

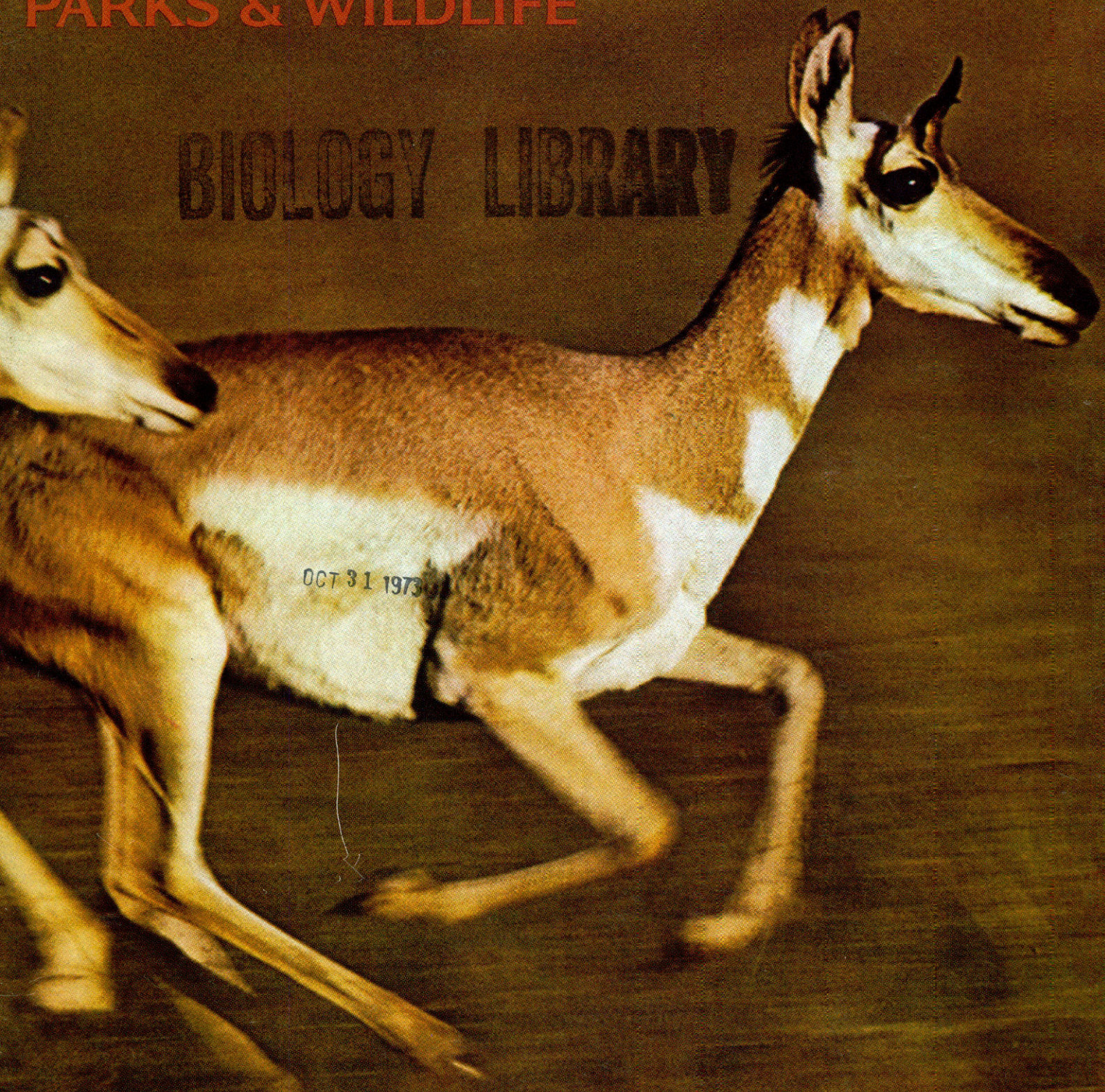
AS

up ✓

TEXAS

PARKS & WILDLIFE

BIOLOGY LIBRARY



OCT 31 1973

September 1973 • 50¢



DOLPH BRISCOE
Governor of Texas

**PARKS AND WILDLIFE
COMMISSION**

JACK R. STONE, Chairman Wells
PEARCE JOHNSON Austin
JOE K. FULTON Lubbock
BOB BURLESON Temple
JOHN M. GREEN Beaumont
LOUIS H. STUMBERG San Antonio

**PARKS AND WILDLIFE
DEPARTMENT**

CLAYTON T. GARRISON . . . Executive Director

DIRECTORS

BOB E. BRADLEY Administration
JAMES E. DICKINSON Finance
ROBERT J. KEMP, JR. Fish and Wildlife
TOM BROWNING Law Enforcement
CLAYTON G. RUTTER Engineering
PAUL E. SCHLIMPER Parks
RICHARD A. MCCUNE Information and
Education

**TEXAS PARKS & WILDLIFE
magazine**

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

NEAL COOK Editor
ED DUTCH Associate Editor
ILO HILLER Assistant Editor
JIM WHITCOMB Photo Editor
RUTH PERRY Advertising-Circulation

Published monthly by the Texas Parks and Wildlife Department, John H. Reagan Bldg., Austin, Texas 78701. Republication of material is not permitted except by special written permission. The inclusion of advertising is considered a service to subscribers and is not endorsement of products nor concurrence with advertising claims. Rate schedule available upon request. Subscription rates: \$3.15 for one year and \$5.25 for two years. Single copies and all back issues, 53¢. Prices include 5 percent sales tax for Texas residents. Foreign subscription rates: \$4.00 for one year, \$7.00 for two years.

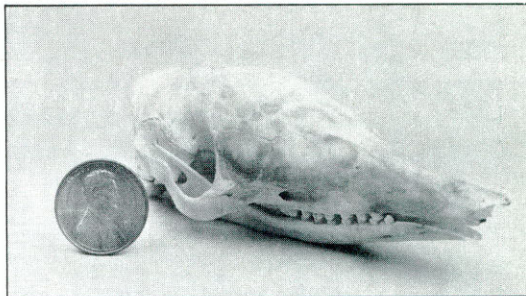
Postmaster: If undeliverable, please send notices by form 3579 to Reagan Building, Austin, Texas 78701. Second class postage paid at Austin, Texas, with additional entry at Oklahoma City, Oklahoma.



2

September 1973; Vol. XXXI, No. 9

30



TEXAS PARKS & WILDLIFE

- East Texas Hideaway** by Ed Dutch 2
Beautiful Daingerfield State Recreation Park is located among towering pines and majestic hardwoods.
- Improve Your Dove Score** by Charles Dickey 6
Let your subconscious do the work and your shooting score should improve.
- Where Do They Go?** by Bill Russ 12
Banding studies provide information on the travels of the mourning dove.
- Know Your Wardens** 14
A county listing of departmental game wardens can acquaint you with their locations.
- Bowhunters—Be Prepared!** by Ed Dutch 20
If you're going to hunt animals with a bow, then be well informed and do it right.
- Hatchery Redfish** by Robert L. Colura 24
Experiments in spawning redfish in captivity may result in stockable numbers of this marine species.
- Young Naturalist: Skulls** by Ilo Hiller 30
By studying the size and shape of a skull and the type of teeth, it is often possible to identify the animal.

Outdoor Books 10 Photo and Arts Credits 23
Long Shots, Short Casts. 11 Letters to the Editor 32

Front and Back Cover: Graceful pronghorn antelope were hunted to near extinction by the turn of the century but restocking efforts and controlled hunting have helped the plains animals make a successful comeback. This department trapped 596 of the animals in the early winter of last year on a West Texas ranch and relocated them on some 800,000 acres of ranchlands throughout the state. Photo by Martin T. Fulfer.

Inside Front: A beautiful sunset can transform an ordinary day into something memorable. Photo by Reagan Bradshaw.





Daingerfield State Recreation Park

East Texas Hideaway

by Ed Dutch

IF YOU have only one more weekend or a couple of days off before the kids have to go back to school and are looking for some place to go, then it would be a good idea to visit one of the most unique state parks in Texas. The relaxed atmosphere and beautiful surroundings of Daingerfield State Recreation Park could be a climax to your summer activities.

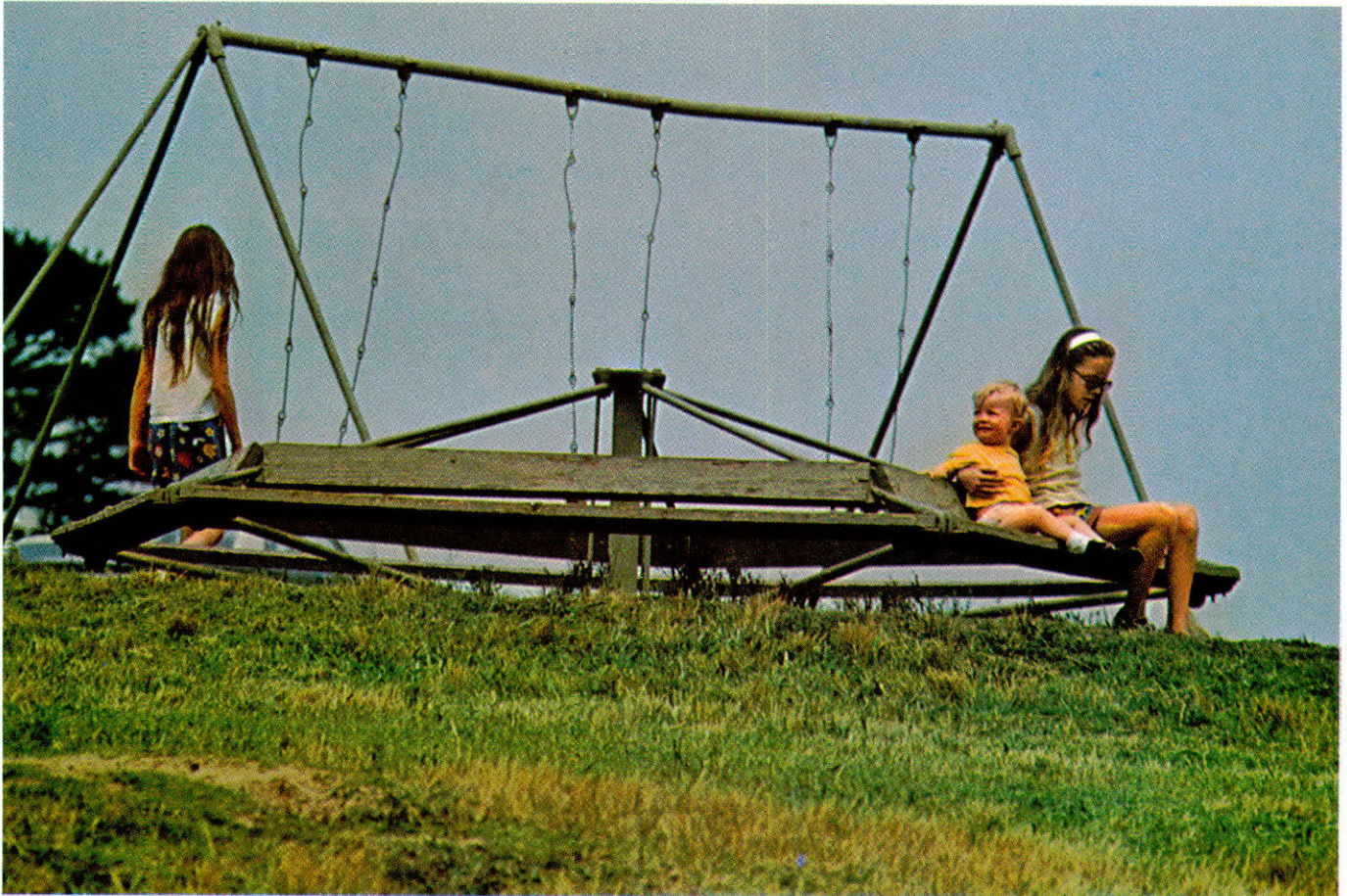
When you turn into the park entrance on State Highway 49 between Daingerfield and Hughes Springs, it seems as if you are entering a hideaway among the solitude of towering pines and majestic hardwood trees. Sunlight becomes only dappled rays throughout the thick vegetation until you reach the circle at the end of the road in front of the park headquarters which overlooks the 80-acre lake. Rising

from the lakeshore are eastern Texas "mountains" of pine and scattered hardwood trees.

It is difficult to decide what to do first as there are many facilities to suit even the most varied interests. Whether you're there for only a picnic at one of the many tables on the lakeshore or for an entire week, the park is designed for your complete pleasure.

In the main park area, there are children's recreational facilities including swings, a merry-go-round and a slide. Across from these facilities is the main concession building which has refreshments, dressing rooms with showers for swimmers or sunbathers, a juke box and large patio terrace which overlooks the swimming area.

The swimming area has an elevated platform for



diving in deeper water and a clean, sandy bottom for everyone in the shallow area. A grassy hill adjacent to the area is perfect for sunbathing or just sitting and relaxing while the kids swim.

Fishermen catch bass, sunfish, crappie and catfish in the park's clear, spring-fed lake. Boats which do not exceed the maximum limit of 19 feet and have a 12-horsepower motor or less are allowed on the lake. But for those who want to fish and do not have a boat, the entire shoreline of the lake is easily accessible and there are two fishing piers. One is a lighted 80-foot pier with a 47-foot tee which has a fishing light suspended just over the water. Fish cleaning facilities include a cleaning table with running water.

Two air-conditioned cabins and a large lodge-type facility for up to 25 persons are available for renting, but it is usually necessary to reserve them in advance by writing or phoning the park office (Daingerfield State Recreation Park, Box B, Daingerfield, Texas 75638, AC/214-645-2921). The cabins rent for \$6.00 a night for one or two persons and then \$1.50 for each additional person up to a maximum of 4 adults. The lodge rents for \$24 a night for 1 to 16 persons and then \$1.50 for each additional person up to a maximum of 25 people. Linens are furnished and there are kitchen facilities, but you must bring your own pots, pans, dishes and eating utensils.

Camping can be rated excellent in the park. Along the upper lake is the Dogwood Camping Area which

has 17 camp sites with tables, water and grills and 10 trailer camp sites each with water, sewer connection, electricity, table and grill. The Mountain Camping Area has 12 camp sites with water, table and grill. All areas have modern restrooms and most have clean showers. Camping fees are about \$1.50 per night depending on which area you choose. This fee is in addition to the \$1.00 entrance fee.

Nature lovers can walk throughout the park's 551 acres in search of the many varied types of flora and fauna that are found there. A 2½-mile nature trail which has over 42 different species of trees and other vegetation circles the lake. The trail and lakeshore are almost unbelievable in the fall with the many colors of the turning hardwood leaves and the beautiful pine trees. Also, the spring is quite colorful with the many dogwood and redbud trees in bloom.

Daingerfield State Recreation Park was established in the late 1930's when a donation of land was made by some local people. The park was constructed under the federal CCC program. It's difficult to believe that such a clean, beautiful park has been in existence for over 40 years and has been visited by so many people. But, much recent development and hard work has kept the park one of the prettiest spots in Texas.

Many other fine fishing lakes and historic places are located within a short drive of the park. It is ideally suited to be a vacation paradise and hopefully you can go and discover why for yourself. **



Playground equipment for the children, wildlife for the naturalist and a clear, spring-fed lake for the fisherman, as well as excellent camping facilities for everyone, are found in this East Texas hideaway.





Improve Your Dove Score

By Charles Dickey
(Reprinted from *Florida Wildlife*)

MOURNING DOVES cause more gun staring than any other species of game bird.

You know what gun staring is, don't you? You've seen it if you've been on the skeet field. A shooter has run 18 straight clay birds and then cleanly misses a double. He watches both birds land unbroken in the grass and then slowly raises his gun and stares at it. The implication to all who watch is that there is something the matter with the gun. Despite the fact that the first 18 birds were broken cleanly, the gunner seeks to find solace in some mysterious malady of his scattergun. Did the choke suddenly tighten up? Did the barrel cave in or perhaps bend?

Gun staring salves a shooter's ego, if only for a fleeting moment. It's easier to glare at the gun than to admit he locked up and it was his fault both birds were missed.

Glaring is better than swearing. When you cuss, you're freely admitting to your companions that the error was yours.

One reason mourning doves cause so much gun staring is that shooting is generally in social groups of three or four hunters, or perhaps as many as 30 or 40 around a large field. Your misses are always observed by someone. No matter how you try to sneak off to a corner away from the other gunners, it never quite works. Whenever you miss, someone knows.

Once in a while a lone dove comes winging at you and you shoot three times. Nothing is seen falling but the wads and the whole field of shooters is witness to your debacle. Ignore the yells and laughs. Hold your gun high and stare at it for half a minute, then break it down and act like you're adjusting parts. Perhaps you remove a small piece of lint from the front sight. It is really permissible to imply by any action you choose that the misses were not your fault.

Gun staring is for relieving tension and saving pride when you're with other hunters. There is no known case of a solitary shooter, knowing he was totally alone, ever having stared at a shotgun after missing a dove.

The dove has several characteristics which make it so popular with gunners. It is a gregarious bird and usually travels in flocks. Hunters get a lot of shooting without much walking if they find the right water hole, feeding field, flight line or roosting area. The dove is easy to dress, either by picking or skinning, and is excellent table fare when an experienced game cook does the honors. However, to many shotgunners, the most appealing characteristic of the dove is its challenging speed, maneuverability and rate of acceleration and deceleration.

If you understand the speed of doves and the average number of shells it takes to bag one, you might be doing better with your shooting than you think—and you can cut down on your gun staring times. Doves fly from 29 to 60 miles an hour, not counting wind factors. Oddly enough, when the dove is alerted or suspicious, he may fly at low speeds; his normal cruising is wide open. For a stable comparison, a skeet target travels about 55 to 60 miles per hour, or 73 to 88 feet per second. A cruising dove flies at 70 to 90 feet per second. Of course, there's a major difference. The skeet target flies the same pattern on each pull, but you never know what a darting dove will do. How could you? The dove itself doesn't know what it's going to do.

Various studies by state and federal wildlife agencies show from five to eight shells are fired for each bird in the pot. One of the most comprehensive federal surveys stated six shells per bird was the best working average for a cross-section of the nation. If you accept this statistic, it takes the average shooter 72 shells to get a limit of 12 doves in midseason.

Of course, I've never known a hunter who'd admit he used over two boxes of shells to fill out. If you can shoot 12 for 15, I suggest you have two witnesses who are unrelated to you. If you shoot 12 for 12, then

you're not a sportsman and should quit shooting birds off telephone wires.

While there are many tricks to dove shooting, there are a few simple things you can do this season which will improve your average. Let's start by saying that theoretically dove shooting should be fairly simple. In most cases, you see the birds coming from 200 to 800 yards away. You know in advance how high they'll be and roughly their speed. They are clearly silhouetted against the sky. If you don't jump around, they will fly in easy range. You have plenty of time to get ready. There's just one catch! You have too much time to think about what you're going to do.

Say you're wearing a camouflage outfit and standing comfortably in a field of Johnson grass and you see a dove 400 yards away coming straight towards you. No one else shoots to swerve the bird. You begin to think: The dove is 30 yards high, he's traveling at 55 miles an hour, he'll pass just to my right and that means I'll have to lead him? . . . now where's my slide rule? . . . if he's flying at 73 feet a second and my reaction time is one-quarter second, and it takes a shot string how long to go 35 yards, and it's a simple triangulation problem and I should lead the dove 12 feet . . . is it sine or cosine? . . . he's only 100 yards away now, so I'll ease my gun up and begin to track him and when he gets 35 yards away . . . maybe I should only lead him nine feet . . . I'll just pull through him once . . . uh, oh, he's changing course . . . that means on the triangulation it should be an isosceles . . . he's getting away . . . oh, hell, I may as well shoot anyway. There goes the old average!

One of the dove's main defenses is that in most cases the shooter sees him a long way off. The more time the shooter prepares for the shot, the more apt he is to miss. Shooting is a mental game, especially if you've done very much shooting. Most of the shots you get on a given dove hunt you've had many times before and been successful with them. Then what makes you suddenly begin to miss? Generally it's the old mental problem; the conscious takes over and pushes out the smooth-working subconscious that has all the data tabulated in its little gray-cell computer.

Let's look at it this way: If you'll analyze the best wing shots you ever made, you'll probably discover they were instinctive shots. You didn't have much time, but the stock moved under your cheekbone and you looked at the bird, swung and fired, and it crumpled. You didn't remember taking the safety off and you were not conscious of leading. Your subconscious took over, with its electronic computer, and your mounting of the gun and shooting was a smooth, swift action so fast and easy you later could not remember the steps.

If you'll recall the best dove shots you've made, how many were snap or instinctive shots when a dove sneaked in behind you and you had maybe a second to shoot before the bird got out of range? Or the times you've suddenly looked up and there was a big fat dove and you just shot without thinking about it?

To help your shooting, try to let your subconscious



Relax, shoot by instinct and the solitary dove may be in the bag.

do the work. Here's how you can help it: When you take up a stand, make some markers, such as broken weeds, in a circle at 35 yards. It's difficult to judge distances of fast-moving birds; clock-markers at 12, 3, 6 and 9 will give you a good start. A marker at 35 yards, plus the varying height of birds, means that your shots will be at 40 yards or less. There aren't three shooters in a hundred good enough to consistently hit doves cleanly at distances over 40 yards.

Approaching doves spook from movement. They are less likely to see movement if you wear camouflage clothes and use cover or a blind. A moving white face or a wavering gun barrel are usually the cause of dove-swerving, or complete change of course.

Now once you are in your blind and have your markers out you deliberately keep your mind off shooting problems, the most confusing of all being how much to lead a bird, which is different for each shooter. When you see a dove 300 yards away coming

towards you, just stay relaxed and say, "Ain't that nice." Tell yourself you are not going to make a move until the bird crosses your 35-yard circle. Then, as the dove crosses, you raise your gun, with the muzzle slightly behind the bird, then swing through and pull the trigger—all in one quick, instinctive motion which your subconscious controls. Next you yell to your dog, "Fetch!"

By using this method of not making a move, mentally or physically, until the dove is in range, you deliberately force yourself into instinctive shooting, rather than balking mental exercise.

In addition to improving your marksmanship, you will have cleaner kills because the doves will be in range when you shoot. Also, you will not be spooking doves when they are out of range; when you make your move to shoot, the dove may see you and flare, but he won't have time to cut many didoes.

Of course, on the days when your subconscious computer is being key-punched by your conscious demon and your score is 5 for 50, it's okay to do a little gun staring. I always carry a tool kit into the field. It makes it more credible to my buddies that I'm having gun trouble!

**

NATIONAL HUNTING & FISHING DAY

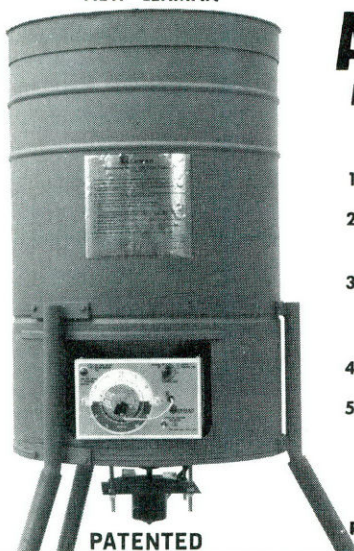
September 22, 1973

National Hunting and Fishing Day is a day of recognition for hunters and fishermen, who have contributed millions of dollars to conservation projects over the years. These sportsmen spent over \$230,000,000 last year alone for conservation, wildlife restoration and hunter safety programs.

All hunters and anglers should be proud of their sport and check with local sportsmen's clubs to see if there are any activities planned in their area on this day.

Be active, be proud and be good sportsmen.

NEW LEHMAN



AUTOMATIC FEEDER

Fishermen • Hunters • Birdwatchers

Time Tested—Over 3,800 Sold!

1. New 24-hour 4-jewel movement.
2. Feed one or more times day or night any selected time regularly unattended.
3. Distributes feed 25 to 75 ft. — depending on installation height. Install suspended — or on pipe legs.
4. Operates on 6 volt dry cell — 2 to 6 mos.
5. Capacity 250 and 1,000 lb. sizes.

Write for Free Brochure

LEHMAN EQUIPMENT CO.

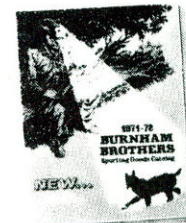
Route 3, Box 53, Corpus Christi, Texas 78415

PATENTED

Bottle Collectors

WHAT ARE YOUR BOTTLES WORTH? Identify and price over 2,500 new and old collectible bottles. Beams, Avons, Fruit Jars, Medicines, Inks, Snuffs, many others. "BOTTLE COLLECTOR'S HANDBOOK AND PRICING GUIDE", by Yount is the most complete bottle book you can buy. All 18 categories. Illustrated new edition! Plus, free bonus directory: "Where To Buy and Sell Bottles" \$3.95 Postpaid. Infobooks, Box 5001 San Angelo, 15 Texas 76901

FREE!



BURNHAM'S NEW CATALOG

CALL YOUR GAME UP CLOSE — varmints, crows, deer, elk. Hand & electronic calls, tapes. New Red Beam & Scope Lites. Guaranteed to work or money back. 64 pages of hunting, fishing, outdoor needs! For calling story booklet, send 35¢.

Catalog is FREE—write now!

BURNHAM BROTHERS

P.O. Box E-23-CT, Marble Falls, Texas 78654

TAKE A QUICK LOOK.

IT'S THE QUICKEST WAY TO IMPROVE YOUR SHORT-RANGE RIFLE SHOOTING.

Qwik-Point is an entirely new sighting concept. It's great when iron sights just aren't fast enough.

It's for superfast short-range shooting with center-fire rifles or 22's (or with shotguns). It's ideal for brush guns like the Winchester 94. It's accurate in dim light or heavy cover.

With one or both eyes open, just look at the target, move the blaze-orange dot to the target, and fire.

You see dot and target instantly in clear, sharp focus. No changing your point of focus. No lining up eye, bead, and target.

You can quickly improve your natural shooting skills with Qwik-Point.

IT'S EASY. IT'S FAST.

Look at your target with one or both eyes open. There's no magnification, no field of view. Focus is infinite. You see your target just like it is. And you see the blaze-orange dot out there on the target.

IT'S PRECISE.

Easy to sight in for your particular kind of shooting. Elevation and windage adjustments put the blaze-orange dot in the center of your shotgun's pattern. Set dead on at 40 yards for skeet or hunting. Set eight to ten inches high for trap shooting.

IT'S TOUGH.

Qwik-Point is recoil-proof and shock-proof. It's really tough. The body is lightweight aluminum finished with durable jet-black anodizing.

IT'S BRIGHT.

Qwik-Point's bright blaze-orange filament collects light and projects an intense dot into the optical system, which, in turn, puts it "out there" on your target. Excellent for dim light conditions. Unlike conventional sights, your target and the dot appear to be in the same place.

IT'S FOR 'MOST ANY RIFLE.

Model R-1 for center-fire rifles is complete with built-in mount (mount bases extra).

Model R-22 has built-in mount that fits factory-grooved receivers on most 22's.

Qwik-Point fits most pump and automatic shotguns, too, with built-in mount and base.

WEAVER

QWIK-POINT®

FROM THE GREAT AMERICAN SCOPE COMPANY.

Suggested retail price for all Qwik-Point Models is \$39.95. Bases extra for R-1.

Write for FREE all-new 1973 catalog.
W. R. Weaver Company,
Dept. 000,
El Paso, Texas
79915.

OUTDOOR BOOKS

THE SURVIVAL HANDBOOK by Bill Merrill; Winchester Press, New York, 1972; 306 pages, \$5.95.

Pick up any newspaper and you will find accounts of freak accidents occurring outside city limits that could have been avoided. Any time you get in your car and drive in the country, whether on a camping trip or going from one place to another, you run a risk of being stranded away from people and involved in emergency situations.

The Survival Handbook attempts to help you anticipate problems and offers solutions for everything from shipwrecks and crash landings to back country accidents. This book is so packed with useful information that it would be impossible to remember it all. As the author suggests, this book should be carried along as additional "emergency equipment."

As an example, you are hiking in the woods and not planning to spend the night, but you become lost at dusk. Do you improvise a temporary camp, attempt a walk out using the stars as guides or give a distress signal for possible searchers? What to do and how to do it are covered in this one volume.

A particularly interesting and useful chapter deals with first aid. The author says, "This subject is a dangerous one. There has been disseminated a good deal of misinformation, and a good deal of correct instruction has been misunderstood or misapplied." Some of the topics discussed include cut arteries or veins, internal bleeding, electric shock, poisoning, snake bites, swimming cramps, sun strokes, burns and scalds. Giving step by step instruction, Merrill claims that in cases of multiple injuries, the patient should first be treated for serious bleeding followed with treatment for stoppage of breath, poisoning and shock. The author includes preventions (where applicable) and symptoms, followed by first aid instructions and illustrations for visual comprehension. Overall, this is probably one of the most important chapters.

Beginning as a Forest Service patrolman in 1922, the author has assisted in many search and rescue operations and even has become lost himself. Bill Merrill is an expert on the outdoors and offers his years of experience.

The great outdoors offers much pleasure and relaxation, but a sudden turn of events could make the day a disaster. With a knowledge of how to handle these situations, many accidents can be avoided. This book should be read by any person who ventures into semi-isolated areas.—Terrie Whitehead

AMPHIBIANS AS PETS by Georg and Lisbeth Zappler; Doubleday & Company, Inc., Garden City, N.Y., 1973; 149 pages, \$4.95.

For persons with a fancy for more unusual pets, amphibians might make suitable companions. *Amphibians As Pets* discusses the pros and cons of having a pet frog or salamander, and offers many good ideas on how to construct and decorate their homes.

The title of the book is somewhat misleading because only the last quarter discusses amphibians as pets. The first portions merely review the characteristics of amphibians, their ancient relatives and some common amphibians of today.

The authors discuss the favorite habitats of different types and species, giving the reader helpful clues on how to locate them. Georg and Lisbeth Zappler highly recommend capturing two adult species at egg-laying time and raising the amphibian from the earliest stage possible. But the authors allow for the less-dedicated persons and add that adults may be captured or even bought at pet stores.

The authors transform what would seem to be a relatively simple project into a spiraling enterprise. As with any household pet, amphibians must eat. The first alternative offered is to go bug hunting for your pet. Or the amphibian owner could become an insect farmer and raise a variety of favorite delicacies for the amphibian. If this second alternative is chosen, the would-be amphibian owner might best read *Insects As Pets* by Paul Villard (reviewed in the June issue of Texas Parks & Wildlife) to find out how to raise bugs. But on the bright side, amphibians seem to be able to fast for long periods of time without adverse affects. The authors attribute this ability to their survival in difficult climates.

Like other pets, amphibians some-

times require special attention when they don't feel well. Listing the symptoms of some of the most common diseases, the authors give "sure to cure" remedies, including a host of prescribed vitamins. And for a last resort, they recommend a trip to the local veterinarian for further diagnosis. In a sincere statement the authors say, "You must take your responsibility very seriously, for another life is involved."

The authors almost discourage the reader from having an amphibian for a pet with their honesty on some of the problems involved. Perhaps this is an active attempt to persuade only sincere persons to adopt an amphibian.

The book is informative and interesting. And if you are considering an amphibian pet, it should not be any more trouble than a tropical fish aquarium, provided the pet does not contract some disease.—Terrie Whitehead

OUR CHANGING FISHERIES edited by Sidney Shapiro; United States Government Printing Office, Washington D.C., 1971; 521 pages, \$9.00; and **THE LIVING OCEANS** by Alec Laurie; Doubleday & Company, Inc., Garden City, N.Y., 1973; 177 pages, \$6.95.

A Chinese proverb says, "Give a man a fish and he will live for a day, teach him to fish and he will have food for life." This adage aptly applies in the 20th century world as pollution threatens to destroy the delicate balance of plants and animals.

Both of these books discuss the world's oceans as a separate environment, informing the reader on its many aspects. *The Living Oceans* concerns itself with the biological aspect, using semi-technical language. The author begins with an analogy of familiar food chains and energy re-cycling on land. Then he associates the same cycles in sea water with plants being the first link in the chains. To illustrate an example of marine life, the author will often make a comparison with something familiar the the reader, such as the human body.

Our Changing Fisheries, published by the federal government, seems to be a more practical book. It covers much of the same information in *The Living Oceans* in addition to stressing food demand for an anticipated world population of 300 million in the year 2000. Because the United States is bounded on nearly all sides by water, fisheries will remain a basic part of the economy.

Each chapter in the second book is authored by one to three experts in their

respective fields. An important and interesting heading covered in *Our Changing Fisheries* is the study of the dietary role of fish and shellfish as related to food science. The book explains and summarizes enzyme reactions, high proteins and low fatty acids in easy language and then lists the more technical data in parenthesis for the person who is more familiar with the subject.

The most outstanding difference between the two books is timeliness. Whereas *The Living Oceans* concerns itself with the geological history of the earth, earthquakes and their effect on marine life, *Our Changing Fisheries* emphasizes the present state of the oceans and inevitable problems of the future.

Both books are well illustrated, although *The Living Oceans* is somewhat superior in quality and uniqueness. Some of the photographs were taken from the depths of the ocean, revealing strange creatures.

These two books are for those persons who are interested in understanding chemical and biological balances in our fresh and salt waters and exploring the oddities of marine life.—*Terrie Whitehead.*

THE WORLD OF THE WOOD DUCK
by F. Eugene Hester and Jack Dermid; J. B. Lippincott Co., Philadelphia and New York, 1973; 160 pages, \$5.95.

Probably the most beautiful of all waterfowl is the multicolored wood duck, and anyone interested in this species will enjoy reading *The World of the Wood Duck*.

In this volume the authors cover not only the behavior, migratory patterns, eating habits, molts, nesting, predation and mortality of the species, but also make the reader realize that the wood duck is facing a precarious future. Lack of natural nesting sites is endangering this handsome duck; and without proper management and the provision of nesting boxes, wood duck populations will again decline to the dangerously low levels reached at the turn of the century.

For individuals interested in making a personal contribution to the preservation of wood ducks, the authors have included a final chapter which has detailed diagrams for the construction of nesting boxes. Also included are suggestions as to where, when and how to erect these boxes and maintain them.

Hopefully, enough people will lend a hand to insure that this beautiful creature is always around for us to enjoy.—*Ilo Hiller*

LONG SHOTS SHORT CASTS

compiled by Neal Cook

Extreme Pollution: The Cuyahya River which feeds into Lake Erie is so polluted that not even sludge worms—one of the lowest forms of aquatic life—can live in it.

Japan Fights Back: With some of the worst pollution in the world in their country, Japanese industries and government bodies have decided to spend over \$34.7 billion in the next 10 years fighting pollution in Tokyo and 11 other cities. Principal targets are air pollution, contaminated water, excess noise, offensive odors and sinking of the ground.

Overdue Congratulations: Two Texans were honored in May by the American Motors Corporation with its Conservation Award for 1973. The awards are presented annually to 10 professional and 10 non-professional conservationists from throughout the United States, and Texas can be proud of having winners in both categories. David L. Wintermann of Eagle Lake was a winner in the non-professional category. He is a rancher who conducts his business in such a way as to make the land productive for wildlife as well as livestock. He has worked to preserve the rare, endangered Attwater's prairie chicken and created six sanctuary ponds for migratory waterfowl. The state's largest inland colony of wading birds is on his ranch and he provides guards for them during the nesting season. He has banned the use of "hard" pesticides and fungicides in his ranching operations and gives much of his time to national conservation organizations. The winner in the professional category was Glen A. Riley, Jr. of Liberty. Riley is a self-taught expert on another of Texas' endangered species, the red wolf. He has gained the confidence and support of ranchers, biologists and the general public in launching programs to preserve the species. Largely due to Riley's work, much has been learned about the animal's problems and potential for preservation. We thank these men for their work.

Snips For Birds: A pair of small tin shears makes the job of cleaning game birds and small game animals such as rabbits much easier. They snip through bones without effort and make removing heads, feet and wings a snap.

Another Hint: Feathers embedded in a downed bird as well as shot can be easily removed by using a small nail with the point hammered flat to make a small spade. Insert the nail where the shot went in, twist and out come both feathers and shot.



Mourning Doves

Where do they go?

by Bill Russ Wildlife Biologist
Federal Aid Project W-95-R

FINDING a band on a mourning dove may surprise the hunter who associates banding with ducks and geese, but it is really not unusual.

It began in Texas with the banding of five mourning doves in 1923. An additional 51,095 doves were banded from 1925 to 1965, with most of the banding prior to 1951 accomplished by private individuals possessing banding permits.

Large-scale banding did not begin until the United States Bureau of Sport

Fisheries and Wildlife initiated the nestling banding program of the 1950's. This was terminated in the early 1960's and banding emphasis was then shifted to flying doves during the pre-hunting season (June-August) and post-hunting season (January-March).

As hunter interest in this game bird continued to increase, the Parks and Wildlife Department recognized the need to acquire more information. To accomplish this, a project concerned strictly with mourning doves was

established in 1966. Questions such as, "Are all those fat October birds from Kansas?" and "Do all doves migrate?" and "What percentage of the population dies annually?" needed to be answered. Another objective of the project was to analyze results from banding operations prior to 1966 and determine future needs.

A total of 2,700 bands have been recovered from birds banded in Texas and from birds banded elsewhere and recovered in Texas during 1925-1965. Of these, 1,734 were Texas-banded doves.

The distribution of band recoveries in and dispersals from Texas is shown on the accompanying band recovery maps.

The numbers on Figure 1 represent the doves banded in other states or foreign countries and recovered in Texas. Figure 2 indicates recoveries from doves banded in Texas and recovered in Texas, other states, and foreign countries.

The map of the United States is divided into the Western, Central and Eastern Management Units. Almost 85 percent of all recoveries were from doves banded in the Central Management Unit, and the majority of these recoveries were banded in Texas. The Eastern Management Unit contributed almost 15 percent of the Texas recoveries, while the Western Management Unit provided less than one percent. The Canadian Province of Manitoba contributed the single foreign recovery made in Texas. Practically all the recoveries from the Eastern Management Unit were from states bordering the Central Management Unit, particularly Louisiana with almost 10 percent of the total Texas recoveries. With the exceptions of California, Massachusetts and Florida, there were no Texas recoveries of doves banded along the Atlantic or Pacific seaboard. It is readily apparent that Texas benefits from many states, and not just Kansas.

Of the 1,734 Texas-banded doves recovered, more than 85 percent were recovered in Texas, and the majority of these recoveries were taken in the same ecological region where the birds were banded. Sixty-three percent of recoveries from winter-banded adults occurred during the following hunting season in the same region of banding. This suggests that adult doves return to the same wintering area year after year and a portion of them could be year-round residents. More than two-thirds of the recoveries from nestling and juvenile mourning doves banded in summer were taken the following fall within the same ecological region

where banded, which indicates that a substantial proportion of immature doves remain in the area where banded until hunting season begins.

Among other states, the greatest number of Texas-banded doves were recovered in Louisiana, accounting for 24 percent of these recoveries. Hunters in 18 other states recovered at least one Texas band. Several doves covered considerable distances to these other states after their capture and banding in Texas; four were taken in California, three in Minnesota, two in North Dakota and one in Florida.

The speed of dove migration is not presently known, but the band recoveries of a couple of speedsters show how quickly they can cover distance. That Manitoba dove was banded on August 23, 1965, and shot just 37 days later in Travis County after a journey of at least 1,600 miles. A Texas dove banded on February 28, 1964, in Brooks County was taken on May 5, 1964, in North Dakota, over 1,500 miles away from the banding site.

A final look at Figure 2 reveals the importance of Mexico in relation to Texas doves. Mexico accounted for 54 percent of the 245 doves taken outside of Texas and 91 percent of the 145 foreign recoveries. The most band recoveries from Central America were reported from Guatemala. In Mexico, the west-central states of Michoacan, Jalisco and Guanajuato had 70 percent of the recoveries from Texas. A substantial concentration of recoveries in Mexico suggests that Mexico is the wintering area for Texas doves, particularly in the three west-central states listed above.

The record for the longest time between date banded and date recovered appears to be held by a dove banded in Palo Pinto County on June 4, 1953, and recovered in Mexico during October, 1964, an elapsed time of 11 years and 4 months. It should be remembered, however, that the actual date of recovery and the date reported may differ considerably. Another record involves a nestling dove banded in Gray County on July 28, 1952, and shot September 3, 1962 in Hunt County, a period of 10 years, 1 month, and 6 days. These two cases should be considered exceptions to the rule, as studies show that at least 50 percent of mourning doves never see their first birthday.

As mourning dove band studies continue, the resulting information should enable biologists to better manage this popular game bird for the benefit of all Texans.

**

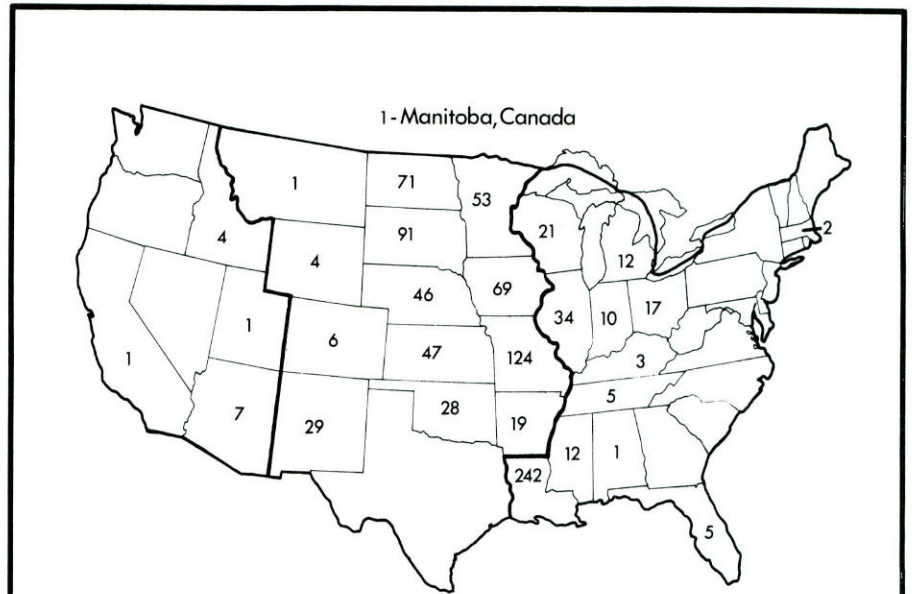


FIGURE 1: The number in each state and in Manitoba represent the mourning doves that were banded in that state or province and recovered in Texas during 1925-1965.

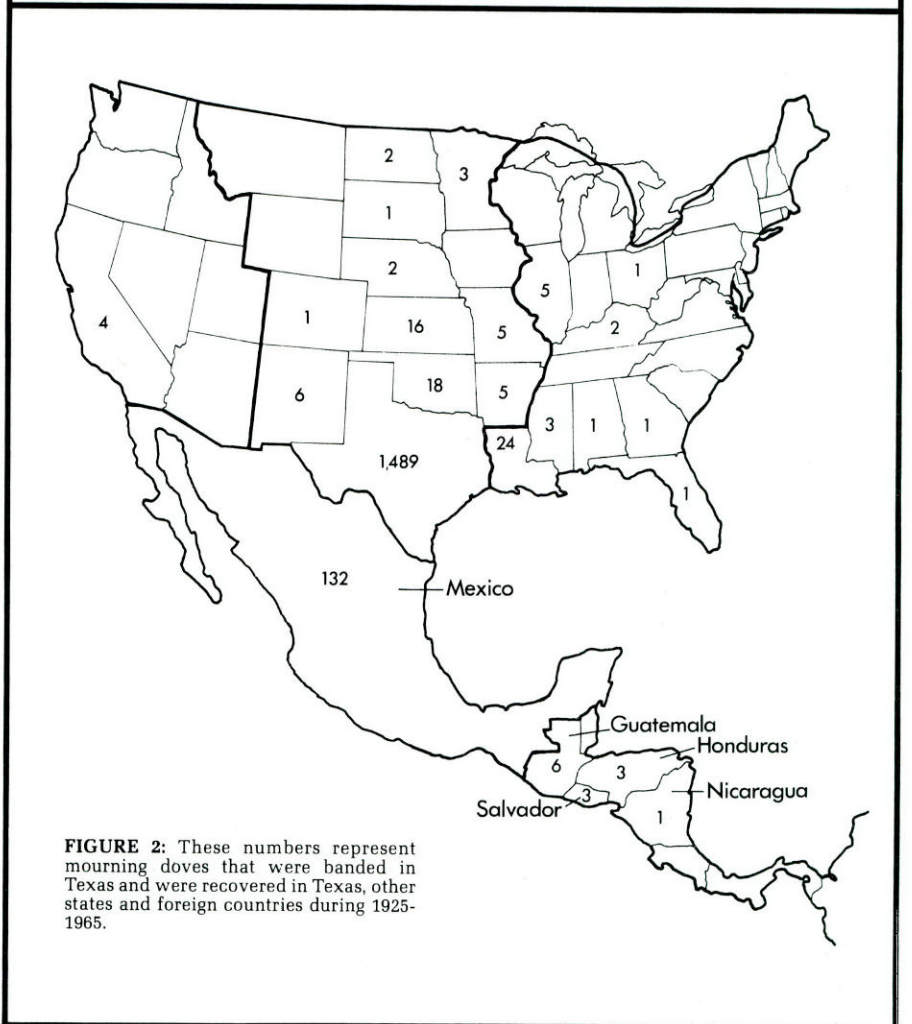


FIGURE 2: These numbers represent mourning doves that were banded in Texas and were recovered in Texas, other states and foreign countries during 1925-1965.

Know Your Wardens

Our law enforcement personnel are located throughout the state not only to enforce game, fish and safety laws but also to help anyone who has questions about those laws or who wishes to report suspected violators.

The five regions of the state are broken into districts which are comprised of several counties. Check the map to find the nearest warden, district supervisor or regional director to contact.

DIRECTOR OF STATE LAW ENFORCEMENT

Tom C. Browning, John H. Reagan Bldg.
Austin 78701 AC 512-475-4284

Region I

LAW ENFORCEMENT DIRECTOR REGION I

J. C. Moore, Drawer 1590
San Angelo 76901 AC 915-653-3301

LAW ENFORCEMENT SUPERVISOR DISTRICT I

Weldon Fromm, 3802 Bowie
Amarillo 79110 AC 806-355-9246

LAW ENFORCEMENT SUPERVISOR DISTRICT II

Ted Wheelis, 4821 Ave. Q
Lubbock 79412 AC 806-744-0213

LAW ENFORCEMENT SUPERVISOR DISTRICT III

Edgar Sturdivant, 1148 Geronimo
El Paso 79925 AC 915-778-0191

LAW ENFORCEMENT SUPERVISOR DISTRICT IV

Charles Keller, Drawer 1590
San Angelo 76901 AC 915-653-3301

LAW ENFORCEMENT SUPERVISOR DISTRICT V

Joe Ramos, 1809 Ave. F
Del Rio 78840 AC 512-775-8327

LAW ENFORCEMENT SUPERVISOR DISTRICT VI

David Palmer, 279 N. Willis
Abilene 79603 AC 915-673-3333

ANDREWS COUNTY

Al Therwhanger, 504 S.W. 17th Street
Seminole 79360 AC 915-758-5951

ARMSTRONG COUNTY

Carl Carter, Box 134
Clarendon 79226 AC 806-874-3807

BAILEY COUNTY

Pat Donnelly, Box 149
308 East 15th Street
Littlefield 79339 AC 806-385-3782

BORDEN COUNTY

Bobby R. Ferguson, 801 North 13th Street
Lamesa 79331 AC 806-872-3229

BREWSTER COUNTY

David M. Cook, Box 488
309 West Avenue D
Alpine 79830 AC 915-837-2623
Eugene O. Willmann, Box 996
309 West Ave. D
Alpine 79830 AC 915-837-3255

BRISCOE COUNTY

Julius Stevens, 1036 N.W. 10th St.
Tulia 79088 AC 806-995-4596

CARSON COUNTY

Richard E. Byrns, P. O. Box 926
Fritch 79036 AC 806-857-3791

CASTRO COUNTY

Charles F. Cosper, 139 Ranger
Hereford 79045 AC 806-364-4723

CHILDRESS COUNTY

Jack D. Burrus, Box 482
801 Ave. I N.W.
Childress 79201 AC 817-937-2138

COCHRAN COUNTY

Danny R. Tuggle, 208 Cypress Street
P. O. Box 1281
Levelland 79336 AC 806-894-7696

COKE COUNTY

R. L. Flanagan, 218 West 5th Street
Box 405
Robert Lee 76945 AC 915-453-2441

COLLINGSWORTH COUNTY

George Farr, P. O. Box 614
Shamrock 79079 AC 806-256-2708

CONCHO COUNTY

W. Gordon Craig, Box 151
Paint Rock 76866 AC 915-732-4218

COTTE COUNTY

Jimmy W. Harris, 1408 Earle Street
Quanah 79252 AC 817-663-2355

CRANE COUNTY

Gary W. Mitchell, 2722 N. Hancock
Odessa 79760 AC 915-337-1088

CROCKETT COUNTY

Raymond H. Davee, Box 629
Ozona 76943 AC 915-392-2504

CROCKETT COUNTY

Walter T. Rinehart, P. O. Box 87
Ozona 76943 AC 915-392-3460

CROCKETT COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

CROCKETT COUNTY

Raymond H. Davee, Box 629
Ozona 76943 AC 915-392-2504

CROCKETT COUNTY

Walter T. Rinehart, P. O. Box 87
Ozona 76943 AC 915-392-3460

CROCKETT COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

CROCKETT COUNTY

Raymond H. Davee, Box 629
Ozona 76943 AC 915-392-2504

CROCKETT COUNTY

Walter T. Rinehart, P. O. Box 87
Ozona 76943 AC 915-392-3460

CROCKETT COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

CROCKETT COUNTY

Raymond H. Davee, Box 629
Ozona 76943 AC 915-392-2504

CROCKETT COUNTY

Walter T. Rinehart, P. O. Box 87
Ozona 76943 AC 915-392-3460

CROCKETT COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

CROCKETT COUNTY

Raymond H. Davee, Box 629
Ozona 76943 AC 915-392-2504

CROCKETT COUNTY

Walter T. Rinehart, P. O. Box 87
Ozona 76943 AC 915-392-3460

CROCKETT COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

CROCKETT COUNTY

Raymond H. Davee, Box 629
Ozona 76943 AC 915-392-2504

CROCKETT COUNTY

Walter T. Rinehart, P. O. Box 87
Ozona 76943 AC 915-392-3460

CROCKETT COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

ECTOR COUNTY

Gary W. Mitchell, 2722 N. Hancock
Odessa 79760 AC 915-337-1088

EDWARDS COUNTY

Roger D. Long, Box 798
Rocksprings 78880 AC 915-683-4656

EL PASO COUNTY

Edgar Sturdivant, District Supervisor
1148 Geronimo Drive
El Paso 79925 AC 915-778-0191

G. L. Anderson, 1148 Geronimo Dr.
El Paso 79925 AC 915-778-0191

Foy W. White, 1148 Geronimo Dr.
El Paso 79925 AC 915-778-0191

FISHER COUNTY

Michael D. Byerly, Box 432
704 N. W. Ave. H.
Hamlin 79520 AC 915-576-3139

FLOYD COUNTY

Ronnie L. Ainsworth, 1601 Kokomo Street
Plainview 79072 AC 806-293-5688

FOARD COUNTY

Jimmy W. Harris, 1408 Earle Street
Quanah 79252 AC 817-663-2355

GAINES COUNTY

Alfred L. Therwhanger, 504 S. W. 17th Street
Seminole 79360 AC 915-758-5951

GARZA COUNTY

William D. Howell, 315 West 3rd Street
Post 79356 AC 806-495-2185

GLASSCOCK COUNTY

Wayne E. Posey, Box 411
Sterling City 76951 AC 915-378-2891

GRAY COUNTY

Roland D. Williams, 2116 Christy
Pampa 79065 AC 806-669-6766

HALE COUNTY

Ronnie L. Ainsworth, 1601 Kokomo Street
Plainview 79072 AC 806-293-5688

HALL COUNTY

Jack D. Burrus, Box 482
Childress 79201 AC 817-937-2138

HANSFORD COUNTY

Starkey Whitehorn, Box 934
Stinnett 79083 AC 806-878-2876

HARDEMAN COUNTY

Jimmy W. Harris, 1408 Earle Street
Quanah 79252 AC 817-663-2355

HARTLEY COUNTY

Calvin Tow, Box 722
Dalhart 79022 AC 806-249-4132

HASKELL COUNTY

Jackie Young, Box 304
1001 North 7th Street
Haskell 79521 AC 817-864-3057

HEMPHILL COUNTY

William B. Rogers, P. O. Box 425
Canadian 79014 AC 806-323-6164

HOCKLEY COUNTY

Danny R. Tuggle, 208 Cypress St.
P. O. Box 1261
Levelland 79336 AC 806-894-7696

HOWARD COUNTY

J. C. Thomason, 1420 Stadium Street
Big Spring 79720 AC 915-263-4765

HUDSPETH COUNTY

Royce W. Wells, P. O. Box 296
Ft. Hancock 79839 AC 915-769-3864

HUTCHINSON COUNTY

Richard E. Byrns, P. O. Box 926
Fritch 79036 AC 806-857-3791

Starkey Whitehorn, Box 934
Stinnett 79083 AC 806-878-2876

IRION COUNTY

Jerry W. Peiser, P. O. Drawer 1590
San Angelo 76901 AC 915-653-3301

JEFF DAVIS COUNTY

Harvey R. Adams, Box 235
Ft. Davis 79734 AC 915-426-3968

JONES COUNTY

Michael D. Byerly, Box 432
704 N. W. Avenue H
Hamlin 79520 AC 915-576-3139

KENT COUNTY

Larry D. Rider, Box 231
Jayton 79528 AC 915-237-4127

KING COUNTY

Vic Lowry, Box 102
Knox City 79529 AC 817-658-6881

KNOX COUNTY

Vic Lowry, Box 102
Knox City 79529 AC 817-658-6881

LAMB COUNTY

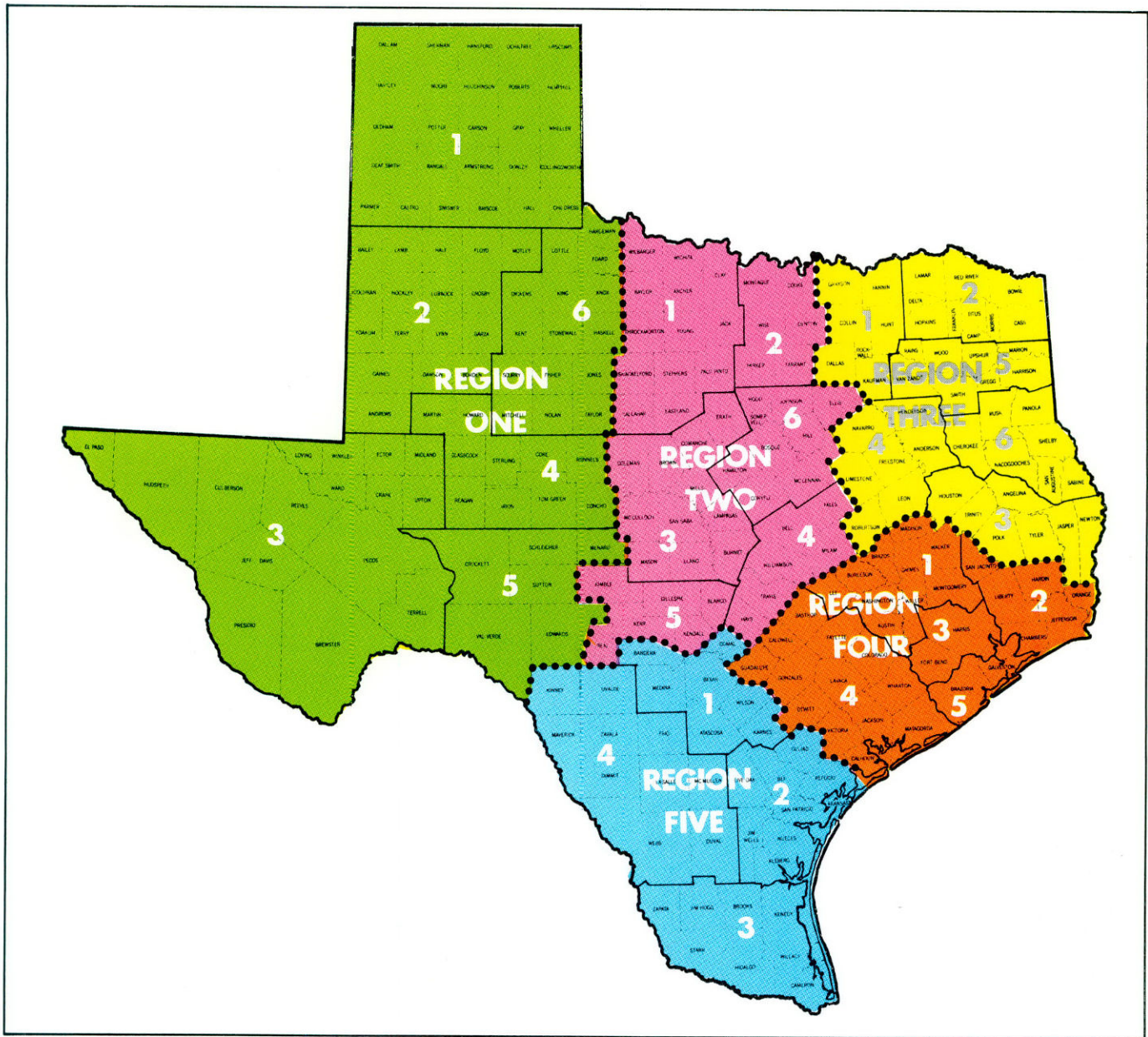
Pat L. Donnelly, Box 149
Littlefield 79339 AC 806-385-3782

LIPSCOMB COUNTY

Gary W. Merrell, Box 41
Perryton 79070 AC 806-435-2781

LOVING COUNTY

Glendon L. Collins, 1008 S. Calvin
P. O. Box 967
Monahans 79756 AC 915-943-4986



LUBBOCK COUNTY

Ted F. Wheels, District Supervisor
4821 Avenue Q
Lubbock 79412 AC 806-744-0213
Bobby L. Goff, 4821 Avenue Q
Lubbock 79412 AC 806-744-6847
William H. Pratt, 4821 Avenue Q
Lubbock 79412 AC 806-744-6847

LYNN COUNTY

William H. Pratt, 4821 Avenue Q
Lubbock 79412 AC 806-744-6847

MARTIN COUNTY

J. C. Thomason, 1420 Stadium Street
Big Spring 79720 AC 915-263-4765

MENARD COUNTY

Dalton Ray Owens, Box 327
Menard 76859 AC 915-396-2583

MIDLAND COUNTY

Homer L. Crosby, 1803 West Wall Street
Midland 79701 AC 915-683-3801
Michael R. Porter, 1803 West Wall Street
Midland 79701 AC 915-683-3801

MITCHELL COUNTY

Ronnie K. Aston, 962 East 14th Street
Colorado City 79512 AC 915-728-5703

MOORE COUNTY

M. Stanley Brooks, Box 877
Dumas 79029 AC 806-935-4893

MOTLEY COUNTY

Ronald M. Vandiver, Box 216
Matador 79244 AC 817-347-2821

NOLAN COUNTY

John D. Rische, 1205 James Street
Sweetwater 79556 AC 915-235-2494

OCHILTREE COUNTY

Gary W. Merrell, Box 41
Perryton 79070 AC 806-435-2781

OLDHAM COUNTY

Joe M. Shelton, Drawer 449
Vega 79092 AC 806-267-3446

PARMER COUNTY

Charles F. Cosper, 139 Ranger Street
Hereford 79045 AC 806-364-4723

PECOS COUNTY

Scott Black, Box 803
Iraan 79744 AC 915-639-2260
Jimmie L. Reed, 1104 N. Park Street
Ft. Stockton 79735 AC 915-336-3743

POTTER COUNTY

John G. Crow, 3802 Bowie Street
Amarillo 79110 AC 806-355-9246
John David Gould, 3802 Bowie Street
Amarillo 79110 AC 806-355-9246

PRESIDIO COUNTY

Sherman H. Bales, P. O. Box 1243
Marfa 79843 AC 915-729-4669
George W. Vickers, Drawer V
Marfa 79843 AC 915-729-4547

RANDALL COUNTY

Weldon Fromm, District Supervisor
3802 Bowie Street
Amarillo 79110 AC 806-355-9246

John G. Crow, 3802 Bowie Street
Amarillo 79110 AC 806-355-9246
John David Gould, 3802 Bowie Street
Amarillo 79110 AC 806-355-9246
Stanley McDonough, Rt. 2, Box 48-BB
Canyon 79015 AC 806-655-9246

REAGAN COUNTY

William C. Rice, Box 274
Big Lake 76932 AC 915-884-2286

REEVES COUNTY

Harvey H. Schoen, 1611 Morris Street
Pecos 79772 AC 915-445-3649

ROBERTS COUNTY

Roland Williams, 2116 Christy Street
Pampa 79065 AC 806-669-6766

RUNNELS COUNTY

Robert T. Wood, P. O. Box 107
Ballinger 76821 AC 915-365-3027

SCHLEICHER COUNTY

Claude M. Caudle
Box 295
Eldorado 76936 AC 915-853-2795

SCURRY COUNTY

Howard L. Gambol, 3106 37th Place
Snyder 79549 AC 915-573-3288

SHERMAN COUNTY

M. Stanley Brooks, Box 877
Dumas 79029 AC 806-935-4893

STERLING COUNTY

Wayne E. Posey, Box 411
Sterling City 76951 AC 915-378-2891

STONEWALL COUNTY

Jackie Young, Box 304
Haskell 79521 AC 817-864-3057

SUTTON COUNTY

Nolan W. Johnson
Box 881
Sonora 76950 AC 915-387-2509
Rodney A. Knight, 1103 Glasscock Street
Sonora 76950 AC 915-387-3068

SWISHER COUNTY

Julius H. Stevens, 1036 N. W. 10th Street
Tulia 79088 AC 806-995-4596

TAYLOR COUNTY

David Palmer, District Supervisor
279 North Willis Street
Abilene 79603 AC 915-673-3333
Raymond D. Evans, 279 North Willis Street
Abilene 79603 AC 915-673-3333
Curtis L. Jones, 279 North Willis Street
Abilene 79603 AC 915-673-3333

TERRELL COUNTY

Harvey B. Williams, P. O. Box 337
Sanderson 79848 AC 915-345-2684

TERRY COUNTY

Alfred L. Therwhanger, 504 S. W. 17th Street
Seminole 79360 AC 915-758-5951

TOM GREEN COUNTY

Charles Keller, District Supervisor
P. O. Drawer 1590
San Angelo 76901 AC 915-653-3301
Jerry Hearn, P. O. Drawer 1590
San Angelo 76901 AC 915-653-3301
Jerry W. Peiser, P. O. Drawer 1590
San Angelo 76901 AC 915-653-3301

UPTON COUNTY

Michael R. Porter, 1803 West Wall Street
Midland 79701 AC 915-683-3801

VAL VERDE COUNTY

Joe Ramos, District Supervisor
1809 Avenue F
Del Rio 78840 AC 512-775-8327
David Allen, 1809 Avenue F
Del Rio 78840 AC 512-775-8327
George Pat Connolly, 1809 Avenue F
Del Rio 78840 AC 512-775-8327
Alan D. Masloff, 1809 Avenue F
Del Rio 78840 AC 512-775-8327
Jesse Ortiz, 1809 Avenue F
Del Rio 78840 AC 512-775-8327

WARD COUNTY

Glendon L. Collins, 1008 S. Calvin
P. O. Box 967
Monahans 79756 AC 915-943-4986

WHEELER COUNTY

George Farr, P. O. Box 614
Shamrock 79079 AC 806-256-2708

WINKLER COUNTY

Glendon L. Collins, 1008 S. Calvin
P. O. Box 967
Monahans 79756 AC 915-943-4986

YOAKUM COUNTY

Alfred L. Therwhanger, 504 S. W. 17th Street
Seminole 79360 AC 915-758-5951

Region II

LAW ENFORCEMENT DIRECTOR**REGION II**

Ron Owens, P. O. Box 4186
Waco 76701 AC 817-799-2446

LAW ENFORCEMENT SUPERVISOR**DISTRICT I**

Morris F. Stallcup, 100 Fremar Valley
Wichita Falls 76301 AC 817-723-4283

LAW ENFORCEMENT SUPERVISOR**DISTRICT II**

Joe B. Brower, 100 N. University
Fort Worth 76107 AC 817-336-5171

LAW ENFORCEMENT SUPERVISOR**DISTRICT III**

John R. Wood, 214 Main
Brownwood 76801 AC 915-646-0440

LAW ENFORCEMENT SUPERVISOR**DISTRICT IV**

Frank Henze, 55 N. Interregional
Austin 78702 AC 512-475-5909

LAW ENFORCEMENT SUPERVISOR**DISTRICT V**

Walter G. Carpenter, 404A Junction Highway
Kerrville 78028 AC 512-257-7611

LAW ENFORCEMENT SUPERVISOR**DISTRICT VI**

Not available at this time

ARCHER COUNTY

Bill Evans, P. O. Box 913
Archer City 76351 AC 817-574-4374

BAYLOR COUNTY

Lowell Rozelle, Box 1075
Seymore 76380 AC 817-888-3859

BELL COUNTY

Jack Gregory, Box 881
Temple 76501 AC 817-778-2851
Mike McBride, Box 881
Temple 76501 AC 817-778-2851
Don Thweatt, Box 881
Temple 76501 AC 817-778-2851

BLANCO COUNTY

Warren E. Guthrie, Box 192
Johnson City 78636 AC 512-868-7472

BOSQUE COUNTY

Joe F. Cannon, Box 155
Meridian 76665 AC 817-435-2921
W. D. Henry, P. O. Box 681
Meridian 76665 AC 817-435-2921

BROWN COUNTY

John R. Wood, District Supervisor
214 Main
Brownwood 76801 AC 915-646-0440
John Echols, 214 Main
Brownwood 76801 AC 915-646-0440

BURNET COUNTY

Roger Hensley, Rt. 1, Box 65
Marble Falls 78654 AC 512-693-2229
Robert Johnson, Box 72
Burnet 78611 AC 512-756-2899

CALLAHAN COUNTY

Howard Bredehoff, 539 Chestnut
Baird 79504 AC 817-854-1365

CLAY COUNTY

James Hale, Box 575
Henrietta 76365 AC 817-538-5385

COLEMAN COUNTY

Roy Winburne, 812 W. 3rd
Coleman 76824 AC 915-625-5158

COMANCHE COUNTY

Billy J. Works, Box 55
Comanche 76442 AC 817-356-2665

COOKE COUNTY

Murrell Hopkins, Box 72
Gainesville 76240 AC 817-465-4219

CORYELL COUNTY

Jerry D. Noles, Box 188
Gatesville 76528 AC 817-865-6352

DENTON COUNTY

C. H. Johnson, Courthouse Annex
Denton 76201 AC 817-387-6341
John L. Welch, Courthouse Annex
Denton 76201 AC 817-387-6341

EASTLAND COUNTY

Kenneth Payne, Rt. 2
Eastland 76448 AC 817-629-2906

ELLIS COUNTY

W. N. Lambing, Box 655
Waxahachie 76165 AC 214-937-1923

ERATH COUNTY

Jay Pemberton, Box 165
Stephenville 76410 AC 817-968-3673

FALLS COUNTY

Delbert Davis, Box 526
Marlin 76661 AC 817-936-3207

GILLESPIE COUNTY

Max Hartman, 803 N. Adams
Fredericksburg 78624 AC 512-997-3015
Norman Henk, P. O. Box 402
Fredericksburg 78624 AC 512-997-2044

HAMILTON COUNTY

Royis Tucker, P. O. Box 129
Hamilton 76531 AC 817-386-5217

HAYS COUNTY

Frank Hamer, Box 681
San Marcos 78666 AC 512-392-4833
Calvin A. Turner, 1003 S. Barbara
San Marcos 78666 AC 512-475-5909

HILL COUNTY

Don W. Jackson, Box 846
Whitney 76692 AC 817-694-2992

HOOD COUNTY

W. A. Hardin, P. O. Box 384
Granbury 76048 AC 817-573-1878

JACK COUNTY

J. C. Romines, Box 75
Jacksboro 76056 AC 817-567-5751

JOHNSON COUNTY

Douglas Fisk, 1617 McAnear
Cleburne 76031 AC 817-435-2465

KENDALL COUNTY

Milburn Dearing, Box 179
Boerne 78006 AC 512-249-2171

KERR COUNTY

Walter G. Carpenter, District Supervisor
404A Junction Hwy.
Kerrville 78028 AC 512-257-7611
Dale Brown, 404A Junction Hwy.
Kerrville 78028 AC 512-257-7611
Larry Holloway, 404A Junction Hwy.
Kerrville 78028 AC 512-257-7611
Arthur McCall, 404A Junction Hwy.
Kerrville 78028 AC 512-257-7611

KIMBLE COUNTY

Gary Dick, P. O. Box 433
Junction 76849 AC 915-446-2286
Gary Turner, 407 N. 9th St.
Junction 76849 AC 915-446-3203

LAMPASAS COUNTY

Richard Pinckney, South Highway 148
Lampasas 76550 AC 512-556-6156

LLANO COUNTY

Terry Joy, Box 129
Llano 78643 AC 915-247-4951
Bill Sprott, Drawer "V"
Kingsland 76839 AC 512-693-4850
Bill Swope, Box 283
Llano 78643 AC 915-247-4031

MASON COUNTY

William Francis, 1013 Church
Box 155
Mason 76856 AC 915-347-5238
August J. Kaderka, P. O. Box 766
Mason 76856 AC 915-347-5784

MCCULLOUGH COUNTY

Kenneth Lunsford, 900 S. China
Brady 76825 AC 915-597-1553

MCLENNAN COUNTY

Ernest Bauman, P. O. Box 4186
Waco 76705 AC 817-799-2446

MILAM COUNTY

Dale Moore, 1403 Cleveland
Cameron 76520 AC 817-697-3213

MILLS COUNTY

Benny Schriver, 708 Proctor Drive
Goldthwaite 76844 AC 915-648-3424

MONTAGUE COUNTY

James McCash, Box 29
Bowie 76230 AC 817-772-3544

PALO PINTO COUNTY

Michael Morris, P. O. Box 236
Mineral Wells 76067 AC 817-325-2152
Forrest E. Shoop
Gratford 76045 AC 817-664-2045

PARKER COUNTY

Glenn Crooks, Courthouse
Weatherford 76086 AC 817-594-5321

REAL COUNTY

Grover Grant, Box 651
Leakey 78873 AC 915-232-5366

SAN SABA COUNTY

C. D. Edmondson, Box 234
San Saba 76877 AC 915-372-3418
Jack D. Reynolds, Box 385
San Saba 76877 AC 915-372-3600

SHACKLEFORD COUNTY

Sammy Rippey, P. O. Box 989
Albany 76430 AC 817-762-3459

SOMERVELL COUNTY

W. A. Hardin, P. O. Box 384
Granbury 76048 AC 817-573-1878

STEPHENS COUNTY

Richard Corley, Box 430
Breckenridge 76024 AC 817-559-5308

TARRANT COUNTY

Joe B. Brower, District Supervisor
100 N. University, Rm. 219
Fort Worth 76107 AC 817-336-5171
O. R. McDonald, Jr., 100 N. University
Rm 219
Fort Worth 76107 AC 817-336-5171

Larry Sodek, 100 N. University
Rm 219
Fort Worth 76107 AC 817-336-5171

Carlos Vaca, 100 N. University
Rm 219
Fort Worth 76107 AC 817-336-5171

Lowell Rozelle, Box 1075
Seymore 76380 AC 817-888-3859

Sammy Rippey, P. O. Box 989
Albany 76430 AC 817-762-3459

Frank Henze, District Supervisor
55 N. Interregional
Austin 78702 AC 512-475-5909

Brent Bergstrom, 3301 Pinecrest
Austin 78701 AC 512-454-2945

J. E. Foster, P. O. Box 3904
Austin 78701 AC 512-232-5366

Marvin Patterson, 12402 Tomanet Trail
Austin 78731 AC 512-836-6464

Grover Simpson, 6207 Shoalwood
Austin 78731 AC 512-465-0306

TRAVIS COUNTY

Morris F. Stallcup, District Supervisor
100 Fremar Valley
Wichita Falls 76301 AC 817-723-4283

Paul M. Corona, 100 Fremar Valley
Wichita Falls 76301 AC 817-723-4283

Kenneth Holder, 100 Fremar Valley
Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

Wichita Falls 76301 AC 817-723-4283

WILLIAMSON COUNTY

Charley Hughes, Box 562
Georgetown 78626 AC 512-863-3885

WISE COUNTY

R. C. Brooks, Box 63
Decatur 76234 AC 817-624-2480

YOUNG COUNTY

David Hancock, P. O. Box 981
Graham 76046 AC 817-549-1555

Region III

LAW ENFORCEMENT DIRECTOR REGION III

Jack Tisdale, 314 S. Main
Jacksonville 75766 AC 214-589-4101

LAW ENFORCEMENT SUPERVISOR DISTRICT I

Charles Hensley, 3727 Dilido Suite 130
Dallas 75228 AC 214-328-5493

LAW ENFORCEMENT SUPERVISOR DISTRICT II

Billy W. Daniel, P. O. Box 1012
Mt. Pleasant 75455 AC 214-572-7966

LAW ENFORCEMENT SUPERVISOR DISTRICT III

John B. Weaver, Box 266
Lufkin 75901 AC 713-632-1311

LAW ENFORCEMENT SUPERVISOR DISTRICT IV

*Not Available at this time

LAW ENFORCEMENT SUPERVISOR DISTRICT V

C. Burnette, 530 Beckham
Tyler 75701 AC 214-592-0863

LAW ENFORCEMENT SUPERVISOR DISTRICT VI

Jerry McRae, P. O. Box 513
Rusk 75785 AC 214-683-5081

ANDERSON COUNTY

Edgar D. Baker, Rt. 7, Box 309
Palestine 75801 AC 214-729-5014
Bert G. Cade, 205 Inwood Drive
Palestine 75801 AC 214-729-6403

ANGELINA COUNTY

John B. Weaver, District Supervisor
Box 266
Lufkin 75901 AC 713-632-1311
Jerry M. Herron, Box 266
Lufkin 75901 AC 713-824-2437
Walter Kirby, Box 266
Lufkin 75901 AC 713-634-3641

BOWIE COUNTY

Danny W. Clack, Box 3774
Wake Village 75501 AC 214-838-5756
Lawton A. Peacock, Box 66
DeKalb 75559 AC 214-667-2492

CAMP COUNTY

Jesse D. May, Box 303
Mt. Pleasant 75455 AC 214-572-5718

CASS COUNTY

O. E. Bruce, Box 885
Atlanta 75551 AC 214-796-2645

CHEROKEE COUNTY

Jerry McRae, District Supervisor
P. O. Box 513
Rusk 75785 AC 214-683-5081
Gerry L. Broadhead, Box 552
Rusk 75785 AC 214-683-5874
William R. Gilliam, Box 84
Rusk 75785 AC 214-683-5803

COLLIN COUNTY

James R. Dillon, Box 514
Wylie 75089 AC 214-442-3039
R. B. McReynolds, Rt. 3, New Hope
McKinney 75069 AC 214-542-4238

DALLAS COUNTY

Charles Hensley, District Supervisor
3727 Dilido, Suite 130
Dallas 75228 AC 214-328-5493
John M. Bruce, 3727 Dilido
Dallas 75228 AC 214-285-0680
James S. Riggins, 1706 Gloucester
Garland 75050 AC 214-272-9109

DELTA COUNTY

John L. Jackson, Box 425
Sulphur Springs 75482 AC 214-885-4233

FANNIN COUNTY

Carl E. Adams, Box 613
Bonham 75418 AC 214-467-2125

FRANKLIN COUNTY

Frank J. Ricketson, Box 565
Mt. Vernon 75457 AC 214-537-4560

FREESTONE COUNTY

James R. Goff, Rt. 2, Box 358
Fairfield 75840 AC 214-389-2950

GRAYSON COUNTY

Sammy D. Brown, Box 1371
Sherman 75090 AC 214-893-6087

Phillip M. Haley, Rt. 2, Box 256
Pottsboro 75076 AC 214-786-9798

GREGG COUNTY

William T. McCool, 1107 Baxley
Longview 75601 AC 214-759-3170

HARRISON COUNTY

William M. Heidelberg, 1058 Cedar Loop
Marshall 75670 AC 214-935-9323
Edgar C. Walker, Box 735
Marshall 75670 AC 214-938-5667

HENDERSON COUNTY

Mark A. Davis, Box 1542
Athens 75751 AC 214-675-5208
Harold D. Oates, 607 Valle Vista
Athens 75751 AC 214-675-1174

HOPKINS COUNTY

John L. Jackson, Box 425
Sulphur Springs 75482 AC 214-885-4233

HOUSTON COUNTY

Allen R. Hightower, 1314 Hooks
Crockett 75835 AC 713-544-8124
David L. Sinclair, 403 S. 10th, Apt. B
Crockett 75835 AC 713-544-8649

HUNT COUNTY

Glenn C. Mitchell, Box 708
Greenville 75401 AC 214-455-6606

JASPER COUNTY

Raymond A. Kosub, 306 W. Levielle, Apt. B
Kirbyville 75956 AC 713-423-3456
Billy F. Platt, Box 625
Jasper 75951 AC 713-384-2698

KAUFMAN COUNTY

Raymon L. Wood, Box 107
Kaufman 75142 AC 214-932-3379

LAMAR COUNTY

Troy A. Chapman Jr., Box 746
Paris 75460 AC 214-784-7678
C. H. Lawrence, 1431 East Sherman
Paris 75460 AC 214-785-2641

LEON COUNTY

James M. Clark, Box 61
Centerville 75833 AC 214-536-2269
Bill P. Waldrop, Box 511
Buffalo 75831 AC 713-322-5200

LIMESTONE COUNTY

Ivan W. Atewine, Box 538
Groesbeck 76642 AC 817-729-3635

MARION COUNTY

T. W. Belote, Box 209
Jefferson 75657 AC 214-665-2083

MORRIS COUNTY

Billy A. Dodd, Box 464
Daingerfield 75638 AC 214-645-3696

NACOGDOCHES COUNTY

Wayne L. Coffman, 823 Evelyn St.
Nacogdoches 75961 AC 713-564-1602
Tommy J. Smith, Box 605
Nacogdoches 75961 AC 713-564-7404

NAVARRO COUNTY

John I. Gerganess, Box 34
Corsicana 75110 AC 214-872-1271

NEWTON COUNTY

Jack H. Chancey, Box 672
Newton 75966 AC 713-379-4336
John R. Greenlee, Box 292
Newton 75966 AC 713-379-8313

PANOLA COUNTY

William A. Milling, Box 675
Carthage 75633 AC 214-693-3188
William J. Riggs, 207 S. Rawls Street
Carthage 75633 AC 214-693-6864

POLK COUNTY

Robert L. Hall, Box 1268
Livingston 77351 AC 713-327-7187
Jimmy K. Wood, Box 65
Livingston 77351 AC 713-327-4174

RAINS COUNTY

James M. Patterson, Box 385
Emory 75440 AC 214-473-2356

RED RIVER COUNTY

Wayne D. Chappell, 401 North Short St.
Clarksville 75426 AC 214-427-2104

ROBERTSON COUNTY

Raymond C. Nichols, 405 Easterwood
Hearne 77859 AC 713-279-5545
Harold G. Robinson, Box 177
Franklin 77856 AC 713-828-3610

ROCKWALL COUNTY

Edward G. Tarpley, Box 702
Rockwall 75087 AC 214-722-3954

RUSK COUNTY

Franklin D. Hudson, 112 S. Evenside
Henderson 75652 AC 214-657-6416

SABINE COUNTY

Gene M. DeLoach, Box 847
Hemphill 75948 AC 713-787-2449
Larry D. Pearce, Box 128
Hemphill 75948 AC 713-787-2517

SAN AUGUSTINE COUNTY

William B. Decker, Box 14
San Augustine 75972 AC 713-275-5574

SHELBY COUNTY

Robert D. Burrus, Rt. 6, Box 31
Center 75935 AC 713-598-2853
Michael D. Warren, 307 Travis Street
Center 75935 AC 713-598-7281

SMITH COUNTY

C. Burnette, District Supervisor
530 Beckham
Tyler 75701 AC 214-592-0863
David L. Pagel, Rt. 9, Box 83-Y
Tyler 75701 AC 214-597-4110
Sam L. Womack, Rt. 9, Box 11-C
Tyler 75701 AC 214-593-5180

TITUS COUNTY

Billy W. Daniel, District Supervisor
Box 1012
Mt. Pleasant 75455 AC 214-572-7966
Jesse D. May, Box 303
Mt. Pleasant 75455 AC 214-572-5718

TRINITY COUNTY

Emmett L. Grumbles, Box 596
Groveton 75845 AC 713-642-6911

TYLER COUNTY

Huey R. Hancock, 1110 Red Bud
Woodville 75979 AC 713-283-2041
Charles A. Westbrook, Box 171
Woodville 75957 AC 713-283-5131

UPSHUR COUNTY

Robert B. Jessee, Box 353
Gilmer 75644 AC 214-797-2811

VAN ZANDT COUNTY

A. C. Longino Jr., Box 67
Canton 75103 AC 214-567-2467

WOOD COUNTY

Carson L. Seago, Box 687
Quitman 75783 AC 214-763-4307

Region IV

LAW ENFORCEMENT DIRECTOR REGION IV

Carl Covert, Suite 205
International Plaza Building
12620 IH 45, North
Houston 77037 AC 713-443-0946

LAW ENFORCEMENT SUPERVISOR DISTRICT I

Jack Woodford, 3825 Old College Rd.
Bryan 77801 AC 713-846-0131

LAW ENFORCEMENT SUPERVISOR DISTRICT II

Ben Urban, 2106 North 11th
Beaumont 77703 AC 713-892-8666

LAW ENFORCEMENT SUPERVISOR DISTRICT III

Frank Dickerson, 1316 College Avenue
Houston 77587 AC 713-941-8926

LAW ENFORCEMENT SUPERVISOR DISTRICT IV

William C. Childress, 1702 E. Airline Road
Victoria 77901 AC 512-575-6306

LAW ENFORCEMENT SUPERVISOR DISTRICT V

Bobby Miles, 2313 Broadway
Galveston 77550 AC 713-762-0732

AUSTIN COUNTY

E. E. Hargett, P. O. Box 95
Bellville 77418 AC 713-865-3814

BASTROP COUNTY

T. Hergotz, Box 481
Bastrop 78602 AC 512-321-2584

BRAZORIA COUNTY

A. Anderson, 109 S. Mattson
West Columbia 77486 AC 713-345-3562
Preston Miculka, 1113 West Sidnor
Alvin 77511 AC 713-585-6297
James Middleton, P. O. Drawer M
Angleton 77515 AC 713-849-8983
David Perry, 115 Wisteria
Lake Jackson 75666 AC 713-297-2975

BRAZOS COUNTY

Jack Woodford, District Supervisor
3825 Old College Rd.
Bryan 77801 AC 713-846-0131
J. D. Robertson, 1222 W. 27th St.
Bryan 77801 AC 713-823-0749
Sammy R. DeStefano, 1209 Skrivaneck
Bryan 77801 AC 713-822-6335
Robert S. Evins, Bryan 77801
AC 713-846-4271

BURLESON COUNTY

Robert H. Wiederhold, Jr., P. O. Box 576
Caldwell 77836 AC 713-567-3121

CALDWELL COUNTY

Roger Haug, 1303 Woodlawn
Lockhart 78644 AC 512-398-3262

CALHOUN COUNTY

James Birmingham, Box 923
Port Lavaca 77979 AC 512-552-9439

D. B. Parker, Box 1135
Port Lavaca 77979 AC 512-552-3277
Arthur Lawrence, 1720 Leon
Port Lavaca 77979 AC 512-552-9640

CHAMBERS COUNTY

J. W. Broughton, Box 29
Anahuac 77514 AC 713-267-3415
Frank A. Kelso, Box CC
Anahuac 77514 AC 713-267-3522

COLORADO COUNTY

Leo Kohleffel, Rt. 2, Box 46
Columbus 78934 AC 713-732-2365
Sam E. Center, Box 803
Eagle Lake 77434 AC 713-234-3622

DeWITT COUNTY

B. J. Drehr, Box 747
Cuero 77954 AC 512-275-5132

FAYETTE COUNTY

L. Bennetsen, Rt. 2, Box 401
La Grange 78945 AC 713-249-3051

FORT BEND COUNTY

Marvin Buller, P. O. Box 236
Richmond 77469 AC 713-342-2429
James Johnson, P. O. Box 813
Richmond 77469 AC 713-232-6502

GALVESTON COUNTY

Bobby R. Miles, District Supervisor
2313 Broadway
Galveston 77550 AC 713-762-0732
A. G. Cook, P. O. Box 381
Seabrook 77586 AC 713-538-2180
Z. W. Spasic, 1906 Oleander
La Marque 77568 AC 713-938-0839
J. D. LeLeux, 268 Industrial
La Marque 77568 AC 713-938-0677
James Havel, 2313 Broadway
Galveston 77550 AC 713-762-0732
Mike Green, # 6 17th Avenue North
Texas City 77590 AC 713-948-0920
Donald Parker, Box 321
High Island 77623 AC 713-266-4171
Ralph Bishop, P. O. Box 291
High Island 77623 AC 713-266-3561

GONZALES COUNTY

G. Sachtleben, Box 777
Gonzales 78629 AC 512-672-6808
T. Morgan, Box 693
Gonzales 78629 AC 512-495-3382

GRIMES COUNTY

Robert Lys, Box 604
Navasota 77868 AC 713-825-3370

GUADALUPE COUNTY

Calvin Turner, Rt. 2, Box 177
Seguin 78155 AC 512-639-2252
H. D. Farley, Box 1073
Seguin 78155 AC 512-379-9223

HARDIN COUNTY

Gordon Hart, Box 937
Kountze 77625 AC 713-246-2167
Forrest A. Laughlin, 1440 Woodrow
Silsbee 77656 AC 713-385-7573

HARRIS COUNTY

Frank Dickerson, District Supervisor
12620 I-45, Suite 205
Houston 77037 AC 713-443-0946
R. E. Miller, 12620 I-45, Suite 205
Houston 77037 AC 713-443-0946
F. W. Lum, P. O. Box 343
Katy 77450 AC 713-371-2356
James Lorenz, P. O. Box 70
Humble 77338 AC 713-449-3993
Larry Meinkowsky, Rt. 1, 21600 Telge Road
Tomball 77375 AC 713-255-6721
Velton Williams, P. O. Box 796
Crosby 77532 AC 713-328-4357
Dennis Thomas, 1908 Utah
Baytown 77520 AC 713-427-8774
F. I. McGrath, P. O. Box 8
Seabrook 77586 AC 713-474-2811
Eugene Skeide, Jr., P. O. Box 8
Seabrook 77586 AC 713-474-2811

JACKSON COUNTY

C. D. Kornegay, Box 697
Edna 77957 AC 512-657-3009

JEFFERSON COUNTY

Benajah W. Urban, Sr., District Supervisor
2106 North 11th St.
Beaumont 77703 AC 713-892-8666
John Muery, 2106 North 11th St.
Beaumont 77703 AC 713-892-8666
Larry Williford, 2106 North 11th
Beaumont 77703 AC 713-892-8666
Bobby Joe Heitman, 2836 60th St. # 7
Port Arthur 77640 AC 713-736-1328

LAVACA COUNTY

E. Wolfsdorff, Rt. 1
Hallettsville 77964 AC 512-798-3054

LEE COUNTY

J. Clampt, P. O. Drawer 29
Giddings 78942 AC 713-542-2343

LIBERTY COUNTY

Jerry Chilton, 917 Woods Dr.
Liberty 77575 AC 713-336-3793
Timothy Moorman, 1208 Glendale
Dayton 77535 AC 713-258-5786

Tommy R. Johnson, Drawer E
Cleveland 77327 AC 713-592-6760

MADISON COUNTY

J. W. Worthington, P. O. Box 521
Madisonville 77864 AC 713-348-2913
Carl W. Matzke, Jr., Rt. 1, Box 170 B
Madisonville 77864 AC 713-348-6752

MATAGORDA COUNTY

B. C. Minson, 1611 1/2 4th St.
Bay City 77414 AC 713-245-8262
L. Salinas, 806 Perryman
Palacios 77465 AC 512-972-3546

MONTGOMERY COUNTY

Charles V. Kincannon, Sr., P. O. Box 258
Conroe 77301 AC 713-756-2147
Leonard A. Greaves, P. O. Box 293
Magnolia 77355 AC 713-259-0136

ORANGE COUNTY

Robert S. King, 3000 MacArthur # 134
Orange 77630 AC 712-883-2362
John Moon, 3635 West Park
Orange 77630 AC 713-886-3874

SAN JACINTO COUNTY

Billy J. Weaver, Box 93
Coldspring 77331 AC 713-653-2266

VICTORIA COUNTY

W. C. Childress, District Supervisor
1702 Airline Drive
Victoria 77901 AC 512-575-6306
E. Gammon, 1702 Airline
Victoria 77901 AC 512-575-6306
Bobby Hahn, 1702 Airline
Victoria 77901 AC 512-575-6306

WALKER COUNTY

Milton Kroesche, P. O. Box 811
Huntsville 77340 AC 713-295-5674
R. W. Clogston, Box 157
Riverside 77367 AC 713-594-2045

WALLER COUNTY

David A. Bird, P. O. Box 673
Hempstead 77445 AC 713-826-3376

WASHINGTON COUNTY

Marvin C. Wills, P. O. Box 945
Brenham 77833 AC 713-836-3490

WHARTON COUNTY

E. Wayne Harrington, Box 292
El Campo 77437 AC 713-543-9226

Region V

LAW ENFORCEMENT DIRECTOR REGION V

M. B. Mullinax, 715 S. Bronte
Rockport 78382 AC 512-729-2315

LAW ENFORCEMENT SUPERVISOR DISTRICT I

C. L. Burdett, 535 S. Main
Room 310
San Antonio 78204 AC 512-225-3295

LAW ENFORCEMENT SUPERVISOR DISTRICT II

C. D. Webb, 4426 S. Padre Island Drive
Corpus Christi 78401 AC 512-854-4303

LAW ENFORCEMENT SUPERVISOR DISTRICT III

Don W. Prince, 1903 S. Clossner
Edinburg 78539 AC 512-383-1151

LAW ENFORCEMENT SUPERVISOR DISTRICT IV

D. J. Caudle, 4004 McPherson
Laredo 78040 AC 512-724-3141

ARANSAS COUNTY

E. L. Billings, P. O. Box 665
Rockport 78382 AC 512-729-2315
Wade F. Callam, P. O. Box 1425
Rockport 78382 AC 512-729-2315
Gordon K. Eckert, P. O. Box 1557
Rockport 78382 AC 512-729-2315
James O. Jennings, P. O. Box 118
Rockport 78382 AC 512-729-2315

ATASCOSA COUNTY

Arthur McCall, P. O. Box 57
Pleasanton 78064 AC 512-569-3916

BANDERA COUNTY

Emil Krejci, P. O. Box 851
Bandera 78003 AC 512-589-2558

BEE COUNTY

Don V. Sachtleben, 504 S. Stephenson
Beeville 78102 AC 512-358-5318

BEXAR COUNTY

C. L. Burdett, District Supervisor
535 S. Main
San Antonio 78204 AC 512-225-3295
Glen Felps, 6618 Spring Brook
San Antonio 78249 AC 512-225-3295
Charles D. Koenig, 142 Forest Valley
San Antonio 78227 AC 512-225-3295
Bill Lynch, Sr., 329 Deborah
Converse 78109 AC 512-225-3295

Robert M. Moore, 4335 Sunnyvale
San Antonio 78217 AC 512-225-3295

BROOKS COUNTY

J. L. Cordell, P. O. Box 203
Falfurrias 78355 AC 512-325-2671

CAMERON COUNTY

R. M. Bennett, Rt. 1, Box 210-B
Harlingen 78550 AC 512-423-0656
Rojelio Gonzales, P. O. Box 3742
Brownsville 78520 AC 512-542-7113
Don L. Powell, Rt. 2, Box 81
San Benito 78586 AC 512-748-2808
W. R. Stewart, P. O. Box 491
Rio Hondo 78583 AC 512-748-2518
J. A. Walzel, P. O. Box 505
Los Fresnos 78566 AC 512-233-5045

COMAL COUNTY

James Scheele, 40 Bobwhite Lane
New Braunfels 78130 AC 512-625-6725

DIMMIT COUNTY

Michael Bradshaw, P. O. Box 643
Carrizo Springs 78834 AC 512-876-2380
Jim Pond, Route 1
Carrizo Springs 78834 AC 512-876-2795

DUVAL COUNTY

Robert Merritt, P. O. Box 477
Freer 78357 AC 512-394-7000

FRIO COUNTY

Billie Hoyle, Box 906
Pearsall 78061 AC 512-334-2392

GOLIAD COUNTY

Curtis L. Oswalt, P. O. Box 711
Goliad 77963 AC 512-645-3755

HIDALGO COUNTY

Don W. Prince, District Supervisor
1903 S. Clossner
Edinburg 78539 AC 512-383-1151
K. L. Baker, P. O. Box 466
Edinburg 78539 AC 512-383-3764
J. S. Maddux, 208 Iris
McAllen 78501 AC 512-682-7016

JIM HOGG COUNTY

N. L. Anthony, P. O. Box 415
Hebbornville 78361 AC 512-527-3035

JIM WELLS COUNTY

J. W. Murphey, Rt. 1, Box 3-E
Alice 78332 AC 512-664-7952
S. D. Woodmansee, P. O. Box 366
Orange Grove 78372 AC 512-384-2694

KARNES COUNTY

W. E. Kutac, 410 Hackberry
Kenedy 78119 AC 512-583-2972

KENEDY COUNTY

W. H. Gooch, 980 West Gem
Raymondville 78580 AC 512-689-2860
J. S. Scarborough, P. O. Box 1048
Raymondville 78580 AC 512-689-5225
W. M. McClendon, P. O. Box 810
Kingsville 78363 AC 512-595-1820
J. K. Richardson, P. O. Box 141
Riviera 78379 AC 512-296-3352
C. M. Shafer, 316 S. Pasadena
Kingsville 78363 AC 512-592-4848

KINNEY COUNTY

B. J. Lindeman, Box 495
Brackettville 78832 AC 512-563-2234

KLEBERG COUNTY

W. M. McClendon, P. O. Box 810
Kingsville 78363 AC 512-595-1820
J. K. Richardson, P. O. Box 141
Riviera 78379 AC 512-296-3352
C. M. Shafer, 316 Pasadena
Kingsville 78363 AC 512-592-4848

LA SALLE COUNTY

L. H. Griffin, P. O. Box 61
Cotulla 78014 AC 512-879-2739

LIVE OAK COUNTY

R. E. Thomas, P. O. Box 397
George West 78022 AC 512-449-8121

MAVERICK COUNTY

J. D. Monsees, Box 1231
Eagle Pass 78852 AC 512-773-2018

MCMULLEN COUNTY

J. E. Daughtrey, Box 52
Callinham 78007 AC 512-786-2997

MEDINA COUNTY

P. G. Gohmert, Box 534
Castroville 78009 AC 512-762-3327
August Timmerman, 2106 Avenue U
Hondo 78861 AC 512-426-2673
J. K. Wipff, Box 485
Hondo 78861 AC 512-426-2358

NUECES COUNTY

C. D. Webb, District Supervisor
4426 S. Padre Island Drive
Corpus Christi 78401 AC 512-854-4303
J. R. Beale, 3814 Brookside
Corpus Christi 78410 AC 512-854-4303
A. W. Hoskinson, 126 Sutherland
Portland 78374 AC 512-854-4303
R. F. Lawrence, 217 Oakridge
Corpus Christi 78418 AC 512-854-4303
K. R. Stewart, 5337 Bonham Dr.
Corpus Christi 78415 AC 512-854-4303

R. C. Whitehead, 3013 Jamaica St.
Corpus Christi 78418 AC 512-854-4303

REFUGIO COUNTY

W. B. Blackwell, P. O. Box 338
Tivoli 77990 AC 512-788-2934
D. W. Sellstrom, P. O. Box 651
Woodsboro 78393 AC 512-543-4189

SAN PATRICIO COUNTY

W. D. Blackburn, 726 S. Commercial
Aransas Pass 78336 AC 512-728-5755
G. W. Burney, P. O. Box 35
Mathis 78368 AC 512-547-3761
W. M. Hellums, P. O. Box 267
Sinton 78387 AC 512-364-4064
T. J. Upton, 603 Yoakum
Aransas Pass 78336 AC 512-758-2828

STARR COUNTY

A. L. Gonzales, P. O. Box 71
Rio Grande City 78582 AC 512-487-3874
Isidro Ybanez, P. O. Box 71
Rio Grande City 78582 AC 512-487-3543

UVALDE COUNTY

R. E. Custer, P. O. Box 1038
Uvalde 78801 AC 512-278-3231
Emil Seewald, P. O. Box 1921
Uvalde 78801 AC 512-278-3894

WEBB COUNTY

D. J. Caudle, District Supervisor
4004 McPherson
Laredo 78040 AC 512-724-3141
H. T. Haugen, 3020 Lyon
Laredo 78040 AC 512-724-3141
Roldan Montalvo, Jr., Casa Norte Tr. Pk.
Box 115
Laredo 78040 AC 512-724-3141
J. W. Reece, Rt. 1, Box 265R
Laredo 78040 AC 512-724-3141

WILLACY COUNTY

W. H. Gooch, 980 West Gem
Raymondville 78580 AC 512-689-2860
J. S. Scarborough, P. O. Box 1048
Raymondville 78580 AC 512-689-5225

WILSON COUNTY

R. J. Holstein, 1708 Fifth Street
Floresville 78114 AC 512-393-2185

ZAPATA COUNTY

J. D. Gorman, P. O. Box 192
Zapata 78076 AC 512-765-4229

ZAVALA COUNTY

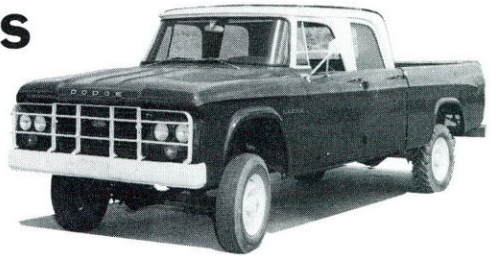
Rep F. Moore, P. O. Box 663
Carrizo Springs 78834 AC 512-876-5572

4 x 4's

(4-wheel drive)

Latest Surplus Release

**Reconditioned
Guaranteed**



Dodge Crew Cab - 6 passenger - 4 door Pickup
Chevrolet 1/2 ton Pickup-Custom hunting seat
Jeep Wagoneer Station Wagon - Air Conditioned
Datsun Utility Commando - removable steel cab
Willys Mule - 4 wheel steer, Posi-Trac. Goes anywhere!
Army Jeeps - We may have a few!
Jeep Accessories: Lockout hubs, Tow Bars, Winches, Gas Cans, Can
Brackets, Major jeep parts. Excellent quality, priced right, call us now!

NO MORE FLATS!

Flatproof your jeep tire for as little as \$2.50

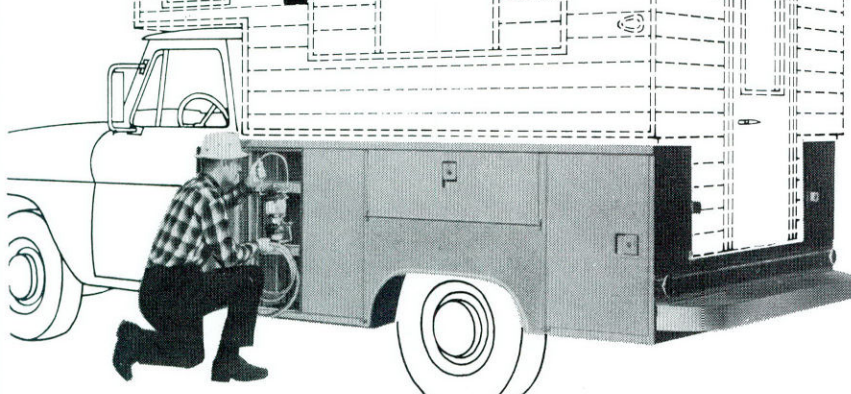
Proven - absolutely guaranteed - Dealer inquiries invited.

BRAUBACH EQUIPMENT CO.

P.O. Box 7390 San Antonio, Texas 78207 1620 W. Poplar

Phone 512 + 736-1659

Camp Mates.

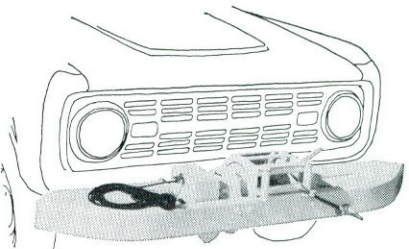


The Koenig Kamp-Stor Body gives you room to store your gear outside the camper so there's room for you inside. No unpacking or moving equipment around just to make room for yourself. And when you stop for the night, you know exactly where everything is. Stowed away securely in one of the individual compartments. Each compartment is weather resistant and locks

securely. Store food, tents, stools, boat motors, fuel or whatever you want to take. **For any standard-sized camper.**



Koenig helps you see America.



The Koenig Electric Winch allows you to go off the road where the action is. 8,000 lbs. of dependable pulling power will enable you to cross a stream, climb a hill, or winch your vehicle out when it bogs down. Now, go where you want to go. **Models for two or four-wheel drive vehicles.**

Please send me literature on:

- Kamp-Stor
- Electric Winch

Name _____

Firm _____

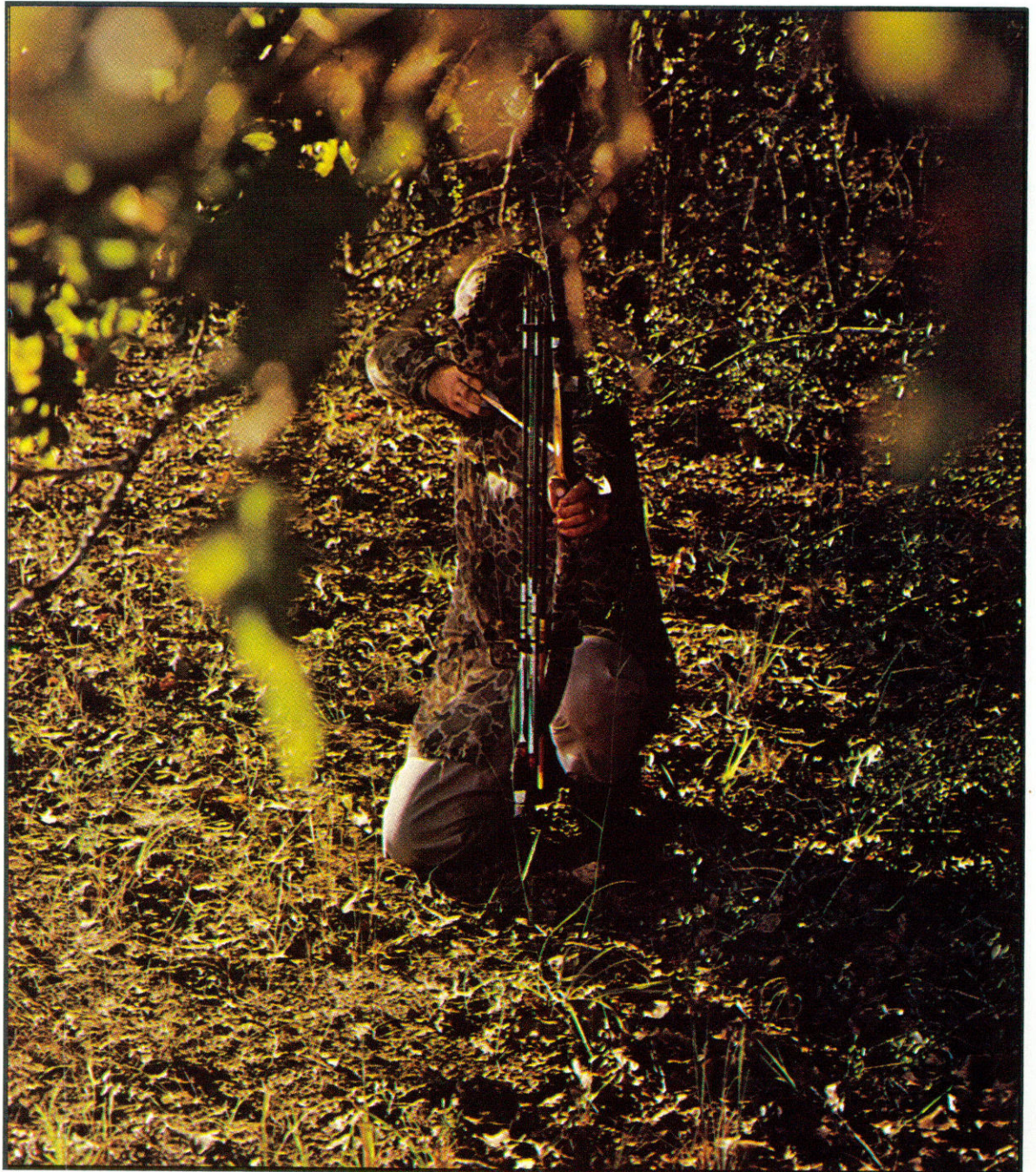
Address _____

City _____ State _____ Zip _____

Koenig Truck Equipment
P.O. Box 7726, Dept. TP-11 Houston, Texas 77007

Bowhunters — Be Prepared!

Article and photographs by Ed Dutch



BOWHUNTING is only for those sportsmen who are willing to pay the price.

I'm talking about the time, interest and dedication that it takes to become a skilled archer and knowledgeable hunter, and not the price of a new bow with six matched hunting arrows, a tube of camouflage cream and other accessories.

Each year during September, which is the month preceding the opening of the archery deer season in most Texas counties, sporting goods stores and other businesses practically sell out their archery supply inventories to growing numbers of potential bowhunters. These "outdoorsmen" have realized that by using a bow, they can extend their deer hunting season by as much as a month. Most, however, don't fully realize what bowhunting requires in skill and stamina.

After shooting a few arrows into a couple of bales of hay, these hunters head out on opening day with visions of killing their first deer. If they are fortunate enough to see a deer, their first reaction is to let the arrows fly.

Then if by some chance an arrow hits the deer, they expect the animal to fall dead. In most instances, the animal runs off never to be seen again except through the eyes of either a carrion eater or a disgusted landowner. The hunter returns to camp or home with his story and plans are made for another hunt, if he can find another place.

This type of bowhunter, if you can even call him one, has done three things. First he added to the bad reputation that bowhunting has as a cruel sport, which actually came about because of novice hunters such as himself. He also gave himself this reputation. Finally, there is a dead or wounded animal which probably will die without providing any benefit to anyone except possibly a predator.

Bowhunting is extremely difficult and facts can prove it. Departmental management area hunts in the fall of 1972 provided some interesting information.

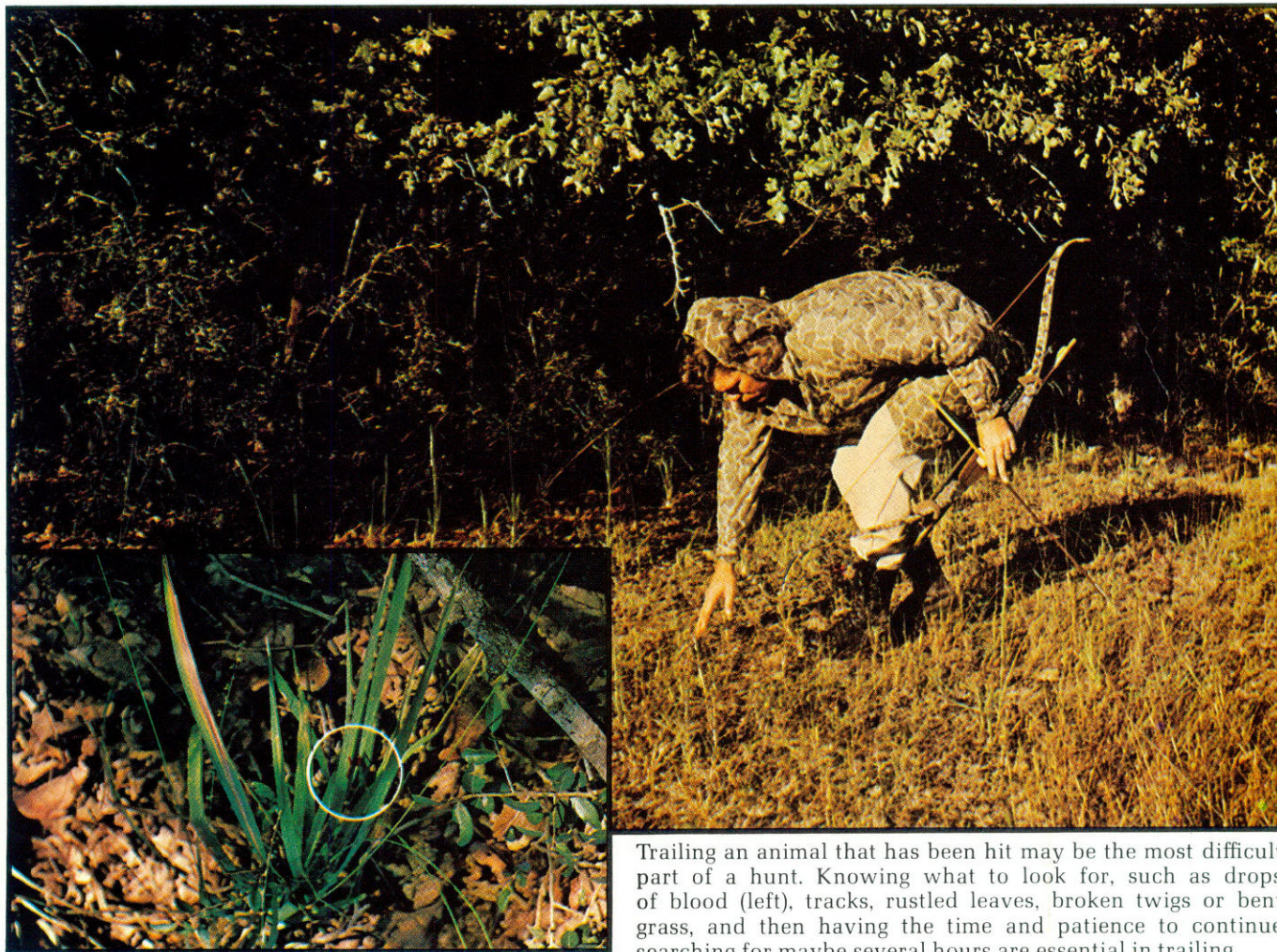
Bowhunters spent 2,001 man/hours on the Kerr Management Area and managed to kill only four deer. Other

management area reports showed that 191 hunters on the Chaparral Management Area and 60 hunters on the Stephen F. Austin Management Area did not kill a single deer. Engeling Management Area hunters succeeded in killing 16 deer but only one was an antlered buck. That is a total of 624 bowhunters who killed 20 deer for a 3.2 percent hunter success, or only one hunter in every 32 killed a deer.

It is also interesting to note that on the Kerr and Chaparral areas a total of 331 hunters shot 206 arrows at 188 deer. Of these, only four killed deer. But also, only three deer were reported to have been hit and not recovered on the Chaparral area. That's an awful lot of arrows stuck in trees and the ground.

Many factors are involved in this unbelievably low hunter success percentage such as not being familiar with the area or not knowing where the deer were, but in comparison with the same factors, hunters during the rifle season harvested 404 deer on these same areas. That's quite a drastic increase.

Hopefully, these figures are not dis-



Trailing an animal that has been hit may be the most difficult part of a hunt. Knowing what to look for, such as drops of blood (left), tracks, rustled leaves, broken twigs or bent grass, and then having the time and patience to continue searching for maybe several hours are essential in trailing.

couraging for bowhunters, but show that intense preparation, learning and practice are essential to become a skilled and successful bowhunter and that even good bowhunters aren't always successful. The following are only a few suggestions that might help you. In addition, read as much as possible, talk to people who know bowhunting, study the area you plan to hunt and, most importantly, get out on the field practice range and release a few thousand arrows before you go into the field.

1. Don't shoot at any animal further than 30 yards.

2. Restrict your shots to a standing or walking animal.

3. Avoid head-on shots because the animal might jump as the string "twangs."

4. Pick a small spot to shoot at instead of just pointing at the animal.

5. Know where to shoot for a quick and clean kill.

6. Remain motionless after shooting and try to tell where the hit was made.

7. If the animal runs off, try to find the arrow to tell where the hit was made (hair and blood color are indicators).

8. Leg hits should be followed immediately to keep the animal moving and the wound open and bleeding.

9. If hit is made anywhere other than the chest cavity, wait as long as is reasonable before trailing.

10. Before starting to track a deer, mark areas where you released and animal stood.

11. Learn the signs left by a wounded animal — blood drops or smears, tracks,

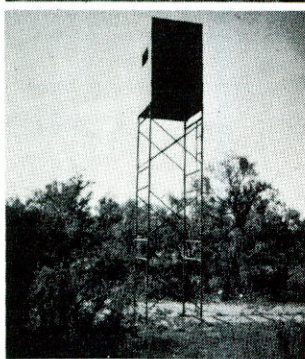
broken twigs or branches and rustled leaves.

12. Don't give up until you can thoroughly convince yourself that there is nothing left to do.

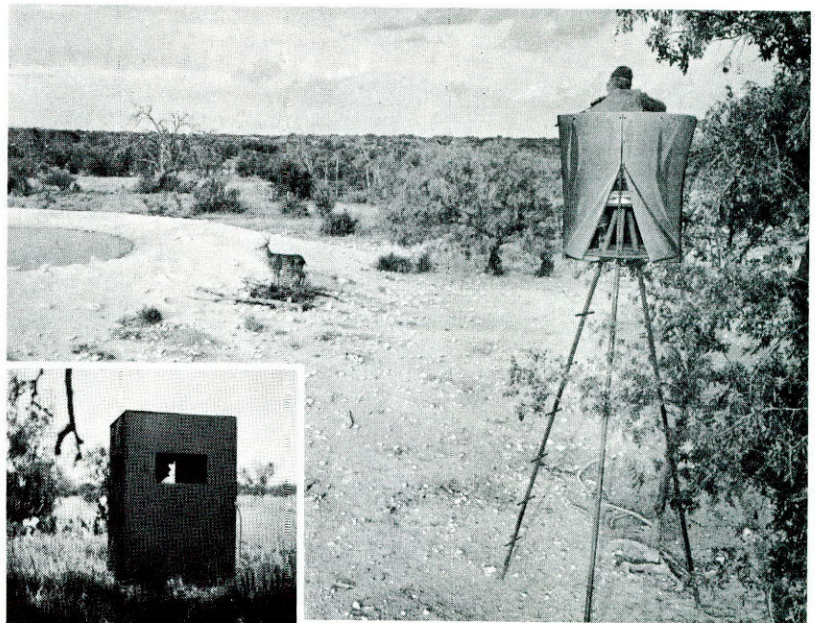
Besides these few things, you must be both physically and mentally prepared for any situation that could arise. Your equipment needs to be in perfect shape with razor-sharp arrows and any additional accessories that you prefer. Most important, you need to be confident and the only way to achieve that is to continually practice and go into the field to acquaint yourself with the many shots that might need to be made to cleanly kill an animal.

Its only for those who are willing to work at it, and I personally plan to work at it and continue to hunt so I'll see you on the practice range. **

PORTABLE HUNTER'S STAND AND BLINDS



NEW!
**Portable
Hunter's
Stand**



NEW HUNTER'S BOW STAND. 10 foot stand can be set up in two minutes. Weighs less than 40 lbs. \$59.00.

Hunter's **NEW ALL WEATHER BLINDS** on 10 foot and 15 foot scaffold type tower. One man can set up in about one hour's time.

Blind (4'x4'x6' 3") \$95.00
With 10 foot tower \$155.00
With 15 foot tower \$185.00

NEW "PORTABLE BLIND"
Light weight total 70 lbs. Can be assembled in 5 minutes
Dimensions — 4'x4' x 6' 3"
\$105.00 F.O.B. San Angelo, Texas

PORTABLE HUNTER'S STAND for the discriminating sportsman who wants greater hunting success as well as comfort, pleasure and safety. Seventeen years of proven success.

Tubular steel construction with full 360° bannister gun rest for perfect shots. Full view of game offers selection before killing. No odor when above. Excellent for hanging game while cleaning. Stand is light and sturdy. Can be assembled or taken down in three minutes for portability from one location to another.

Other uses: varmint calling, photography, wildlife observation, viewing and judging sporting events.

10 ft. model with Fiberglass Swivel Seat as shown \$79.50, 12 ft. \$87.50, 15 ft. \$97.50. Other models and seats available. Canvas Windbreaker for weather protection, \$14.95.

All prices f.o.b. plus 5% sales tax.

For more information write or call for free brochure.

**HUNTER'S
EQUIPMENT MFG. CO.**

P. O. Box 5254
PHONE: 653-5262 or 949-6459
SAN ANGELO, TEXAS 76901

PHOTO AND ART CREDITS

Front and Back Cover—Martin T. Fulfer; Nikon F, 400mm Leitz Telyt; Kodachrome X.

Inside front—Reagan Bradshaw; Nikon F, 50mm Nikkor; Kodachrome X.

Page 2—Ed Dutch; Nikon F2, 28mm Nikkor; Kodachrome X.

Pages 3-4 — Dutch; Nikon F2, 400mm Leitz Telyt; Ektachrome X.

Page 5 (top)—Robert C. White; Cannon FTB, 400mm; Kodachrome X.—(bottom)—Dutch; Nikon F2, 80-200mm zoom Nikkor; Ektachrome X.

Page 6—Leroy Williamson; Mamiya C-33, 80mm Sekor; Kodachrome X.

Page 8—Fulfer; Nikon F, 560mm Leitz Telyt; Kodachrome X.

Page 12—Fulfer; Nikon F, 560mm Leitz Telyt; Kodachrome X.

Pages 20-21—Dutch; Nikkormat, 50mm Nikkor; Kodachrome X.

Pages 24-25—Bill Reaves; Nikon F, 55mm micro Nikkor with strobe; Ektachrome X.

Page 26 (right)—Reaves; Nikon F, 28mm Nikkor; Ektachrome X.—(left)—Robert Colura; Besseler Topcon, 58mm; Kodachrome II.

Pages 30-31—(Javelina) E. P. Had- don; Technical information not available.—(Raccoon) Leonard Lee Rue III; T.I.N.A.—(Nutria) Fulfer; Nikon F, 400mm Leitz Telyt; from Kodachrome X.—(Armadillo) Neal Cook; Nikon F, 400mm Leitz Telyt; from Kodachrome X.—(Owl) Leonard Lee Rue III; T.I.N.A.—(Heron) John Suhrstedt; Nikon F, 300mm Nikkor; from Ektachrome X.—(Ibis) Leonard Lee Rue IV; T.I.N.A.—(All skulls) Reaves; Nikon F2, 55mm micro Nikkor; Plus-X.

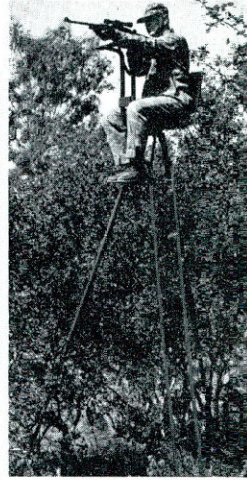
Inside back—Henry Compton; colored ink, pencil and gouache on illustration board.



TEXAS HUNTER®

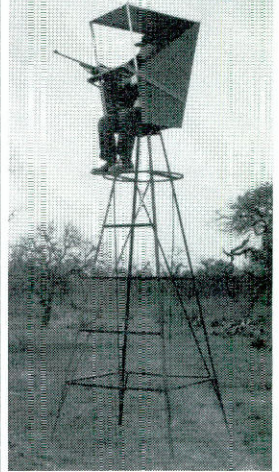
For Safety and Comfort!

FOR THE HUNTER ON THE MOVE



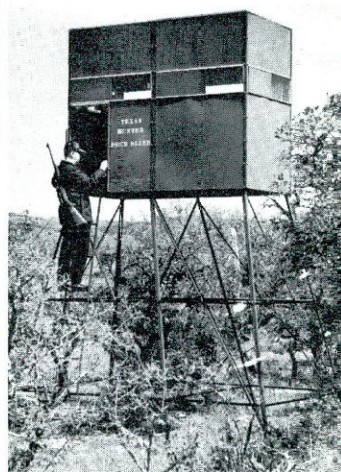
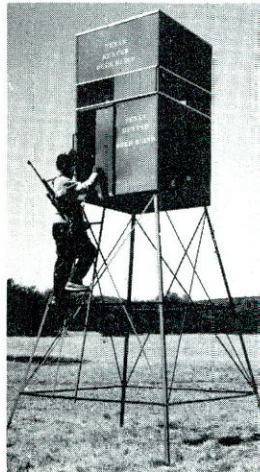
THE RIGID LIGHTWEIGHT TRIPOD STAND, allows the hunter to move from one location to another with ease. The stand is fabricated of aluminum with handle for easy carrying. The seat is fabricated of aluminum and wood with gun rest and silent 360 degree swivel. Stand is shipped assembled, the seat knocked down. Complete on 10' stand 44 lbs. \$89.00.

SWIVEL HIGH CHAIR



Weather & Sun protected, with 360 degree turn seat. Aluminum framework. Side arm rests. Front safety bar provides gun rest. All steel stand, wide base spread for safety. Shipped knocked down.

On 10' stand, \$89.00
On 15' stand, \$125.00



Warm, Dry ENCLOSED DEER BLINDS

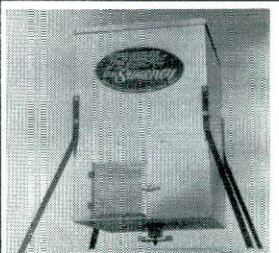
feature rigid steel frame construction, galvanized metal roof, 1/4" tempered masonite sides and 3/4" plywood floor. Steel ladder to free-sliding door and safety hand-bar at left side allows easy entrance and exit. Improved shooting ports on all four sides provide complete visibility. Bypassing glass sections and panels are in divided channels of non-warp, extruded aluminum. Inside height of both blinds 6'3". Blinds may be used on ground or on Texas Hunter's portable, rugged all-steel towers. Shipped knocked down.

| SINGLE BLIND 4' x 4' | | SIAMESE BLIND 4' x 8' | |
|----------------------|----------|-----------------------|----------|
| Without Tower | \$ 98.00 | Without Tower | \$179.00 |
| on 10' Tower | \$145.00 | on 10' Tower | \$260.00 |
| on 15' Tower | \$192.00 | on 15' Tower | \$345.00 |
| on 20' Tower | \$258.00 | | |



SWIVEL ARM CHAIR

Full-turning aluminum and wood chair is extra strong & roomy with proper tilt for comfort. Designed for use in enclosed blinds. \$16



Automatic Feeder \$166

- Prices FOB San Antonio, plus 5% sales tax. • Discount on quantity purchases.
- Special units designed and fabricated on request.



BRADEN WIRE & METAL PRODUCTS, INC.

1310 West Laurel St. 512-734-5189 P.O. Box 1067 San Antonio, Texas 78201





Hatchery Redfish

Many problems still must be solved.

by Robert L. Colura Coastal Fisheries Biologist

ANGLERS eagerly await the filling of a new lake because they know that for a few years it will provide fantastic fishing, but then something happens and fishing declines.

Heavily fished native sportfish such as black bass are unable to utilize properly the rough and large forage species such as carp, buffalo, suckers and gizzard shad, which soon overpopulate the lake.

One solution to this problem is the introduction of large euryhaline fish (ones able to live in fresh or saltwater) which will not only feed on these abundant rough and forage species, but also will provide fishing action for the angler. Experiments introducing striped bass into Texas waters have proved so successful that Texas Parks and Wildlife Department biologists began considering other species such as redfish for experimental introduction.

With their voracious appetite, large size and ability to adapt to fresh water, redfish fit the guidelines used for selecting a marine fish for fresh water introduction. In the past, department biologists released small numbers of redfish in freshwater impoundments, and these experiments proved promising. But the establishment of a species in new waters requires large numbers of fish which can be acquired only by spawning the fish in a hatchery.

Prior to 1970, biologists knew very little about redfish except that they mature in four years at a weight of about 12 pounds and spawn in the Gulf during the fall. To obtain additional information on the spawning habits of redfish along the Texas coast for future hatchery work, a study was started in 1970 which revealed that most spawning occurs after September.

Attempts to spawn redfish began in 1972 when department personnel traveled as far as North Carolina seeking ripe redfish for the project. Biologists, however, captured most of the fish in Texas waters with nets or hook and line and some were obtained from commercial and sport fishermen. The redfish were transported then to the Marine Fisheries Research Station near Palacios on Matagorda Bay, and most fish survived transporting. But keeping them alive long enough to spawn proved difficult.

Some loss occurred because handling the large redfish knocked off scales. This caused bacterial and fungal infections which spread over their bodies, eventually killing them. Extra care during handling plus treatment with antibiotics reduced this problem.

Another problem encountered involved excessive expansion of the fish's swim bladder. A fish uses its swim bladder as a float to maintain its position in the water. In saltwater, the swim bladder occupies approximately five percent of the fish's body volume. If a fish swims to a greater depth, the water pressure decreases the volume of the swim bladder causing the fish to sink. The fish compensates for this decrease and maintains its equilibrium by taking oxygen and carbon dioxide from its bloodstream to increase the pressure and thus the volume of its swim bladder. When the fish is rapidly brought to the surface, it is unable to equalize the pressure in its swim bladder as rapidly as the water pressure surrounding it decreases. The bladder expands and presses against internal organs, usually resulting in death.

Although this problem was expected in fish caught in deep water, it also

One of the many problems encountered was in the handling of the redfish. Scales were damaged when biologists worked with the large fish which made the fish susceptible to bacterial and fungal infections such as on the fish shown below. Treatment with antibodies and extra care in handling reduced this loss.



Robert Colura



Bill Reaves

occurred in shallow-water fish. After losing a number of fish because of swim bladder expansion, researchers discovered that a hypodermic needle could be inserted through the body wall into the swim bladder, allowing the escape of excess gases. After development of this procedure, no more fish were lost from bladder expansion.

By the time biologists learned how to return healthy fish to the laboratory, the spawning season had ended. Fortunately, problems in capturing and returning healthy fish to the laboratory had been anticipated early in the program, and a second approach to spawning redfish had already been initiated.

In 1967 young redfish several inches long were captured and stocked in a freshwater pond at the Olmito State Fish Hatchery near Brownsville. Four years later biologists transported 23 of the fish from Olmito to the Marine Fisheries Research Station to determine if they would spawn. The redfish were placed in a saltwater pond with a second group of 31 redfish that had been held at the research station since 1969. This experiment proved success-

ful when 15 mature males and six mature female redfish were taken from the pond to the laboratory in the fall of 1972.

Most important, none of these mature fish exceeded 10 pounds. The pond environment stunted the fish's growth making them easier to handle during spawning experiments.

To determine if the mature pond-reared females were near spawning, a plastic tube was inserted into their oviducts. By applying a slight suction to the free end of the tube, eggs were drawn from the females and examined under a microscope. Redfish approach spawning when the majority of the eggs are approximately 0.8mm in diameter and have a granular, opaque appearance. Three fish were thought to be several weeks away from spawning and were released into the pond for further growth. The remaining three females exhibited eggs approaching maturity, and along with several ripe males were taken to the laboratory for spawning experiments.

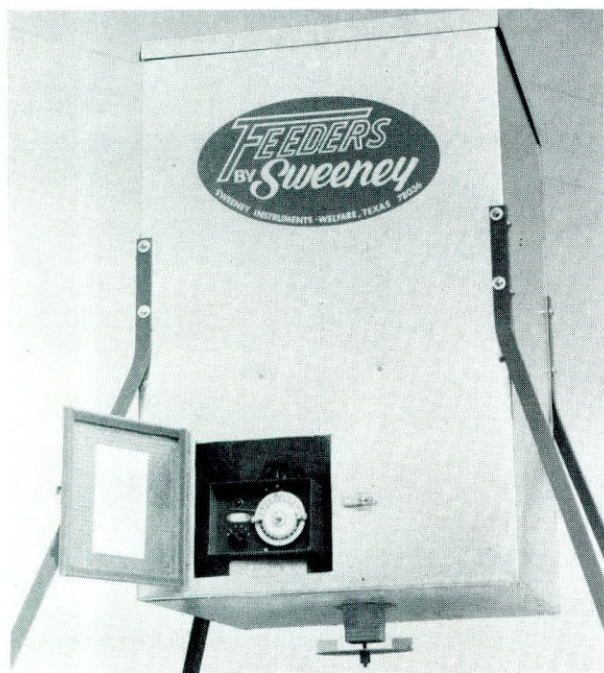
In the laboratory the females were injected with a hormone, Human Chorionic Gonadotropin, used in

spawning other marine fish. One was then released into a pond with a ripe male to determine if the fish would spawn without further aid; no larval fish were found.

Egg samples were taken periodically from the two remaining females. As spawning approaches, the eggs begin to clear until they are totally transparent. The eggs of both fish began to clear, but the egg development of one stopped just short of spawning. The other fish spawned, producing several hundred buoyant eggs which were fertilized and placed in a hatching jar. Several larvae hatched but did not survive. Unfortunately, no other mature redfish were found, forcing an end to the 1972 spawning study.

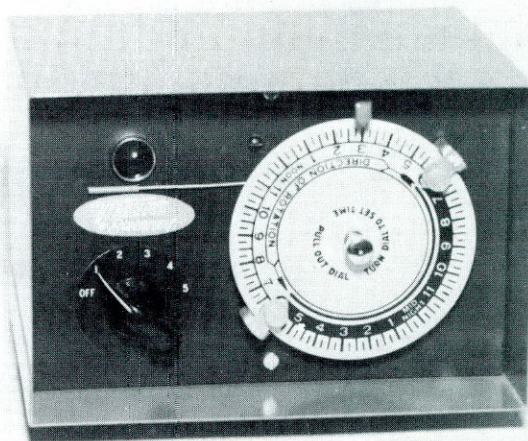
Despite the numerous problems encountered, the experiment proved that redfish can be spawned in captivity. These studies also developed techniques for capturing and returning healthy adult redfish to the laboratory. With this knowledge, biologists approach the 1973 spawning season with hopes that hatchery-produced redfish will soon be swimming in Texas lakes. **

AUTOMATIC GAME FEEDERS



MODEL DF-1

It's square—not round like a barrel—because it is designed and fabricated for one specific purpose. Model DF-1 holds 300 pounds of corn and stands on four legs. Constructed of heavy gauge galvanized steel. Lockable door to controls and battery. Feed the amount you want and when you want. DF-1 comes complete with 12-volt dry battery and the DFT-1 Automatic Timer. Extension pipe legs are not included.



**AUTOMATIC TIMER
MODEL DFT-1 (Patented)**

Hundreds of feeders already in the field do not function properly because of inefficient and unreliable timing mechanisms. The DFT-1 Automatic Timer can rejuvenate these feeders and make them dependable, easily operable units. Jeweled 24-hour clock movement. Electronic circuitry for precise feeding cycles. Up to twenty operations per day. No flashlight batteries or photo cells. Twelve volt D.C. Automatic or manual operation. Simple to program. By far the finest battery powered timer made.

**—ALSO AVAILABLE
DFI-A Deluxe Feeder
750 Pound Model Feeder
DFK-1 Feeder Kit
Extension Legs for Feeders**

WHERE TO BUY

BRADEN WIRE & METAL PRODUCTS
1310 W. Laurel
San Antonio, Texas

CLYDE COX, JR.
Pearsall, Texas

CHENAULT'S
Junction, Texas

THE DANDELION
700 N. Walker St.
Breckenridge, Texas

SAMMY DEVELLEIR
Route 1, Box 493
Winnie, Texas

DONOP FEED STORE
P.O. Box 407
Mason, Texas

DAVIS HARDWARE
317 Congress
Austin, Texas

M. J. DENN & SON
Bay City, Texas

EDEN'S IMPLEMENT CO.
Center Point, Texas

FOXWORTH-GALBRAITH LUMBER CO.
Kerrville, Texas

JACK'S MARINE SERVICE
401 Highway 35 By-Pass
Port Lavaca, Texas

JOHNNY'S FEED STORE
Boerne, Texas

KATY SALES & SUPPLY
5811 Highway Blvd.
Katy, Texas

LANGFORD'S
Bandera, Texas

LINDNER RANCH SUPPLY, INC.
Comfort, Texas

LANDA GARDEN CENTER
New Braunfels, Texas

MATHIS SALES CORP.
Interstate 37
Mathis, Texas

E. L. NIXON & SON
Fredericksburg, Texas

SA-SO INC.
1135 108th St.
Grand Prairie, Texas

SWEENEY CLOCK CO.
315 Brooklyn
San Antonio, Texas

TEXOTIC WILDLIFE
P.O. Box 27625
Houston, Texas

THE BLANCO COUNTY SUPPLY CO.
Johnson City, Texas

TEXAS FARM STORE
236 E. Nopal
Uvalde, Texas

UTOPIA GARAGE
Utopia, Texas

WOODY'S BOAT BASIN
P.O. Box 656
Port Aransas, Texas

WILEY & SONS
Route 1, Box 86
Wills Point, Texas

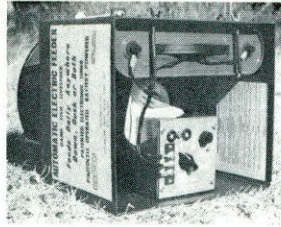
If no dealer in your area contact factory

Free Brochure
SWEENEY ENTERPRISES, Inc.
ROUTE 2, BOX 145G
BOERNE, TEXAS 78006
(512) 537-4244



BASIC FEEDER

Pipe Legs



AUTOMATIC ELECTRIC FEEDERS for GAME • FISH • LIVESTOCK



Feeder Kit

Feeds daily anywhere at Dawn or Dusk or Both. Patented electronic timer, photocell operated, battery-powered. Feeds at optimum times regardless of the seasons for greatest effectiveness and feeding efficiency. Adjustable dispensing rate and time. Uses the heavier, longer lasting and less expensive 6 volt battery, and permanently lubricated motors. 110 volt A-C powered models also available. All equipment now fully guaranteed for 3 years.

| | Weight | Price |
|---|----------|----------|
| Basic Feeder — Model PTF (Includes battery) | 85 lbs. | \$147.50 |
| Feeder Kit — Model PTFK (Includes battery, universal funnel for 5 gal. cans and larger, complete except for feed container) | 20 lbs. | \$ 94.50 |
| Pipe Leg Suspension — Model PLS (As shown) | 38 lbs. | \$ 12.50 |
| Tripod-Winch Suspension — Model TWS (Not shown) | 140 lbs. | \$ 79.50 |

Send for free brochure of complete line.
SPECIALTY PRODUCTS COMPANY

5911 Bullard Drive, Austin, Texas 78731 Phone 512/454-3355
 Also distributed from 1218 Dryden Lane, San Antonio, Texas 78213 (512) 341-3204

Buy Decoys Direct

Duck and Goose decoys.
 Buy direct and save.
 Send for free catalogue to:
Decoys, Rt. 11, Box 229B
Houston, Texas 77050

EXOTIC GAME HUNTING IN TEXAS

Fallow, Sika, Axis, Whitetail deer, Antelope, Aoudad, Mouflon, Corsican Rams, Wild Turkey.

PRIOR BROS. RANCH

Box 401 Ingram, Texas 78025
 A/C 512-367-5324

"LIV"

Fish Food Concentrate.
 For Trout, Catfish, Bass. Other species. Exceptional for newly hatched fish. Write for details and prices.

FARM & WILDLIFE PRODUCTS INC.

P.O. Box 6231 Elmwood Park, Station
 Omaha, Nebraska, 68106



"CATFISH FARMING HANDBOOK"

by Jerry Mack

This valuable reference book covers Production Financing, Disease Control, Marketing and all other phases of this dynamic new agri-business industry.

\$12.95 hardcover postpaid

AGRIBOOKS

Box 5001 - T

San Angelo, Texas 76901

JEEP PARTS

Military and Civilian

New — Used — Rebuilt

We carry a large inventory of parts

MIDWAY SUPPLY COMPANY

P.O. Box 427, Irving, Texas 75060

Phone (214) 256-1532



"NO GAME NO PAY"

BLACK BUCK ANTELOPE

SAFARI STYLE HUNTING

- OVER 125 SQUARE MILES
- GAME FROM FOUR CONTINENTS
- EXCELLENT MEALS, LODGING
- CUSTOMER ENTERTAINMENT PROGRAM

CALL OR WRITE TODAY



Y.O. RANCH

BOX 220, MOUNTAIN HOME, TEXAS 78058

Telephone (512) 654-2076



EXOTIC GAME FOR STOCKING

and Trophy Hunting

Exotic breeds from Asia, Africa and Japan available for Fall or Winter delivery in the Southwest. Guaranteed top quality game, all breeds well adapted to Texas short grass ranges. Hunting: 10 guaranteed trophies this Fall. Write or call for particulars.

AXIS DEER FALLOW DEER EUROPEAN RED STAG BLACKBUCK ANTELOPE
 MOUFLON SHEEP JAPANESE SIKA DEER AODAD SHEEP SAMBAR

THESE EXOTIC BREEDS ALSO AVAILABLE ON SPECIAL ORDER

SITATUNGA • ELAND • HORNED SHEEP • ELK
 CORSICAN RAMS • BARASINGHA

THE WORLD FAMOUS

PATIO GAME RANCH

P. O. BOX 21100 • SAN ANTONIO, TEXAS 78221 • 512 WA 3-3411

HUNTERS

The ONLY Deer Stand For You!



Stands 12 Feet High
Swivels 360°
Weighs about 30 lbs.
EASY TO CARRY
Sets up quick & quiet
**ALL STEEL
CONSTRUCTION**
ONLY 59⁹⁵

C. E. BLACKWELL

NEW BRAUNFELS, TEXAS

In Austin, Contact CHARLIE STARK, Phone 836-8983

Contact
942 Allen St. • 625-7816
Home phone 625-0149



The FEED-ALL

Game-proof, 5-gallon feeder dispenses dry grain and pellets. Self operated by breeze; only one moving part. Simple control cone adjusts opening to dispense and provide positive control of flow of various types of feed. Rust-resistant steel construction. \$6.95 prepaid plus 5% tax.
PAT. #2,972,334

See your dealer or order direct from:

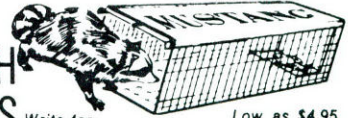
P. O. Box 5087



BRADEN WIRE & METAL PRODUCTS, INC.

San Antonio, Texas 78201

LIVE-CATCH TRAPS



Write for FREE CATALOG

Low as \$4.95

Traps without injury squirrels, chipmunks, rabbits, mink, fox, raccoons, stray animals, pets, etc. Sizes for every need. Also traps for fish, sparrows, pigeons, turtles, quail, etc. Save on our low factory prices. Send no money. Write for free catalog and trapping secrets. MUSTANG MFG. CO., Dept. N 37 Box 10880, Houston, Tex. 77018

ELECTRONIC GAME FEEDER

Build your own game feeder with our pre-assembled electronic Motor/Control. Control operates once or twice a day with adjustable run time. Motor/Control and construction plans only—\$39.50 plus tax, post. Brochure available.

JACKSON MANUFACTURING

P.O. Box 1216,
LaPorte, Texas 77571

LLANO COUNTY LEASES

Excellent hunting available for season, week, or weekend. Individual pastures with cabins and/or campsites for each group. Deer, Turkey, Hogs. Reservations accepted now at reasonable prices.

BEN A. WALLIS & SON
LLANO, TEXAS 78643
(915) 247-5207

BIRD DOGS

Chandler Kennels, one of the largest in the business offers to you for your selection over 100 top trained POINTERS, SETTERS & BRITTANIES. These dogs are all registered out of top blood lines. We guarantee all our dogs as advertised to suit you, the Hunter. Also puppies & started dogs.

Call, write, or come by:

CHANDLER KENNELS
P.O. Box 1011, La Porte, Tex.
Call: Area Code 713-GR 1-4023
Hollen Chandler—Owner

NOW Set or Take up Trotline in 5 Minutes!

BOOKLET ON HOW TO CATCH 'EM 20 PAGES



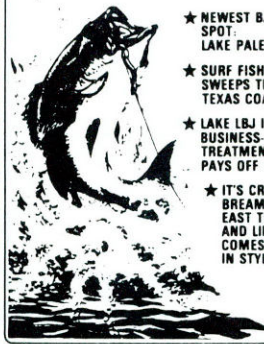
"TROTLINE FISHING SECRETS"... written by experts. How, when, where to set trotline, illustrated. Baits laws, tackle. Send 25¢ for mailing cost.

LAWRENZ MFG CO., DEPT T, P.O. BOX 3837, DALLAS, TEX 75208

BIG BEND COUNTRY OF TEXAS

Guided hunt on 7,360 acres for Mouflon and Corsican trophy rams. 3-day hunt, guaranteed kill. Jeeps & Lodge included. Air strip. Javelina in season. Ram \$200, Javelina \$100. Also breeding stock available. 35 miles west of Sanderson, Texas. Write to H.O.H. Ranch, 2412 N. Interreg. Hwy., Austin, Texas 78703. Call person-to-person Harry Montandon 512-476-4838.

The Texas Fisherman



- ★ NEWEST BASS HOT SPOT: LAKE PALESTINE
- ★ SURF FISHING SWEEPS THE LOWER TEXAS COAST
- ★ LAKE LBJ IS BACK IN BUSINESS—ROTNONE TREATMENT PAYS OFF
- ★ IT'S CRAPPIE AND BREAM TIME IN EAST TEXAS—POLE AND LINE FISHING COMES BACK IN STYLE

The Texas Fisherman

This big new fishing monthly takes Texas fishermen into both the middle and the far reaches of their sport. It is not for the armchair angler but for the men and women who love the sun and the sweat and the chill thrill that goes with trying to catch the big ones in both freshwater and saltwater. Guys who write this lunger-sized package of reading excitement are tops in their business. They roam from Lake Meredith to Amistad, to Toledo Bend and Texoma, from Port Isabel to Corpus to Trinity Bay and they don't miss a strike. You won't either when you subscribe to the valuable all-fishing monthly which covers Texas, the fishing-state of them all.

ARTICLES ON

- New hot spots
- Tips from pros
- Upcoming contests
- Freshwater maps
- Saltwater maps
- New boats
- New tackle
- Bass, crappie,
- trout, snapper,
- warsaw, redbfish,
- catfish, flounder,

THE TEXAS FISHERMAN

5314 Bingle Rd. Houston, Texas 77018

Enclosed is \$5 for my 1-year subscription, at the charter subscriber's rate.

NAME _____

ADDRESS _____

CITY _____ STATE _____

ZIP _____

(Texas orders add 4% state tax. This offer good only in U.S. Foreign orders, \$1/year extra.)

Young Naturalist

Skulls

by Ilo Hiller

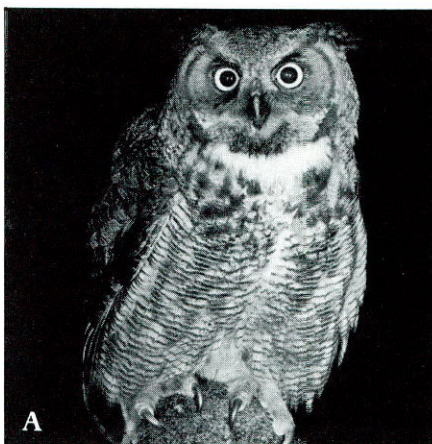
1. Mammal found throughout western Texas and the brush country of South Texas. It has daggerlike tusks and crushing molars which help it eat various types of cactus (especially prickly pear), mesquite beans and other vegetation. As many as 30 of these animals may roam together in one herd, and although it usually avoids man, it has been known to slash hunters or hunting dogs with its long, sharp tusks. It makes a loud popping sound with its teeth as a warning signal and squeals if startled. Adults weigh between 30 and 50 pounds.

2. Strictly nocturnal mammal spends the daylight hours sleeping in its den in a hollow tree or log. It is quite fond of water and does most of its feeding in or by the water's edge. Although classed as a carnivore, this animal is not a specialized feeder and eats fruits, nuts and corn as well as fish, birds, snakes, insects and crayfish. As a result, it has flat-crowned molar teeth which are adapted for crushing instead of the shearing or cutting molars of the dog and cat families. Adults weigh between 10 to 30 pounds.

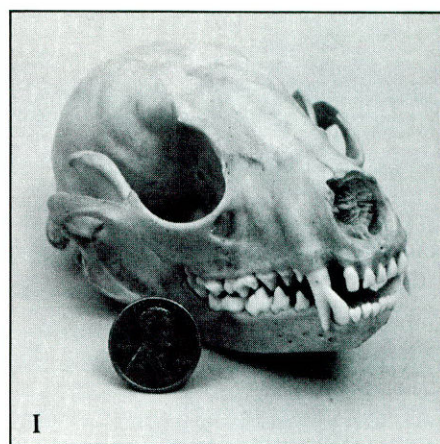
3. Imported mammal is a member of the rodent family and has large gnawing incisors characteristic of this group. It prefers a semiaquatic habitat and can be found in swamps and marshes or along the shores of lakes and rivers. It is equally at home in both fresh and salt water. Aquatic and semiaquatic vegetation are its staple food items, but a nearby garden with cabbage, carrots and sweet potatoes may also be raided by this South American native. Adults normally weigh 18 to 25 pounds.

SOMEDAY, while walking through your favorite woods or brushland, you may come across the skeleton or maybe just the skull of an animal. With a little bit of thought, you may be able to figure out the identity of the animal by the size and shape of the skull or the type of teeth it has.

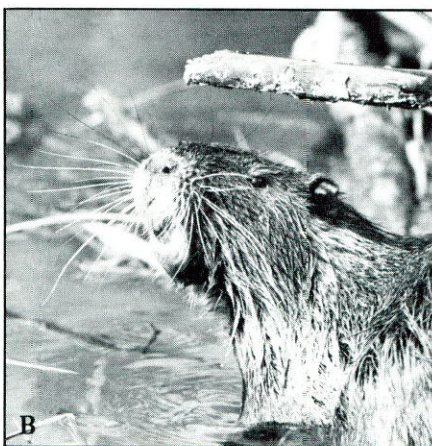
To help you with your thinking, here are a few skulls for you to study. Match the information about the animal with its skull and its picture. Each column is jumbled, so you might end up with an answer such as 1, F, IV. To check to see if you put everything together right, look at the answers at the end of page 32.



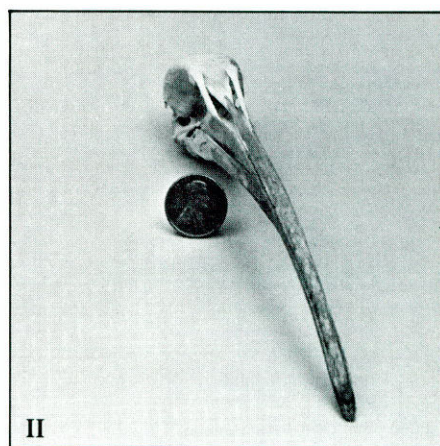
Leonard Lee Rue III



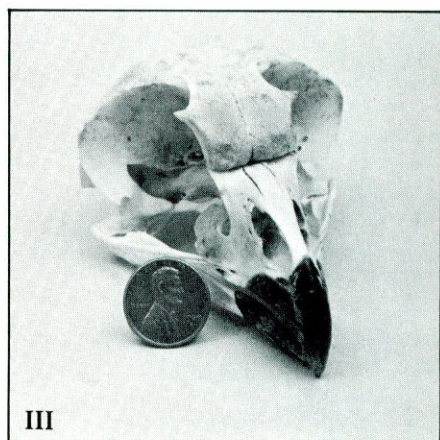
Skulls by Bill Reeves



Martin T. Fuller



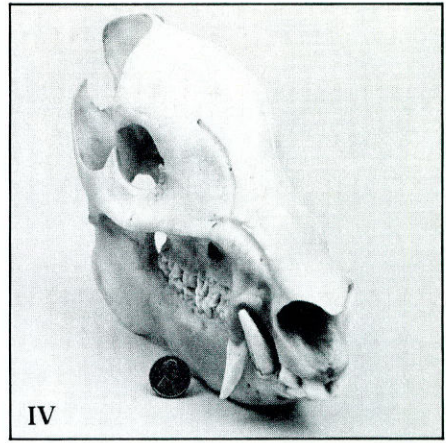
Neal Cook



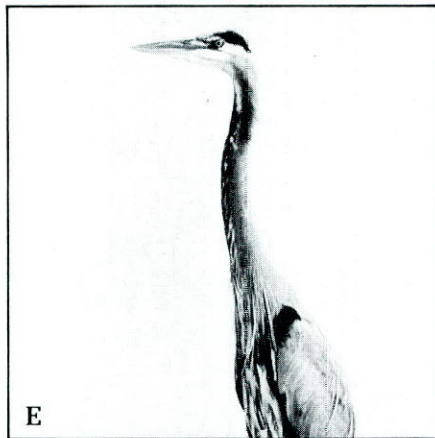
4. This mammal is a very active digger and will have several unoccupied dens or burrows which are used for escape shelters. Although most of its body is covered with a bony armor to help protect it from predators, its lack of hair makes it susceptible to cold weather. In fact, long periods of freezing weather can kill a whole population. Its long snout, well-suited for probing the ground for insects, is equipped with around 30 peglike teeth. Adult males weigh 12 to 17 pounds and females eight to 13 pounds.



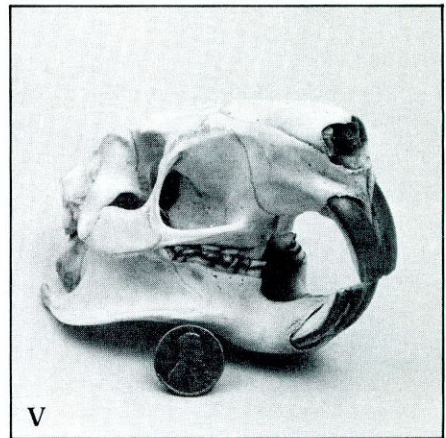
Leonard Lee Rue IV



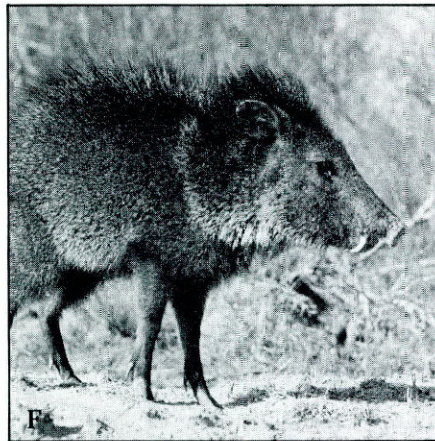
5. Predatory bird with a huge appetite. It can swallow whole rats, mice and small birds. Larger animals are torn into pieces by its sharp, hooklike beak. Bones, feathers and fur are all eaten and the parts which cannot be digested are compressed into a pellet about one inch in diameter and two inches long which the bird then regurgitates. This bird is well-adapted to night hunting and its flight is almost noiseless. It has extremely large eyes which can take advantage of the dim light of night.



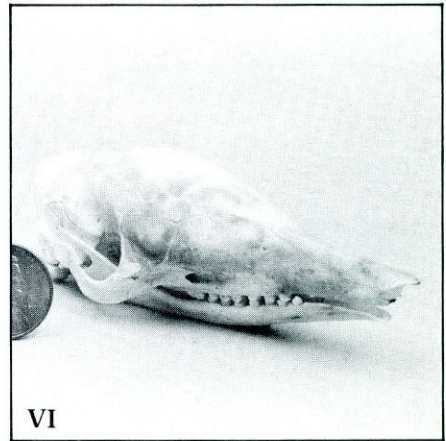
John Suhrstedt



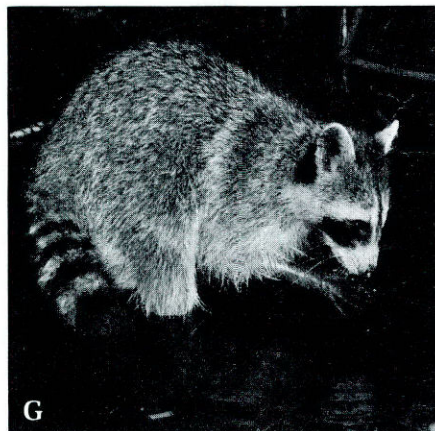
6. Large, long-necked wading bird, often mistaken for a crane. It uses its spearlike bill to catch its food and defend itself against enemies. In addition to fish, this four-foot-high bird with its six-foot wing span eats snakes, mice, frogs, eels, salamanders, insects and an occasional marsh bird. When in flight, it folds its long neck and rests its head on its shoulders. Marshes, swamps, ricefields, rivers and shorelines are choice habitat.



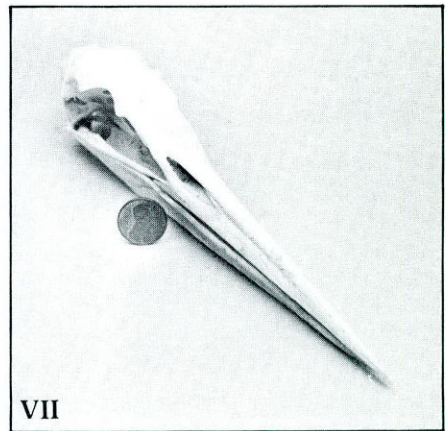
E. P. Haddon



7. Medium-sized wading bird prefers the shallow water of marshy areas, wet fields and tidal flats for feeding areas. Crayfish, fiddler crabs, snakes and insects fall victims to its long, curved bill. When in flight, this bird keeps its neck outstretched and alternates between flapping and gliding.



Leonard Lee Rue III



LETTERS TO THE EDITOR

Bright Future?

In your June "Letters to the Editor" section, there appeared a very interesting communication from Mr. William James, who rightly applauded your agency's efforts at managing the state's wildlife resources.

However, Mr. James' otherwise excellent rationale suffered when he implied that our Texas forests and natural cover are being systematically and irrevocably removed. The "Bulldozer Syndrome" with which he is apparently afflicted is an increasingly contagious malady transmitted through continuous exposure to misinformation.

In addition to begging the serious question that personal property rights should be automatically subordinated to "public rights" when the two appear to be in conflict, Mr. James' generalization that Texas forests and natural cover are being "rapidly removed," as evidenced by his observations of specific, land-clearing projects in Caldwell County, is a generalization not

warranted by the actual facts of the matter. If he is indeed adhering to this generalization, I would like to make a point about the forests in Texas.

A recent article published by the American Forest Institute concerning America's forests and their current status reads in part:

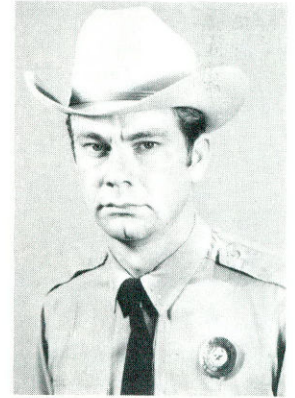
"After supplying so much of the material and the land to build America's houses and cities and highways, after meeting our constantly growing demands for paper products, our forest is still 761 million acres big. To supplement natural planting, we're planting trees ourselves: more than a million and a half acres of forest a year—and more than one tree for every tree we use."

Here in Texas the record of the private forest landowner is equally admirable. Under the free enterprise system, Texans have been pursuing modern forest management programs for years and have been largely responsible for the exceedingly bright forest resource picture that is very much in evidence in our great state.

The professional forester in Texas is quietly preparing to help this state meet its awesome responsibilities in the South's Third Forest. This exciting, concept is based on a doubling of the demand for forest products and services by the close of the century. As he goes about this task, the forester views with chagrin and some irony, the success of a few social propagandists who, armed with half-truths and evangelical zeal, would misinterpret our resource status, malign our vital program of forest management, and desecrate the professional foresters competence and dedication.

The state, federal and privately-owned forests in Texas are not only in no danger of being "removed," their future has never looked brighter.

Bruce R. Miles
College Station



In Memoriam

Parks and Wildlife Department game warden Ronnie L. Germany, 26, was shot and killed July 29 while investigating reports of illegal hunting in San Augustine County. A suspect was arrested at the scene.

He is survived by his wife, Belinda, and his parents, Mr. and Mrs. D. K. Germany of Tyler.

TEXAS PARKS & WILDLIFE

Send check or money order to:

TEXAS PARKS & WILDLIFE DEPT.
John H. Reagan Bldg., Austin, Texas 78701

Check one

RENEWAL

Paste your last magazine address label into space indicated and mail with payment.

CHANGE OF ADDRESS

Paste recent magazine label into space indicated, show change on form and mail.

NEW SUBSCRIPTION

Fill out form at right and mail with payment.

GIFT SUBSCRIPTION

Show recipient's name and address in form, indicate gift signature and mail with payment.

Attach recent magazine address label here for renewal or change of address.

Name _____

Address _____

City _____

State _____

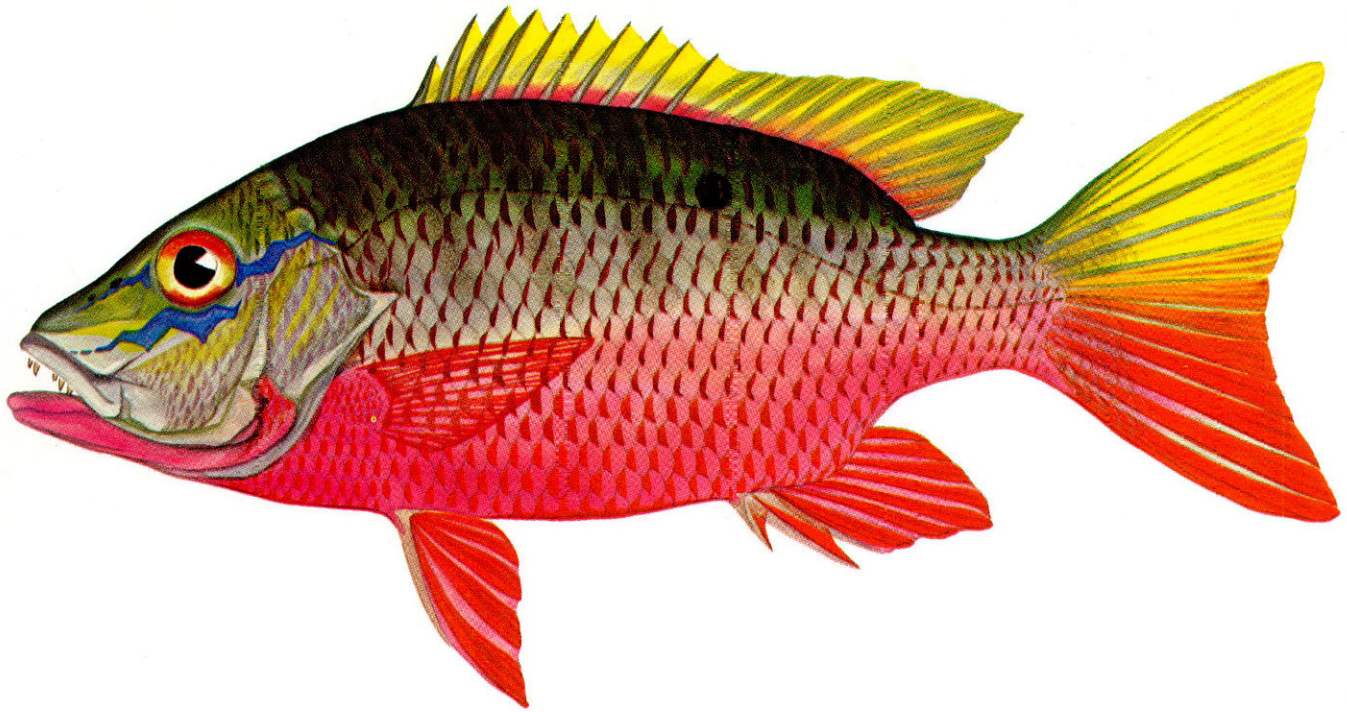
Zip Code _____

Sign Gift Card _____

CHECK ONE 1 yr. \$3.15 incl. tax 2 yrs. \$5.25 incl. tax
Out of U.S. (except APO and FPO) 1 yr. \$4. 2 yrs. \$7.

Answers to Young Naturalist Quiz:

- 1, F, IV, Javelina
- 2, G, I, Raccoon
- 3, B, V, Nutria
- 4, C, VI, Armadillo
- 5, A, III, Great-horned Owl
- 6, E, VII, Great Blue Heron
- 7, D, II, Ibis



TEXAS SALTWATER FISHES

Of these two reef fishes found primarily in the deeper offshore waters of the Texas Gulf, the muttonfish (top) is the more common. It feeds upon small fish, crabs, shrimp and squid. Average muttonfish weigh between two to five pounds but some may reach 25 pounds.

The yellowtail snapper (bottom) is relatively rare off Texas and is seldom caught by fishermen. It also feeds upon small fish, crabs, shrimp and squid. Size of these small snappers may vary from less than one foot up to about two feet in length.

Artwork by Henry Compton.

