooms look very similar in shape and color to the verbena one might buy from a nursery as a bedding plant. But the desert variety is a much tougher customer.

Every plant in the desert competes fiercely for moisture and soil nutrients. In order to survive, plants adapt by spacing themselves far enough apart to get their share of the scarce rainfall. Big Bend wildflowers often confine their growth to areas that normally hold more moisture, such as the lowlands near the Rio Grande and the lower slopes of

The desert's floral presentation is subtle.

washes and canyon bottoms. Even roadsides sprout more flowers than some other places because runoff concentrated from the pavement makes them a choice location.

Even in a good year, a massive wildflower bloom in Big Bend could look meager by Central Texas standards. Yet

for those who know just how sparse the desert can be, a good year for Big Bend wildflowers is a marvel. Spring 1991 was just that. Rains during the previous fall and winter added up to more than double the normal precipitation. The desert began to bloom during the winter and by late February, the bluebonnets were at peak. "They were growing hundreds of feet above the river lowlands on the slopes," says Riskind, "and that's really unusual."

Tuff Canyon, on the west side of Big Bend National Park just two miles north of Castolon, is a good bet most years for



The claret cup cactus sports vibrant blooms in the spring.

bluebonnets. In a year of good bloom, the fragrance alone is overwhelming. The sweet perfume, reminiscent of honeysuckle, wafts up from the rocky canyon slopes on the breeze.

There is plenty to see from Tuff Canyon's observation point, but the most spectacular view is on the 1/4-mile hiking trail that leads to the canyon floor. Not clearly marked, the trail is to the south of the observation area, past the point where the sidewalk ends. But it is worth the effort it takes to find it because the slopes rising sharply from the narrow trail can be covered with bluebonnets.

At the canyon bottom, the deep pinks

of verbena and anemone accent the sandy, dry streambed. Bright yellow desert marigolds bob in the breeze, their daisylike faces turned toward the sun. A walk back into the canyon on its natural stone pavement provides a good opportunity to see the brilliant green foliage and yellow blossoms of rock nettle, which grows horizontally out of rocky cliffs. The sandy banks alongside the canyon also may sprout a variety of less showy but interesting wildflowers, such as the broomrape. This unusual plant is a parasite that feeds on roots of other plants. It has no leaves, but emerges from the sand with a cone-like stem on which purple flowers bloom.

Another good area that can be enjoyed easily, even from the comfort of an automobile, is FM 170, the river road bordering the Rio Grande and



A strawberry cactus blooms among Big Bend National Park's rugged desert mountains.



Big Bend Ranch State Natural Area

Big Bend Ranch State Natural Area adjoins the national park on its west side. FM 170, which winds along the Rio Grande, runs the length of the area from Lajitas on the east to Presidio on the west. Admission is \$2 per vehicle. An additional \$2 activity fee is required for river float trips, hiking, camping, fishing or other recreational pursuits. Fees are paid at the Warnock Environmental Education Center east of Lajitas or at Fort Leaton State Historical Park east of Presidio.

Guided bus tours of Big Bend Ranch are available to Conservation Passport holders. Tours depart from the Warnock Center or Fort Leaton and take visitors northeast into the interior of Big Bend Ranch. The nine-hour tour costs \$30 per person and includes a chuckwagon lunch.

The \$25 Conservation Passport is good for a full year and provides entrance to most of the Texas Parks and Wildlife Department's public lands as well as a discount on facility use fees. It

may be purchased at any state park that charges an entrance fee and all offices that sell hunting and fishing licenses.

About 30 miles of backcountry trails at Big Bend Ranch currently are open to visitors. The only campsite currently available is a primitive site at Madera (Monilla) Canyon. River access is provided at Rancherias Canyon, Madera (Monilla) Canyon and Grassy Banks.

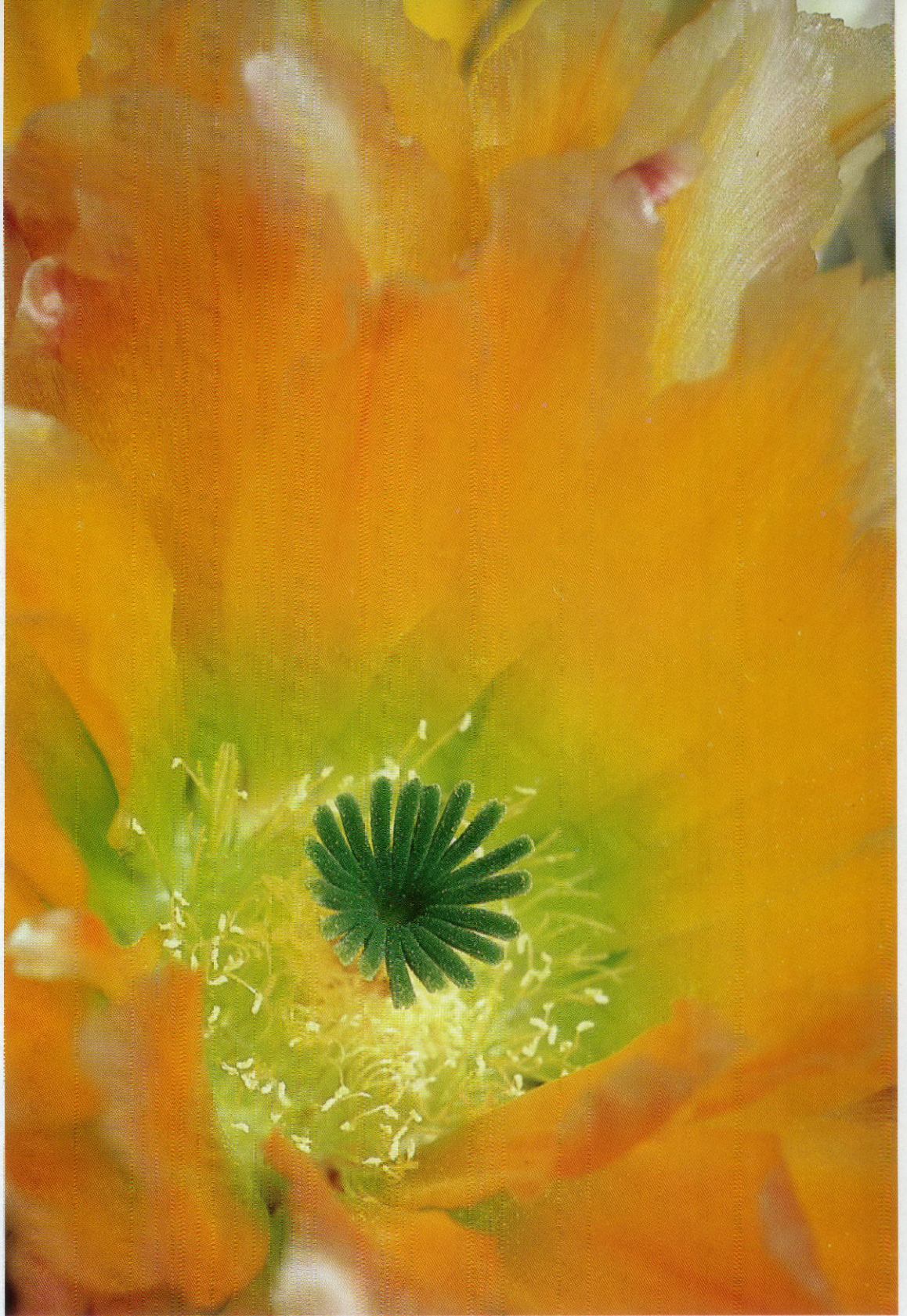
For more information or bus tour reservations, write:

**Barton Warnock Environmental
Education Center**
HCR 70, Box 375
Terlingua, Texas 79853
Telephone: 915-424-3327

Information also is available from:

**Fort Leaton
State Historical Park**
P.O. Box 1220
Presidio, Texas 79845
Telephone: 915-229-3613

Blooming cacti usually reach their peak in late March and early April. At right is the bright yellow flower of the rainbow cactus.



running the length of Big Bend Ranch State Natural Area. Bluebonnets, desert marigolds and rock nettle are abundant on this scenic route in early spring.

That the desert soil can support beautiful wildflowers is amazing in itself. But equally astonishing is the durability of the blooms. Though fragile looking,

the blossoms bravely withstand the ravages of rain squalls and the irritating blasts of March winds, so fierce at times that the 40- to 60-mile-per-hour gusts knock out electricity in the national park for hours. Tender blossoms such as the paper-thin white prickly poppy seem to hang on for dear life in the



Tall, spiny cacti bloom in Big Bend's Hot Springs Canyon.

Big Bend National Park

Big Bend National Park lies 211 miles southwest of Odessa or 308 miles southeast of El Paso. From Odessa, take IH 20 west to Monahans, turn south on SH 18 to Fort Stockton and continue south on US 385 through Marathon and on to the Persimmon Gap entrance to the park. From El Paso, take IH 10 east to Van Horn, turn south on US 90 to Alpine and turn south on SH 118, which enters the park on the west side at Maverick. Admission is \$5 per vehicle.

The National Park offers three major campgrounds at the Basin, Rio Grande Village and Castolon. Only Rio Grande

Village provides utility hookups through the national park concessionaire. Because of steep grades into the Chisos Mountains, the park management recommends that trailers of more than 20 feet or motor homes in excess of 24 feet use campgrounds other than the Basin. Fees for Class A campgrounds are \$5 per vehicle each night. Class B campground fees are \$3 per vehicle each night.

A free permit is required for backcountry roadside campgrounds along park dirt roads. Some roads may be accessible only with four-wheel-drive vehicles. Inquire at any visitor center when obtaining the permit.

The park has more than 150 miles of hiking trails, from rugged backcountry trails to well-maintained short walks. Bicycles and mountain bikes are allowed on paved and dirt roads only. Saddle horses, pack animals and guides are available in the Basin from the Chisos Remuda. For information, call 915-477-2374.

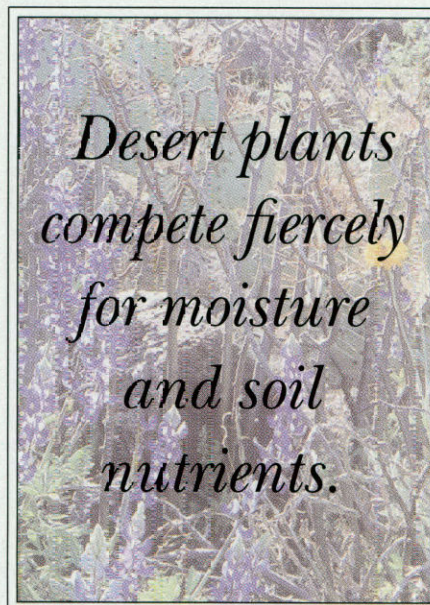
A permit is required for rafting or canoeing the Rio Grande and can be purchased at the visitors' centers at Rio Grande Village or Panther Junction.

For information or reservations, write to Superintendent, Big Bend National Park, Texas 79834, or telephone 915-477-2251.

desert gales, but they tend to grow in more sheltered, sandy areas that give them the best opportunity for survival.

The seeds produced from each wildflower are engineered like tiny time capsules. Their tough coats disintegrate only under the right conditions. That's why a good bloom one season is destined to create others of the same or greater magnitude many years later. "The flowers we plant in our gardens have been bred to all germinate and bloom at the same time, but that's not a good strategy for a natural ecosystem," says Riskind.

Nature preserves its reproductive ability by building a seed bank in the soil. Only a portion of the seeds in that bank will germinate each year. "It's conceivable that many of the plants you see



blooming today came from seeds that matured a decade ago," adds Riskind. That particularly applies to bluebonnets, the seeds of which are extremely hard and look like small pebbles, about 1/8 inch in diameter.

Desert plants may respond quickly to environmental cues. If there's plenty of moisture, some plants that normally would flower only in the spring will reflower later in the summer. But other plants wait an entire year before responding to rainfall. The 20-foot tall yuccas of Big Bend, called giant daggers, are an example. "Sometimes they'll bloom best in what's currently considered to be a dry year because it rained 12 months before," says Riskind.

A trip to Big Bend just for the wildflowers is well worth the effort and can

It isn't just cacti that bloom in the desert.

be planned from late winter through late summer. What is blooming at any time is totally dependent upon the previous months' rainfall. However, bluebonnets normally peak in late February and early March. At that time, other wildflowers will bloom in the lower elevations where the temperatures warm

up more quickly. A lot of cacti reach their peak bloom in late March and early April, and the giant daggers make their impressive showing from March through May.

Generally, as the spring progresses, the wildflower crops appear in higher elevations. The rainy season for Big Bend in July and August produces yet another bloom. By late summer, the Lost Mine Trail in the Chisos Mountains is especially good for seeing regal sage, Wright verbena, pink windmills and the red Mexican catchfly. The fall season brings spiderworts and Apache plume, among others.

Both serious wildflower lovers and those who simply enjoy learning may wish to participate in one of the wildflower seminars offered each year by the Big Bend Natural History Association. Led by an expert on Big Bend wildflowers, the seminars normally are a day long and cost \$40, which includes a campsite and entrance to the national park. Advance reservations are recommended and can be obtained by writing the association at P.O. Box 68, Big Bend National Park, Texas 79834 or telephoning 915-477-2236.

To see flowers off the beaten path, consider a bus trip through the backcountry of Big Bend Ranch State Natural Area. The inner sanctum of this area, opened to the public for the first time in 1991, is accessible only by bus. Visitors can take a 74-mile round trip tour from Fort Leaton State Historical Park near Presidio. A 136-mile round trip tour covering the same route, but also including FM 170, leaves from the Warnock Education Center near Lajitas. Either tour includes a chuck wagon lunch at Saucedo. The tours are scheduled only twice a month, so reservations are encouraged.

The size of Big Bend can be intimidating to some visitors. It's possible to spend several days in just one area such

as the Chisos Mountains. But that would be a mistake, especially if seeing wildflowers is the reason for the trip. At any given time, different flowers will bloom in different places. So it's best to stop by one of the park's three visitor centers and ask what's blooming and where.

The advantage of the diversity in this huge natural expanse is that visitors have ample opportunity to see a variety of landscape and vegetation, from river



An Indian paintbrush blooms among a stand of candelilla. Fragile-looking flowers must be durable to survive in the desert.





bottom canes to open desert cacti to mountain greenery. And there are plenty of activities besides wildflower gazing in which to participate. Hiking is most enjoyable in the spring because temperatures are warm but not too hot during the day. If it's too warm, there are numerous places to rent rafts or take guided raft trips down the Rio Grande. A dip in the 110-degree hot springs on the way to Rio Grande Village can take

the edge off a cool desert night or help soothe sore muscles after a long day of hiking.

Can one see wildflowers, the desert, the mountains and a national border in the Texas Hill Country? No way. Only Big Bend offers that kind of variety. ★

Dallas freelance writer Jo Lou Spleth combined a love of flowers and the desert in this story.

Delicate purple flowers of the narrowleaf spiderling add splashes of color to the Big Bend landscape.

PICTURE THIS

Photo Contest, 3-D, etc.

Article and Photos by Leroy Williamson

3-D! WILL WE EVER GET IT RIGHT?

Our apologies for not getting our picture separation correct in either of our previous 3-D articles. Correct separation is 63mm, or approximately 2 1/2 inches between corresponding points in each photo. In our first article, our 3-D photos displayed about 77mm separation. It still was possible to free-

view, but with some eye-strain.

In our second 3-D article we missed it even worse. This time separation was 100mm, an impossibility for most humans to free-view. I could do it with the magazine held at arm's length but there was considerable eye-strain.

Just to prove we can do it right, here are a couple of stereo views of white-tailed deer—with 63mm separation.

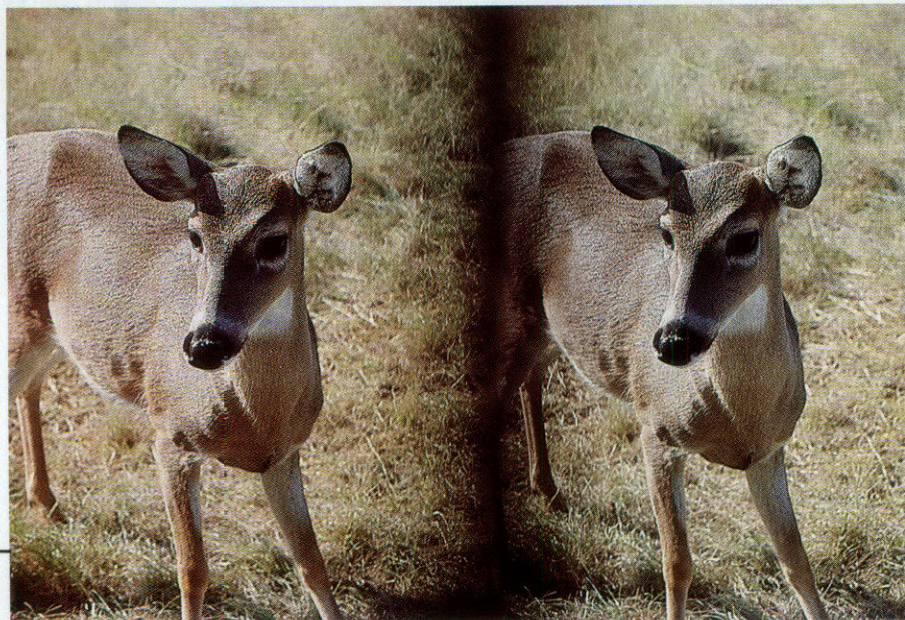
These are a breeze to free-view.

Sorry to have crossed your eyes so severely last time. Thanks to all the 3-D enthusiasts who have written. There were a couple of inquiries about finding a lab that processes and mounts stereo slides, a service that once was available at most labs but now is hard to find. Three labs still provide this service in the U. S.: Sunset Color Lab, P. O. Box 46145, Los Angeles, California 90046; Dynacolor Corporation, 616 Dwight Street, Springfield, Massachusetts 01103; and Color Print Incorporated, 221 Thayer Street, Little Rock, Arkansas 72202.

I'd be glad to hear about any other labs providing 3-D services. If I hear of any I will pass the information along in a future article.

PHOTO CONTEST GRAND PRIZE ANNOUNCED

A Pentax PZ-10 with a 28-80mm zoom lens will be awarded to the person who submits the photo judged best overall in the current Wildlife Photo Contest. The camera is the Pentax Corporation's latest entry into the world of smart cameras and is the world's first 35mm single-lens-reflex camera to sport intelligent power zoom. Other features include high speed auto-focus; predictive auto-focus for moving subjects; multi-patterned metering system for programmed auto-exposure; aperture-priority auto-exposure; manual settings for exposure, focusing, and zooming; built-in automatic flash with a through-the-lens program automatic flash mode.



A zoom clip mode allows the photographer to preset a specific focal length into the lens memory and automatically zoom back to that setting at the push of a button.

An image size tracking mode allows a precise image size to be set, and then the lens automatically zooms to maintain that image size with each additional exposure. Atop the camera is a multi-information liquid crystal display panel that provides a wide variety of useful information in the form of numbers and simple pictographs.

This easy-to-operate camera is designed for everyone, from beginners to advanced amateurs.

Other winners will receive \$50. All winners will be awarded certificates of achievement and six copies of the December issue.

The deadline for entering the Wildlife Photo Contest is August 15. See the entry form below for complete rules.

ANOTHER PHOTO CONTEST

Palmetto State Park is holding its third annual Earth Day Photography Show and Contest. The nature photography show is designed to develop and increase awareness of the unique natural resources that parks such as Palmetto were created to conserve. Photo subjects are: Texas Nature, Texas Wildlife, and People in Nature (Texas).

Matted photographs (8 by 10) will be accepted at Palmetto State Park from



Palmetto State Park is sponsoring its third annual Earth Day Photo Contest.

April 1 to April 20. These photographs will be displayed at the park's picnic shelter on Sunday, April 26 from 11 a.m. to 4 p.m. The awards ceremony will begin at 1 p.m.

For complete entry details, contact Mark Abolafia-Rosenzweig, park superintendent, Palmetto State Park, Route 5, Box 201, Gonzales, Texas 78629, telephone 512-672-3266. ★

Texas Parks & Wildlife Photo Contest Rules

- 1) A maximum of three slides, 35mm or larger, may be entered by one contestant. This entry coupon or facsimile thereof must accompany your slides. Mail to: Wildlife Photo Contest, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744.
- 2) Entries must be color slides, made by the contestant, of genuine Texas wildlife. Slides may be any format, 35mm or larger.
- 3) Entries will be judged for content and photographic quality by a panel of judges whose decisions are final.
- 4) Submissions must be accompanied by a stamped, self-addressed return mailer. While every effort will be made to return submissions after judging is complete, we accept no responsibility for damaged or lost submissions.
- 5) Freelance photographers whose photos have appeared in any issue of *Texas Parks & Wildlife* magazine are ineligible to enter. Previously published photos are not acceptable.
- 6) Employees of Texas Parks and Wildlife Department and their families are ineligible to enter.

WINNERS WILL BE ANNOUNCED IN THE DECEMBER 1992 ISSUE OF TEXAS PARKS & WILDLIFE MAGAZINE. ALL ENTRIES MUST BE RECEIVED NO LATER THAN 8-15-92.

NAME _____ PHONE _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

NUMBER OF SLIDES SUBMITTED: _____

Technical Information:

Subject	ID	Location	Film	Shutter Speed	Aperture
1)	_____	_____	_____	_____	_____
2)	_____	_____	_____	_____	_____
3)	_____	_____	_____	_____	_____

I enclose my entry for the Wildlife Photo Contest. The slides submitted by me are my own and I hereby give permission for *Texas Parks & Wildlife* magazine to reproduce them.

SIGNATURE _____

Back to the Wild

by Janet R. Edwards

"Watch out for the bird, Daddy!" cries a panic-stricken child sitting next to you on the front seat. At highway speed, there isn't time to react to the frantic flash of wings or the sickening thud beneath your car's right front fender. With a sinking heart, you pull over and locate the hapless animal; unconscious on the roadside, feathers awry, beak open, eyes closed, but still breathing. You want to help. But what should you do?

Regrettably, even your best efforts may not be sufficient to restore health to this innocent creature. Yet perhaps you, like thousands of others across the state, recognize and appreciate the inestimable value of even the most common species of wildlife and are willing to invest the time and effort required to try to beat the odds.

Should you treat the animal for shock? How can you safely transport it? Where should you take it? Whom should you call? Is it legal to take the wildling home? Should its suffering be mercifully ended? What are its chances for recovery?

The answers to these questions depend upon the law, the scope and severity of the animal's need and the potential risk for both yourself and the animal you want to help.

The care and rehabilitation of injured, diseased and orphaned wildlings is regulated by state and federal law. A person confining wildlife without a state permit is subject to a Class C misdemeanor under the Parks and Wildlife code, which includes a \$25 to \$500 fine for each animal held, plus court costs.

"We are there not only to enforce the law but to protect

the public. That's who we work for—not just the state but for the people of the state," explains David Palmer, director of field operations for law enforcement for Texas Parks and Wildlife. "Our game wardens try to educate and prevent violations as much as possible. But sometimes we have no choice but to enforce the law."

Generally, all mammals and birds, with the exception of feral rock doves (domestic pigeons), English sparrows (house sparrows) and European starlings (all abundant, nonnative species) are protected by the State of Texas. With few exceptions, it also is a federal violation for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import or export any bird passing through the state, including related

items such as nests or eggs. Other species, including reptiles, amphibians, fishes and certain plants also may be protected.

Some may view the legislative motive behind these strict regulations and the stiff penalties associated with them as simply a convenient means of generating state or federal revenue. However, those directly involved with the science of environmental resource management see it differently.

"The most important issue mankind faces on this planet is not the threat of nuclear war, the increasing budget deficit, or the many other issues that occupy our time and attention. By far, the most important issue concerns the continuing loss of biodiversity, which is our life-sustaining resource base," said Jack

Payne, former wildlife specialist for the Texas A&M Extension Center in Corpus Christi and current director of the Private Lands Program for Ducks Unlimited, Inc. "The evidence that the population growth of the human animal is severely impacting the biological diversity of this planet is strong. We need political leaders who are willing to address this issue and an educated public willing to support them."

By obeying these laws, we actually preserve for ourselves the luxury of being able to utilize some nonthreatened and nonendangered wild animals for recreational, scientific, educational and nutritional purposes.

However, if the state and federal governments discourage direct interaction between wild animals and the general population, who takes care of the innocent creatures that become hurt, abandoned or sick?



Steve Bentsen

High school students examine a rehabilitated white-winged dove prior to its being released back into the wild.



Steve Bentsen

Fortunately for all of us, there are a few dedicated individuals in almost every community who are willing to meet the requirements for obtaining a scientific rehabilitation permit. Qualifications include: knowledge of the proper care and treatment of needy wild animals, the financial resources to provide shelter, nourishment and medication, the physical and emotional stamina to provide 24-hour nursing care if needed, and the maturity required to return them to the wild when the time comes.

"I enjoy doing it," explains Dr. H. A. Hodges, a Corpus Christi veterinarian active in the treatment and rehabilitation of wildlife. "It's a great thing to prevent burnout. It's good public relations, good for office morale and it serves a good purpose. The investment

in time and money more than pays off."

Basic requirements for a state license include a completed permit application, letters of recommendation from two professionals in the field (such as veterinarians or established wildlife rehabilitators), a game warden's inspection of the holding facilities and detailed annual reports of animals cared for, including the outcome of their treatment. State permits must be renewed once a year. Wildlife officials emphasize that a rehabilitation permit does not allow the permit holder to keep a wild animal as a pet.

During their inspection, wardens look for cages of sufficient size, stability and repair to provide adequate ventilation and protection from the sun, inclement weather and predators. They ensure

Volunteers assist Dr. Steve Bentsen, a Rio Grande Valley veterinarian and wildlife rehabilitator, with the treatment of a great-horned owl.

that cages are constructed in a fashion that minimizes human contact, allows for the proper elimination of parasites, wastes and excess water and provides space for clean water and food.

Federal Migratory Bird Scientific Rehabilitation permits may be obtained by sending in a copy of the state permit along with a completed application. The U. S. Fish and Wildlife Service recently placed a temporary moratorium on the \$25 application/processing fee for migratory rehabilitation permits. Detailed annual reports are required along with

What should you do if you find an injured animal?

permit renewal every two years.

With a knowledge of and a respect for the law as a basic framework, what can and should you do as a caring, responsible citizen to relieve a wild animal's suffering and possibly save its life? First consider certain critical differences between wild and domesticated animal behavior.

Unless it is a tiny baby with unopened eyes, a wild animal that allows itself to be touched is in serious trouble, whether there is any visible evidence of a problem or not. Many species may tolerate

and even be inquisitive about your approach under normal circumstances. But the moment you violate the flight line—the distance from a human at which a wild animal feels safe—most will try to escape. This aversion to contact with man is, of course, essential for the animal's survival.

"Be constantly on your guard," warns P. C. Hanes, executive director of Central Texas Wildlife Institute in Austin. "The animal has no way of knowing if you are trying to help or if you intend to hurt. That animal is simply going to

protect itself from any perceived danger. And human beings are perceived as a threat."

How can you minimize the danger and still move in close enough to get a good look at the animal and decide upon the best course of action?

Remember that eyes that look directly forward on the face, as human eyes do, generally are recognized as the mark of a predator and likely will produce fear and panic in an injured, diseased or orphaned wildling. Try to avoid direct eye contact with the animal as

Steve Bentsen



Dr. Jeff Jorgensen performs surgery on an injured brown pelican. The ultimate goal of all wildlife rehabilitation efforts is to return the animals to the wild.



Dr. Steve Bentsen and son Myles prepare to release a fawn that had been removed from its natural habitat. Well-meaning people who take a fawn home, believing its mother has abandoned it, do the animal serious harm. Usually the mother is nearby and will find her baby easily when the humans leave. Game wardens confiscate these "adopted" fawns and deliver them to veterinarians such as Bentsen to examine prior to release.

wayward offspring easily when it returns, unless the baby is the victim of a well-meaning human affected by the "Bambi syndrome," a sometimes fatal (for the animal) condition that causes a person to remove the animal from its natural habitat and take it home as a pet.

Keeping a wild animal in your home can be disastrous.

A wild youngster held in captivity is not able to learn from its parents how to protect itself from its natural enemies. The pampered creature, treated as a pet, forgets its own identity, coming to think of itself as a member of the human species. Should it manage to escape or be turned back to the wild at a later time, it not only is unable to relate to members of its own species, it finds itself at the mercy of its enemies and the elements, unable to find shelter or proper food.

In many cases, wild animals suffer serious malnutrition and eventual death in captivity because their natural food requirements cannot be duplicated in the foods that humans or even domesticated animals normally eat. Although the animal may accept and seem to relish certain foods, it may become ill and die because its digestive system is not designed to tolerate these foods. Trained, licensed rehabbers have knowledge far beyond the average citizen concerning how to provide a balanced diet for the various species of wild animals.

you approach with a slow, lateral movement. While speaking in a low, soothing voice, keep your body as low to the ground as you can to avoid a "towering monster" effect. This reduced profile will not eliminate the animal's fear, but it might lessen it to a degree that will make your approach a safer one and allow you to evaluate the animal's situation more easily.

Once you've come as close as prudently possible, you must determine whether the wildling actually needs your help. Those in need fall into two general categories: animals that have permanently lost their mothers and are too

young to survive on their own; and animals which, though physically old enough to care for themselves, cannot do so because they have been weakened or injured. Unless the animal falls into one or both of these categories, leave it where it belongs—in the wild.

Like all children, young wildlife have a tremendous curiosity about their new surroundings. They may wander away from the protection of their homes while the parent is off in search of food. In some species, the mother actually will leave the nest on purpose, feigning an injury in order to distract a predator.

However, the parent can locate the

"I once had a young roadrunner brought in to me with a terrible case of metabolic bone disease," said Sallie Delahoussaye of Wildlife Rescue, Inc. in Austin. "The people who had found the bird as a nestling had fed it mostly insects. Vertebrate animals have to have a diet containing the proper balance of vitamins, minerals, protein, calcium and phosphorus to stay healthy. Because of a calcium deficiency in such a restricted diet, the bird's bones became rubbery and soft. First the legs went, so it had to try to hold its body upright with its wings. Pretty soon the wings also became rubbery and collapsed. Finally the lungs caved in. The poor creature actually suffocated under its own weight. And all because it didn't get the right nutrition."

Feeding wild animals properly not only is a demanding science, it also can dent the family budget.

"Most people don't realize what's involved. A young barn owl, for example, needs eight to ten mice a day. When I tell people that mice normally cost \$1 or more each at a pet store and, in the case of very young owls, each

mouse must be cut up into bite-sized pieces before they can be fed to the owl, they usually decide to bring the animal in right away," said Delahoussaye.

Keeping a wild animal in your home may prove disastrous in other frightening ways.

"Even after two or three generations in captivity, these animals still have natural instincts that are awfully strong," warns Dr. H. A. Hodges, Corpus Christi veterinarian. "I once had a client with a pair of supposedly domesticated bobcats the family had raised from birth. One evening, while we were playing dominoes, we caught one of them stalking their baby. We caught the cat before the baby got hurt, but it gave us all a good scare."

But how can you identify and rescue a truly orphaned wild baby?

It is commonly believed that once a human being has touched a wild baby or its nest, its mother will abandon it. In most cases, this is not true. Babies should be handled with caution, but for a different reason; they may injure you, become lost or injure themselves trying to escape from you.

Babies become orphaned in a variety of ways. Accidental injury or death of the mother is the most common cause. If the baby (particularly a fawn), does not appear to be injured or weak, check back in a few hours to see if it has moved or the mother has returned. If the mother's body is located, or if she is unable or unwilling to return to care for

Approach an injured animal with caution.

the baby, determine whether the orphan is able to care for itself.

An infant mammal that can walk rather than crawl, with a full coat of fur and eyes that are open and bright should be returned to the safety of its nest. Be kind. Though it may be tiny, the animal is probably old enough to care for itself. Make regular checks over the next few

Cyndy Chapman (right, with Dr. Jorgensen and the brown pelican) founded the Rio Grande Valley's Bird Rescue rehabilitation program.



Steve Benisen

days to make certain the baby is indeed self-sufficient.

A baby animal should be rescued only if any of the following conditions apply: eyes are not fully opened and the mother is absent for more than a few hours or is known to be dead; behavior is listless or weak; body is cold or wet; injury; obvious danger from predators such as dogs or cats; fire ants on the body; or the nest is destroyed, out of reach, in a dangerous location or not visible.

Fully grown wild animals must be dealt with differently.

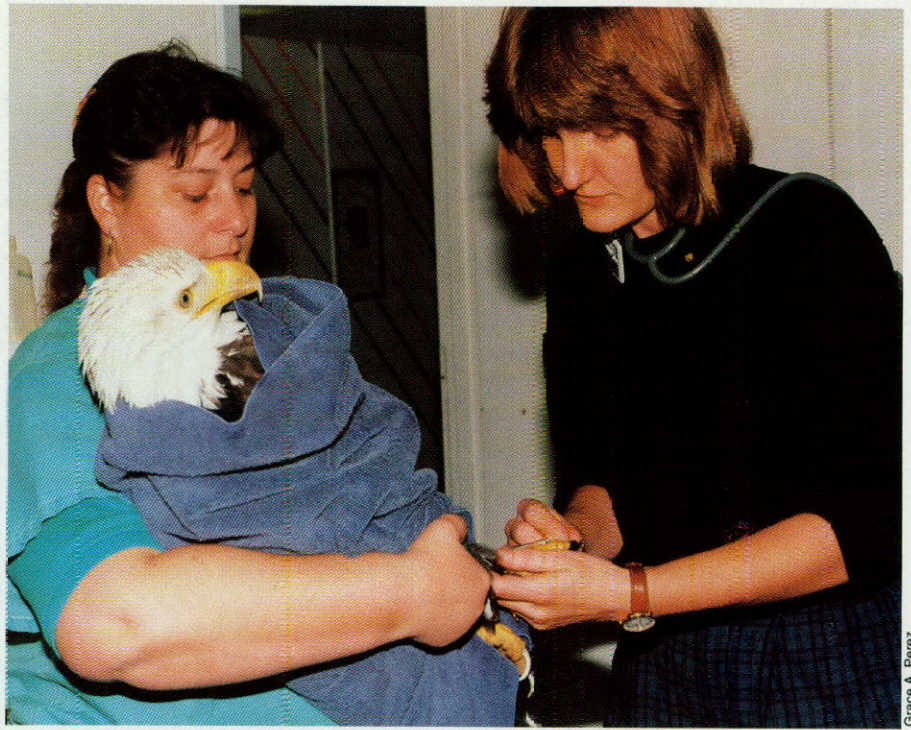
Do not attempt to handle a fully mature injured or diseased wild animal, particularly a predator such as a raccoon, fox or bird of prey. Instead, try to evaluate the animal's condition from a safe distance, then contact a game warden regarding its location, type of injury and any distinctive behavior.

Coping with any grown wild animal can be extremely dangerous. In their fear and distress they will bite, claw and possibly inflict severe injury. Herbivorous mammals, such as deer, are potentially hazardous because of their enormous strength and sharp hooves. Water birds with long beaks also can present a major hazard.

"Don't try to chase down a great blue heron or any large water bird," said Corpus Christi animal rehabber Gladys Albertson. "They're worse than snakes with those long necks and sharp beaks. I got stabbed once myself. They'll go for your eyes."

Whether the animal you want to save is an injured or weakened adult animal or an orphaned baby, consider the risk of disease. Never underestimate the danger of contracting rabies when handling any warm-blooded mammal in the United States. Extra caution is advised if the wildling seems friendly, approachable or tame, particularly if the animal is among those species known to be at high risk of carrying rabies: skunks, raccoons, foxes or bats. Recent tetanus and rabies vaccinations are certainly reasonable prerequisites for handling any animal that conceivably could inflict a wound.

Wild animals sometimes carry disease-bearing parasites. Ground squirrels and prairie dogs found in the western states, including West Texas, have been found to carry fleas that can transmit



San Antonio veterinarian Dr. Melissa Hill treats a bald eagle that was injured by a car as the bird fed on carrion along a roadway. Hill advises using a cardboard box rather than a wire cage to transport injured raptors to a veterinarian.

the organism that causes bubonic plague. Animals in these areas should be handled strictly by a professional. Birds normally pose little danger in terms of communicable disease.

Should you decide that it is safe and necessary to rescue an orphaned, injured or diseased wild baby, minimize any danger to yourself by following a few basic safety precautions. A very small baby, with eyes still closed, can be picked up with your bare hands. Approach a larger baby with greater caution. Offer your hand for the baby to smell. If it doesn't try to bite, slowly change the position of your hand so you can stroke its back, petting it slowly and very gently.

Now protect your hands with a blanket or an article of clothing and gloves, if you have them. Place one hand underneath the covering. Use the other hand, covered with part of the material, to push the baby gently into the other hand. Move your hands together under the baby, forming a nest with both hands in which to carry it. Drape a corner of the material over the baby to prevent it from jumping out and injuring itself. If the baby is injured, make certain the covering is very light in weight to avoid unnecessary discomfort.

Gently place the animal in a warm,

dark container—such as a cardboard box lined with the covering you used to pick it up—to prevent it from sliding around during transport and to keep it away from drafts, children, pets and household noises. Do not handle it or try to give it food or water. Take it to the nearest game warden, veterinarian, or licensed wildlife rehabilitator as soon as possible. Humane societies and animal shelters also may be of help, although training and expertise in handling wild animals at these types of facilities often is very limited.

"Human medicines should not be used," warns Albertson. "Tourniquets are okay, if they're done properly. But iodine's too strong for most animals. It'll burn the socks off a bird."

If the animal is bleeding, apply pressure directly over the wound. If a light tourniquet is used, place it above the wound, and release it every 15 to 20 minutes. Get professional help as quickly as possible.

Following the rules of basic hygiene will help prevent the spread of any disease or parasite. Immediately after you handle any wild creature, its body fluids or droppings, wash your hands thoroughly with soap and water. Then apply an antiseptic to any bites or scratch marks. Regularly change and dispose of

soiled bedding materials. If an animal dies while under your care, notify your physician or local health department in case further examination and treatment are needed.

Remember: Contact your local game warden, veterinarian or licensed wildlife rehabilitator at the earliest possible time to determine whether the animal

in your care is a protected species and how best to carry out its eventual rehabilitation and release.

What becomes of those injured, diseased and orphaned animals that survive but never regain the ability to take care of themselves due to permanent injury or human imprinting and cannot be released back to the wild?

"I've sent two to three hundred nonreleasable birds over the past 17 years to zoos all over South Texas," says Albertson. "Once I raised a great blue heron from a fledgling that some people had saved off an oil rig. I named it Sandy. Its nest had blown down and its beak was cracked. It took a long time for the beak to heal. When Sandy got well, I tried to release him on the beach. But he kept running up to me, squawking to be fed. Since he had lost his fear, we had to send him up to the zoo in San Antonio where he'd be safe."

Nonreleasable animals may not be kept as pets. Wild animals that die while undergoing treatment sometimes are preserved and used for educational purposes, but the remains must be documented and disposed of according to state and federal requirements.

The goal of any rehabilitative effort is to return wildlings to their native environment as soon as they are able to go. When possible, interaction with members of their own species is provided while in captivity, in hopes they will be better prepared to recognize and mate with others of their own kind.

Many predators, such as hawks, owls and foxes, also receive prerelease muscle conditioning, which often includes teaching or reteaching them how to hunt their own food in order to ensure maximum chance of survival in the wild.

The future holds exciting promise for the field of wild animal rehabilitation. The Texas Parks and Wildlife Department's Legal Services Division is studying a program to provide standardized training and accreditation for wildlife rehabilitators. In addition, efforts are being made to establish a statewide network of local organizations and licensed rehabilitators to provide mutual support and rapid dissemination of information.

"Continuing education is a vital part of wildlife rehabilitation," said P. C. Hanes, executive director of the Central Texas Wildlife Institute in Austin. "Improved techniques and diets, a more professional approach to what once was considered a 'little old lady in tennis shoes' avocation...and training vets to care for wildlife make an ongoing learning process not only possible but essential."

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Animals that have suffered permanent injury or human imprinting are unable to care for themselves and cannot be returned to the wild. Here, a Bird Rescue member shows some McAllen school children a white-tailed hawk.

rabies, developed eight years ago, recently has been approved for field testing to determine if it can produce immunity in wild raccoon populations.

Perhaps a more controversial development is the trend toward homeopathy. This is a holistic healing approach in which small amounts of natural, nontoxic substances such as bee venom extract and medicinal herbs are given to the animal for a short period of time instead of broad spectrum antibiotics in order to stimulate the immune system to produce a more rapid and com-

plete healing response.

In spite of the tireless efforts of dedicated animal rehabbers and responsible citizens around the globe, there is good reason to be actively concerned about the devastating impact of human interference—both accidental and intentional—on our fragile ecosystem.

Ironically, millions of wild animals suffer every year as much from human achievement as human ignorance, as much from misguided human compassion as human indifference. Even for those rescued from their misfortunes and given professional care, the survival rate usually is less than 50 percent.

Add to these pressures the forces of natural selection—competition for food, water and space, predation and genetic imperfection—and you have at least a partial explanation for the large num-

bers of species sliding inexorably closer to the threshold of extinction. We must do what we can to save them.

"Nature is kind to itself. Most of these problems are man-produced. There is a material order to things. Big ones eat little ones. That's just the way it is," explains Hodges. "Too many times we try to control nature. What we should do is try to protect it—mainly from us."

Janet Edwards is a regular contributor to the magazine.

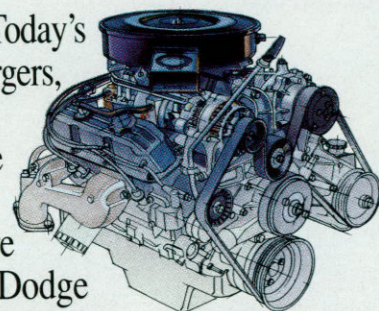
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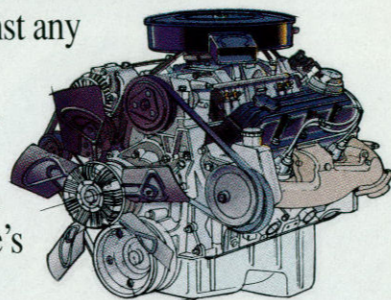
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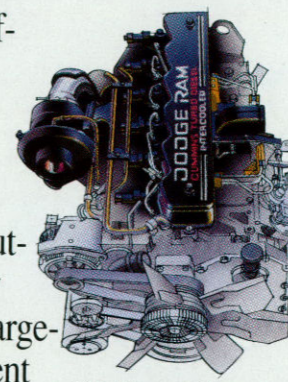


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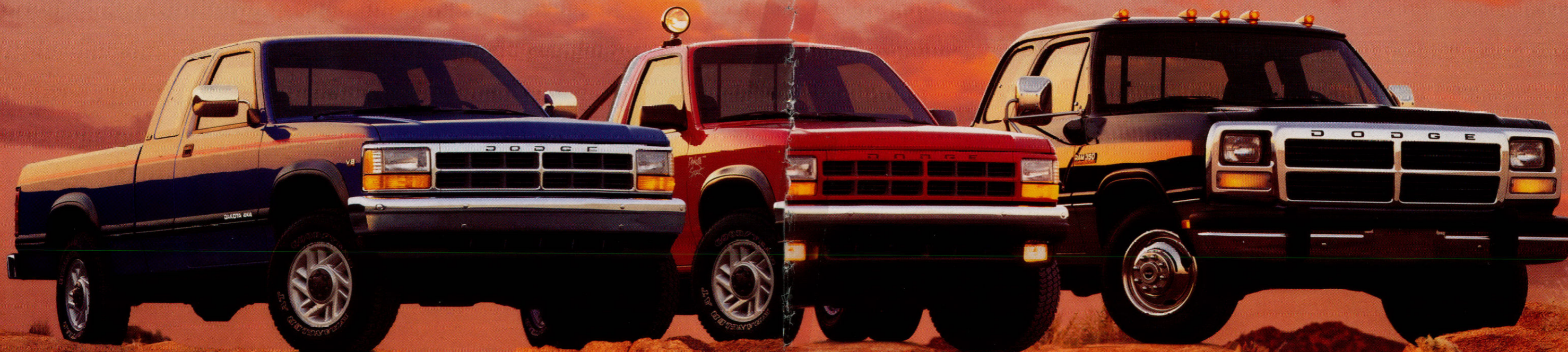
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The sun has just dropped below the horizon, but here within the screen of loblolly pines the darkness has been deepening for half an hour. With nightfall comes the formation of breeding choruses of the endangered Houston toad, *Bufo houstonensis*, at this small pond in Bastrop County, Texas, which is a focal point for these small, warty, rugose creatures. It is as if the pond is drawing the toads in one by one until the nightly chorus reaches a peak of 50 to 100 males.

As twilight settles in on this February evening the male toads are beginning to call from their shallow burrows where they spent the day. As night progresses they leave their retreats and move toward the pond where I sit. The sporadic rustlings in the live oak and yaupon leaves on the forest floor tell me that the toads are approaching.

As the first males arrive they select positions around the margin of the pond, or on small logs in the water near the edge. From these stations they will give their high-pitched musical trills until they attract a female or some inner signal notifies them that it is time to return to their small burrows.

As a biologist participating in a study, of the Houston toad with Dr. Andy Price of the Texas Parks and Wildlife Department and Dr. James Dixon of Texas A&M University, my job is to assist with the capture, measuring, weighing, marking and releasing of toads as they visit the breeding ponds. The study is being conducted to determine how many toads are occupying two par-

PROM NIGHT FOR THE HOUSTON TOAD

*Metamorphosis
is a many
splendored thing.*

Article and Photos
by James C. Godwin

ticular ponds and how often they visit these ponds so that our understanding of Houston toad populations will be expanded. With recent advances in technology, marking procedures have become more accurate and reliable, giving us more opportunity to learn about the Houston toad.

The Houston toad, named after the city on the upper Texas coast where the animal first was discovered, closely resembles its relative to the north, the American toad, *Bufo americanus*. In outward appearance and in vocalization the two species are quite similar. But whereas the American toad is found throughout the eastern United States, except for portions of the south, the Houston toad is confined to a small region of southeastern Texas. As a relictual species, or a holdover from the past, it is a representative of cooler and moister conditions of former times.

The Houston toad's greatest concentrations are in Bastrop County; no toads have been found in the Houston area in recent years. Located about 30 miles east of Austin, Bastrop County lies just off the Balcones Escarpment, a geological feature that separates the uplifted Edwards Plateau from the post oak savannahs to the east. Bastrop County also hosts an isolated population of loblolly pines, a tree more typical of East Texas. Although the toads not always are found in conjunction with pines, one physical feature often ties the two together—deep, loose, porous sands. The pines grow best in sandy soils, and the toads require sand for burrowing. Houston toads are not

present in regions without fine, floury sands, since they do not have the ability to dig into more compacted soils.

The toads begin breeding activities during mild Texas winters and, depending upon rainfall and temperature, may begin breeding as early as mid-January and continue to May. In all likelihood this winter breeding is due to their evolution in cooler, wetter climates. The Houston toads, along with the great plains leopard frogs and southern leopard frogs, are the earliest breeders in the ponds. Later during the spring they will be joined by gray treefrogs, gulf coast toads and great plains narrow-mouth toads.

Historically the Houston toad probably bred in temporary ponds in loblolly pine and live oak forests, as well as in post-oak woodlands or small pools along the sandy, gravelly creeks. But these days they are more likely to lay their

eggs in manmade depressions. The adults typically convene on nights when the temperature has not fallen below 57 degrees during the previous day. Warm, light rains appear to facilitate the breeding activity, although moisture is not necessary for the adults to hop to the breeding sites. Toads are somewhat inhibited when the moon is out; therefore the most raucous choruses are heard on darker nights.

The males usually arrive first and begin their ritual of serenades. If any receptive females are in the vicinity they soon will find their way to the pond. The males align themselves along the

pond based on some secret toad decree, and throughout the night each male sings with his high-pitched trill. Males often will call from logs or other emergent objects in the pond, as well as from the woods away from the pond.

If the male is lucky he will attract a female. Of course more than luck is involved, but the reasons some males succeed while others fail is not known. The likelihood that a male will mate during the breeding season is less than 20 percent. The female will swim or hop over to her selected beau and give him a slight nudge to signify her receptivity. He will then turn and grasp her just behind her forelimbs, in an act of amplexus. In most instances the female is larger than the male. Once the pair are in amplexus they usually enter shallow water.

Several hours later the female will begin to release her string of eggs. As

A male Houston toad sings its high-pitched serenade, hoping to attract a receptive female. The toad's inflated vocal patch acts as a resonating chamber to project the call.





During metamorphosis, a Houston toad tadpole loses its tail and gills (above), then grows limbs and develops lungs (right).



she does so the male fertilizes them. Toad egg masses are identified easily because they occur in long strands. Picture a string of pearls but substitute small black spheres covered with a clear jelly coating and you have toad eggs. The other frogs of the pond—southern leopard frogs, great plains leopard frogs and gray treefrogs—lay eggs in surface films or compact masses.

Depending upon the water temperature the eggs begin to hatch in a few days. At first the tiny tadpoles hang onto the jelly envelopes of the egg mass while consuming the remainder of their internal yolk store. As they grow they gain strength and mobility and soon are swimming freely about the pond scraping algae from twigs, leaves and substratum. From the time the eggs hatch until the tadpoles metamorphose may be 60 to 90 days, again depending upon water temperature.

Metamorphosis is truly an amazing event. An individual tadpole transforms from an herbivore with a small mouth and long intestinal tract into a carnivore with a wide mouth, a short intestinal tract and the associated adaptations for capture and consumption of other animals. In the process of this transformation the tadpole loses its tail and gills, grows limbs and develops lungs. It has made the transition from aquatic to terrestrial life.

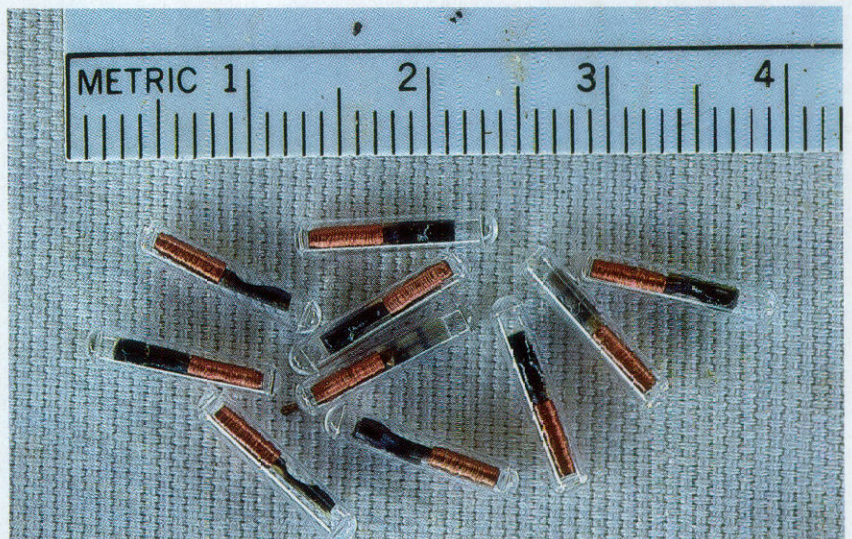
Once this change occurs, the toads disappear. As the toadlets leave the pond it is anyone's guess as to what they do until they mature and return

to the ponds to breed.

The toads are followed easily at the breeding ponds, but when they are away from the ponds little is known about the adults and even less about the young, immature toads. I have seen small toads and toadlets away from the ponds in areas of deep sands but on only a few occasions, too few to draw any substantial conclusions. It is assumed that once the tadpoles transform they behave much as any other toad by moving away from the ponds into the surrounding forests, feeding on small invertebrates, growing and returning to the breeding ponds the following year or the year after. This is an area in the life history

that is important to the continued survival of this species and as such deserves investigation.

But why may technology be important to studies in the natural history of an endangered species? To adequately assess any population, individual members need to be marked in some easily recognizable fashion and in a manner that does not upset the animal excessively. In the past with amphibians this has involved toe clipping, branding and tattooing. But each of these techniques has disadvantages. Large numbers of frogs or toads cannot be marked. Problems also include the regrowth of tissue that obscure the original marking.



Passive integrated transponder or PIT tags that are injected into the toads provide information for biologists studying the species.

A method known as "pitting" now is being used with success. The main advantage of this method is that large numbers of toads can be marked with permanent individual codes that are not subject to fading and are easily monitored for years after marking.

A small glass-encapsulated copper

When a wand is passed over a toad that has received a PIT tag, a code appears on the screen of the reader (below). Through these codes, biologists can track the movement and activities of individual toads.

wire forming an electromagnetic circuit and bearing a 10-digit code is injected into the body of the animal. This capsule is known as a PIT (passive integrated transponder) tag. The code from the PIT is activated by a reader that displays the code on its screen. The major disadvantage is cost. Each reader costs over \$1,000 and the PITs are about \$5 each.

But PITs have advantages that outweigh their initial cost. For one, the failure rate of PITs is negligible. And because they have no internal power source the PIT is, for all practical pur-

poses, a permanent mark. The code will never wear out or become indistinct from tissue regeneration. Only a few moments are required to implant a PIT, and often after being "pitted" male toads resume calling, or pairs continue amplexus.

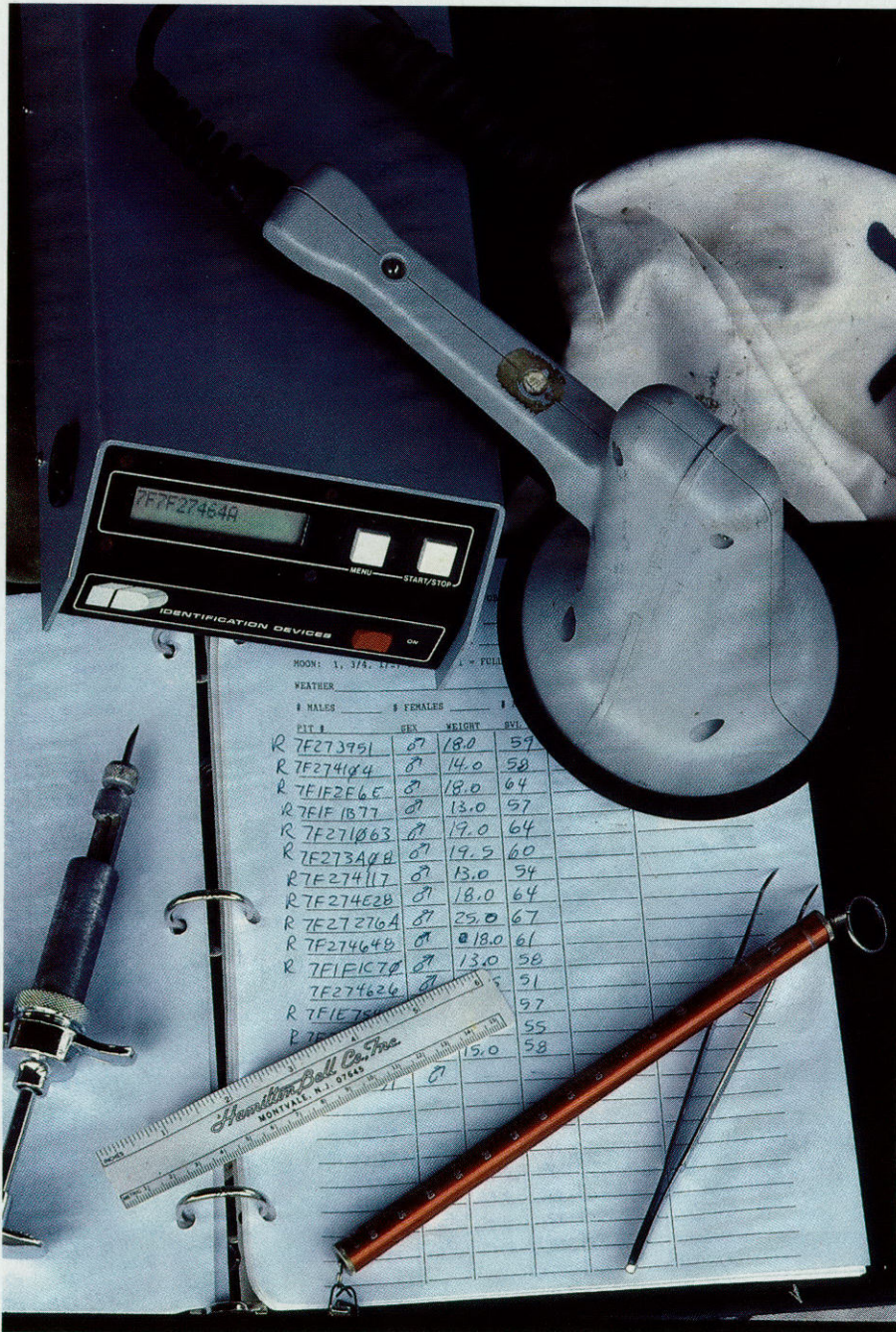
The use of the PITs has yielded information no other marking technique could. One warm March evening a great chorus of toads was in full swing. For several days a large blotched water snake had been noticed in the pond. She had been captured and examined previously but never contained any food. On this night, however, she was seen eating a male Houston toad. The toad was recovered and was found to be one that had been marked.

With other methods we only could have surmised what was in the snake. In this case we knew exactly what species of animal had been consumed, its sex, which individual, and its size and approximate weight at last capture. With the accumulation of such tidbits of data, a more complete picture of the life history of Houston toads and their interactions with other species will emerge.

The real payoff with the PITs will be in future years. We were able to mark and follow 343 toads in 1990 and determine how many visited the two ponds and how often, which individuals bred, which didn't, and how long they tended to stay. From this technology we eventually will learn how long they live, when they mature, whether or not they return to the same pond year after year, and whether the females lay eggs every year. In essence, the Houston toad no longer will be quite the biological mystery it now is.

As the constellations arc toward the horizon, some inner voice signals the completion of the night's breeding. One by one the male toads fall silent, then turn from the pond and begin their short trek back to their retreats where they will spend the day. If the warm weather holds for tomorrow night these burly little fellows will return with exuberance and anticipation of completing the circuit of their life history. ★

James C. Godwin is a vertebrate ecologist specializing in herpetology with the Florida Game & Freshwater Fish Commission.



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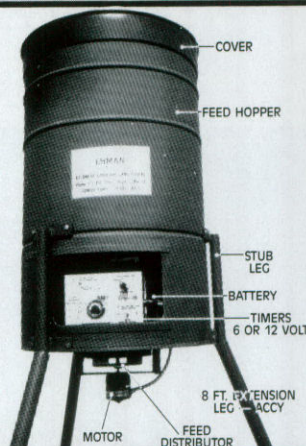
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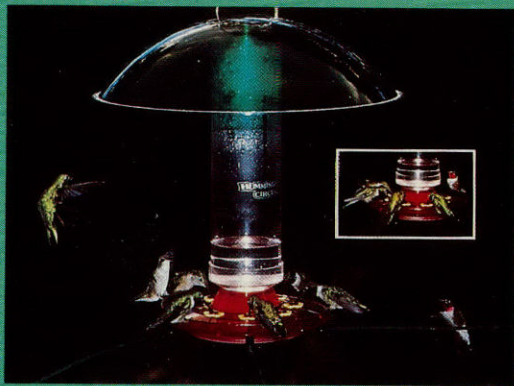
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OUTDOOR ROUNDUP

by Lyndal Waldrip



Joe Richard

Saltwater hatcheries produced a record 21.9 million red drum fingerlings in 1991 for stocking in Texas bays and six freshwater reservoirs.

Hatcheries Produce Record Numbers of Red Drum

Almost 22 million red drum fingerlings were produced by the Texas Parks and Wildlife Department's saltwater hatcheries in 1991, by far an all-time high.

At 21.9 million, 1991 is the first year that annual fingerling production has topped 20 million, said Mike Ray, director of marine fish hatcheries. About 15 million fingerlings were produced in 1990, also a record.

The GCCA-CPL Marine Development Center in Corpus Christi produced 16.3 million of the 1¼ inch fish, 3.8 million were produced at the Dow Satellite Facility in Freeport and 1.8 million were produced at the Perry R. Bass Marine Fisheries Research Station at Palacios. The Corpus Christi facility nearly doubled its previous record for production.

Texas bays received 19.5 million red drum fingerlings. The rest were stocked in six freshwater reservoirs, Calaveras (787,255), Nasworthy (164,950), Fair-

field (516,976), Tradinghouse Creek (413,194), Braunig (294,715) and Colorado City (183,800).

"We're very excited. It's been our goal to achieve that 20 million plateau," Ray said. "We've been striving for this since we completed our facility expansion in 1988, and we finally reached it."

Reasons for increased production include refined production skills and learning how to produce fish even in bad times, such as during the most recent brown tide in the Upper Laguna Madre, he said. The brown tide, which began in June 1990 and lasted about a year, prevented the department from producing any red drum for a couple of spawning periods.

"Brown tide cost us about four million fingerlings," Ray said. "We could do about half as much as normal once we learned a little about it. It out-competed everything. It completely took away the nutrients we needed for food for the fingerlings to eat. It also took so much oxygen out of there it was virtually impossible to raise fingerlings."

Ray gave most of the credit for such high production to Robert Vega, hatchery manager in Corpus Christi, and Camilo Chavez, who manages the Dow and Bass facilities. "I'm excited. The staff worked hard to reach this goal," Vega said, "but we believe we can produce even more red drum fingerlings under better conditions."

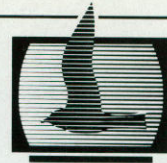
The Corpus Christi facility nearly doubled its previous production record. It increased its production from three million in 1989 and eight million in 1990 before 1991's 16.3 million.

The hatcheries also raised 250,000 spotted seatrout and stocked them in the bays.

Cost Share Agreement Helps Purchase Turkeys

The Texas Parks and Wildlife Department will be able to buy more eastern turkeys after receiving more than \$17,000 from the U.S. Forest Service in a Challenge Cost-Share Agreement.

The department and the National Forest and Grasslands of Texas entered into an agreement to help with eastern turkey restoration on the Davy Crockett National Forest in Trinity and Houston Counties, said Mike Krueger, a TPWD technical guidance biologist from Lufkin. The cost-share agreement is a nationwide program in which the Forest Service solicits cooperators, identifies a needed project, usually on



TELEVISION SCHEDULE

Watch for our companion television series, "Texas Parks & Wildlife," on your local PBS affiliate. The following is a partial listing for March. All times p.m. unless otherwise noted.

CITY/STATION	DAY	TIME
Austin KLRU, Ch. 18	Check Local Listings	
College Station KAMU, Ch. 15	Wednesday Thursday	7:00 11:00 a.m.
Corpus Christi KEDT, Ch. 16	Saturday	9:30
El Paso KCOS, Ch. 13	Sunday	6:00
Harlingen KMBH, Ch. 60	Saturday	6:00
Houston KUHT, Ch. 8	Monday-Thursday	5:30
Killeen KNCT, Ch. 46	Thursday	1:30
Lubbock KTXT, Ch. 5	Thursday	1:00
San Antonio KLRN, Ch. 9	Check Local Listings	
Waco KCTF, Ch. 34	Thursday	11:00

Programming schedules are subject to change, so check your local listings.
In stereo where available

Forest Service land, then splits the cost of accomplishing that project.

The Forest Service reimbursed the department \$17,231.93 for 49 eastern turkeys stocked on four sites from October 1990 through February 1991. Eighteen turkeys were stocked at the Piney Creek/Centerville Restoration Area, 22 were stocked at the Groveton Northwest area, three at Augusta South and six at Hagerville.

Krueger said the money will be used to buy additional eastern turkeys for stocking in East Texas. In continuation of the eastern turkey restoration program, the department hopes to stock up to 930 turkeys in several counties this year. If enough birds are available, some may be stocked on the Sabine National Forest. More than 800 turkeys were stocked in East Texas last year.

This is the first time a cost-share agreement has been used for eastern turkey restoration. The department has used it previously on a red-cockaded woodpecker project in East Texas. "We're going to try this program again," Krueger said. "This cost-share agreement sets the precedent for future agreements on the other national forests."

Kerr Area Stocked With 22 Mearns' Quail

Biologists at the Kerr Wildlife Management Area recently released 22 Mearns' quail as part of an effort to reestablish the birds in that portion of their historical range.

The Mearns' historical range runs as

Efforts are underway to reestablish Mearns' quail on the Kerr Wildlife Management Area.



Glen Mills

far east as Kerr and Kendall Counties and west through Pecos, Brewster, Jeff Davis and Presidio Counties, said Donnie Harmel, area manager. The quail has been extirpated from Kerr County since about 1945 and the bird's population statewide is unknown.

"Current information suggests they're in small, isolated populations in Edwards, Real, Jeff Davis, Brewster and Presidio Counties," Harmel said.

The quail were obtained from the Arizona Game and Fish Department and the U.S. Fish and Wildlife Service at Buenos Aires National Wildlife Refuge in Arizona. "We've been providing male bobwhites to them as surrogate parents in a masked bobwhite restoration program," Harmel said. "They would like to furnish us about 75 birds this winter, all of which will go to the Kerr area."

OUTDOOR DATEBOOK

MARCH

- March 3:** Texas Conservation Passport* (TCP) Mardi Gras at Indian Lodge, Davis Mountains State Park, 915-426-3254.
- March 3:** TCP white-winged doves, jaguarundis and native brush (every Tuesday in March), Las Palomas WMA, 512-383-8982.
- March 5:** TCP bird watching and nature study tours (every Thursday in March), Bentsen-Rio Grande Valley State Park, 512-585-1107.
- March 7:** TCP migrant stopover birding tour, Candy Abshier WMA, 409-736-2551.
- March 7 & 28:** TCP guided birding tour, Black Gap WMA, 915-376-2216.
- March 7:** TCP coastal wetlands tour, Peach Point WMA, 512-729-2315.
- March 14 & 28:** TCP bird banding observation and birding tour, Kickapoo Cavern State Natural Area, 512-563-2342.
- March 14:** TCP whooping crane and winter birds tour, Matagorda Island State Park, 512-983-2215.
- March 14-15 & 28-29:** TCP Penn Farm Agricultural History Center tours, Cedar Hill State Park, 214-291-3900.
- March 21:** Annual frontier fort reenactment, Ft. McKavett State Historical Park, 915-396-2358.
- March 21:** TCP birding in the bottom, Keechi Creek WMA, 903-566-1626.
- March 21:** TCP fishing seminar at Lake Texoma, Eisenhower State Park, 903-465-1956.
- March 22:** TCP dogwood tour, Huntsville State Park, 409-295-5644.
- March 28:** TCP alligator basking tour, Murphree WMA, 409-736-2551.
- March 28:** TCP birding tour, Lake Tawakoni State Park site, 903-425-2332.
- March 28:** TCP Project WILD mini-workshop, Eisenhower State Park, 903-465-1956.
- March 28-30:** TCP hunting wild turkeys with a camera, Daughtrey WMA, 512-786-3868.

APRIL

- April 1-26:** Wildflower Celebration, Prairie Edge Museum, 408 E. Main, Eagle Lake, 409-234-5567.
- April 4 & 25:** TCP guided birding tour, Black Gap WMA, 915-376-2216.
- April 4 & 11:** TCP bird banding observation and birding tour, Kickapoo Cavern State Natural Area, 512-563-2342.
- April 4:** TCP History tour, Matagorda Island State Park, 512-983-2215.
- April 4-May 10:** special weekend hours (Saturdays and Sundays 10 a.m. to 4 p.m.), National Wildflower Research Center, Austin, 512-929-3600.
- April 4-5:** Canterbury Faire fundraiser for the Wild Basin Preserve, Waterloo Park, Austin, 512-327-7622.
- April 4-19:** Eastern turkey hunting season, selected areas in East Texas.
- April 4-May 3:** Rio Grande turkey hunting season.
- April 4:** Heritage dance celebration, Landmark Inn State Historic Park, 512-538-2133.
- April 4, 5, 11, 18, 19, 25, 26:** Anson Jones living history program, Washington-on-the-Brazos State Historical Park, 409-878-2214.
- April 4:** Sheep to shawl, Goliad State Park, 512-645-3405.
- April 10 & 11:** TCP nature trail walking tour, Sheldon WMA, 409-736-2551.
- April 11 & 18:** TCP birding and nature tour, Matador WMA, 806-492-3405.
- April 11:** TCP barrier island ecology, Matagorda Island, 512-983-2215.
- April 11:** TCP guided tour and seminar on brush management, Copper Breaks State Park, 817-839-4331.
- April 11:** TCP white-winged doves, jaguarundis and native brush, Las Palomas WMA, 512-383-8982.
- April 11:** Historical festival, Sebastopol House, 512-379-4833.
- April 11:** TCP coastal wetlands tour, Peach Point WMA, 512-729-2315.

- April 11-12:** Wildflower Days Festival, National Wildflower Research Center, Austin, 512-929-3600.
- April 11 & 18:** TCP migrant stopover bird-watching tour, Atkinson Island WMA, 409-736-2551.
- April 12:** TCP canyonland songbird hike, Hill Country State Natural Area, 512-796-4413.
- April 17:** TCP archeology of the Big Bend, Big Bend Ranch State Natural Area, 915-424-3327.
- April 18:** TCP fishing seminar at Lake Texoma, Eisenhower State Park, 903-465-1956.
- April 18:** TCP birding in the bottom, Keechi Creek WMA, 903-566-1626.
- April 18-19:** San Jacinto battle re-enactment, San Jacinto Battleground State Historical Park, 713-479-2431.



Leroy Williamson

Fort McKavett State Historical Park will hold its annual frontier fort reenactment on March 21.

- April 25:** TCP Project WILD mini-workshop, Eisenhower State Park, 903-465-1956.
- April 19:** TCP native plants tour, Hill Country State Natural Area, 512-796-4413.
- April 21:** San Jacinto Day, San Jacinto Battleground State Historical Park, 713-479-2431.
- April 25:** TCP guided birding tour, Black Gap WMA, 915-376-2216.
- April 25:** TCP driving nature tour, Elephant Mountain WMA, 915-364-2228.
- April 25:** TCP cavern and bat emergence tour, Kickapoo Cavern State Natural Area, 512-563-2342.
- April 25:** TCP waterfowl tour, Lake Tawakoni State Park site, 903-425-2332 (Purtis Creek State Park).
- April 25:** TCP Project WILD mini-workshop, Eisenhower State Park, 903-465-1956.
- April 25:** TCP spring migration birding tour, Matagorda Island State Park, 512-983-2215.
- April 25-26:** Historical reenactment, Ft. Griffin State Historical Park, 915-762-3592.
- April 25:** Earth-friendly camp cooking, LBJ State Park, 512-644-2252.
- April 25:** Plantation days, Varner-Hogg Plantation State Park, 409-345-4656.
- April 25:** Bob Wills Day, Caprock Canyons State Park, 806-455-1492.
- April 26:** Photography show, Palmetto State Park, 512-672-3266.
- April 26:** TCP bird-watching tour, Huntsville State Park, 409-295-5644.
- April 26:** Spring concert, Goliad State Park, 512-645-3405.

*Texas Conservation Passports are available for \$25 each at most state parks, Parks and Wildlife offices and Whole Earth Provision Co. locations in Austin, Houston and Dallas.



