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TEXAS PARKS & WILDLIFE

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TEXAS PARKS & WILDLIFE

December 1990, Vol. 48, No. 12

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MAGAZINE

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

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COVERS—Front and Back: Fallen leaves mark the change of seasons as fall ends and winter approaches. Even in their final cycle of life, leaves add to outdoor enjoyment as they crunch underfoot and spread color across the landscape. They even offer protection to the lone plant trying to survive. Photographed by Leroy Williamson in a dry creekbed tributary of Salado Creek with a Pentax LX, 100mm macro lens and Kodachrome 64 film. **Inside Front:** Wetlands are important to sandhill cranes, since the birds need fresh water to drink and prefer to roost in shallow water. For more about sandhill cranes, turn to page 42. Masowski Photo, Nikon F3, 600mm, f/6.3, 1/250 second, Kodachrome 64 film.

At Issue

I'm here to tell you that horn rattling works, just as Ray Sasser describes it on page 12. If I can do it anybody can. Some seasons ago I tried it while on a hunting foray in South Texas along the Nueces River. Within just a few moments of the first horn clack a buck charged into the sendero I was sitting next to—hair on nape of neck sticking up, nostrils aflame—just like a cliché from one of the national outdoor magazines.

It was a runty four-point bucklet; so much for massive South Texas trophy bucks coming to horns. But it was kind of fun, just like following the directions to building an old Heathkit electronic project, plugging in the contraption and having it actually work. It's the same kind of satisfaction as having a buck respond to rattling.

Rather than snapping a cartridge primer I snapped the little buck's photo, just to remind myself of this occasion. Turn to page 26 and you will find several more outdoor photos taken by amateurs such as myself. We published the winners this month to our magazine's first Best of Texas photo contest.

Chief photographer Leroy Williamson has been trying to talk me into such a contest for years. Response from our readers has both him and office manager Paulette Goertz considering early retirement before the next contest.

We had more than 1,000 entries to choose from. Leroy, myself and art director Dwain Kelley served as judges and, as they say, decisions are final.

Like horn rattling, for me the contest was fun. We put out the word to our readers, and in rolled the envelopes filled with photos. Some entries were a little amusing, like the photos of red cows entered in the wildlife category. Nice cows, and we appreciate the chance to see their pictures, but I don't think so.

We'll do it again, perhaps with a new twist. Our Animal Crackers features have been so popular maybe we will have a readers' Animal Crackers photo contest, or a Young Naturalist photo contest, or maybe a contest for the best photo of a red cow. We'll figure it out and let you know.

In next month's issue, the Battleship *Texas* comes home, we will go along on the expeditions to collect specimens for the new Texas State Aquarium, a photo spread on winter in Palo Duro Canyon, a story on Canada geese and two disturbing accounts of oil spills and their effects on wildlife.

Until then, have a happy holiday, and if you get a red cow to come to horns this season, by all means, send us a picture. ★

—David Baxter

Watch Your Step

I wholeheartedly agree with Buddy Gough's enthusiasm for catching large bream in Hill Country rivers and streams (August). But one problem this article will promote is fishermen unknowingly trespassing on private land.

I am aware that Mr. Gough warns of this in his article and encourages fishermen to "keep their feet in the water and off the shore to avoid trespass." He even suggests "...consulting with the local county attorney concerning public access to any particular segment of stream."

He mentions accessible crossings to the Sabinal River on Highway 187 near Vanderpool. Having been a landowner on both sides of the Sabinal River for 20 years, I believe I am right in stating that this is not one of Texas' so-called navigable streams and even walking "in the riverbed" would be trespassing. If I'm incorrect please correct me, and if I'm right please let your readers know. I do not tolerate uninvited guests on my property, and I understand that my deed includes the land under the river.

Dick Swantner
Corpus Christi

■ We sent Mr. Swantner's letter to the Parks and Wildlife Department's general council, who once again advised recreationists to consult local county officials about public use of any particular reach of a stream or river. Mr. Swantner's letter illustrates how important this is.

Best in the Country

We have been subscribers to your superb magazine since picking up a complimentary issue at a state park some years ago. We particularly like the stories about the parks and the photography articles.

We have made many trips to Texas, most of them in the past nine years since our grandson was born. We are campers and think the Texas state parks are the best in the country.

In June we picked up Christopher at his home in McKinney for a vacation in East Texas and at the Gulf coast. Christopher is a special child; although he is not able to speak or play as most little boys,



LETTERS

he thoroughly enjoys being outdoors. We were fortunate to experience the bilingual Mass and celebration at Mission Tejas State Park commemorating the 300th anniversary of the establishment of the Mission San Francisco.

Ann Prochnow
Iowa Falls, Iowa

Franklin Mountains

The story about Franklin Mountains State Park (September) is pretty good, but it could have been more explicit about the altitude of the Trans-Mountain Road. The article says it is almost a mile high but it is actually 30 feet less than a mile. The map leaves the impression that the park is only a small part of the mountain, while actually it stretches over most of the Franklins from approximately three miles below the Trans-Mountain Road all the way to the New Mexico State line.

There was only a slight mention of the wildlife. Mountain lions, skunks, gophers, badgers, several species of snakes and an occasional bear can be found in the Franklins. Peregrine falcons nest on the ridge and golden eagles, doves, roadrunners and a whole passel of other birds make the Franklins their home.

I didn't mention all the wildlife and there is more plant life than cacti. Many native grasses have reestablished in the park. Creosote is plentiful but it does not cover all the foothill slopes. Also, the myth that other plants will not grow near creosote should be dispelled. I have seen other plants growing near creosote and have actually seen plants growing in the shade of this despised plant.

Gerald X. Fitzgerald
El Paso

Enjoys Hunting

David Baxter's "At Issue" in September reminded me of my pet peeve about your magazine. I can't remember the last time I read anything in your magazine about hunters, hunting, our contributions to wildlife or anything positive about hunters in general. Thank you for September's "At Issue." I hope it is the forerunner of some positive things about those of us who still enjoy hunting in Texas.

Rob Overton
Houston

Water Shortages

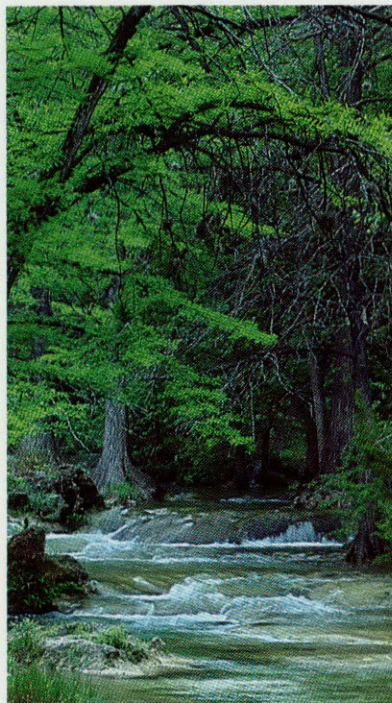
As a native Texan temporarily living in Seattle, I thoroughly enjoy your magazine. The August issue raised some unpleasant possibilities concerning the future of Texas' great outdoors.

Water shortages are rapidly becoming a major issue in most areas of the country, including here in Washington. I suspect part of the problem in Texas, as in Washington, is that people simply do not understand the dynamics of the natural communities around them. Furthermore, most people today do not consider themselves to be a part of those "communities." Building more dams and inundating or altering almost a million acres of valuable wildlife habitat will not solve the water problem in Texas.

Education, water conservation, land use and technological practices that are ecologically sound, and a commitment from all Texans to protect one of the most biologically rich regions of the world are the things that are going to solve Texas' water problems.

These things will cost money. I will be moving back to Texas in a few years and will gladly pay my share of those costs and, if need be, work to find ways to help those who cannot do so.

Phillip Coker
Seattle, Washington



Leroy Williamson

Longtime Subscriber

I have read your magazine since way before it was *Texas Parks & Wildlife*. It used to be *Texas Game & Fish*.

We moved to Kerrville in 1926 where my husband was a game warden under J. J. Dent. In the summer he was a policeman. We lived all over—Medina Lake, Uvalde, Sonora and Rockport. I knew A. E. Wood and all the old-timers.

I am 81 and I still like to hunt and fish.

Mrs. Bonnie E. Shannon Gamez
Falls City

Life in a Park

I very much enjoyed the article "From the Inside Looking Out" in the September issue. Life in a state park has been a topic of conversation for us upon many visits to the parks. Thanks for publishing this informative piece.

Daniel Foyt
Arlington

Six-Pack Yokes

Clipping six-pack yokes as suggested in your July article about plastics is a good idea. However, scissors are not always handy, and I've discovered with children that things are more fun when you make a game out of it.

The game my children and I make out of destroying every hole in a six-pack yoke is similar to pulling the wishbone on a turkey. Two children grab the rings in a tug-of-war fashion and pull hard. The player who pulls a ring apart before his opponent scores a point. The big outer rings break first, then the smaller inner rings. The winner is the one who breaks the most rings before his opponent.

My children enjoy the game so much that I never worry about a whole six-pack yoke making its way to the trash.

Ireanne Hohmann
Grand Prairie

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.

Window to the

In the laid-back world of the Texas Gulf Coast, there perhaps is no more laid-back town than Port Aransas. This is the Port A of spring break fame, the old Tarpon Inn of FDR's time, and now row upon row of high-rise condos that stretch down the island nearly to Corpus Christi. Port Aransas means fishing tournaments, summer trips and waiting in a sweltering car for the ferry and the long drive home after vacation.

The city limits sign says Port Aransas is home to some 3,000 folks, a number that probably swells to more than 20,000 on a summer weekend. Every summer, some of that horde grows weary of the sand, the jetties and the discount T-shirt shops. They poke their sunburned noses in the front door of a building complex with a sign out front that says University of Texas Marine Science Institute. Here, sandwiched between the Coast Guard Station and the south jetty, they enter an eclectic world of science and education, a world where it is sometimes hard to distinguish tourist from scientist — both are usually clad in shorts. Here it's not unusual in the summer to see men and women of considerable learning striding the halls with tanned legs emerging from white lab coats and shod in deck shoes, like so many surfers turned flasher.

According to Institute director Dr. Robert Jones, the 105 men and women of UTMSI have three major tasks — public education, research and work toward advanced degrees. "Our professional staff comes from many disciplines," said Jones. "They represent physical oceanography, marine biology, marine geology, marine chemistry, mariculture and many other fields. Because the marine environment is so complex, research falls into several broad, overlapping areas. No scientist works in just one area.

"As examples, Dr. Joan Holt's primary responsibility is to work with larval fish and their nutrient requirements, but an interesting spin-off is her research in propagating tropical marine fish.

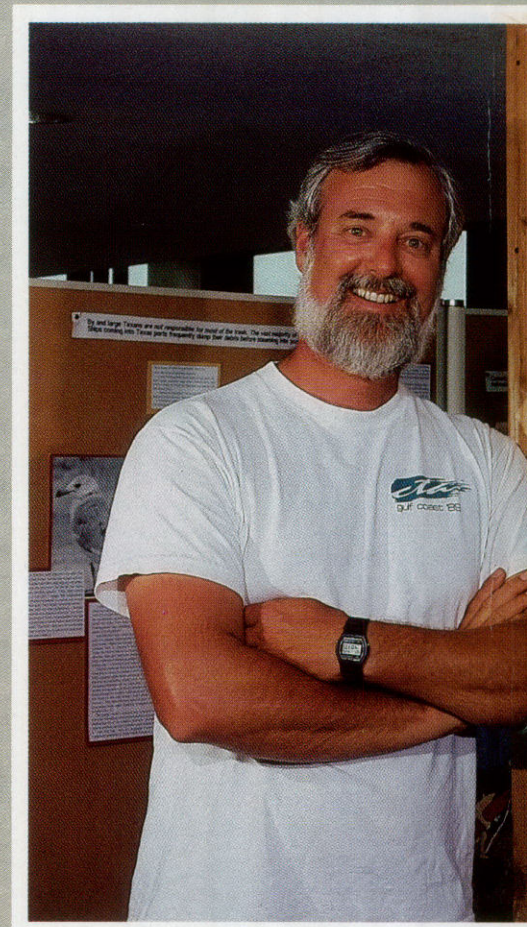
"Tony Amos' main job is to study currents here in the Gulf, but many summer visitors see him out on the beach in the morning maintaining a log he has kept since 1978 on the condition of seven miles of Mustang Island beach — the amount of trash washed up, migratory birds and stranded marine mammals and turtles.

"Ed Buskey's major study is bioluminescence, the glow or light many marine creatures give off. During the summer of 1990 he was keeping track of a 'brown tide' in the Upper Laguna Madre.

"Rick Tinnin is responsible for the Visitor Center, but he has developed an educational program for children similar to Project Ocean that was started in California. Our staff is a diverse one, but they have one thing in common — a love of the sea."

The Institute's Visitor Center is all many tourists see, and a good place to begin our tour. Rick Tinnin heads up the public education part of UTMSI's three-part mission. "I was born in San Antonio and spent every summer in Port Aransas," said Tinnin. "The island has changed so much from those days that I have to take my kids over to San Jose Island to give them some idea of what Mustang Island looked like when I first came here as a child."

Tinnin's responsibilities include the Visitor Center, public information and tours of the facility, and school tours on the Institute's two boats, the *Katy* and the *Longhorn*. "I spend a lot of my time with the public," he said, "answering questions about what they've dragged off the beach."



Sea

UNIVERSITY OF TEXAS MARINE SCIENCE INSTITUTE

“Our Visitor Center hosts some 30,000 people a year, Monday through Friday, and we show them movies twice each day except Friday. The aquaria in the lobby take a landlocked visitor out into the various habitats of this part of the Gulf — offshore drilling platforms, mangrove swamps, oyster reefs.”

Public service is a UTMSI function and the public is allowed in the facilities except where sensitive lab work is going on. There are displays in parts of the building other than the lobby that will help a casual visitor better understand what lies beyond the surf line or back in the bay and why they are important.

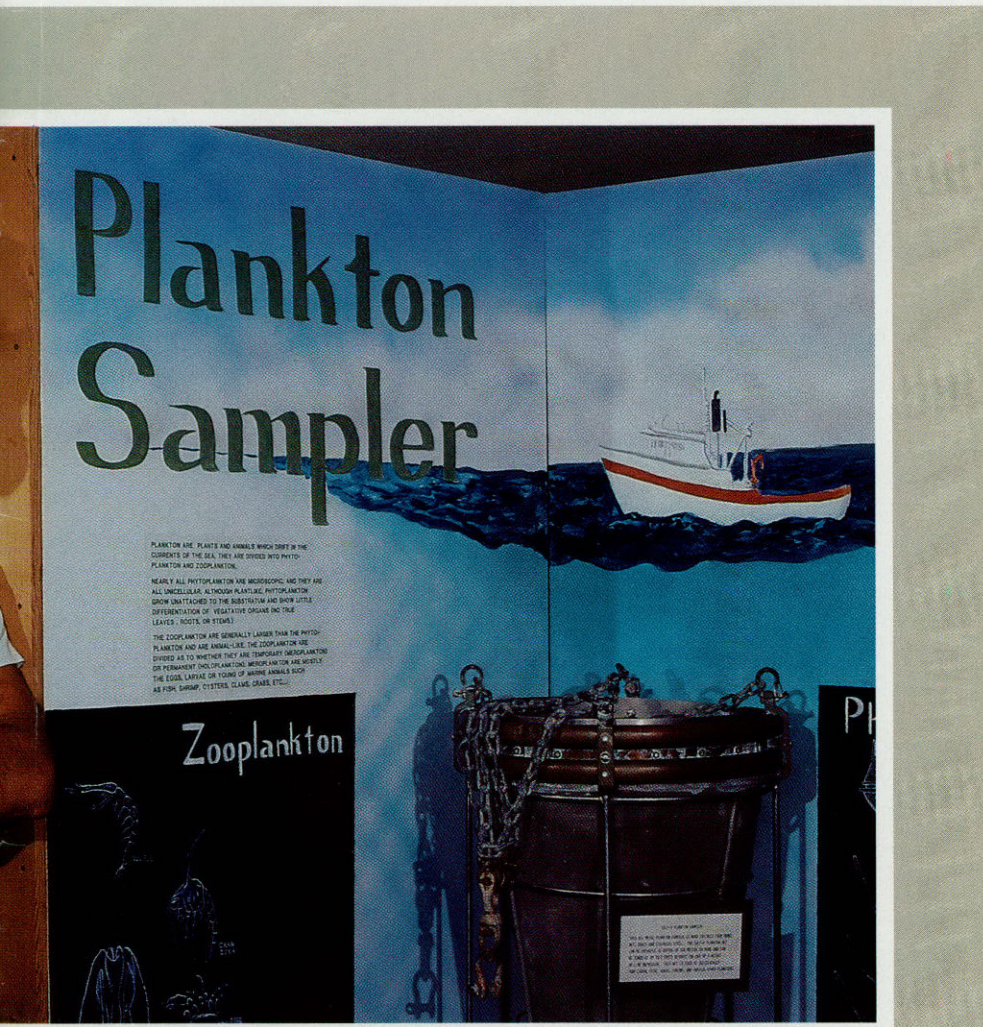
They display some of the interesting trash that currents carry to the Mustang Island beach, and effects the 1979 Ixtoc oil spill in Mexican waters had on Texas beaches.

The Institute’s library is one of the best on the coast. Librarian Ruth Grundy maintains more than 8,000 books and 37,000 bound volumes for both research and graduate education. Scientists from The University of Texas, Texas A&M, Corpus Christi State University, Texas Parks and Wildlife Department, U. S. Fish and Wildlife Service and other institutions and agencies all use its resources.

Libraries and displays aside, the thing about UTMSI most school kids remember best is their ride out into Corpus Christi Bay on the *Katy*, a 57-foot trawler used as a research vessel. The Institute’s other major vessel, the 105-foot *Longhorn*, is designed specifically for Gulf research.

Some 10,000 students each year come from more than 250 schools across Texas and neighboring states to learn about the marine environment. They sleep in one of the Institute’s dorms, eat in the cafeteria and go out into the bay. Jeff Heimann, Tinnin’s assistant, usually is the one taking the students out. They collect water samples and analyze them for salinity, dissolved oxygen and nutrients; make plankton tows and bottom trawls and collect sediment samples.

The highlight of the three- to four-hour trip probably is when the *Katy*’s trawl dumps its contents onto the deck. Crabs go scuttling between the legs of squealing kids, small fish flop about, and bay water goes everywhere. Of course, the kids love it, depending on their age. Heimann, Tinnin or another staffer sorts through this pile of marine life, discusses it and gives the kids a chance to see and touch an oyster, crab or other denizen of the Texas bays.



A smiling Rick Tinnin stands near one of the Visitor Center's exhibits. Each year some 30,000 people troop through the Center. Education is a major function of the UT Marine Science Institute, and the public is allowed in most of the facilities.

Jeff Heimann sorts through a pile of writhing marine life spilled out on the decks of the Kety. Each year the UTMSI research vessel takes some 10,000 school children out into Corpus Christi Bay to learn first hand about what lives on the bottom of the bay.



The local gulls know this routine. They pick up the *Katy* when it casts off, follow along and then swoop in for a meal when the dredge is emptied. On the trip photographer Stephan Myers made, a teen-age lass tried hard to maintain her composure at this point of the trip only to have one of the eager gulls whitewash her hair. Gulls just don't appreciate how fragile an adolescent's hair and self-image can be.

"Dr. Jones mentioned my interest in Project Ocean," said Tinnin. "It's a curriculum for grades K-8. Each level studies a different ocean habitat and relationship of its creatures to that particular habitat.

"The project tries to show how human interaction can be both good and bad. Through Project Ocean we strive to make this generation aware of the planet's finite resources. It helps children understand the relationship of something like *El Niño* to South Texas

droughts. (*El Niño* is the periodic warming of Pacific waters off the coast of South America. It develops around Christmas, hence the name *niño* or child.) When *El Niño* develops in the Pacific, there are few hurricanes in the Gulf of Mexico."

Tinnin is doing a three-year Project Ocean pilot program in Port Aransas, Beeville and San Antonio. He plans to customize the California program to Texas' needs.

Tinnin also is working on an advanced degree in Marine Sciences, which brings us to the second part of UTMSI's mission. Work leading to masters and doctorates in marine science is of special interest to Institute director Bob Jones, who also serves as professor and chairman of the faculty. Jones, who is a Texan with degrees from UT Austin, has a doctorate from the University of Hawaii.

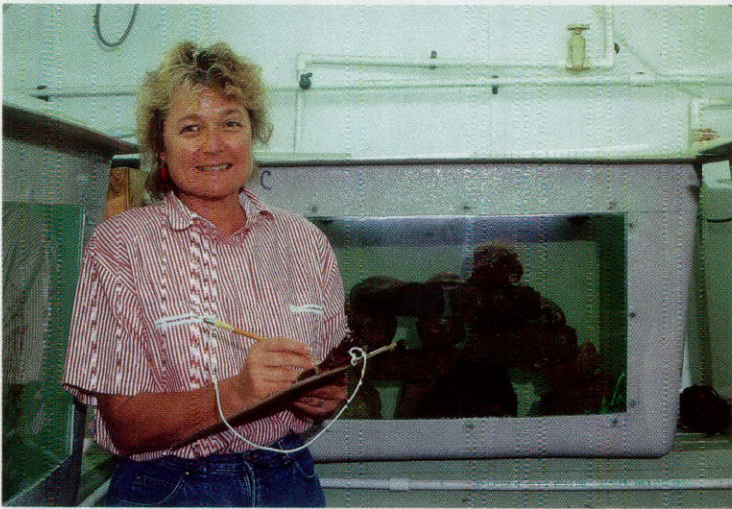
"Up until 1989," said Dr. Jones, "a graduate student would pursue an advanced degree in one of the traditional disciplines such as zoology or biology, with emphasis in marine sciences. Now, we are a UT degree-granting department in our own right, and our students work towards graduate degrees in marine sciences."

Graduate students usually spend their first two semesters on the UT-Austin campus, then come to Port Aransas. A number of other undergraduate and graduate courses are offered only during the summer in addition to the regular session course work.

Of all the hats Dr. Jones and his staff wear, the biggest is that of research. Research by UTMSI staff is having an impact on Texas outdoorsmen. Back in 1975, Dr. Connie Arnold, at that time working for the National Marine Fisheries Service, first developed techniques for getting red drum to spawn in artifi-



The landlocked public can take a vicarious trip to Texas' varied marine environments through the Visitor Center's aquaria. The seven aquaria show typical habitats and the organisms that live there -- mudflat, Spartina marsh, oyster reef, seagrass beds, mud-bottom, rock jetty and offshore oil platform.



Joan Holt is working on the artificial spawning of tropical marine species such as these pigmy angelfish. Raising these popular fish in captivity could relieve pressure on wild fish and tropical reefs.



cial conditions. Adjusting light and temperature in the lab, Dr. Arnold was able to trick adult red drum into thinking it was fall, the season when the fish naturally spawn in the bays.

In the lab, researchers set the lights for 12 hours on and 12 hours off, and set the temperature at 26 degrees centigrade. During a 1980-87 study, Dr. Arnold and his staff obtained 250 million eggs from two males and two female brood fish using the techniques.

"Before we hit on manipulating light and temperature," said Dr. Arnold, "we had to strip mature fish of their eggs and milt and fertilize the eggs. We often damaged or killed the brood fish and lost many immature eggs."

The scientific community seized this breakthrough that had long-range payoffs for the angling community. Mariculturists from all over have adopted Dr. Arnold's techniques to spawn mil-

lions of tiny reds in tanks held in rooms where the calendar is stuck in autumn.

Dr. Arnold's techniques have been especially useful to the Texas Parks and Wildlife Department. TPWD fisheries staff have used the light and temperature manipulation to induce reds to spawn at the department's Joan Wilson Hatchery in Flour Bluff for eventual stocking in Texas bays. Major freezes of 1983 and 1989 and a red tide in 1986 killed thousands of mature red drum. Those losses can now be mitigated somewhat through hatchery replenishment.

Out in the lobby of Dr. Arnold's lab is a display case with various trophies. Among the trophies is one for darts with Joan Holt's name on it. When she's not nailing bullseyes or fishing and diving with her husband, fellow staffer Scott Holt, Joan Holt, PhD, Texas A&M University, is working to

improve the survival and growth of larval reds, and to increase our knowledge of environmental tolerances and natural habitat needs of the little reds.

A spin-off of Dr. Holt's work on the care and feeding of larval reds is her work on spawning and developing tropical marine fish. "I first became interested in tropical marine fish on a dive trip to Belize," said Dr. Holt. "Using Dr. Arnold's light and temperature techniques, so far I have been able to induce spawning in the pigmy angelfish and the blue-headed wrasse, two species that are popular with saltwater aquarium enthusiasts.

"This has two major implications," she said. "The first is a commercial one: pigmy angelfish sell for about \$30 to \$60 a fish in retail stores. Second, and perhaps most important, if we can develop a means to spawn and grow such fish in labs profitably, it will relieve much pressure on wild fish and tropical reefs."

According to Dr. Holt, in places such as the Philippines, divers use cyanide to capture wild tropical fish. "Divers go down on the reefs with plastic squeeze bottles filled with cyanide," she said. "They give the fish a squirt of cyanide to immobilize them for capture. Of course, in the process they kill a lot of both target and nontarget fish. And to compound all this, many divers take home the cyanide-killed fish to cook and feed to their families. I think we could help both fish and humans with a means of commercially rearing these fish.

"My biggest problem now is what to feed the larval fish once they consume the yolk on which they are hatched. So far, we can keep the lab-spawned fish alive for seven days before they starve." To her knowledge, Dr. Holt is one of the few researchers in the world who is doing such work.

The Holts are not the only husband-and-wife team at UTMSI. Dr. Curtis Suttle and Amy Chan are working with marine viruses. According to Dr. Suttle, viruses are present in all marine waters but we are just now beginning to understand the role such tiny organisms play. "We have found that marine viruses kill a variety of important marine creatures such as phytoplankton, microscopic

green plants,” said Dr. Suttle. “Viruses may limit the productivity of the ocean. Phytoplankton are ‘grazed’ by only slightly larger creatures and as such are at the beginning of the world’s carbon cycle. Anything that kills phytoplankton is affecting this carbon cycle.”

Here again, not many people in the world are doing this kind of work. In the words of Amy Chan, “It’s hot stuff.” Now, we can all understand that .

Just a short boat ride from the UTMSI docks is the Laguna Madre, the most productive estuary in Texas for fish such as red drum and speckled trout. And yet, the Laguna Madre is one of the saltiest bays in the world with little freshwater inflow. Splitting the Laguna Madre into Upper and Lower parts, the Upper Laguna has even less freshwater inflow and is saltier than the Lower Laguna down towards Port Mansfield. However, the Upper Laguna produces more fish than the Lower Laguna. Why?

Dr. Paul Montagna is one of many at the Institute who is working to better understand what he calls the “paradox of the Laguna Madre.”

“We’ve been told that finfish productivity is related to the amount of fresh water the bays receive,” said Dr. Montagna. “Well, if that’s the case, then the Upper Laguna especially

shouldn’t have a single trout in it. There is no water exchange with the Gulf of Mexico and no rivers to bring in fresh water and nutrients.

“What the Laguna Madre has going for it is water clarity. Clear water allows the sun to penetrate the Laguna’s shallow waters and encourages the growth of seagrasses.

“In most marine food chains there are only microscopic phytoplankton. In the Laguna there also are luxuriant seagrass beds. These beds or meadows provide cover for trout and reds to feed and grow. And when the grasses decompose they provide nutrients for the rest of the ecosystem.”

Something happened in the Laguna Madre during the summer of 1990 that threw this out of whack, at least for the moment. About June 1990, reports started coming in of a so-called brown tide. Dr. Ed Buskey is one of the staff who kept an eye on the tide. “We first discovered the tide up in Baffin Bay,” said Dr. Buskey. “The tide is composed of tiny, round-celled creatures called chrysophytes. They are so small that some two to four million of them can fit into one milliliter of water. A thimble-full of seawater could hold as many as 10 million of the cells, which measure only four microns in size. Cells of the infa-

mous red tide a few years ago were huge in comparison, being some 40 microns in diameter.”

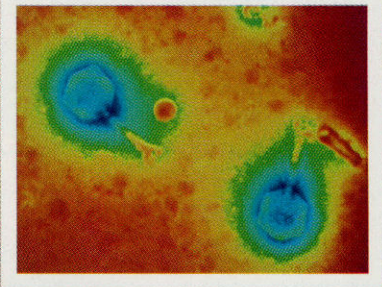
Buskey and others reported no toxic effects from the brown tide, unlike the toxins released from the red tide that killed fish and irritated human respiratory systems. “One thing the brown tide did do,” he said, “was to cut visibility in the Laguna Madre from up to 20 feet to less than two inches. Predators such as trout and reds that fed by sight had difficulty finding prey, and fishermen had a hard time catching the trout and reds.”

Lousy fishing was the short-term effect of the brown tide. Of longer term consequence was the death of many seagrasses in the darkened waters.

“As the seagrasses go, so goes the Laguna Madre,” said Dr. Paul Montagna. “When the plants die, the habitat dies. This comes hard on the heels of the December 1989 freeze that killed many adult fish.”

The Laguna Madre also winters some 85 percent of the nation’s redhead ducks. They too feed among the seagrass meadows.

One of Dr. Montagna’s favorite words is synergism, the action of two or more



Curtis Suttle and Amy Chan work to better understand the tiny viruses found in the world’s oceans. Marine viruses such as these have been found to kill bacteria in the Laguna Madre.

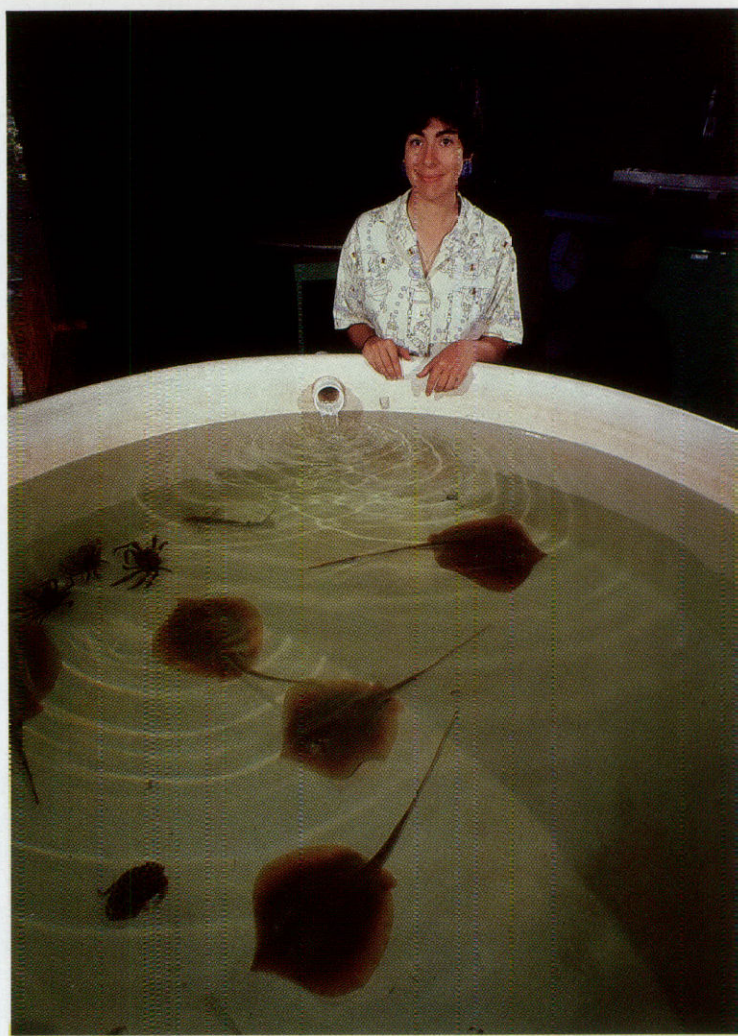
organisms or processes to achieve an effect that one alone cannot achieve. Seagrasses have been important in the carbon cycle of the Laguna Madre for at least 2,000 years. Microorganisms are responsible for the decomposition of seagrasses into nutrients usable by other organisms in the bay. They serve as a link between plants and animals. Together, seagrasses and microorganisms forge a chain in the Laguna Madre. Remove the seagrasses and the chain is broken.

A man who has been called upon to explain synergism and other formidable terms to the public is Tony Amos, the unofficial spokesman for the UTMSI. (See *Texas Parks & Wildlife*, May 1989, for an interview with Tony.)

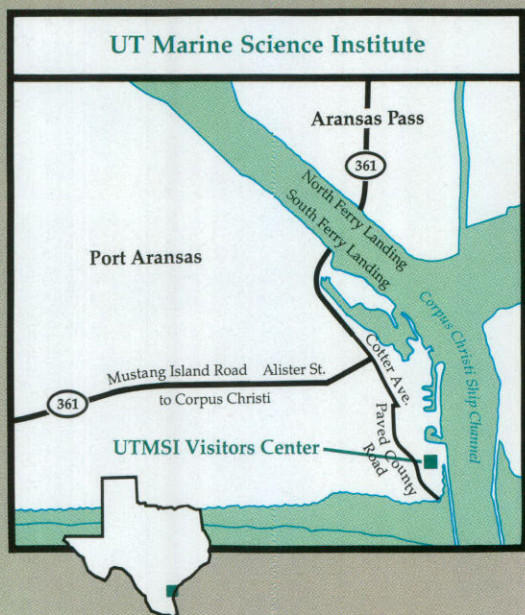
"Officially, my prime duty is studying currents," said Amos. "I tracked the movement of more than 140 million gallons of oil from the 1979 Ixtoc oil well blowout off Mexico.

"Currents carried some 27,000 barrels of oil up to the Texas coast, forming offshore tar reefs between the first and second breakers. An oil-water mousse even flowed down the burrows of animals that dwelled in the tidal zone, solidifying into black chimneys of tar."

If a television reporter had to cast an oceanographer it probably would be Tony Amos. With an English accent, gray beard and wreath of gray hair, all he needs is a trident to look like



Arana Garcia is doing research on the blood chemistry of rays and crabs. These animals have the ability to go from salt water to nearly fresh water in a short period of time with no cellular damage.



The University of Texas Marine Science Institute's Visitor Center is open Monday through Friday from 8 a.m. to 5 p.m. Group tours are available if request is made in writing at least two weeks before the date desired. Tour groups should be limited to 30 people unless special permission is obtained.

Marine Science Institute, Port Aransas, TX 78737-1267. Telephone, 512-749-6729.

From the Ferry: Take Cotter Street through the stoplight at Alister to the four-way stop on Station Street. Continue on Cotter through the four-way stop towards the beach. UTMSI Visitor Center is on the left just before the beach.

From Corpus Christi: Take South Padre Island Drive towards Padre Island. Once over the Kennedy Causeway, turn left on Hwy 361 and travel 18 miles to Port Aransas. Turn right at the second stoplight and follow Cotter Street through the four-way stop to the Visitor Center.

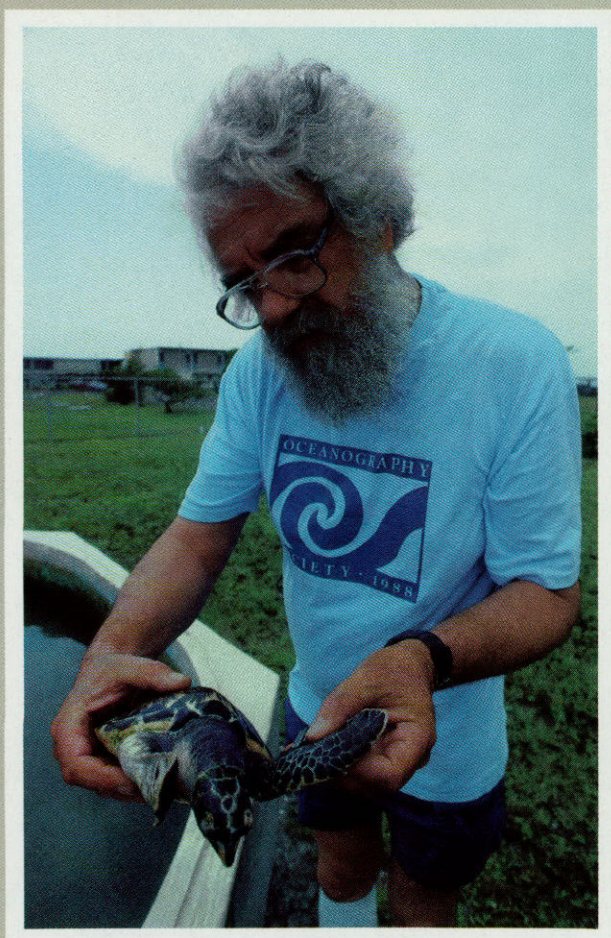
Poseidon. He regularly trades trident for pen and writes a column for the Port Aransas newspaper dealing with a wide variety of problems affecting the Gulf Coast, from plastic to TEDs (turtle excluder devices). His views on the latter have not endeared him to many local shrimpers. The University of Texas Press wants to compile his columns into a book.

Amos' regular beach monitoring puts him in contact with the public each day, contacts which have made him the local

observer for three stranding networks — marine mammals, turtles and shore-birds.

The Institute had its origins back in 1935, when zoologist Dr. E. J. Lund came to Port Aransas to investigate a fish kill. He operated out of a small, one-room shack that he helped build on the old U.S. Army Corps of Engineers dock. Later, in 1941, University of Texas regents founded the Marine Science Institute with Lund as its first director.

If Dr. Lund could come back and visit after 55 years what would he say about the changes to the Gulf Coast and this sleepy Texas fishing town? He probably would be upset after hearing about oil spills, garbage on the beaches and the decline in fish such as reds and trout. But after a tour of the Marine Science Institute and hearing of the work his successors are doing, he probably would feel a little more optimistic about the future of the Texas coast and the life that depends on it. ★



UTMSI's most recognized personality is Tony Amos, left. Amos' regular beach patrols put him in contact with the public and stranded marine species such as this endangered Ridley turtle. Above, Connie Arnold and one of the redfish brooders used in the lab production of the popular gamefish. Arnold's techniques of manipulating light and temperature have revolutionized the production of such fish.

Rattlin'

by Ray Sasser

It was an ill-advised attempt at rattling up a whitetail buck. The north wind was gusting to 40 m.p.h. In order for a deer to hear the clash of rattling horns, he would have to be very close. To stack the odds in my favor, I chose to rattle on the downwind side of a narrow strip of brush that separated a huge bufflegress field from a high fence that surrounded the South Texas ranch.

I'd had a glimpse of a pretty good buck in that strip of brush the day before. By working along the downwind side of the cover, there was no chance of a deer hearing me approach or smelling me. Even in high winds, a buck bedded on the opposite side of the brush would be no more than 50 yards away and would easily hear the antlers and believe a fight was close at hand.

That strategy paid off at my very first rattling spot. I backed up under the overhanging limbs of a mesquite bush, clashed the synthetic antlers together, twisting and grinding them while making a long, drawn-out grunt of effort on the grunt call.

Before I could set the antlers aside, a mature buck bolted out of the narrow strip of brush on a dead run, hair on end, ears laid back. He was headed straight for my bush! At the last moment, he spotted the unusual shape under the bush and veered into the open field where he stopped and stared for at least 30 seconds.

I later paced off the distance. The 10-point buck had come within seven steps of me and had attempted to stare me down at 50 yards. He eventually wandered off, confused by the absence of a fight where he had clearly heard a fight. He was a good buck but not a great buck, so I let him walk. Ten minutes later, I rattled him up again!

Horn rattling to attract whitetail bucks is a misunderstood and often misused hunting technique. Many hunters still consider it a form of Texas

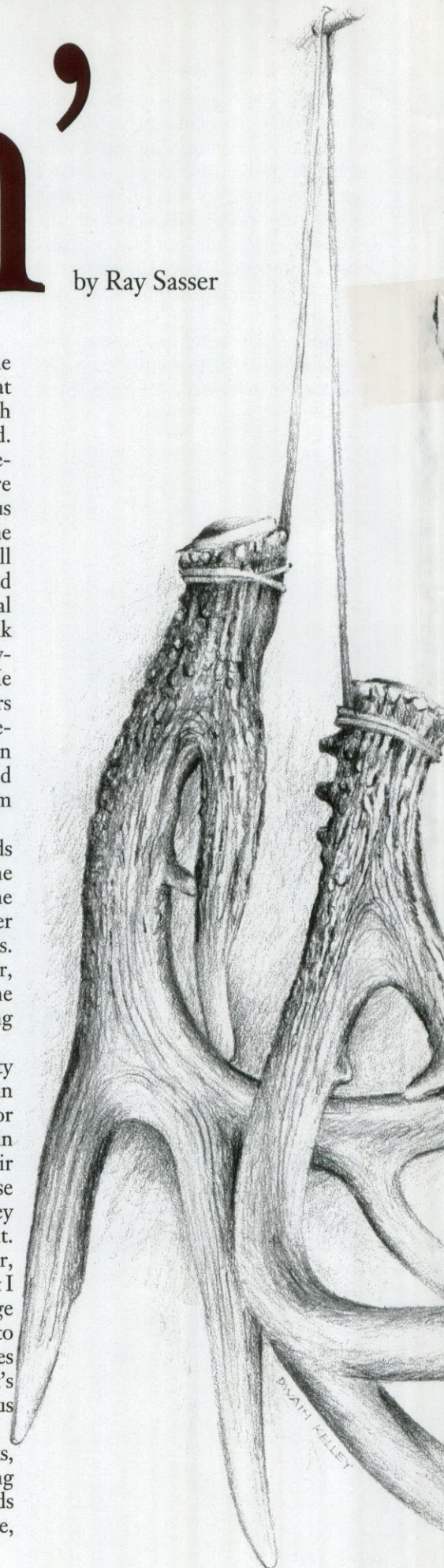
brag, a tall tale that ranks with the jackalope or, at best, a method that works only in the South Texas brush country where it apparently originated.

In practice, horn rattling for white-tails will sometimes work anywhere white-tails roam. Most of the 1,000-plus bucks Bob Ramsey of Mountain Home has brought to the horns have been Hill Country bucks. I've personally rattled up bucks in South, East and Central Texas. Ramsey is the John Henry Faulk of horn rattling, a consummate storyteller as well as a skilled hunter. He remains mystified, after nearly 60 years of rattling success, as to why bucks respond to the sound one day, when conditions seem less than ideal, and ignore it the next, when conditions seem perfect.

In fact, whitetail hunters are at odds over just why bucks are attracted to the sounds of other bucks fighting. One popular theory is that bucks fight over estrus does. That certainly happens. Some of the most violent fights occur, however, when there are no does in the area and neither buck is actively trailing a doe.

Dr. James Kroll, a whitetail authority with Stephen F. Austin University in Nacogdoches, believes bucks fight for territorial dominance. "Deer living in overlapping territories establish their pecking order early," says Kroll. "Those deer don't need to fight because they already know which buck is dominant. During the breeding season, however, there are certain dominant bucks that I call dominant floaters. They range throughout a wide area seeking does to breed. When a dominant floater crosses paths with a dominant resident—that's when you get the potential for a serious fight."

Other bucks, including small bucks, may believe the two bucks are fighting over a doe and come to the sounds figuring to sneak in and steal the doe,



*Face to face
with a big buck,
who's more rattled
. . . the hunter
or the deer?*

but that's unlikely. The long, drawn-out chase that's part of the ritual of whitetail breeding is designed to ensure that the dominant buck—the deer capable of keeping up the chase for the longest period of time—is the buck that breeds the doe. Small bucks may chase estrus does but, if the chase continues long enough and there's a mature buck in the area, the chase will eventually attract the larger animal's attention. Survival of the fittest is the exhibited principle. Kroll believes does can tell the social status of a buck and are programmed to breed with dominant bucks, which may also explain the chase ritual.

Dr. Bill Morrill, a wildlife management specialist with offices in Boerne, believes bucks come to fight sounds for the same reasons kids come running on a playground when you yell "fight!"

"It's a genetic reaction that deer and other animals, including humans, exhibit," says Morrill. "They want to be where the action is, where the excitement is. Whether a buck is tough and believes himself the toughest buck in the area or whether he is subordinate may also influence the way in which he responds to a fight. A tough buck may charge right in, convinced he can whip any other deer in that area, while a less dominant buck may sneak in to size up the competition."

Kroll says bucks also come to a fight

hoping to get in on the action. "If a buck gets badly whipped," says Kroll, "all the other bucks will jump on him. They'll kick him while he's down."

Deer that have been rattled up before or otherwise spooked by hunting pressure may respond cautiously to fight sounds. Ramsey always sets up to rattle with a clearing downwind of his position. "When you rattle, a buck may come from any direction," he explains, "but he most likely will come from downwind. No matter where he comes from, he will almost always circle to get downwind of the sounds. I always put out skunk scent to mask my odor."

Veteran hunters can't even agree on why bucks come to rattling, but those who rattle deer every year agree that two critical criteria must be met for the technique to work. The deer must be actively rutting or the rut must be close at hand. Morrill says he rattles more bucks just prior to the actual rut and finds the deer difficult to rattle when they're actively chasing does. Rattling

also works well when the rut is winding down and most of the does are already bred.

The second criteria that must be met if rattling is to work well is a balanced deer herd. In a situation where does greatly outnumber bucks, the technique doesn't work very well. That situation is usually the result of heavy hunting on the buck population, meaning most bucks in the herd are immature. The combination of immature bucks and many more does than bucks makes rattling largely ineffective.

The greatest rattling success occurs where there's a good population of mature bucks and a buck-to-doe ratio approaching one-to-one. Ramsey thinks you should try rattling anywhere there's a buck-to-doe ratio of one-to-three or better. The timing of your rattling efforts and the place where you rattle have a lot more to do with success than any "secret technique."

"I know hunters who have rattled up bucks by clacking a pocket knife on a



Steve Bentzen

Was it the possibility of seeing a fight that brought this buck to the sound of a hunter rattling antlers? Experts say that for born rattling to work the deer must be actively rutting or the rut must be close at hand. Also remember that rattling works best in a balanced deer herd.

rifle stock, by clashing two dead limbs together, or by scuffling the bark with their boots when they climbed a tree," says Ramsey, who has simultaneously rattled as many as nine bucks on three different occasions.

"The trick is rattling near a buck that's in the right frame of mind. A fellow I know in South Texas was using a stick to rake limbs from the grill of a bulldozer when a buck jumped out of the brush, hair on end, spoiling for a fight. The auxiliary engine on that bulldozer was running at the time. Being at the right place at the right time is definitely more important than rattling technique."

The right time, as we've already established, is just prior to or during the whitetail rut in a specific area. For South Texas, where rattling is very popular, December and January are the prime rattling months.

Specifically, the right place to rattle is where a buck can hear the clashing of the antlers. The pros like to rattle where they've repeatedly seen a good buck and feel confident the animal is close by. In an unfamiliar area, fresh buck rubs and scrapes are the best indications of a buck's presence. Because

sounds carry better on a still day, a frosty, windless morning is prime rattling time.

In open country, deer have been known to home in on rattling horns from as far away as a half mile. Thick woods tend to muffle the sounds, as does the wind. Ramsey doesn't like to rattle if the wind is blowing harder than 15 m.p.h.

In Texas, possession of a good set of rattling horns confers undeniable status. Hunters have been known to saw a trophy rack apart just to make impressive rattling tools. A sizable set of antlers produces more noise than smaller antlers, but a spindly six-point rack will definitely get results.

The proliferation of synthetic rattling horns in the past five years has made it easy for any deer hunter with \$30 to \$50 in his pocket to have a good set of horns. Texas hunters do know, incidentally, the difference between horns and antlers, but the custom is to refer to whitetail antlers as "horns" and to talk about "horn rattling."

Ramsey says there's no such thing as "tuned" rattling horns, although he does treat his antlers with linseed oil to keep them from becoming chalky. "All the

synthetic horns I've heard sound good enough to rattle up a buck that's in the right mood," he adds.

The synthetic horns I prefer are marketed by Gordon Eastman and endorsed by South Texas biologist Bob Zaiglin. Both antlers are cast off the same right main beam, meaning they both curve to the left when clashed. That makes them much easier to rattle without the risk of goring yourself.

I have a set of real whitetail antlers made from the right main beams of two different bucks. They produce a sound that I like better than any horns I've used.

Texas biologist Larry Weishuhn has long favored a set of mule deer antlers for rattling whitetails. The oversized antlers produce a loud sound that can be heard for long distances and the mule deer forks mesh together well for extra interaction. Weishuhn and Kroll are reproducing those mule deer antlers in synthetic material that should be available now on the Texas market. The prototypes I heard sounded very realistic, indeed. For information about the product, call Whitetail Outfitters at 409-564-2797.

The synthetic antlers will be available in a blaze orange color that's well advised anytime you're rattling on public land or on any private land where you're not absolutely certain about the location of fellow hunters.

Ramsey, who once rattled 38 bucks in a five-hour session, has a few tips on how it's done.

"The setup is more important than rattling technique," he explains. "If possible, two hunters should participate—one to handle the horns, the other to shoot. As many as 100 times, I've had deer come in so quickly that I didn't have time to put down the horns and pick up the rifle.

"I like to take advantage of cover, at least by sitting next to a tree that will break up my outline and preferably by backing up under some low-hanging limbs to hide me from deer. Climbing a tree makes a lot of sense because the deer aren't apt to see or smell you when you're up off the ground. Hunting from a tree or other high stand is about the only way a bowhunter is going to be successful.

"A mature buck that comes to rattling



Ray Sasser

Try rattling near fresh buck rubs and scrapes, which indicate that the animal is nearby. Big antlers produce more noise than smaller ones, but the experts say that even a spindly six-point rack will definitely get results.



Ray Sasser

Bucks do indeed fight over does, but some of the most violent fights occur when there are no does in the area. Bucks also fight for territorial dominance, and the sounds of the clash are believed to attract other deer who want to see the action.

is almost always going to come from downwind. I don't rattle without putting out skunk scent to mask my odor. Otherwise, the deer are going to come in, smell you and leave. You'll never know you rattled a buck."

Rattling works well if the shooter is in an elevated stand and the rattler is on the ground a short distance away. Deer have an uncanny ability to know exactly where a sound is coming from and bucks coming to a fight are extremely alert. They may be so convinced of what their ears tell them that they virtually ignore a hunter, but more likely they'll spook before you can get off a shot. Intentionally making noise while deer hunting is foreign to most sportsmen but you can't make too much noise when rattling. Two mature bucks locked up in combat are brutal and their fight tears up the ground and the surrounding brush. To see what a heavyweight bout is like, try to locate a copy of the video "Fighting Whitetails" from Smith/Taylor Productions. The 50-minute tape includes dramatic footage of dominant buck fights. Here's how Ramsey tries to duplicate the sounds.

"Wind up and hit the antlers together as hard as you can—really hit them hard. Then fight them; twist them together like two bucks pushing against one another with all their strength. Try

to get one wrist to overpower the other. Get a sneer on your face and work up a sweat grinding those antlers together for about 20 seconds. Then really rake the ground hard and thump the antlers on the ground. Reach up and fight a bush. The whole sequence should last about 45 seconds. Now put the horns down, pick up your rifle and start watching."

Ramsey waits and watches for about five minutes. If he sees nothing, he tries to goad cautious bucks by gently tickling the tips of the rattling horns together.

"You don't have to rattle hard again," he says. "The first time you hit the horns together, every deer within hearing distance heard you. By just ticking the horns gently together later, you may prompt action from a buck that's standing close by in cover.

"I don't generally stay in one spot longer than about 30 minutes before moving on to my next spot. Many times, though, I've stood up after rattling and spooked deer that I didn't see, even though they had come in pretty close."

Deer that are coming to horns often let their testosterone overpower their common sense. Ramsey recalls one setup in which he was rattling with his daughter and son-in-law. Game call maker Johnny Stewart was also there,

trying to capture the action on film. A buck jumped over Ramsey's daughter and son-in-law and found himself surrounded by people. In Ramsey's words, the deer went berserk, falling over and churning earth with his rear hooves, the whitetail equivalent of "spinning out," until he managed to get his legs back under him and race away.

Hunters, unused to seeing bucks charge in on them, sometimes act as strangely as rattled bucks. Rattling on the YO Ranch once, Ramsey had a big buck race in and stop at point blank range. His hunter shouldered his rifle, aimed, ejected a cartridge, aimed again, ejected another cartridge and kept up the process until all his ammunition lay at his feet.

The fellow, obviously shaken, finally turned to Ramsey and whispered "Bob, can you see where I'm hitting?" Ramsey nodded and pointed to his feet. The hunter could not believe he wasn't shooting at the buck.

As in the case of most hunters who rattle, the majority of bucks that come to Ramsey's horns leave none the worse for wear. Of the 1,000-plus bucks he's rattled up, only about 70 have been shot. I've personally rattled up about 100 bucks and shot only one.

"If I know where there's a truly big whitetail buck, rattling is the last method I'll use to try and get him," says Morrill. "Deer seem to get educated very quickly to the sound of rattling. I love to rattle—most hunters do. When bucks are coming to horns, it's the most exciting way to hunt them. Rattling is not a very productive method for harvesting a really big buck."

One of the biggest bucks taken in Texas during the 1989-90 season was rattled up on the Junco Ranch, which Morrill manages for Rich and Bob Nunley. That buck green-scored high enough to make the Boone and Crockett Book of North American Big Game Records.

When it works, horn rattling is easily the most exciting method of hunting whitetails. The problem with rattling is that, once you've done it, you'll be spoiled for the more traditional methods of whitetail hunting. ★

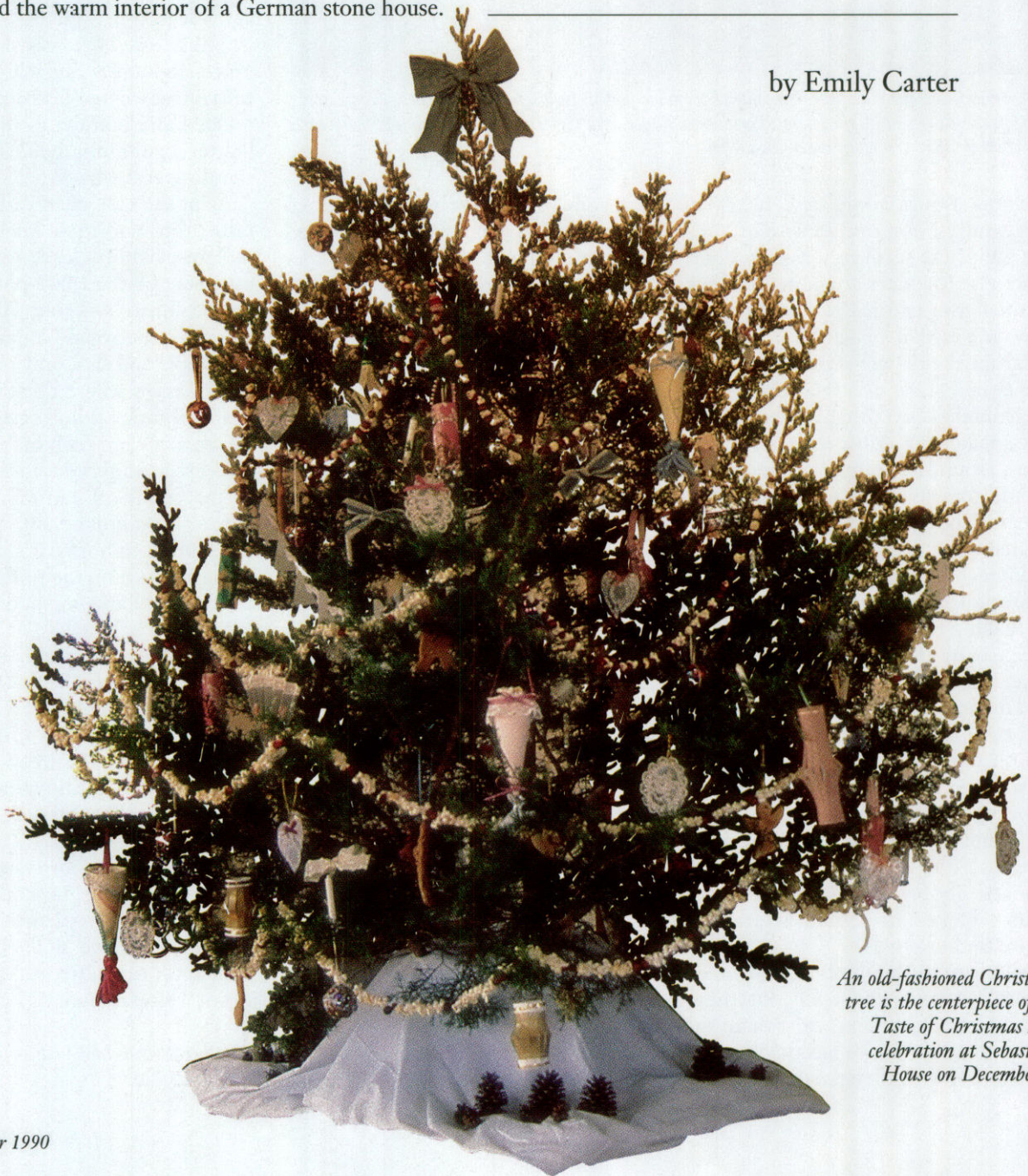
Ray Sasser is outdoor editor of the Dallas Morning News.

Christmas in the Parks

Horse-drawn sleighs, candles nestled on pine branches, stockings hung on mantles and formal parlors are some traditional holiday images dating from the Victorian era. But a historical Texas Christmas consists of a mix of cultural traditions. Among them are Mass in a Spanish mission, sausage making at a Hill Country farm, a cozy parlor in a frontier inn, and the warm interior of a German stone house.

Holiday celebrations recalling bygone days in Texas are planned at 10 state parks where the public events will present a blend of modern activities in historical settings. Many sites will be decorated with authentic period ornaments. In addition, a modern-day outdoor event, the Christmas Bird Count, will take place at Bentsen-Rio Grande Valley State Park.

by Emily Carter



An old-fashioned Christmas tree is the centerpiece of the Taste of Christmas Past celebration at Sebastopol House on December 9.



DATES, PLACES AND TIMES OF EVENTS.

LBJ STATE HISTORICAL PARK STONEWALL

The 22nd annual Christmas tree lighting ceremony featuring Lady Bird Johnson, a living nativity scene and a traditional Hill Country Christmas at Sauer-Beckmann Living History Farm; 6 p.m. December 16; admission free; call 512-644-2252.

STARR FAMILY STATE HISTORICAL PARK MARSHALL

As part of Marshall's Wonderland of Lights Festival, candlelight tours are offered at the vintage Maplecroft mansion. Like the rest of the city, the house is festooned with tiny white lights outside but inside it reveals its Victorian splendor with pine boughs, velvet ribbons and trees dressed with antique ornaments; weekends, November 23-December 16, time to be announced; tour admission fees are \$1 adults, 50 cents children; call 214-935-3044.

FULTON MANSION STATE HISTORICAL PARK ROCKPORT

Christmas open house featuring live music, Victorian Christmas decorations such as aromatic sweet bay and crepe myrtle leaves, the warm glow of luminarias on the path to the house, a Christmas feast set in the dining room and music; 7-9 p.m. December 6 and 7; admission free; call 512-729-0386.

MONUMENT HILL/KREISCHE BREWERY LA GRANGE

Kreische Christmas featuring an open house, refreshments, caroling and mu-

sical performances around a tree decorated in the German style with candy canes, apples, candles and hand-cut paper ornaments; 1:30-4 p.m. December 9; admission 50 cents adults, 25 cents children; call 409-968-5658.

VARNER-HOGG PLANTATION STATE HISTORICAL PARK WEST COLUMBIA

A Civil War Christmas featuring choirs, music and Dr. McAlexander, a retired historian, recounting stories of food shortages and other circumstances of Christmas in Brazoria County during the Civil War; 1-4 p.m. December 1-2, 8-9, 15-16; admission \$2 adults, \$1 children; call 409-345-4656.

LANDMARK INN STATE HISTORICAL PARK CASTROVILLE

Old-fashioned Christmas and Open House featuring fresh cedar garland decorations, pioneer toys for children to play with, Christmas music and refreshments; 5 p.m. December 7; admission free; call 512-538-2133.

GOLIAD STATE HISTORICAL PARK GOLIAD

Christmas Concert at Espiritu Santo Mission Church featuring Handel's Messiah sung by the Victoria Community Chorus, Ruth Williams, director; December 2, time to be announced; admission \$4; advance tickets required, write: Goliad Heritage and Cultural Association, P.O. Box 939, Goliad, Texas 77963.

SAM BELL MAXEY HOUSE PARIS

Maxey Gala Christmas featuring choral groups, parlor music and dramatic readings amid Victorian decorations of cedar swags, pine cones and fruit decorations; 1-5 p.m. December 9; admission \$1 adults, 50 cents children, call 214-785-5716.

SEBASTOPOL HOUSE SEGUIN

Taste of Christmas Past featuring refreshments made from authentic Victorian recipes, caroling, old-fashioned tree and decorations, luminarias; 6-8 p.m. December 9; free admission, call 512-379-4833.

INDIAN LODGE FT. DAVIS

A Children's Breakfast with Santa, 10-11:30 a.m. December 8; \$2.95 per child. Lodge Open House featuring local choirs, house specialty baked goods and a handmade ginger bread village; 6:30-9 p.m. December 15; no charge. Posada Procession with a donkey and lambs and traditional Mexican refreshments of hot chocolate, empanadas and bunuelos; 7-8:30 p.m. December 22; no charge. Gourmet Christmas buffet with cheeses, prime rib and a trifle; 12-2:30 p.m. and 4-8 p.m. December 23; \$6.50 adults, \$3.95 children; call 915-426-3254.

BENTSEN-RIO GRANDE VALLEY STATE PARK MISSION

A modern Texas outdoor Christmas event is the Christmas Bird Count for the Rio Grande Valley at 5:30 a.m. December 27; bring sack lunch and meet at the park gate. Call 512-585-1107. ★

RIVER ON THE EDGE

The year was 1709 when a small group of Franciscan monks embarked on a journey from the Gulf of Mexico coast up the Guadalupe River. Paddling upstream was slow, but reaching their final destination was more important than speed. They were searching for satisfactory locations for a colony, and they carried the name "San Marcos" with them. This name would be applied to the first sizable river east of the Guadalupe.

When they arrived at a tributary near what is now the city of Gonzales, the monks steered into a stream flowing into the Guadalupe and continued their northerly course. The waters they traveled were murky for about the next 70 miles, but finally they found a flow of clear spring water entering the stream and turned their boats to follow the sparkling water to its origin. Undoubtedly their excitement grew as they neared the end of their journey. About four miles upstream, where many springs bubbled from the ground to create one of the prettiest bodies of water in the world, they reached their destination.

Early Spaniards called the river Rio de los Inocentes, or River of the Innocents. The Spanish made several attempts to establish colonies at or near the headwaters of the San Marcos, but none survived. Hostile Indians and little or no support from a corrupt government doomed each venture. The present city of San Marcos was established by Anglo-Americans after Texas became a state, nearly 140 years after the monks made their journey to name the river.

But the Spaniards didn't discover the river. Neither did the French, nor any other European explorers for that matter. Clovis Indians lived at the site at least 13,000 years ago. Archaeologists and historians believe the area may hold the North American continent's record

for longest continuous habitation by man. How much longer people may have lived around the river is conjecture. The amazing thing is that, even today, the river is surviving the ravages and pollution of mankind.

Known today as the San Marcos River, this stream can truthfully be called unique. There is not another river anywhere on earth that supports the same organisms, both animal and plant, as these crystal-clear spring waters. Even nearby springs along the Balcones Escarpment are not inhabited by the same organisms.

Why does such unprecedented life exist here and not elsewhere in Texas or the world? The world's total population of the San Marcos salamander, *Eurycea nana*, and fountain darter, *Etheostoma fonticola*, is limited to the springs at the headwaters of the river. Three species of caddisflies, mothlike insects with aquatic larval stages, have not been found anywhere else in the world.

Texas wild rice, one of only four wild rice species in the world, is found only

in a 1 1/2-mile stretch of the upper San Marcos River. The U. S. Fish and Wildlife Service lists the plant as endangered. Texas wild rice grows completely submerged in one to six feet of clear running water. Only when the plant is blooming do parts of it emerge above the water.

Giant freshwater prawns, *Macrobrachium carcinus*, are some of the most extraordinary invertebrates found in the river. These lobster-sized crustaceans reach a weight of three pounds or more and attain a body length of 10 to 12 inches, with antennae extending 24 inches more. In the late 1800s, these prawns supported a thriving fishing industry in the San Marcos area. Today, they are difficult to find and little is known about their biology. They apparently reproduce in coastal estuaries and migrate upstream. There are various exotic underwater plants such as anacharis, cabomba, ludwigia, ambulia, ceratophyllum, vallisneria and hygrophylla. For many years, these plants were shipped from the San Marcos River throughout the United States to provide decoration for home aquariums.

How can all this isolated life be explained? One factor is that the crystal waters of the San Marcos are consistently warm, maintaining a year-round temperature of about 71 degrees. Aquatic plants thrive in such an environment. Another factor is the location of the San Marcos River springs in relation to the Edwards Aquifer. The Edwards Aquifer is an elongated, subsurface crescent of porous, water-bearing limestone. The crescent follows the curve of the ancient Balcones Fault and is tilted from an elevation of about 1,300 feet above sea level at its western edge near Brackettville to about 574 feet above sea level at San Marcos. Near its eastern end it curves northward to Salado Creek in Bell County. The aquifer is about 175 miles in length, varies from five to 30

by Leroy Williamson

The San Marcos River and its historic springs face an uncertain future

miles in width, and is approximately 500 feet thick.

The aquifer contains three distinct underground pools. The San Antonio pool extends from Brackettville to Kyle (and includes the San Marcos springs); a second pool extends from Kyle to Barton Springs in Austin; and a third

pool extends from the Colorado River in Austin to Salado.

Lying at the lowest point on the San Antonio portion of the aquifer, San Marcos springs would be the last to fail in severe drought. There is no record that the springs have ever ceased to flow and it is possible they have been flowing

continuously for hundreds of thousands, perhaps millions, of years.

Today, the river attracts people more for its beauty than for life support. But for the earliest civilizations, it provided pure, clean water, a food supply of fish and crustaceans and a means of travel. Stephen F. Austin passed through the valley of the San Marcos River in August 1821, and wrote in his diary that the area was the most beautiful he had ever seen. And General Edward Burleson, commander of the Texas Army that recaptured the Alamo, chose the hill overlooking the headwaters of the San Marcos River to build his home, where he lived until his death in 1851.

There was no Spring Lake when Burleson built his home there. The bubbling springs created only a small stream that could be stepped across in several places. But Burleson saw the need for water power, so he built the first dam in 1849 on property he had purchased the year before. Along with the dam, he built and operated Burleson's Mill on the west bank of the river, close to the spot where an ice plant would be built. The well-known restaurant, Pepper's At The Falls, is now located in the old ice plant building.

A Bishop Doggett of the Methodist Church South wrote a description of the river in a letter to the Richmond, Virginia, *Christian Advocate* in spring 1877, in which he said, "The marvel of this wonderful river, however, is not its abrupt origin or its crystal clearness, but the wealth of sub-aquatic vegetation. Its margin is not only lined with overhanging shrubs and clustering heaps of wild tresses of long and silken grass springing from its depths and floating in the current off for twenty or thirty feet, but its entire bottom is covered with an almost unbroken tissue of delicately tinted and beautifully variegated vegetation blooming beneath the

Resembling an exotic tropical paradise, the upper San Marcos River supports lush plant life along its banks as well as unique life below its surface.



Leroy Williamson

surface, under whose picturesque foliage the lithe, agile fishes perform their graceful motions, and whose crystal caves the imaginative Greek would have peopled with laughing water nymphs. I doubt if any water scene of the same extent abounds with more transcended beauty. It is a genuine, original greenhouse. It is nature's own conservatory, where her rarest productions are preserved in amaranthine freshness, enclosed in a framework of rustic grandeur, and seen through surfaces of perpetual purity...One must be incurably obtuse to look into this mirror of nature and not be transported with its imagery."

People who meet this wondrous river fall in love with it. My own love affair with the river began late in the river's history but early in mine. When I was a youngster in the 1930s, my mother would often take my three brothers and me on a six-mile drive from our country home to the springs where we learned how to swim in the chilly waters behind the ice plant where my father worked. (Technically, the waters are warm, but any swimmer will swear that the river is melted ice.) When my father returned from work, we would walk from the ice plant to the headwaters and drink from the springs, something I wouldn't recommend today because of possible pollution from an increased population, but primarily because it is not wise to drink untreated spring water.

Even at that preschool age, the river was intriguing to me. There weren't any other rivers I knew of at that time that were crystal clear, where you could watch fish swimming in their domain, and even see them bite your hook.

Years later, within a few days of my 13th birthday, my father became manager of the first glass-bottomed boat venture, instituted by Paul J. Rogers. For the next six years I piloted a boat part-time, and spent much of my free

time on the lake, swimming, fishing, taking pictures, boat riding, or just enjoying the scenery and wildlife around the headwaters of the river.

I would tell visitors everything I had learned about the river: that the springs

San Marcos Springs would be the last to fail in a severe drought.

flowed an average of 100 million gallons of water a day, the names of most of the underwater plants, water temperature and the like. On a typical boat ride, a variety of fish would be seen, including largemouth bass, catfish, Rio Grande perch, various sunfish and sometimes eels.

The fleet of boats grew from a single four-passenger model to two 30-passenger craft. After visiting Marineland, Florida, Rogers decided to build an underwater theater and Aquarena Springs was born. Aquarena Springs is now one of the main tourist attractions in Central Texas with a fleet of glass-bottomed boats, a sky ride, and various

other attractions including a bed and breakfast inn and a restaurant.

Many people have moved to San Marcos because of the river, and each year thousands of others visit to see it. Southwest Texas State University students bask on the river banks and swim in the refreshing waters. Scuba divers and snorkelers enjoy the crystal clearness of the river, exploring underwater wonders while playing tag with the fishes. On any given day, it's possible to find biology or fishery majors collecting specimens for their class work. The river is an excellent hands-on classroom for students.

While the San Marcos is still running at historic rates, there are predictions that the springs may someday fail. Several severe droughts have threatened the springs. In 1956, Comal Springs in New Braunfels ceased to flow, as did many other springs along the Edwards Aquifer. Spring flow at San Marcos dropped to 45 cubic feet per second from a decade average of 155 cfs.

A story published in the *San Marcos Record* on February 10, 1956, quoted Ed M. Cape, general manager and counsel of the Guadalupe-Blanco River Authority as saying, "The San Marcos springs can go dry in 10 years."

On August 2, 1978, San Marcos radio station KCMY quoted a federal official who predicted: "The San Marcos springs are rapidly going dry and will be flow-

Photo courtesy San Marcos City Library



The San Marcos River circa 1893 in the Martindale area. Some four miles from the headwaters the Blanco River flows into the San Marcos, causing the San Marcos to become a more typical Central Texas stream. Dams were built in the San Marcos, Martindale and Staples areas to create water power.



Leroy Williamson

Spring Lake, headwaters of the San Marcos River and home of tourist attraction Aquarena Springs, is located within the city limits of San Marcos. The compact, fragile area's future depends on man's ability to protect the Edwards Aquifer.

ing only intermittently by as early as 1985. What's more, it appears as if nothing can be done to halt their eminent demise."

Were these people wrong, or will their predictions yet come true? Man probably has tampered with the river and its natural water supply more in the past 50 years than in its entire prior history. The most immediate threat to the aquifer today, however, is depletion.

The underground aquifer contains good water and bad water, with the line separating both dangerously close in some instances. Indeed, the greatest threat to the aquifer may be encroach-

ment of the bad water line due to over-drafting. As the good water is drawn down, the bad water moves ever closer to wells supplying drinking water, making the water unfit for consumption. There are wells in the Kyle area in which such bad water already appears.

Cities are taking more and more water from the aquifer as populations expand. The once pure waters have been polluted by sewer and septic tank drains, pesticides, fertilizers and automobile emissions. During the 1940s and 1950s, the river was so polluted from raw sewage that it was unsafe for swimming and was off-limits to military personnel sta-

tioned at San Marcos Air Force Base. The sewage problem has since been solved, making the river safe for recreationists.

But the river is changing. Flood control projects in the river's drainage area prevent natural flooding and flushing of the lake and river. Silt is filling shallow areas and clinging to much of the plant life.

The river and its headwaters are dazzling, but not as dazzling today as they were 50 years ago. Man's meddling with nature is causing drastic changes in an invaluable resource. A drought in the summer of 1990 found the Edwards Aquifer in trouble again. Emergency water rationing was instituted in the major cities and counties within the Hays, Bexar, Comal, Medina and Uvalde aquifer region. There was concern that all springs along the fault might cease to flow when the aquifer dropped to dangerously low levels.

Understanding what is happening to the aquifer is a matter of simple arithmetic. More water is being subtracted than is being added. Man is using more water than nature can supply. As the population increases, the problem will worsen. A crisis situation exists and concerned citizens are beginning to take action to save the aquifer. Unfortunately, most people tend to ignore problems until they do become a crisis. Often, it is too late then to solve the problem.

It's theoretically possible that man could drain the Edwards Aquifer because he must have the water. Long before that, however, the springs along the fault would go dry and rivers that depend on them, especially during droughts, would be severely affected. There is little consolation in the fact that the San Marcos River will be the last to go dry.

What about the Comal, Barton and Salado Springs, as well as the San Antonio, Comal, Nueces and Sabinal Rivers? What about the Guadalupe, the Frio, Medina and Blanco Rivers? Can the loss of any of these be justified?

Do we have the determination to solve our water problems without destroying the magnificent works of nature? Or will we drain the aquifer and its rivers before we realize the misfortune of our deeds?

It has been nearly 40 years since I lived at Spring Lake. I still visit the river occasionally, to gaze at its beauty and marvel at its clearness. There are nights when I dream of swimming in the underwater splendor. In my dreams I have the miraculous advantage of not having to come to the surface to breathe, gliding as a fish among the underwater growth in the glorious world just below the water's surface.

Dreaming about swimming in Spring Lake is about all that is possible today. Since the lake is completely surrounded by private property, Aquarena Springs can control public access to protect its business interests and preserve the integrity of a unique, environmentally sensitive area. Limited access has benefitted water quality and helped protect the endangered species found there.

There have been complaints from local San Marcos citizens about lake access and the Attorney General's office has been evaluating the situation.

Most of the river has limited access, as most riverside property is privately owned. Southwest Texas State University has a private park for students and faculty. Just downstream from that is the city park, with public access to about a mile of river down to and including the old Rio Vista park. Aquarena Springs owns and allows public access to the river across its land immediately behind Peppers At The Falls.

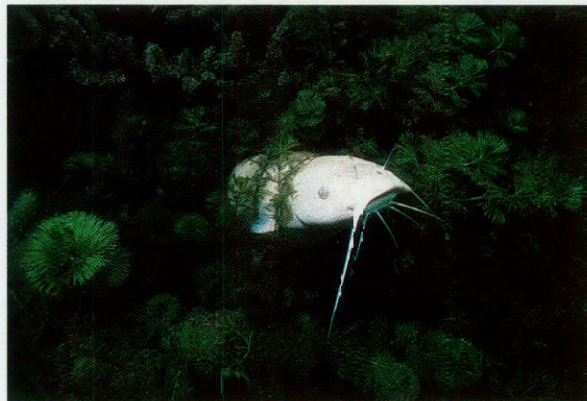
But lake and river access is a problem that can be solved. The greater immediate problem is saving the aquifer and the river. The aquifer is not an eternal water supply. Current demands for water exceed the average annual recharge but we must not let depletion of the aquifer be considered an alternative. The San Marcos and all the



Stephan Myers

other aquifer rivers must keep flowing. Man must solve his water problems before destroying this great natural resource that creates such exquisite scenery for the central Texas area and supports unique plant and animal life that has existed for millions of years.

If we don't solve the water problem we can watch the spring rivers fed by the Edwards Aquifer go dry, one by one. When the San Marcos River goes dry, we'll know that the aquifer has been drained to a level which will no longer sustain spring flow. Glass-bottomed



An albino catfish pokes its head from the lush vegetation in the headwaters of the San Marcos River (left). Above, snorkelers glide above a patch of wild rice unique to the upper San Marcos River.

Stephan Myers



Stephan Myers

An underwater archaeological dig directed by Southern Methodist University in Dallas has recovered thousands of artifacts from the lake's bottom dating back to the Clovis Indian times of 12,000 years ago. Some of the recovered artifacts will be displayed at Aquarena Springs. Late afternoon finds the waters of Spring Lake as smooth as a mirror. Springs bubbling from the Edwards Aquifer have been flowing for thousands, perhaps millions, of years.

boats will no longer cruise the crystal clear waters of Spring Lake, providing visitors with a glimpse of one of nature's great wonders. We'll know that the San Marcos salamander no longer survives. We'll know that the many rare and exotic river plants are gone. We will know we have lost a great treasure—a treasure that was in our care for safe keeping. We will know that we failed to do what we should have done.

Will the millions who depend upon the aquifer know where their future water is coming from? ★

Note: Visit your public library to learn more about aquifers and water conservation. To learn more about the Edwards Aquifer, contact the Edwards Aquifer Research and Data Center, Southwest Texas State University, San Marcos, Texas 78666.



Leroy Williamson



by Arturo N. Longoria

“A handful of committed people can really make a difference.”

JIM & CYNDY CHAPMAN

Who would have guessed that a chance encounter with a nature magazine in a New York City apartment ultimately would help save wildlife and endangered habitat in deep South Texas? Most certainly not Jim and Cyndy Chapman, who until the late 1970s had never even heard of the Rio Grande Valley.

The Chapmans, who came from different ends of the country but met during stints in the Peace Corps in New York, were not particularly conservation-minded until after they had married and moved to Denver.

“There were some subtle things going on in our minds,” explained Cyndy, who was first drawn to learn more about conservation after reading several articles in an *Audubon* magazine she found lying on a friend’s coffee table.

Once in Denver, where Jim studied to be a physician’s assistant, Cyndy decided to attend an Audubon Society meeting to learn more about the national Bird Rescue rehabilitation program she had become involved with while working for a local veterinarian.

“In Denver the good fights were being fought, and there wasn’t any shortage of people to fight just causes,” noted Jim, who had also become a member of Denver’s Sierra Club.

But when the Chapmans moved to the Rio Grande Valley in 1981, where Jim began working in the medical field,

they were compelled to take more than just a passive role in trying to preserve the environment.

“Coming down here (to the Valley), it became apparent that there were all kinds of problems,” said Jim.

He said his first trip to the Santa Ana National Wildlife Refuge south of San Juan opened his eyes to the beauty that once existed throughout the area.

“I was amazed,” he said. “The refuge was so beautiful, but then I realized that it existed as an island, surrounded by fields. Everything had been cleared beyond the refuge for as far as I could see.”

“We were struck by the total absence of trees,” added Cyndy.

The Chapmans were quick to immerse themselves in the Valley’s conservation movement. Cyndy founded the Bird Rescue program, and Jim helped start a Sierra Club chapter.

“We realized that if we didn’t step in, then no one was going to step in,” said Jim.

Cyndy nodded in agreement. “You know a handful of committed people can really make a difference.”

Both Jim and Cyndy concede that establishing a strong conservation base and staying committed to preserving the Valley’s environment has not been easy. “There was one man, though, who probably did more to get me involved in trying to save habitat and wildlife than

anyone else,” said Cyndy.

She recalled a Lower Gulf Coast seminar she attended shortly after they arrived in the Valley and bought a home in Weslaco. “This man stood up and said, ‘What’s all the fuss? We’ve been dumping junk into the Laguna Madre for a long time, and we haven’t ruined it yet.’”

She had heard enough. From that moment on, Cyndy knew she would remain committed to what has become a major effort to help save the Valley’s environment and diminishing brushlands.

“What got to me was there seemed to be no regret or remorse about what people had done to destroy so much of the Brush Country,” Jim lamented. “On the contrary, one of the local banks had an advertisement boasting that they had helped to knock down all the brush. Of all the things to brag about. It was unbelievable.”

“Forty years ago there was so much brush that a little clearing didn’t hurt,” said Cyndy. “Unfortunately, the mentality of many people is still there ... 40 years behind. People are doing things as they’ve always done them. The only problem is that now, with the continued brush clearing, it threatens the very existence of living things.”

From the start, the Chapmans’ energy has seemed boundless. Their list of accomplishments and awards since



Steve Dentson

moving to the Valley has established them as leaders in the conservation movement. Besides founding Bird Rescue, Cyndy initiated the Wildlife Corridor Task Force, which has been the primary catalyst in establishing an unmolested brushland corridor from the mouth of the Rio Grande near Brownsville to Falcon Dam in northwestern Starr County. To date, the Task Force has aided the Valley in receiving more federal money to preserve habitat than any other region in the country. In 1989 the federal government appropriated \$3 million for the wildlife corridor. (See *Texas Parks & Wildlife*, January 1988.)

Cyndy is currently on the board of directors of the Frontera Audubon Society, and was the first director of the Valley Nature Center, an organization

dedicated to promoting conservation education. She was also named "1987 Conservationist of the Year" by the National Audubon Society, and was awarded the Gulf Oil Company "Citizen Conservation Award" — one of only 10 individuals in the country to be so recognized.

Jim has not taken a back seat in either the work or the awards. He helped found the Native Plant Project, which works to preserve the Valley's unique native plants. He is also active in Bird Rescue, the Frontera Audubon Society and was an executive of the state Sierra Club for three years. He has received awards from the Sierra Club for promoting conservation.

When an out-of-state corporation wanted to incinerate dangerous chemicals in the Gulf of Mexico the

Chapmans helped lead the fight to stop it — via the Gulf Coast Coalition. In the end the coalition was victorious, thus saving the Gulf of Mexico from a possible environmental catastrophe.

"How can one not do something?" said Jim, when asked how he and his wife can devote so much of their time to conservation work. "Yes, you're already too busy, and you're already too tired, but how can you turn your back? We can't."

"That's true," agreed Cyndy. "We've had more opportunities to gaze at the crystal ball in the Valley, and see what's become of it because we came from outside. I'd have to say that the environmental community here is in the toddler stage. I see us moving forward, though."

The big picture is only part of the Chapmans' conservation repertoire. For the past eight years they have teamed to create a mini-wildlife sanctuary directly behind their midtown Weslaco home. They call it "the thicket," and it has attracted bird watchers, researchers and state officials from Texas and across the nation.

A collage of enormous native trees, vines and riparian shrubs, the thicket lends an air of enchantment — almost mystery — to the otherwise monotonous rows of houses and pavement.

"For a lot of people, clearing brush and thus destroying wildlife is just a means to an end," observed Jim. "I don't think their end is to see the brush knocked down. If we could educate people to see what happens as a result of their actions, then they might change."

Cyndy looked at her husband and smiled. "You know," she said, "If it's true what Jim's saying — and I believe it is — then there's hope." ★

Arturo Longoria is a freelance writer from Mission, Texas, who works for the McAllen Monitor.

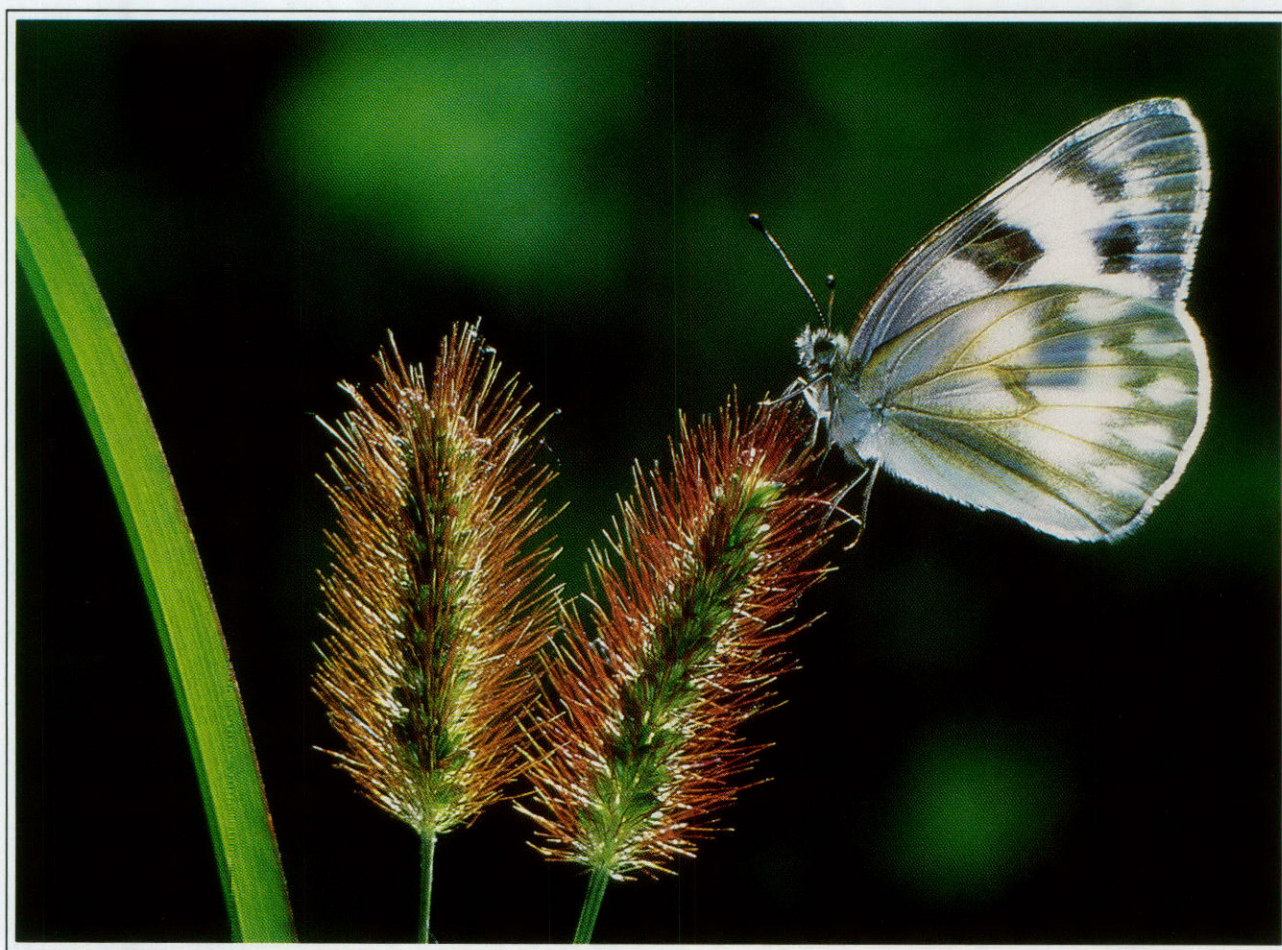
BEST OF TEXAS PHOTO CONTEST

Congratulations to the winners of our Best of Texas Photo Contest—and a special thanks also to all who entered but didn't place. Even though you weren't winners, your contributions helped make the contest a success.

Here are the winning photos—one best of contest, a first, second and third

in each category, and a few honorable mentions where applicable.

The judges had a difficult job selecting the finest of some 2,500 slides submitted by just over 1,000 entrants. But they did their best, and we hope you will agree that the photographs are outstanding.



BEST OF CONTEST

DR. EDWARD O. ERKES

RANDOLPH AFB

Backlit checkered white butterfly
Nikon F4 camera, 100mm macro lens,
two flash units and one mirror reflector,
Fujichrome 50 film, 1/250 second at f/11.



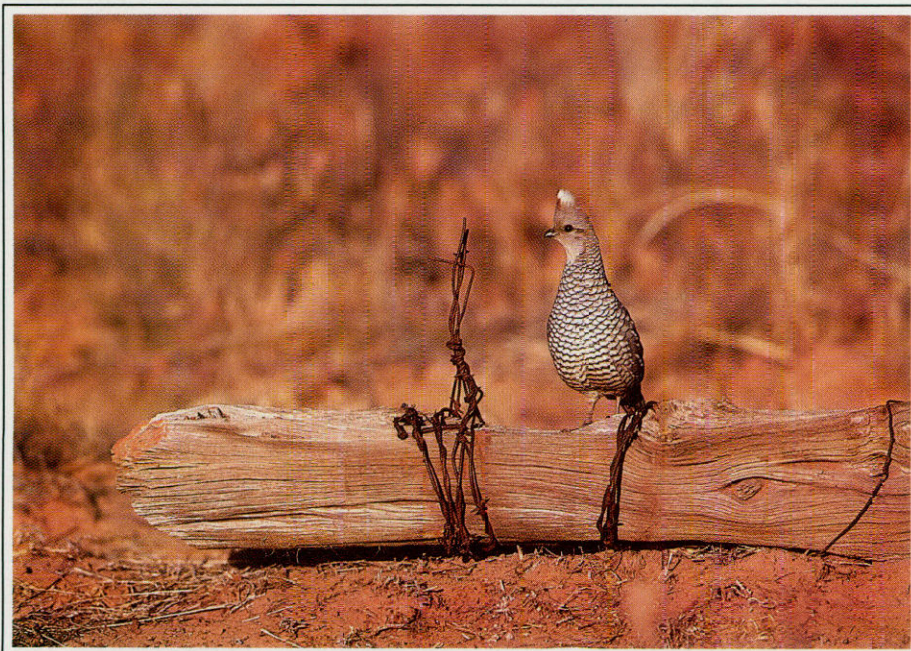
WILDLIFE

FIRST PLACE

JOHN M. JONES

HOUSTON

Baby alligator on mother's head at Brazos Bend State Park
Pentax LX camera, Pentax 600mm lens,
Kodachrome 64 film, 1/250 second at f/8.



WILDLIFE

SECOND PLACE

PATRICIA REDWINE

ANDREWS

Scaled quail
Canon F1 camera, Canon
300mm f/2.8 lens,
Fujicrome 50 film.



WILDLIFE

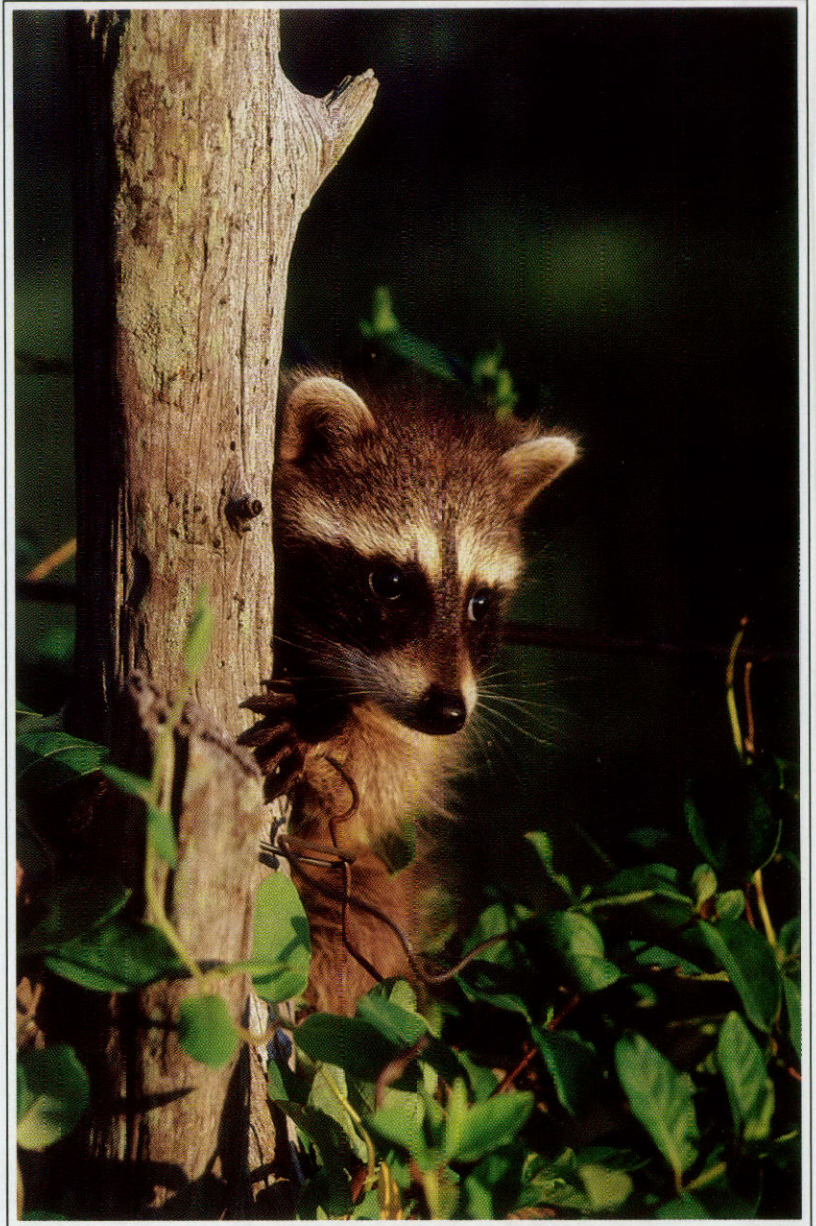
THIRD PLACE

TODD E. LOVE

CASTROVILLE

Common snipe

Canon AE-1 camera.



WILDLIFE

HONORABLE MENTION

RANDY CRANE

MOUNT VERNON

Baby raccoon

Canon F1 camera, Canon
300mm lens, Kodachrome
64 film, 1/125 second at f/4.

WILDLIFE

HONORABLE MENTION

BOBBY INMAN

ROUND ROCK

Male cardinal with sunflower

Nikon FE2 camera,
Kodachrome 64 film,
aperture set manually to
approximately f/5.6, time
set by camera's aperture
priority system between
1/125 and 1/250 second,
flash used for fill light.





WILDLIFE

HONORABLE MENTION

SUSAN DAVENPORT

BRAZORIA

Black-crowned night heron in
marsh by Intracoastal Waterway
Minolta Maxxum 9000
camera, 600mm APO lens
with 2-1 converter, Fuji 100
film, f/8 at 1/125 second.

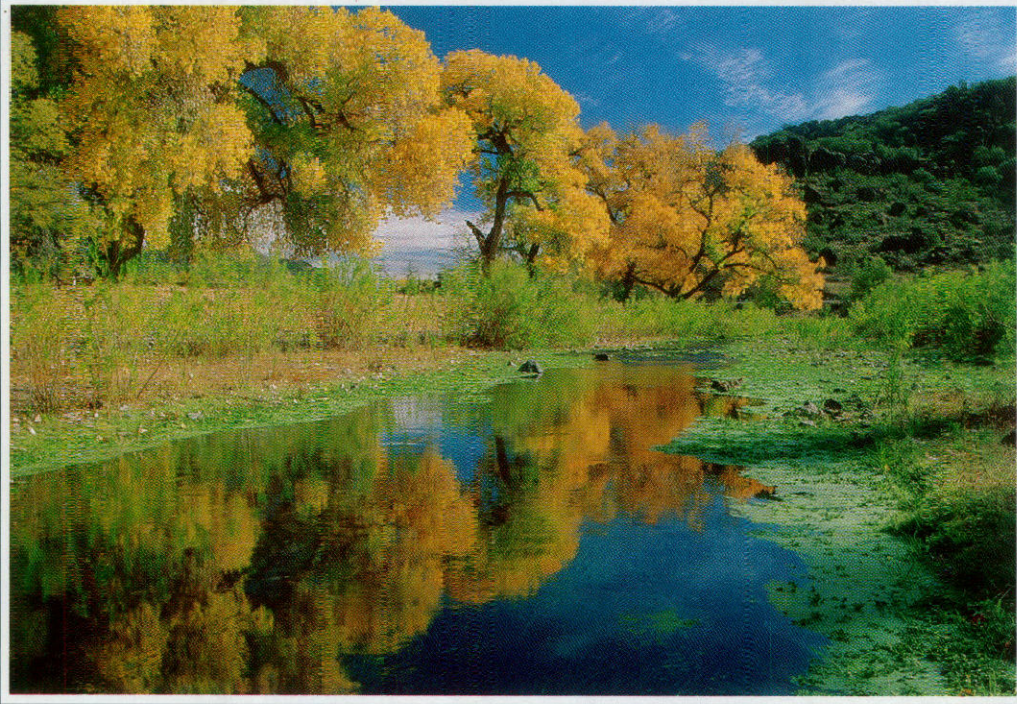
WILDLIFE

HONORABLE MENTION

BARTH SCHORRE

HOUSTON





SCENIC

FIRST PLACE

CECIL J. SPARKS

NACOGDOCHES

Cottonwood trees near Fort Davis

Pentax SF1 camera,

Ektachrome 100 HC film.

SCENIC

SECOND PLACE

LAYTON BLAYLOCK

AUSTIN

Shrimper at sunrise, Corpus Christi

Canon F1 camera, 200mm lens,

Kodachrome 25 film.





SCENIC

THIRD PLACE

MARY ANN BEALS
INGRAM

Fall in Lost Maples State Park
Minolta 7000 camera, Fuji film.



SCENIC

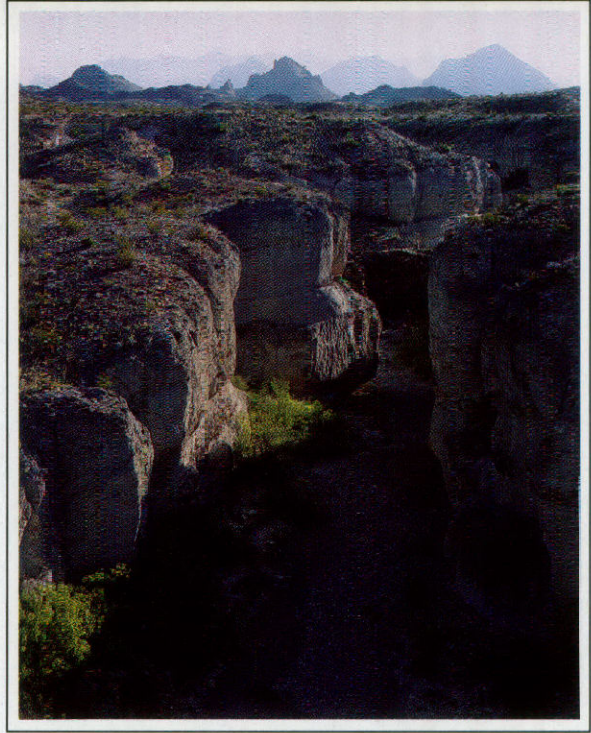
HONORABLE MENTION

RACHEL NEMEC
SNOOK

Tornado winding down,
Brazos County, April 27, 1990
Canon EOS 630 camera,
70-210 telephoto lens,
Kodak Gold 100 film.

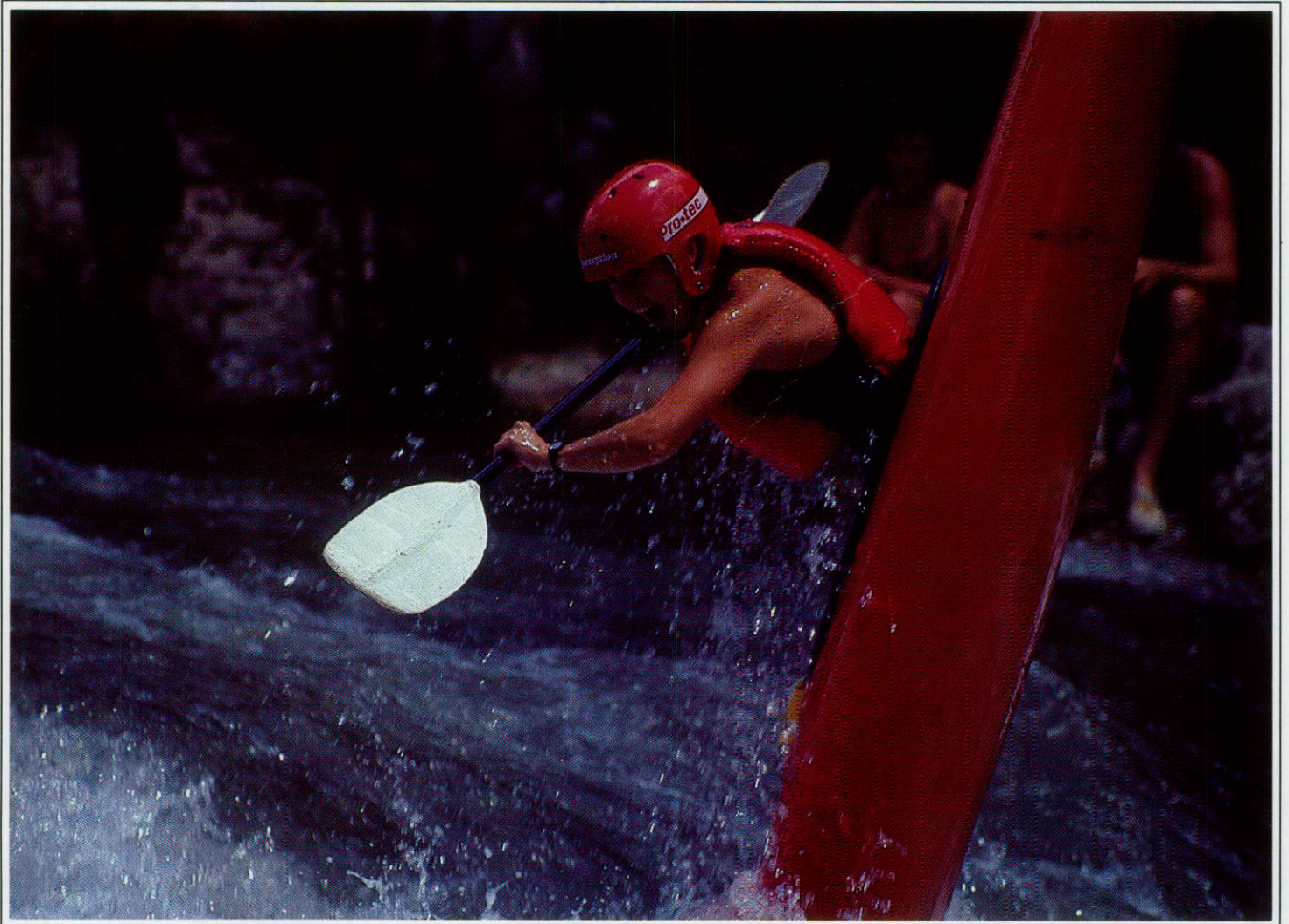
SCENIC
HONORABLE MENTION

JOHN DEATON
CARROLLTON
Tuff Canyon, Big Bend
National Park
Zone VI Field Camera,
210 Schneider,
Ektachrome film.



RECREATIONAL
FIRST PLACE

RICHARD ALBRECHT
HOUSTON
Kayaker "popping-up," Hueco Falls, Guadalupe River
Pentax MX camera, Pentax 70-210mm zoom lens,
Kodachrome 64 film, 1/250 second at f/8.



RECREATIONAL
THIRD PLACE

PATRICIA REDWINE
ANDREWS

Boy fishing in Champion Creek Lake, Colorado City
Canon F1 camera, Canon 80-200 zoom lens, Kodachrome 64 film.



RECREATIONAL
SECOND PLACE

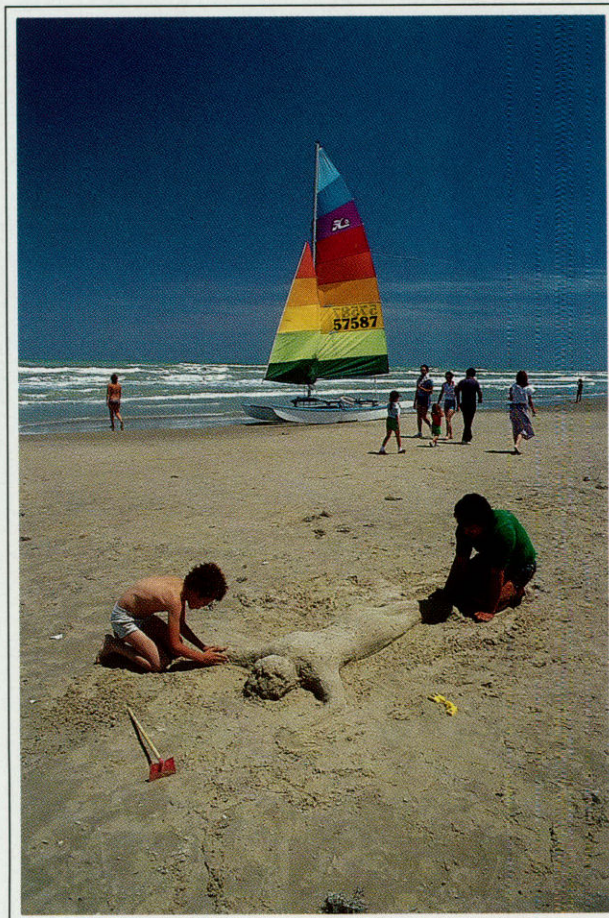
WILMA OWENS
WOODVILLE

Chad and Mr. Dobbs fishing on Cypress Creek
Canon AE1 camera, Canon FD 50mm 1:1.8 lens,
Ektachrome 200 film, 1/60 second at f/8.

RECREATIONAL
**HONORABLE
MENTION**

BRIAN K. LOFLIN

SAN ANTONIO
Beach sculpture,
South Padre Island
Nikon F3 camera,
Ektachrome 100 film,
1/125 second at f/16.





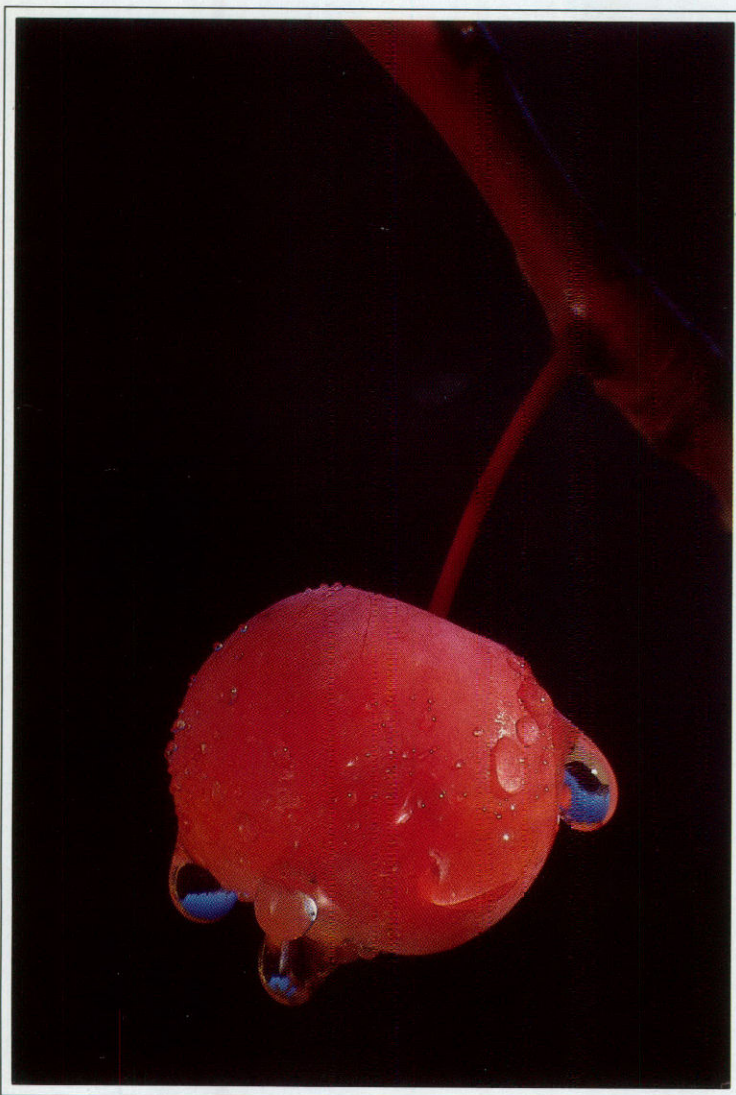
MACRO

FIRST PLACE

PHILIP W. MARTIN

SAN ANTONIO

Winecup with spider and fly
Nikon EL2 camera, 105mm
Nikkor macro lens, flash,
Kodachrome 64 film, 1/125
second at f/16 or f/32.



MACRO

THIRD PLACE

THOMAS L. BLACKLEY

ABILENE

Crabapple after rain
Nikon F3 camera,
Kodachrome 64 film.



MACRO

SECOND PLACE

JAMES C. COKENDOLPHER
LUBBOCK

Cicada killer with prey
Olympus OM-2N camera,
F32 on 80mm macro lens
with two flashes (one
mounted off camera),
Kodachrome 64 film.

MACRO

HONORABLE MENTION

GEORGE A. BOGARD, D.D.S.
ROWLETT

Clearer shrimp on coral reef
Minolta X370 with Ikelite
housing, Kodachrome
25 film, 1/60 second at
f/8, flash.



MACRO

HONORABLE MENTION

G. C. IRVINE
VIDOR

Granny's Eyes
Sears KSX Super camera,
50mm lens with extension tube,
Kalimar 2X teleconverter
with the lens removed.

PICTURE THIS

For Christmas I Want . . .

by Leroy Williamson

Buying a Christmas gift for a photo enthusiast should be the easiest thing in the world since photographers need (or want) so many things. Of course, it may be necessary to listen for hints so you won't waste your money on unwanted or useless items.

If there is a photographer on your gift list, here are some items that might make excellent presents.

Film - Every photographer needs film. Find out what your photographer's favorite film is and give him one roll or 20 rolls. If you are really generous, you can include prepaid processing mailers with the film.

Price of this gift will range from less than \$5 to as much as you want to spend.

A New Lens - Add to your photographer's creative ability with a new lens, perhaps a wide angle, a new zoom, a super-telephoto for wildlife, or a macro for ultra close-ups. Price will range from less than \$100 to major bucks.

A Tripod - Every photographer should have a good one. For slow shutter speeds or time exposures, tripods are a necessity, and they also should be used

for telephoto photography. You definitely need one for a timed exposure of the Christmas tree lights. Don't buy the least expensive, lightest weight tripod on the market. A medium weight will work better and last longer. Price range will be \$60 to \$200.

A Flash - If your photographer doesn't have an electronic flash, he or she will love this gift. A flash will infinitely expand picture-taking opportunities. If your photographer has an automatic camera, a dedicated flash that retains all the automatic features of the

camera will make the best gift. Do a little research to find out which flash the photographer wants. Price range is \$25 to \$300.

Filters - Filters can do a lot to improve pictures under certain lighting conditions. Large assortments of filters aren't necessary, but there are a few that should be in every photographer's camera bag. These include a polarizing filter (if you are only going to buy one, this is it); a couple of color correction filters, one to add warmth (reds) and one to add coolness (blues) to scenes; a diffusion filter to create a dreamy effect; close-up filters (actually lenses, but they screw onto the lens like filters) to permit focusing much closer than normal—great for close-ups of small things. Your photographer may have some other filters in mind. Price range is from \$5 to about \$30 each. There are filter systems on the market your photographer might prefer. A starter kit in a particular system is inexpensive, about \$10 to \$15.

A Camera Bag - All photographers need something to carry their equip-

ment in and protect it at the same time. Camera bags come in a great assortment of shapes, sizes and prices. A \$15 or \$20 bag is not a best buy to carry expensive equipment. Plan on spending \$80 to \$200 for a good bag or case. Find out what your photographer prefers in bags or cases before shelling out these dollars.

Gadgets - There are zillions of gadgets on the market that photographers are certain they must have to create otherwise unattainable images. For gadgets, listen for hints from your photographer. There are just too many on the market to guess at something. Price range from a few dollars to no telling how much.

Cable Release - Another necessity every photographer should have—in fact, more than one since they come in varying lengths. A cable release should be used any time the camera is on a tripod making long exposures. A 12- to

15-inch and perhaps a 25- to 36-inch cable release would make your photographer happy. Plan to spend \$15 to \$25 each. **CAUTION:** Most of the new electronic cameras will not accept standard cable releases. They require an electronic release in the \$30 price range. Long, remote extensions permit operation of the camera up to 30 feet away. Extensions will cost an additional \$30 to \$40.

This list could go on forever and include photo blinds, wildlife calling tapes and tape players, photo vests, extension tubes, bellows extensions, slide copiers, magnifiers, lens cleaning kits, camera winders, projectors, screens, and if your photographer has a darkroom, there's another world of equipment.

My point—it is so easy to buy a gift for a photographer. Listen for hints or outright requests, select the one or ones in your price range and your gift problems are solved.

Have a Merry Christmas...and be sure to take lots of pictures for tomorrow's memories. ★



Photo by Mario Gonzalez

Accessories supplied by Precision Camera, Austin, Texas

MISTLETOE

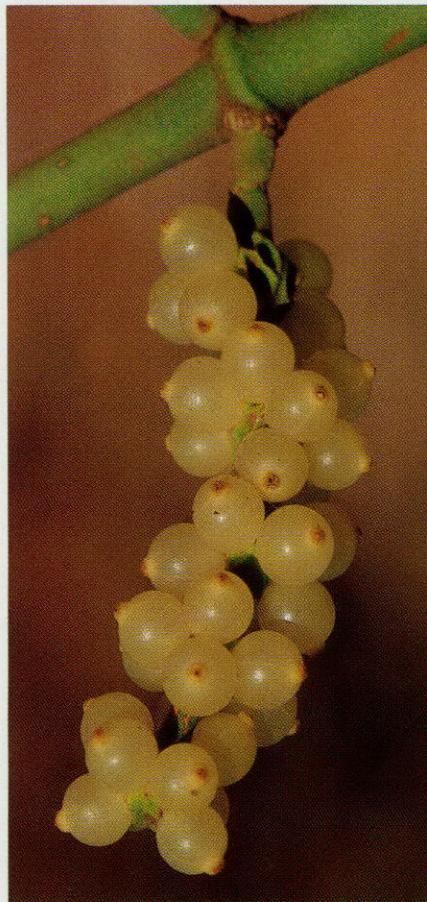
Kissing. Until recently that summarized my thoughts about mistletoe, but not any more. Last year at Big Bend National Park I noticed a juniper tree with an unusual splash of yellow-green. Closer examination showed it to be a mistletoe with small, narrow and tightly clustered leaves that reminded me of broccoli. For the first time, I discovered that there are mistletoes other than the kind that hangs in my house at Christmas.

Indeed, depending upon the expert consulted, there are between 700 and 1,500 species of mistletoe, most of which occur in the tropics. Many of these are quite different from the mistletoes here in Texas.

For example, the Holy Land has a mistletoe that blooms with a blaze of orange-red flowers, leading some scholars to speculate that it was Moses' burning bush. In Indonesia, there is a mistletoe whose flowers are "spring-loaded;" when probed by a bird, they open explosively, spraying the visitor with pollen. Then there is Australia's "Christmas tree" mistletoe, which grows to a height of 30 feet and blossoms with showy yellow-orange flowers during the holiday season.

Texas has nine species of mistletoe. Three of these grow on conifers in the western part of the state and belong to the genus *Arceuthobium*, the dwarf mistletoes. Their shoots are as short as one inch; their leaves have been reduced to yellow, green, orange, or red scales; and their berries are green or purple.

The other six Texas species are *Phoradendron*, which forms the familiar clumps of green with white or pink



Mistletoes produce spikes of berries each fall (above). Inside each berry is a seed encased in a sticky, viscous substance. Christmas mistletoe (above and right) grows in East, South and Central Texas, with seven other mistletoe species found in the state.

berries. Two of these, which some biologists consider the same species, are the familiar Christmas mistletoes. One is found in far East Texas on water oaks and the other grows on mesquite and hackberry in Central and South Texas.

The remaining four are found in the Trans-Pecos region. Bigleaf mistletoe grows on cottonwoods and mesquite

along the Rio Grande from El Paso to Presidio. Oak mistletoe is found throughout the area. Rough mistletoe, which is the species I first saw in Big Bend, grows on junipers. Finally, juniper mistletoe, whose leaves have been reduced to scales and which reminds me of a sea anemone, grows not only on juniper but also cypress trees at moderate to high elevations. For those wishing to start a mistletoe life-list, Big Bend National Park is the place to begin. A hike from the lower slopes of the Chisos up to Laguna Meadow will reveal Christmas, oak, rough and juniper mistletoes.

Although mistletoes are green plants, supplying most of their needs by photosynthesis, they are also semi-parasitic. Biologists speculate that mistletoes evolved in forests with highly leached soils to obtain needed minerals. In fact, their roots penetrate the host tree withdrawing both minerals and water.

Not surprisingly, mistletoes stress the host, affecting its growth rate and increasing its susceptibility to attack by insects and fungi, particularly during drought conditions. The most damaging are the dwarf mistletoes. They are responsible for a significant loss of lumber each year in the coniferous forests of the Western United States. This partially results from the tree forming "witches brooms." The mistletoe stimulates the host tree to produce twigs in the mistletoe's vicinity. These twigs soon become infected with mistletoe, resulting in more twigs and more mistletoe. Finally, a dense growth results, which is a significant drain on the tree, and the branch dies.

If mistletoe grows on trees, how does



This decorative plant has inspired legends throughout the centuries.

it first get established? During the 17th and 18th centuries, some botanists thought that they grew like warts from within the tree. Today we know that the secret is in the fruit.

Each fall, mistletoes produce spikes of berries. Inside each one is a seed encased in a sticky, viscous substance. Additionally, on the seed's surface are small, hairlike threads that will attach themselves to the tree branch.

Transferring the seed from the berry to the tree is accomplished in two different ways. In a dwarf mistletoe, a pressure develops in the ripening berry. When it becomes sufficiently great, the berry splits open, firing the seed upwards at 60 miles per hour. Oftentimes it lands on a pine needle where it remains until it rains or is otherwise moistened. Next, it slides down the needle, eventually arriving at the surface of the branch.

For the other mistletoes, birds such as robins, cedar waxwings, and phainopeplas eat the berries. The sticky seeds are swallowed and excreted on a branch. They may also adhere to the bird's bill and are then wiped off. It is this activity of birds that is responsible for the dense clusters of mistletoe found on some trees—the berries attract birds, which results in more mistletoe.

Among plants, mistletoes are unique because their seeds begin to germinate simply by their removal from the fruit. Germination is accompanied by the development of a disklike holdfast that presses the seed against the branch surface. Next, a penetrating organ develops that pierces the bark of the host, leading to the development of a root system in the branch. After the roots are established, external shoots appear. In about two years, a mature, fruiting mistletoe has developed.

In addition to birds, other creatures use mistletoe for food. For example, in

South Texas at least 12 species of insects, including butterflies, weevils and bugs, are wholly dependent on mistletoe for larval food. Additionally, mistletoe, which is high in carbohydrates, is an important food source for white-tailed deer. Indeed, on the Texas Rolling Plains, up to 70 percent of the winter and spring diets of deer is mistletoe.

Mistletoes also provide cover for nesting birds. They are preferred by Cooper's hawks and long-eared owls. Here in Abilene, I've noticed that they are often used by mourning doves.

Humans, too, have made significant use of mistletoe. As early as 400 B.C.,

we were making birdlime, which is prepared by kneading mistletoe berries that have been boiled in water. Its use? To catch birds and flies on its sticky surface.

Mistletoe has been an ingredient in various folk medicines. In Europe, for example, cramps, hemorrhages and epilepsy were treated with mistletoe products; it was also used as an antidote for poisons. Japanese women believed it helped them to conceive, and in Africa it was used against hookworm and syphilis.

The Mayans employed it to attack cancers. For the Cherokee Indians, it



Rough mistletoe (right) has small, narrow, tightly clustered leaves and grows on juniper trees in Big Bend National Park. As a green plant, the mistletoe supplies many of its needs through photosynthesis. As a semi-parasite, it places stress on the host tree.

was a cure for lovesickness. How? The afflicted person was forced to vomit for four days, followed by a drink of mistletoe tea. Perhaps, not surprisingly, the name for mistletoe in several languages means “cure-all” or “all-healer.”

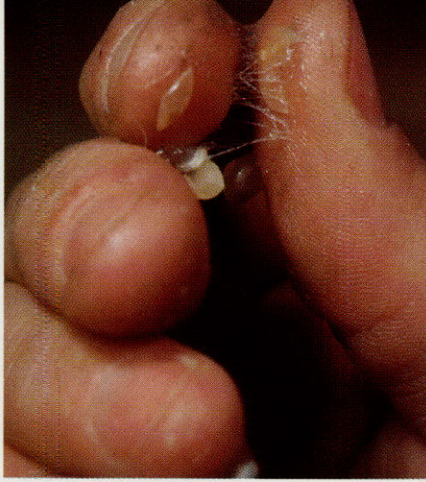
Other uses included protection in battle, a divining rod for lost treasure, an omen of good fortune, an opener of locks, protection against lightning, and an enhancer of the potency of bulls. Additionally, mistletoe has been an important element in our myths and traditions.

To the Druids, a Celtic religious order, mistletoe was a sacred plant, perhaps because it was an evergreen growing between heaven and earth whose fruit ripened in the winter. When a mistletoe was discovered on an oak tree, they believed that God had favored the tree. At the winter solstice, the priests cut down the mistletoe with a golden sickle, being careful not to let it touch the ground lest it lose its special powers. The plant was then distributed throughout the village as a symbol of happiness and a refuge for forest spirits during the cold winter.

Some Christians of old believed that mistletoe was once a tree whose wood was used in Christ’s cross. Its punishment was to become a parasite. Further, it was an ancient custom that when soldiers met under a mistletoe, they threw down their arms and embraced.

This is a reminder of the Christmas tradition of kissing under a mistletoe. How did this begin? No one knows, although it seems to have originated in England and it was popularized by Charles Dickens’ “A Christmas Carol.”

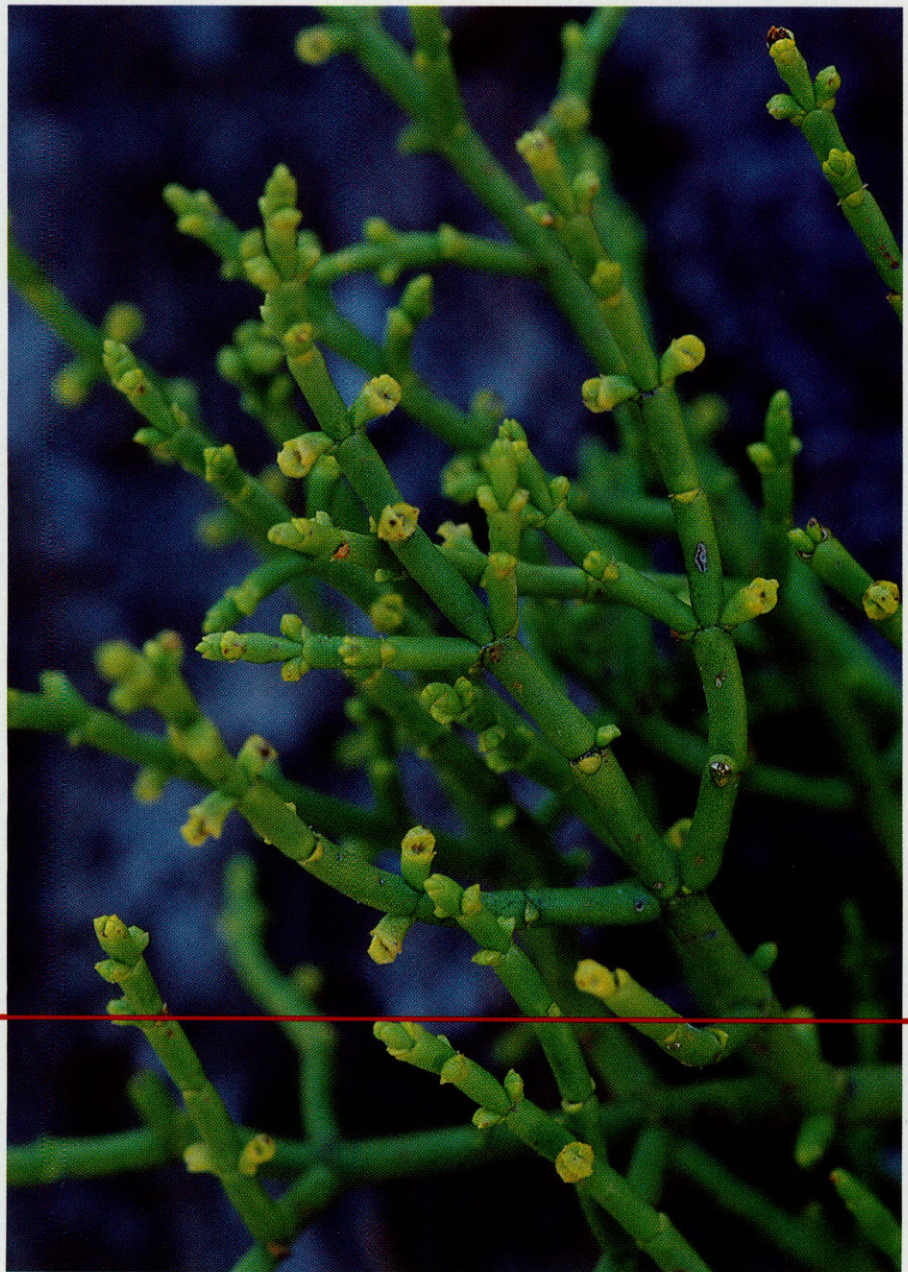
Of course there is a proper technique for taking a kiss. Namely, the gentleman removes a berry when the lady has been bussed; when all the berries are gone, the kissing stops. It is also believed that a woman kissed seven times will marry, unless, that is, the plant is burned.



The sticky substance inside a mistletoe berry allows the seeds to adhere to birds' bills. When the bird wipes the seeds off, a dense cluster of mistletoe soon appears; the berries attract more birds, which results in more mistletoe.

Each year Texas makes an important contribution to Christmas kissing. Along with California, it is a major supplier of mistletoe to the commercial market. In fact, to most of us it is impossible to separate mistletoe from kissing. That is unless you are from Oklahoma where it is the state flower. ★

John Peslak is Professor of Chemistry and Physics at Hardin-Simmons University in Abilene. A native of New Jersey, he has photographed natural Texas for the past 12 years. His photographs and articles have appeared in several issues of Texas Parks & Wildlife.



The juniper mistletoe has leaves that have been reduced to scales and yellow-green flowers (right) and resembles a sea anemone. It grows on juniper and cypress trees at moderate to high elevations.

CRANE MUSIC



Gregory Allen

THE WILD AND DISTANT SOUNDS OF THE SANDHILL CRANES

I clearly remember the first sandhill cranes I ever saw. It was a beautiful Sunday afternoon in the fall of 1965, and I was a student pilot at Webb Air Force Base, Big Spring, Texas. My wife Barbara and I were driving around the north end of the air base when we began to see long, ragged lines of huge, gray birds winging in from the north and landing in a shallow lake near the north end of the runways.

by Ronnie R. George

At a distance, the birds looked like geese, but their wingbeats were sort of floppy and they did not maintain crisp "Vs" like migrating geese. As we drew closer to the lake, we saw a dense mass of gray bodies with long necks that pointed skyward and long legs that disappeared into the shallow water.

Despite their unusual appearance, the most striking thing about these birds was their calls. Dozens or perhaps hundreds of the strange gray birds were calling at once. Their calls had a sharp, rolling, trumpet-like quality that seemed to carry for miles. It was one of those wild, distant sounds that you never forget, like a coyote howling on a still night. Sometime later, I came to think of this sound as "crane music." At that time, however, I still did not know what we had seen and heard until the next morning at briefing when our instructor pilots told us that the sandhill cranes had arrived for the winter. They said we had better keep a sharp lookout for cranes when we were flying if we wanted to avoid a potentially fatal midair collision with the heavy birds.

In later years, as a wildlife biologist, connoisseur of crane music and crane hunter, I learned that sandhill cranes are a management challenge for wildlife biologists, a crop depredation problem for farmers, an extremely wary quarry for crane hunters, excellent table fare for camp cooks and serious chefs, but most of all an ecological and aesthetic international treasure.

Of the 15 species of cranes in the world today, seven species (including the North American whooping crane) are considered endangered. Some populations of sandhill cranes in Mississippi and Florida are also quite limited. In contrast, sandhill cranes that winter in Texas are doing extremely well. They are part of the mid-continent population that numbers nearly one half million birds, making this the largest concentration of any species of cranes anywhere in the world. The mid-continent cranes have adapted well to modern agricultural practices, particularly grain farming, and have increased



Keith Kingdon

The sandhill cranes that winter in the High Plains of western Texas and eastern New Mexico are part of the mid-continent population that numbers some one-half million birds, making this the largest concentration of any species of crane anywhere in the world.

steadily in number since the first quarter of this century. Mid-continent cranes nest in wetlands in central and western Canada, Alaska and Siberia and migrate southward in the fall through the central United States. Most of the mid-continent flock winters in the High Plains of western Texas and eastern New Mexico. They are particularly numerous around the Muleshoe National Wildlife Refuge northwest of Lubbock and between Brownfield and Tahoka south of Lubbock. Mid-continent cranes also winter in smaller numbers in South, West and North-central Texas, as well as Oklahoma and Mexico. Birders from all over the world travel to Texas to see wintering sandhill cranes.

Wetlands are an extremely important component of mid-continent crane winter habitat. Cranes need fresh water to drink, and they prefer to roost standing in shallow water. This behavior is undoubtedly a defense mechanism that permits the cranes to detect approaching predators such as coyotes. Although cranes will roost on farm ponds, river sandbars and playa lakes, they seem to prefer large alkaline lakes in the High Plains. Some of these lakes

are two to four miles across and would seem to offer unlimited roost sites for cranes. However, these lakes do not always have suitable water depths, and some of the lakes are currently being modified for road construction, petroleum production and mineral extraction. Consequently, future roosting habitat needs for mid-continent cranes must be carefully considered.

Sandhill cranes wintering in Texas generally feed on plant tubers and waste grain (milo, corn, peanuts, wheat, rice, etc.) left in the field after harvest. Cranes are also known to feed on cottonseed in picked cotton fields, but they generally do not bother unpicked cotton. I have talked to some farmers, however, who personally have seen sandhill cranes pulling cotton from standing cotton stalks and tossing the lint into the air, apparently in play. Sandhill cranes cause much more serious crop depredation problems for farmers when they feed on green wheat during the winter or sprouting corn in early spring.

Various methods have been used to reduce sandhill crane damage to crops, including changes in planting or harvest times, various audio-visual frightening devices (such as "scare cranes"

CRANE HUNTING MIGHT LOOK EASY TO SOMEONE WHO HASN'T TRIED IT.

and acetylene exploders) and legal crane hunting. As crane populations have increased, federal and state wildlife agencies responsible for managing these migratory birds have placed increasing research and management emphasis on the mid-continent crane population. These agencies have gradually permitted increased hunting pressure over the years to help reduce crop depredation problems and provide recreational hunting. Eight states, including Texas, now permit hunting.

Crane hunting might appear easy to those who have never tried it. After all, the birds are large, noisy, highly visible creatures that could not be much of a challenge to bag. Not necessarily! Like

all migratory game birds, sandhill cranes can be legally hunted in the United States only with a shotgun, long bow and arrow or falconry (by permit). Consequently, getting in range of the birds is a major problem for novice crane hunters. Many beginning crane hunters who see cranes standing around in grainfields often attempt to sneak up on the birds, generally with no success.

Sandhills almost always feed in flocks, they are every bit as sharp-eyed as geese, and they stand taller than geese, making them extremely difficult to approach undetected.

The next method tried by many new crane hunters is pass shooting where the hunter attempts to shoot cranes flying between roosting and feeding sites. The problem with this method is that cranes quickly wise up and learn to spiral up directly over the roost site to a height of 1,000 to 2,000 feet, travel horizontally over the country at this altitude for several miles, and then spiral down in the middle of a feeding field. Under these conditions, it is difficult to be effective at pass shooting.

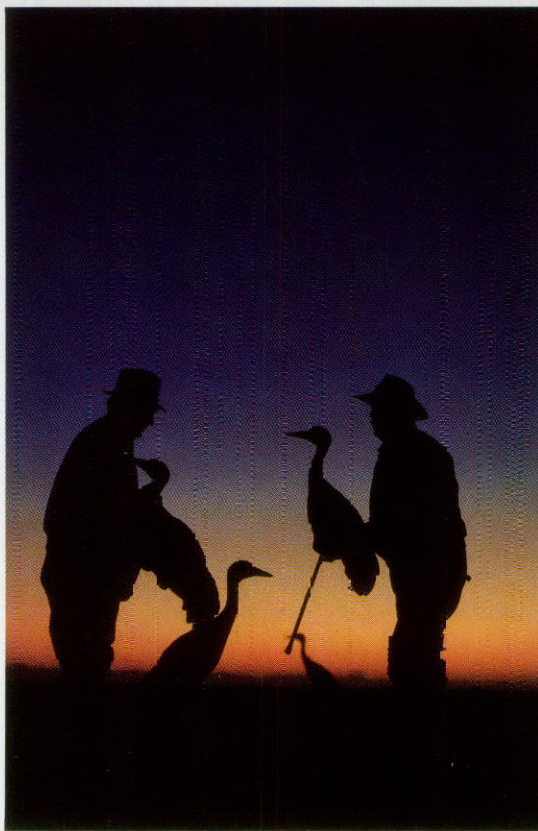


Pass shooting sandhill cranes as they fly between roosting and feeding sites is difficult. The cranes soon wise up and learn to spiral straight up from the roost site, fly at an altitude of 1,000 to 2,000 feet, then spiral down in the middle of a feeding field.

D. K. Langford

At this point, many would-be crane hunters switch to more cooperative quarry. Those who eventually become successful crane hunters generally start using decoys.

Decoys work best when placed in a field where the cranes have been feeding. Cranes respond readily to gray-colored rag, shell, silhouette or full-bodied decoys. Decoys that have floppy materials attached that resemble crane feathers moving in the wind seem to work best. Some of the decoys should have heads and necks down in a feeding position. If all of the decoys have erect heads and necks (an alert posture), the incoming cranes will probably flare too soon. It is best to place the decoys in two groups about 50 to 75 feet apart. The cranes usually will head for the open spot between the decoys, making their final approach directly into the wind. Consequently, the wise hunter positions his blind along the suspected ap-



Grady Allen

proach path to the decoys. The blind can consist of grain stalks, tumbleweeds (staked down to hold them in place), old farm machinery, a pit or anything else that will conceal the hunter until the birds are in range.

There are commercial crane calls now on the market, but some crane hunters

have learned to make a reasonably effective crane call with their mouth. This call can be made by forming a sound like a cat's "purr" but start the call with a "k" instead of a "p" and then roll the "rs" as loud as you can. The only problem with this call is getting enough volume to consistently attract the cranes. The new commercial crane calls may solve this problem.

Many crane hunters believe they have to use a 12-gauge shotgun, high-velocity shells, and BB or larger shot to bag the high-flying cranes. However, if the decoys are set up correctly and the hunter is well concealed, 20-30 yard shots are fairly common, and I have occasionally had cranes land 10 feet from my blind. With a good decoy setup, a 20-gauge shotgun with number 6 or 7 1/2 shot is adequate for crane hunting. I have even seen one experienced crane hunter bag three cranes at about 35 yards with four shots from a .410 shotgun, a feat I do not recommend for everyone.

Non-toxic steel shot is not currently required for crane hunting anywhere in Texas, but it may be in the future. In field tests, I have successfully bagged cranes with number 2, 4, and 6 steel shot.

Once you have bagged a crane, what do you do with it? You've probably heard that cranes are skinny as a rail, tough as a boot, and taste like liver. Actually, I have found cranes are quite plump and tasty when skillfully prepared. As with any wild game, it is important to cool the meat as soon as possible. I recommend skinning the bird and removing both sides of the

Successful crane hunters have learned to use decoys (top). Place the decoys in two groups, 50 to 75 feet apart. The cranes usually head for the open spot between the decoys.

Sandhill cranes that winter in Texas feed on plant tubers and waste grain such as wheat and rice that is left in the field after harvest.



Grady Allen

breast and the thigh meat directly from the carcass with a sharp knife. You may also be able to get some meat off the wings and drumsticks. A seven to ten-pound crane yields three to five pounds of rich, dark, tender meat.

Crane meat can be prepared in a number of ways. The most important thing is to keep the meat moist while it is cooking. Crane fillets can be slow cooked in a crockpot with cream of mushroom soup or barbecue sauce; thin sliced, battered, and chicken fried; cubed with potatoes, carrots, onions, and spices in a stew; or prepared my favorite way as "Fillet de Crane."



Leroy Williamson

FILLET DE CRANE

To prepare Fillet de Crane, you should slice the breast fillets across the grain in 1 1/4-inch thick steaks. Wrap each steak in a strip of bacon, and secure the bacon with a wooden toothpick. Marinate the steaks in a 50/50 mixture of olive oil and soy sauce in the refrigerator for at least six hours. Remove the steaks from the liquid, add salt and pepper, and grill the steaks over mesquite coals in a covered grill until the bacon is crispy brown (the covered grill is necessary to keep the olive oil from flaming). The steaks should be served with a baked potato, tossed salad, hot bread and a cold beverage.

If this has inspired you to go crane hunting, there are a few things you need to remember before you head out the door. 1) Most crane hunting in Texas occurs on private land so you will need landowner permission prior to hunting. 2) There are specific bag limits and shooting hours for crane hunting. 3) Only certain areas of the state are open to crane hunting at certain times of the year. 4) There are other large birds out there that resemble sandhill cranes but are legally protected at all times of the year. 5) One fully feathered wing must be left on all dressed sandhill cranes until the hunter reaches his final destination. 6) All crane hunters must have a federal crane permit in their possession in addition to a valid hunting license to legally harvest sandhill cranes.

Federal crane permits may be obtained, free of charge, by sending your

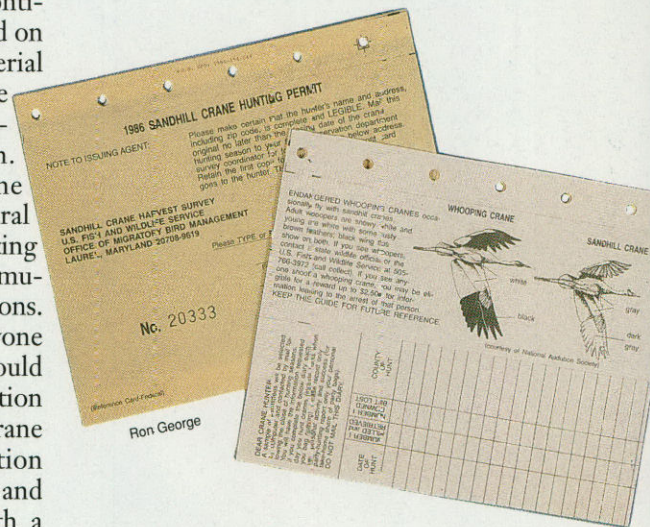
name and address to Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744. Muleshoe and Buffalo Lakes National Wildlife Refuges and most TPWD Regional Offices also issue crane permits. A sample of people who requested crane permits will be sent a survey questionnaire at the end of the crane season to determine hunter success.

The overall status of the mid-continent crane population is monitored on an annual basis with extensive aerial surveys when the birds congregate along the Platte River Valley in Nebraska during spring migration. Crane harvest surveys and crane population surveys are used by federal and state wildlife biologists in updating crane management plans and formulating annual harvest recommendations.

By working together with everyone who is interested in cranes, we should be able to minimize crop depredation problems for farmers, allow legal crane hunting consistent with population levels, and maintain this biological and aesthetic treasure. Hopefully, with a little luck and a lot of hard work, future generations of Texans will also be able to enjoy crane music. ★

Wildlife biologist Ron George is the crane program leader for the Texas Parks and Wildlife Department.

One tasty way to prepare sandhill crane meat is to wrap the steaks in bacon, marinate them and grill them over mesquite coals (above). Crane hunters must have a federal crane permit, which is available free of charge.



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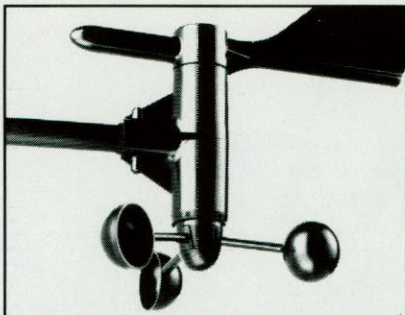
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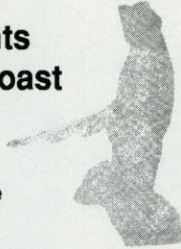
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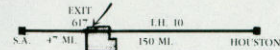


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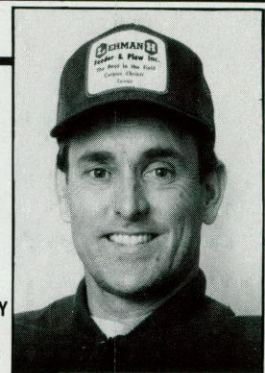
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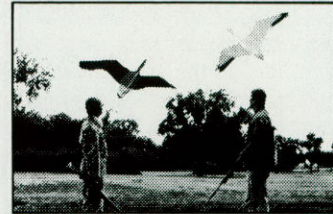
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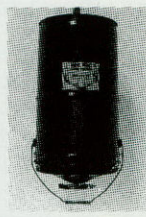
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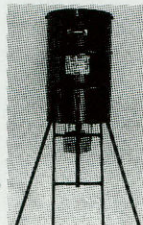
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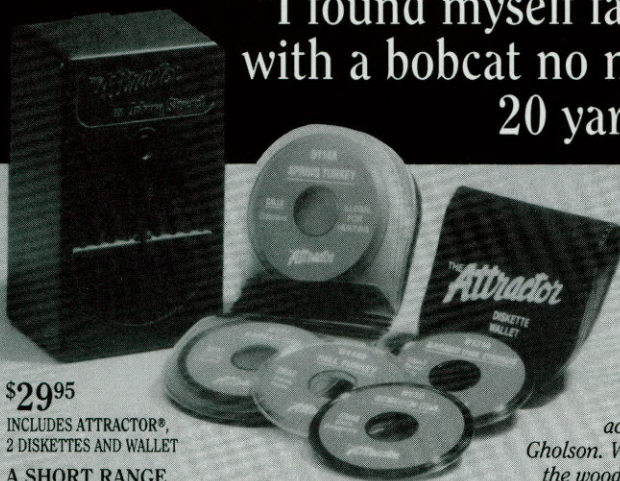
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OUTDOOR ROUNDUP

Nongame Area at Smith Point Named For Candy Abshier

The Texas Parks and Wildlife Commission voted during its August meeting to name the department's first nongame area, acquired in January, in memory of Catherine "Candy" Abshier. The 207-acre tract on Smith Point in Chambers County will be called the Candy Abshier Wildlife Management Area.

The site, bounded on the south by Galveston Bay, was acquired as an important "stopover" area for spring migrants returning from Central and South America, which utilize the oak mottes as first landfall after an exhausting flight over the Gulf of Mexico. The area also serves as an important migration pathway for the southward movement of hawks and falcons in the fall.

Acquisition of the area was made possible by Oryx Energy, which contributed 50 percent of its appraised value to the department's Special Nongame and Endangered Species Conservation Fund. The Special Fund, sustained by donations and by the sale of nongame artwork, stamps and decals, enables TPWD to acquire habitat or conduct research and management projects spe-

cifically for nongame and endangered wildlife.

Commissioners decided to name the area for Candy Abshier, who died June 24, 1989, in recognition of her dedication to environmental concerns.

Born in Beaumont in 1946, Candy graduated from the University of Texas. While practicing teaching in Austin, she began her involvement with environmental issues. In an effort to motivate her students, Candy suggested they do a multi-media slide show related to one of their current interests, such as saving Barton Creek.

From 1970-77, Candy was an audiovisual specialist with the Texas Parks and Wildlife Department. Also, she was editor of several publications for TPWD, Texas State Senate and LBJ School of Public Affairs. From 1978 until her death at 42, she freelanced alone or with partners in Austin, Houston and Gila, N.M. Her longtime devotion to nature and conservation was evident in the media shows, scripts, speeches and articles she produced to advance worthy causes, such as the preservation of precious lands, rivers and historic sites.

Dedication and opening ceremonies for the Candy Abshier WMA are planned for Spring 1991, after a man-

agement plan has been developed. For more information about the area or the Special Fund, contact the Nongame Resources Program at 1-800-792-1112, ext. 4505.

Atkinson Island Acreage Donated By Conoco

The Texas Parks and Wildlife Commission approved the donation of a 151-acre portion of Atkinson Island offered by Conoco Inc. during its August meeting. Acquisition of the tract will benefit the Nongame Resources Program and the Special Nongame and Endangered Species Conservation Fund.

Located in Galveston Bay, Atkinson Island provides habitat to several species of nongame birds, including wading birds, shorebirds and resident songbirds, as well as spring migrants. Atkinson Island also is rich in history and several important archaeological sites can be found on the island. Acquisition of this tract will provide protection for its biological and historical resources and is a beginning for the Texas Parks and Wildlife Department's land protection efforts in the Galveston Bay Estuary.

"Conoco and our parent company, Du Pont, have been committed for decades to protecting and conserving our nation's wildlife, such as the whooping crane, and land resources such as Atkinson Island," said T.E. Davis, vice president of Conoco's Natural Gas and Gas Products department. "We are delighted to continue this tradition by returning Atkinson Island and its wealth of flora, fauna and history to Texas and the very able stewardship of the Texas Parks and Wildlife Department."

TPWD Executive Director Andy Sansom praised Conoco for its spirit of conservation and stressed the critical need for similar environmental commitments from Texas' other corporate citizens.

"Donations of habitat such as Atkinson Island are essential if we are to protect and conserve our birds and animals, many of which are at risk due to man's ever-growing need for land. Unless we carefully set aside habitat, we



Glen Mills

Oak trees at the newly named Candy Abshier Wildlife Management Area on Smith Point are an important stopover for birds migrating to and from Central and South America. Department ownership of the 207-acre tract was made possible through a gift from Oryx Energy.

could lose our greatest asset, our wildlife," Sansom said.

The Atkinson Island donation will benefit the Special Fund by providing state funds to match federal monies which reimburse the department when other nongame habitat areas are purchased or when nongame research and management efforts are funded. For every \$1 donated to the Special Fund, a matching \$3 is available from federal Pittman-Robertson monies and provides the department a total of \$4 to conduct research and management and acquire habitat specifically for nongame and endangered wildlife.

The area will be named the Atkinson Island Wildlife Management Area. A management plan will be developed and opening ceremonies are anticipated for spring of 1991.



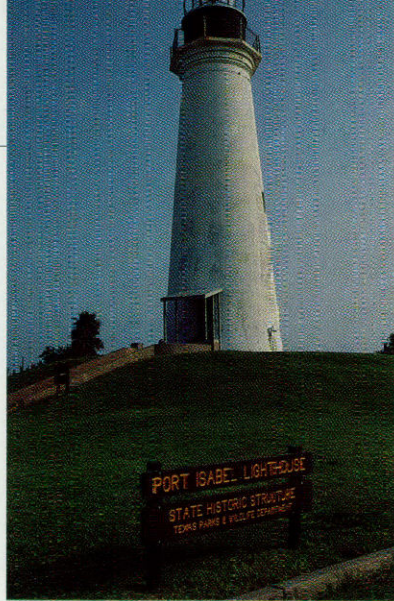
Mearns' quail, one of Texas' rarest and most unusual quail species, is featured on the 1990 Nongame Stamp. Funds from sales of stamps and art prints are dedicated to the department's Nongame Program.

Nongame Stamps Available At TPWD Offices

The 1990-91 Special Nongame and Endangered Species Conservation Fund stamps and decals are available at all state parks and most Texas Parks and Wildlife Department offices statewide.

This year's artwork features a Mearns' quail by Sherrie Russell Meline. Also known as a harlequin or Montezuma quail, the male of this species has a distinctive black and white facial mask which gives rise to yet other names: clown-faced or fool's quail. Once common throughout the Edwards Plateau and Trans-Pecos, the Mearns' quail is not as common as it once was because of habitat loss from overgrazing and drought.

The Special Fund is supported by donations and revenue from the sale of nongame artwork, stamps and decals.



Glen Mills

Improvements are in store at Port Isabel Lighthouse State Historic Park, made possible by the City of Port Isabel's recent donation of four city lots adjacent to the lighthouse.

Commission Accepts Land Donation From Port Isabel

The Texas Parks and Wildlife Commission, during its August meeting, authorized the acceptance of a land donation of four city lots adjacent to the Port Isabel Lighthouse State Historical Park. The Commission's action also initiated new construction planning and devel-

Also, this year, a poster featuring an ocelot is available while supplies last for every \$10 donation received. These posters were made possible with the help of the Audubon Council of Texas.

For every \$1 that goes into the Special Fund, a matching \$3 is available from federal monies, giving TPWD \$4 for every \$1 donation to conduct research and management projects and acquire habitat specifically for nongame and endangered wildlife. So far, the Nongame Resources Program has acquired two nongame wildlife management areas and currently is conducting 21 research and management projects for nongame and endangered wildlife.

For more information on the Special Fund or the Nongame Resources Program call the TPWD wildlife division at 1-800-792-1112, ext. 4505 or write to TPWD, 4200 Smith School Road, Austin, Texas 78744.

Operation Game Thief Tip Results In Sting Operation

A call to Operation Game Thief one year ago has evolved into more than \$80,000 in fines for anglers and busi-

ness owners for the site.

The donation from the City of Port Isabel will enlarge the park site to a full city block, allowing space for additional visitor parking, a headquarters building and new restrooms, according to Park Manager Frank Juarez. The addition will allow more people to visit the Lighthouse.

Built in 1853 to guide ships along the lower Texas coast near Port Isabel, the Lighthouse was donated to the state in 1950. It was opened to the public in 1953 and is the only historic lighthouse in Texas available to public visitors.

"Visitors may climb the 74 metal steps up to the lantern room and get a view across Laguna Madre Bay to South Padre Island two miles away," Juarez said of the 73-foot tall lighthouse. "Since the park is next to the State Highway 100 Causeway bridge going over to South Padre Island, it's an ideal place for island tourists to pull over and stop."

The park is open daily, except Christmas, from 10-11:30 a.m. and from 1-5 p.m. Entry fee is \$1 for adults and 50 cents for children 6-12. Children under 6 and senior citizens over 65 get in free. For more information call 512-943-1172.

ness owners in four Texas counties, according to Texas Parks and Wildlife Department law enforcement officials.

Law enforcement officials began serving warrants to 34 people on September 6 after a nine-month investigation at Lake Texoma and waters below the dam. Warrants were issued for illegally buying and selling game fish, which included striped bass, hybrid stripers, sand bass and paddlefish, an endangered species in Texas. Many of the fish were sold to certain restaurants and fish markets in Dallas.

Capt. Bill Daniel, law enforcement regional director from Mount Pleasant, said 346 cases were filed—142 in Grayson County, 103 in Dallas County, 71 in Collin County and 30 in Rockwall County. More than 1,000 fish were involved in the operation; however, only 346 were used in the prosecution.

Through September 12, some \$80,218 in fines had been assessed, not including civil restitution.

Sixteen people were arrested in Grayson and Collin counties. In Grayson, 36 cases were pleaded not guilty while 175 guilty pleas were entered for a total of \$59,587 in fines. All 70 cases in Collin County were guilty pleas and

OUTDOOR ROUNDUP

continued

\$16,275 in fines were handed down. Two people in Rockwall County pleaded guilty to 22 cases and were fined \$4,356. Game wardens filed 11 cases on four restaurants and two market operators in Dallas County.

Civil restitution charges will be added later, Daniel said.

Capt. Carlos Vaca, who administers the civil restitution program for TPWD, said restitution charges vary according to size. Striped bass and hybrid stripers range from \$2.26 to \$116 and white bass range from \$1.55 to \$26.14. Restitution charge for paddlefish has not been determined at this time.

Daniel said more than 80 other cases are under investigation and charges will be filed later.

This is the third covert operation in East Texas in recent months resulting from an Operation Game Thief call. This operation was the second largest on record for TPWD, behind only a redfish investigation in 1988 that resulted in arrests of fishermen and restaurant owners from the Gulf Coast to Dallas.

"This has been a nine month operation and there is no telling how long this illegal activity has been going on," said Chester Burdett, TPWD law enforcement division director. "We are going to continue our surveillance to protect the resources.

"The Operation Game Thief program gets information that would not otherwise be available," Burdett said. "This is a big operation that may have gone on a lot longer, and more of the resource may have been hurt."

To report game law violations call Operation Game Thief at 1-800-792-GAME. Callers may remain anonymous and may be eligible for a reward.

Land, Water Fund Creates Texas Legacy

This year is the 25th anniversary of the Land and Water Conservation Fund, which supports land conservation and long-range planning for natural resources through a matching grant program for acquisition and development of parks.

The idea for the Land and Water Conservation Fund resulted from warnings sounded by a 1958 presidential commission. It reported that valuable natural resources were being lost at

alarming rates and recommended a federal grants-in-aid program to help states acquire and develop recreation lands. President John F. Kennedy proposed the fund; Congress enacted the law and the fund became operational in 1965.

Since 1965, Texas has received a total of \$132 million. The actual public investment made on behalf of Texans is double that figure, or \$264 million, because the grants-in-aid structure requires a 50 percent match.

Fund money has supported more than 1,000 community park projects and contributed to more than 40 state park projects.

Creation of publicly owned parklands and recreational facilities is only one thrust of the Land and Water Conservation Fund Act; a second is "resource investment." Most of the fund's revenue comes from offshore oil and gas leasing royalties. Income produced from nonrenewable resources is invested in conservation of renewable resources: parklands and other natural preserves.

Each level of government has a role to play in the Land and Water Conservation Fund. The National Park Service distributes the fund to the states, evaluates accomplishments and reports to Congress.

The states analyze needs, determine spending priorities and administer local projects. In Texas, planners at the Texas Parks and Wildlife Department research and write the Texas Outdoor Recreation Plan, receive and score grant requests and monitor park projects.

Local governments participate in the process in two ways: they put up 50 percent of the money for any project and, after receiving the grant, they bear the main responsibility for administering and maintaining parks and facilities.

The fund has lived up to its fundamental aims to provide public parks and recreation facilities, to invest natural

resource profits in resource conservation and to create a partnership between all levels of government.

But the future is not clear. During the decade of the 1980s, federal appropriations taken from the fund's existing balances were cut by 75 percent. In 1979, Texas received \$15.5 million in Land and Water Conservation Fund grants. In 1989, the state received \$759,000 from the fund.

When Congress reviewed the fund in 1989, it decided to renew its work for another 20 years. However, appropriation of revenues from the fund is still logjammed.

The American Heritage Trust has been proposed as a fiscal instrument to manage the fund's account balances and ensure equitable distribution. It would place revenues deposited to the fund's accounts in an interest-paying permanent trust fund with annual allocations distributed by standardized formulas.

Although the purpose in creating the Land and Water Conservation Fund was to serve the human urge to touch nature and to provide open spaces for healthful play and recreation, there has also been a beneficial economic outcome of the fund's work.

Obviously grant monies have an immediate benefit in paying for supplies and for construction salaries. But the quality-of-life value is economically beneficial too. Greenbelts along intercity creeks as well as parks and recreation facilities are amenities that attract people and businesses to communities.

State parks serve the recreation needs of travelers and bring tourist dollars to the surrounding area. And finally, land purchased with the fund is permanent public legacy to be kept or replaced with land of equal value. So, while the fund serves conservation and recreational values, it also provides long-term investment values across the state in every community.



San Antonian Shawn Johnson got a bonus during a March 1990 camping trip at Buescher State Park near Bastrop. He caught an 11-pound largemouth bass from the park's 15-acre lake.

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J. C. Martin, Director of the San Jacinto Museum has written the introduction. Thoughtful essays on the men, the politics and the tools of warfare in 1836 set the stage for the paintings. Mr. Shaw adds insight into the evolution of selected pictures and an historical text expands on the

action of each painting. The book is produced at Wind River Press under the supervision of David Holman.

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