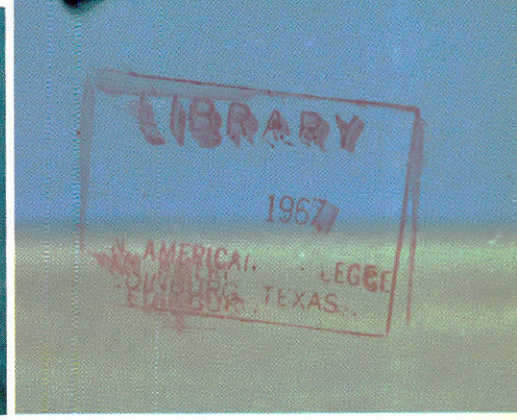
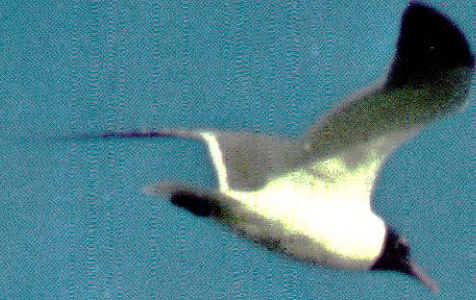


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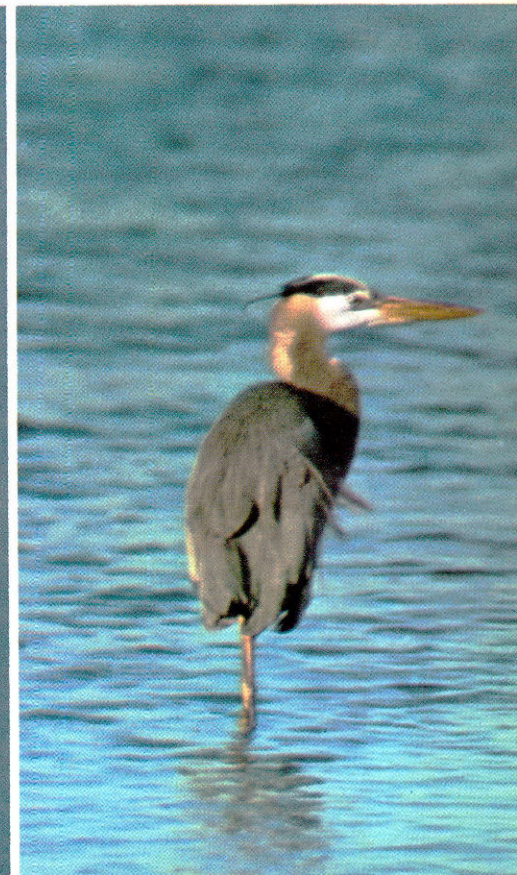
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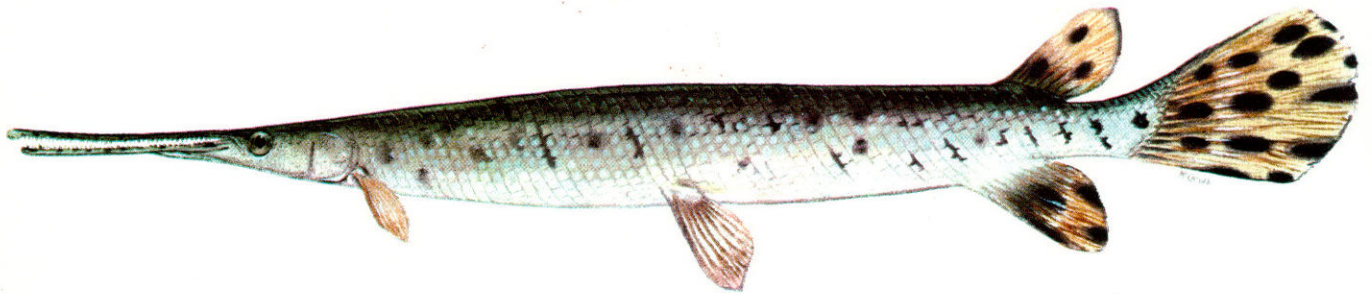
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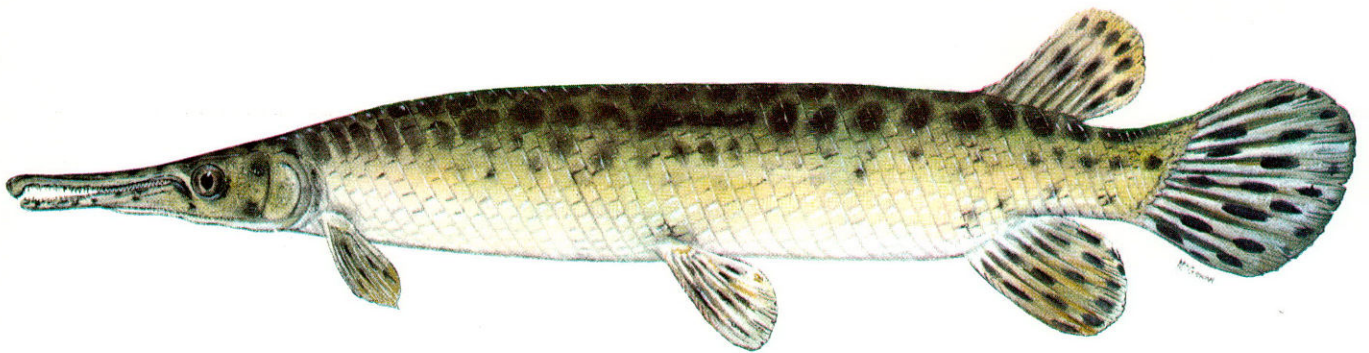
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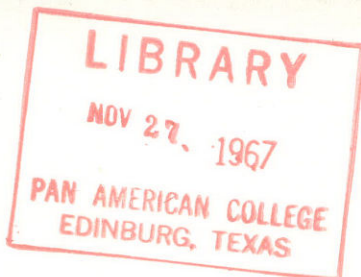




The Fishes of Texas

Because the ancient order of gars goes back at least to the time of the dinosaurs, these fish sometimes are called "living fossils." They are recognized by their long beaks and hard, "armor-plate" scales. Four species are found in Texas waters. Most abundant throughout the State, and with the longest beak, is the longnose gar, *Lepisosteus osseus*, above. The spotted gar, *Lepisosteus productus*, middle, is common in weedy bayous, lakes, and on the coast. Adults of the alligator gar, *Lepisosteus spatula*, below, are found in brackish waters and coastal harbors, but the young are taken in freshwater. This species is distinguished by the large teeth in two rows on each side of the upper jaw. The shortnosed gar, *Lepisosteus platostomus*, not pictured here, is less common but may be found in silty rivers in eastern Texas. Gars are rather slow and sluggish but can be suddenly quick when feeding or taking bait. The young feed on insects and the adults on fish and carrion. In the South, they are considered a fine sport fish and good eating.





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

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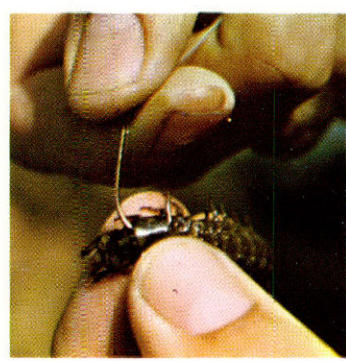
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 PARKS & WILDLIFE**

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Front Cover: Laughing gull (top left), black skimmer (top right), herring gull (center), ringbilled gull (lower left), and blue heron all may be sighted while beachcombing (see page 16). Photos by Leroy Williamson and Ron Perryman.

Back Cover: Hummingbird nest with two young stands as evidence of State's variety of bird life. Photo by Dan Klepper.



Hellgrammites . . .

Fisherman's Favorite

by Colonel Elkins Read, Jr.

RANDOLPH AIR FORCE BASE, SAN ANTONIO

WADING the Guadalupe River above New Braunfels in the Texas Hill Country with a rod and reel is my idea of happiness. Several weeks ago on a cloudy, pleasant Sunday, I had a normal day with my favorite live bait. In the course of several hours I had caught 10 bass, 20 large bluegills, and a three-pound channel cat. My keepers made a pretty and conversation-producing sight hanging from my wader loop, as I worked my way down a swift half-mile of the Guadalupe.

There were a lot of people along

the river that day. Most were casting from the banks or just sitting and hoping. I guess at least 20 anglers asked me how I was doing, and when I happily held up my stringer, the next and inevitable question was what was I using for bait. My answer, "hellgrammites," almost always was met by a blank look and, "What are hellgrammites?"

Fishing with hellgrammites is too much fun and too productive to be such a mystery. One of the first requirements for fishing with this bait is to latch on to some! Since few, if any, bait stores in Texas have them,

that sort of cuts the alternatives down to one: you catch them yourself.

The hellgrammite is the larvae stage of the Dobson fly, belonging to the insect family Corydalidae. One look at Mama and Papa Dobson fly is enough to understand why junior struck out in the looks department. They are among the largest insects in North America with dragonfly-textured double wings that span up to five inches. The high infant mortality rate and their nocturnal habits keep the adult fly population down. The average





Turning over rocks in swiftly running water will release hellgrammites and allow them to float downstream into your seine.

Texan probably never has seen one.

The Dobson life cycle begins with a nickel-sized white patch of eggs deposited on the undersides of leaves hanging over a running stream. They also show up on protruding rocks, logs, and under bridges. The tiny hellgrammites hatch and drop into the water where they seek cover under rocks in the riffles. They stay there for two years and eleven months, eating other aquatic life, and growing bigger and uglier.

By the time they are ready to emerge, they are three inches of leathery body, propelled by six legs, armored in front with a hard collar, and armed with a set of impressive and functional pincers. About May of their third year they come out of the water, moving only at night, and crawl until they find a suitable rock or log under which to pupate, or convert into an adult fly. A month later the adult Dobson fly emerges and the life cycle is complete. They are ugly ducklings that grow into

very unattractive ducks.

Now that you've met him you still have to catch him. Find yourself a small minnow seine and a hoe. If you don't have a seine, an old framed window screen will do nicely. Pick a riffle where the water is about knee deep and the bottom has a lot of loosely imbedded medium-sized rocks. This isn't too tough — almost any riffle on the upper Guadalupe meets the requirement. Get a quart bait can with a lid that you can hang around your neck, and finally, take a friend along. You can perform this operation alone, but it's a lot easier with two.

Hellgrammites live under rocks in swift water. Plant the seine downstream from your selected spot and have your buddy turn the rocks over with the hoe—the larger the rocks the better. Something tells Mr. Hellgrammite to let go of that rock when it turns over, and he comes floating down and washes into the net. It's as simple as that.

You lift the net and your buddy picks out the hellgrammites and puts them in the bucket. The safest way to pick them up is by the collar to avoid the strong pincers that are capable of bringing blood on a tender part of the hand.

A note of caution: keep your hellgrammites in wet grass or leaves. Although they live in the water, they breathe air: if you try to keep them like minnows overnight, they'll be dead before morning. If you put them in a bare can, they tear each other apart and you wind up with a lot of heads and tails.

Now we are ready to begin the best part—fishing. I prefer a spinning rod, but a fly rod is probably just as good. Reach gingerly into the bucket and brush away the grass and leaves so you can see which end is which of your hellgrammites. Again, pick him up by the collar. Be careful. You'll pick him up by the tail only once! He isn't poisonous, but he has a very strong character.

Next, take your hook, a number

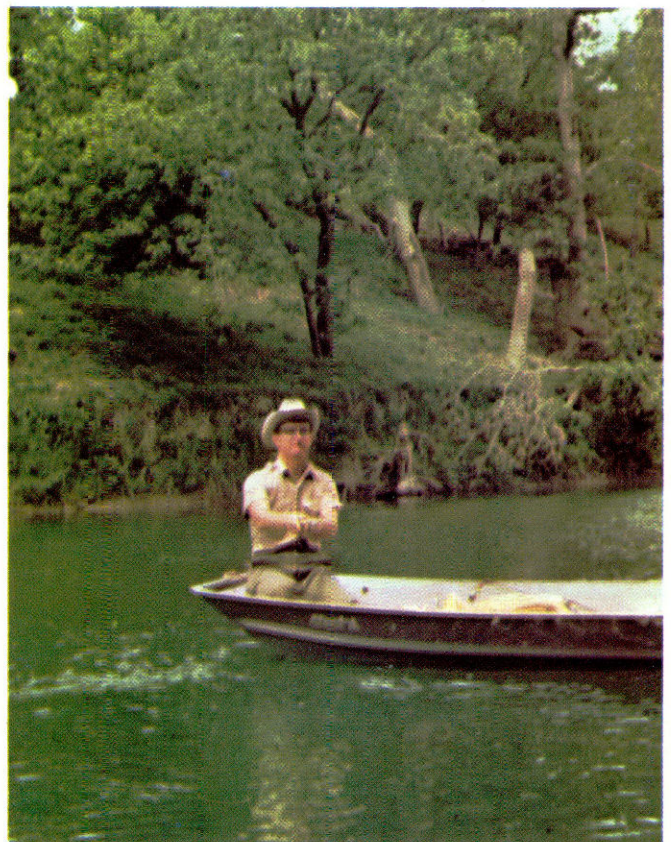


Grasp a hellgrammite by the armor-like collar and thread the hook lengthwise under it to secure the bait for one or more catches.

six Eagle Claw is my choice, and run it under the collar on top from front to back so the point protrudes. You now have a bait that can't be stolen, lives as though it has nine lives, and is the fishes' candidate for Miss America.

A second note of caution: keep him off the bottom. Give a hellgrammite a rock and he'll get under it with disheartening results. My system is to tie a small sinker about six inches above him to take him down and then to attach a round bobber at whatever point on the line is needed to hold him off the bottom.

Now float him into a nice fishy spot and you've done your part. Believe me, the fish will do the rest. When the bobber disappears, haul back and you can flip a coin about what you have hooked because every self-respecting fish loves hellgrammites. Think nothing about catching four or five fish on one bait—they are real tough to get off! Try it. You'll be glad you did! * *





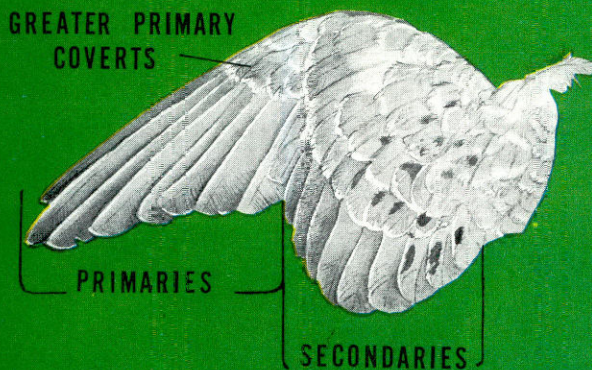
Dove Hunting Seasons . . .

Wings Point the Way

by Ted L. Clark

WILDLIFE BIOLOGIST

PITTMAN-ROBERTSON PROJECT W-95-R



SETTING a mourning dove season that is both equitable to hunters and in the best interest of the wildlife resources, for a state as large and diverse as Texas, is a very complex task. Because they are migratory, a delay in opening the dove season to eliminate all of the very young birds from hunters' bags could result in a substantial reduction in the number of birds killed. An earlier opening, on the other hand, could result in killing excessive numbers of adults that have not yet finished their chores of rearing a family, which would also result in the loss of young that are dependent upon them.

To gain insight into the problems of establishing the dove hunting season in relation to the age of birds in the bag, the Parks and Wildlife Department distributed approximately 25,000 dove wing envelopes over the State during the 1966 hunting season so that wings

Dove wings collected last year indicate that an earlier opening of the hunting season may kill many nesting adults, while a later season could open after many of the migrating birds have moved further south.

When young doves leave the nest they have a full set of white or buff-tipped greater primaries (left). Molting soon starts replacing feathers until a full set of adult feathers is attained (right).



could be collected for examination and aging studies by qualified biologists. Some 1,832 envelopes were returned to the Department, containing more than 30,000 wings. A number of the envelopes received were useless because there was insufficient information as to where or when the doves were collected.

Before evaluating the results of the 1966 wing collection, a few points should be clarified. First, *all* doves, both adults and juveniles, molt (shed feathers) every year. It is therefore impossible to determine the age of doves based upon the amount of pin feathers. Usually molting occurs during the summer, but it can extend into the fall. Thus, it is possible for hunters to take adult birds that have a considerable number of pin feathers covering their bodies.

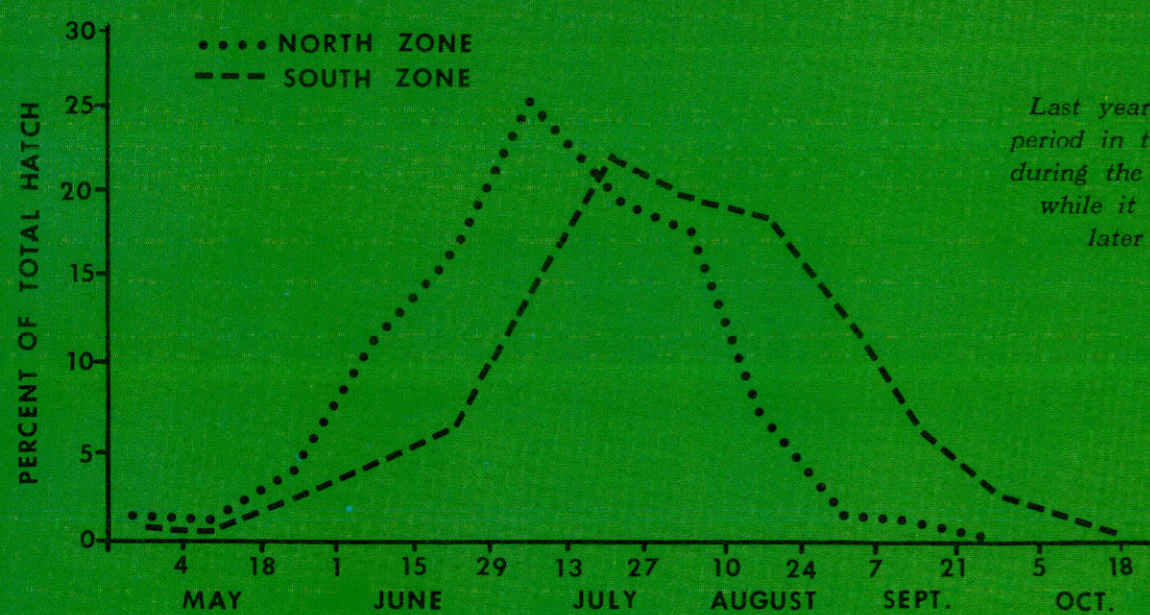
Secondly, some mourning doves nest in Texas during every month of the year, making it possible to

find juvenile doves of varying ages, regardless of when the season is set.

Another point that should be made clear is that young doves are dependent upon their parents for about 12 to 15 days after they hatch. In setting hunting seasons, care must be taken not to endanger substantial numbers of nestling doves still dependent on the care and feeding of their parents.

Finally, by international treaty between the United States and Great Britain (Canada) concluded in 1918, the open season for taking migratory birds must fall between September 1 and January 15.

Mourning doves are readily aged by careful scrutiny of the greater primary coverts and primaries (flight feathers) of the wing. When young doves leave the nest, they have a "full" wing of juvenile feathers consisting of greater primary coverts with white or buff



Last year the peak hatching period in the North Zone was during the first week in July, while it occurred two weeks later in the South Zone.



North-South Zone line used during 1966 season (left) was set in 1946. Wing of 63-day-old dove (right) shows telltale replacement of fifth primary.



tips and brownish-colored primaries. Within less than a month, these young doves begin what is termed the post-juvenile molt; that is, they begin to lose their juvenile primary coverts and primaries and replace them with adult feathers.

Adult feathers are easily distinguished, as they lack the white or buff tip on the greater primary coverts and the primary feathers are darker, blue-gray in color. It takes approximately 145 days to complete this post-juvenile molt; thus, any bird more than 4½ months old is classed as an adult.

The approximate time required for a complete molt has also been broken into the approximate length of time, in days, required to molt each of the juvenile primaries. This knowledge permits biologists to take a large number of wings from juvenile birds, determine the age of the bird at the time it was killed from the stage of feather replacement, and back-date this data to determine hatching dates. This is exactly what was done with the more than 15,300 juvenile wings submitted by hunters during 1966.

Peaks of hatching in the North and South zones are substantially different. In the North Zone during 1966, the peak occurred the first week in July, while it oc-

curred during the third week of July in the South Zone. Since young doves are dependent upon their parents for a maximum of 15 days, any opening hunting date must consider the young birds which would be lost as a result of shooting the parents.

Through an analysis of hatching data, it is apparent in the North Zone that approximately four percent of the total production of young doves could theoretically be jeopardized by opening the season on September 1. Similarly, in the South Zone a September 24 opening date could jeopardize approximately six percent of the young birds. In essence then, it can be said that the earlier the opening date, the greater the danger of losing young doves still in the nest, particularly in the South Zone.

Certainly, the actual number of young lost last year was much less, because to lose the above percentages of the hatch would require that both parents of young in the nests be killed on opening day of the season. All are not killed during the entire season, much less on opening day.

Age determinations from dove wings submitted by hunters also are useful in appraising opening hunting dates with respect to the ratio of very young, or "ob-

jectionable," birds in the bag. A potentially objectionable bird may be considered one with excessive pin feathers, or a bird that is only 45 to 54 days old, or younger. These young birds are distinguished by not yet having molted the fourth primary. After molting this feather, doves are of such body weight that the dressed bird usually cannot be distinguished from an adult. It should be remembered that pin feathers will occur on older birds, even adults, as the result of natural molting cycles, although to a lesser degree.

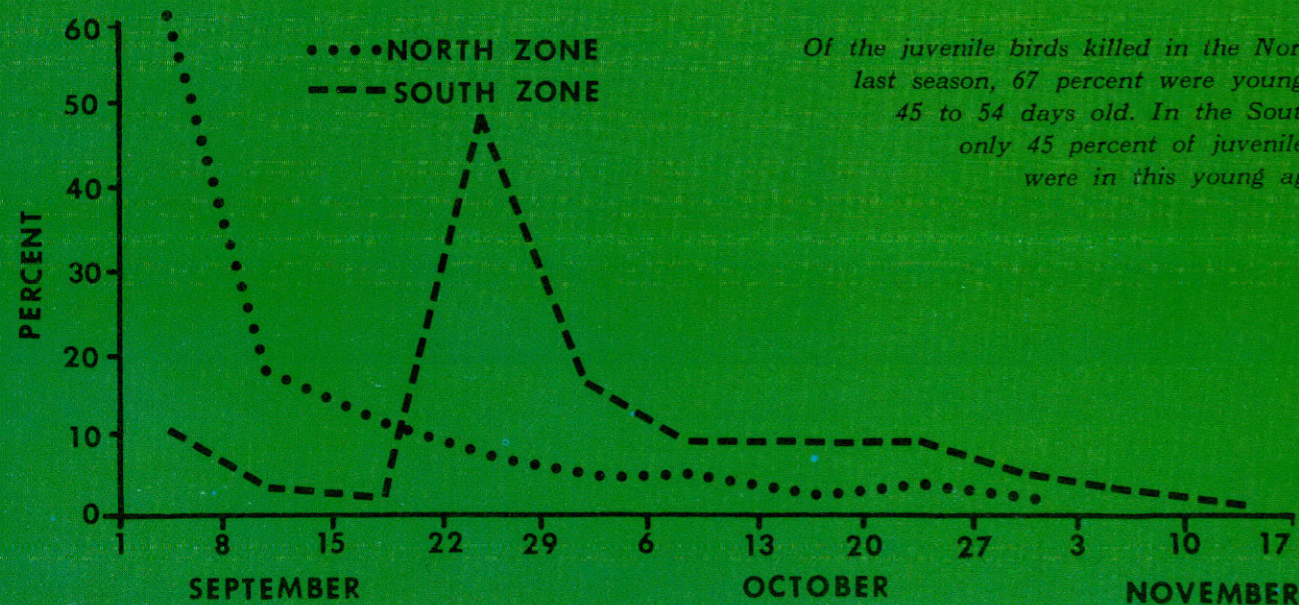
The number of birds younger than 45 to 54 days rapidly declines during the fall period. During the first week of the 1966 season in the North Zone, 67 percent of the juvenile birds bagged were in this age class, while the South Zone recorded only 45 percent. The number of such young birds bagged by hunters could be greatly reduced if the opening date in each of the zones were delayed one week. Fall population trend surveys suggest, however, that any delay would seriously affect the number of doves found in some areas of the State, due to the normal fall migration of doves.

In addition to the complex factors already described, other factors must be considered before dove hunting season dates are set. Of paramount importance in mod-

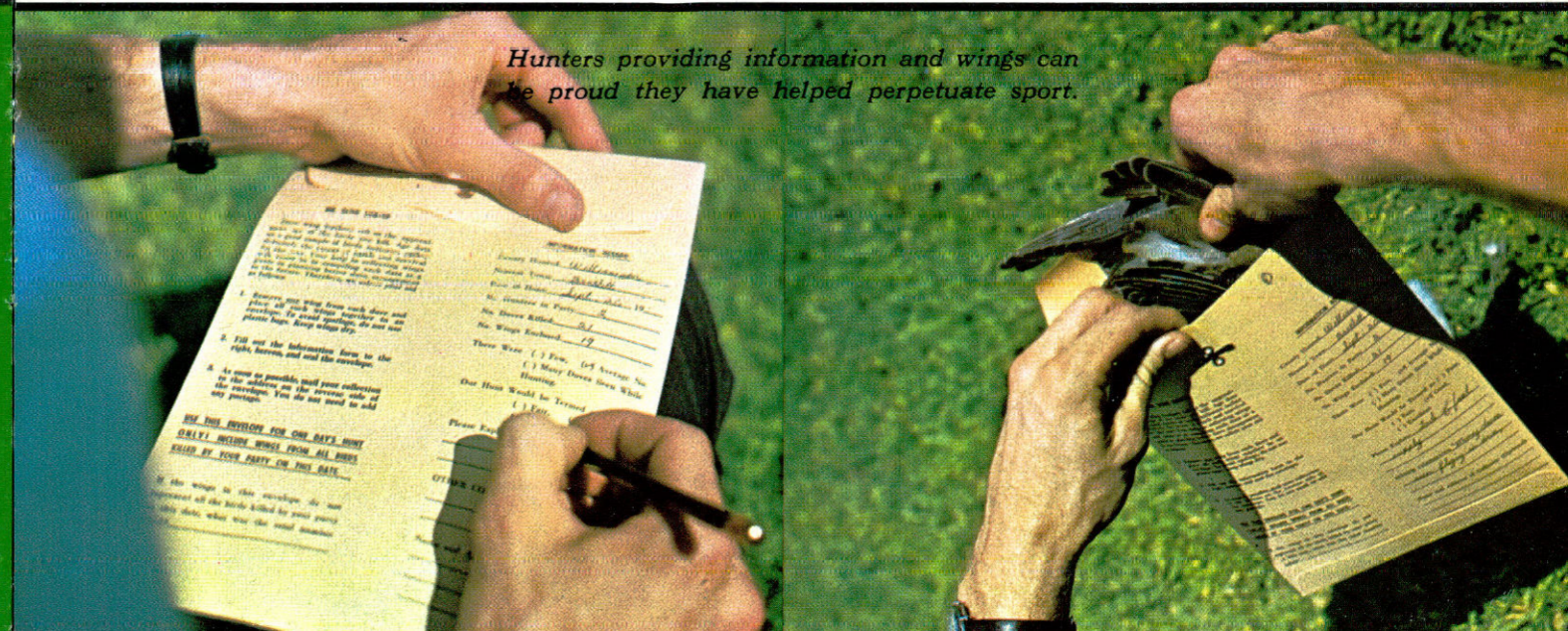
ern game management is the current welfare and perpetuation of the species. Since the mourning dove is the most popular game bird of Texas, the interests of the hunter must be remembered too. The dates selected by the Parks and Wildlife Commission reflect all of these factors.

Just as the Parks and Wildlife Commission has a dual obligation to the dove resource and the hunting public, hunters have an obligation to assist in gathering sufficient data upon which hunting regulations may be based. Submitting dove wings is one way sportsmen can assist. Dove wing envelopes may be obtained from local game wardens. At the end of the hunt, one wing from each dove taken by the party should be removed and placed in the envelope. Dove wings will keep for long periods of time if they are dry and neatly severed close to the body without large breast muscles attached. Wings should never be placed in an airtight plastic bag.

After carefully filling out all blanks of the questionnaire on the back, the hunter can drop the prepaid envelope in the nearest mailbox and stand just a little taller, for his efforts will materially contribute to the future of dove hunting in Texas. * *



Of the juvenile birds killed in the North Zone last season, 67 percent were younger than 45 to 54 days old. In the South Zone, only 45 percent of juveniles killed were in this young age class.



Hunters providing information and wings can be proud they have helped perpetuate sport.

Rodent Rooter

by Joan Pearsall

DISAPPEARING acts have seldom been better accomplished than by the clown-faced badger. Houdini himself would have had a hard time matching such a speedy expert. With all four feet and mouth in action, the animal has the dirt flying and vanishes into the earth, with the hole plugged behind him, almost in the wink of an eye.

This fellow, *Taxidea taxus*, the American badger, really would rather dig than fight. But when escape is impossible, then any opponent had better watch out! A cornered badger is one of the most ferocious and courageous of fighters. With his strong teeth and fast, razor sharp claws he can hold off a whole pack of dogs. He devotes himself utterly to defense. Growling and snarling, his face resembles not so much a comic as a brave in warpaint.

Not the least formidable weapons are the potent scent glands he possesses, as a member of the musk-carrier family, Mustelidae, which includes weasels and skunks. The badger also is incredibly strong. Once, one was said to have raised a platform holding a horse and rider.

The badger is native to various regions of the Northern Hemisphere. From northern Alberta to Central Mexico, he occupies a variety of habitats—plains, desert regions, and dry upland valleys. He can climb and swim easily when he wishes, but greatly prefers to stay close to the earth. In Texas, he is found in the south and in the western half of the State.

Short, stout, and muscular, a full grown adult is from two to three feet in length, and weighs between 10 and 25 pounds. Body and head are broad and flat; the neck, legs, tail, and ears are short. Five toes are on each foot, and the animal "toes" in when he walks. His common name refers to his "badge," the black line or mark around each eye and ear on a white background, and a distinct white stripe from near the tip of the pointed, black nose, over the head to the shoulder area. The fur above has a grizzled or frosted appearance, since individual hairs are gray-white near the skin, then black, and silvery-white at the tip. The pelage is lighter below, and the feet are darker, or black.

Badger hide is remarkable in that it is very thick, yet loose and flexible. This is yet another aid in defense, for it prevents the teeth of an attacker from

getting a firm grip.

To make his outstanding digging ability possible, the badger has powerful, elongated toes and heavy, curved claws which grow continually. From these, he often cleans out any caked dirt, to keep them at peak efficiency. Strong teeth and a large jaw are also put to work on the digging chores, as well as for fighting. A man with a shovel has no hope of keeping up with a diligent badger. On one occasion, 11 men worked frantically for four hours to capture a burrowing badger, but had to give up and concede defeat.

About the only way to force this animal out of his burrow is to flood it, but anyone who does this is sure to have a savage fight in store. A popular sport around the turn of the century was to try to flush out badgers, and to enjoy their ferocity in defending themselves. Bets were placed on dog and badger contests, in which the dogs nearly always came off worst. This is how the term "badgering" came into being. Badger baiting has long since been outlawed.

Usually a solitary animal, the badger hunts alone and lives in his own individual burrow, the hole into which has an oval-shaped opening to fit his body. Usually, a long, winding tunnel leads to a neat grass-lined room. Occasionally, a badger has been known to allow a fox to share his den. However, if the guest turns out to be a messy roommate, out he goes. The badger is one of the cleanest of wild animals, and will not tolerate dirty living quarters.

Any kind of meat or eggs, fresh or carrion, appeals to this carnivore. Rodents are high in preference; sometimes even snakes are included. The badger is very thorough in inspecting diggings and searching out his prey, aided by his super keen nose, which can detect rodents underground. Often he will run down small animals; if they escape into a hole, it's no problem at all for him to dig them out.

Mating season for badgers is late fall or early winter. It is believed that implantation is delayed for a few months. The litter, which can consist of one to seven, but averages three, is born underground in spring or early summer. The young are furred but blind at birth. They are half grown when their eyes open, four to six weeks later. At this time, the mother weans them and takes them with her on hunting trips. With some



exceptions, the father does not take part in care of the offspring. The young remain with the mother for several months, after which it is necessary for these animals with such large appetites to seek a wider range.

Although they sometimes drowse through a few days of bad weather and may remain underground for long periods, badgers do not hibernate. Where the ground is not frozen hard, they are as active in winter as in summer.

Often their wanderlust takes them far, but they amble along confidently, unworried about their ability to deal with attackers or to find an ample food supply. A badger who is not fat is indeed as rare as a cowardly one. What this brave animal cannot cope with, however, are sweeping predator control programs, traps,

and poisons. Because of his digging, he sometimes is considered a nuisance. The holes are, at times, a hindrance to irrigation systems, and many a cowboy whose horse has stumbled in one has turned the air blue with his reaction. But the help the badger gives far outweighs any slight damage he might do. Epidemics of rodents which have resulted from campaigns of predator eradication have made this very clear.

Not only because of his definite value in the balance of nature, there is much to respect in the down-to-earth qualities of the badger. If he should be forced into the ranks of the endangered or vanishing species of our time, it would indeed be a great loss. Long may he continue, then, only to do his own unique brand of "vanishing!" * *



Gain Sk W

by W. R. Long

REGIONAL INFORMATION OFFICER, TYLER

DOVES come zooming in or out, angling, ducking, going with the wind or against it. Quail flush, fly this way or that—sometimes back over the hunter's head. Bird hunting can be frustrating, costly, and dangerous, but with training on a skeet range, a hunter may improve his reflexes and aim, bag more game per box of shells, and learn safety rules which apply wherever there is a loaded gun.

Texas hunters, during last dove season, managed to drop fewer than five birds in the bag for each box of 25 shotgun shells used. Skeet shooting might have upped this figure dramatically if it had been at least semi-mastered before each bird season.

Skeet, although its name is Scandinavian for shoot, is as American as baseball, but it is not so exclusively a man's game. An 86-year-old grandmother in Texas shoots skeet with the best of them. She breaks in the high 90's. (That's 90 downed skeet birds in a row without a miss.) Also, in one family the husband, wife, son, daughter, and lately the son-in-law and daughter-in-law, all shoot skeet.

In 1915, skeet was called "clock shooting" because the field was arranged in 12 shooting stations resembling the dial of a clock. This arrangement made things less than convenient for the casual spectator. There just wasn't a good place to sit or stand.

For instance, if a shooter was on station 12 (high noon), the spectator standing on the other side of the field at six o'clock was in danger of getting his hat ventilated unless he could duck faster than the speed of a load of number nines.

On the skeet field belonging to William H. Foster in Ballard Vale, Massachusetts, a monkey wrench was thrown into the works in 1923 when a neighbor established a chicken farm adjoining the skeet range. With the air virtually raining shot, the hens were reluctant to stay on the nest long enough to lay eggs. Foster was faced with selling out or rearranging. Being an

th Skeet

ardent shotgun fan, he chose the latter and radically changed the layout of his range.

The range became a semicircle in general layout, with all guns pointing away from the egg factory. This evolved into the modern skeet field which has eight firing stations and two trap houses. Seven firing stations are on the semicircle and the eighth is out in the center. A high trap house is to the left side of the field and a low house to the right.

From each of these eight positions in turn, the gunner fires two shells. One target is ejected from the high house and the other from the low house. With two shells fired from each station, a total of 16 has been used. Then going back to stations one, two, six, and seven, the shooter fires "doubles." Doubles means that a clay bird comes from both houses at the same time. If a hunter has been in the field when two quail have been flushed at the same time, one going one way, the other opposite, then he knows that it can be very frustrating.

Many hunters hesitate, not knowing which bird to go for first. By the time a decision is made, it is too late and the birds are out of range.

Shooting doubles on the skeet field can almost eliminate this hesitation. The shotgunner usually fires first at the going-away bird, then swings on the bird coming in, and fires. After the doubles have been shot, at least 24 out of the 25 shells in a box have been used. If the gunner misses along the way, he repeats his shot at the missing bird, and this takes care of the extra shell.

If his eye is sharp and his swing is good, and he breaks 24 straight, he then uses his last or 25th shell as his option shot from the station of his choice. This is usually on the right end of the field and he takes either a high or low bird.

Shooting skeet is a lot like shooting real birds but there are a few differences. On the skeet range each bird from each trap house is going to go at the same



**Skeet shooting,
improves accuracy...
promotes safety**



speed, in the same direction, and if missed, hit the ground at about the same place. But it still isn't easy. The shooter changes firing stations so much and so fast that a different shot is required for each pull of the trigger.

The skeet shooter begins his round of skeet by starting at station one under the high house. At his call, "Pull," the trap boy hits the button and the bird comes out of the house like a flushed quail with its tail on fire. This is a straight-away shot, looks easy, but in truth is one of the most missed birds on the field.

The trick of the straight-away is to aim high, drop the muzzle below the bird, and pull the trigger. The bird is going away and rising. A parallel in the field is when a dove zooms high over the hunter's left shoulder. If the hunter shoots above or at the bird, he misses. If he shoots slightly under, the shot and the bird intersect and the bird slams to the ground.

The next shot is from the same station, but the bird comes from the other end of the field. It comes in at an angle, so the shooter has to lead, pull, and follow through to turn the bird to dust. A parallel in the field is when a pheasant or quail is flushed toward the hunter by a circling dog.

The remaining seven stations are shot the same way, the only difference being that each has a different



angle, thus requiring a different lead. This is the entire secret of the game.

A few pointers to remember in shooting a shotgun are: 1) adjust your lead according to the angle of the bird and whether it is coming toward you or away from you; 2) pull the shotgun trigger, don't squeeze; and 3) follow through with the muzzle after the shot is made. Stopping the swing before pulling the trigger results in a miss. By the fractional pause of stopping, the bird is on the down-range and gone from the pattern of the shot. This is true also in the field. Continue the swing AS you pull, and afterward.

Championship shooters miss few birds, but any score above 20 out of 25 is considered pretty fair skeet shooting. From such a score on the range, the average dove or quail hunter might well be expected to go afield and add considerably to his game bag in a day's outing. More important, he may drastically reduce his crippling loss.

It is only reasonable that the man who is familiar with the speed of flying targets, familiar with the gun and the pattern it throws, and has conditioned himself to lead and swing-through properly, will be a better wing shot afield than someone with less experience.

Although hunters continue to shoot each other behind brush piles and in trees, there have been no re-

ported shootings on the skeet range. This alone may indicate the need for a higher degree of training even for the experienced hunter. The good habits taught on the skeet range are usually carried over into the field.

Skeet, properly digested, not only will promote good gun handling and give birth to conscious safe gun handling, it also will teach the hunter his own shortcomings in gun handling. Side effects include teaching the rudiments of sportsmanship and marksmanship to the younger set.

What better site than a skeet field to shoot and develop the proper habits of expert gunnery? What better place to learn gun handling techniques, and teach them to hunters of the future? And too, the field is a good place to meet with old friends and make new ones.

Estimates place the number of persons currently belonging to skeet and other shotgun clubs at more than half a million. Still most of the shooting is done on the practice field rather than in registered shoots.

If you haven't tried skeet shooting, perhaps you should. There is probably a range waiting for you at the edge of your town, or any of the larger cities in Texas. Maybe you've been missing something that is challenging, fun, and downright good practice for the coming bird season. ° °



Sand and Solitude

GRITTY sand beneath your toes; roaring, thundering surf pounding the shore; burning sun, cooling breezes braising the skin; salty taste and the scent of freshness; and the sight—the best thing of all—of seemingly endless beach with no sign of another human being. Beauty undisturbed by man.

This is beachcombing.

No five o'clock traffic snarling, or radios blaring, or children screaming, or neighbors complaining. No asphalt jungles, brick barnyards, or concrete cities.

Just the sun, the water, the beach.

Peace. Solitude.

This is the prescription that the doctor ordered. This is the true "get-away-from-it-all" place. Depending on your ingenuity and fortitude, it is possible to get away from everyone and find a section of beach that is totally deserted and void of any human being.

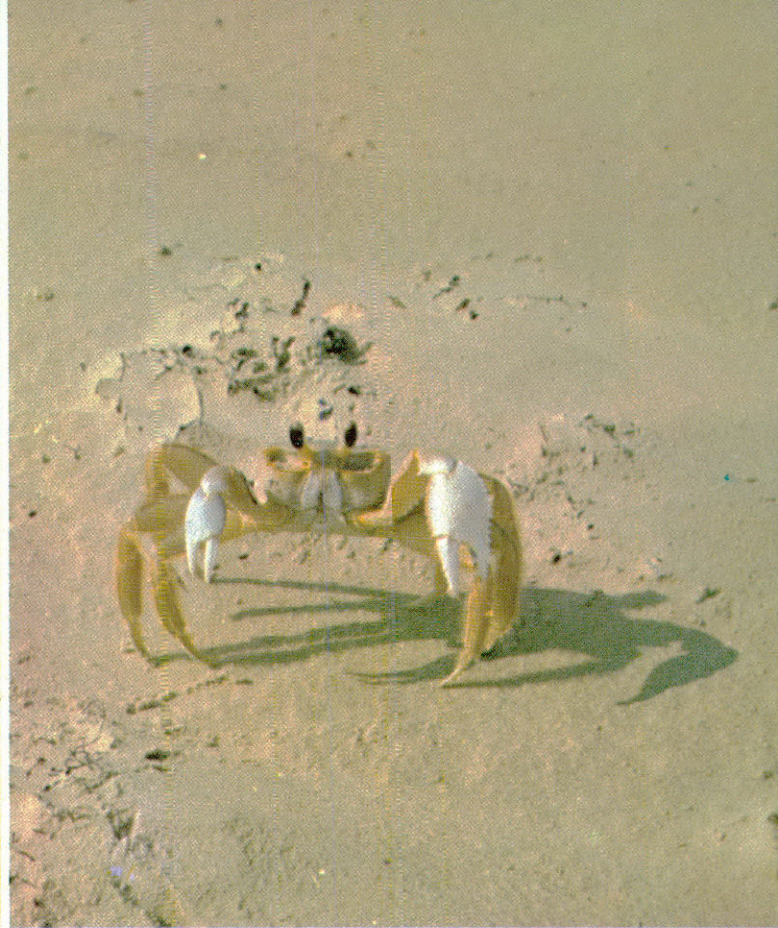
The first prerequisite is to find a lonely stretch of beach. This is the most difficult part, especially on weekends. Padre Island is a popular beach in Texas, but it is too popular. There are some lonely stretches of beach on Padre but it is necessary to do considerable

reconnoitering to discover them.

Swamps and marshes are obstacles, as well as loose sand and shell, in your travel down the coast of Padre. Sometimes these areas are impassable and at other times it is no trouble to go around them and down to a part of the beach that few people have travelled. It is always worth looking into. The easiest mode of travel is by motor bike, because it is the lightest and the least likely to get bogged in the sand. Four wheel drive jeeps and dune buggies work almost as well and sometimes better. If you don't have wheels, you can always walk. Be careful, however, since it is easier to walk the five miles down the beach than the five miles back. Don't overexert yourself. Take it easy and have fun.

Besides Padre, there are also Matagorda and St. Joseph islands. It is a little tougher to get to these two, however, since there are no roads connecting them to the mainland.

This leaves two choices: boat or plane. The cheapest route is by boat. It is not hard to hire a skipper in Rockport, Port Aransas, or some other nearby com-



by John Houser

Colorful Portuguese man-of-war, spidery ghost crab, and a mysterious coconut intrigue the senses.

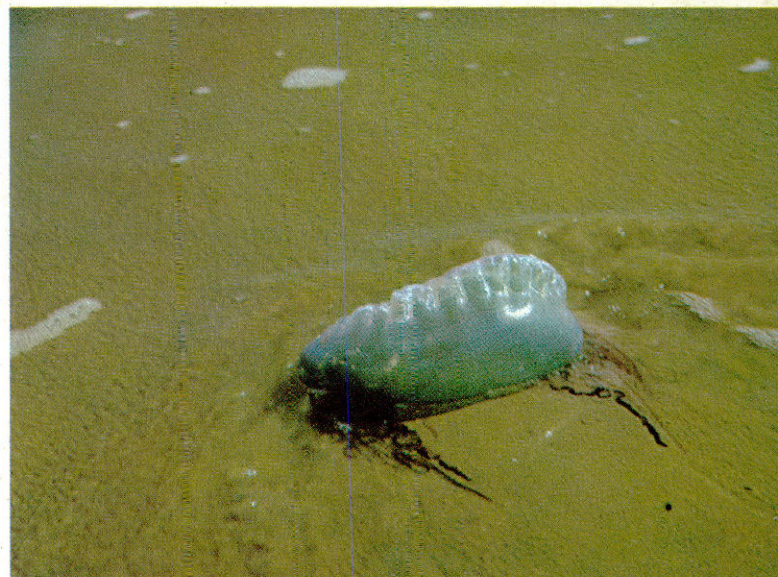
munity to take you to these islands.

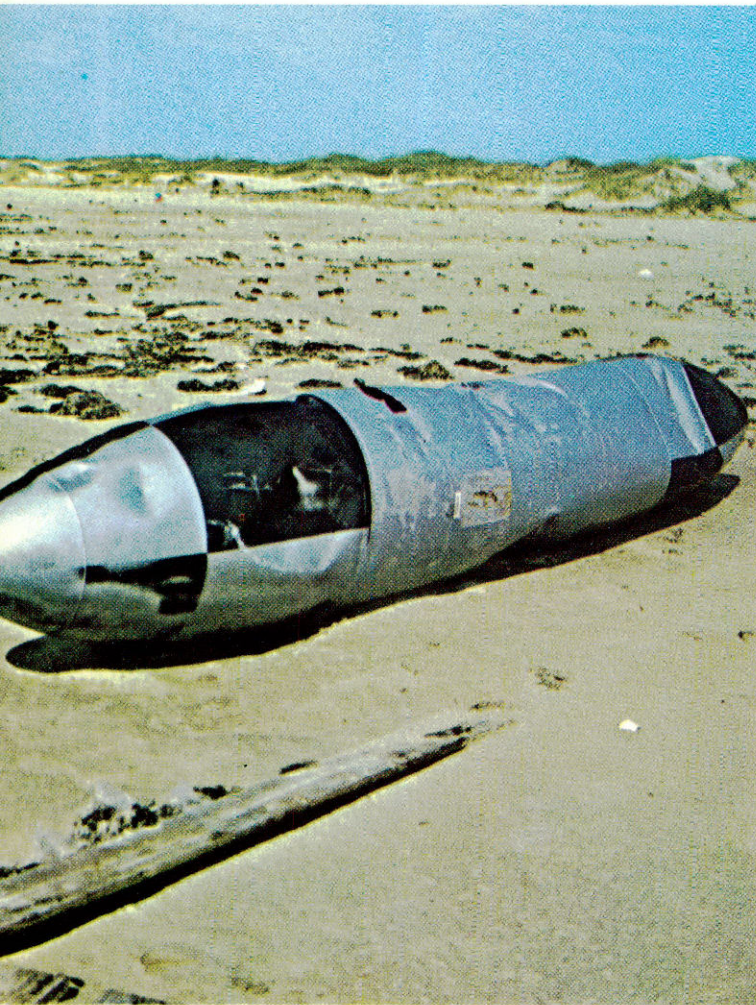
Grab your gear, take a small motor bike (the smaller the better), if the skipper will take it across for you, and head out to the islands for a couple of days.

Pack a tent, sleeping bags, food, matches, plenty of fresh water (minimum one gallon per person per day), sunglasses, sun tan lotion, first aid kit, and any other necessities that you may need, like a rod and reel or a camera.

Then just relax to the sound of the lonely waves washing the beach. Simple, yet so complex, a symphony could be composed of the different tunes emitted. The roar of the surf fills your ears, hollow rumblings and roaring crescendos of the water tumbling, seething, splashing, whispering, grinding the shore. And then the retreat, slowly, quietly, shyly returning to the heart of the the ocean until once more the waves billow forth louder and stronger than before. Life, death, rebirth, and life once more. The endless, fathomless abyss of the sea.

And from the sea come many things—living, dead,





Aluminum gasoline wing tank and rusty channel marker buoy are stories in themselves.

and man-made. The tiny sea creatures that the uneducated human eye cannot discern inhabit the shallow water near the beach. These are choice morsels for the birds that stand on the water's edge and dart after a receding wave for a meal.

The colorful Portuguese man-of-war, with its long tentacles that are a hazard for any living thing, are often cast upon the shore. The jellyfish, so clear that they are barely visible, also are the victims of the tide. Both of these sea creatures, while dead or alive, can sting a man badly and sometimes kill him. But dead on the beach, they seem somewhat beautiful and helpless.

The sea also washes up creatures that look foreign: odd shapes of living organisms, or part of something that is intriguing and yet a little frightening.

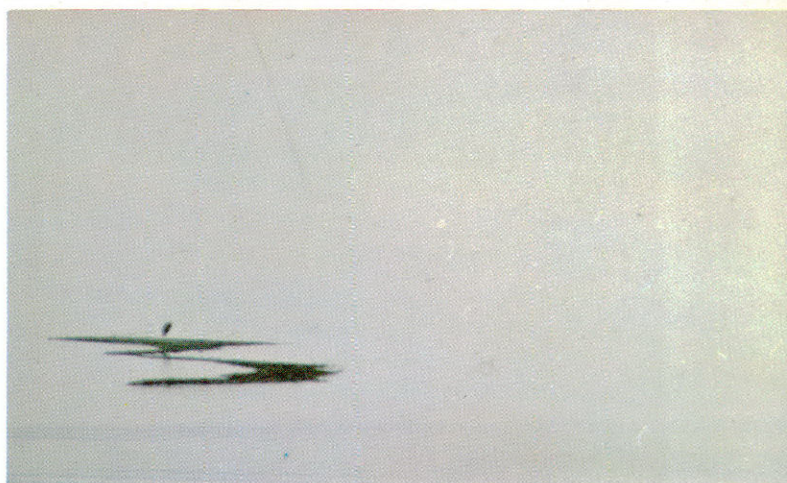
Sea shells sometimes are found abundantly, and at other times the beach is picked clean by the erosive action of the sea, dragging them back into her bosom. However, it is illegal for persons to remove anything from the National Seashore part of Padre Island.

Other shells are taken over by the hermit crab, who likes to make a home out of a conch. Once he is inside, there is not much chance that you can coax him back outside.

The ghost crab, a distant cousin of the hermit, runs more like a spider and, with his hairy legs, looks more like one than a crab. His sideways gait is delicate and one could spend hours just watching him run. It is possible to chase him down if you have the stamina, and this playful beast will gladly pose or even fight. This depends, of course, on whether you can catch him and if he doesn't run into his hole.

The ghost crab's tracks in the sand make little indentations. Many of these run out of his home in all directions. Other animal tracks can also be found on the beach. A jack rabbit's bounding gait is easily recognizable. Bobcat, wolf, coyote, badger, raccoon, and other tracks along with the snake trails also are found on the beach in the soft sand.

These tracks are tales in themselves. Sometimes large tracks can be found following smaller ones, and



Black skimmers (above), curlews (middle right), egrets (lower right), and other birds transfix the eye.

the smaller ones disappear. The strongest survive and the weak die.

Other stories can be found on the beach if your imagination is strong enough. Coconuts, pineapples, and even large, uprooted trees are found washed upon the shore. Where did they come from? How old are they? How long were they on the ocean? These questions and others only the sea can answer.

Man-made items, such as a gasoline wing tank from an airplane, or a ship's hull, or a channel marker buoy are also to be found on the beach. What stories have they to tell? What mysteries could they solve if they could speak?

The beach has many unusual objects for the observant beachcomber to see and remember and to think about.

As all good things must come to an end, you will soon have to depart your wonderland and return to civilization. But as your footsteps are erased by the shifting, whispering dunes, a memory will linger on and keep tugging you to return another day. * *

Long Shots Short Casts

Compiled by Joan Pearsall

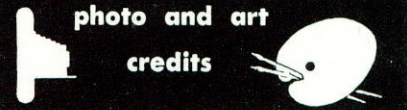
OIL AND TOIL: Oil catastrophes off eastern coasts have kept the local Audubon societies busy cleaning up the victims. New Jersey has tried placing an oiled duck in an ultrasonic washer with a nontoxic detergent, then treating it with a warm solution of alcohol. Massachusetts Audubon has stuck to washing ducks by hand. Either way, it's long, slow work.

FAIR FEATHER FRIENDS: American Indians, who still prize eagle feathers, are joining the fight to save the national bird. The Chippewa Tribe has designated its 400,000-acre reservation in Minnesota as a bald eagle sanctuary. These lands are on an important eagle migration route and have several active nests. Rare except in Alaska, bald eagles are included in the Endangered Species Act of 1966. A wildlife marsh restoration project has also been completed on the reservation, and other wildlife—waterfowl, muskrat, and mink—will also enjoy protection there. The Bureau of Sport Fisheries and Wildlife has a standing order from Indian tribes for feathers of eagles that die in the sanctuary. Donation of the feathers is permissible only for ceremonial use.

TROUT TRYOUTS: A physical training program has been started for trout! Based on tests in Canada on hatchery reared steelhead trout, several Idaho fish hatcheries started muscle-building exercises for the fish this spring, 15 minutes a day. At the start of the Canadian tests, involving the increase of water velocity in raceways by reducing depth, only five young steelhead in 36 were good swimmers. After vigorous forced-swim lessons every day for five days, it was found that 30 fish out of 36 were good swimmers.

PEDAL PLENTY: The first U.S. "Bikeway" to cross an entire state was officially opened last year in Wisconsin. The trail mainly follows rural highways, while one section takes off on an abandoned railroad right-of-way, with its three tunnels intact but its rails and ties removed. Small bike symbol signs are installed at intervals along the Bikeway, and folders showing the exact route are available from the Vacation and Travel Service of the Wisconsin Conservation Department.

A CHOICE DILEMMA: New York City, to ease its formidable air pollution problem, announced a plan to seal apartment house incinerators which do not comply with the City's new air pollution standards, and proposed burying the unburned garbage in a nearby park. Conservationists pointed out the folly of destroying one natural resource for the sake of another. The National Audubon Society suggested leaving the incinerators unsealed and imposing the \$200-a-day fine which the law stipulates until the owners comply.



Cover—(top left) Black head gull; (top right) black skimmer; Ron Perryman. (center) Herring gull; (lower left) ring-billed gull; (lower right) blue heron; Leroy Williamson.

Inside Cover—Longnose, spotted, and alligator gar; Nancy McGowan; Grumbacher watercolor on D'Arches illustration board.

Pages 2, 3—Hellgrammite; Guadalupe River; Williamson; Pentax Spotmatic, 50mm; Kodachrome II.

Page 4—Guadalupe River; Robert Felling; Nikon F; Kodachrome II.

Page 5—(both) Hellgrammites; Guadalupe River; Williamson; Kodachrome II.

Page 6—(top) Dove; near Edinburg; Williamson; Ektachrome X. (bottom) McGowan; pen and ink; D'Arches illustration board.

Pages 7, 9—Dove wings; near Austin; Paul Hope.

Page 11—American badger; McGowan; Grumbacher watercolor on three-ply Strathmore illustration board.

Pages 12, 13—Near Austin; George McKinney; Rolliflex 80mm; Ektachrome X.

Pages 14, 15—Near Austin; McKinney; Rolliflex, 80mm; Ektachrome X.

Page 16—Rockport; Williamson; Pentax Spotmatic, 50mm; Ektachrome X.

Page 17—(top left) Matagorda Island; Richard Moree; Hasselblad, 80mm; Ektachrome X. (top right) Ghost crab; (center) Portugese man-of-war.

Page 18—(left) Gasoline wing tank from airplane; Moree; Hasselblad, 80mm; Ektachrome X. (right) Bell buoy.

Page 19—(left) Black skimmer; Perryman; Kodachrome II. (center right) Curlews; (lower right) Egret; Williamson.

Page 21—Dan Lay; watercolor; Crescent 300 illustration board.

Page 24—Possum Kingdom State Park; Williamson; Mamiya C-33; Ektachrome X.

Page 25—(top) Huntsville State Park; (center) Garner State Park; Williamson.

Page 26—(top left) Lake Corpus Christi State Park; (top right) Huntsville State Park; (center & bottom) Garner State Park; Williamson.

Page 27—Guadalupe River; McKinney.

Page 32 & Inside Back Cover—McGowan; Grumbacher watercolor on three-ply Strathmore illustration board.

Back Cover—Hummingbird nest; Dan Klepper.

Sandjack Oak . . .

Lost Hardwood

by Daniel W. Lay

WILDLIFE BIOLOGIST

PITTMAN-ROBERTSON PROJECT W-80-R

MOST dependable producer of acorns in East Texas is the sandjack—and its acorns are those most palatable to game. Known also as turkey oak and bluejack oak, *Quercus cinera* has a distinctive niche in the forest. This is the smallest oak tree in eastern Texas, seldom exceeding eight inches in diameter and 20 feet in height, although it can grow to a height of 35 feet.

Sandjack thrives on deep sand where the dearth of moisture eliminates most other trees. Often, its only companions are bull nettle and needle grass. It also occurs on better sites with blackjack oak and short-leaf or longleaf pine.

For looks, it isn't much. Shape is irregular; leaves are sparse; leaf color is a dry, dusty, blue-gray-green; twigs are stubby. The root system, however, must be beautiful.

In the worst drought, it finds enough water to make one more crop of acorns, as if it might be the last. It is natural that the species has acorns every year. The tough place it has occupied in the plant community, through eons of time, has eliminated the less consistent producers. However, evolution failed to adapt the species for economic competition in the Twentieth Century.

Sandjack lacks commercial value. It is a so-called "worthless" hardwood, too small for pulp wood or sawlogs. Even the foresters, who conserve some hardwoods on "hardwood" sites, ignore the lowly sandjack. Sites which have most of the sandjack are problem areas for the foresters because they are hot and dry, whereas pine establishment depends on exceptionally favorable weather.

When pines do establish on these sites, they grow up through the sandjack shade and overstory with no difficulty. Sandjack is one of the few oaks that will produce well in the shade of pines. An indirect benefit to the pines is the litter and root system of sandjack which improve the soil.

Variety is well known to be important to all game, yet many fail to recognize the scrubby sandjack as a giant member of the ideal forest wildlife habitat.

The dependability of its acorn production may be documented. A survey of mast producers in two localities of East Texas was conducted each year from 1959 through 1966. Random samples of sandjack four inches or more in diameter were

tallied as to the presence of acorns.

In Jasper and Newton counties, the average was 84 percent, with acorns for all sizes and all years. In Trinity County, the average was 68 percent. By size class, the seven-year average in Jasper-Newton was 67 percent for the four-inch trees, 89 percent for the six-inch trees, and 90 percent or more for each of the larger size classes. At least half of the trees had some acorns in the poorest years.

Deer hunters know the attraction of deer to the ridges where these acorns are available. Turkey, quail, and fox squirrel seek them when they can. Today, turkey are almost extinct on most of this range in East Texas, and sandjacks are becoming a relic of the past. * *





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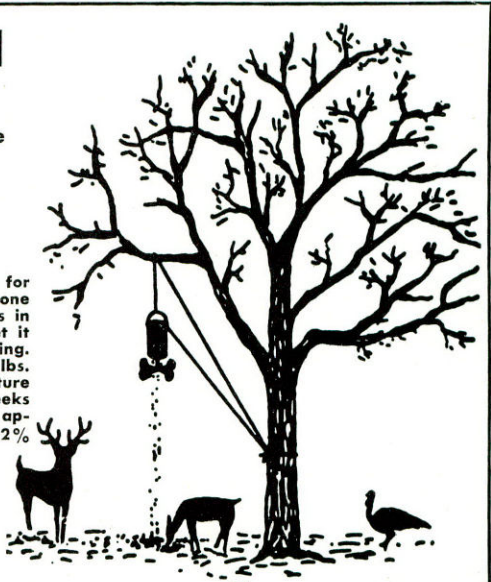
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Recreation Parks																			
Abilene	Buffalo Gap	■	■				■	■		■		■		■					
Atlanta (Undeveloped)	Queen City	■					■	■		■			■	■		■			
*Balmorhea	Toyahvale	■			■	■	■	■	■	■		■		■					
Big Spring	Big Spring	■					■	■		■				■					
Blanco	Blanco	■	■				■	■		■		■		■					
Bonham	Bonham	■		■			■	■		■		■		■					■
Buescher	Smithville	■	■				■	■		■		■		■					
Cleburne	Cleburne	■		■	■	■	■	■		■	■			■	■		■		■
Daingerfield	Daingerfield	■		■			■	■	■	■		■		■					■
Eisenhower	Denison	■					■	■		■		■		■					
Falcon	Falcon	■			■		■	■		■		■		■					
Ft. Parker	Mexia	■	■	■			■	■		■		■		■					
Garner	Concan	■	■	■			■	■	■	■		■		■					
Goose Island	Rockport	■					■	■		■		■		■					
Huntsville	Huntsville	■	■				■	■		■	■	■		■					■
Inks Lake	Burnet	■					■	■		■		■		■					■
Kerrville	Kerrville	■	■	■	■		■	■		■		■		■					
Lake Brownwood	Brownwood	■		■			■	■	■	■		■		■					
Lake Corpus Christi	Mathis	■					■	■		■	■	■		■					
Lake Whitney	Whitney	■	■	■	■	■	■	■		■		■		■					
Lockhart	Lockhart	■					■	■		■		■		■					■
*Mackenzie	Lubbock	■					■	■		■		■		■					■
Martin Dies, Jr.	Woodville	■	■		■		■	■		■		■		■					
Meridian	Meridian	■	■		■		■	■		■		■		■					
Mother Neff	Moody	■					■	■		■		■		■					
Port Lavaca Causeway	Port Lavaca	■					■	■		■		■		■					
Possum Kingdom	Caddo	■					■	■	■	■		■		■					
Tyler	Tyler	■	■				■	■		■		■		■					
Velasco (Undeveloped Gulf Beach)	Freeport	■					■	■		■		■		■					
Scenic Parks																			
Bastrop	Bastrop	■		■	■	■	■	■	■	■		■		■					■
Bentsen-Rio Grande Valley	Mission	■					■	■		■		■		■					
Brazos Island (Undeveloped Gulf Beach)	Brownsville	■					■	■		■		■		■					
Caddo Lake	Karnack	■					■	■		■		■		■		■	■		
Davis Mountains	Ft. Davis	■			■	■	■	■	■	■		■		■					■
Longhorn Cavern (Daily Cavern Tours)	Burnet	■					■	■		■		■		■					■
Monahans Sandhills	Monahans	■					■	■		■		■		■					■
Palmetto	Luling	■					■	■		■		■		■					
Palo Duro Canyon (Summer Drama)	Canyon	■			■	■	■	■		■	■	■		■					
Historic Parks																			
Ft. Griffin (Texas Longhorn Herd)	Albany	■					■	■		■		■		■					
Goliad	Goliad	■					■	■		■		■		■					■
Gov. Hogg Shrine	Quitman	■					■	■		■		■		■					■
Indianola	Port Lavaca	■					■	■		■		■		■					
Jim Hogg	Rusk	■					■	■		■		■		■					
Lyndon B. Johnson	Stonewall	■					■	■		■		■		■					
Mission Tejas	Weches	■					■	■		■		■		■					
San Jacinto Battleground	Deer Park	■					■	■		■		■		■					■
Stephen F. Austin	San Felipe	■	■	■	■	■	■	■		■	■	■	■	■					■
Varner-Hogg Plantation (Guided Tours)	West Columbia	■					■	■		■		■		■					■
Washington-On-The-Brazos	Washington	■					■	■		■		■		■					■
Historic Sites																			
Acton	Granbury	■					■	■		■		■		■					
*Alamo	San Antonio	■					■	■		■		■		■					■
*Battleship Texas	Deer Park	■					■	■		■		■		■					■
Eisenhower Birthplace	Denison	■					■	■		■		■		■					■
Fannin Battleground	Fannin	■					■	■		■		■		■					■
Gen. Zaragoza Birthplace	Goliad	■					■	■		■		■		■					■
Monument Hill	La Grange	■					■	■		■		■		■					■
Old Ft. Parker (Fort Replication)	Groesbeck	■					■	■		■		■		■					■
Port Isabel Lighthouse	Port Isabel	■					■	■		■		■		■					■
San Jose Mission	San Antonio	■					■	■		■		■		■					■

*Facilities Not Operated by Texas Parks and Wildlife Department



Recreation Parks . . .



A CALL FOR THE

OUTDOORS

by Barbara Jaska

PARKS INTERPRETATION ASSISTANT

SKIING on a sun-splashed lake, fishing on a sandy beach, picnicking in a shaded valley, riding horseback through a canyon . . . outdoor recreation is many things.

It may be a means of physical exercise, a creative outlet, a social gathering, or merely an escape from daily routine. It may occur alone or with others, with or without expensive equipment, for an hour or a week, near or far from home. Actually, outdoor recreation is any activity in the outdoors that a person voluntarily undertakes in his leisure time, ranging from picnics in the backyard to camping in remote wilderness.

Today, although more Texans are living and working in urban areas, they are turning more and more to the outdoors for recreation. The outdoors holds the attraction of clean air, natural beauty, and spaciousness, which is a kind of antidote for today's pell-mell pace of living. In addition, Texans, as a rule, have more money and more time than ever before for recreational activities.

In recent years the demand for outdoor recreation has been so great that the State parks system has

found it necessary to classify the State parks on the basis of type and purpose. One type of park—State recreation park—is devoted principally to providing facilities for outdoor recreation. The original purpose for which State parks were established—the preservation of outstanding examples of Texas' distinctive natural environments—is now the primary purpose of State scenic parks.

The new classification system does not mean, however, that the natural environment is totally disregarded in State recreation parks. Indeed, to preserve the natural setting is to preserve the very essence of outdoor recreation.

Recreational facilities in State recreation parks are limited to the "non-urban" type. "Urban" recreation—that usually found in cities and towns, such as tennis and basketball—generally requires a vast alteration of the natural environment. But facilities for "non-urban" recreation (hiking, camping, fishing) blend in with the natural surrounds; the activity itself is in "harmony" with nature.

Moreover, the facilities are limited in number. If



Recreational park facilities are developed so they will not detract from nature.



picnic tables, parking areas, camp sites, and other conveniences were constructed in accordance with rising demand, and if no additional land were acquired and developed for recreational purposes, the State parks would soon be little different than city parks or playgrounds. Verdant trees, colorful wildflowers, and native animal life are part of what makes camping and picnicking so enjoyable. And, too, the undisturbed portion of the park provides for such activities as hiking, horseback riding, and nature study. In this way, a balance between recreational development and the natural setting is maintained.

The increasing demand for outdoor recreation is making itself felt throughout the State in both public and private recreation areas. Every summer weekend and every holiday, the parks are filled; shortages are apparent everywhere. What's more, the demand for outdoor recreation is expected to double in less than 20 years.

In view of the call for the outdoors, as evidenced by the existing shortage and expected demand, the Texas Legislature has passed a \$75-million land acquisition program to acquire and develop 150,000 acres of land for State parks. Among the parks to be created are 26 State recreation parks, most of which will be located on a sizeable body of water and within two hours of major metropolitan centers.

The program, which awaits the approval of Texas voters on November 11, is not only a positive step in fulfilling recreation demand; it is a necessary step. It assures Texans and out-of-state visitors that they will have a place to water ski, to fish, to picnic, and to camp now and in the future. * *



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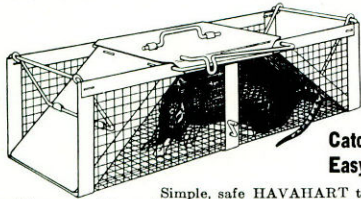
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Many Angles to Angling

As a take-off on a popular cigarette advertisement, "I'd rather switch than not fish."

Unlike many dyed-in-the-wool fishermen who adopt one method of fishing, whether it be bait fishing, spinning, fly fishing, or what have you, the person getting the most of his fishing hours is not afraid to switch lures, change from artificials to live bait or vice versa, or do something really drastic in order to catch fish.

It is the guy unafraid of being different that discovers new fish catching secrets, just as the scientist must be unafraid of an unorthodox experimental procedure in order to invent a new device or process. Fish are so unpredictable and affected by so many factors that the same methods are seldom productive for a very long period of time.

Often the true inventor instinct comes out in an angler when he knows where a big fish or a school of fish is hiding, but can't get the slightest nibble. Finally, after every lure, bait, retrieve, and approach has been tried, the fisherman gets desperate.

In such cases, fish have been known to bite on bottle openers, baby mice, mulberries, and just about anything imaginable. But the

secret is, don't be afraid to switch!! If you are using minnows, try hooking them a different way, or switch to worms, or stink bait, or a marsh-mallow, or soap, or corn flakes. If your favorite artificial lure doesn't produce, don't pull up and go home—try a different retrieve, try some other lure, switch to a plastic worm, or even join the live bait fraternity.

Never give up just because the fish aren't biting. This is the real test of the fisherman and one of the things that keeps fishing a sport.

TWO-BIT COOK STOVES may sound like a fanciful and derogatory phrase, but believe it or not, there is a camp stove on the market today that sells for a quarter.

As you might expect, there is a small catch to this claim. The stove is an ingenious crossbar that fits on a can of "Sterno," and the 25-cents offer does not include the tin of fuel. But even including the cost of the canned heat, this is a mighty inexpensive and compact little cook stove.

The "stove" consists of two interlocking strips of steel which fold flat and pack in your gear in less room than a pocket comb. Snap the two pieces together to form the crossbar, set it on a can of "Sterno," and put a cooking pot on top. Beans, soups, coffee, stew, and other foods are piping hot or boiling in a few minutes.

As designed, the crossbar keeps the pot at the right height over the "Sterno" flame, and helps direct the draft upward for minimum heating with maximum economy. Although it will not cook a meal for a crowd, the stoves are so compact everyone can carry his own.

To take advantage of this unusual stove, send your quarter to "Sterno, Inc., P. O. Box 620B, Jersey City, New Jersey 07303." With the stove you will receive a coupon worth eight cents on the purchase of three small cans or two large cans of fuel. This offer expires December 31, 1967.

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FISH HAVENS may take the form of natural obstructions, brush, inundated bridges, fences, or man-made structures, but good fishing is usually found around such an area.

One of the most energetic programs proposed to date has incorporated the nation's overabundance of discarded automobile tires. Unlike old car bodies that are hard to work with, and many other materials that may be expensive, hard to handle, or offer only limited service, old tires are very serviceable for this purpose.

One of the champions of this cause is Norm Edmund of the Edmund Scientific Company, 101 East Gloucester Pike, Barrington, New Jersey 08007. By sending him a stamped, self-addressed, large envelope, he will send you a very informative booklet on how to use auto tires as fish attracting shelters.

ELECTRONIC FISH FINDERS have been on the market for several years now, but the average fisherman looks at these devices as just another gimmick to separate him from his hard cash. However, just as is true with many other new items, they are only as productive as the guy using them.

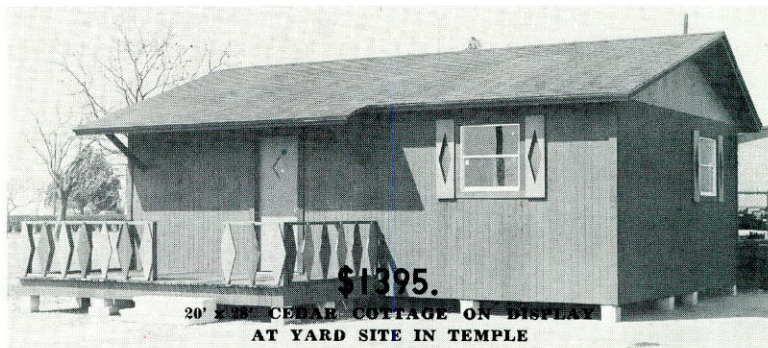
In an effort to promote better understanding of the design and ideas behind the fish LO-K-TOR, the Lowrance Electronics Manufacturing Corporation of Tulsa, Oklahoma, has recently published a book entitled "The Fun of Electronic Fishing."

Concisely written and well illustrated, this book is straightforward and packed with information. Other than describing how the Fish LO-K-TOR operates, the book also contains sections about the thermocline, favorite depths of fish, schooling habits, surveying a lake, using a thermometer, bait fish, fishing the windward shore, using a marked line, bottom bumping, and much, much more.

Available from the Lowrance Electronic Manufacturing Corporation, 7809 East Admiral Place, Tulsa, Oklahoma 74115, for only \$2, this book could well be your first step toward understanding how the miracles of modern electronics can help your fishing. * *



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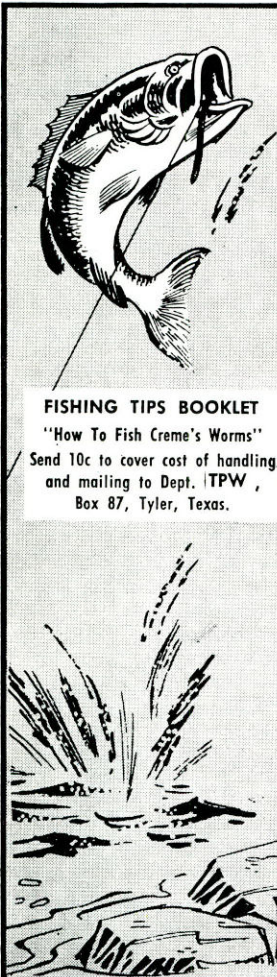
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OUTDOOR BOOKS—Jim Sutton

Whoopers and Gobblers

THE WHOOPING CRANE—The Bird That Defies Extinction, by Faith McNulty, Introduction by Secretary of the Interior Stewart Udall; E. P. Dutton & Company, Inc. (New York) 1966; illustrated; 186 pages; \$4.95.

Everyone likes to have friends and influence people, but not everyone would like to have a book written about them. That might be a way of losing friends instead of gaining them.

The whooping crane, desperately needing friendship of the human population, probably would not have any qualms about his most recent biography, Faith McNulty's "The Whooping Crane."

Miss McNulty reveals in absorbing detail and compassion the problems and possibilities of keeping the whooping crane on earth. At last count, there were only 51 remaining, seven of which are in captivity. The number of people actively concerned with the dilemma has not been counted, but the comparative figure does not seem to be much more than the number of birds.

The few whooping cranes that are left travel many thousands of miles each year. After breeding in Canada during summer, they migrate to the Texas coast (where the Aransas Wildlife Refuge now receives them) for the winter.

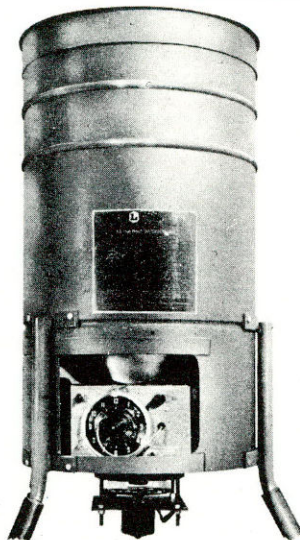
This work, winner of the Dutton Animal Book Award, is much more than a

study of birds, however. It is also the chronicle of men who have fought, researched, and plotted to keep the whooping crane alive. Robert Allen was one such fighter.

The late Allen, wildlife writer for the National Audubon Society, compiled the first classic story of the whooper in 1952. "Allen," the author says, "dedicated himself heart and soul to finding the answer to such questions. He combed libraries for historical records of whooping cranes. He struggled through the mud of the Texas salt flats to stalk the wintering birds. In summer he flew several thousand miles searching for the mysterious nesting places. In the course of this work, Allen became a passionate champion of the whooping cranes. He not only knew more about them than anyone had before him; he also cared more about them than anyone now alive. It is typical of the bad luck that besets the whooping cranes that they lost such a friend. Allen died suddenly in June, 1963."

Contrary to many cases of wildlife near-extinction, most notable of which is the American buffalo, the whooping crane population had shrunk to no more than fifteen hundred birds even before there was significant human interference. This was Allen's thesis.

Man has done his share, however. The whooper met one of his waterloos in



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Texas. There, McNulty says, "the destruction of the habitat of the whooping crane was neither so sudden nor so simple as in Louisiana, but proceeded as inexorably. The Rio Grande area, once wet enough for cranes, gradually dried up as a result of drainage, farming, and grazing . . . At the mouth of the Brazos River whooper territory is now the scene of oil refining, sulfur extraction, and kindred industrial uses. It is as congenial to whooping cranes as the center of Houston, only sixty miles away."

Miss McNulty is fair in her assessment. Mistakes have been made and will be made by man in his treatment of the rest of earth's creatures. These mistakes, in most instances, are the result of a lack of knowledge and understanding, rather than a disregard for life.

The whooper's battle has been a long and dramatic one. According to the author, it will not be won soon. The point is that it now is being fought on a larger scale than ever before.

Small wonder. The whooper is worth hanging onto. "For some of us there is a strange magic in knowing that once again the flock has completed another extraordinary journey. Somehow, mysteriously, from high in the air the birds sense the nearness beneath them of the small patches of sand and water that are theirs. They brake their flight, and descend, floating down in narrower and narrower spirals. For an instant before a whooping crane touches the ground, its huge wings seem to hold it in the air. Its legs stretch out, reaching for the earth, and then it settles. Its great tapered, shining white body comes down so softly it seems as though it could light upon an egg and not break it. It is a marvelous thing."

So is this book.

—Jim Sutton

THE WILD TURKEY—ITS HISTORY AND DOMESTICATION by A. W. Shorger; *University of Oklahoma Press (1966); Illustrated; 501 pages; \$10.00.*

Some people think of the eagle as being the "all-American" bird; to them it symbolizes liberty and freedom. A. W. Shorger points out, however, that the turkey is the real "all-American"; to him it symbolizes a good bird and a full stomach.

In this extensively researched yet dully written work, the author has set out to compile a complete history of the wild turkey. If his goal was to write a reference book for the game manager and biologist he has most certainly succeeded.

For instance, Shorger goes into much detailed descriptions of original distribution, taxonomy, anatomy and physiology, breeding and nesting, development, mortality, and utilization.

"An unsolved problem in turkey management," he says, "is drifting from the place of release. Game managers select stocking areas which in their opinion are

most suitable for turkeys. Frequently, the birds show little respect for their judgment and will move considerable distances. It is not certain that drifting is due to the unsuitability of the place of release. Nervousness from capture and strange surroundings may impel turkeys to move until calmness is restored and they can settle down."

For the biologist he has this—as well as other things—to say: "The postacetabular length of the ilium is greater than the preacetabular length; and the length of the postacetabular area is greater than the width." The above sentence is not recommended for the layman.

Neither is the rest of the book, for that matter. With 114 pages of biogeography, Shorger has well footnoted his statements,

leaving nothing to doubt. And he does come up with some interesting, little known facts.

For example, "In southeastern Illinois, Birkbeck had wild turkey for dinner every day for a month. Five could be purchased for a dollar (1818). Flower states that in 1819 in Edwards County the prevailing price of a wild turkey was 25 cents."

Or consider this one: "Hunters in Texas, shooting at a roost in early morning, saw a 'panther' seize a turkey and make off with it. Pursued on horseback, the cat dropped the bird, which had one breast and one leg torn off."

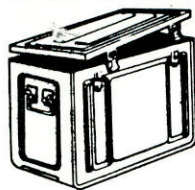
Most of the information within the volume, however, is relevant to the scientist, which makes this an essential book about an essential bird.

—Jim Sutton

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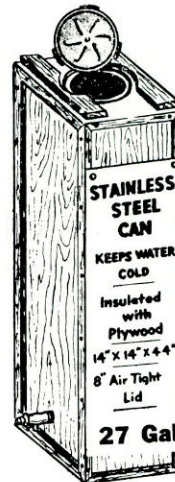
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Letters



to the Editor

Less Propaganda

I used to enjoy your magazine very much, but it has become steadily worse for sportsmen who are not biologists and do not care how many restrooms, etc. there are in every park in the State of Texas. I would like to hear more stories about what other sportsmen are doing, and not just what the State is doing for us.

Tim Parker
Beaumont

New Residents

A note of appreciation for the excellent facilities in your Martin Dies, Jr. State Park, which is a lovely spot that we have enjoyed overnight twice. The Rangers were most friendly, another plus for your system. . . . God willing, we'll become citizens of your great State in less than three years. We love it. Waiting for retirement age of 62 from Sinclair Oil. Hope to see many more parks.

Mr. and Mrs. Harley S. Lewis
Quincy, Illinois

Nice Parks

After two delightful winters in Texas, I feel that I would like to tell your Department why we have greatly enjoyed your part in making our first two years of retirement very joyous ones. . . . Most of our time in 1965 was spent at Falcon State Park, and in 1966 at Falcon and

Martin Dies, Jr. State Parks. . . . At Falcon, we found complete facilities (especially this year after the addition of sewage connections and increase in electrical power) well kept and maintained by capable and friendly workmen. They were pleasant and helpful throughout. . . . At Dam B. (Martin Dies, Jr.) the same excellence prevailed. We cannot commend Mr. Smith, Mr. Ham, and everyone of the workmen there too highly, for their hospitality, friendliness, and cooperation. Mrs. Smith and Mrs. Ham were also unusually helpful and friendly. . . . In my opinion, you can tell when you cross the State Line into Texas, and we believe your fine attitude pays off in good roads, easy traffic conditions, courteous and helpful officers and tradespeople, and a general feeling that you are glad we came and hope we'll come back. We look forward with pleasure to future winters in Texas.

Jack E. Yarian
Flora, Indiana

Formosa Friends

We enjoy the magazine very much and have airmailed it to our son and his family since they have been in Formosa—December, 1964. Our daughter-in-law teaches fifth grade in the American School in Taipei, and takes each issue to school. Recently she wrote, "Do not fail to keep sending the Texas magazine. My pupils like it a lot, also learn so much from it." We also want our 10-year-old grandson to learn all about Texas.

Mrs. M. Jackson
Lockhart

Proud Texan

Let me commend you for the excellent facilities at Martin Dies, Jr. State Park and Lake Whitney State Park. The drive-in spaces for travel trailers, with water, lights and sewage, are planned for efficient operations. The restrooms and showers are very, very nice and clean. Personnel at both parks were friendly and helpful. . . . I am proud of Texas tourist facilities. Parks like these should attract many out-of-state travel trailers and tent campers to Texas.

G. M. Morris
Temple, Texas

Lost and . . .

As a new subscriber to *Texas Parks and Wildlife*, I have been greatly impressed with the quality of the publication, both in the printing and in content. I would like to make one suggestion on behalf of the thousands of new citizens and tourists who weekly search this great State for outdoor recreation. Identify those beautiful color pictures of lakes, and streams that appear in your magazine each month. In one recent issue there were at least half a dozen shots of lakes that I would like to visit, but none were identified—not even the cover picture.

This is an awfully big State, so please help us wandering fishermen find short cuts to its lakes and streams.

W. E. Carey
Houston

Since we have received other requests of this nature, perhaps there are other readers who have not found the reference to photos and art presentations, which is included in the column entitled "Photo and Art Credits." This column is listed in the index, and in it we relay to the readers as much about each photograph and piece of artwork as is practicable and possible. —Editor

. . . Found

Have been an enthusiastic reader of your magazine for quite a few years—back to the days of a different name and beyond.

One of the high points of the magazine has been the illustrations, covers especially. You have always been remarkably good about giving the data for the pictures, but now you are outdoing yourselves. Such information can be very useful. I refer, of course, to the "photo and art credits." Keep it up.

Anonymous

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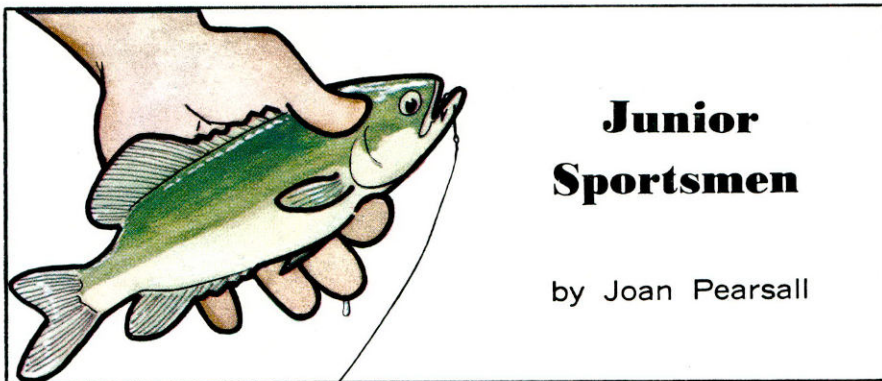
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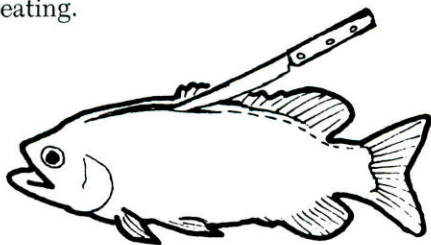


Junior Sportsmen

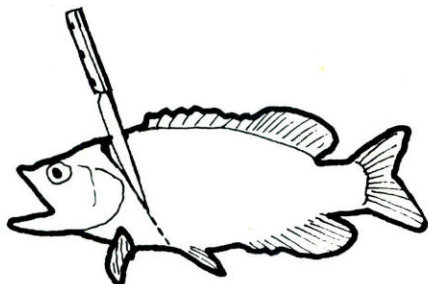
by Joan Pearsall

The Way to Fillet

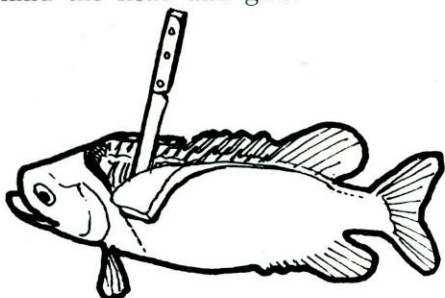
When the fish you catch is at least as big as a man's hand, filleting is the best way to get it ready for eating.



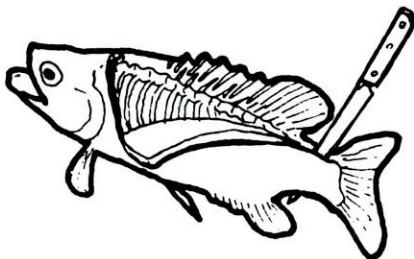
Wash and rinse the fish, and dry it thoroughly, then you are ready for step No. 1. Place the fish on a cutting board and, with a sharp knife, make a shallow slit along the back, each side of the dorsal fin, from the head to the tail.



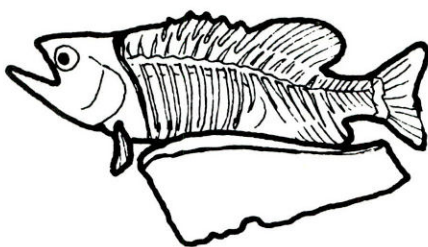
Secondly, cut across the body, behind the head and gills.



Third, cut flat along the backbone, gently pulling and cutting the flesh from the rib cage down to the belly.



Then, step 4, extend the knife and finish cutting to the tail. Repeat these steps on the other side.



The fillets you now have can be cooked with or without the skin.

Use some lemon juice to wash your hands after cleaning fish. This will remove the odor better than soap.

Remember, when filleting fish it can be dangerous to have a dull knife. Any sharp, thin-bladed knife works fine. If you want to make a special filleting board, use some scrap plywood rubbed with cooking oil.

When you try filleting, you will find it is quick and easy, you have got out of the chore of cleaning, and

you don't have to worry about picking out bones from your dinner.

Summer Tips

Casting over a fish scares them. If you see a good fish in the water, don't cast straight over him, but drop your lure beyond and several feet to the right or left. This way, the lure can be brought up to where he will see it without getting frightened.

When you go **rowing**, save wear and tear on your hands by placing a small, split section of bicycle tire on the grip of the oar. This will give you a much more firm and comfortable hold.

Insect repellants can make outdoor living much more enjoyable, but they should be used with caution. They should be kept out of your eyes, so do not spray directly on your face. Do not put any on the palms of your hands, for some repellents will damage such things as sunglasses, monofilament, and varnished fishing rods.

Grasshoppers are a favorite bait for nearly all fish. To stock up on them, locate a weedy place where they are plentiful. Return early in the morning. The hoppers, still sleepy, can easily be picked off the weeds. You can do the same after dark, with the aid of a flashlight.**

Be safe when you **water ski**. Learn to ski properly, be sure you know how to swim, and always wear a life preserver. Be alert to where you are going. The law says that there must be a wide angle mirror in the boat as well as an extra person to watch you. And don't ski in shallow water, or jump in the boat while the motor's running. Common sense leads to more fun!

Ordinary household detergent rubbed on a **leader** will make it sink.

Lift bass from the water by the lower jaw. The weight of the fish then pulls its mouth open, and it will not struggle.

If you are doing a lot of **hiking** on your camping trip, it is a good idea to soak your feet in a cold stream or lake each night, when you can. This will toughen them, as well as refresh you. But wait until your feet have cooled off first, or they may blister.

