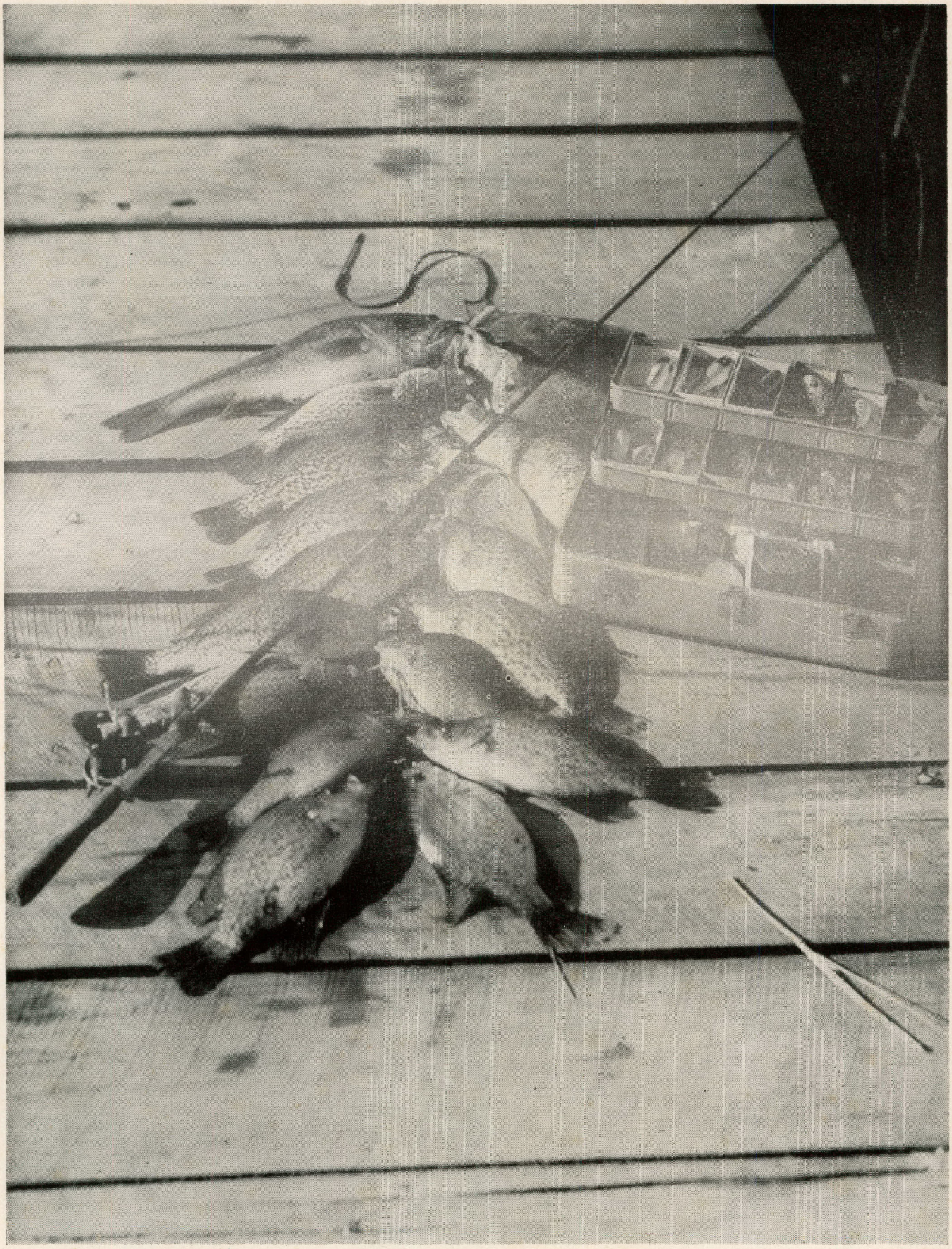
Texas Game and Fish

MARCH 1953 TEN CENTS



Staff photo by Clyde Graham

THAT Time Is Here Again!

Texas Game and Fish

A MONTHLY MAGAZINE DEVOTED TO THE PROTECTION AND CONSERVATION OF OUR NATIVE GAME AND FISH; AND TO THE IMPROVEMENT OF HUNTING AND FISHING IN TEXAS.

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In This Issue

The Cover

The red-tailed hawk is featured on this month's cover by Sidney A. Wooldridge in a typical pose. Individuals vary greatly in color from almost white through dark brown to almost black, with color of breast least variable. Texans generally are far more familiar with the sight of this hawk than with his habits. The story is on page 6.

Lookin' In on the Outdoors

With the Editor

Walleyes for Texas

Before coming to the Commission, we used to write an outdoor column for a newspaper. But our primary duties were as sports editor. One question frequently was asked by acquaintences in the field of sports—"What sport do you like best?"

Our answer was that next to hunting and fishing, we like baseball best during the baseball season, basketball best during the basketball season, football best during the football season, and track, boxing, tennis, golf, and the other miscellaneous sports best at the times they came our way.

The same goes for hunting and fishing, our top favorites. We like one as well as the other and enjoy either the "best" any time we get the chance.

So naturally, we get excited every time some good news concerning the outdoor sports drifts into the office. Maybe that's one reason we like this job—we hear of so many things being done to provide better hunting and fishing.

The current good news concerns fishing.

Texas is to have walleyed pike. The first batch, some half a million fry or fingerlings, will be planted in Lake Travis, in the Highland chain of the Colorado River, and in Devil's Lake, near Del Rio. They'll go in early this spring.

The walleyed pike of course is a native of the Northern states. But he has proved himself amazingly adaptable to warmer waters.

Studies by Texas Game and Fish Commission biologists indicate that the waters of Lake Travis and Devil's Lake are suitable for walleyes. They still aren't so sure that conditions are right for reproduction, but they are going to give it a try.

Walleyes attain a weight of around 20 pounds for the big ones. They take artificial lures and are dead game.

Their future in the South seems assured. Two notably successful experiments have been conducted in Elephant Butte Reservoir on the Rio Grande River in New Mexico and in the big lakes of the Tennessee Valley.

The truth is that the walleyes who have gone South, suh, have done even better than their northern cousins. It's a matter of having more warm feeding, growing days in the year. The southern walleyes are eating and getting bigger during many weeks when their northern kinfolks are dormant and chilled at the bottom of a lake.

As proof of this, the four largest walleyed pike entered in the 1952 annual FIELD AND STREAM contest came from their adopted home in Tennessee.

We can hardly wait until those Texas babies grow up!

Lookin' for a Home

Ever wonder why hunting isn't as good as it used to be?

Jimmy Lingan, outdoor editor of the *Houston Chronicle,* told us a story over a cup of coffee the other day that presented the whole picture in a nutshell.

Jimmy was driving along the highway when he came to a long stretch where land was being cleared. Trees had been felled and brush uprooted in a huge field extending far back from the road. The process had not been completed, and the debris still lay in the field.

"Then I saw a most interesting thing," Jimmy related. "It might have been funny had it not had such a tragic meaning. I saw a movement, and stopped the car.

"Out there in the center of that barren field among the tangle of fallen trees and brush was a squirrel. He was chasing frantically from one pile of debris to the other. I'll swear, that squirrel was trying to find HIS tree!"

That unhappy little squirrel is not alone. Down through the years since Texas was covered with virgin timber, grass taller than a gun, and sparkling streams that ran all year 'round, hundreds of thousands of game animals have lost their homes forever. The prairie chicken seeks in vain for waist-high grasslands, the deer looks for browse on overgrazed ranges, and the bobwhite searches for feed and cover in fields now plowed clean.

And so long as beef and cotton and wheat bring a higher price than game to the landowner, the picture of the little squirrel searching frantically for his tree is apt to be repeated again and again.

Man vs. Snake

We had a lot of fun with Lon Fitzgerald around the office when he was filming his soon-to-be-released new bobwhite quail movie for the Commission.

Lon, in setting up the portion of the movie showing the damage predators do to quail, became obsessed with the idea of getting a shot of a snake eating quail eggs. It would be only a small segment of the movie, but Lon is a very thorough fellow.

He got a snake. He ordered a dozen quail eggs.

"But, Lon," we said, "How in the heck are you going to get the snake to eat the eggs when you want him to?"

"I'm going to keep him hungry for a couple of weeks," was the answer.

"But, Lon, a snake can go a lot longer than that without food."

"Don't worry, I'll make him eat them." Lon refused to be discouraged.

We should have known better than to argue with Lon. When he sets out to film a certain scene, he usually manages it somehow, no matter how impossible it may seem at first. Still, we just couldn't believe that he could set a nest of quail eggs in front of a snake, a snake excited and frightened

at being in captivity, and expect him to eat them in front of a camera.

"Betcha a milk shake the snake won't eat the eggs," we challenged.

"It's a bet," Lon answered, grinning.

So Lon headed off for the brush where he planned to plant the eggs in an abandoned quail nest he had spotted. With him went the eggs, the snake, and his camera.

A couple of days later he was back.

"Did the snake eat the eggs?"

Lon stuttered, started to say no, then said, "Yeah, he ate one."

We were suspicious. "Now, Lon. Come on; out with the truth."

"The snake swallowed an egg, and I got the shot," he insisted.

We pressed him, still doubtful. "Voluntarily?"

Lon flinched, and we knew that shot hurt.

"Well . . . no," he hesitated. Then the story came out. Lon had fooled with the snake all one day. He stayed with the task on through the long night. Finally about noon of the second day, he made a decision.

Lon grabbed the snake and shoved an egg down his mouth!

He paid off the bet. Lon's only complaint was that once the snake got the egg in his mouth, he almost had it swallowed before Lon could get back to his camera.

But as we said, Lon is a very thorough man.

Snake Senses

The snake story reminds us of a fallacy commonly believed to be the truth about snakes.

Many folks believe that a snake "hears" with his tongue. They explain that when he flicks out his tongue, when alarmed, he is doing so to be able to hear better.

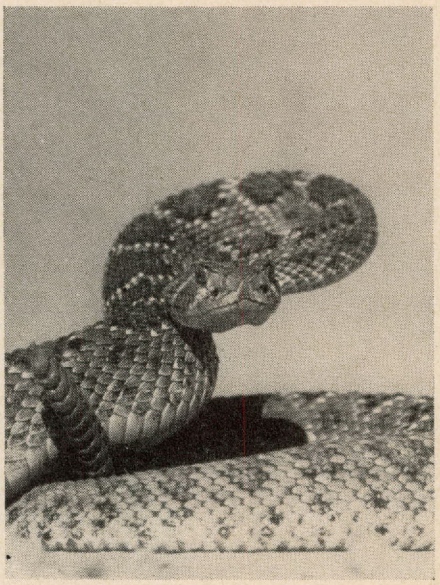
This is untrue. In fact, a snake cannot hear at all. He has no organs for recording tones. About the best he can do is "feel" vibrations from the ground through his stomach, just as you might lay your hand flat on the floor and feel someone walking.

Peculiarly enough, the tongue of a snake isn't used for taste either. A snake can't taste a thing.

Herpetologists tell us that snakes use the tongue for smelling! You might say, then, that when a snake flicks out his forked tongue, he is trying to smell you!

Of course the senses of taste and smell are closely related in most animals.

For instance, if you hold your breath, while chewing, there isn't much difference between an apple and a raw potato. That's a good thing to remember the next time you have to take a dose of bad tasting medicine. Hold your breath, swallow the medicine, chase it with orange juice, rinsing out your mouth thoroughly. Then when you breathe again, all you can taste will be the orange juice.



At least it has worked for us. Just be sure you don't exhale or inhale even a thimbleful of air in the process.

Break for the Kids

How many times did you take a boy fishing or hunting last year?

That can be an embarrassing question to many outdoorsmen, regardless of the good intentions with which that certain place is supposed to be paved.

One guy we know welcomes the question. He has made it possible for a number of youngsters to go fishing, not once but many times. His is a great plan and seems worthy of passing on.

Sergeant C. J. Bizett has formed an organization in Austin known as the "Huckleberry Finns." Members are boys between six and thirteen years old, although there are no age limits.

All these youngsters are from broken homes. Part of them live at the Settlement Club House, sponsored by the Settlement Club and the Community Chest. The rest come from the Children's Home, a project financed by a group of Austin citizens who like kids and who stage a style show each year for its support.

Bizett went to these organizations and volunteered to take some of the boys fishing. The idea was accepted enthusiastically.

Members are selected by the homes, and the youngsters put themselves on the best behavior and work hard on their school lessons to earn the privilege.

On fishing days, Bizett gathers up his Huckleberry Finns and they head for the wide open spaces. They dig their own worms and are taught how to handle their tackle and how to spot the best fishing places.

The youngsters kid each other, and competition is keen for the best and biggest catches.

They pool the fish and every once in a while get together for a fish fry. We were honored with an invitation to one of these not long ago. Sergeant Bizett furnished the potato salad and other trimmings, and, man, how those happy, healthy youngsters stowed away the fish!

Now they are getting interested in learning to cast artificial lures. Petmecky's tackle store has agreed to furnish the youngsters with rods, reels, lines, and lures, at below cost. And the boys are working and saving their money to buy their own outfits. The homes agreed to give them extra chores for which they are paid.

It's difficult to describe the good which has come from the program. It's one of those wonderfully intangible things that defies words. But there is one way to find out for yourself—look around in your own community for youngsters who have no home or no one interested in taking them into the outdoors you love so well. Give Sergeant Bizett's plan a whirl.

He Hunts By Air

—Photos by Hunter's of Alpine

By CHARLES M. HUNTER

THERE was a faint trace of light in the east when I arrived at the Starns Air-Port, home of the Casparis Flying Service, Alpine.

As I parked my car I saw a light moving around the gate and heard the familiar bass voice of John Casparis saying, "It's time to take off."

As I had hunted with Cas previously I knew the plane we were to use. It was the same old 1939 Aeronca that has always been in need of paint but which I knew to be in perfect condition.

This Aeronca has quite a history. Originally it was equipped with a 65 hp engine, but immediately this engine was replaced with a 100 hp Lycoming. As Cas stated, "When the time comes I want to be sure that I have plenty of power to get me out." To date this is the 5th engine that has been in this plane.

Everything has been removed behind the pilot's seat to make a place for cans of gas that Cas always carries for emergency.

I loaded all my camera equipment in the ship, the engine started it's steady purr after the second spin, and Cas moved in beside me to take up his two-thirds of the space.

JOHN O. Casparis—I never got around to asking him what the "O" stands for—was born at Round Mountain, Texas. He is 53 years of age, 6'-1" in height and weighs 205 pounds. After 28,000 hours of sitting in the cramped position in a plane he walks stooped.

The hazel blue eyes of this pioneer airman remind a person of the eagles he has hunted for 26 years. His curly steel gray hair is cut short so there will be no danger of it getting in his eyes when it's time to shoot. In all the time I have known him I have never seen him wear a hat or cap. His complexion resembles a well preserved, but worn, piece of leather.

After trying many jobs, in 1926 Cas started flying. During World War II he trained hundreds of pilots without a fatality. In all Cas' flying he has torn out one landing gear and broken one or two props.

IN 1945 the eagles and coyotes were taking such a toll on the livestock in the Trans-Pecos area that the ranchmen were forced to start an Eagle and Coyote Club for their protection. They asked Cas to come to their assistance.

It is possible that an eagle will kill and eat three animals per day. These can be rabbits, lambs, young Antelope or deer.

One ranchman, prior to the starting of the Club, marked 1500 lambs, and 63 days later only had 250 lambs. Another, during the same period, marked 2900 lambs and 65 days later had 2200. Other ranchers suffered similarly.

The year following the organizing of the club some of the same ranchers reported an 86% market of lamb crop.

That first year, 1945, Cas killed 1008 eagles and 350 coyotes. This has saved the ranchers thousands of dollars and has made it possible for the sportsman to hunt Antelope, in 1951 there were 496 killed, and for black tail and flag tail deer to become more numerous. In three years the Texas Game and Fish Commission has trapped 5,000 antelope to move them to areas where they were previously but had become extinct, and many have been placed in other areas where with the control of predators we are able to have open hunting seasons.

Several articles have been written about the destruction of the golden eagle by Cas, but these writers did not state correctly why these eagles were killed. These same writers wrote of the wonderful wailing of the coyote, but never stated that the coyote was calling its pups to devour the body of a freshly killed calf, lamb, fawn, or baby antelope.

Cas described one incident about the protection a mother antelope gave her young. "I was flying home from an eagle hunt when I looked over the side and saw a bunch of some 20 antelopes gathered around a juniper bush. When I circled I saw one doe make a pass under the bush and out jumped a coyote.

"The coyote took off over the ridge with the antelope a step behind him. The antelope rolled him once, then I thought it was time for me to take over. The antelope had not paid a bit of attention to me or the plane until I shot and rolled the coyote.

"While I was circling the antelope gave the coyote a thorough working over, and as I passed overhead they looked up and seemed to thank me for helping them. A short ways I found the young antelope that the coyote had killed but hadn't had time to eat."

AS Cas finished the story, we reached the end of the unlighted runway, ready for the take-off.

Cas had told me that he went by sound and feel and used the instruments only to check himself, so while speeding down this unlighted runway I was praying that his hearing and feel were working. Before I realized it I looked to my left, saw the lights of Alpine, and knew we were safely in the air.

Just as the sun came up we landed on the road in front of the George Knight ranch some 20 miles west of Marfa. We went in and enjoyed a breakfast of ham and eggs, biscuits, coffee, and jelly—real early-morning Western hospitality—courtesy of Mr. and Mrs. Knight.

Two grown coyotes and four pups were known to be on this particular ranch, and Cas hoped to find and destroy them. The ranchers were to help run them out of their hiding places by driving pick-up trucks abreast of the area being covered by the plane. Mr. Knight and two boys from neighboring ranches, Clay Evans and Bill Grubb, drove these trucks.

Cas told me that this time he would have to take off cross wind and would have to make the curve in the road. I repeated that little prayer, but again we were quickly in the air, safely. Then came the hunting.

Actually, when the day ended, our bag was pretty slim. We wound up with only one eagle, no coyotes. That's pretty thin pickings for a guy like Cas, whose hunting from the air has netted a total of 8,300 eagles and 2,400 coyotes.

But I learned a lot about his unusual and fascinating hunting methods, and for me the day certainly was not wasted.

On the way to the hunting grounds, we flew low over a herd of antelope. They were not particularly alarmed. They just looked up at us, seeming to acknowledge that our mission was one of war against their foes.

CAS REACHED the selected pasture and settled the plane at an altitude of about 150 feet from the ground. Then he started flying a weaving pattern of parallel lines, covering every inch of the area.

We bee-lined for a cross fence about five miles away, turned, and came back along a route about a quarter of a mile to the left of our original track. Back and forth we flew, straining our eyes to catch every movement on the ground below.

I sighted a number of "coyotes," but when Cas went back to make the kill, they turned out to be jackrabbits. I felt better when Cas told me he once had the same trouble.

After four hours of flying some 300 miles, our score still was zero, and we had to land on a ranch road to fill the gas tanks from the cans in back of us.

Then it was back into the air for more fruitless searching. Finally we got the signal from Knight on the ground to head home—the coyotes we sought apparently had given us the slip.

Cas hated to give up. He started in the general direction of home alright, but he took his time about it and continued weaving his way cross country.

Then Cas hollored at me. Finally he made me see the eagle he had sighted sitting on a fence post.

Down we went. Cas' favorite 12-gauge pump poked its nose out of the plane's window. One shot as the eagle

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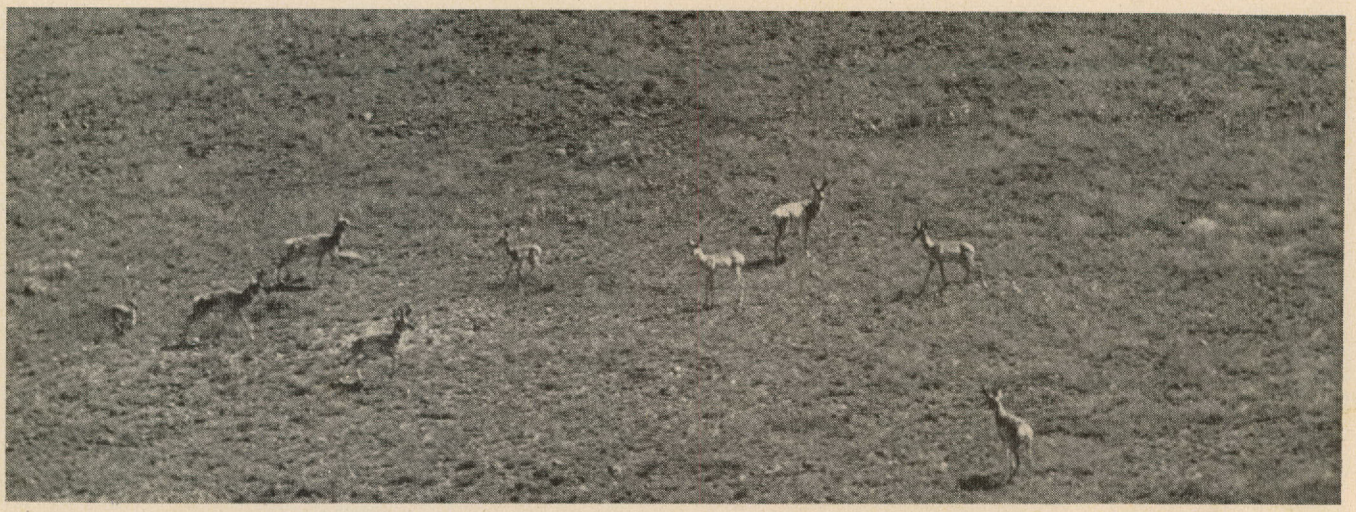
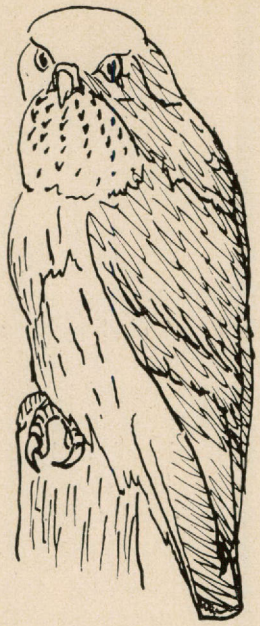


The antelope stood still, looking up at us . . . they seemed to sense we were after their enemies, the coyote and the golden eagle.

Mr. Redtail

Meet the Red-tailed Hawk of Texas

By JACK M. INGLIS
Wildlife Biologist



FEW birds seem to appreciate the powers of flight like the red-tailed hawk.

If you are looking for a red-tailed hawk the most profitable searching grounds will be the sky. When you find him there he'll be, circling on broad wings and fan-shaped tail in spectacular relaxation—resting on air.

The vulture or "buzzard" makes long, soaring trips, but they have a work-a-day quality about them, while the driving flights of the Cooper's hawk and falcons are definitely purposeful. Mr. Redtail, however, has all the hawks outclassed when it comes to soaring which has a heart-lifting, joyful atmosphere about it.

This species is seen commonly all over Texas from the Big Bend to the piney woods and from the plains to the brush country.

Their plumage is quite variable. Some dark phase individuals are almost black, while others sport light colored attire.

The birds usually can be distinguished in flight from other broad wing hawks by the fact that the underparts are characteristically banded, with light breast, streaked belly and more light color under the tail, although some individuals don't have this pattern.

Another way to know them is by their size and chunky form. Although not quite as large as the rough-legged hawks, they are one of the largest broadwing species and can be distinguished from their larger cousins by the relatively broader wing and shorter appearing, fan-shaped tail. The characteristic red upper tail surface gives away sitting adults, and it can often be seen when the birds veer in flight or cross near the sun.

REDTAILS are territorial birds and they mate for life, coming back year after year to the same nesting grounds. They like to nest in lofty places such as tall trees and cliffs where, if they find an especially good tree "fork" or crag, they'll build, year after year, nest on nest until tremendous structures of sticks and twigs result. Of course, if lofty sites aren't available, the birds are forced to nest near the ground.

When the home ground is invaded the birds usually flush and leave the area immediately, for this is one of the shyest of hawk species. On occasion, however, some individuals will attack intruders, screaming with indignation and making dives and passes which cause their feathers to flutter with the strain.

The hunting abilities of the hawk are pretty much dependent on his extremely keen eyesight, since much food gathering is done from high in the air. It's there the bird lingers, wheeling and watching, until some unwary rodent moving in the grass catches his eye. Then with wings half folded the bird drops to pinion and kill the prey with his strong feet. At other times the hunting system varies, with the bird sitting, hunch-shouldered, on some high place commanding a likely meadow and swooping off the perch at the sight of game. Occasionally they are seen flying low over their hunting grounds and catching prey somewhat in the fashion of the marsh hawk.

SINCE the redtail is large, maneuverability isn't his style. Therefore, birds are not characteristically his prey. As a result the diet of the bird is mainly rodents and other small mammals, and it is because of this that he should have the friendship and respect of farmer and sportsman alike. To a certain extent the much talked of "balance of nature" is maintained by redtails, along with numerous other predator species, who create a downward pressure on the populations of what we consider "pest" species of small mammals. In this way excessive populations of these animals are reduced and they are kept adjusted to the place they should fill in nature.

Along in the spring the redtails which nest in Texas start showing up on their old territorial grounds. It's then that the paired birds are often seen in courtship flights, high in the air, circling close to one another until at times their wingtips almost touch. As the season progresses they might be seen soaring to great heights and then folding their wings and plummeting earthward to check just over the treetops. This spectacular maneuver is the nuptial flight. Not long after this it can be noticed that both birds are seldom seen aloft and soaring at once. It is then probable that nesting has begun.

The nest building process is carried on deliberately and slowly with the birds visiting the nest site at infrequent intervals. Both sexes work at the job of building the flat, relatively shallow nest and lining it with soft shredded mateiral.

Two or three eggs are laid. Generally most of them are a dirty white color, but they may be blue or greenish in hue. The eggs may be plain or heavily blotched with reddish or yellowish markings, but usually they are

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TEXAS ARCHERS OF TODAY

By HARVEY B. RICHARDS

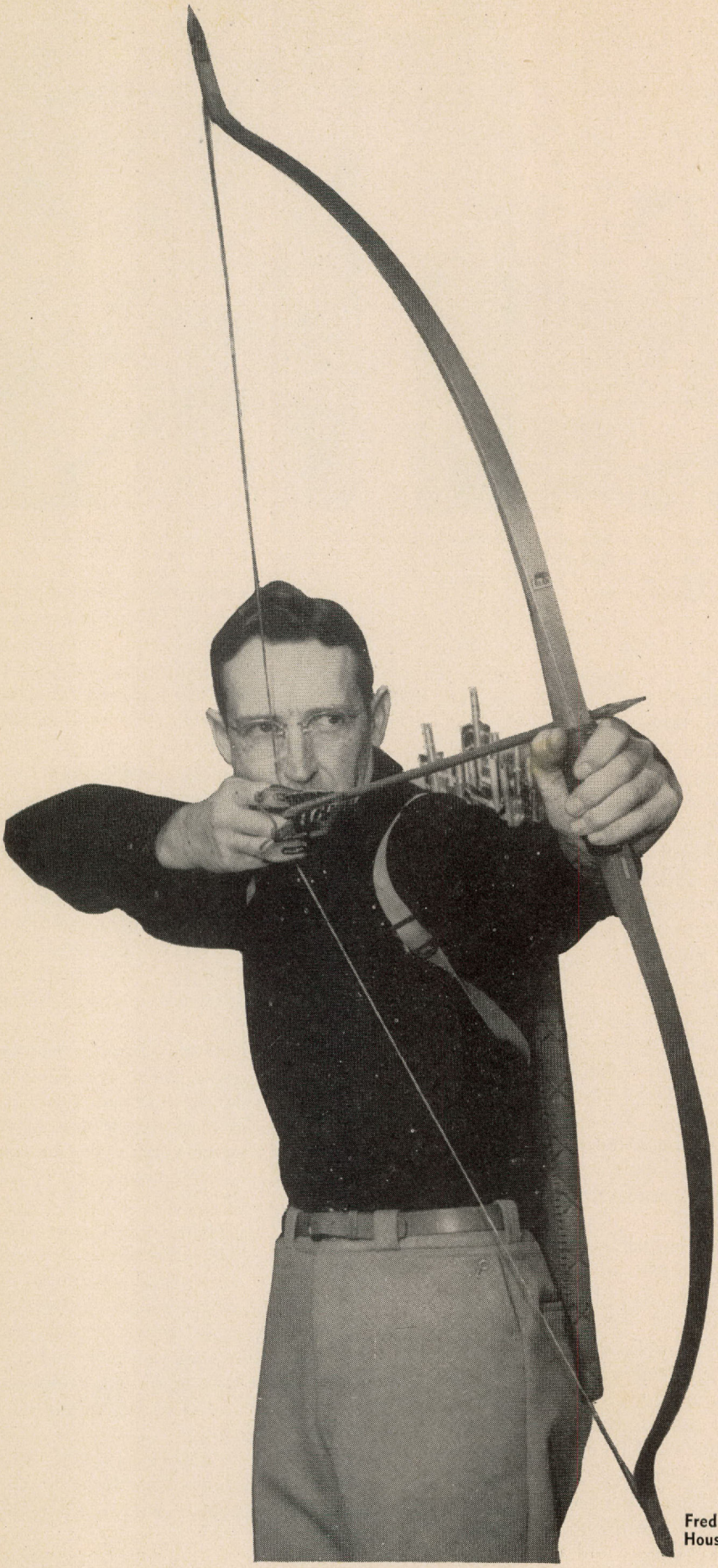
The author, Harvey B. Richards, Houston, is an enthusiastic bow and arrow hunter and an official of the Texas Field Archery Association. This article does not necessarily express the views of the Texas Game and Fish Commission nor of this magazine.—Ed.

ONE of the nation's fastest growing hobbies is that of hunting with bow and arrow. And Texas is keeping up the pace.

An estimated two thousand or more Texans, many of them oldtime gunners, have turned to archery as a new stimulation to hunting thrills.

In these days of modern rifles and higher-powered cartridges with increasingly longer ranges, the archers are going the other way. The bow and arrow hunter must stalk his game, getting to within 20 to 50 yards in order to expect a kill. Archery puts the hunter on almost equal terms with the game. It is the nearest thing possible to hand-to-hand competition, and this perhaps is the reason for its fascination.

Now almost every city of any size in Texas has a number of archery enthusiasts. Many of them are forming local clubs to organize hunts and tour-



Fred McNeff, an electrician who works near Houston, displays the accepted stance of a modern bow hunter.

Eight hundred acres of deer lease, eight hunters, three arrows shot, no bucks killed. Deer kills are few, but archers agree that the fun of stalking deer and the thrill of anticipation makes it worthwhile. The ladies of the party, Mildred Richards, Grace Coffey, and Irene Jenkins, all of Houston, were the lucky ones to loose the shots.

L. N. Coffey is southern target archery champion, but he has stalked deer for eight years without being able to get within close enough range to loose a single arrow.

naments. They are made up of men, women, and children from all walks of life, sharing a common desire to get closer to the outdoors.

BOWS that are used today are much better than those of the early American Indians. Most are made from laminations of plastics and wood or of metal. Their cast, or trajectory, is far superior to that of the bows of long ago.

The arrows used for hunting have steel-tipped broad heads. When razor sharp, they have great penetrating power and kill cleanly even when shot from a light bow.

Most hunting bows average about 50 pounds pull. However, a lighter bow is suggested at first for the novice until he can work up to a heavier one.

So rapidly has interest in archery spread in Texas recently that equipment at times is difficult to acquire. Texas stores simply have found it hard to replenish supplies.

Why should a sportsman want to hunt with a bow when he is much more sure of getting game with a gun? Perhaps it is for the same reason that fishermen are swinging from heavy lines and tackle to light rods and low-test lines and many gunners are shifting to smaller gauges for birds. It is simply that sportsmen are seeking more fun and a sterner challenge by handicapping themselves.

Game bagged with bow and arrow offers the feeling of greater accomplishment. Many are the former gun hunters who experimented with the bow and found it so fascinating that they actually sold their guns!

A number of veteran Texas nimrods, some of whom have hunted deer for over 20 years, have traded their guns for a bow.

IN THE fall, many Texas archers take to the woods and pastures seeking deer, the finest prize the state has to offer the bow and arrow hunter.

At best their chances of killing a deer are remote. Hitting one is the least of their worries, difficult as it is with bow and arrow. The greatest difficulty, and the part of the hunt requiring the most skill, is in stalking the deer to within the short range necessary.

Official reports from Michigan, where for years archers have had their own special season, indicate that only one archer in 15 made a kill in 1951. Yet almost one gun hunter in three made a kill there the same season.

In Texas, where archers must hunt in competition with gun hunters, the odds are increased immeasureably.

Texas bow and arrow hunters have been banding together to take separate leases, but this has been far short of satisfactory. Gun hunters in adjoining pastures have kept the deer far too jumpy to permit the close-range stalking necessary.

MANY states have recognized the problem by setting aside special deer seasons for the bow and arrow hunter. Led by Michigan and Wisconsin, a total of 26 have joined the list. Archers in this state would like to see the Texas Legislature follow suit.

Archers have ceased to be a special group. Interest in the sport is so widespread and their numbers have increased to such an extent that when you speak of bowmen, you are referring to a broad-cross-section of the sportsmen of Texas.

These sportsmen feel that they should not be required to compete with gun hunters. They hold no grudge against the gun hunter—many archers are crack shots with rifle and shotgun—but they do feel that the archer should have the opportunity of getting into the field before the deer become gun shy.

The kill would be negligible and the quiet nature of the sport should interfere but little with a later gun season.

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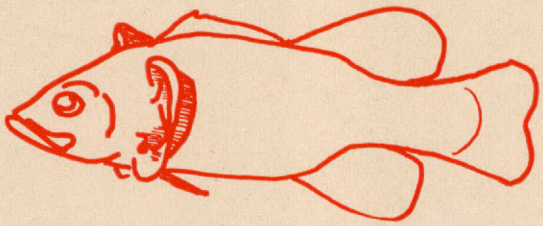
how much can a fish hear?



NOTHING, says one fisherman. Heavy vibrations from FOOTSTEPS, says another. Even your VOICE, says a third. What does science have to say about it . . . ?

By ROBERT E. STOVER

. . . The answers from the scientists again run the length of the scale.

Many early investigators reported that fish could hear voices, ringing bells, whistles, gunshots, etc. Later investigators reported most species to be incapable of hearing anything.

All of these studies lacked the modern equipment now available and most of them had failed to control such variables as intensity of the sound, sight of food or experimenter, etc. Even the best work, which proved that some species could hear certain sounds, was done without modern equipment.

IN THE present study, which was done in the summer of 1952 at The Pennsylvania State College under the supervision of Dr. William Lepley, modern acoustical equipment was used in an attempt to settle the argument. The study was made possible through the cooperation and help of the Pennsylvania Fish Commission through their Fisheries Research Laboratory at Bellefonte, Pa.

The fish used were bluegill sunfish *(Lepomis machrochirus)*. These were chosen because of their small size, the relative ease of keeping them alive in an aquarium, their close relation to a game fish (black bass), and because they belong to a species which was definitely not supposed to be able to hear any frequency higher than 5,000 cycles per second.

The fish were placed in a 50-gallon aquarium. A wire feed cage was constructed that could be lowered into the tank in such a manner that a fish had to go look into it before it could tell whether there was any food in the cage.

A variable frequency oscillator (a device for producing pure tones or frequencies) and a waterproofed earphone made up the sound equipment. The intensity was controlled by using a vacuum tube voltmeter to hold the voltage input constant.

WHEN feeding time came, the feed cage was lowered into the aquarium—empty, if the sound was not turned on, and containing worms if the sound equipment was operating. A random order of feed and no-feed trials was followed so that the only clue the fish had as to whether there was anything in the feed box was whether or not they could hear the sound. The frequencies were varied in steps from 35 cycles per second to 17,920 cycles per second.

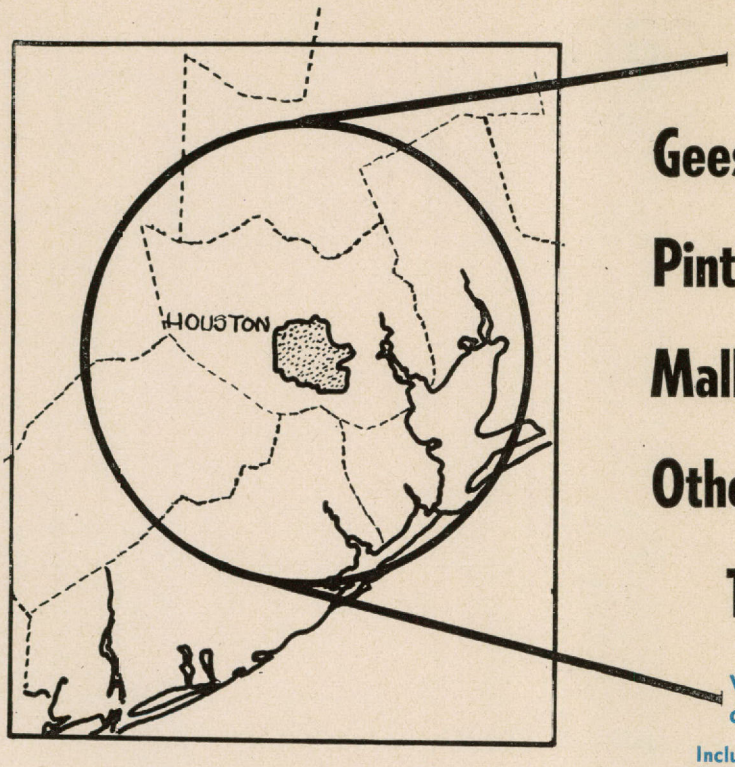
All movements, time intervals, light conditions, etc., were held constant so that it all boiled down to one thing: if the fish were capable of learning, which they were, they should learn to come to the feed box only when the sound was turned on and stay away when it was turned off. Thus, when the point was reached where the fish stayed away but the sound equipment was actually on, it was plain that they were unable to hear this frequency.

AFTER 112 feeding trials, the results showed that the sunfish could hear all steps from 35 cycles per second to 8,960 cycles per second, but could not hear 17,920 cycles per second.

Thus, these sunfish are perfectly capable of hearing many of the frequencies of human speech.

Before anyone rushes out to buy a rubber boat or muzzles for his fishing companions, however, we should look at the matter of intensity. In this study the earphone was right in the water with the fish. Out on the stream conditions are far different. There is a great loss in intensity when sound passes from air to water, so that it would take a tremendous intensity, indeed, before the fish could hear a fisherman talking. Vibrations from a soggy stream bank or a tacklebox dropped in the boat are something else again. Here the vibration is transmitted directly to the water and naturally the fish can hear it.

The thing to remember then is that intensity is the factor: if you get the vibrations into the water—no matter how—the fish can hear all about it.—*Pennsylvania Angler.*



Geese	50,000
Pintails	168,400
Mallards	105,100
Other Ducks	36,500
TOTAL	360,000

Waterfowl count within 50 miles of downtown Houston, Jan. 12-13, 1953.*

Includes only Harris County and those parts of Liberty, Galveston, and Brazoria Counties lying within the 50-mile zone.

NEW LIFE FOR

Sheldon Reservoir

The Houston area, home of one of every eight Texans, also attract large numbers of waterfowl. It is hoped that the "new" Sheldon Reservoir will help hold them for hunters and provide better fishing as well.

FOLKS down in the biggest city in the biggest state are talking about Sheldon Reservoir. At least those who like to hunt and fish are talking about it.

Right now, and for perhaps another year, the City of Houston still is making use of Sheldon as a water supply, so talking and dreaming and planning is about all anyone can do. The talking and dreaming is being done by sportsmen in that congested area. The planning is being done by the Game and Fish Commission.

Sheldon eventually will be one of the most unusual projects ever undertaken by the Commission. It will combine the talents of both wildlife technicians and fresh-water fishery biologists in one big cooperative project. Together they will attempt to create ideal habitat and living conditions for fresh-water game fish in Sheldon's waters and for waterfowl on its shores.

Many advantages will accrue, but the primary objective simply is to provide as much local hunting and fishing as possible for sportsmen in that congested area. Located just seven miles from Houston's eastern city limits, it will serve Texas' most heavily populated area, containing over one-eighth of the state's inhabitants.

The reservoir and adjoining lands contain some 2,503 acres, almost all of it water area. It was bought by the Commission from the City of Houston last year for $195,780. This original amount plus improvement and future maintenance costs will be paid 25 per

* Figures compiled in aerial census by Bob Singleton, Game and Fish Commission biologist, and Frank Clarkson, federal game warden, as part of the annual National Waterfowl Inventory of the U. S. Fish and Wildlife Service January 12-13, 1953.

Shell Oil Co. photo courtesy Houston Chamber of Commerce

Keeping ducks and geese within practical range of the thousands of hunters in Texas' largest city is a big problem for the Game and Fish Commission.

cent from state funds and 75 per cent from federal funds under Pittman-Robertson and Dingel-Johnson projects. The P-R and D-J monies come from federal taxes on hunting and fishing equipment respectively.

Outright purchase, giving the Game and Fish Commission full control of the property, was necessary in lieu of a lease in order that federal funds could be used to finance the three-fourths of the total cost.

SHELDON long has been open to the public for hunting and fishing. But booming Houston found need for a larger water supply, and the construction of San Jacinto Reservoir was begun. Eventually the intricacies of city financing called for the abandonment of Sheldon, the draining of its waters, and sale of the land to balance the budget. That was when the Commission stepped in to save it for the propogation of fish and game.

The city still maintains control and is using the reservoir as a water supply. This will end when San Jacinto is completed, probably in 1954. Then the Commission will take over and can go ahead with its plans for creating ideal conditions for game and fish.

Until then, little can be done, because the reservoir first will have to be drained for a complete rebuilding of the dykes and conditioning of the area to fit its new use.

In the meantime, preliminary engineering surveys are being made, and fishery biologists and wildlife technicians are analyzing the site to see what can be done toward making Sheldon ideal for fish and waterfowl habitation.

With a million people living almost within the distance of a good long cast from Sheldon, fishing pressure is bound to be terrific. However, with proper control of aquatic vegetation, deepening of water by cutting channels where needed, the provision of suitable spawning sites, and other measures, it is hoped that eventually the annual yield can be increased to double or more.

Chances are the kids will be given a special break, for there is a possibility of setting up one section of the area where the youngsters alone can fish.

VETERAN Houston waterfowl hunters know only too well the usual pattern of hunting success on Sheldon in recent years. The first shots of the season send ducks and geese a-flying, and from then on hunters usually outnumber the waterfowl, which are never given another chance to get near Sheldon.

The Commission has reason to believe that at least 150,000 ducks and geese can be accommodated at Sheldon once proper plantings of vegetation are made in the water and along the shore.

Studies show that these geese and ducks will range as far as 50 miles in every direction, providing increased shooting over a wide area in the Houston region.

It's a natural, for the Houston territory is particularly attractive to waterfowl. As late as January 12-13 this year, an estimated 360,000 ducks and geese still remained within a 50-mile radius of Houston as shown in the accompanying diagram.* Counts indicated that the number was much greater the first week in November at the height of the hunting season.

Sheldon's eventual value as an accommodation for 150,000 ducks and geese is obvious to the veteran hunter. Previously these waterfowl have had to move further south into Mexico or Central and South America, seeking food and protection from gunfire. The new Sheldon, serving as a resting place, may tempt them to remain in the area. From Sheldon they will range out over the 50-mile feeding area, providing hunters in this region with a great amount of additional sport.

The new benefits from the improved Sheldon won't be available tomorrow—or even next year. It will be at least a year before the city can pass control of the reservoir to the Game and Fish Commission. Then will come the vast engineering job necessary. Even after the wildlife technicians and aquatic biologists move in, more time will be needed for the development to grow and take shape. Ideal fish and wildlife habitat doesn't spring up overnight.

But it is hoped eventually that Sheldon will help meet the tremendous hunting and fishing demands of outdoor sportsmen in the biggest city in the biggest state and provide them with their biggest break.

A Checklist of Texas Fresh-Water Fishes

IT IS with pride that TEXAS GAME AND FISH magazine presents below the most complete list of this state's fresh-water fish ever published.

The up-to-date list contains 197 different species and is the result of months of research in a co-operative effort by the Game and Fish Commission and other authorities in the field.

In running through the list, the average fisherman may be surprised to find that the popular largemouth black "bass" is not a bass at all but a member of the sunfish family and close cousin of the bluegill, redear sunfish, and green sunfish or goggleye.

The only true fresh-water bass in Texas are the white (or striped) bass and the slightly smaller yellow bass.

And the bluegill, redear, and white "perch" are not perch at all. They are sunfish, and the only true perch are little fish. The largest species of Texas perch is the log perch, which usually reaches a maximum size of three inches in this state.

The Rio Grande "perch" so common in South, Central, and West Texas is neither a perch nor a sunfish. It belongs to the family of the chichlids.

The first family on the list is that of the lowest form of fish in Texas; that is, the fish which has developed the least down through the ages. The last family listed is the highest developed.

It may come as a shocker to many that the mighty tarpon is of a lower form than the carp, the buffalo, and the common sucker or that the largemouth black bass ranks below the freshwater drum.

In case you're wondering how a tarpon got onto a list of fresh-water species, the tarpon and other salt-water fish which at times move into fresh water also are included.

How does Texas compare with other states in the total number of species? Figures for all states are not available, but it is safe to assume that Texas with 197 ranks well toward the top, although it isn't first.

Of course new discoveries no doubt will add new names to the list, but these will come slowly over the years.

The list shows first the scientific family name, followed directly in most cases by the common family name. Next comes the genus with its scientific name. Below that the individual species are classified. For each species, the scientific name is given first, then the accepted common name, and following that are other common names in parenthesis.

It seems worthy of mention that all fish listed actually were examined by one or more of the collaborators mentioned. Nothing was left to hearsay or vague reports. —*Townsend Miller.*

By **KENNETH C. JURGENS**
Aquatic Biologist
and **CLARK HUBBS**
The University of Texas

The classification in the following checklist follows Berg (1940) for higher groups and Bailey (1951) for genera. The marine species included are often found in fresh water and their inclusion is based on the work of Gunter (1945).

The authors wish to acknowledge assistance given them by Mssrs. Carl L. Hubbs, Kelly Bonham and Gary H. Soulen through their work on Texas freshwater fishes.

In addition, much assistance was given by Mssrs. Marion Toole, Cecil W. Reid, Edward W. Bonn, Jack C. Ball, William H. Brown, Lawrence S. Campbell, Alvin G. Flury, Robert A. Kuehne, Robert J. Kemp, Leonard D. Lamb and Leo D. Lewis, all of the Game and Fish Commission, and Mr. Kirby H. Walker.

A Checklist of Texas Fresh-Water Fishes

Compiled by Kenneth C. Jurgens and Clark Hubbs

Family: PETROMYZONIDAE—Lampreys
Genus: *Ichthyomyzon* Girard
1. *I. castaneus* Girard—chestnut lamprey*
2. *I. gagei* Hubbs and Trautman—southern brook lamprey

Family: CARCHARHINIDAE—Sharks
Genus: *Aprionodon* Gill
3. *A. isodon* (Muller and Henle)—smoothtooth shark
Genus: *Carcharhinus* Blainville
4. *C. leucas* (Muller and Henle)—bull shark

Family: PRISTIDAE—Sawfishes
Genus: *Pristis* Linck
5. *P. pectinatus* Latham—sawfish*

Family: DASYATIDAE—Rays
Genus: *Dasyatis* Rafinesque
6. *D. sabina* (LeSueur)—tidewater stingray

Family: POLYONDONTIDAE—Paddlefish
Genus: *Polyodon* Lacepede
7. *P. spathula* (Walbaum)—paddlefish*

Family: ACIPENSERIDAE—Sturgeons
Genus: *Scaphirhyncus* Heckel
8. *S. platorhynchus* (Rafinesque)—shovelnose sturgeon,* (hackleback)

Family: LEPISOSTEIDAE—Gars
Genus: *Lepisosteus* Lacepede
9. *L. spatula* Lacepede—alligator gar*
10. *L. platostomus* Rafinesque—shortnose gar*
11. *L. productus* Cope—spotted gar*
12. *L. osseus* Linnaeus—longnose gar* (fish gar)

Family: AMIIDAE—Bowfins
Genus: *Amia* Linnaeus
13. *A. calva* Linnaeus—bowfin,* (grindle, dogfish)

Family: ELOPIDAE—
Genus: *Elops* Linnaeus
14. *E. saurus* Linnaeus—bigeye herring*

Family: MEGALOPIDAE—Tarpons
Genus: *Tarpon* Jordan and Evermann
15. *T. atlanticus* (Valenciennes)—tarpon*

Family: CLUPEIDAE—
Genus: *Alosa* Cuvier
16. *A. chrysochloris* Rafinesque—skipjack*
Genus: *Harengula* Cuvier and Valenciennes
17. *H. macropthalma* (Ranzani)—white bill
Genus: *Brevoortia* Gill
18. *B. gunteri* Hildebrand—bay menhaden
Genus: *Dorosoma* Rafinesque
19. *D. petenensis* (Gunther)—threadfin shad
20. *D. cepedianum* (LeSueur)—gizzard shad,* (hickory shad)

Family: HIODONTIDAE—Mooneyes
Genus: *Hiodon* LeSueur
21. *H. alosoides* (Rafinesque)—goldeye*

Family: ENGRAULIDAE—Anchovies
Genus: *Anchoa* Jordan and Evermann
22. *A. mitchilli* (Valenciennes)—bay anchovy
23. *A. hepsetus* (Linnaeus)—stripped anchovy

Family: SALMONIDAE—Trout
Genus: *Salmo* Linnaeus
24. *S. gairdneri* Richardson—rainbow trout*

Family: ESOCIDAE—Pickerels
Genus: *Esox* Linnaeus
25. *E. vermiculatus* LeSueur—grass pickerel,* (jackfish, little pickerel)
26. *E. niger* LeSueur—chain pickerel,* (jackfish)

Family: CHARACIDAE—Tetras
Genus: *Astyanax* Baird and Girard
27. *A. fasciatus* (Cuvier)—Tetra, (Mexican jumper)

Family: CATOSTOMIDAE—Suckers and buffalofishes
Genus: *Cycleptus* Rafinesque
28. *C. elongatus* (LeSueur)—blue sucker*
Genus: *Ictiobus* Rafinesque
29. *I. cyprinellus* (Valenciennes)—bigmouth buffalo,* (blue rooter)
30. *I. niger* (Rafinesque)—black buffalo,* (mongrel buffalo)
31. *I. bubalus* (Rafinesque)—smallmouth buffalo,* (razorback)
Genus: *Carpiodes* Rafinesque
32. *C. carpio* (Rafinesque)—river carpsucker,* (carp, white-eyes)
Genus: *Moxostoma* Rafinesque
33. *M. congestum* (Baird and Girard)—gray redhorse,* (river sucker)
34. *M. erythrurum* (Rafinesque)—golden redhorse*
35. *M. poecilurum* Jordan—blacktail redhorse*
Genus: *Minytrema* Jordan
36. *M. melanops* (Rafinesque)—spotted sucker*
Genus: *Erimyzon* Jordan
37. *E. sucetta* (Lacepede)—lake chubsucker*
38. *E. oblongus* (Mitchill)—creek chubsucker*

Family: CYPRINIDAE—Shiners and minnows
Genus: *Cyprinus* Linnaeus
39. *C. carpio* (Linnaeus)—carp,* (German or European carp)
Genus: *Carassius* Nilsson
40. *C. auratus* (Linnaeus)—goldfish*
Genus: *Notemigonus* Rafinesque
41. *N. crysoleucas* Mitchill—golden shiner,* (silversides)
Genus: *Semotilus* Rafinesque
42. *S. atromaculatus* (Mitchill)—creek chub,* (tuffy minnow)
Genus: *Gila* Baird and Girard
43. *G. nigrescens* (Girard)—Rio Grande chub
Genus: *Opsopoeodus* Hay
44. *O. emiliae* Hay: pugnose minnow
Genus: *Hybopsis* Agassiz
45. *H. storeriana* (Kirtland)—silver chub
46. *H. aestivalus* (Girard)—speckled dace
Genus: *Rhinichthys* Agassiz
47. *R. cataractae* (Valenciennes)—longnose dace*
Genus: *Phenocobius* Cope
48. *P. mirabilis* (Girard)—suckermouth minnow
Genus: *Notropis* Rafinesque
49. *N. atherinoides* Rafinesque—emerald shiner*
50. *N. percobromus* (Cope)—plains shiner
51. *N. oxyrhynchus* Hubbs—sharpnose shiner
52. *N. jemezanus* (Cope)—Rio Grande shiner
53. *N. amabilis* (Girard)—Texas shiner
54. *N. fumeus* Evermann—ribbon shiner
55. *N. umbratilis* (Girard)—redfin shiner*
56. *N. brazosensis* Hubbs—Brazos River shiner

• Continued on Next Page

Checklist of Texas Fresh-Water Fishes

•Continued from Preceding Page

57. *N.* sp. —Trinity River shiner
58. *N. cornutus* (Mitchill)—common shiner*
59. *N. chalybeus* (Cope)—ironcolor shiner
60. *N. roseus* (Jordan)—central weed shiner
61. *N. simus* (Cope)—bluntnose shiner
62. *N. blennius* (Girard)—river shiner
63. *N. potteri* Hubbs—broadhead shiner
64. *N. bairdi* Hubbs and Ortenburger—western longnose shiner
65. *N. sabinae* Jordan and Gilbert—longnose shiner
66. *N. amnis* Hubbs and Greene—pallid shiner
67. *N. chihuahua* Woolman—Chihuahua shiner
68. *N. braytoni* Jordan and Evermann—Tamaulipas shiner
69. *N. venustus* (Girard)—blacktail shiner (spottail)
70. *N. lutrensis* (Baird and Girard)—red shiner (redhorse shiner)
71. *N. proserpinus* (Girard)—proserpine shiner
72. *N. deliciosus* (Cope)—sand shiner*
73. *N. atrocaudalis* Evermann—blackspot shiner
74. *N. volucellus* Cope—mimic shiner
75. *N. buchanani* Meek—ghost shiner

Genus: *Dionda* Girard

76. *D. episcopa* Girard—roundnose minnow

Genus: *Hybognathus* Agassiz

77. *H. nuchalis* Agassiz—silvery minnow*
78. *H. placita* (Girard)—plains minnow

Genus: *Pimephales* Rafinesque

79. *P. vigilax* Baird and Girard—parrot minnow
80. *P. promelas* Rafinesque—fathead minnow*

Genus: *Campostoma* Agassiz

81. *C. anomalum* (Rafinesques)—stoneroller,* (steelback)

Family: ARIIDAE—Sea catfishes

Genus: *Bagre* Oken

82. *B. marina* (Mitchill)—gafftopsail catfish* (Gafftop)

Genus: *Galeichthys* Cuvier and Valenciennes

83. *G. felis* (Linnaeus)—sea catfish* (hardhead)

Family: AMEIURIDAE—Freshwater catfishes

Genus: *Icatalurus* Rafinesque

84. *I. punctatus* (Rafinesque)—southern channel catfish* (blue catfish)
85. *I. lupus* (Girard)—headwater channel catfish
86. *I. furcatus* (LeSueur)—blue catfish* (channel catfish)

Genus: *Ameiurus* Rafinesque

87. *A. melas* (Rafinesque)—black bullhead*
88. *A. natalis* (LeSueur)—yellow bullhead*

Genus: *Troglogianis* Eigenmann

89. *T. pattersoni* Eigenmann—toothless blindcat

Genus: *Pilodictus* Rafinesque

90. *P. olivaris* (Rafinesque)—flathead catfish* (yellow catfish, opelousas catfish, mud catfish, goujon)

Genus: *Satan* Hubbs and Bailey

91. *S. eurystomus* Hubbs and Bailey—widemouth blindcat

Genus: *Schilbeodes* Bleeker

92. *S. mollis* (Herman)—tadpole madtom
93. *S. nocturnus* (Jordan and Gilbert)—freckled madtom

Family: ANGUILLIDAE—Eels

Genus: *Anguilla* Shaw

94. *A. rostrata* (LeSueur)—American eel*

Family: BELONIDAE—Needlefishes

Genus: *Strongylura* Van Hasselt

95. *S. marina* (Walbaum)—Atlantic needlefish* (billfish, needlefish)

Family: SYNGNATHIDAE—Pipefishes

Genus: *Syngnathus* Linnaeus

96. *S. scovelli* (Evermann and Kendall)—southern pipefish

Family: CYPRINODONTIDAE—Killifishes and topminnows

Genus: *Lucania* Girard

97. *L. parva* (Baird and Girard)—rainwater fish

Genus: *Adnia* Girard

98. *A. xenica* (Jordan and Gilbert)—diamond killifish

Genus: *Fundulus* Lacepede

99. *F. similis* (Baird and Girard)—longnose killifish
100. *F. heteroclitus* (Linnaeus)—striped killifish* (gulf killifish)
101. *F. confluentus* (Goode and Bean)—bayou killifish
102. *F. jenkinsi* (Evermann)—blackspot killifish
103. *F. chrysotus* Holbrook—redspot topminnow
104. *F. notti* (Agassiz)—starhead topminnow
105. *F. notatus* (Rafinesque)—blackstripe topminnow*
106. *F. olivaceus* (Storer)—blackspot topminnow
107. *F. zebrinus* (Jordan and Gilbert)—Rio Grande killifish, (zebra minnow)
108. *F. kansae* (Garman)—plains killifish

Genus: *Cyprinodon* Lacepede

109. *C. variegatus* Lacepede—variegated cyprinodon,* (sea pupfish)
110. *C. rubrofluviatilis* Fowler—Red River pupfish
111. *C. bovinus* Baird and Girard—Leon Springs pupfish
112. *C. elegans* Baird and Girard—Texas pupfish

Family: POECILIIDAE—Mosquitofishes

Genus: *Gambusia* Poey

113. *G. nobilis* Girard—gambusia* (Texas mosquitofish)
114. *G.* sp. —gambusia* (largespring mosquitofish)
115. *G. gaigei* Hubbs—gambusia* (Big Bend mosquitofish)
116. *G. affinis* (Baird and Girard)—gambusia* (common mosquitofish)

Genus: *Mollienisia* LeSueur

117. *M. latipinna* (LeSueur)—sailfin molly*
118. *M. formosa* (Girard)—Amazon molly

Family: APHREDODERIDAE—Pirate perch

Genus: *Aphredoderus* LeSueur

119. *A. sayanus* (Gilliams)—pirate perch*

Family: MUGILIDAE—Mullets

Genus: *Mugil* Linnaeus

120. *M. cephalus* Linnaeus—striped mullet
121. *M. curema* Valenciennes—white mullet

Family: ATHERINIDAE—Silversides

Genus: *Menidia* Bonaparte

122. *M. audens* Hay—Mississippi silversides
123. *M. beryllina* (Cope)—tidewater silversides

Genus: *Membras* Bonaparte

124. *M. vagrans* (Goode and Bean)—silverfish

Genus: *Labidesthes* Cope

125. *L. sicculus* (Cope)—brook silversides*

Family: POLYNEMIDAE—Threadfins

Genus: *Polydactylus* Lacepede

126. *P. octonemus* (Girard)—threadfin

Family: CENTROPOMIDAE—Snooks

Genus: *Centropomus* Lacepede

127. *C. undecimalis* (Bloch)—snook

Family: SERRANIDAE—Basses

Genus: *Morone* Mitchill

128. *M. chrysops* (Rafinesque)—white bass* (sand bass, striped bass, barfish)
129. *M. interrupta* Gill—yellow bass*

Family: CENTRARCHIDAE—Black basses and sunfishes

Genus: *Micropterus* Lacepede

130. *M. punctulatus* Rafinesque—spotted black bass* (Kentucky spotted bass, Kentucky jumper, trout, smallmouth bass)
131. *M. treculi* Hubbs and Bailey—Texas spotted bass (smallmouth bass, river bass, trout)

132. *M. salmoides* (Lacepede)—Largemouth black bass* (trout)

Genus: *Chaenobryttus* Gill

133. *C. coronarius* (Bartram)—warmouth* (goggleye, rock bass)

Genus: *Lepomis* Rafinesque

134. *L. cyanellus* Rafinesque—green sunfish* (branch perch, rock bass, goggleye)
135. *L. symmetricus* Forbes—small sunfish
136. *L. punctatus* (Cuvier)—spotted sunfish* (bream, Garman's sunfish)
137. *L. microlophus* (Gunther)—redear sunfish* (Georgia bream)
138. *L. macrochirus* Rafinesque—bluegill* (bream)
139. *L. humilis* (Girard)—orangespotted sunfish*
140. *L. auritus* (Linnaeus)—yellowbelly sunfish* (redbreast bream, long ear bream)
141. *L. megalotis* (Rafinesque)—longear sunfish* (cherry bream)
142. *L. marginatus* (Holbrook)—dollar sunfish

Genus: *Ambloplites* Rafinesque

143. *A. rupestris* (Rafinesque)—rock bass* (goggle eye)

Genus: *Pomoxis* Rafinesque

144. *P. annularis* Rafinesque—white crappie* (sac-a-lait, white perch)
145. *P. nigromaculatus* (LeSueur)—black crappie* (mason perch, calico bass, white perch)

Genus: *Centrarchus* Cuvier

146. *C. macropterus* (Lacepede)—flier*

Genus: .*Elassoma* Jordan

147. *E. zonatum* Jordan—banded pigmy sunfish*

Family: PERCIDAE—Perches and Darters

Genus: *Stizostedion* Rafinesque

148. *S. canadense* (Smith)—sauger*

Genus: *Hadropterus* Agassiz

149. *H. maculatus* (Girard)—blackside darter
150. *H. scierus* Swain—dusky darter
151. *H. shumardi* Girard—river darter

Genus: *Percina* Haldeman

152. *P. caprodes* (Rafinesque)—logperch*

Genus: *Ammocrypta* Jordan

153. *A. vivax* Hay—Arkansas sand darter
154. *A. clara* (Jordan and Meek)—western sand darter

Genus: *Etheostoma* Rafinesque

155. *E. chlorosomum* (Hay)—bluntnose darter
156. *E. histrio* Jordan and Gilbert—snubnose darter
157. *E. gracile* (Girard)—western swamp darter
158. *E. barratti* (Holbrook)—cypress swamp darter
159. *E. asprigenis* (Forbes)—mud darter
160. *E. parvipinne* Gilbert and Swain—goldstripe darter
161 *E. whipplei* (Girard)—western redfin darter
162. *E. artesiae* (Hay)—eastern redfin darter
163. *E. spectabile* Agassiz—orangethroat darter
164. *E. lepidum* (Baird and Girard)—greenthroat darter
165. *E. grahami* (Girard)—redspot darter
166. *E. proliare* (Hay)—cypress darter
167. *E. fonticola* (Jordan and Gilbert)—large spring small darter

Family: CARANGIDAE—Jackfishes

Genus: .*Caranx* Lacepede

168. *C. hippos* Linnaeus—common jack*

Family: SCIAENIDAE—Croakers, drum and weakfishes

Genus: *Aplodinotus* Rafinesque

169. *A. grunniens* Rafinesque—freshwater drum

Genus: *Bairdiella* Gill

170. *B. chrysura* (Lacepede)—silver perch* (yellowtail)

Genus: *Sciaenops* Gill

171. *S. ocellata* (Linnaeus)—red drum* (red fish)

Genus: *Leiostomus* Lacepede

172. *L. xanthurus* Lacepede—spot* (flat croaker)

Genus: *Micropogon* Cuvier and Valenciennes

173. *M. undulatus* (Linnaeus)—Atlantic croaker* (croaker)

Genus: *Pogonias* Lacepede

174. *P. cromis* (Linnaeus)—black drum*

Genus: *Cynoscion* Gill

175. *C. arenarius* Ginsburg—sand squeteague* (sand trout)
176. *C. nebulosus* (Cuvier and Valenciennes)—spotted squeteague* (speck, speckled trout)

Family: SPARIDAE

Genus: *Lagodon* Holbrook

177. *L. rhomboides* (Linnaeus)—pinfish

Genus: *Archosargus* Gill

178. *A. phobatocephalus* (Walbaum)—sheepshead* (sheepshead porgy)

Family: CICHLIDAE—Cichlids

Genus: *Cichlasoma* Swainson

179. *C. cyanoguttata* (Baird and Girard)—Rio Grande perch

Family: ELEOTRIDAE—Sleepers

Genus: *Dormitator* Gill

180. *D. maculatus* (Bloch)—fat sleeper

Genus: *Eleotris* Schneider

181. *E. pisonis* (Gmelin)—spinycheek sleeper

Family: GOBIIDAE—Gobys

Genus: *Evorthodus* Gill

182. *E. lyricus* (Girard)—lyre goby

Genus: *Gobionellus* Girard

183. *G. shufeldti* (Jordan and Eigenmann)—Shufeldt goby
184. *G. stygmaticus* (Poey)—spotted goby
185. *G. boleosoma* (Jordan and Gilbert)—darting goby
186. *G. oceanicus* (Pallas)—longtail goby
187. *G. hastatus* Girard—sharptail goby

Genus: *Microgobius* Poey

188. *M. gulosus* (Girard)—clown goby

Genus: *Gobiosoma* Girard

189. *G. robustum* Ginsburg—robust goby
190. *G. bosci* Lacepede—naked goby

Genus: *Gobioides* Lacepede

191. *G. broussoneti* Lacepede—violet goby

Family: BOTHIDAE—Flatfishes and flounders

Genus: *Citharichthys* Bleeker

192. *C. spilopterus* Gunther—sand dab

Genus: *Etropus* Jordan and Gilbert

193. *E. crossotus* Jordan and Gilbert—fringed flounder

Family: PLEURONECTIDAE—Flounders

Genus: *Paralichthys* Girard

194. *P. lethostigma* Jordan and Gilbert—southern flounder*

Family: ACHIRIDAE—Soles

Genus: *Achirus* Lacepede

195. *A. maculatus* (Bloch)—hogchoker
196. *A. lineatus* (Linnaeus)—lined sole

Family: TETRODONTIDAE—Puffers

Genus: .*Sphoeroides* Lacepede

197. *S. marmoratus* (Ranzani)—swellfish or rabbit fish

* Common names accepted by the Committee on Common Names, American Fisheries Society, and as published in Special Publication No. 1, American Fisheries Society, 1948.

BIBLIOGRAPHY

Bailey, Reeve M.

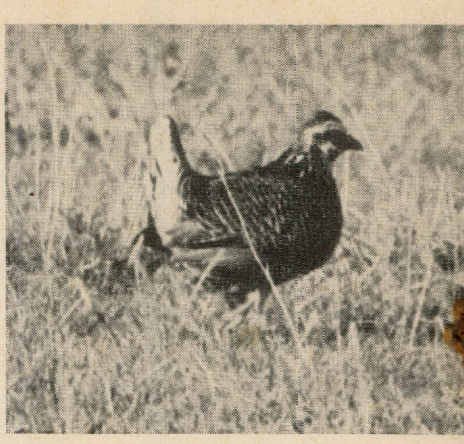
1951 A checklist of the fishes of Iowa with keys for identification. In: Harlan and Speaker, Iowa Fish and Fishing, State of Iowa, pp. 185-237.

Berg, Leo Semenovitch

1940 Classification of fishes, both recent and fossil. Travaux Inst. Zool. Acad. Sci. USSR, Moscow, tome 5, livre 2, pp. 87-517, figs. 1-190. [In Russian and English.] Photolith reprint, 1950. Ann Arbor, Mich.

Gunter, Gordon

1945 Studies on marine fishes of Texas. Publ. Inst. Marine Sci. Vol. 1, No. 1, Univ. of Texas, Austin, Texas.



The "booming" ritual of the prairie chicken, one of the nation's most colorful wildlife exhibitions, fast is fading from the American scene. In this series of pictures, a prairie chicken cock sights a rival attempting to enter his "territory" on the booming grounds. He advances to meet cocks, each at the edge of the area he is

Vanishing Prairie Chicken Honored

The colorful prairie chicken is spotlighted by this year's National Wildlife Week. Texas is one of the few remaining homes of this valuable game species.

By W. C. GLAZENER

DAYBREAK came as a quickly shifting balance between high plains chill and morning shadows. In a twig and grass thatched blind, two tense figures crouched and waited. It was early May, prairie chicken booming time in the Texas Panhandle.

One crouching figure nervously adjusted the focus of a camera aimed at a flat stretch of low hilltop a few yards away. The other one concentrated on the controls of a sound recording machine. Their object was to record, in both picture and sound, the activities of lesser prairie chicken on one of the long used booming grounds.

Lon Fitzgerald and Dick DeArment, photographer and biologist,* respectively for the Texas Game and Fish Commission, actually were not worried about operating their equipment. Their concern was over the question of chickens coming back to the site they had chosen for their recording work. A number of birds had been there yesterday; but would they return today?

"Booming," in connection with prairie chickens, refers to the courting activities of cock birds. People in some localities call it "drumming," and still others use the term "crowing." Under any name, these dramatic performances are witnessed by few people of this generation.

BOOMING usually begins at about the time of earliest day break. Cock prairie chickens gather at some chosen spot, coming in from all directions. Spaced at intervals of six to ten yards apart, as a rule, the individual birds go into their routines.

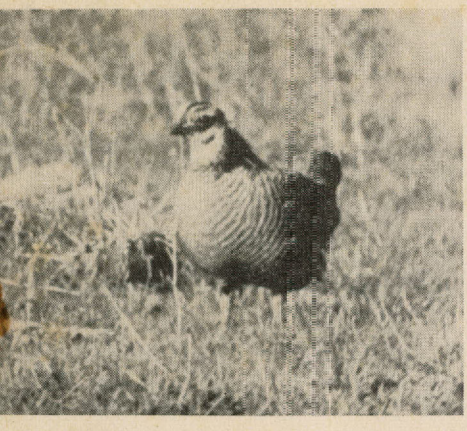
There is first a short dance — a flurry of hopping, twisting and foot stamping. Then, the bird inflates orange colored air sacs at the sides of its neck, raises and spreads its tail, and drops its wings and head. At the same time, long tufts of neck feathers stand erect—in such array the bird appears to have two tails and no head.

Noise is a prime part of the booming display. Some of it comes from the cocks as they deflate the orange colored air sacs. Thereafter, as the birds strut, feint at each other, jump up and down, or engage in short but fierce combat, they cackle and gabble almost unceasingly. If a large number of cocks gather, the volume of their calls swells surprisingly, in a series of crescendos.

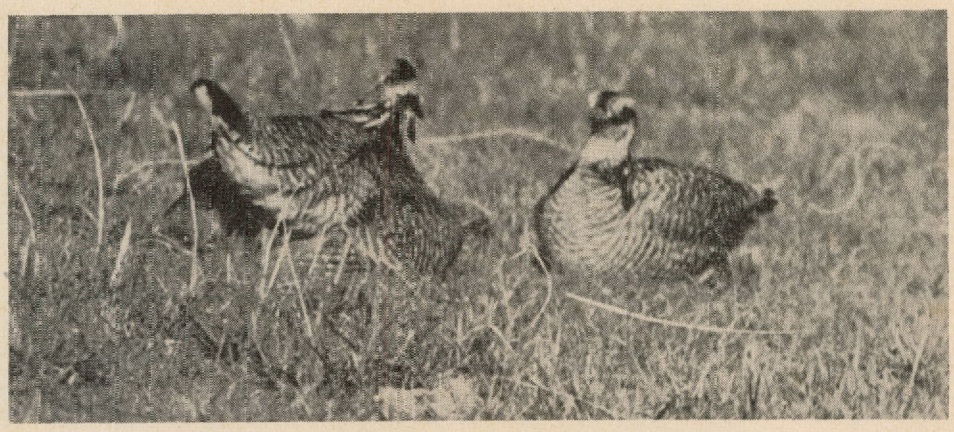
Prairie chicken hens gather at the booming grounds, too. However, in contrast to the boisterous cocks, they come quietly and demurely. While seemingly having no interest in anything but choice bits of food and carefully avoiding all male advances, each hen finally selects a strutting mate and allows him to follow her from the arena.

A FEW weeks following the photographing scene, I drove across some of the prairie chicken range north of the Canadian River, in the eastern Panhandle, with P. D. Moseley of Canadian. Moseley had worked this section for years as a warden with the Game and Fish Commission; he knew every ridge, slope, and flat.

* *P-R Project W-45-R.*



the challenge, center. At right the two defending, meet face to face. They "talk"



a fearsome brawl and strut and parade, but the bluff usually is bigger than the fight. This scene was snapped in the Texas Panhandle by Lon Fitzgerald, staff photographer.

Now and then, as we rode along, he would point out a plot of flat ground and say, "Chickens boomed there for many a year, but they got fewer every spring. This year I never saw or heard a single one."

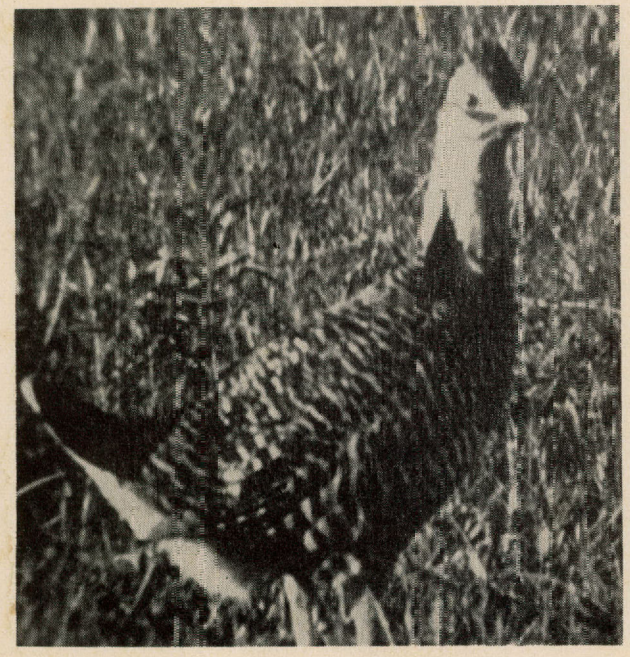
Down on the Coastal Prairie the story is about the same. At one time, competing hunters saved only the heads of prairie chickens to prove who could kill the most birds in a day. Now, the remnant Attwater prairie chicken population is thin, scattered, and dwindling away.

In August 1943, V. W. Lehmann, biologist with the Game and Fish Commission, sketched the fading trail of the Attwater chicken in the TEXAS GAME AND FISH magazine. The title he used was "DRUMS OF THE DYING," possibly melodramatic, but apt beyond denial. He cited the multiple influences of settlement and civilization as decimating the species along the coast.

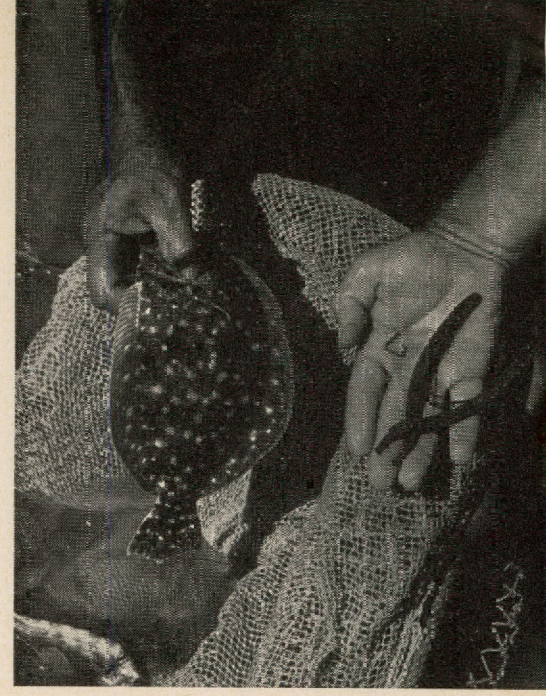
NORTHWARD across the Great Plains and into Canada, events have been duplicated. The species of chickens and degrees of latitude varied, but general results showed a striking uniformity of pattern. A prophetic look at the plight of the greater prairie chicken appeared in print 47

● *Concluded on Page 28*

The prairie chicken has declined in Texas because of the scarcity of food and the kind of cover like this shown protecting an adult, below left; a young chick, below right, and a nest, right. These are the Attwater species of the Texas Coast.



Facts About Flounders



The Commission's trapping and tagging operations have greatly increased our knowledge of the Texas flounder. Here are some of the facts of most interest to the fisherman.

By ERNEST G. SIMMONS
Marine Biologist

IT IS unlikely that any person will ever know everything about any fish. This statement is certainly applicable to members of the flounder group, but there are certain points which may be determined and certain questions which may be answered.

What flounders, for instance, inhabit the Texas coast? Which of these are of importance to sports fishermen and commercial fishermen? How fast do these fish grow? When do they spawn? Where do they spawn? What do they eat and how do they capture their food? What are their environmental necessities? How do they differ from other fish?

After 20 months of operation of the fish trap at Cedar Bayou, some of these questions may be answered.

In analysing the catch each day it was found that vast numbers of spot-fin whiffs, tongue fish, hogchokers, soles, and small mouth flounders were captured. Several other related species were taken by trawls in the deep waters of the gulf. None of these fish are of economic value but are often confused with the young of the commercial species.

Lesser numbers of southern flounder, gulf flounder, and ocellated flukes were taken. All of these are of importance to man.

Thus it can be seen that the forms found on the Texas coast are the southern flounder, the gulf flounder, the ocellated fluke, the spot-fin whiff, the tongue fish, the hogchoker, the soles, and the small mouth flounder.

Insofar as the southern flounder is the most valuable of the major three, all investigation was based on this form. All flounders gigged at night by the crew at Cedar Bayou, all recovered from winter kill, all taken in the trap, and all taken in tramel net operations were measured, examined for sexual development, and opened for examination of stomach content. Many were tagged.

By these various examinations the rate of growth, the time of spawning, the place of spawning, the food habits and the feeding habits were discovered.

When Do Flounders Spawn?

Early in November many of these fish were taken in the trap as they moved through Cedar Bayou toward Gulf waters. Some were tagged and released; others were analysed for sexual development.

It was found that the first large group consisted of males in a ripe condition; the second group, taken several weeks later, consisted of females in a ripe or semi-ripe condition. This outward movement continued until mid-January.

From these observations it was deduced that the major spawning occurs from November to late January, and that some scattered spawning takes place both prior to and after this period.

Where Do Flounders Spawn?

Results were soon obtained from those fish which had been tagged and released.

One female, which had been in a ripe condition when tagged November 4, 1950, was recaptured in a spent condition November 29, 1950, by a shrimp trawl operating in water 108 feet deep.

Other fish, still ripe with roe, were taken in trawls in water 50-100 feet deep and some in waters 150 feet deep. Some few spawning fish were captured in deep holes and channels in the bay areas.

From these data it may be surmised that the greater portion of spawning takes place in the gulf in depths of 100 feet or more but that some occurs in the bays.

A later investigation indicated that certain flounder do not spawn each year, but may be found in bay areas at anytime during the winter months.

How Do Flounders Differ From Other Fish?

No eggs have been found in this investigation, but young of those which spawn in the bays and Gulf have been located. Those from Gulf waters re-enter bay areas in March and April and range in size at that time from one-half inch to two inches.

Flounder are born in the conventional form with one eye on each side of the head and with very little coloration on either side of the body.

Before a length of one-half inch is reached, however, one eye moves around the head so that both organs of sight are on one side of the body. The mouth moves until it is somewhat asymetrical, and one side becomes colorless, while the other assumes a shade of brown or gray.

In most cases the coloration and the eyes are on the left side of the body, but the reverse form is found occasionally.

How Fast Do Flounders Grow?

In December, 129 captured post-larval flounder ranged in sizes from 16 to 25 mm (25 mm equal one inch), although flounder as small as 8 mm were found. Fish 46 mm long were taken in January.

Numbers of adult and young-of-the-year fish re-enter the passes and bays in March and April.

By June those flounders which entered the pass had reached a length of 5 to 9 inches. This variation in size is caused by the lengthy spawning season and the possible different rate of growth in separate areas. In July numbers of flounder 6-9 inches were gigged or captured. In September the modal standard length was 11.5 inches.

In November and December, however, it was discovered that the average male flounder was somewhat smaller than the female. Average size of the female at the age of one year was 11.8 inches; the average size of the male was 10.0 inches.

It is probable that a length of 16-18 inches is reached in two years. The southern flounder may reach a weight of 15 pounds but usually does not weigh over seven pounds.

How Does This Fish Live?

During the process of growth this species can evidently endure many types of environment. Water with low salt content is tolerated as is a salinity range somewhat higher than average. They are sometimes found in brackish water such as Green Lake and are often found in areas of high salinity such as the Laguna Madre. As they are a very hardy fish a certain amount of domestic and industrial pollution may be tolerated.

Any shallow area may produce flounder. Large sand or mud flats are especially productive, but numbers may be found along the edge of deep channels, in patches of vegetation, between patches of reef, or even on bare reefs.

Flounders make beds—not just one bed but several during a single night. These are not sleeping beds as might be thought; they are stalking and hunting dens. It is in these depressions that they lurk in ambush awaiting their prey.

As a rule the flounder will move up into shallow water when the tide starts in. There, in the sand, mud, or grass, it will make the first bed of the night. This it accomplishes by undulating the dorsal and ventral fins until a shallow pit is dug. Some sand is left over the body and the current will usually wash more silt over the fish, completing the camouflage.

When suitable prey, such as a small mullet, a croaker, or a shrimp passes, a sudden lunge is made and a meal may be secured.

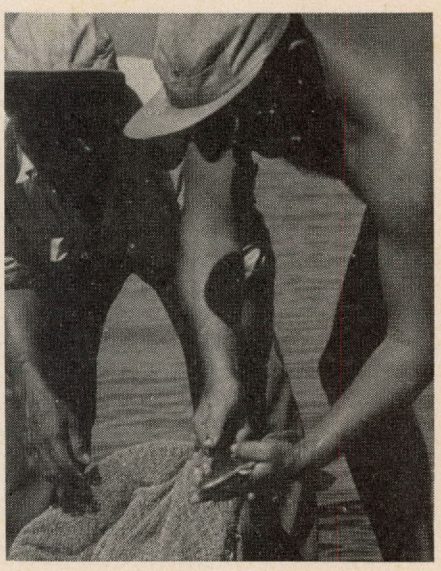
A new bed is then made a few feet from the old one. If by chance the flounder is satisfied with the meal, this depression is occupied until the tide starts out, at which time a movement into deeper water is made. If, however, a miss is scored or the prey is small, the fish will keep moving until its appetite is sated. Thus many beds may be made in a rather small area.

What Do Flounders Eat?

According to the material gained from a study of the stomachs of 420 flounder, the fish is piscivorous the greater part of the time.

One hundred and forty-eight food items were found in 130 stomachs. Of this total 81.1 percent were fish items; 18.9 percent were non-fish items. Croakers were most numerous, followed by shrimp, silver-sides, mullet, anchovies, unid fish, whiffs, mojarros, gobies, lizard fish, squid, crabs, and pin perch in that order.

A tag goes on a young flounder.



The flounder evidently feeds on whatever fish is most numerous in the area at a given time. Since that first study, the examination of an additional 680 flounder verified these data.

Can A Fish Change Its Color?

Much has been written on the ability of the flounder to change hue. It has been said that the fish can assume even the colors and the pattern of the checkerboard.

While this has not been definitely proven, it is well known that a change from light brown to dark gray can be accomplished. In fact, photographs have shown that a flounder placed on a surface that is half brown and half gray will, in a short time, blend in with each of these surfaces.

It also has been indicated that the flounder tries to turn the colors taken in by its vision. Sometimes the head will be on dark mud and the body on light sand, but the whole body will be dark.

Anyone who has gone gigging will know how nearly *invisible* this fish can be against a mud or a loose sand bottom. It can even blend in with marine vegetation fairly well. Very often a thrashing under the foot of the wader is the first and last indication of the presence of this well camouflaged creature.

What Are The Enemies Of This Flatfish?

In nature the enemies of the flounder are relatively few after maturity is reached. Sharks, redfish and other large fish take a small toll as food.

The greatest enemy by far is man with his gig and his rod and reel. Some of these fine fish may be taken on a hook baited with shrimp or small fish but more may be gigged at night near the shoreline.

It is possible that an area may be completely decimated by overfishing in this manner as the flounder shows a tendency to remain in one small area for long periods. This fact should be kept in mind when the future outlook of the flounder is considered

Fish Reports
Field Data

Texas Tracks

By JAY VESSELS

NEW RADIO USE

Two-way radio has proved itself vital to modern law enforcement. An East Texas game warden found a new, and mighty important, radio advantage the other night. He was trapped by a gang of night hunters, some of whom drew guns. The warden slipped away from one man, grabbed his car mike, got his wife on his home set and said loudly: "Honey, if anything happens to me remember these men were involved." Then he read off the names of his adversaries. A tense moment. And awfully hard on the little woman, but the trick worked and the crisis passed, bloodlessly.

BLACK IS BLACK

Game Warden Supervisor Herbert Ward of Catarina, told the Crystal City Boy Scouts about the contributions of birdlife generally. He also described the harmful species such as the crow. In deep South Texas, Ward said, crows do not occur, but ravens oftentimes are mistaken for crows. The difference is that a raven shows white under its feathers, while the crow "is black to the heart, and the heart is black, too."

FATAL MISTAKE

Game Warden Bob Snow, the noted mountain lion tamer, reports one of his prize cat dogs got too careless with a cornered javelina and had its throat slit, dying almost instantly.

FLAK—INTENSE, ACCURATE!

Ruth B. Jones, Director of the U. S. Forest Service Conservation Education program for the Southwest, passed along the attached clip from *The New Mexican* which refers to a proposed boundary change between Texas and New Mexico.

"IS IT WORTH IT? Now that Gov. Edwin Mechem has entered into the spirit of the thing and laid claim to all allegedly Texas land lying west of the Nueces river—about half of Texas—we again urge caution. It was not so serious to lay claim to only a 16 mile strip of Texas, but half of that state is something else again.

"If we got that much land from our neighboring state, then we'd be as big as Texas is now. Then we'd start bragging about how big we are. And the first thing you know we'd have the same reputation as Texans.

"Is half of Texas worth it?"

BLOCK BUSTERS

Warden M. B. Mullinax of Rockport relays this one from Warden Earl Sloan of Aransas Pass: Herring Gulls are up to their old tricks on Ransom Island. When the tide goes out, they pick up clams then fly high over the hard shell road and drop them. The gulls follow the clams down. If they break, the gulls feast on the insides. If they don't break, they pick them up and drop them again.

MIXED BAG DEPARTMENT

Bob Aldridge reporting in his "The Beaumont Parade" column in the Beaumont *Journal:*

"Heard a friend telling about the hunt Park Chief Reese Martin went on. The fellow said: 'Reese went coon hunting, took along a couple of squirrel dogs and came back with six 'possums! And he added, "but Reese's friends are claiming that the take actually was six armadillos!' "

HOLD YOUR NOSE

The San Antonio *Light's* "biggest deer head" contest was tremendous; drew more than 300 entries, and also drew some things—such as flies—that weren't in the script. Some hunters, entering the competition, brought the horns, some the heads, and some even the entire carcasses. Those trophies do get gamey after a time. The entries kept the *Light's* sports photographers so busy that other routine was snarled. Sports Editor Harold Scherwitz says they will do it bigger and better next year, but the photographing will be done by private cameramen, just to avoid the jam plus—.

FOR VALUE RECEIVED

Ducks Unlimited's official magazine carried this Page One box:

"DU Boosters Harry Koch, Sam Ganiglia, and Turk Tierney claim "the mallards appreciate our help." It seems that the three Omaha members handily filled out their mallard limits on the Platte river near Linwood—but non-DU members hunting just above them wound up with only a teal and a spoonbill.

AGITATED ARCHER

A "motion shot" by a rifle-carrying deer hunter at less than 100 yards gave Harvey B. Richards of Houston the maximum scare of the last deer season. Richards is an official of the Texas Field Archery Association which is sponsoring a bill designed to legalize a special bow and arrow season prior to the regular big game shoot.

He said he was on location on an 800-acre lease near Wimberley, which theoretically was exclusive for archers, when he saw a man with a rifle. Richards sensed the danger but in trying to get into the open to make his presence known to the intruder, he unintentionally shook some cedar limbs. Whereupon the rifleman fired into the brush. Richards stepped out of danger just in time.

Press Views Game Notes

TWANG-G-G-G-G-G

Pros and cons on the proposed special season for bow and arrow hunters are getting space in the newspapers. Fred Maly, outdoor editor of the San Antonio *Express,* suggests there is no more reason for special shooting privileges for archers than for a special season for southpaw gunners. Others support the proposal. Ken Foree, outdoor editor of the Dallas *News,* concluded a report on the proponents' contentions about bow and arrow hunting with this: "So from the standpoint of this column why not let the Robin Hoods have their fun? Every shoemaker to his last. Every squirrel to his nut."

PERSONAL CHALLENGE

The San Antonio *Express* editorially quotes a slant by Game Warden Supervisor Charles Jones of Weslaco, in saying: "Conservation is a simple word of easy understanding, meaning to hold, have, and enjoy, but few people who enjoy hunting and fishing lend a hand to perpetuate their pleasure." The *Express* describes Jones as being concerned that indifference is dissipating wildlife faster than it is being restored and as citing that "the hunter himself is the best game warden for he sees and hears of so many violations."

DEER GRAVEYARD

The Austin *American* carried this United Press dispatch from Saranac, Lake, N. Y.:

"Tales of deer 'graveyards' in the Adirondacks have been found to be true for the most part. Greenleaf Chase, Saranac Lake district game manager of the New York State Conservation department, vouches for the theory of the old-time hunters. They have reported finding bleached deer bones. The deer, upon reaching their last days, seem instinctively to exert their failing strength to reach the so-called 'graveyard!' During severe winters, the competition for food becomes keen, and older deer and fawns are deprived of sustenance. They seek 'concentration points for dying deer,' Chase said. Usually these secluded spots are along edges of swamps, particularly the north side of southern bends of streams. These points provide the dying deer with the most warmth and shelter."

PS: Eugene Walker, Wildlife Biologist for the Game and Fish Commission, observed that Texas deer do NOT use "the graveyard system," nor do they yard up. He said carcasses of deer, dying from natural causes, usually are scattered. "This," he added, "could be because Texas seldom has winter weather extremes conducive to deer yarding up." However, he noted that after one violent winter snow storm, one hundred sixteen deer carcasses were found in one test area covering one square mile.

HAK-ARK LOG

Harkey Kern and his fellow outdoorsmen over at Killeen still are rambling around in their portable hunting lodge—the Hak-Ark. Mexico was the latest land on the itinerary.

REPORT—NO PROGRESS!

The wildlife sanctuary which Harmon Henderson runs on the side at the Possum Kingdom state fish hatchery is going strong. Henderson runs it, you see, because he has no other choice. Wild duck and deer swarm over the place, as this department related before. Deep-diving ducks eat the roots of aquatic vegetation and weaken the walls of hatchery ponds from the inside. Sharp-toed deer, grazing on the lush grass, puncture the walls from the outside.

Henderson thought he might do something about the deer during the six-day season in that area. He loaded up his rifle and watched the surrounding area. And not a deer showed up.

Ducks were so thick on the ponds, one couldn't see the water. Motorists stopped nearby to admire them and to ask: "Why don't you shoot some of those fat ducks?" Said Jim Massie, one of Henderson's assistants: "I just tell 'em it isn't legal." And the big fat redheads, and green heads and blue bills and pintails and canvasbacks just sit there almost within arm's reach.

BARGAIN IN DOVES

In this era of wildlife management strides, some Texans seem to accept the impossible. This was reflected in a small news story in a Central Texas paper. A game warden was reporting about the early hatching of doves. In transmission the word "two" got changed to "four" in reporting the usual number of dove eggs in a nest. Almost before the ink was dry on the item, a man wrote in with a straight face, asking where he could get a stock of doves "which lay four eggs."

TAME OX, DE LUXE

Game Warden Tom Waddell of Eagle Lake recalls when the law permitted use of livestock to screen hunters in ambushing waterfowl. He said one old animal, weighing about 1500 pounds, was particularly effective. Hunters sneaked up to geese in the ox's shadow and then fired over his back or under his belly, according to Waddell. He said the old animal was so used to gunfire that he never jumped even when they shot between his horns. This mode of hunting now has been outlawed.

PEDERNALES PLIGHT

Warden Adolph Heep of Fredericksburg reports that the loss of fish life in the Pedernales River in the historic September flood may not have been as bad as at first thought. Heep says he has observed "plenty of fish" in the river. He said he had noted the devastation, finding thousands of bass and bream dead apparently from fouled gills. He suggested that there might have been an overstock of bream. Heep says catfish seemingly were unaffected. The warden observed that the torrential rains and ensuing flood strangely took some toll of wild turkey. He said the turkey presumably perished when their roosts were flooded.

• Continued from page 8

The bow hunter would not have the privilege of doubling his take. He would be permitted to hunt during the regular season only if he had not secured his limit during the bow and arrow season.

Archers would pay a special license fee—in addition to the purchase of a regular hunting license. The fee would provide for the additional administration expense required, for propogation of game and fish, or for better enforcement.

TEXAS archers are willing to let the Conservation Department of Michigan, which was one of the first bow hunting states, do some of their arguing for them. Here is what its wildlife management experts have to say:

"Considering the small percentage of success by bow hunters, Michigan's dear herd could stand almost unlimited amounts of hunting with bow and arrow. A general statewide "one deer" (either sex) law could easily be permitted with no effect whatsoever on the deer herd.

"It is obvious that encouragement of archery deer hunting is not only a means of promoting additional outdoor sport at little or no expense to the deer herd, but it is one way of eating your cake and having it too."

Eight Houston hunters provide a typical example of the difficulties of killing deer with bow and arrow and of the problems of stalking in the vicinity of gun hunters.

Last season, these archers had their own exclusive lease, 800 acres on the Buck Winn ranch near Wimberly. The group included L. N. Coffey, southern target champion, and his wife, Grace, who had won a number of championships. Yet, despite the fact that the ranch had not been leased for hunting in previous years, only three of the eight hunters were able to get in shots. Those shots were at about 65 yards, too far for accuracy.

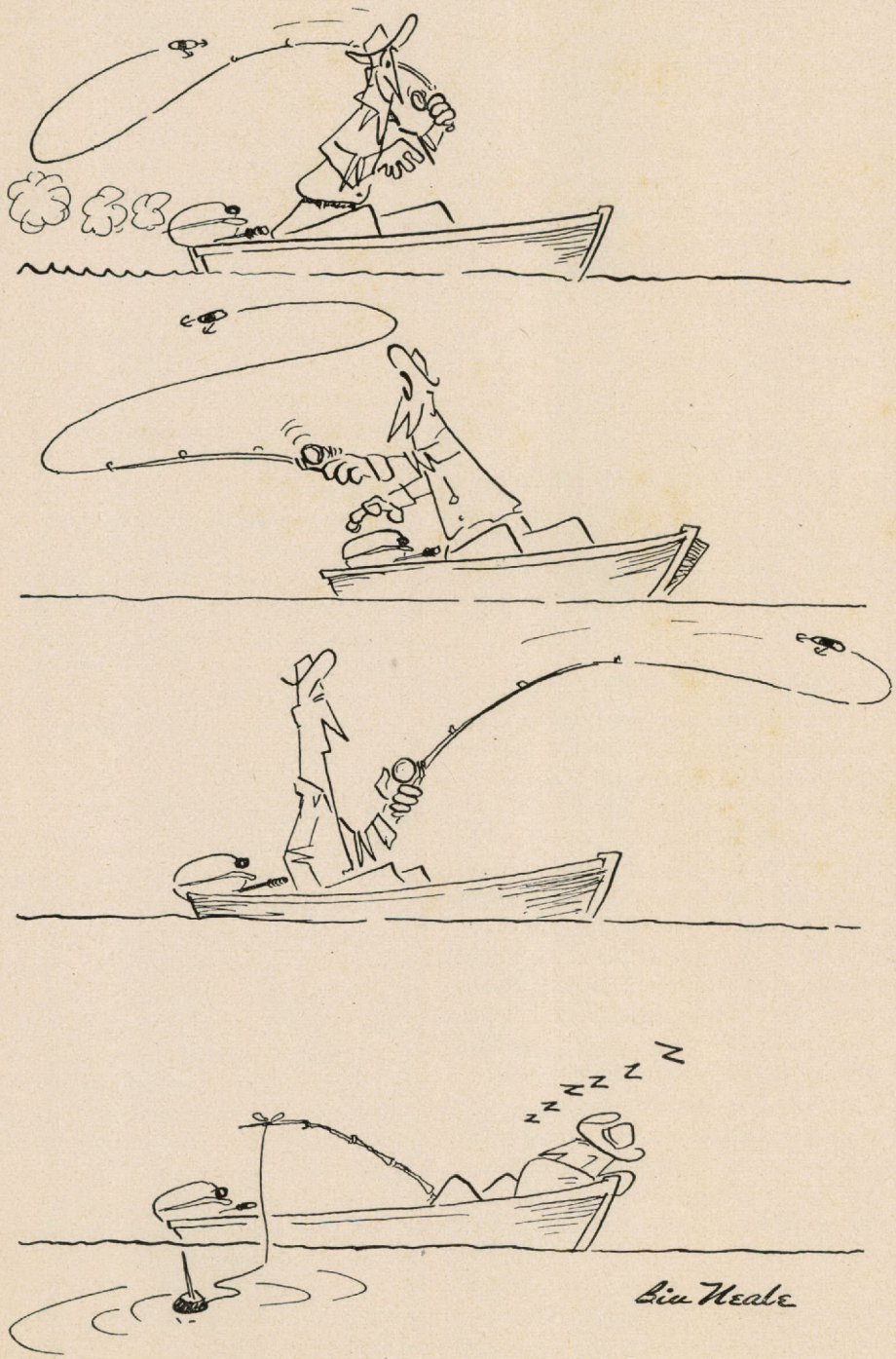
The surrounding area was leased to gun hunters, and the bow hunters found it virtually impossible to get within effective range of the flighty deer.

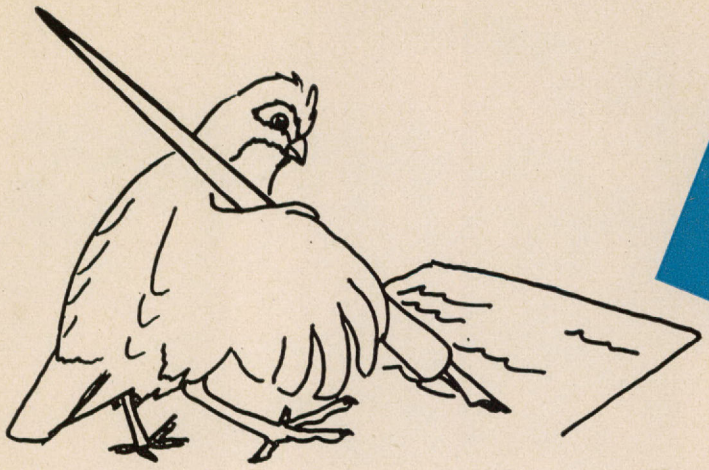
Ranchers have watched experiments, such as the one on the Winn ranch, with a great deal of interest. Many agree that bow hunting should have little effect on deer populations, and all are quick to recognize that archery eliminates the "meat hunter."

One of the most outstanding attributes to archery is safety. The state of Wisconsin, with 15 years of bow and arrow hunting experience behind it, reports that in all this time not a single hunting accident has occurred involving archers.

This is of prime importance, particularly in the training of our youth. It is good to feel secure in the knowledge that the boys and girls of Texas can learn to hunt safely—that they will learn, while hunting with bow and arrow, to be positive in their identification before shooting.

The close proximity of hunter to game is an inherent factor in bow hunting. Later, if the youngsters are inclined to take up gun hunting, their experience and knowledge of game will be a valuable asset to safety.





Letter from a Bobwhite Quail

EVERY magazine receives a wide variety of mail from its readers, and TEXAS GAME AND FISH is no exception. Nothing is very surprising, no matter how odd it may be.

Recently, however, there arrived at the Editor's desk a letter that was really in a class by itself. It came from a quail. That's right, a bobwhite quail.

The story actually began in December, when TEXAS GAME AND FISH carried an article and picture of Pete, the famous coffee-drinking bobwhite of Paris, Texas. Pete had lived happily in the home of Joe Caldwell for over a year, dining at the table and aquiring a taste for coffee and toast.

Chickie and Mrs. Reeves

That article stirred Chickie, a hen bobwhite at Decatur, to action.

It seems that Chickie is quite a chick, who, like Pete, has become decidedly domestic, only more so. Her feminine indignance aroused, Chickie wrote that . . .

But we'll let Chickie do her own whistling. Here is the unique letter from a bobwhite quail:

Dear Mr. Editor:

After reading about Pete in the December, 1952, issue of the magazine, I decided you should know about me, too.

My name is Chickie. I am a bobwhite hen, and I live in the home of Mr. and Mrs. Joe Reeves at Decatur. I sleep in a box under the bed and eat from the table like Pete. But I prefer Coca-Cola to coffee and I like chocolate candy better than toast.

Pete was brought from the wilds into the house as a youngster something over a year and a half ago. I have lived in the Reeves home for over three and a half years, and what's more, I was hatched in the kitchen stove.

Eight of us were hatched from that clutch of eggs. Two of my brothers and sisters lived about two months, but the rest passed on within a few weeks, rest their souls.

The eggs originally were found by Mr. Reeves when he was clearing a right-of-way for an electric line.

I will be four years old July 19, and, although I hate to admit it, I guess I am past middle age for a quail.

I miss my children. Yes, I have two children, born July 12, 1951, almost two years ago. My how time flies! They live in a little house in the country with my husband, Chigger. If they would only settle down and not be so flighty, all of us could live together here, but I guess they are too much like their father.

I lead a relatively quiet life in the Reeves household. In the evenings I like to sit in front of the fire or doze in someone's lap.

When the weather is warm, I go outside occassionally to chase insects or to take a dust bath. Someone always stays nearby to protect me from stray cats.

I have had some narrow escapes in my lifetime, too. One time I almost got caught in a mouse trap, and once I flew up on a chair just as someone sat down.

Then there was the time I swallowed a scorpion. They gave me castor oil. Fortunately, I survived the scorpion . . . AND the oil.

Sometimes I get to travel. I have made three trips to Colorado in the family car. At first, they tried to keep me in a cage. They should have known better! I usually ride sitting on Mr. Reeves' knee while he drives or on Mrs. Reeves' lap.

I would like to meet Pete sometime. We could have an interesting time talking of our experiences while living with folks, if he would be willing to put up with the prattle of a little old lady.

I will close now, but I thought you might be interested in hearing about me.

Sincerely,
Chickie

When Mrs. Connie Hagar lectures, she carries a kit of assorted birds which she, herself, stuffs. A convenient extension facilitates handling without danger of damage.

Patches is Mrs. Connie Hagar's "bird dog." He rides behind her in the family car. She watches for birds on the ground, and Patches keeps an eye cocked skyward. According to Mrs. Hagar, when Patches sees a soaring bird, he taps her on the shoulder with his foot.

Connie Hagar should represent the epitome of reasons why birding is good for one. During an interview incidental to this article, she emphasized that birders had to be on location at the break of dawn. That, observed the interviewer, means getting up before 4 a.m. during the summer. He followed through: "Does that mean you observe the siesta custom?"

"Goodness, no," she snapped, "I'm only 67."

This spry, sharp woman, whose sense of humor rides on a deep, hearty laugh, seems to have inexhaustible energy for field work and maintains regular correspondence with 300 persons all over the world.

Mrs. Hagar has been a birder all her life, her father, an attorney, having taught her the common birds. She came close to being named after a bird, her first name being Conger—close up to Condor.

Reminded of this she snapped, laughingly, "There's an eel named Conger."—*Jay Vessels.*

Feathered Crossroads

NOT many amateur bird observers are as fortunate in their homesite as our yard (in Rockport) has proven to be. In front, the calm bay provides a resting and feeding spot for water birds, while the backyard with its ten acres of live oak, yaupon, and sweet bay give ample food and shelter for the perching birds.

One is often torn between two desires—Shall I watch the herons, terns and gulls or the lark sparrows, scissor-tails and painted buntings — which shall it be, land or water birds?

During the winter months, the ducks, geese and cranes pass in large flocks. Once we stood at the door for ten minutes while lesser snow geese flew by; one long steady stream of white birds, all honking. What a clatter!

At the same time of the year, vermilion fly catchers perch on the clothes line in the back. Blue gray

Mrs. Hagar patiently preserved this hummingbird and restored its nest to create an authentic setting. As a comparison of size, note pencil at right of photo.

By CONNIE HAGAR

gnat catchers and ruby crown kinglets feed over the limbs and branches of the oaks. Inca doves nest at the back door, while an osprey brings his fish to the tree to enjoy his meal. Confusion. Worse, confounded. That's the yard problem, day after day.

THEN comes spring time, and nesting birds arrive to start their busy season, while migrants take over every tree, bush and, often, the grass.

One cool spring morning my husband rushed in and said, "Come quickly. You may never see this again. You have a blue yard." Sure enough, there it was, solid blue with Eastern bluebirds. Not a blade of grass to be seen, just lovely birds, resting during a migratory flight.

As spring advances, people come from all over the United States, parts of Canada and even British Columbia to watch with me as this phenomena of nature takes place. Franklin's gulls pour through in such numbers that one man exclaimed: "Confetti in the air!" Warblers fill every tree at times. When a wet norther blew in last May a flood of baybreasted warblers covered the trees and grass. Two observers from Boston, one a director of the Massachusetts Audubon Society, remarked: "We see them so well we can't recognize them." He explained that they had always seen the baybreasteds in the very tops of the tallest sycamore trees. Now, here they were feeding at their very feet.

The indigo buntings were so numerous in April that several New Englanders who were looking with me said: "Thick as blueberries on the bush."

Recently, a lawyer and his wife were bringing me home from a neighboring city where I had talked for the garden club on wild flowers. The wife explained that I also studied birds, upon which the lawyer asked: "Mrs. Hagar, do you know the Prothonotary Warbler?" "Yes," I replied, "but I am in no way connected with Mr. (Alger) Hiss or Mr. (Whittaker) Chambers."

FOR many years the buffbreasted sandpiper has migrated through this area in large flocks, but since the professional ornithologists had never been here at the time of their movement, the ornithologists were very doubtful of the records. However, the dean of field ornithology, Ludlow Griscom of Harvard, got to see several with me, and this year Milton Trautman of Ohio went with me and counted 1,000 birds in a narrow area. Next day, Guy Emerson of New York, the Ernsts of Boston, and I had 750 in one field. Now all's well for the buffbreasted sandpiper.

Once some bird observers came from North Dakota and were anxious to learn the different terns. They knew a few but wanted to see the gull bill tern especially. So out to the salt flats we went. Finally, I said, "there go gull bills. See how short the tail notch is." "Why," exclaimed one of the party, "I thought terns were identified by their long forked tails; that was what made them terns." I didn't need to be told they came from inland.

A question often propounded to me is this—Can you tell what kind of persons birders are when you go into the field with them? Yes; soon the part of the United States from which they come will show. Eastern, western, or northern. An observer from the Eastern seaboard will spot the little sandpipers, plovers, and ducks quickly but will be cautious in identifying a verdin or female blue grosbeak. A Westerner will spot the sage thrasher or marbled godwit but hesitate over a female painted bunting or female dickcissel. From the North, the observers are not prepared for the ease with which we find rails but an American rough-legged Hawk is "home sweet home."

HOW do these different observers work? The very new observers want spectacular birds such as roseate spoonbill, painted buntings, or purple gallinules. More mature workers enjoy the huge concentrations and migratory flights of hawks, geese, warblers, grosbeaks, orioles and flycatchers. Some want plumage changes, some distribution, some songs.

There are as many ways to study birds as there are birders.

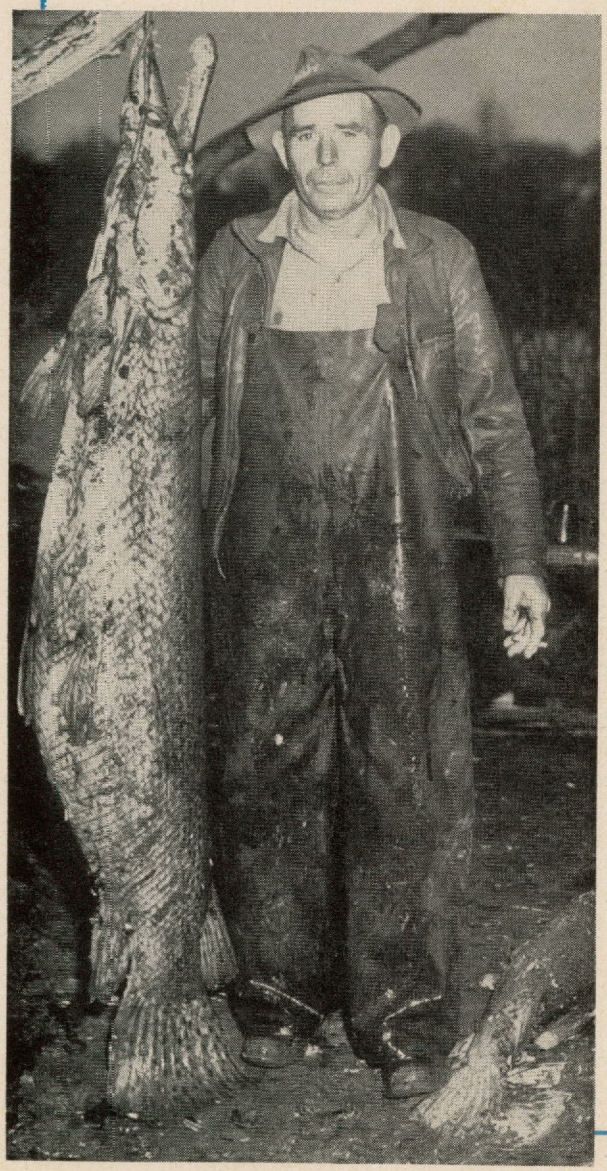
One last question put to me of the "what bird did I see?" variety was this: "What large grey bird perched on a skiff, standing on one leg, and looking so forlorn, did I just see as I drove by the water?"

My answer was:

The herons on BO Island stand
  silently all day,
Like lean old men together.
They hunch their shoulders grey.
I wish I could get near them
And hear what they might say.
They ruff up their coat collars
And stand so gloomily,
That somehow as I watch them
It always seems to me
That in their trouser pockets
Their wrinkled hands must be.
—Elizabeth Shane.

I knew he had seen a Ward's heron, or great blue heron as he is commonly designated. The lines precisely matched his observation. We in Rockport like to help visitors see their bird, their way.

Man Sized!



As contrasting as the separate Texas areas from which they were harvested were these big aquatic specimens. The succulent catfish was taken in northwest Texas. The destructive alligator gar was caught in southeast Texas.

Shown above with his prize is L. L. McDaniel of Coleman. McDaniel landed the whopper on a trotline at Lake Scarborough, the Coleman city water reservoir.

Local anglers agreed that McDaniel should be able to score on angling honors. You see, he's custodian of the reservoir.

The other giant, shown left, is a 190-pound alligator gar taken from Hildebrandt Bayou near Beaumont by Lee Bolton. He has a commercial fishing permit issued by the Game and Fish Commission in an effort to control rough fish in the bayou.

Bolton uses a tough nylon net and catches from 10 to 20 big gar a day. He has some savage tussles with some of the larger ones and usually finds that clubbing them into submission is more effective than shooting them.

Things You May Not Know

The roots of most trees are more extensive than the branches. In fact, with most plants, except those that grow in swamps, there are more underground parts than parts above ground.

* * *

The ears of the cricket are in his legs.

* * *

Mammalogists recognize 253 different species and sub-species of land mammals east of the Mississippi in the United States. There are about 30,000 in the world.

* * *

If a human family ate in proportion to a family of birds, the daily grocery list would include something like 50 loaves of bread, 25 pounds of hamburger, 30 doughnuts, 10 pounds of spinach, 6 heads of lettuce and 1 gallon of ice cream.

* * *

The ears of the woodcock are located in front of the eyes.

* * *

The jumping shrew of Africa is said to sometimes curl up and roll along instead of jumping like a kangaroo.

* * *

The only mammal that has wings is the bat.

* * *

The black seadevil, which inhabits the dark depths of the ocean, carries on the end of her nose a phosphorescent head light to blind and lure her prey into her cavernous mouth.

* * *

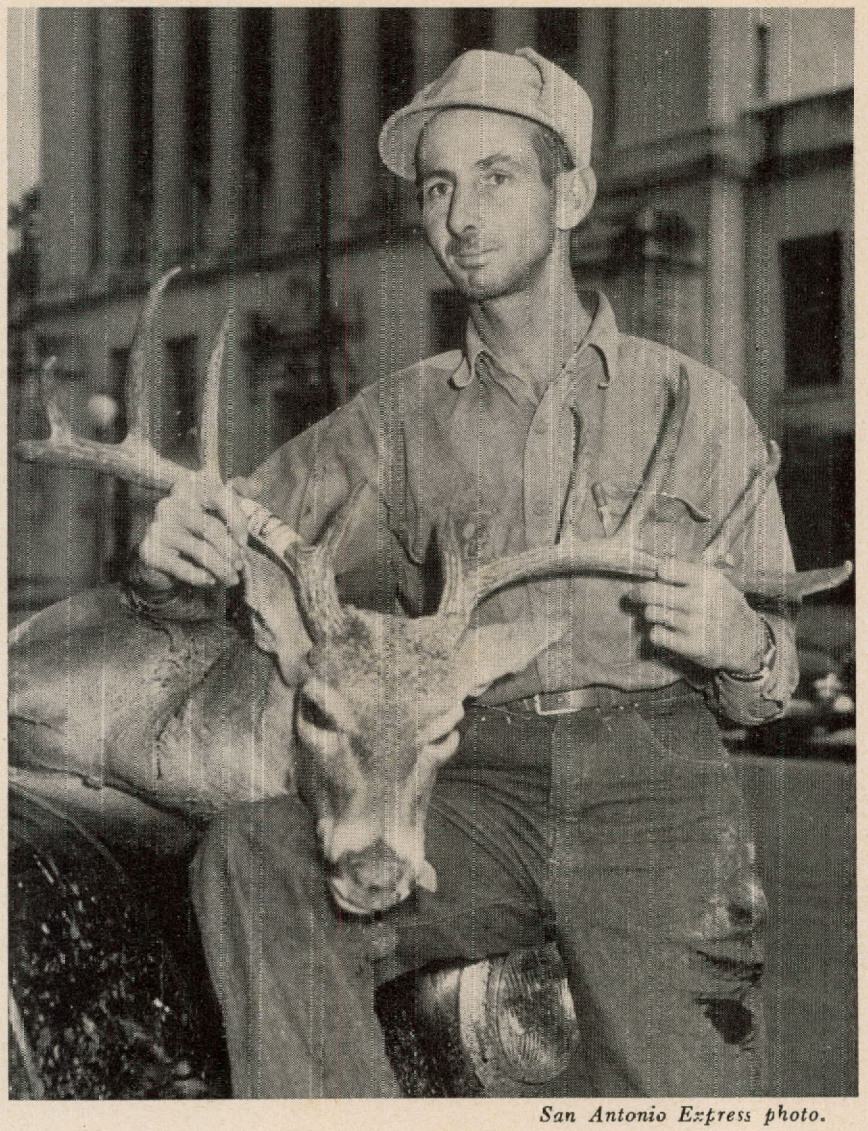
Bees are more ill-tempered in foul weather than they are on fair days.

* * *

The lips of the beaver are designed so that they close in back of the long, front incisor teeth, allowing him to work under water without getting water in his mouth.

* * *

Birds do not have a highly developed sense of taste. They often detect food through their bills, which are quite sensitive to touch.



San Antonio Express photo.

Buck With 31-inch Maximum Spread May Be Texas Record

Until a bigger one shows up, this buck may have the widest antler spread of any white-tailed deer ever killed in Texas. Its maximum spread measured an even 31 inches.

The lucky hunter pictured is A. W. Anderson of Sinton. He bagged his prize on the Murray Hollar ranch, McMullen County, in the heart of South Texas.—Fred Maly, San Antonio *Express*.

The red-cockaded woodpecker is the only bird that excavates its nest cavity in the living pine tree. It returns to the same tree year after year.

* * *

Snakes almost literally walk on the ends of their ribs. The ribs are attached to broad, special scales on the under side of the body. Through a forward and backward motion of the ribs, these scales move the snake along the ground.

Game Warden's Lament

By GILBERT RUSSELL BRACKETT

If the game warden asks to see your license, he's insulting;
If he takes your word for having one, he's corrupt.
If he arrests a violator, he's showing how rough he can be;
If he gives the culprit another chance, he's showing favoritism.
If he labors day and night to enforce the law, he's a tyrant;
If he relaxes at all, he's a shirker and a crook.
If he talks fish and game conservation, he's maudlin;
If he keeps quiet, he's not interested in his work.
If he accepts suggestions or advice, he's incompetent;
If he works out his own problems for himself, he's a know-all.
If he acts like a gentleman, he's too easy;
If he acts firm, he's unfair and a rascal.

Ashes to ashes,
Dust to dust,
If the sportsmen don't do it,
The game warden must!

Prairie Chicken

Continued from Page 17

years ago, written by Nat Wetzel, a market hunter.

His story, appearing in *The Saturday Evening Post* in 1906, included the following: "Day after day, for a period of three months after opening of the (Cherokee) Strip, my buyers brought in their corn wagons filled level to the top of the sides with prairie chickens instead of corn ears. There was no help for this slaughter; the birds were in the way of civilization and they had to be sacrificed . . . but it was a pity, for all that. Most of them brought only $1.50 a dozen, but now it is difficult to get the birds at from fifteen to eighteen dollars a dozen. And this suggests the observation that prairie chickens will be one of the first of our game birds to suffer practical extinction, in spite of all that the wisest laws and the firmest enforcement of them can do to protect the species.

"The reasons for this are plain: prairie chickens cannot stand civilization, and as the wild prairies disappear these birds are bound to go. Another fact which bears on the elimination of the prairie chicken is that this bird takes to the open, and consequently is much more accessible to the hunter and more easily killed than the partridge, and, finally, it should be remembered that, next to the wild turkey and the woodcock, there is no game bird held in higher esteem by the hunter or the epicure than the prairie chicken."

As a prophet, Wetzel was amazingly correct. Within ten years the greater prairie chicken had disappeared entirely from Texas and from many localities in Oklahoma and Kansas. Where once this species had ranged southward to Bosque and McLennan Counties, it was no more.

SHORTENED hunting seasons, and reduced bag limits failed to check the decline of either of the remaining prairie chicken species in Texas. Similarly ineffectual has been a closed season.

Their numbers shrink with the dwindling stands of native prairie grass that was their home. Only near the centers of their respective ranges, on the better stands of native vegetation, do any seem to hold their own today.

Nationally, the decline in suitable habitat has shrunk the prairie chicken range until they now are found in only about 15 states in any quantity. The coastal Attwater species lives in Texas and Louisiana alone.

Most states prohibit the hunting of prairie chickens. Very limited shooting was permitted in only four, Nebraska, South Dakota, Wisconsin, and Michigan, last year.

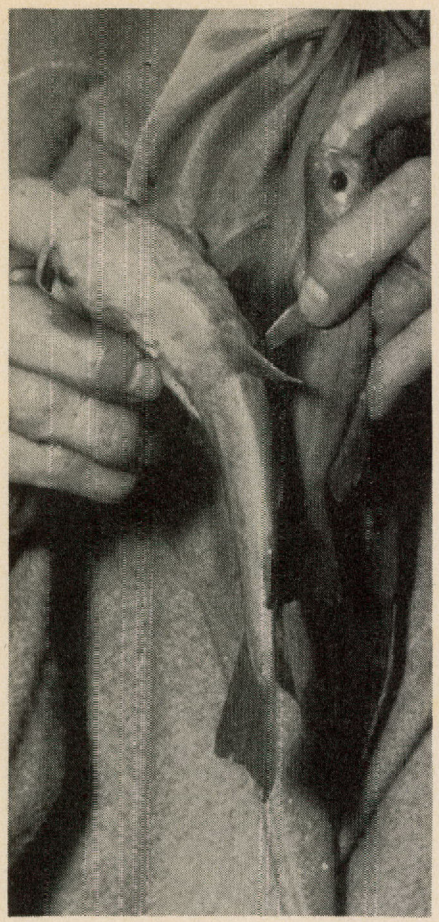
NOW, after years of being "the forgotten bird," the prairie chicken again rates public attention. March 15-21 is National Wildlife Week. More specifically, this year we might say it is "Prairie Chicken Week."

The National Wildlife Federation has so designated it, honoring the prairie chicken in the same manner as the vanishing Key deer was honored and brought to public attention in the first of a series last year.

It is hoped that this measure will stimulate interest in saving these rapidly-fading birds, to keep them from becoming another closed chapter in the wildlife history of North America.

To achieve that goal, we must appraise the problem, ask some pertinent questions, choose our answers and act. If we decide to let the matter rest, fulfillment of Wetzel's vision is delayed but a little while.

Many sportsmen, landowners, and representatives of game departments would like to see the bird saved. If their interests can be combined into joint action on a sound plan, there is hope for the prairie chicken's future.



One of the rare catfish, identified as black bullheads, was about five inches long, the other about 7½ inches.

Rare Albino Catfish Found In Paris Pond

Aaron Chennault, a minnow dealer in Paris, Texas, for 47 years, had never seen an albino catfish. Then one day he netted two in one day.

Seining from different farm ponds separated by a road and 100 yards apart, they attracted hundreds of visitors to Chennault's place in February.

One of the albino catfish was about seven and one half inches long, the other about five inches. Their skin was transparent, the flesh showing through it. The eyes of both fish were covered with a film, leading to the belief that they were blind.

The two oddities first were placed in a glass bowl, but the larger one flopped out, died, and was fed to a cat. The other was placed in a pond and later rescued by Ed Bonn, Game and Fish Commission biologist from Lake Texoma, but it also had died. This fish was preserved for further study.

Paris News Photos

Mrs. J. A. Chennault and the two albino catfish her husband seined from farm ponds near Paris, Texas.

Bonn identified the catfish as being black bullheads *(Ameiurus melas)*, quite common in Texas but rare in the albino form.

The two ponds from which the albinos were seined are located about 25 miles northwest of Paris near Direct, Texas.

He Hunts by Air

Continued from Page 5

made a last frantic effort to escape this bird "bigger'n he was," and it was all over.

I learned later that Cas gets 99 per cent of his kills on the first shot. It's then or never, usually.

Of the thousands of eagles and coyotes he has pursued from his hunting blind with wings, only eight have escaped. Five coyotes managed to fortify themselves in holes, and three eagles flew into canyons too narrow and steep for the plane to enter.

Cas is a very exacting sort of person. I found that out when we landed and he taxied the plane right on into the hangar, guiding the wheels precisely to rest against two small blocks and leaving the prop spinning just inches from the back wall.

Then I found out why he walks in that stooped position. I had been hunched over, straining to watch the ground for six hours. It was three days before I could straighten up!

Change Brings Good News to Readers

TEXAS GAME AND FISH magazine is growing up. Thanks to you loyal readers who told your friends about our publication, the number of subscribers has climbed at a record pace the past few months, and the flood of orders continues.

The machinery for processing, making, classifying, and filing address plates for new orders and renewals was pushed far beyond the capacity to keep up. Our readers suffered.

New subscribers had to wait too long for their first copies, and the renewals of old readers could not be processed as fast as we wished. Letters went unanswered as the staff tried to give the machines a helping hand.

But there is good news. A completely new method of handling subscriptions and the mailing of the magazine was inaugurated with this issue. It's faster. It is more accurate. It is keyed to the rapid gains being made by TEXAS GAME AND FISH.

We have had a hectic time making the changeover the past month between issues. That is why this issue of your magazine may have been a little late.

But from now on, we should be able to give our readers much better service—the kind they deserve and the kind we want to give them.

Letters . . . to . . .

Liles and 40-pounder.

Editor:

Please renew my subscription to TEXAS GAME AND FISH.

I am enclosing a snapshot of a big catfish caught in Possum Kingdom Lake on a trotline. It weighed 40 pounds.

Marvin V. Liles
4642 Travis St.
Dallas, Texas

Editor:

Until recently, I had no idea that such an excellent periodical as TEXAS GAME AND FISH was being published.

Might I suggest that 25 cents be added to the subscription price and this money used to publicize the fact that this magazine is available?

C. O. Bailey
Justice of the Peace
Rockport, Texas

(The number of letters we receive from subscribers who want to do something to let others know about the magazine continues to be a constant source of amazement—and pleasure.)

Editor:

I am writing for information on the propagation of minnows.

I plan to start a small hatchery . . . and raise golden shiners and red shiners. Where can I get these species for brood minnows?

I am enclosing a picture of Mr. J. E. Halnan, Mount Pleasant, and two big bass he caught in Iron Ore Lake near Daingerfield.

Irwin Akers
2009 Crockett
Amarillo, Texas

(The raising of minnows is an extremely risky business as many have found out to their sorrow. There usually is a good demand for minnows in Texas, but they are most difficult to raise.

(The Commission does not have a bulletin dealing with the propagation of minnows. At least two are available, however. "The Propagation of Minnows and Other Bait Species," published by the U. S. Fish and Wildlife Service, may be obtained for 35 cents from the Superintendent of Documents, Washington, D. C. "How to Grow Minnows" is available for $1 from Philip F. Allan, P. O. Box 1898, Fort Worth 1, Texas. [See BOOKS, page 32, this issue]

(TEXAS GAME AND FISH magazine plans to carry an article by Mr. Allen concerning minnow raising in the April issue.

(Some of the Commission's hatcheries produce golden shiner minnows. These may be picked up at the hatchery for use as brood fish. You might be able to obtain red shiners from a bait dealer.)

Editor:

I would appreciate it if you would clarify an apparent conflict in the squirrel law as outlined on page 12 of your booklet DIGEST OF GAME AND FISH LAWS.

The "general" squirrel law shows an open season of six months. However, at the bottom of the page under a heading "No Closed Season," several counties are listed, including Wilson, Comal, Guadalupe, and Blanco, which touch Bexar County where I live.

I assume this to mean that now (January) it is illegal to kill squirrels in Bexar

Whoppers for Halnan.

Mr. Redtail

• Continued from Page 6

sparingly spotted. Incubation takes 28 days, with both parents sharing these duties.

WHEN the young hatch they are helpless balls of white down, but it isn't long before they are quite active. They're soon walking awkwardly around the nest, stretching their wings and making a weak peeping sound. At a relatively young age the little birds will bite when touched. They grow rapidly as nestlings, keeping the old birds busy hunting food and bringing it to them. At all times the parents are greeted with lusty cries when they come home.

After the young birds leave the nest and learn to fly the adults teach them some of the technique of mouse hunting. This is an interesting procedure to watch. The older birds frighten prey from hiding places in the grass and then call the young ones, who are circling above, down to catch the scurrying rodents. After the young have mastered the technique they are soon left to their own devices by the parents.

All in all the redtail makes a good neighbor. His habits make him a pleasure to watch and a useful citizen of your neighborhood. Though there are occasional individuals who get a taste for poultry and have to be controlled, they are not so numerous that fences need be festooned with dead birds. These birds are part of a closely knit natural web which is nature in action. His position on the predator side of the ledger should make us, after due thought, consider him a useful cooperator with us in our natural associations rather than an enemy to be destroyed.

County but that the season is open in these bordering counties.

Is this right? Please clear this up for me.

G. L. Prothro
304 Givens Ave.
San Antonio, Texas

(Your interpretation is absolutely correct. However, confusion often results from these local laws, and a brief explanation might be of interest to others.

(The State Legislature, in establishing the game laws, sets up "General Laws" to apply to the state as a whole.

(However, the Legislature has made many exceptions to these "General Laws." The exceptions are called "Special Laws," and they usually apply to individual counties.

(If your county is not listed among those to which a "Special Law" applies, then your county is covered by the "General Law."

(To use your DIGEST OF GAME AND FISH LAWS, first turn to the page listing the species in which you are interested. Read the "General Laws" which apply. These cover your county, UNLESS it is listed among the "Special Laws," which are found in the DIGEST just below the "General Laws" for each species. If your county is subject to one or more of these "Special Laws," it will be listed and the exception will be explained.

(The DIGEST OF GAME AND FISH LAWS is available without charge from most license-issuing agencies or direct from the Game and Fish Commission. It is, as the name implies, only a digest of the bulky legal codes but meets the requirements of the average outdoorsman.)

Editor:

. . . We have a boys' organization in our school, in which we study game conservation and game laws . . .

Our local game warden, Mr. W. C. Childress, meets with us from time to time and is most helpful to us.

With this boys' organization we feel that we are doing a great deal toward developing proper attitudes toward wildlife conservation and game law observation.

J. D. Gray, Superintendent
Pearland Independent School District
Pearland, Texas

Editor:

Reading your magazine up here in Minnesota, I get the impression that the outdoor sportsmen of your state are very cooperative . . .

. . . It looks to me like you have some game and fish management projects that are going to pay off in the future.

Jack Schultz, President
Rod and Gun Club
Ottertail, Minnesota

(Yes, most Texas sportsmen realize the tremendous problems involved in maintaining suitable populations of game and fish. They are willing to seek the truth, and that makes a big difference in their cooperation with fish and wildlife technicians. Their patience will make the projects you mention pay off eventually, and they can thank themselves.)

Editor:

I am sending a picture of my 11-year-old grandson, Irving Akers, and his first buck. It was a fine eight-pointer, weighing 128 pounds, killed on the Saathoff ranch near D'Hanis.

Irving is one of your most faithful readers. I have given him a subscription for the past three years, and he wouldn't be without it.

He is the son of Mr. and Mrs. W. C. Akers, San Antonio.

Mrs. F. I. Anderson
917 Hot Wells Blvd.
San Antonio, Texas

First buck!

Club Member Expirations

Several months ago, the circulation department mailed letters to officials of various outdoor sportsmen's clubs of the state. We asked that TEXAS GAME AND FISH be notified whether or not your club planned to continue giving a subscription with each club membership.

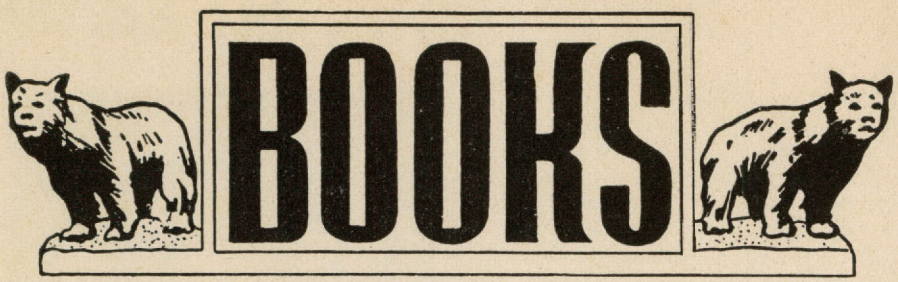
We now are changing our methods of handling subscriptions, renewals, and the mailing of the magazine.

It will help us greatly if you will let us know as soon as possible IF your club plans to continue giving members a subscription to the magazine.

Your cooperation will be appreciated.

In the meantime, we will continue to send expiration notices of club members to the designated club official. If your club has discontinued giving subscriptions with club dues, please drop these cards in the mails, so that the individuals will receive them. The cards will be pre-stamped for mailing.

Many thanks.



NATURAL SALT WATER FISHING BAITS by Vlad Evanoff. 96 pages generously illustrated with sketches by the author. Published 1953 by A. S. A. S. Barnes and Co., 232 Madison Ave., New York City 16. $1.75.

This book is one of the Barnes Sports Library series and is a companion to the earlier "Natural Fresh Water Fishing Baits."

Taking one natural bait at a time, including shrimp, small baitfish, crabs, sea worms, squids, and others, the book describes each, where it can be found, how it is obtained, methods of keeping, and how it is rigged and fished.

It is obvious that the author is much more familiar with bait and fishing along the Atlantic Coast than in our own Gulf of Mexico, and that seems to be its only weakness to the Texas angular. However, the veteran and beginner alike will pick up many tips, and, who knows, maybe we're missing something by not trying less familiar baits and methods in the Gulf.

FISHING BEHIND THE EIGHT BALL by Harlan Major, 254 pages generously illustrated with photos, sketches, and maps. Published 1952 by The Stackpole Co., Telegraph Press Bldg., Harrisburg, Penn. $5.

The author admits that he started rather late trying to learn the complexities of fishing—he was 12 years old. But since four big albacore introduced him to saltwater fishing and made monkeys of the veterans who took him along "for the ride" over 30 years ago, he has made up for lost time.

His specialty is moving into untried waters of the sea, learning of the fish which dwell there, and inventing methods and tackle for taking them. His "business" has taken him all over the world, and he was a pioneer fisherman in many of the waters now famous to saltwater anglers the world over. He helped make them that way.

During the war, thousands of GIs knew him as the guy who sent them tackle from a shop in his home, where volunteer workmen repaired and assembled fishing equipment donated by sympathetic fishermen all over the U. S.

Major's book leads the reader to every corner of the world held glamorous by the fisherman.

There isn't a dull sentence if you are a fisherman, and especially if you have a bit of Major's wanderlust in your blood.

HUNTIN' GUN by Walter R. Rodgers. 178 pages illustrated with sketches by Jim Berryman and Gib Crockett. Published 1949 Sportsman's Press, 1115 17th St., N. W., Washington 6, D. C. $3.50.

The author is the kind of guy you'd like to have around the campfire. He'd be sure to spin just the sort of yarns you like best about guns and hunting and shooting theories and the hunts and hunters he's known in nearly half a century in the outdoors.

A Time-Tested Favorite

That's just what Rodgers does in his book. The stories are told in down-to-earth language just the way you like to hear them. In fact, it was enthusiastic reader response to one of them after it appeared in the AMERICAN RIFLEMAN magazine that led the publisher to print the book after it had been turned down.

The settings are Texas and New Mexico. The stories are about such interesting subjects as the sharp-shooting old woodsman who lost the trigger from his gun and just went on killing game in one shot by slipping the hammer (he never used the sights, either), the turkey whose neck Rodgers aimed at and broke at 300 yards without breaking the skin, and a deadly squirrel gun that not only refused to kill rabbits but wouldn't even fire at anything but a squirrel.

All the stories lead up to Rodgers' interesting rifle shooting theory he calls "gun feel."

It all adds up to becoming so accustomed to your rifle that shots are aimed and fired in one movement—much like snap shooting a shotgun with both eyes open. His fascinating stories are about hunters who "prove" his theory, and he winds up by taking well-aimed cracks at some of the modern firearms.

HOW TO DRESS, SHIP, AND COOK WILD GAME.

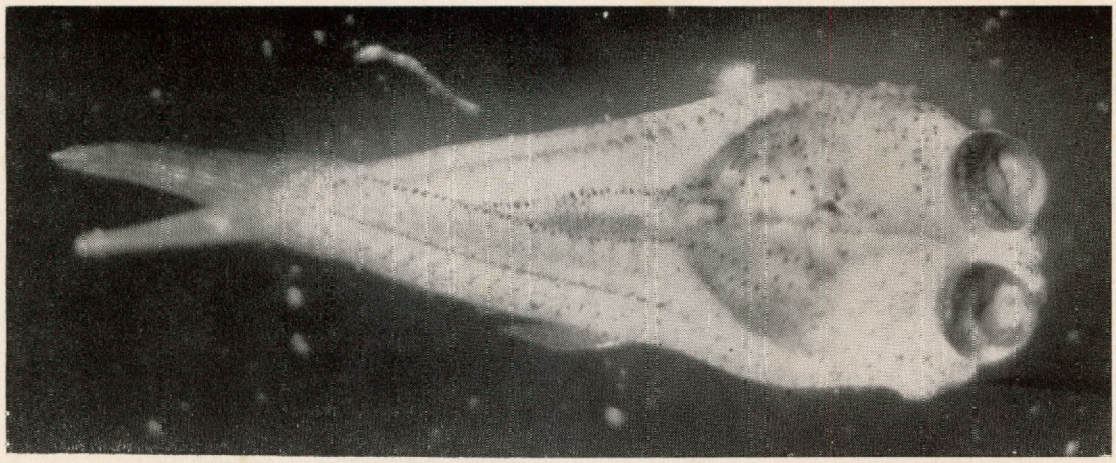
A dime will get you this interesting little booklet from the Advertising Division, Remington Arms Co., Bridgeport, Conn.

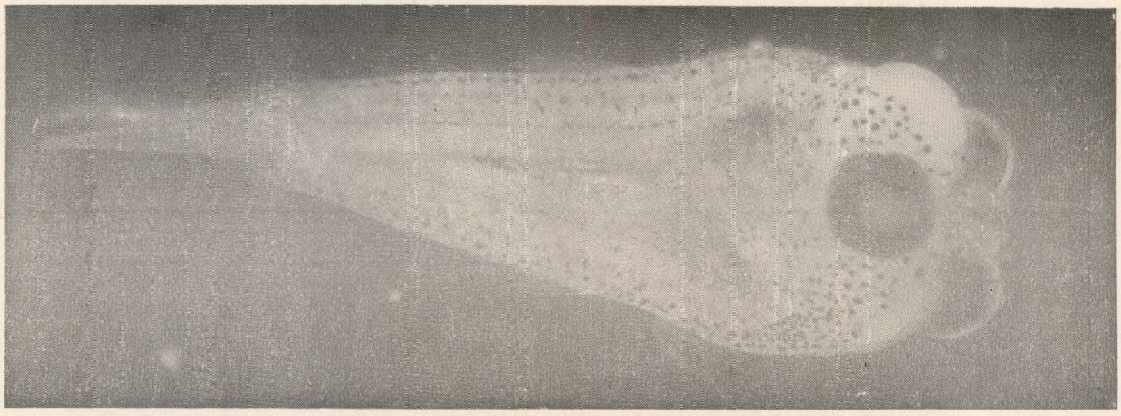
HOW TO GROW MINNOWS by Philip F. Allan. 63 pages illustrated with photographs, sketches, and "blueprint" type drawings. Paper bound. Published 1952 by the author, P. O. Box 1898, Fort Worth, Texas. $1.

This book should be in great demand. There is very little published material about this popular subject, probably because a new way to fail in the minnow business is discovered every day, but few know the secrets of success—and they won't tell.

Allan packs a surprising amount of material in this little book, and his unusual method of summarizing a chapter at the beginning of each one seems to help immeasurably.

The author, himself, cautions that "no book, however good, can tell you all that you need to know about raising minnows for profit." However, this book should get the beginner off to a good start in his studies.





The "Siamese twin" Peruvian guppies, which lived for two weeks at the Commission's Marine Laboratory in Rockport, were joined at the head. The three eyes they shared jointly can be seen in the lower photo. They were just over one-fourth-inch long when these photos were taken by Pat Pew of the laboratory staff.

'Siamese' Twin Guppies

MARINE Biologist Howard Lee was making a routine observation of a Peruvian Guppy bearing its young at the Rockport Marine Laboratory of the Game and Fish Commission. He noticed that two of the 53 young ones were joined together. Thus the birth of the Siamese twin fishes was formally chronicled.

They lived two weeks. Birth of fishes joined together is comparatively common, according to Lee, but the length of their survival is considered unusual.

The twins were given maximum care. They were placed in a separate container. The temperature was watched carefully. But from the start they failed to grow as fast as other members of the litter.

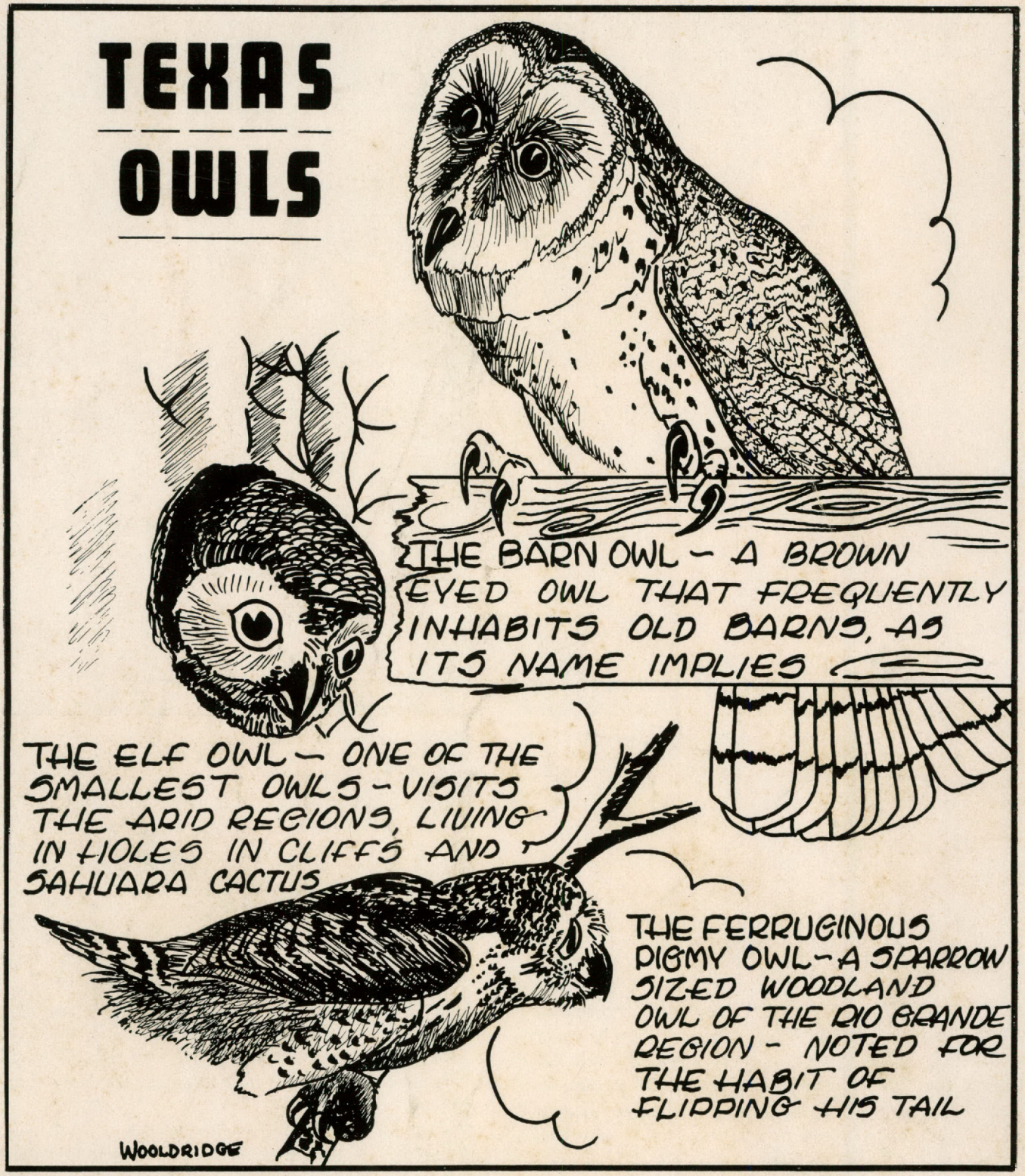
The laboratory staff helped keep close watch, observing the strange youngsters through a microscope and conjecturing on what might happen if the twins lived. The fish seemed to have fairly normal bodies, except that between them they had a total of only three eyes, set in sort of a triangle. Each had a mouth, gills, a tail, and a full set of fins. None of this was within ordinary sight. The aid of a microscope was necessary to detect the body characteristics.

The microscope also was used by Pat Pew of the laboratory staff to take the official photos shown here. She used a 3¼ by 4¼ Micam camera. The degree of magnification is evident when it is realized that the twins were no larger than a common housefly.

The photos were taken when the twin fish were nine days old. At that time they were seven millimeters or just over one-fourth of an inch long. This is about one-sixth the size of the average full-grown Peruvian Guppy.

The twins have been preserved for display at the Rockport Laboratory, which has an assortment of live and preserved fish and other marine life on exhibition for the public.—*Jay Vessels.*

TEXAS OWLS



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