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PARKS & WILDLIFE



October 1971 • 50c





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**TEXAS PARKS & WILDLIFE
magazine**

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

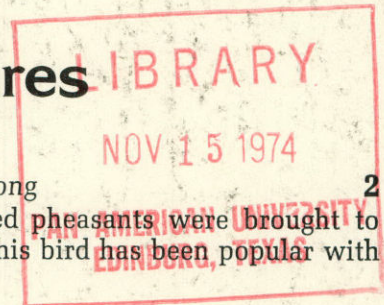
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**TEXAS
PARKS & WILDLIFE**

Outside Cover: Female orchard orioles are greener than other female
orioles, and they have two white wing-bars. Photo by Jim Whitcomb.
Inside Front: Healthy deer are produced by a balance between the
number of deer and the amount of food. Photo by Bill Reaves.



PANHANDLE PHEASANT

by W. R. Long
Information Officer, San Angelo

The United States Consul General at Shanghai brought the first 28 pheasants from China to the Willamette Valley of Oregon in the late 1880's. The birds spread to almost all of the West and Midwest. Many of the 12,000 to 13,000 pheasants harvested annually in the Texas Panhandle descended from birds that drifted in from Colorado, Oklahoma and Kansas. Others have been released by the Texas Parks and Wildlife Department.

Pheasant hunting is a popular sport in the Panhandle; some hunters are out every day of the brief December season trying for their bag limit of two cocks. The birds experience a lot of hunting pressure due to limited range; however, as much as 90 percent of the cock population can be harvested in a season. The remaining males with their harems can reproduce birds in huntable numbers.

The winter day we hunted the Asian exotic was cold, but cold fingers have a way of warming fast when the multicolored birds explode beneath you. A friendly Panhandle landowner provided the fields and the birds, and we brought along a dog.

The miles of flat Panhandle country were all sugar beet, corn stubble, weedy draws and ravines, fence rows and oak motts. It was prime pheasant country, and 13 hunters started

out with shotguns, shells and hopes. Most of us were using 12-gauge scatterguns with No. 6 shot.

We knew we would find birds as we started across the corn stubble, but we had no idea the hunting would be so difficult. The books say that pheasants are related to domestic fowl. The ringnecks we flushed must have been half fowl and half jet airplane.

Every 20 yards or so would produce another couple of birds — that is, birds in the air but few in the game sacks. Hitting a pheasant as it rockets away is difficult, and I stood amazed when my first hit finally tumbled to the ground.

At the end of the field we all gathered for a tactics discussion. Two hunters hopped into a pickup truck and drove to the other end of the field to wait with ready shotguns and serve as blockers. The rest of us busied ourselves tying together all the rope, chain and wire we could find for a drag. The drag would flush birds we had missed the first time through the field.

To be truthful, I felt like missing a couple more and going in for the day, but a majority of our party wanted to keep hunting. The next bird I saw go spiraling to the ground in a puff of brilliant feathers gave me just enough momentum to agree that hunting was the order of the day.



Jim Whitcomb

This time, with our blockers 300 yards ahead of us and out of shotgun range, we started across the field trailing the drag behind us. Believe it or not, we had walked past more birds than we had thought could be in the field. The drag was working. Pheasants came from everywhere. On our first safari across the whole field without the drag, we had shot five birds, but five were taken in the first 50 yards of the return trip.

Hunting pressure had made some birds much wiser, and they stayed on the ground, scurrying out of our way into almost inaccessible cover. The dog proved its worth and routed the birds from their hiding places. We pulled the rope along, used the stubble rows as markers to watch birds go down and after a round trip in the patch we had 15 fat trophies from the hunt.

Open range invites hunting, and our host secured permission to hunt the adjoining field. We sent the blockers ahead to wait for us. We did not realize it, but we had chased a lot of birds into the adjacent field when we started the hunt, and we suddenly found ourselves in the midst of a squadron of birds going in every direction. I am sure the ammunition stockholders would have leaned back and folded their hands in contentment if they could have heard the small war we started.

My second bird soaked up shot from three shells, the last of which might not have been absolutely necessary. I touched off a shot that caught him with the fringe of the pattern. The next shell slammed him at 45 yards, and he came tumbling down. I fired the next shell as insur-

ance, but at least I filled my bag limit and felt no more foolish than the rest of us who had used more than a reasonable quota of ammunition.

Birds continued to go down for the next 100 yards and then suddenly all the shooting stopped. Thirteen happy men stood in the field with 13 bag limits.

I take a little pride in saying that not a single crippled bird escaped the 13 men who filled their bag limits. The dog helped, but mostly it was hard work on our part to find a wounded bird.

The hunt is only a memory now and I look back on it with pleasure and thanks to those who knew the country and arranged the hunt. There is reported to be better pheasant hunting somewhere else in the country, but Texans need not go any farther than the Texas Panhandle for all of the pheasant hunting any person wants. **

Pheasants are seedeaters; cornfields are their favorite places during the daytime, but wheat, rye and barley fields will also attract some birds. When danger approaches, they fly, and then they can be added to the bag as the author has done here



Richard DeArment



Quantity vs. Quality

Part 2 A deer management decision

by Jack Ward Thomas
and R. G. Marburger
Wildlife Biologists
Pittman-Robertson Project W-62-R

This is a revised version of an article published in the December 1965 issue.

Watching a deer eat, a biologist on the department's Gus Engeling Wildlife Management Area learns the species' food preferences. The food passes through the deer's throat and out a hole into a plastic container strapped on the deer's neck by the brown band. Back in the laboratory, biologists can study the amounts of various foods that deer prefer.

Recent estimates place the size of the Texas deer herd at about 3,000,000 animals.

It seems apparent that Texas has an abundance of deer "quantity." In fact, Texas probably has more deer than any other state of the Union. However, most of our deer herds deserve very few compliments for deer "quality."

Concern over quality is of relatively recent origin and is, at present, shared by only a few people. Around the turn of the century, Texas deer herds had been decimated by a combination of factors, including year-round hunting. During the period 1900-1910, deer numbers reached their lowest point. In 1903, a law against the killing of female deer was passed by the Texas Legislature, but without provisions for wardens to enforce the law. The Game, Fish and Oyster Commission (predecessor to the present Parks and Wildlife Department) was established in 1907, but as late as 1921 only six salaried wardens were enforcing game laws over the entire state.

The real key to the preservation of the remaining deer herds was the concern and protection provided by some far-sighted ranchmen. Ranchmen began to band together (as early as 1911 in Mason County) in the form of livestock protective associations (Hahn, 1945).

These early efforts provided for some small increase in deer populations. The real push came in 1925 with the passage of the "trespass law." This law, in effect, made it possible for private landowners, at their discretion, to exclude all persons from their property. Heavy penalties were provided for trespassing. It followed that landowners could charge

a fee for the privilege of entry onto their lands — hunting might be allowed if the price was right.

Sportsmen offered to pay for hunting rights, and it soon became evident that increases in deer populations would benefit all concerned. Hunters would have their sport, and landowners would be compensated for providing "room and board" for the deer.

The period from 1925 to 1940 was marked by dramatic increases in established deer populations. During this same period, many of the areas presently occupied by deer were changed from grassland to brush covered areas due to overgrazing by domestic livestock. This change was favorable for deer since open pastures do not rank high as preferred deer habitat.

The period 1935 to 1955 was marked by intensive trapping and transplanting efforts by conservation agency personnel. These efforts have been so successful that the vast majority of acceptable deer range in Texas supports populations of deer.

Emphasis from the beginning of the deer management effort in 1903 was on deer quantity. Increases in deer numbers and occupied range was the aim. In this limited sense, the program succeeded beyond the wildest dreams.

For a time, everyone was elated: the sportsmen, the landowners and conservation officials.

But, in the quest for deer quantity, deer quality was forgotten. When deer were scarce, the quality took care of itself. As deer numbers increased and began to exceed the ability of their ranges to support them on an adequate nutritional plane, deer quality began to decline.



Soon complaints about smaller deer, poor antler development, low fawn crops, distorted sex ratios, etc., began to be heard. What had happened to deer quality?

Texas was not alone in this regard — most major states reported similar problems. As a result, research started the long process to investigate deer herd management problems. Most of this research was done as a result of Federal Funds (Pittman-Robertson Act) provided to the states on a matching basis for the purpose.

Years went by, and as results of the research effort began to roll in, the conclusions were very similar in state after state.

When deer numbers exceed the capacity of the range to provide adequate nutrition, deer quality deteriorates.

Many well-intentioned efforts were made to solve the problems of overpopulation by artificial feeding, trapping and transplanting surplus animals, etc. Results were almost unanimous, and the conclusion was reached that:

Deer numbers must be controlled through the harvest of adequate numbers of both sexes, so that deer numbers do not damage the range.

It was also obvious that token harvest of antlerless deer would not do the job. Experience in state after

state revealed that "No overpopulation in deer which has reached the stage where fawns are starving, has been checked by herd reductions of less than 50 percent (Hosley, 1956: 257)."

Much of the deer range in Texas is so overpopulated with deer and domestic livestock that deteriorating deer quality is evident, even to the casual observer. These are a few of the symptoms:

- 1) A decline in antler size. This is particularly reflected in high numbers of spike bucks in the yearling age group.
- 2) A decline in body size and weight.

Jim Whitcomb



3) Low, widely fluctuating, reproductive rates.

Poorly nourished deer simply do not reproduce anywhere near the potential of the species (Thomas and Marburger, 1965).

Texas has been involved in an antlerless deer harvest program since 1953. One of the early professed aims of this program was to improve deer quality. Experience soon indicated that public opinion was not ready to accept reduced deer numbers in exchange for increased deer quality.

Texas once had very few deer. We have worked and scraped and protected until, today, we have more deer than any other state and certainly

many more than the deer ranges can support without danger. The ranges and the deer are sending out danger signals in the form of well-defined browse lines, deer die-offs, decreased deer reproduction, smaller antlers and decreased weights.

Biologists have prescribed herd reduction and improved range management to reduce the danger to the habitat. The warnings given out by deer and their habitat are increasing in frequency. What is to be the outcome?

Until we can bring public opinion more into line with reality, we are stuck with our present approach which has been stated as, "The pres-

ent purpose of the deer management program is the provision of the greatest possible use of the deer resource; to provide as much recreation to the hunting public as possible and adequate revenue to landowners, realizing that under present conditions on heavily populated ranges, deer numbers are fluctuating, basically unaffected by hunting pressure. We should always keep in mind that, ultimately, we may be able to gain public acceptance of reduced deer numbers in exchange for improved ranges and improved deer quality (Thomas, 1965)."

Another writer made a statement that applies to our present situation: "Sound public relations and open policies are of vital necessity to a successful conservation program. However, if a conservation program is to mark time or retreat when an ill wind blows through a newspaper, it will stagnate and die. Situations arise where action cannot wait, and it is better to take vigorous action than to be consistently seeking approbation (Swift, 1946:34)."

We have made much progress in our deer management program. The deer herd has been brought back from near oblivion to the present overabundance. We have learned basic truths about how deer herds should be managed. Giant steps have been taken down the road toward liberalized, either sex harvests.

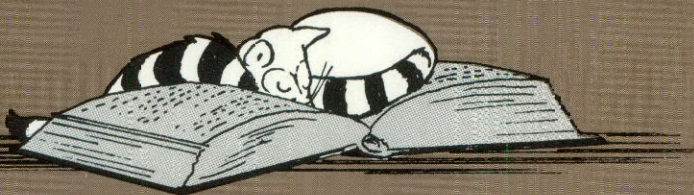
We will have succeeded when we ultimately face up to a decision on the question, "quantity or quality?" We can't have it both ways. **

Jim Whitcomb



In the 1940's and 1950's, areas suitable as deer habitat were stocked with deer from other areas. Now that nearly all areas of the state have abundant deer populations, controlled harvesting of both sexes keeps the numbers inside the carrying capacity of the land. The result is a healthy deer population.

Outdoor Books



THE WORLD OF THE SNAKE, by Hal H. Harrison; J. B. Lippincott Co., New York and Philadelphia, 1971; 160 pages, \$5.95.

I can think of no animal so feared and misunderstood as the snake. Most people's reaction to a snake is like that of the chubby cavewoman in the comic strip—to pick up whatever is handy and beat it to death.

John Muir, the founder of the Sierra Club, said that when one tugs at a single thing in nature, he finds it attached to everything else in the world. I guess the same thing applies to snakes. As Harrison points out in *The World of the Snake*, snakes are effective rodent controls. Someone came up with the figure that a single snake is worth \$3.75 to agriculture in the amount of pests it devours.

To me, snakes are like sharks. There is something awesome, perhaps beautiful about such lissome, efficient predators. And like sharks, there are volumes

of folklore about the natural and supernatural powers of snakes.

Harrison confines his discussion to North American serpents. The snake is a more complicated animal than I ever thought it was.

Harrison follows the format of the Living Nature Series. He starts his narrative with a general discussion of snakes and then follows reptiles through the seasons of the year and activities specific to the seasons.

The author's discussion is general and nontechnical; there is a detailed bibliography available to the reader if he wants to pursue the matter further. Mr. Harrison is a newspaperman and wildlife photographer. His prose is easier to follow than that of the average biologist.

Harrison sets us straight on snakes. My only complaint is that everything I read about snakes written for the general public is an apology and defense of snakes. But then, as Harrison says snakes get no respect.—David Baxter

THE HIKER'S & BACKPACKER'S HANDBOOK by W. K. Merrill; Winchester Press, New York, 1971; 314 pages, \$5.95.

It will help those wading into Bill Merrill's *The Hiker's & Backpacker's Handbook* to have some inclination toward backpacking. If you have never considered backpacking, you will probably remain unsold on the idea after reading the book. There are no anecdotes, just straight exposition about backpacking.

If you are interested, the handbook can be useful. There are sections on equipment, first aid, map reading, food, clothing and trails open to the backpacker. It must seem to those who have enough interest in the outdoors to consider backpacking, however, that too much of the book is taken up by obvious statements such as warnings against starting forest fires, hints on getting in shape and other common knowledge items.

But if the reader has the patience, he will find out what to take on his backpacking trip, where to go and what to do if he gets into trouble. The information is clearly but somewhat colorlessly presented. With at least one glaring exception, the suggestions make sense.

The exception is in the first aid section where Merrill recommends putting ointment or spray on burns. The ointment treatment is a throwback to the days when mamma put butter on burns. Butter didn't work then, and ointment won't now. Doctors just have to clean the ointment off before they start treatment. It might be mentioned here that this isn't the first book in which Merrill recommends this treatment. It is hoped that he will update his information before he writes future books.

—Howard Barnett

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DEER HUNTING IN TEXAS by Alex Cox; The Naylor Company, San Antonio, 1971; 112 pages, \$5.95

We have about a half dozen books in our office library on the subject of hunting deer in Texas. This is the second printing of one of the very first volumes on the subject, original copyright 1947.

Cox talks about the mating of white-tails, movements through their habitat, how to predict their whereabouts and methods of hunting deer. His text has not changed very much since 1947. One noticeable addition is hunting from a vehicle. The 62nd Texas Legislature has made it legal to hunt deer from a vehicle on private property.

Like Cox says, vehicle hunting has a wide appeal since it requires little effort. Some of the large ranches catering to VIP's chauffeur their guests around until they find an appropriate animal.

The best parts of Cox' book are the examples of various means of hunting.

The author is a good storyteller, and his examples are personal experiences. The tales are excellent means of illustrating his suggested hunting techniques.

The author readily admits that his suggestions for hunting whitetails are no more than suggestions. Hunting methods vary like individual deer, and what will work for one hunter often ends up as nothing more than a cold afternoon in a tree for another.

For those hunters with their sights on a record as well as a buck, Cox also goes into detail on the scoring system used by the Boone and Crockett Club for records of North American game. And he rounds out his book with a chapter on helpful hints on bringing home the venison. He makes an interesting statement in this last chapter: "If only bucks are shot at, hunters will not kill men by mistake. Only doe slayers kill everything that jumps."—David Baxter

THE WORLD OF THE OTTER by Ed Park; J. B. Lippincott Co., New York and Philadelphia, 1971; 159 pages, \$5.95.

River otters in Texas are limited to the extreme eastern part of the state. Otters are wanderers over much of their habitat and never really abundant in any locality.

Actually, very little is known about the otter. They have been made famous in both the book and movie, *Ring of Bright Water*, but zoologists are not even sure of the exact length of the animal's gestation period. Most of the information gathered on the otter has been from analyzing the carcasses which trappers bring in. And otters are hard to trap.

The otter fur catch indicates a rough estimate of the population. Counting otters would be futile; it's hard enough to census large animals like deer, much less the hide-and-seek otter.

Most of Ed Park's information on the otter is firsthand from observations in the field. Park is a naturalist by education and a photographer by profession. He combines his background with the patience and skill of a wildlife photographer and comes up with a well-balanced combination of photographic artistry and zoological fact.

The World of the Otter is part of a series on North American animals. The series is written for the layman and not the specialist. Like Park, most of the authors, such as Hal Harrison and Leonard Lee Rue are photographers and wildlife writers.

The World of the Otter, like the rest of the series, presents its information in a fresh, first person narrative. Although not as specific as material written by authors with more scientific credentials, I find the series to be informative. If I need more data, there is always the bibliography.—David Baxter

Long Shots, Short Casts

compiled by Neal Cook

Amazing Migrations: The Pacific golden plover nests in Alaska and northwestern Siberia and winters in Hawaii — a journey of 2,400 miles. Arctic terns breed in the Arctic and then journey 11,000 miles to winter in the Antarctic. Cuckoos come from Africa to breed in Great Britain and then the young birds return to the wintering ground in Africa, often flying without any of the older birds.

Oil Eaters: It has long been known that bacteria break down the oil that has spilled in the sea. There have been several recent attempts to harness the strains of bacteria and use them to control oil spills. Scientists at Florida State University have isolated the strains that consume bunker C fuel oil, a California crude, and one type of Louisiana crude. Other strains are being tested that can control Kuwait and Venezuelan crudes. The hope is that someday a helicopter could fly over an oilspill and release millions of bacteria. The hungry bacteria would then consume the oil and die as the food source decreases.

Beep a Litterer: When you see someone throw paper or other litter from their car window, sound a "BEEP, BEEEEEP, BEEP, BEEP" on your horn and point an accusing finger. This one short, a long, and two shorts is the Morse code for the letter "L" and the Family Camping Federation's method of reminding travelers not to litter.

Robin's Forest Dying: Today Sherwood Forest, legendary home of England's Robin Hood, is not large enough to hide any outlaw bands and pollution and lack of water might mean the end of all the original forest. Once covering 200 square miles, Sherwood Forest has been reduced by the advance of civilization until only about 1,000 acres remain. Much of these 1,000 acres have been replanted within recent years, but in the center of the forest are about 200 acres of trees from 400 to 1,000 years old. These trees, according to legends, are where Robin Hood and his men robbed the rich to give to the poor. Today the trees are dying of old age, a shortage of water and pollution. The lack of water is caused by the City of Nottingham reducing the underground water in the area. The pollution is caused by manufacturing plants in the area. City planners in Nottinghamshire are studying the area and hope to be able to create policies that will enable other city planners to create cities keeping in mind the needs of expanding populations to retain the beauty of the countryside.



Where the rainbows wait for the rain...

and the big river is kept in a stone box, and water runs uphill and the mountains float in the air, except at night when they go away to play with other mountains.

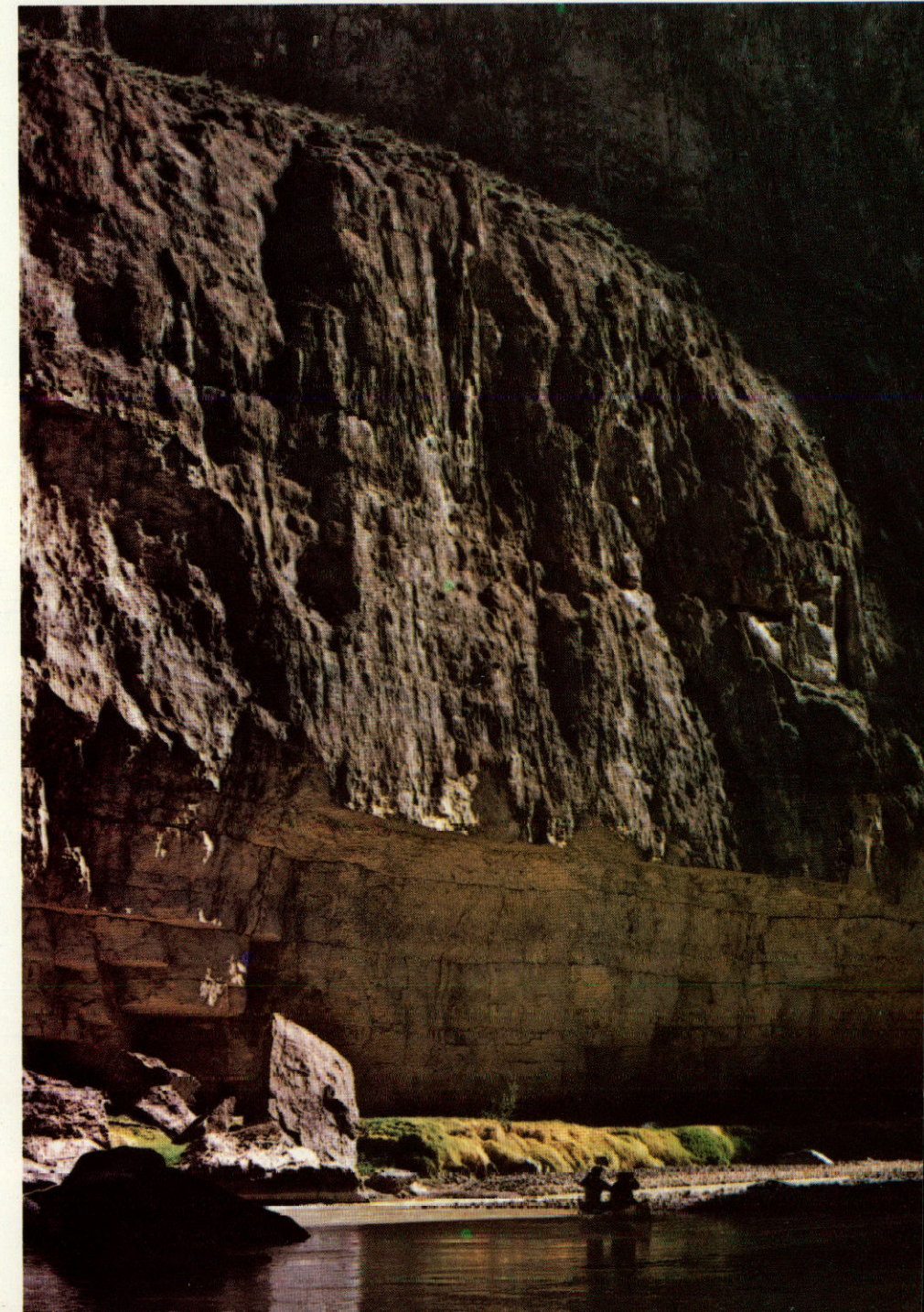
Photography and article by Reagan Bradshaw

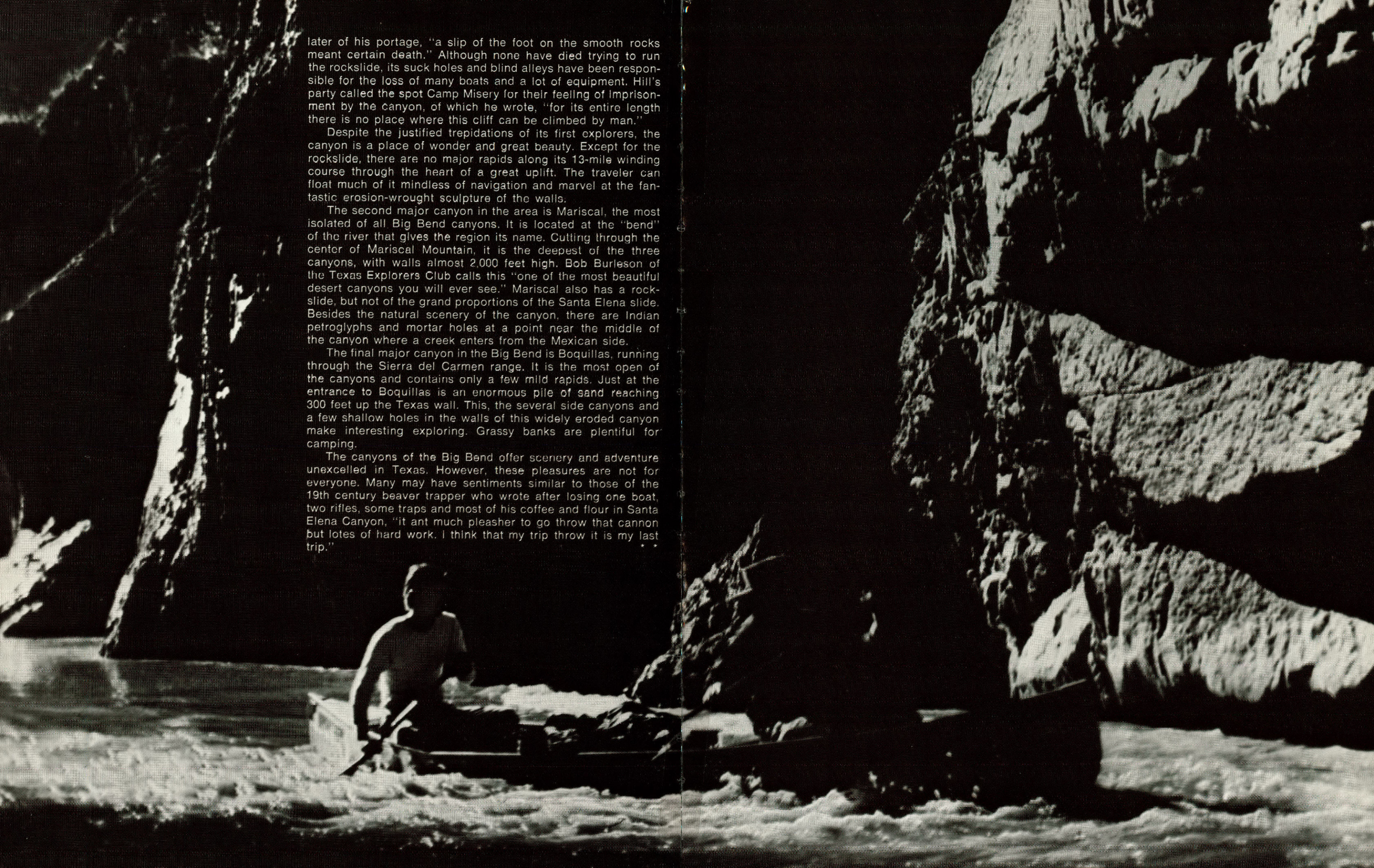
Thus a Mexican vaquero described the Big Bend country over a hundred years ago, according to Texas folk historian Frank X. Tolbert. A fanciful description, but it rings true to those who have experienced the Rio Grande from a raft or canoe. River runners agree with the first U.S. boundary surveyor in the area, who described the canyons in 1850 as "gorges of frightful sublimity."

The canyons are magnificent. From a shallow, meandering desert course above Big Bend National Park, the Rio Grande narrows, quickens its flow and drops suddenly and swiftly into a great vertical slot in the side of Mesa de Anguila, entering Santa Elena Canyon. Out of the glare of the desert the river sweeps silently and powerfully into the canyon's cool half-light. Fifty feet apart, sheer walls reach 1,000 feet up toward a narrow ribbon of blue sky, and continue higher as the river penetrates the twisting chasm.

Less than a mile from the entrance, the quiet swish of the river is replaced by a roar from the famous Santa Elena rockslide. The rockslide was caused by a cave-in off the south wall and is navigable only to true white water experts in specially decked canoes and kayaks, and then only on low water. All others must portage over the quarter mile of house-sized boulders piled 300 feet high on the south wall.

The danger of this part of the canyon was not lost on its first explorer, Robert T. Hill, who wrote





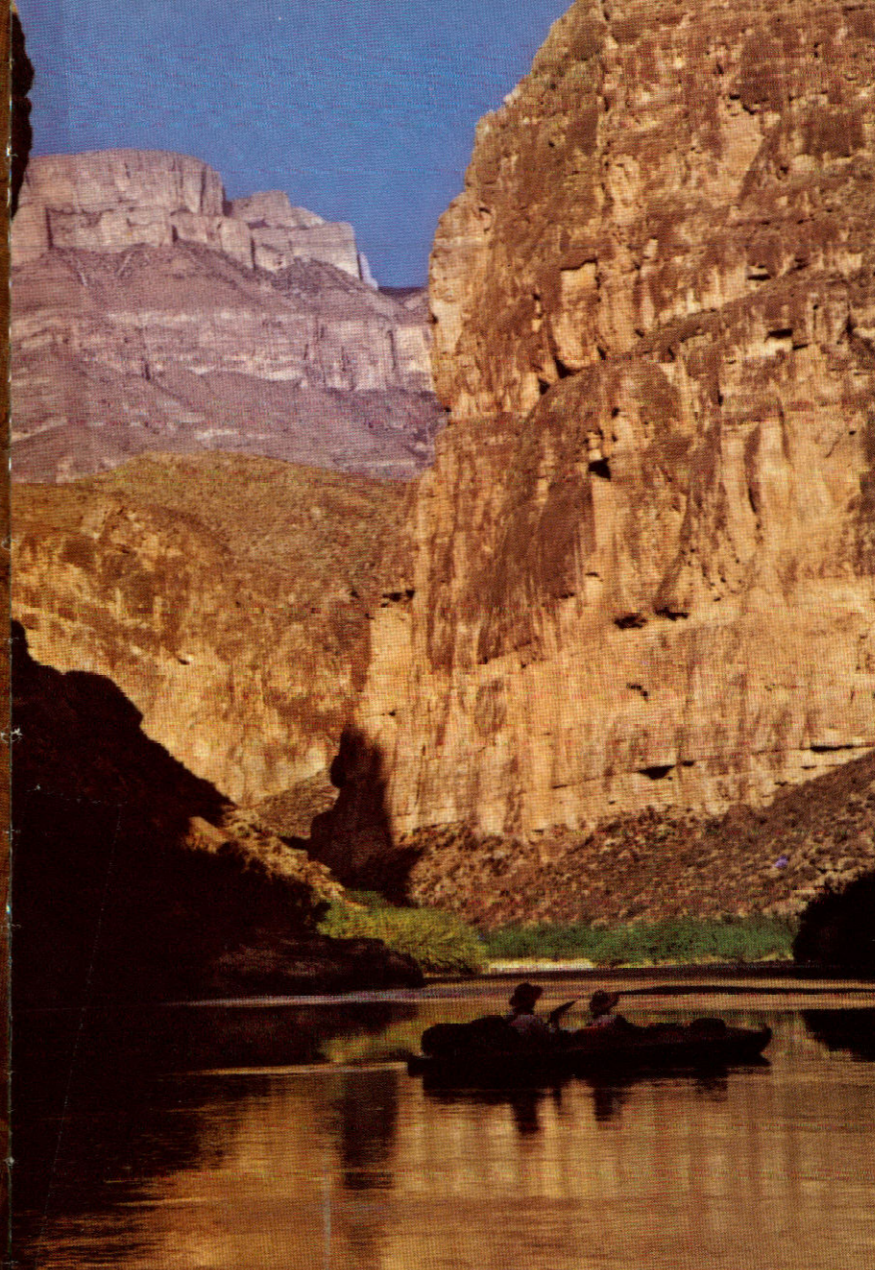
later of his portage, "a slip of the foot on the smooth rocks meant certain death." Although none have died trying to run the rockslide, its suck holes and blind alleys have been responsible for the loss of many boats and a lot of equipment. Hill's party called the spot Camp Misery for their feeling of Imprisonment by the canyon, of which he wrote, "for its entire length there is no place where this cliff can be climbed by man."

Despite the justified trepidations of its first explorers, the canyon is a place of wonder and great beauty. Except for the rockslide, there are no major rapids along its 13-mile winding course through the heart of a great uplift. The traveler can float much of it mindless of navigation and marvel at the fantastic erosion-wrought sculpture of the walls.

The second major canyon in the area is Mariscal, the most isolated of all Big Bend canyons. It is located at the "bend" of the river that gives the region its name. Cutting through the center of Mariscal Mountain, it is the deepest of the three canyons, with walls almost 2,000 feet high. Bob Burlison of the Texas Explorers Club calls this "one of the most beautiful desert canyons you will ever see." Mariscal also has a rockslide, but not of the grand proportions of the Santa Elena slide. Besides the natural scenery of the canyon, there are Indian petroglyphs and mortar holes at a point near the middle of the canyon where a creek enters from the Mexican side.

The final major canyon in the Big Bend is Boquillas, running through the Sierra del Carmen range. It is the most open of the canyons and contains only a few mild rapids. Just at the entrance to Boquillas is an enormous pile of sand reaching 300 feet up the Texas wall. This, the several side canyons and a few shallow holes in the walls of this widely eroded canyon make interesting exploring. Grassy banks are plentiful for camping.

The canyons of the Big Bend offer scenery and adventure unexcelled in Texas. However, these pleasures are not for everyone. Many may have sentiments similar to those of the 19th century beaver trapper who wrote after losing one boat, two rifles, some traps and most of his coffee and flour in Santa Elena Canyon, "it ant much pleasher to go throw that cannon but lotes of hard work. I think that my trip throw it is my last trip."



Safety and Logistics

As with many sports, river running has its own dangers. Losing a boat in a rapids is a small problem compared with the possibility of serious physical injury hours or even days away from a doctor. Extreme caution can prevent such unfortunate occurrences, and a thorough knowledge of first aid and a complete first aid kit are mandatory. Do not run the Rio Grande without experienced companions, and wear life preservers. Only experienced paddlers should tackle the Rio Grande.

Boquillas is easy to reach and requires the least paddling skill. The usual put-in point is at Rio Grande Village in Big Bend National Park, and most canoeists leave a car at the U.S. Customs station at the La Linda bridge on Farm Road 2627. Allow two or three days on the river.

Mariscal is the next canyon to run, although its isolation is a danger. The car shuttle may take most of one day, and two days on the river will allow time to explore.

Santa Elena is the most difficult and should be run the first time only on low water and then only by skilled paddlers. It requires about two days to go from Lajitas to the mouth of the canyon in Big Bend Park. The usual camp is either at the entrance or just below the rockslide.

Information on commercially escorted raft trips, water levels, topographic maps and campfire permits (required in the park) may be obtained from the Park Headquarters, Panther Junction, Big Bend National Park Texas 79834 (AC 915 477-2251). The pamphlet "Guide to the Backcountry Roads and the River," is available from the Park Headquarters for \$.50.

Massive boulders in Santa Elena (facing page) and the eroded walls of Boquillas (top, above) dwarf canyon visitors. A canoeist lines his boat through the Santa Elena Rockslide (above) while two others (right) watch twilight fall over the river at the end of their trip.

"IT'S A NICE WAY TO GO
IF YOU GOTTA GO!"



GRAHAM
HUNTER

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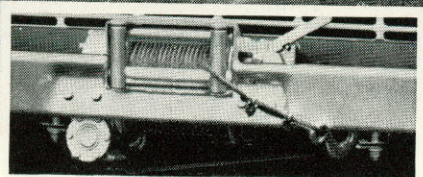
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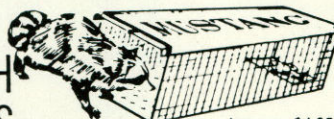
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DIAMONDBACK

by Tate Pittman
Information Officer, Waco

The western diamondback rattler is responsible for more serious and fatal accidents than any other poisonous snake in North America. It is neither the largest nor the most poisonous North American serpent, but its aggressiveness and wide distribution make it one of the most feared.

Rattlesnakes occur in every state except Maine, but the western diamondback is common only to the arid and semiarid regions of the Southwest. It is the most common poisonous snake in Texas.

The average size of native western diamondbacks, *Crotalus atrox*, is from 3½ to 4½ feet long, but six-foot specimens are sometimes found in South Texas and Mexico. The record length is about seven feet. Weights up to 24 pounds have been recorded. The body is light brown, and dark scales with a border of light scales form a diamond-shaped pattern on the back. A light stripe extends from behind the eye to the angle of the mouth. His chalky white tail, vividly marked with four jet black rings, has given him the name, "coon-tail rattler."

The western diamondback, usually a night hunter, locates his warm-blooded prey with the aid of heat sensitive pits located beneath each eye. He also has a well-developed sense of smell which is aided by a forked tongue that he

flicks in testing odors. The tongue sends samples of air to a pair of small spherical chambers in the mouth called Jacobson's organs. These organs are used in locating food and seem to be important in finding a mate and in locating a denning area.

Although primarily a snake of the lower elevations, he sometimes ascends to altitudes of 5,000 feet or more. He is at home on open prairies, farming areas and desert flats as well as rock cliffs and canyons. These snakes sometimes swim holding their head and tail high.

These snakes, like the majority of reptiles, are hidiers. Seldom if ever will one advance to make unprovoked attacks; however upon close contact, his attitude is mean and deadly. While growing up in diamondback territory, you learn to look constantly in every nook and cranny—never letting it interfere with your activities—always conscious of the fact that you are in the snake's area.

Frightened or annoyed, he rises from his resting coil to the S-shaped stance. When the intruder is in range, the snake hesitates for only a split second; then the big heart-shaped head moves like a flash. Opening its mouth to strike, the snake throws its long fangs forward and into position. As the victim is hit, the fangs sink in;

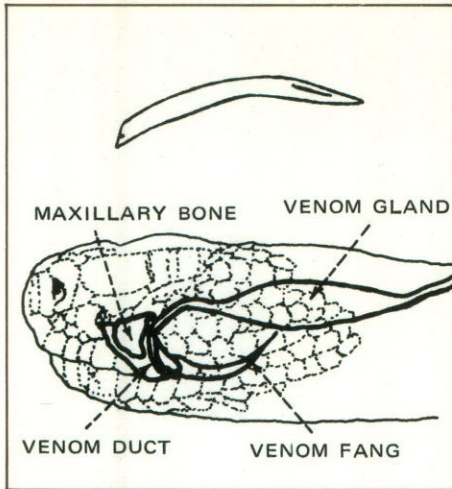
muscles and ligaments contract to squeeze the venom glands in each cheek and force the poison out through a small tube that runs from the gland through the fang.

Although the amount of venom injected varies, it is unusual for any snake to empty the glands at one injection. Some may expel only a fraction of a drop, but the larger snakes may inject as much as one to two cubic centimeters—a tremendous amount of venom.

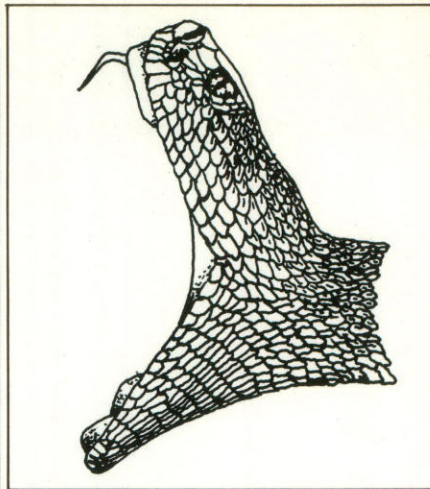
In the last 10 years, rattlesnakes have caused from one to nine deaths per year in Texas, which is small compared to the number of persons who die from venomous insects.

There has been wide difference of opinion among medical authorities as to first aid treatment for snakebite. However, it is firmly established that antivenin made from the blood of horses is the only known drug for the treatment of severe rattlesnake bites. This antivenin is a prescription item to be administered by a physician.

Why the snake has and uses its rattle remains unknown. To assume the serpent sounds the rattle to warn enemies is no more than theory. This argument has been kicked around in many circles from creek bank philosophers to learned herpetologists. It is certainly illogical for a predator to warn its victim, and many people



Venom is contained in the gland. Muscles squeeze the poison out, and it passes out the duct and through the fang, which is hollow, as shown in the enlarged view.



At rest, the fangs are folded under the upper jaw, as shown on the left, but in striking, they come out. The right view shows the configuration of erect fangs.

have seen snakes attack mice or squirrels without buzzing.

It is a popular but incorrect opinion that the diamondback grows a new joint or ring of the rattle every year and that his age can be determined by counting the rattles. Actually the western diamondback normally acquires from two to three rings each year, but the rattle seldom attains a length of more than 10 to 12 segments because the rings wear off.

A new-born western diamondback is provided with a soft button on the tip of the tail which cannot produce a sound. This young snake sheds its skin in a few days and starts feeding on small mice or other young rodents. Growing rapidly, the snake sheds its second skin in two months and uncovers the first ring or segment of the rattle, which dries and hardens after a few days. Now when the tail is shaken, it produces a faint buzzing sound, and the snake has a miniature rattle. A segment of the rattle is produced with each molt or shedding of the skin.

The first frost usually finds the western diamondback in hibernation, but during warm spells he sometimes crawls out on nearby ledges and shelves for food and sunlight. Although the mating season was originally thought to be

in the spring, diamondbacks have been observed mating at other times of the year.

Herpetologists once thought courtship displays included a mating dance, but it was later learned that this dance is a territorial display since only males dance. After a gestation period of about 165 days, 10 to 12 young are born alive and are immediately abandoned by their mother. A popular folk story suggests that the mother will swallow the young when danger approaches; this is a fallacy.

Rattlesnakes, like many dangerous animals, are a favorite topic of discussion around the campfire. Their distinctive coloration and sinister form, combined with the electrifying sound of the rattle, make a lasting impression upon the observer. **

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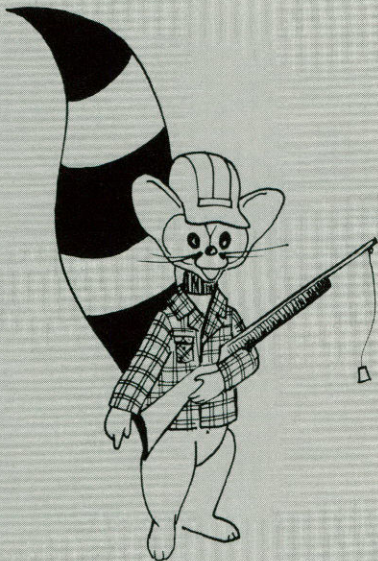
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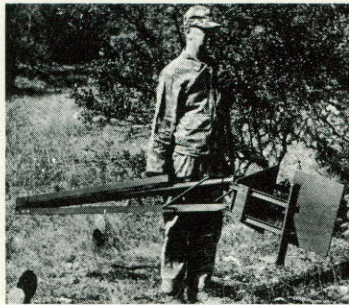
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7. Unattended guns should be unloaded; guns and ammunition should be stored safely beyond reach of children and careless adults.
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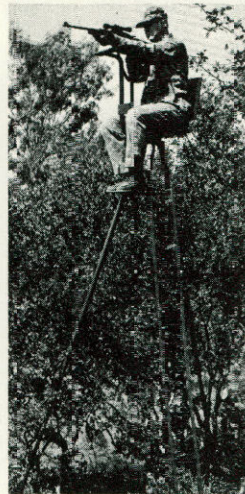
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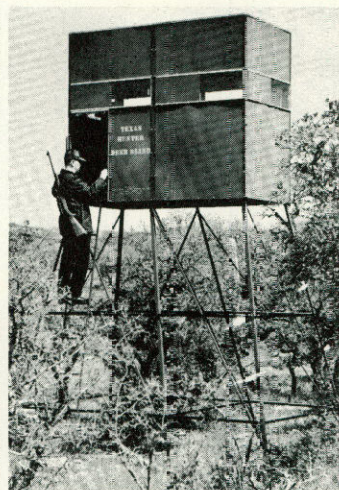
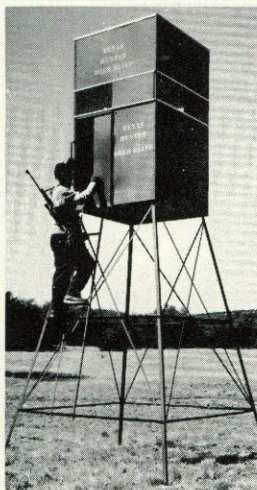
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TEXAS CATS

by Dennis Russell
Wildlife Biologist

The story of wild Texas cats in general is one of rapid extermination with the growth of farming and livestock interests within the state.

Historically, Texas was blessed with six of the seven North American cats—the jaguar, *Felis onca*; margay, *Felis wiedii*; ocelot, *Felis pardalis*; jaguarundi, *Felis yagouaroundi*; mountain lion, *Felis concolor*; and bobcat, *Lynx rufus*. Several of these have already passed from the Texas scene, and with the exception of the bobcat, the prospects for the rest are gloomy.

The jaguar was found in the mid-1800's along water courses in the region of San Antonio, and General Sam Houston reported it "east of the San Jacinto River and abundant on the headwaters of the eastern tributaries of the Rio Grande, the Guadalupe, etc." Kill records and other early reports do not indicate this abundance, but do report its presence.

But jaguars were stock killers in direct competition with man, and by 1900, the species was reported as being scarce within the state. The range of the jaguar had not, however, declined much as they were reported around the turn of the century in such scattered locations as Jasper, Center City and near the mouth of the Pecos River.

After the turn of the century, the jaguar all but disappeared from Texas. The only records in recent years show one killed in Cameron County in 1946, another in Kleberg County in 1948 and an animal thought to be a captive killed near Presidio in 1963. An occasional straggler may wander in from Coahuila, but the jaguar in

Texas is extinct as a breeding population. It is unlikely that it could ever return to Texas because of the destruction of the subtropical brushlands near the border.

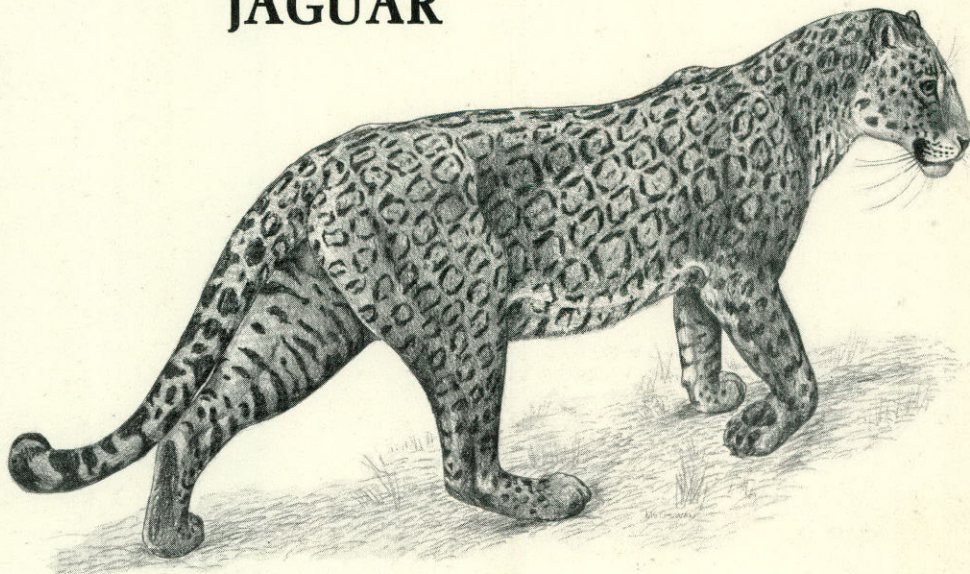
The margay is recorded in Texas on the basis of a single specimen taken in Eagle Pass in the 1850's. From this single record and some knowledge of the animal's tropical habits, it is doubtful that the margay was ever abundant within the state in historic times. However, fossils recently found along the Sabine River suggest that the margay may have been present over large portions of the state during the Pleistocene or Ice Age 10,000 years ago.

Ocelots are still found in small numbers at scattered locations throughout the South Texas brush country north to Kerrville and Rock-

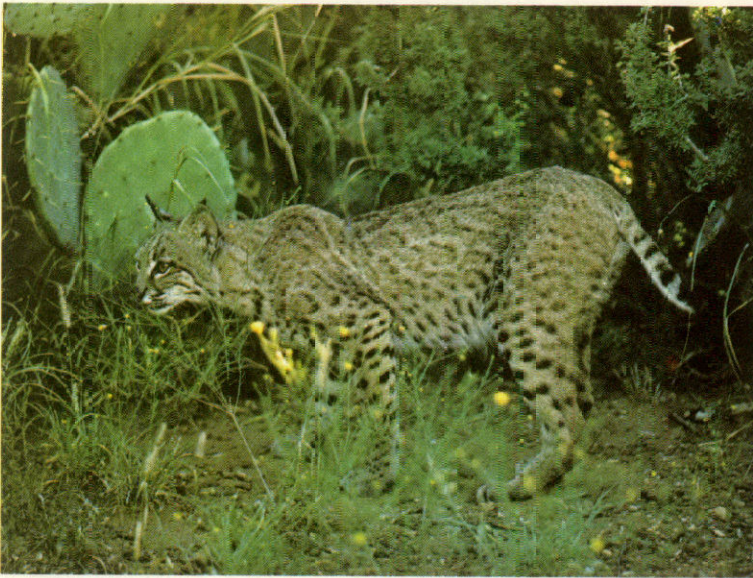
springs. The eradication of brush in South Texas, made in an effort to improve grazing, has adversely affected the animal's habitat and its numbers. However, brush control has been accomplished without much shrinkage of its original range. Wherever thick brush tracts still exist, ocelots may be found in small numbers. It appears that the ocelot will continue to hold out for some time in dense cedar brakes of the Edwards Plateau and in isolated brush tracts of deep South Texas as hunting pressure and predator control is light to nonexistent on this species.

The jaguarundi, or red and gray cat, is confined to the native brush tracts in extreme South Texas. In the few remaining areas of native brush, they can be expected to survive for a while. But with the continuation of

JAGUAR



BOBCAT



BOBCAT

ill-planned brush control, this little cat, which seemingly requires thick native brush, will not exist indefinitely.

The mountain lion once ranged throughout the southern two-thirds of the state. It is presently confined to the rugged parts of the Trans-Pecos and South Texas with scattered animals along the Balcones Escarpment and adjacent rugged lands of the Edwards Plateau. Before the turn of the century, mountain lions were found in the densely forested swamps of eastern Texas, and we can only guess that this was the Florida panther, *F. c. coryi*. However, by 1902 the panther was extinct in East Texas. Reports are occasionally made of a panther in the dense forests and swamps of that portion of the state, but it is probable that this subspecies no longer exists in Texas. Parks and Wildlife Department estimates of the total number of lions in all of the state range from 65 to 150. These estimates might be low, as some have suggested, but they are based only on resident animals and do not include those which wander back and forth from Mexico.

The rugged country of the Big Bend area probably contains the highest population density of lions in the state, but here again, it must be considered that many of these animals are moving in from the

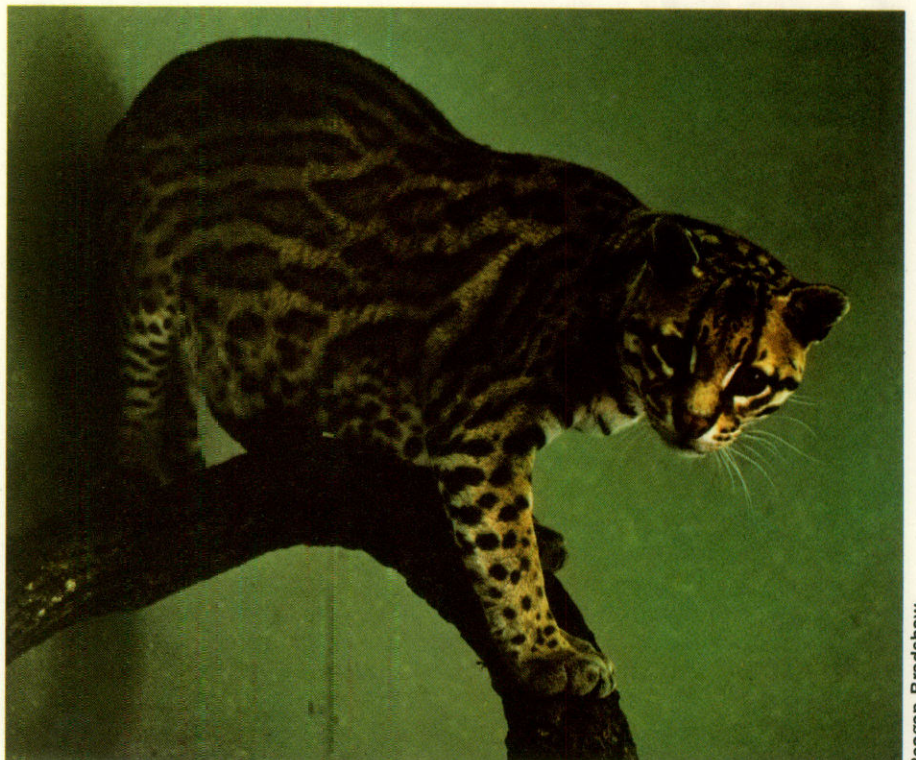
mountains of Mexico and that numbers are declining due to excessive trapping in adjacent areas

Other populations probably exist in the Guadalupe, Sierra Diablo and Chinati Mountains with occasional drifters into the Davis Mountains. These populations and others of the rugged mountains of the Trans-Pecos are not allowed to expand into the lower lands because of heavy trapping and hunting pressures.

The South Texas brush country probably contains the largest remaining populations in Texas, but each year nine or 10 lions are killed which probably represent more than the

yearly increase to a population estimated to contain no more than 50 animals there. This population is by no means stable or secure. A few lions are reported each year in the Possum Kingdom section of the state, west of Fort Worth near Possum Kingdom Lake; a small breeding population of five to 10 animals possibly still exists in this area. In the Edwards Plateau lions are confined to the rougher sections and are pursued throughout the year. This area is heavily hunted for game animals and some lions are taken by deer hunters. It is also a center of sheep and goat raising in the state and inevitable conflicts arise when lions move in. This section is rapidly becoming heavily populated as it becomes a major recreation area. But land parcels are becoming larger as companies buy large acreages for hunting resorts and remove the stock from them, thus preventing conflicts with ranching interests which were frequent in the past.

Bobcats are still found virtually throughout the state in favorable habitat. Their ability to adapt to changing conditions and a wide variety of habitat types makes them unique among the Texas cats. High densities exist throughout the South Texas brush country. It may be supposed that the great amount of land disturbance has increased the cat's food supply of rodents, because trap



OCELOT

catches of bobcats generally increase after an area is cleared of brush. The bobcat's shy, nocturnal nature has also prevented man from seriously threatening its existence.

In the middle of the 19th century, thin to moderate stands of brush were found on most of the uplands of southern Texas except in the forested areas. These stands of native brush intensified as drainage courses were approached. Brush density probably increased slightly between the early 1700's and the mid-1800's. With overgrazing and the reduction of prairie fires, brush virtually exploded toward the end of the 19th century.

Since this time, the brush has been reduced in the following ways: 169,500 acres have been converted to vegetable farming; 90,000 acres to citrus production; 1,878,690 acres to hay and grain; and about 2,500,000 acres to cotton. On the remaining 17,250,000 acres in South Texas, which is devoted primarily to livestock grazing, brush cover has been changed by mechanical or chemical methods with little or no concern shown for the quality or value of the brush type for either wildlife or livestock.

As a result of these large scale efforts to increase grass without careful regard for the whole resource complex, less than 5,000 acres of the native catclaw-huisache-ebony brushland remain. These 5,000 acres are virtually all that remains of the prime jaguarundi range. The regrowth of brush in cleared lands throughout the remainder of the 17,250,000 acres has probably provided an acceptable habitat for the bobcat and possibly also for the mountain lion. However, the checkerboard pattern created by farming and extensive land clearing probably has reduced the suitability of the habitat for the wide ranging mountain lion.

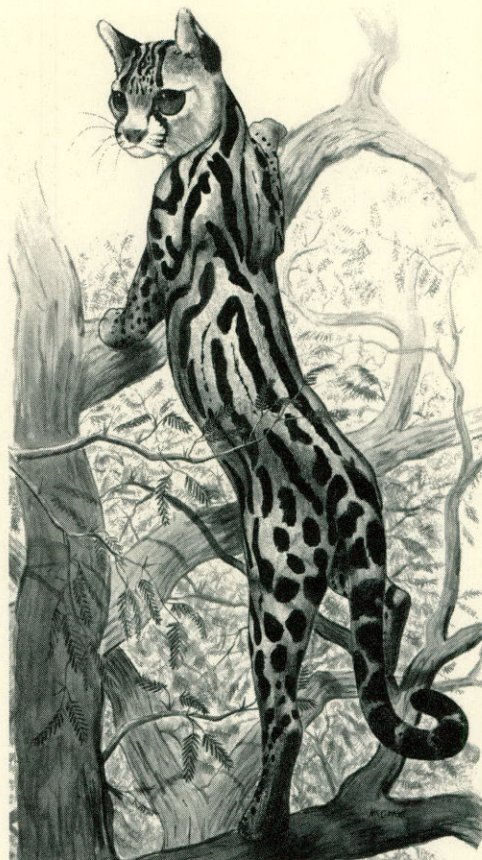
In eastern Texas, inundation of bottomlands for lakes and reservoirs has destroyed much of the habitat which was the haunt of the Florida panther. This, with the removal of hardwoods and expansion of pine culture may also have changed the size and composition of the rodent populations, notably the gray squirrel, fox squirrel and Florida woodrat. Opening of the forest canopy, timber stand improvement and tame pastures in the forests of eastern Texas may have temporarily created better

conditions for other types of rodents such as the cotton rat and pocket gopher. However, these rodent population buildups are generally of short duration since the forest canopy again soon closes over the treated area and the populations decline. This has probably resulted in the replacement of stable animal populations with eruptive populations which cannot be depended upon to support high level carnivores.

Brush clearing, land inundation, the planting of exotic grasses and timber stand "improvement" throughout the state have so changed the habitat that it appears the chances for the larger cats to make a comeback are remote.

Without a doubt, predatory animal control efforts have contributed to the decline of mountain lions within the state. Trappers from the U. S. Bureau of Sport Fisheries and Wildlife and the old Biological Survey, along with state and bounty trappers, pursued both the mountain lion and bobcat for over half a century. Major efforts have been confined largely to protecting sheep and goats, and as a result, the mountain lion has been virtually eliminated from the Edwards Plateau. Large-scale predator control was dropped officially by the by the Texas Game and Fish Commission in 1955. Since that time, only private trappers and those of the Division of Wildlife Services of the Bureau of Sport Fisheries and Wildlife have operated on a limited and carefully controlled basis.

A bounty system still is authorized by law in 36 of the state's 254 counties. Parks and Wildlife Department records indicate that 16 counties still pay bounties on the bobcat ranging



MARGAY

from a low of \$2 to a high of \$80. Lions are bountied in two counties at \$15 and \$50. These funds are supplied by the County Commissioner's Courts and are sometimes matched with contributions from a local stockmen's association or a hunting club. No records are available to show the numbers of lions taken in recent years by bounty hunters. Records do indicate that more than 500 bobcats were bountied during the last fiscal year. **



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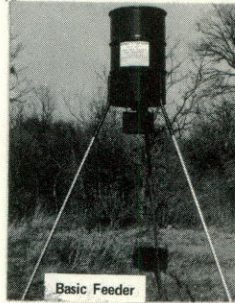
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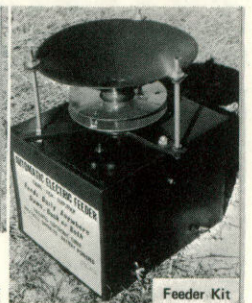
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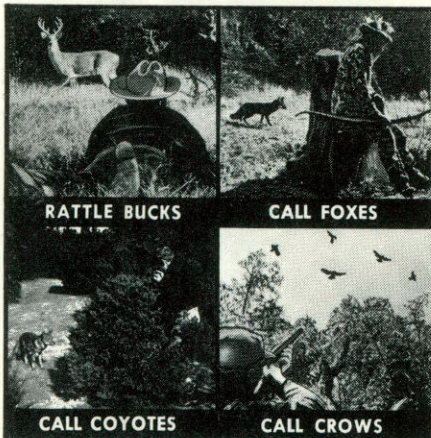
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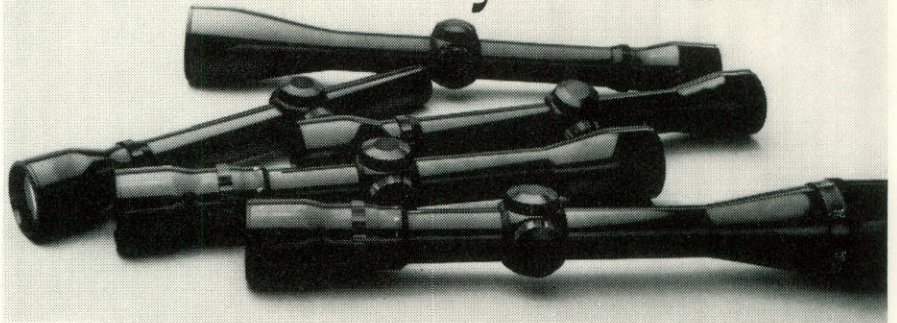
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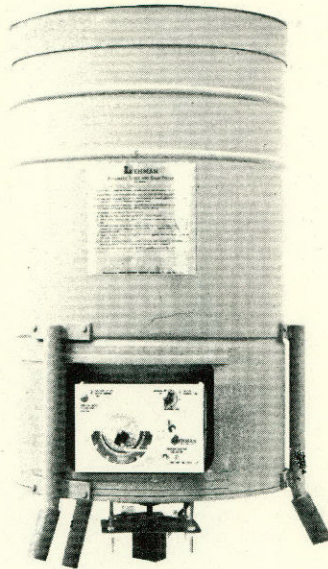
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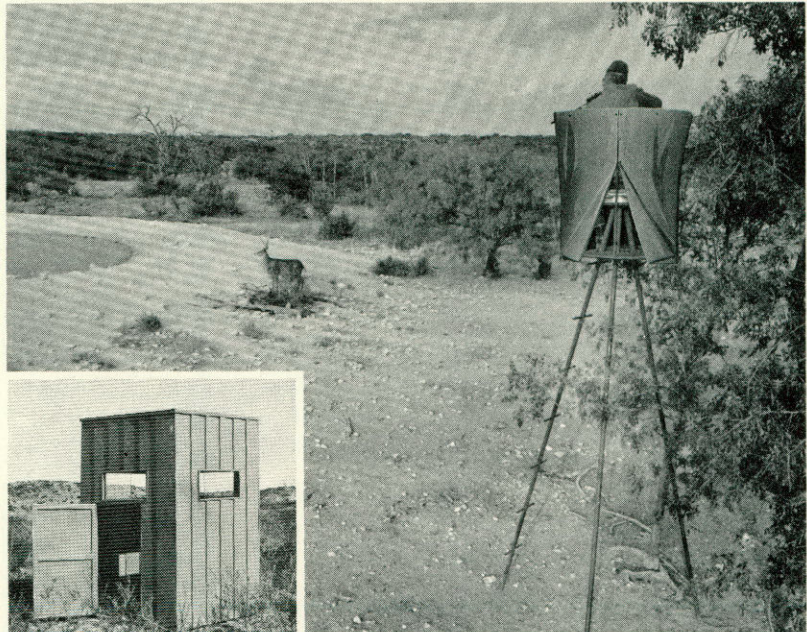
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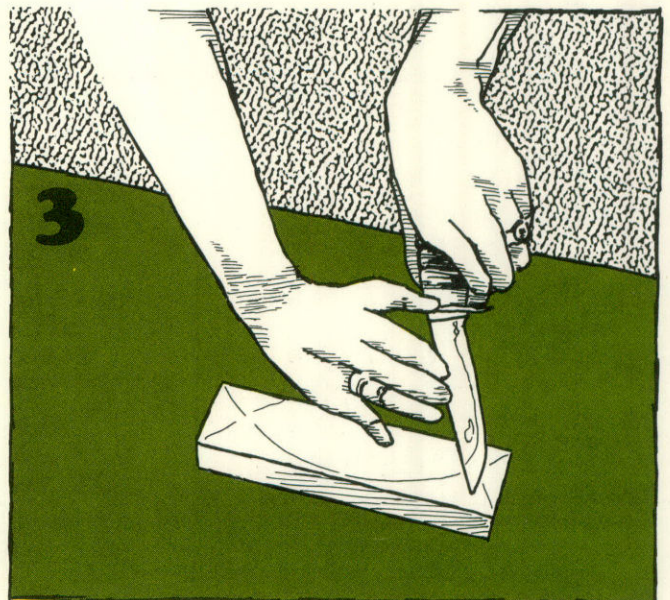
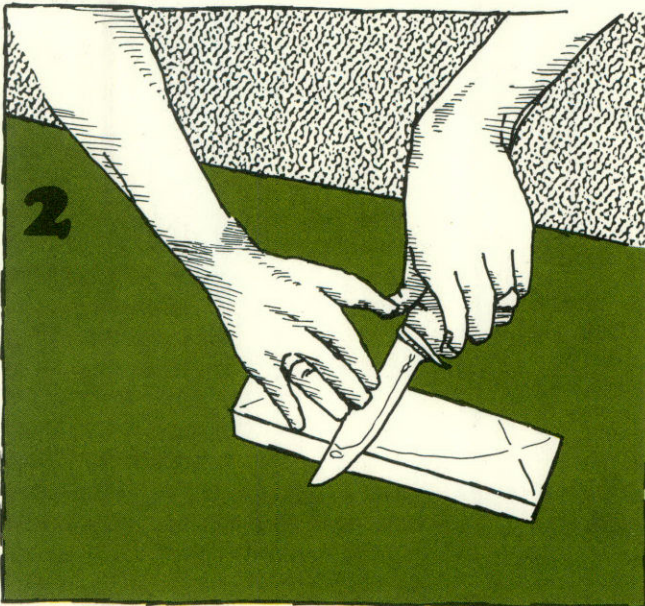
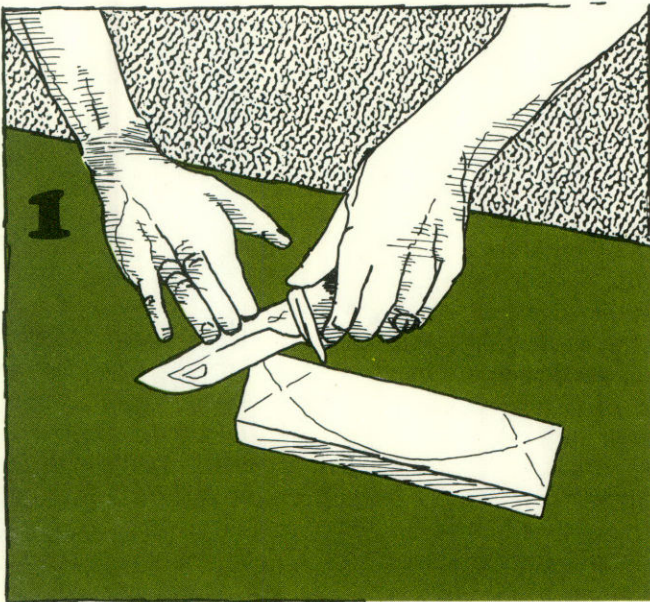
by David Baxter

What kind of shape is your knife in? It may be in pretty bad condition if it was left in the trunk of the car after your last hunting or fishing trip.

Let's assume that it is coated with rust and requires more than just a whetstone to restore it to hardware-store brightness. With a finishing file, work out all deep nicks or breaks in the blade. If the blade is ground on one side, file only on that side and do not destroy the basic shape of the knife. This way the finished edge will be straight and level. If the knife has a double edge, work on both sides equally.

After the cutting edge is prepared, all rust should be removed with removal solutions and fine grain emery paper. This may take a lot of time and work, but it will be worthwhile when you have to depend on the knife to work for you.

Sharpening requires two types of whetstones: a coarse, Washita stone and a fine-grained hone or Arkansas stone. For both whetting and honing, a good grade of ma-



chine oil should be used to prevent clogging the stone with metal particles. These particles will severely hamper the effectiveness of the stone if allowed to accumulate.

For shaping of the cutting edge a coarse whetstone is used. The blade is held at a 20-degree angle on the stone and moved forward in the motion of cutting.

Most of the sharpening is done on the whetstone and only a few strokes are needed with the hone.

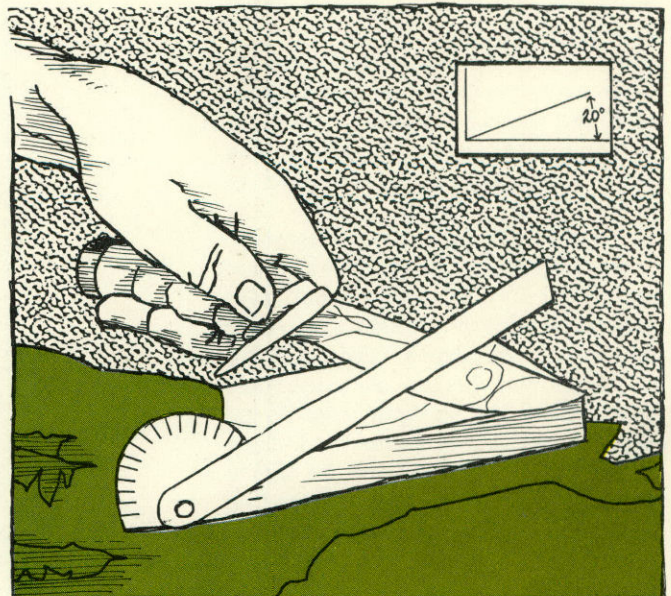
With a good edge whetted on the blade, use the same motions to draw the blade across the hone. Honing will leave an exceptionally fine edge on the blade.

Honing also leaves a light "wire" or fuzzy edge on a knife which can be removed by stropping on a piece of leather. Strop the blade in one direction only — away from the edge.

The best way to test the edge of your restored knife is to use a piece of paper. Hold the paper in one hand and the knife in the other; if the edge is sharp it will cut through the paper pushed by the weight of the knife without tearing.

If the knife is to be stored after sharpening, the metal should be covered with a preservative or other heavy lubricant. * *

Starting with a coarse whetstone, draw the blade across the stone in a 45-degree arc. Move the knife in the motion of cutting. The blade should be held at a 20-degree angle to the stone as shown with the protractor in the sketch to the right. Repeat the process with a fine-grained hone.



Letters to the Editor

Rattlesnake's Eyes

I received your magazine of July 1971, and had a question concerning the picture on the front cover of the prairie rattlesnake. All information I have received before said that rattlesnakes have narrow, slanted pupils. The one on the July cover shows round pupils. Could you explain why?

Richard Vaughn
Austin

You are correct in that rattlesnakes and most pit vipers have elliptical pupils. The snake shown on the front cover has elliptical eyes, but he was in a low-light situation and the pupil had opened wide to admit more light. It is slightly oval in the picture, and if it had been in the bright sunlight, it would have been the narrow slit usually shown in pictures of the snakes. Our photograph was taken with an electronic strobe that illuminated the snake for such a short period of time that the eye did not have time to react to the light.

Two Laws

This department has received many letters asking for clarification of two proclamations adopted by the Parks and Wildlife Commission.

Since it is no longer necessary to keep shotguns permanently plugged to a three-shell capacity in hunting non-migratory birds, many people have asked whether this applies to doves. Both mourning doves and white-winged doves are migratory birds. In addition, wild ducks, geese and brant of all species, coot, rail, gallinules, plovers, Wilson's snipe or jacksnipe, woodcock and sandhill (little brown) cranes are migratory game birds. The shotgun must be incapable of holding more than three shells, including one in the firing chamber. The penalty for violating the law is a fine of \$25 to \$100.

Trotlines and the tags for them have also confused many Texans.

Trotlines set in fresh water in regulatory counties must have a legible tag, constructed of material at least as durable as the trotline. Paper tags are obviously illegal. The tag must bear the name and address of the fisherman who set the line, and the date it was set. Since there are many counties not under regulatory authority, it is wise to check with a game management officer or play it safe by always putting a tag on your line. In addition, no trotline may be set in the vicinity of a public boat dock, bathing pier, bathing beach or any other public place commonly used as a swimming or bathing area. The fine for violating this law is from \$25 to \$200.

Worms

My wife and I have just returned from two weeks on South Padre Island. This isn't our first trip there — we've been there nearly every year for the past several years. As usual, we thoroughly enjoyed our stay, but this time I've got a problem.

One evening we were placing some speckled trout filets in plastic bags for freezing when my wife suddenly exclaimed, "These fish have worms."

They were buried in the meat on the skin side, and in color and texture they looked like nothing but fat — completely white, with no marking and I could not discern any movement.

My question is: are they worms, and if not, what? In any event, are they harmful for human consumption? The last question is pretty much academic — if the answer to the first question is "yes," I'm afraid that a "no" answer to the second won't help me. I'll just have to clean out the freezer.

Dan L. Mayer
Bartlesville, Oklahoma

The worms you described in the muscle of the trout are a larval state of a tapeworm which matures only

in sharks and rays. They pose no threat to humans, who may eat them even raw.

Apparently, fish pick them up through some dietary habit, and usually the older and the larger the fish the more worms it contains. Some species of fish have more than others, and the croaker family, which includes the trouts, drum and redbfish, are often infested.

You may want to trim around the worms when you filet the fish, but this is for aesthetic rather than health reasons.

Metal Detectors

Please send me information on which state parks in Texas we can take a metal detector into. What is the law pertaining to this?

T. J. Watkins
San Antonio

It is not the policy of this department to allow private individuals to conduct metal detecting operations within state parks.

All property located within a state park, including property lost or abandoned by the general public, becomes the property of the state, subject, of course, to the claims of the rightful owners who may identify such property. For these reasons, we do not allow the use of metal detectors in any state park.

Telescopic Sights

In the article on adjusting a telescopic sight on pages 30 and 31 of the September issue we made some mistakes in the captions. At 200 yards, four clicks would move the point of impact two inches, and at 50 yards, four clicks would move it one-half inch. In the answer on page 10, the windage knob should be moved eight clicks to the right, not to the left.

BACK COVERS

Inside: In Santa Elena Canyon, the swirling waters of the Rio Grande are a challenge for even the best paddlers. Photo by Reagan Bradshaw.

Outside: When crisp air comes to Texas, the rocks and leaves blend in an autumn pattern. Photo by Reagan Bradshaw.



