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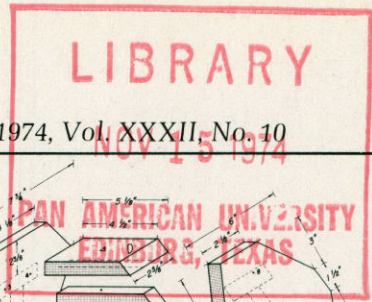
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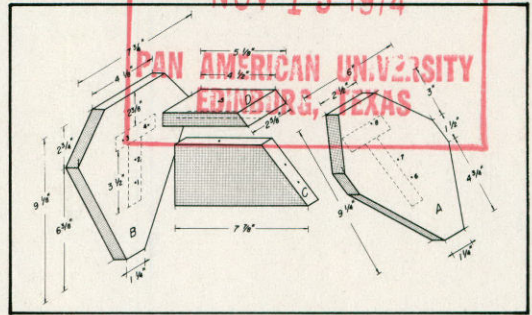


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Front Cover: Of all of the wild creatures in Texas, perhaps none is more appealing and entertaining to watch than the prairie dog. It once numbered in the billions across the western plains, but modern agricultural practices and poison reduced its numbers considerably. Photo by Jim Whitcomb.

Inside Front: Lichtenstein's oriole is an unusual resident in Texas found only in the extreme southern tip of the state. The bird has been known to breed in Cameron and Hidalgo counties. Photo by Bill Reaves.



Learn about Quail

by E. L. Young, Jr., Daniel W. Lay, Richard D. DeArment, William B. Russ and W. Jay Williams, Wildlife Biologists, and Tate Pittman, Information Officer.

With quail occurring from the top of the Panhandle to the mouth of the Rio Grande, it is understandable that these birds create state-wide interest. As a result, our biologists are bombarded with questions concerning the habits and habitat needs of both the bobwhite and scaled quail. Perhaps the answers to the following commonly asked questions will also answer some questions that have been puzzling you.

Do bobwhite and scaled quail have the same habitat requirements?

Scaled quail seem to prefer a more open situation than do bobwhites. When the Chaparral Wildlife Management Area, near Cotulla in South Texas, was purchased several years ago, its quail population was about half bobwhite and half scaled quail. At that time the area was heavily grazed by domestic livestock. The area now has considerably better cover, a result of a reduction in the grazing pressure, but the quail ratio at this time is about 10 percent scaled and 90 percent bobwhite. Even though overgrazing may result in an increase in scaled quail numbers, it is not recommended as a management practice.

If a landowner really wants to do something to help quail, what help is available from the state?

The Texas Parks and Wildlife Department has several trained wildlife biologists in all regions of the state who are available to offer advice on habitat management to those landowners willing to make any necessary concessions or changes in operation to promote quail populations. In addition to these biologists who have other wildlife management responsibilities, there are five extension biologists who specialize in assisting landowners with wildlife problems. These men are located in Breckenridge, Laredo, Victoria, Tyler and Sweetwater and are available to assist anywhere in the state. A request for assistance to the

Austin headquarters will be forwarded to the appropriate biologist.

No financial assistance is available. The majority of techniques to increase quail numbers do not require great expense, but many require considerable labor. Moderation in grazing pressure is the essential ingredient in providing good quail habitat. Overnight results should not be expected since, like most good things in life, good quail habitat takes time to develop. **What kinds of habitat improvement are likely to be needed?**

Quail must have food and cover to survive, and the weak link is usually the food supply. Where habitat improvement is needed, it can usually be achieved by one of the following means:

Controlled grazing—Overgrazing by cattle, sheep, goats or even deer causes a reduction in the number of seed producing weeds and forbs. Reducing the numbers of grazing animals can greatly increase the abundance of plants needed for food, nesting cover and escape cover. In areas where an overabundance of rank grasses is a problem, moderate grazing by cattle can encourage forb growth and improve the habitat for quail.

Protected areas—Clean farming practices create a desert for bobwhite quail. Cultivating fields right up to the fence line helps eliminate quail habitat. The farmer interested in maintaining quail populations



can improve his farm by leaving a narrow strip of uncultivated land along fence rows. This will permit vines and weeds to grow to provide nesting cover, escape cover and food. Areas which are unproductive can be protected from grazing and cultivating to permit the growth of food and cover plants.

Plantings—In some cases, plantings of shrubs which provide food and cover for quail may help to hasten the improvement of quail habitat. Plantings should always be followed by deferment from grazing to prevent damage to young plants. Seeds for native food plants are often expensive and difficult to obtain, but there are a few sources of supply. Transplanting native plants such as dewberry, greenbrier, plums and oaks can be more effective than introducing exotic plants.

Soil disturbance—Disturbing the soil through discing permits the growth of annual and perennial plants which supply the bulk of a quail's diet. Other methods include root plowing and chopping or shredding native brush. This should be done in strips to only remove some of the brush, leaving the rest for cover. Croton, ragweed, sunflowers and many other forbs will often invade areas where the soil has been disturbed.

Controlled burning—Although extreme care should be exercised to prevent wildfires, controlled burning of dense grasses will also encourage the growth of good quail plants. Extremely hot fires may inhibit vegetative growth, so advice from a biologist or Soil Conservation Service representative should be solicited before burning. Moisture conditions must also be considered before using fire. This practice is most effective in the eastern half of Texas.

Vegetation control—The use of herbicides designed to kill broadleafed plants should be discouraged in areas where quail are wanted. These chemicals eradicate the best food plants. Extensive brush eradication can be detrimental to quail, but carefully planned brush control can make a positive improvement.

Is a lack of quail cover a problem?

Quail require some shade during the heat of the day as well as escape cover and an adequate place to rear their young. In intensively cultivated sections, on prairies or in areas with complete brush control, lack of cover is a limiting factor. There should be some type of woody or brushy cover on every 10 to 20 acres. Cover is no problem near woodlands, but it may be too dense for good dog and gun work at hunting time.

Will an increase in watering places produce more scaled quail?

In the Trans-Pecos area where water is well distributed over most of the range, there is no concrete evidence that it increases quail. Quail regularly drink at water areas, but studies have shown coveys to remain away from water for weeks at a time.

What do quail eat?

Weed seeds, when available, make up the bulk of the diet of both species. Seeds from croton (dove-weed), ragweed, broomweed, prickly poppy and

sunflower are some of the favorites. Other important food sources are the fruit of such woody species as bumelia, granjeno, brasil and prickly pear. Insects supplement this diet but, in late winter, quail rely almost entirely on "greens" to sustain them. These greens consist of tender winter weeds and the leaves of some grasses.

Will supplemental feeding help increase my quail population?

Ordinarily, no. Many individuals and governmental agencies have tried and failed. The lack of rodent-proof feeders makes supplemental feeding expensive; concentrating quail also concentrates their predators; and often times, poor site selection dooms such programs from beginning. Supplemental feeding will concentrate quail in a local area, but experiments show no overall population increase the next year. Feed blocks specifically designed for quail have had success in carrying scaled quail through hard times. However, the cost of artificial feeding is difficult to justify on most ranches with low hunting pressure.

Should I buy some birds and restock my range?

Restocking of quail habitat with pen-raised birds has been found to be a time-consuming, expensive and essentially useless practice. Stocking quail in an area where numbers are low is tantamount to treating the symptoms and not the disease. The factors which eliminated the native birds originally will also eliminate the new stock unless the habitat has been improved. If food and cover are available, quail will naturally occur.

Won't stocking pen-raised birds introduce new blood and vigor to counter deterioration caused by inbreeding in the native stock?

Definitely not! In a population with an 80 percent turnover each year, only the strongest survive, and inbreeding is not detrimental under these conditions. Also, the chances of inbreeding are very remote considering there is a constant interchange of quail between coveys. Birds will exchange between coveys which often results in individual quail moving several miles. Introduced birds are usually inferior to native stock and will pollute the populations with less vigorous quail. Pen-raised birds may also introduce domestic poultry diseases into the wild flocks.

Are scaled quail bigger than bobwhites?

It is the opinion of many South Texas quail hunters that "blues" are considerably larger than bobwhites. They are larger, but not much. Collected data indicates that in this area of the state, adult scaled quail (on the average) outweigh bobwhites by about 16 grams, or a little more than one-half ounce.

Are bobwhite and scaled quail in South Texas different than those in other areas?

Three subspecies, or varieties of bobwhites occur in Texas: the Virginia or eastern form, *Colinus virginianus virginianus*, in East Texas; the Texas or Mexican bobwhite, *C. v. texanus*, in South and Central Texas; and a variety of eastern form, *C. v. taylori*, in the Panhandle and Lower Plains. These three varieties crossbreed readily where their ranges overlap,



and releases of one variety on to the range of the other have occurred. All subspecies look very much alike, differing slightly in color and size. The Texas bobwhite is somewhat paler with wider bars on its breast. In South Texas, the Texas bobwhite is the most common.

Two subspecies of scaled quail occur in Texas: the Arizona form, *Callipepla squamata pallida*, which inhabits the Trans-Pecos, West Central and Panhandle areas, and the chestnut-bellied scaled quail, *C. s. castanogastris*, of southern Texas. The coloration and markings of the two birds are similar, but the chestnut-bellied quail is darker with a chestnut-colored belly patch from which the bird gets its name. It is also slightly smaller than the Arizona form. These birds are called a variety of common names: "Blue quail," "Mexican quail," "top knot" and "cotton top."

For all practical purposes, both the bobwhite and scaled quail of South Texas are the same birds as their subspecific counterparts found in other areas of the state.

How far do quail range?

Studies on the Chaparral Wildlife Management Area revealed that movements of banded birds from the trap site to the kill location ranged from .05 to 4.69 miles. However, most movements were less than one half mile. There was no significant difference in

the range movements of bobwhites and scaled quail.

If quail belong to the people of Texas, why don't I have the right to hunt them anywhere in the state?

According to the law, the birds belong to the people, and every citizen has the right to hunt them during open season. However, the law also recognizes the right of the landowner to say who will or will not hunt the birds on his land.

Where are scaled quail found in the Trans-Pecos?

They are distributed over the entire area, except for minor gaps in their range. The greatest harvest comes from Brewster, El Paso, Pecos and Reeves counties.

Are landowners in the Trans-Pecos willing to lease for quail hunting?

Yes. Landowners near population centers have begun to lease by the season. Day hunting has the greatest potential for the Trans-Pecos area due to the distances involved between hunters and leases. County chambers of commerce can provide leasing information to interested hunters.

Where should I go in South Texas to hunt bobwhite and/or scaled quail?

Bobwhites occur in all South Texas counties, but scaled quail are more or less restricted to the western half of the area. In many areas both species occupy the same range.



Photographs by Bill Reaves

Studies have shown that hunting is not a controlling factor of quail numbers since quail populations in general undergo a natural turnover rate from one season to the next of 70 to 80 percent. Hunters are more likely to underharvest a season's quail crop than to overharvest it. However, for the best hunting results, quail coveys should not be moved more than once a week by gun or dog.

How much quail hunting will my land support?

It has been found by examining thousands of quail wings over a period of years that the annual crop of young birds is 70 to 80 percent of the total population. Theoretically, it would be possible to have a 40 to 50 percent harvest, leaving 20 to 30 percent of the total annual mortality to predation and other natural losses which begin before the young birds are free of the eggshell.

Under ordinary hunting conditions in the Panhandle, less than 10 percent of the quail population is harvested by hunters and the remaining harvestable percentage is doomed by nature. A 45 and 47 percent harvest was taken on the Gene Howe and Matador Wildlife Management Areas, respectively, during the 1973-74 season because a maximum hunting effort was encouraged under the most desirable conditions. This still fell short of the perfect harvest because both areas had over 80 percent young in the population.

Does it matter how often during the season quail are hunted?

For best results, coveys should not be moved by gun or dog more than once a week. Generally, it doesn't matter, but continual hunting pressure will cause quail to seek the most dense cover, and they may move as much as 300 to 400 yards in order to find safer habitat.

How many bobwhite quail should be taken out of a covey?

According to banding records, the bobwhite is a "big visitor" and individual quail are known to mix and mingle, shuffling from covey to covey. The important point is to leave adequate spring brood stock. One-fourth of the fall population is normally adequate to replenish the population.

What are population densities and covey sizes?

Population densities and covey sizes of both "bobs" and "blues" vary considerably from one area to another and from one year to the next. There have been documented reports, during peak populations that occurred in the fall of 1966 and 1968, of one bobwhite per acre on some ranches in Bee County. There appears to be no significant difference in the covey sizes between the two species, with about 12 to 15 birds per covey in a normal year.

What causes the populations to fluctuate from year to year?

Rainfall is the key to annual quail production. Studies have shown that poor reproductive efforts usually follow an exceptionally dry winter and spring.

Does closing the season help quail populations?

No. Hunting is not a controlling factor of quail numbers. There is a natural turnover of 70 to 80 percent of the population from one year to the next

Predators, such as hawks, are not a major consideration in a quail management program since predation actually keeps quail numbers in balance with their habitat. Adequate food and cover, however, are major considerations. Poor habitat is much more limiting on quail populations than predators, disease or other factors.



Swainson's hawk by Jim Whitcomb



which occurs whether the birds are hunted or not. Hunting merely utilizes a resource which would otherwise be wasted. In many areas of Texas, quail never see a hunter. However, these birds still have the natural 70 to 80 percent turnover.

Would it help to kill predators such as hawks, skunks and foxes?

No. Predation is not a major problem in quail management, but acts to keep the population in balance with its habitat. Inadequate habitat that does not provide food and cover during the entire year is much more detrimental to quail than predators.

Do scaled quail hatch earlier than bobwhites?

Combined quail wing data collected on the Chaparral Wildlife Management Area and areas throughout Live Oak County indicate that about 80 percent of the bobwhites and 95 percent of the scaled quail hatch prior to July 15th. It is concluded that average peak hatching dates are a little earlier for scaled quail.

Where there is a large population of quail in the fall and winter, is this the result of individual quail rearing more than one brood?

No. We feel that an adult pair of bobwhite quail will ordinarily raise only one hatch during the summer. If for some reason their efforts are completely destroyed, they may reneest until successful. Large quail populations in the fall are the result of good

hatching and survival of young.

What happened to the quail I see during the dove season that are gone when the season opens?

Believe it or not, the dove hunters do not take them. During dove season (September and October), quail populations are at their peak and the birds are staying in areas more frequently used by people, such as fields, roads and around farm houses. As fall approaches, food and cover become scarce in these areas and quail begin a "shuffle" to the denser vegetation of pastures, woodlands and idle land along creeks and other bottomlands where they are seldom seen. Following the peak of the population in late summer, a normal decline begins from such natural causes as predation and disease.

What is the future outlook for quail in Texas?

The quail picture in Texas as a whole is good. In many areas, high populations occur when weather conditions are right. Rainfall, both in its frequency and volume, determines the availability of food and cover. These two factors, in turn, control the number of birds in a given area. Man can create a drought for quail by overgrazing the range and destroying food and cover; by clean farming practices which leave no weeds along fences, creek beds or draws; and by chemically controlling weeds in a pasture. The future of quail in Texas is in the landowners' hands. **



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OUTDOOR BOOKS

THE FIFTH HORSEMAN IS RIDING by Larry Van Goethem; Macmillian Publishing Co., 866 Third Avenue, New York, N.Y. 10022, 1974; 150 pages, \$4.95.

Imagine approximately 10,000 years of natural evolution since the last glacier in the Pleistocene and picture the natural beauty of the United States before the early colonists. With that thought in mind, look at our polluted rivers, smog-filled air and overcrowded cities.

The change has been a slow process, so slow that much of the damage has gone without notice. Van Goethem is a concerned naturalist and an environmental reporter for the *Milwaukee Sentinel* who has written a book about the destruction of the United States, especially that occurring in the mid-western states.

Many environmental books on the market illustrate some of the author's arguments, but few use his literary, almost poetic style of writing. Often quoting Thoreau and Emerson, he attempts to create a forceful impact of a before-and-after scene of America.

At times the author is critical of the federal government's lack of concern with environmental programs and their impact on the balance of nature. He concludes that the responsibility lies within the body of the people and, unless action is taken at the grass roots, the environment will be ignored when legislation should be enacted.

Van Goethem sees the destruction of the environment in a clear perspective and offers practical solutions, unlike many environmental authors. For example, he feels strongly about recycling all possible materials, and would like to see the beer and soda industries provide part of the incentive by abolishing the no-deposit, no-return cans and bottles.

The reading becomes lighter at times as the author inserts personal experiences about his life in Wisconsin. He also makes good use of several full-page charcoal reproductions for illustration.

The Fifth Horseman Is Riding is an above-average environmental book because the author's approach to the subject is different and because he

offers valid suggestions for the improvement of natural resources. —Terrie Whitehead

THE WONDERS OF WILDLIFE IN AMERICA by the editors of *Outdoor World*; Country Beautiful Corporation, 24198 W. Bluemound Road, Waukesha, Wis. 53186, 1973; 160 pages, \$12.95.

At last there is a one-volume wildlife book that covers all major divisions of animals and is pictorially illustrated with top-quality photographs. This book might be compared to a concise version of a wildlife encyclopedia, giving factual information in an interesting manner. However, it goes one step further to include some plants, insects, reptiles, fish and a selection of animals from other countries.

The written material of the book relies heavily on the 163 photographs, 138 of which are in full-color. In one chapter the authors give helpful hints on using a camera and taking wildlife photographs, and suggest that the beginner frequent lakes, ponds, state parks and wildlife refuges. As the authors point out, state parks and wildlife refuges are excellent places to take photographs because the animals become accustomed to humans and automobiles.

In another chapter discussing predators, especially coyotes, bobcats and mountain lions, the authors give a brief summary of various poisons employed by farmers and ranchers as well as recent federal legislation governing their use.

One chapter covers Aransas National Wildlife Refuge and features color photographs of geese in flight, a Texas sunrise and a great blue heron.

The entire book is versatile and is comprised of many contributing writers and photographers. The design is outstanding and the subject matter is divided into logical chapters. *The Wonders of Wildlife in America* is well-written, excellently illustrated and would make a great gift for a pre-teenager interested in learning about wildlife. —Terrie Whitehead

INTRODUCTION TO MUSHROOM HUNTING by Vera K. Charles; Dover Publications, Inc., 180 Varick St., New York, N.Y. 10014, 1974; 58 pages, \$1.25.

If you've ever found mushrooms growing in an open field or in the woods on a hot day after a rain, you probably wondered what kind they were and if they were edible.

Introduction to Mushroom Hunting is a field guide containing practical information on 95 common genera. Unfortunately, the 49 illustrations are black and white, making it difficult at times to determine the distinguishing characteristics of each.

Mushrooms are a fungus varying in form, size, color and habitat, and one typical characteristic is the absence of green. All are either parasites or saprophytes, and two important growing factors are heat and moisture. The tissue structure is designed to absorb large amounts of water; consequently, growth is rapid.

As the author emphasizes repeatedly, no hard and fast rules govern which mushrooms are edible and which are poisonous; therefore, it is dangerous to experiment and eat them. Young mushrooms, or buttons, are extremely dangerous, even to the experienced, because during early stages of development it is difficult to tell one species from another.

Ms. Charles, formerly with the United States Department of Agriculture, includes a glossary of definitions and a list of material for further reading in the back of the book.

Mushroom hunting can be fun and interesting, and a field guide such as *Introduction to Mushroom Hunting* is a practical and inexpensive way to learn names and varieties. —Terrie Whitehead

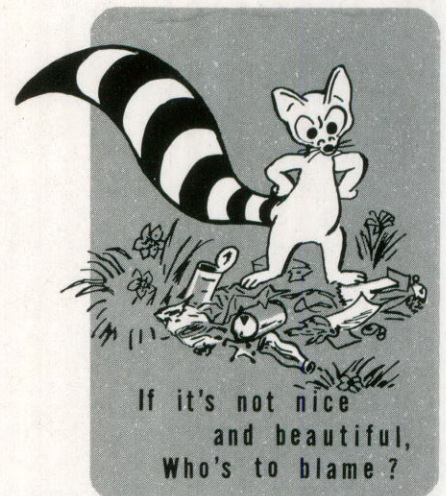


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**Texas Parks & Wildlife
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LONG SHOTS SHORT CASTS

compiled by Neal Cook

Locals Litter: Two Texas Highway Department engineers reported recently that most litter along our roads is put there by "locals." Thoughtless citizens, not tourists or visitors, can be blamed for marring the beauty of the state's highways. Hopefully, none of our readers are the "locals" causing the problem.

No Heart Problems: Anyone who is on a salt-free diet and has worried about the salt in saltwater fishes can stop worrying about that problem. Saltwater fishes have no more salt in their flesh than freshwater fishes or land animals. Though they live in a highly saline environment, their bodies maintain a constant internal balance of salts and fluids through various osmotic processes. The same is true for animals in a freshwater or terrestrial environment.

Big Shark: The largest of all modern sharks is probably the whale shark, but it is a placid and inoffensive animal despite its size. It feeds on small fish and squid. The heaviest whale shark recorded was a 38-foot specimen that weighed 26,594 pounds. The maximum size for the animal is probably about 45 feet long.

Mixing Oceans: Work proposed in the Panama Canal Zone may destroy efforts by biologists collecting and recording animals living in the Atlantic and Pacific Oceans. Until the 51-mile Panama Canal was opened in 1914, the oceans were effectively divided, but current plans to use seawater for raising the water in the locks on the canal mean that there will be an eventual exchange of animal species between the oceans. What this may mean to the predator-prey balance of the waters is unknown and, since biologists have not recorded all animals on both coasts, a "before and after" inventory may not be possible.

Protecting the Oilbird: The World Wildlife Fund has granted \$11,000 to study the oilbird of Trinidad, West Indies. This cave-dwelling, blue-eyed, fruit-consuming bird flies only at night. Equipped with a radar similar to that of bats, it is the only bird known to be capable of flying in total darkness. It has suffered heavy predation by man who has used the chicks' heavy fat layer for its oil. The oilbird now stands to suffer habitat destruction affecting its food supply. The birds will be radio-tagged and tracked to learn the site and extent of their feeding grounds as a preliminary step to protecting an area sufficient to support them.



King of the Canyon

Article by Ed Dutch, Information Officer, Edinburg, photography by Bill Reaves

In the Palo Duro Canyon of the Texas Panhandle, the aoudad sheep is king and more than a match for its gun-toting adversary—man—who has, more times than not, found hunting the creature to be an extremely humbling as well as memorable experience.

It took six days in this awesome country for me to bag my aoudad ram, but even those who persevere are not always rewarded with a kill.

Adverse conditions such as sub-freezing temperatures, 30- to 50-mile-per-hour winds and rugged canyon terrain are only a few of the obstacles that combine to make an aoudad hunt in the canyon area one of the finest challenges in the state.

In 1973, the Texas Parks and Wildlife Department issued Panhandle landowners 195 permits for aoudads, but only 60 sheep were harvested. An average of 15.1 man-hours of hunting was required to bag an aoudad during the seven-day November season. Over the last 10 years, during which time 1,179 permits were issued, only 338 sheep have been killed. When taking into consideration that hunters pay between \$250 and \$750 for hunting rights, depending on the ranch and facilities available, it's obvious that aoudad hunting is serious business. Yet, only a few sheep, both rams and ewes since both have horns and are legal, are harvested each year.

Although the Parks and Wildlife Department issues

the aoudad permits to the landowners for distribution to the hunters, the department does not manage the actual hunts nor the method of distribution. Those interested in obtaining a listing of the landowners who hold aoudad permits for this year's hunt should contact the Texas Parks and Wildlife Regional Office, P.O. Drawer 1590, San Angelo 76901.

Aoudads are not native to the Panhandle. They were transplanted to this area by the Texas Parks and Wildlife Department in 1957. Considered by many as being among the most successful of transplants, 44 aoudads were released in the Palo Duro Canyon, and from that brood herd, population estimates now reveal there are about 600 sheep in the canyon.

The adaptability and characteristics of these sheep seem to work in their favor in this type of country. Originally from the rugged mountains of North Africa, aoudads are immensely strong animals and can survive in the roughest of habitat. They can go up and down almost sheer canyon walls, easily disappearing if you glance away for only a second. Their strength, color and mobility, combined with superb eyesight, make them extremely difficult to bag.

The terrain of the canyon area varies greatly; however, most hunters choose to stay on top of the canyon ridges and look out over the country below in search of the aoudad. Others hunt from below the



Hunter searches the canyon country for a glimpse of his quarry, the aoudad, one of the most elusive game animals in Texas.

ridges, but this depends on the particular ranch and area hunted.

The use of a vehicle, most often with four-wheeled drive, is optional in both cases, but driving around on top of the canyon or down below may decrease your chance of getting near the sharp-eyed sheep. Stay well away from the specific areas where you intend to do your hunting should you plan to drive. If the rancher is agreeable to its use, a small trail bike will also serve as transportation. Otherwise, you will be on foot, hunting from sunrise to sunset.

Preparing yourself physically for the strenuous hunt will also increase your chances of getting a sheep. Good boots and warm, but not bulky, clothing are advised. Hunting aoudads is not for the inexperienced or lazy hunter.

Hunting on foot provides the opportunity to see many things that might otherwise be overlooked. The

great number of birds, mule deer and other wildlife and the scenic beauty of this area will keep you from becoming bored until sheep are finally sighted.

There is quite a contrast between the hunter who is able to bag his sheep on the first day and the one who must work very hard at it. My hunting companion was in the first category. Although he got his aoudad the first day, his hunt was slightly disappointing.

After sitting only a short while on a point overlooking two small canyons, he spotted a sheep about 200 yards away. He continued to watch it for some time trying to determine its size, an extremely difficult task if you have never seen an aoudad before. After a few minutes of deliberation, he squeezed off a shot. At that moment, about 20 sheep came around the point below, and he felt his disappointment as he realized he had shot a small ewe. Her horns extended only a little and were more vertical than horizontal.

Any aoudad bagged is respectable, but whenever an experienced hunter has to watch a number of very large, big-horned rams run off, knowing his hunt is over after only a few hours of the first day, he has to be a little disappointed.

Just for reference for those hunters who might be going aoudad hunting, the *Texas Parks & Wildlife* magazine for July 1974 has a few photographs of aoudads which might be helpful. The two sheep on page 3 are probably nice rams with horns of about 21 and 23 inches, the one on the right being larger. The photograph on page 6 shows four nice sheep: three of them have horns of about 19 to 23 inches, but the horns on the one big ram in the middle may go 29 to 32 inches. This one comparative photograph reveals that the length of the cape (chest and leg hair) is also a very good indicator of sheep size.

I was fortunate enough to enjoy five days from sunrise to sunset and part of the sixth before I finally bagged my sheep. However, two near chances during those first days helped keep up my hopes.

Opening day at almost sunset, the rancher and I went out on what he called "Bird Island" which was similar to a peninsula about a half mile long. There were canyons to each side and, as we headed off the peninsula, a herd of about 15 sheep ran over a hill in front. I'll never forget the sight as each was silhouetted against the setting sun. I managed only one unsuccessful shot before they ran down into the dark canyon to the south.

I spent the next two days without even sighting any sheep, but two things did happen that would have made my hunt worthwhile even if I never saw another aoudad. One afternoon, I saw a young golden eagle apparently exercising across a small canyon. He would pick up a rather large rock, fly skyward with it and finally drop it. He would then swoop down and catch it before it hit the ground. Each time he would carry it a little higher and catch it closer to the ground. Finally he waited too long and, upon catching the rock, the weight pulled him onto the ground in what aviators would consider a crash landing. I couldn't help but laugh out as he stood up, undaunted, and started preening his feathers.

The following morning at sunrise was very cold and surprisingly calm. As I walked out on a ridge, an enormous mule deer buck jumped up about 10 feet below. He ran on a few feet and stopped atop a small hill looking back at me. His startled breath came in vaporous clouds. It was an incredible sight in incredible country, and almost enough to make me permanently trade my rifle for my camera so I would never miss another picture like that.

Time after time there was something in that fabulous country to keep me enthused while I kept searching for aoudads. Being alone and walking that area, always seeing something or feeling so insignificant with the ridges above or the deep canyon below, was worth more than just hunting an aoudad, and on the fourth day I was sure of this.

That particular day I had been shown by one of

the ranchers where there were some sheep, and had managed to get within about 50 yards of where I thought they would be. When I raised my head above the rocks, all I could see was a ewe. I could have shot her easily and, after four days of hunting and thinking about the fee I had paid, it was tempting. But I restrained myself and glanced down to see if I could move around and locate any more of the herd. When I looked back a second later, the ewe was gone.

I never saw her again and, after an hour of searching, found signs where about 10 sheep had run down an almost sheer canyon wall, escaping in a dry creek bed which was invisible from the top of the ridge. Tracking them for over three miles only revealed that these sheep take the hardest escape route possible.

Finally on the sixth day, I made one last effort since my companion and I had arranged to leave at nine that morning. All during the first two hours of daylight, I had been telling myself the trip was more than worth it even if I didn't get a sheep. At 10 minutes until nine I had driven out on a ridge to shoot a few last photographs. Looking to the north, I saw something off-color on a canyon wall about three-quarters of a mile away. I fell to my knees, focused the binoculars and uttered a short requesting prayer.

It was aoudads, and there were about 30 of them sunning themselves. I left the truck there, crawled back into the scrub brush and then ran out of sight to the ridge across from the sheep.

When I crawled within view, it seemed every one of the sheep was looking at me, so I eased back and jumped down onto the caprock ledge on the back side of the ridge. I moved out to the point, and drew down on a large ram at about 300 yards, but the hurried shot was wide. The hill was alive with sheep running in all directions, and I too was running. When I reached a small mesa below that extended to within 200 yards of the sheep, I stopped and took several shots before finally hitting a ram.

It was the last of the aoudads running around the point, or so I thought. At that instant a movement caught my eye below and there stood the largest ram of the herd. Apparently, according to this experience and to what I have heard, old rams leave the herd and hide while the other sheep run off. From about 50 yards away, I stood and watched him leave. He seemed to know he was safe.

One thing I should mention before closing is that the hardest part of the hunt usually comes after the hunter has downed his quarry. Getting an aoudad out can be extremely difficult, depending on the area where it is shot. This is one consideration to make before shooting because there are places where it may be difficult to even get to the sheep within a day, and practically impossible to bring it out.

After spending half a day getting my sheep back to camp, my hunt was over. Or was it? I'm still reliving the memories and will for a long time to come. I may never go back to hunt the aoudads myself, but I am going back this year to help somebody else find one, and again experience more than just a hunt. **

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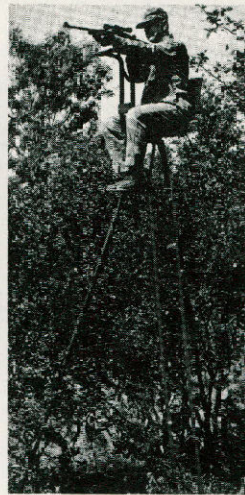
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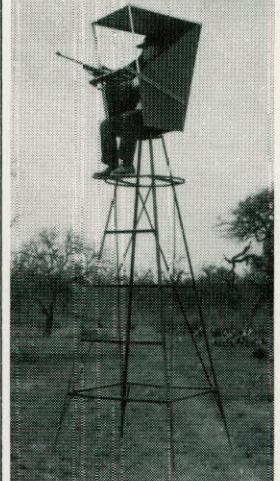
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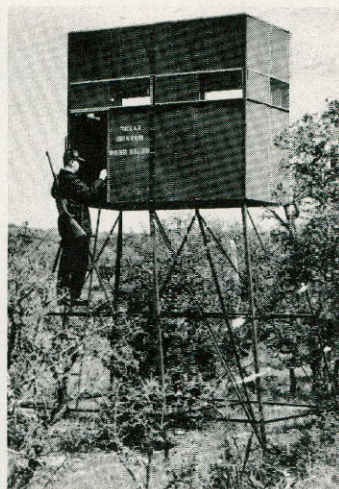


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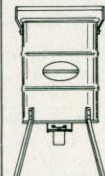
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Nature's Excavator

by Jim Perkins, Wildlife Biologist, Junction

Badgers, although a species of wildlife found throughout the western two-thirds of Texas, are seldom seen outside of museums or zoos by most people. Even those who often work in the outdoors usually see only one or two each year because of the shy nature of these creatures.

The wary badger is a nocturnal animal, but any unusual disturbance or strange scent may cause the animal to remain in its underground den all night. It is so shy that it may even stay underground on a moonlight night, afraid to venture out into the brightness.

A heavy-bodied animal with short legs, the badger weighs from 10 to 25 pounds, averaging about 14 pounds. Its body is about two feet long, and its long grayish hair sticks out at the sides, giving the animal a flat appearance. A white stripe on the center of its nose extends over the head. Its cheeks are white and there is a black spot in front of each ear. Its legs and feet are black and the front claws are long and sharp. The tail is short and flat.

The presence of badgers is usually revealed by unmistakable signs of newly cut vegetation either around the mouth of a burrow or on paths leading to the burrow. A creature of habit, the badger uses the same paths when traveling to and from its home. The animal is an extremely clean housekeeper, and gathers the vegetation for use as fresh bedding in its underground den located at the end of a tunnel which is from six to 30 feet long.

Badgers belong to the Mustelidae, or weasel family, which also includes skunks, otters, minks, martens and wolverines. It possesses a musk gland at the base of its tail, but does not have the aromatic ability of its cousin, the skunk. It does not usually climb trees or use water as an escape route, but has managed to survive without these advantages. If surprised in the open, the badger often uses its digging ability to disappear in a shower of dirt as it tunnels rapidly beneath the surface.

Mating usually takes place during July or August,

but young are not born until February or March of the following year. The lengthy gestation period is believed to be caused by delayed implantation. In this process, the fertilized egg undergoes a few divisions, and then the growth of the embryo ceases for a period of time. One to five badgers are born in each litter, and until their eyes open, the young never leave the den. After all the young in the litter have their eyes open—four to six weeks—the female coaxes them to leave the den for short periods. She teaches them to feed themselves and by October they leave the shelter of the den to seek their own territory.

Badgers are carnivorous, or flesh eaters, and exist on ground squirrels, gophers, rodents, earthworms, frogs, small snakes, snails, beetles and a variety of insects. In areas where the two are found together, the badger is one of the few predators which kills and eats porcupines. The badger is not particular about its diet, and preys on almost any ground dwelling or burrowing creatures smaller than itself.

Found throughout most of North America, the badger hibernates in the colder sections of its range. Where winters are warm, it remains active year round.

Man is probably the badger's number one enemy. At one time, the sport of killing badgers in their dens was commonly practiced both in Europe and America. This practice was known as "badgering," and the use of the word still indicates an annoying or aggravating practice. Dachshunds were specially bred for badger hunting, resulting in their long, low configuration. However, badgers are fierce fighters, and sometimes came out winners in the battles.

Reaction to danger is one of display as well as ferocity. If surprised away from its burrow, the badger emits a loud hissing noise or snort, bristles every hair on its back and appears twice its normal size. Usually the shock value of this act alone is enough to discourage the would-be aggressor. But generally the badger avoids confrontation, especially with man. As a result, the badger will continue to be one of the least-seen critters in Texas.

**



Ambergris:

A Floating Treasure

Beachcombers lucky enough to find this substance will also find its market value has dropped drastically.

by A. W. Moffett,
Coastal Fisheries Biologist, Seabrook

Time and time again our coastal fisheries biologists and chemists disappoint an excited beachcomber with the words, "Sorry, the material you found is not ambergris." But occasionally, a beachcomber gets lucky and finds the real thing, only to discover that ambergris is no longer as valuable as it once was.

What is ambergris? It is a natural product created, of all places, in the intestines of the sperm whale. For centuries it was thought to be good for treating typhoid fever, rabies, epilepsy, demon possession and other ailments. Some people, mainly Moslems, used ambergris as a tea spice, in tobacco mixtures and as an aphrodisiac. However, its principal use for years has been to fix or maintain the scent in the best perfumes. It does not improve the fragrance.

Perfume manufacturers once paid extraordinary prices for these often bad-smelling, waxlike lumps. Norwegian whalers once found 920 pounds of ambergris which sold for 27,000 English pounds. One London perfumer paid \$42,000 (over \$800 per pound) for a 53-pound piece found in Scotland.



Raw ambergris (opposite page) may not look exciting, but it has been valued highly for centuries as a fixative in the finest and most expensive perfumes. One of the largest pieces of ambergris (left) ever found is more than a yard in diameter. It was taken from a sperm whale caught in 1953.

The largest find was 982 pounds reported by the Dutch East India Company in the 1880s, but there appears to be no record of its value.

About 30 years ago one pound of ambergris was worth \$320, however, its value and demand decreased greatly when artificial ambergris, developed by European researchers, reached the market. By the late 1950s the price of a pound of natural ambergris varied from \$32 to \$144. Since the quality of ambergris varies so greatly, it would be difficult to establish a price on today's market. However, it would probably be worth no more than \$3 or \$4 per ounce which would make it \$48 to \$64 per pound.

True ambergris is formed during the sperm whale's digestive process, but it is not produced in all sperm whales. It is found most frequently in old males, and the common fallacy at one time was that only the old or sick males manufactured ambergris.

Why sperm whales occasionally manufacture ambergris and how they do it remains a mystery. The answer may lie in the food they eat. They feed extensively on squid and, if ambergris is examined under magnification, fragments of squid beaks or "pens" are likely to be found. Certain squid contain *ambien*, a white solid material which becomes ambergris when exposed to sunlight, seawater and copper.

Fresh, floating ambergris is dark in color and sticky to the touch. Its odor is offensive. With time, its color lightens and the smell improves. The pieces, sometimes composed of concentric (onionlike) layers, are generally pale

yellow when found, but very old pieces are white.

Ambergris burns with a blue flame and melts at 140 degrees Fahrenheit. When heated on the point of a knife, it evaporates. If a small piece is burned and the flame extinguished, the smoke has the slight odor of burning rubber. It dissolves in hot alcohol at 140 degrees Fahrenheit, in cold absolute alcohol, in fatty oils and ether. When ambergris dissolves, the alcohol solution becomes fluorescent and a yellow-green rim forms on the glass.

More than 95 percent of all false ambergris finds can be eliminated by making the hot-wire test. Heat a wire—a needle will do—over a flame for 20 to 30 seconds. Insert the hot wire one-eighth of an inch into the material. If a dark resinous liquid forms and appears to boil around the wire, it may be ambergris. It may also be ambergris if tacky pitchlike strings adhere to the skin when touched. Wax, often mistaken for ambergris forms a smooth coating over the skin. When melted ambergris cools, it looks like shiny, dark enamel.

Natural ambergris is commercially obtained from the world's whaling industries, and the chances of finding it on beaches are indeed rare. However, beachcombers continue to pick up all kinds of odds and ends that are washed up on beaches by the tide with hopes of finding the real thing. More often than not their finds turn out to be weathered candle wax or old pieces of rubber, but occasionally someone is fortunate enough to find this mysterious substance. **

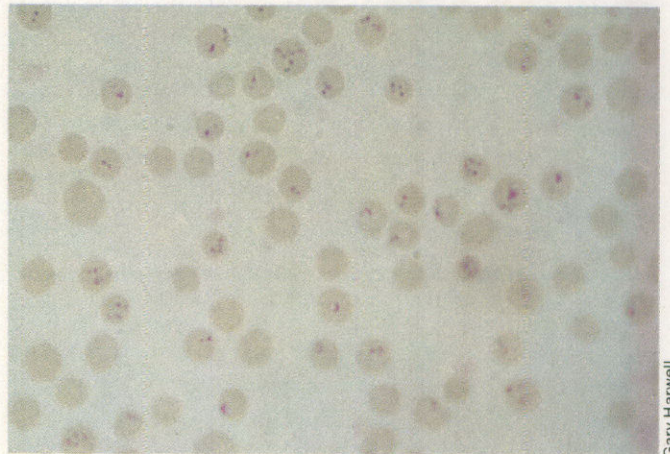
Deadly Combination

Under poor range conditions deer cannot fight off the effects of blood parasites.

by Gary Harwell and R. M. Robinson, D.V.M.
Department of Veterinary Pathology and
Texas Agricultural Experiment Station,
Texas A&M University, and Larry L. Weishuhn, Wildlife
Biologist, Texas Parks & Wildlife Department



Wayne K. Tiller



Gary Harwell

Like most wild animals, deer face many problems in their struggle for survival. Two of the most prominent problems facing Texas deer are the decline in range conditions suitable for deer survival and a parasitic infection called theileriasis. Under adverse seasonal conditions these two problems may produce the deadliest combination of naturally occurring events a deer herd can face.

Theileriasis is caused by a microscopic blood parasite, *Theileria cervi*, which invades the red blood cells of white-tailed deer. After entering the blood stream via the bite of a tick, the minute organism enters and soon destroys red blood cells. Some of the parasites reproduce, in an as yet unknown location, to form thousands more organisms which then invade and destroy more red blood cells. Most deer in Texas carry *Theileria* organisms but no ill effects are evident until the nutritional quality of the range begins to deteriorate.

Texas ranges generally become very dry in the summer and fall, unless fortuitous rains keep them green. As range plants dry, due to parching or freezing,



their nutritional value for deer, as well as other animals, decreases. Clinical signs of theileriasis appear when the amount and quality of food taken in becomes less than that required to replace destroyed red blood cells. The animal becomes anemic (lacks sufficient red blood cells) and this produces paler colored animals than we normally see. The ears may become "waxy" white due to the anemia. Affected deer may lack sufficient energy to respond and run from potential or real danger. In the unceasing search for food of adequate quality, deer may be seen in open fields in the daytime, and may even pay little attention to passing cars. The animals continue to lose body condition until even their gait is severely weakened. Running and jumping standard fences become difficult tasks. When the deer finally collapses, death comes rapidly and with little struggle. With its energy reserves depleted and unable to water, the deer quickly dehydrates. If *Theileria* were not present, the deer would live days or weeks longer; but still, under the same conditions, it would eventually starve.

Theileriasis, then, appears to be a two-edged sword,

actually terminating those deer so nutritionally deprived that they would be likely to starve anyway. Such was the case during the winter of 1973-74 when many dead and poor deer were reported in some areas of Central Texas.

Research conducted by the Wildlife Disease Project, under a cooperative interagency contract between the Texas Agricultural Experiment Station, Texas A&M University's Department of Veterinary Pathology, and the Texas Parks and Wildlife Department, demonstrated that *Theileria* organisms cannot be transmitted from infected deer to cattle and other livestock animals. Extensive serological testing and examination of blood films have shown this organism to be of no threat to livestock. Venison and infected deer blood pose no threat to human health.

This disease and the accompanying nutritional problem constitute a hazard to expanding herds, hitting the weanling deer necessary to herd replacement. Control of the problem, when it exists, of necessity should be directed toward solving the nutritional problems of the herd, rather than the disease itself. **





Lake Arrowhead State Recreation Park

Article by Tim Leifeste, photography by Bill Reaves

Water and oil ordinarily don't mix, but an interesting combination pleases the increasing number of people who visit Lake Arrowhead in North-Central Texas.

Those 15 steel oil derricks that rise from the lake's watery depths are really a blessing in disguise. Ask any fisherman who visits the lake frequently and he'll tell you that's where the fish concentrate.

The derricks are what make the lake unique. They can be seen from any point along the lake's 106 miles of shoreline. Like armored sentinels, they stand guard over this 13,500 surface-acre lake which attracts hundreds of boating, sailing, skiing, fishing, swimming and camping enthusiasts to the area daily.

Located approximately 15 highway miles south of Wichita Falls on the Little Wichita River in Clay and Archer counties, Lake Arrowhead is a relatively new impoundment and one of several municipal water sources for Wichita Falls.

Its increased popularity over the last couple of years has been attributed to Arrowhead's close proximity to Wichita Falls and the lack of adequate water-oriented recreational spots in the area. Motorboats and skiers at Lake Arrowhead are finding that there is room enough for them to coexist with fishermen.

People are also beginning to discover other con-

veniences at the lake, such as the fine state park facilities located there. Designed to complement and add to the many recreational activities available to the lake visitor, the facilities include a nine-lane boat ramp with parking for approximately 200 cars; 48 multi-use campsites and 25 campsites without electricity; charcoal grills; picnic tables; showers and restrooms; a marina and concession stocked with boating, camping and fishing supplies, including live bait and a 50-acre mini-bike trail area.

Across the breakwater from the concession area and next to the boat ramp, visitors will find a spacious picnic area furnished with shade shelters, grills and restrooms.

Purchased from Wichita Falls in 1970, Lake Arrowhead State Recreation Park consists of approximately 524 acres along the northwest shore of the lake, adjacent to the west end of the three-mile-long earthen dam and spillway.

Vegetation in the park is primarily mesquite and native grasses, and the land is characterized by semi-arid, gently rolling prairies. A number of species of wildlife such as quail, rabbits, doves and other species roam or fly freely throughout the park.

Take a trip to Lake Arrowhead State Park, and you'll see that water and oil go together rather nicely. **



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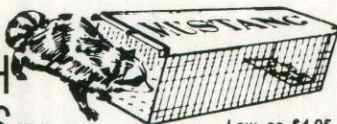
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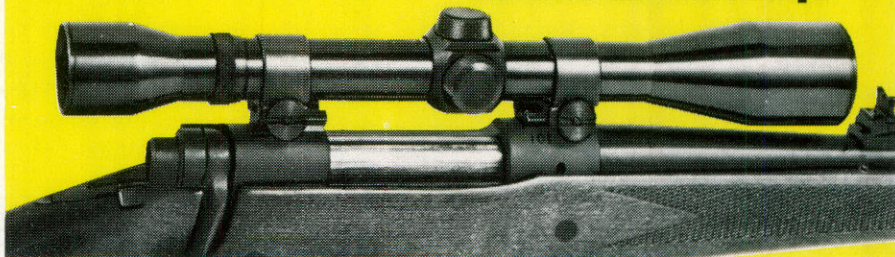
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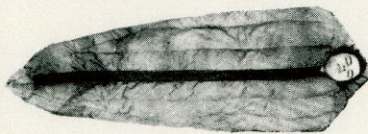
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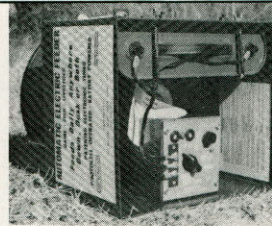
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How To: Mount Trophy Horns



Article and photography by J. J. Stransky

Texas hunters harvest thousands of big game animals each year, yet relatively few trophy heads are mounted. Some hunters simply cannot afford the expense of the taxidermy work while others just have no interest in devoting so much den space to a bulky head. However, trophies represent memories, and these memories should be preserved.

European hunters solved the problem with attractive, inexpensive, do-it-yourself trophy mounts. The mount is designed to accentuate the horns since they are displayed with just a portion of the skull, instead of the entire head and neck, and takes up little wall space.

Horns of any North American or exotic species may be mounted in this manner, but antlers usually pose problems because of their size.

The few tools needed to make this mount are a wood saw, bone saw, knife and screwdriver, and all of the materials (wood, wood finish, soap, bleach and screws) cost less than two dollars.

Preparing the Horns

Step 1. After the head is severed from the carcass, remove hide from the skull. It is not necessary to skin out and disconnect the jaw unless the owner wishes to keep it as an indicator of the animal's age.

Step 2. Saw off the frontal portion of the skull. Use



Figure 1

a fine-toothed, frameless bone saw or, if one is unavailable, an ordinary hacksaw will do the job. The cut should follow a straight line that connects the nose and the lower rim of the eye socket with the top of the skull. Position of the horns makes the cut somewhat difficult because little room is left between horn and skull to work the saw. The cut may be completed with a hacksaw blade removed from its frame by making a handle for the blade by wrapping a rag around one end of it. Leave the bone larger than ultimately needed. Later, after it dries, the cut surface can be levelled and smoothed with a sander.

Step 3. Trim off as much muscle and fat as possible. Remove the eyes and brain. This will be easy since the saw cut makes them accessible. Soak the head in cold water for 24 hours to loosen tissue that remains on the skull and to rinse out blood. Change soaking water at least four times.

Step 4. Cook the head in water for one hour. Start with clean warm water. Keep water simmering, don't let it boil. When loosened, remove cartilages, connecting tissue and fat with a knife, but be careful not to scratch the bone. Heads of older animals may need more cooking to loosen tissue. When cooked sufficiently, the connecting tissue should separate cleanly from the bone. After most of the tissue is

removed, scrub the bone with a brush or paper towel to clean off the remaining tissue particles.

Step 5. Cook the submerged horns on a slow fire for an additional hour to remove the horn sheath from its bone core. Scraping out the cartilagenous tissue from between the horn's base and the core will facilitate separation. Do not cut into the horn while doing this. Try loosening the horns by twisting motions. While firmly holding one horn, a few taps with a wooden or rubber hammer on the skull behind the horns might get the process started. After the sheaths come off, soak them in cold water for 24 hours, then scrape out any loose tissue from the core cavity, rinse and let dry in a well-ventilated, shady place.

Step 6. After the horn has been removed, boil the skull for at least three hours. Start with clean water and add one tablespoon each of liquid soap and granular household bleach to each gallon of water. Skim fat globules from water surface periodically. When no more fat comes to the surface, add one-quarter cup of liquid chlorine bleach per gallon of water and continue to boil for another 30 minutes. Immediately after removing the skull from the cooking water, rinse it in cold water. Place it in the sun to dry and bleach for at least two days. The bone should then be chalky white and free of fat as seen in Figure

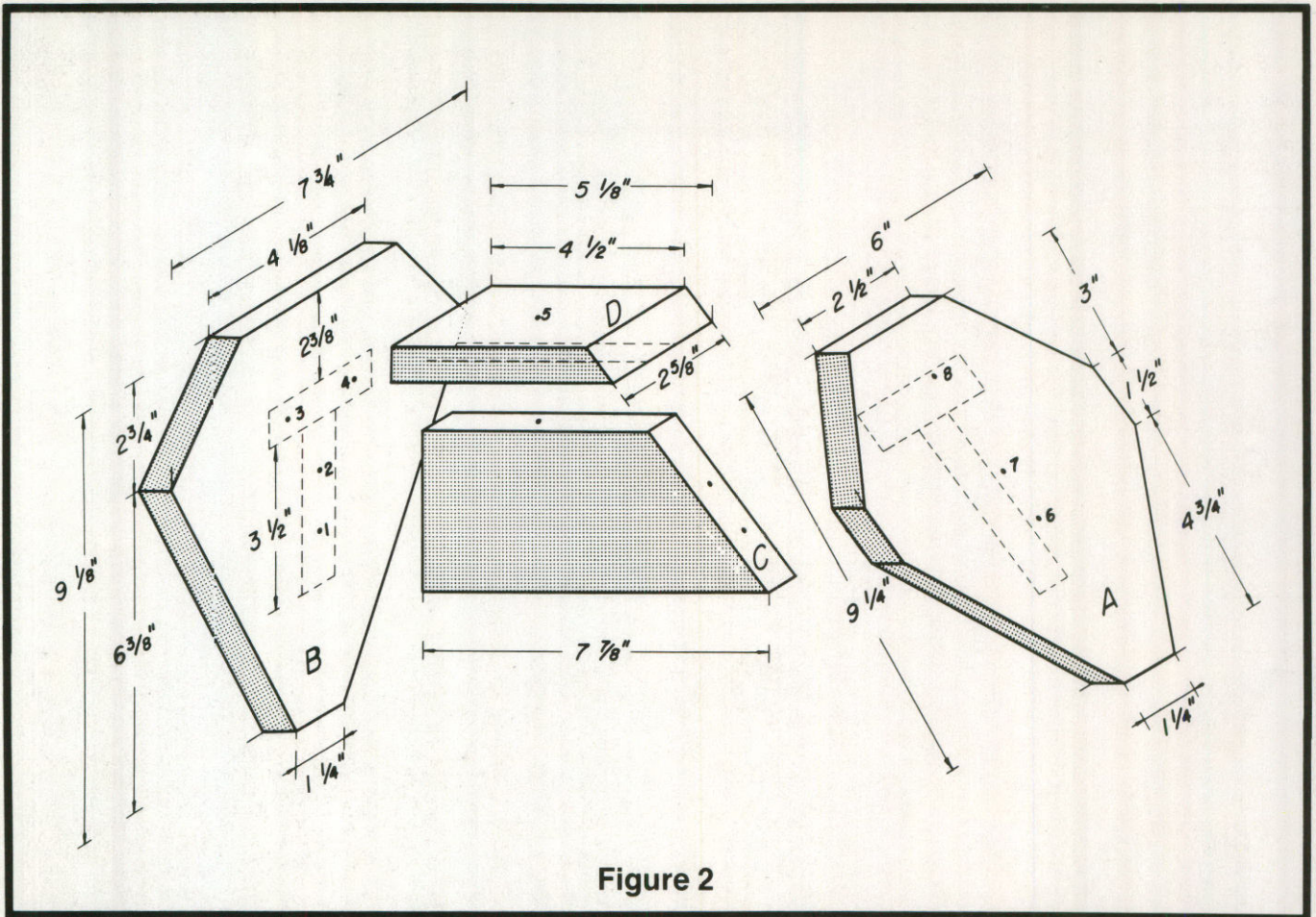


Figure 2

1. The horn sheaths can be replaced on the cores and secured with glue or with small nails.

Preparing the Mount

Step 7. Draw the outlines of the mount components on a $\frac{3}{4}$ -inch thick, dressed hardwood board. Dimensions of the components are shown in Figure 2. Be sure the wood grain runs the length of all pieces. Saw out the parts. Smooth the edges with a sander and bevel them if desired. On the back side of part B (wall plaque), chisel a hole for the nail with which the mount will be hung on the wall.

Step 8. Draw the outline of the horizontal extension pieces C and D on the face of wall plaque B (as marked by dotted lines in Figure 2). Mark the place for screw holes 1 to 4 and drill through, from the face toward the back, with a $\frac{3}{16}$ -inch shank bit. Countersink the screw heads on the back of B. Place pieces C and D in position on B and mark screw holes 1 to 4 on C and D with a nail or punch through the drill holes in B. Now drill the holes in C and D with a $\frac{3}{16}$ -inch shank bit. Fasten the horizontal extension pieces to the wall plaque with 2-inch long, $\frac{3}{16}$ -inch shank screws. Drill the hole for screw 5 through the center of D (with an $\frac{11}{64}$ -inch bit) into C (with a $\frac{7}{64}$ -inch bit). Countersink the screw head. Be sure to keep C centered under D as shown by the dotted line in Figure 2. Fasten D to C with a $\frac{1}{2}$ -inch long, $\frac{11}{64}$ -inch shank screw.

Step 9. Check to see if slanted surfaces on C and D are lined up. If they are not, even them up with a sander or rasp. Center the plaque A on the slanted surface of C and D as shown by dotted lines in Figure 2. Drill through holes 6 and 7. Use same drill sizes as for screw 5. Countersink screw heads in face of A. Fasten plaque A to C with two $1\frac{1}{2}$ -inch long, $\frac{11}{64}$ -inch shank screws. The mount is now ready to be coated with varnish, linseed oil or whatever finishing material you choose. The place and date of the kill can be written on the wall plaque. This information may also be engraved on a metal plate that can be tacked to the wood.

Fastening Horns to Mount

Step 10. Center the skull on plaque A. Drill the hole for screw 8 through the back of the skull at such an angle as to penetrate the pieces A, D and C. Use the same drill sizes as for holes 1 to 4. Countersink the screw head in the skull. Fasten the skull to the wood with a 2-inch long, $\frac{3}{16}$ -inch shank screw.

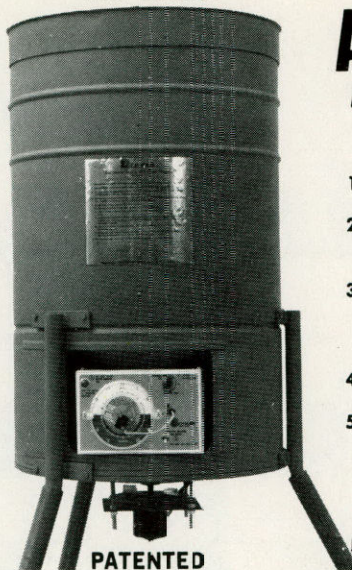
The horns are displayed at an angle that most nearly resembles their natural position and are held away from the wall by the horizontal extension pieces. Thus they can be viewed from almost any angle. For larger skulls and bigger horns, the mount may be enlarged proportionately if necessary. The mount is sturdy, well braced and a worthy display for a fine hunting trophy. **

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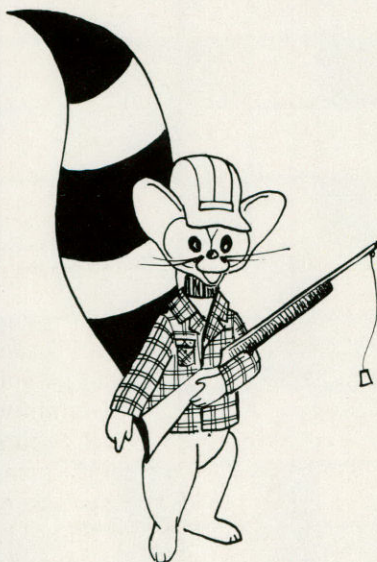
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5. Be sure of your target before you pull the trigger.
6. Never point a gun at anything you do not want to shoot.
7. Unattended guns should be unloaded; guns and ammunition should be stored safely beyond reach of children and careless adults.
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Young Naturalist

Environmental Crossword

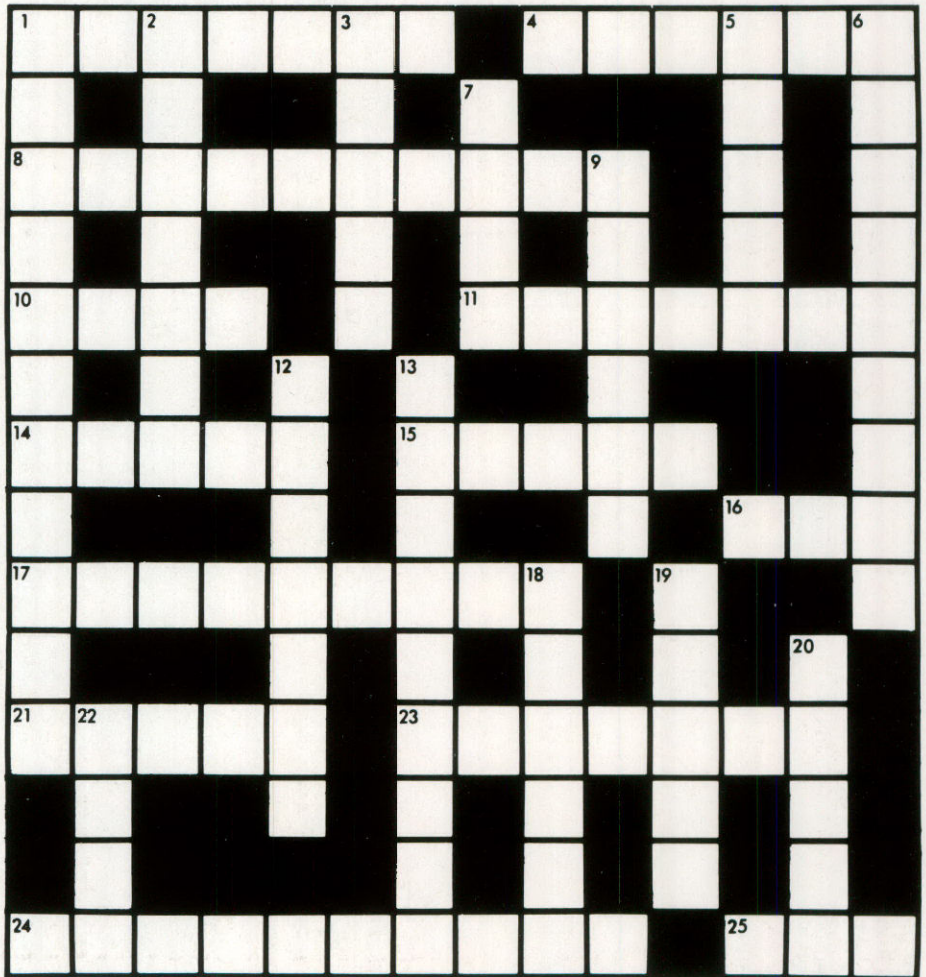
by Ilo Hiller

We must all keep in mind the many problems facing our environment. How long will it provide breathable air and drinkable water for us if we continue to poison it daily with chemicals and wastes from our automobiles, factories, farms and homes? How long will the land be suitable for wildlife if we continue to fill marshes, drain swamps, cut down forests, pollute streams and otherwise destroy their habitat?

Spend a little time filling in the blanks in these environmental-related statements and you will not only accurately work this crossword puzzle, but also, hopefully, become more aware of what we must do to protect and clean up our surroundings.

Across

1. The study of the relationship between organisms and their environment is called _____.
4. The soil _____ when all vegetation is removed.
8. _____ keeps wind and water from wearing away the topsoil.
10. Don't just _____ and rave about pollution; do something about it.
11. Animal species such as the dinosaur, which cannot adapt to changes in the environment become _____.
14. Everything in nature has its own particular _____.
15. Keeping a clean environment is _____ one's business.
16. Declare _____ on litter and pollution.
17. The pattern of interactions and activities in the plant-animal community is known as an _____.
21. Enjoy nature; take a hike on a nature _____.
23. Scavengers help keep our environment clean by eating _____.



24. Animal species which are diminishing rapidly in number are said to be _____.
25. Everyone should keep a watchful _____ on the environment.

Down

1. Another word for our surroundings is _____.
2. Many people now practice _____ gardening.
3. Clean air and pure water are _____ we should strive to achieve.
5. When developers _____ a swamp, they change the wildlife's environment.
6. An area set aside to give refuge to wildlife is known as a _____.

7. Being careless with _____ can destroy a whole forest.
9. Man often upsets the delicate balance of _____.
12. _____ bottles, cans and paper whenever possible.
13. The wise use of _____ must be practiced by farmers to protect the environment.
18. The endangered whale is a _____ mammal.
19. _____ pollution can damage our hearing.
20. Man is nature's worst _____.
22. Pollution will _____ our environment.

(Answers on page 32)

HUNTERS

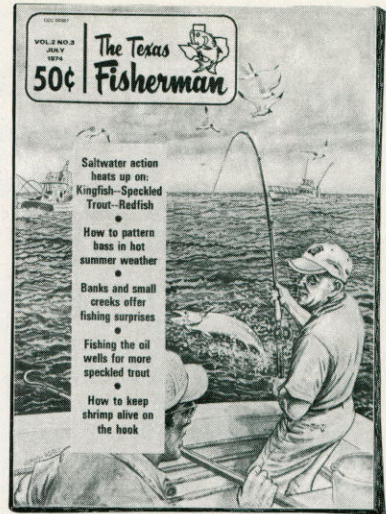
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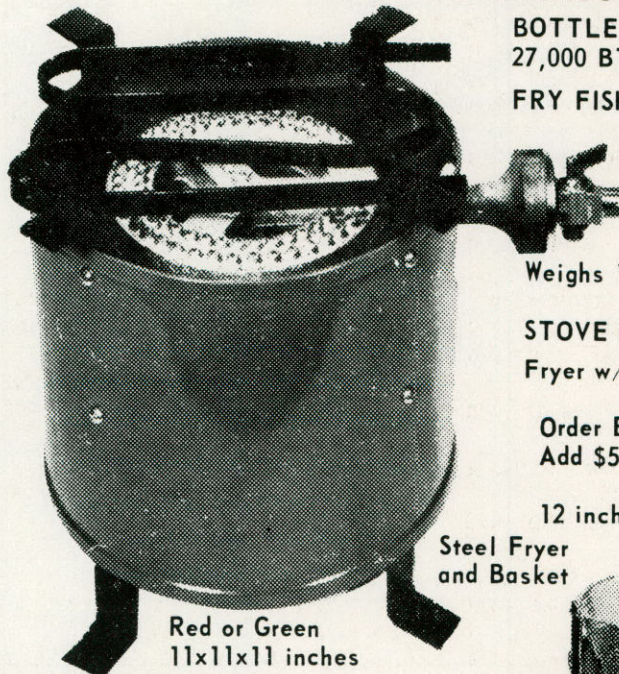
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LETTERS TO THE EDITOR

Food and Shelter

We have a few squirrels in our yard, including three young ones, and enjoyed reading your article in the May issue. Since the cost of sunflower seed is a problem to retired people, we would like to know if the laboratory animal chow you mentioned is the same as the rabbit pellets most feed stores carry? I have put some out, but the squirrels won't eat it.

What size and shape should the den boxes be?

Mrs. Gerald Floyd Inman, Sr.
LaMarque

The "lab chow" mentioned in the article is a high-protein, balanced food produced by the Purina people and used to feed rodents and rabbits that are held in captivity. It is a very wholesome food, but squirrels have to be hungry to eat it. One reason we recommend it as a supplemental food is that as long as other foods are available, squirrels will not eat it. This cuts down on waste and unnecessary feeding costs. Make chow available to your

squirrels during those periods when you think other foods are in short supply, and if the squirrels are hungry, they will eat the chow on the spot and not waste it as they will other foods. The feeding platform, mounted on a tree about six feet from the ground, should have a protective covering of some type to shelter the food from the weather.

A den box should be approximately eight inches square, 26 inches deep and have a two-inch entrance opening for cat squirrels or a 2½-inch opening for fox squirrels. It should be weather-proof, but have small holes drilled in the bottom for drainage. A hinged top or bottom will enable you to clean it out at least once a year. Squirrels provide their own nesting material.

Predatory Ants?

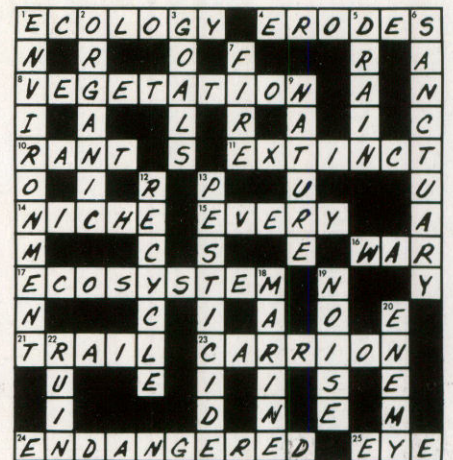
In the latter part of the article "Learn About Squirrels," reference was made to predators of this animal. I could easily understand all that were mentioned except ants. Would it be possible to expand on this a little to explain how

ants fall into the same category as snakes and raccoons? I also noted they were listed ahead of hawks and crows.

Joe Davis
San Antonio

While making nesting success and survival studies on squirrels in Hardin, Jasper and Newton counties in deep southeast Texas, it became apparent that some newborn squirrels were being destroyed by ants. Although this could have been an atypical situation, it wasn't too uncommon to find a nest that was invaded by ants. If the female did not move her young, within hours they were dead.

The list of predators given in the story was not meant to be either complete or hard and fast. Under different conditions there will be a shifting of importance between the various predators, however, man will usually head the list.



BACK COVERS

Outside: One of the most difficult to bag of Texas game birds, the scaled quail is a typically desert or semi-arid species. Many a hunter has soundly chastised this bird after an exhausting, unsuccessful chase. Photo by Bill Reaves.

Inside: About this time every year, fishermen head for the shallow waters along the Texas coast in search of the delicious flounder. Their habit of coming into shallow water at night to feed makes flounder gigging a popular sport. Photo by Jim Whitcomb.

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