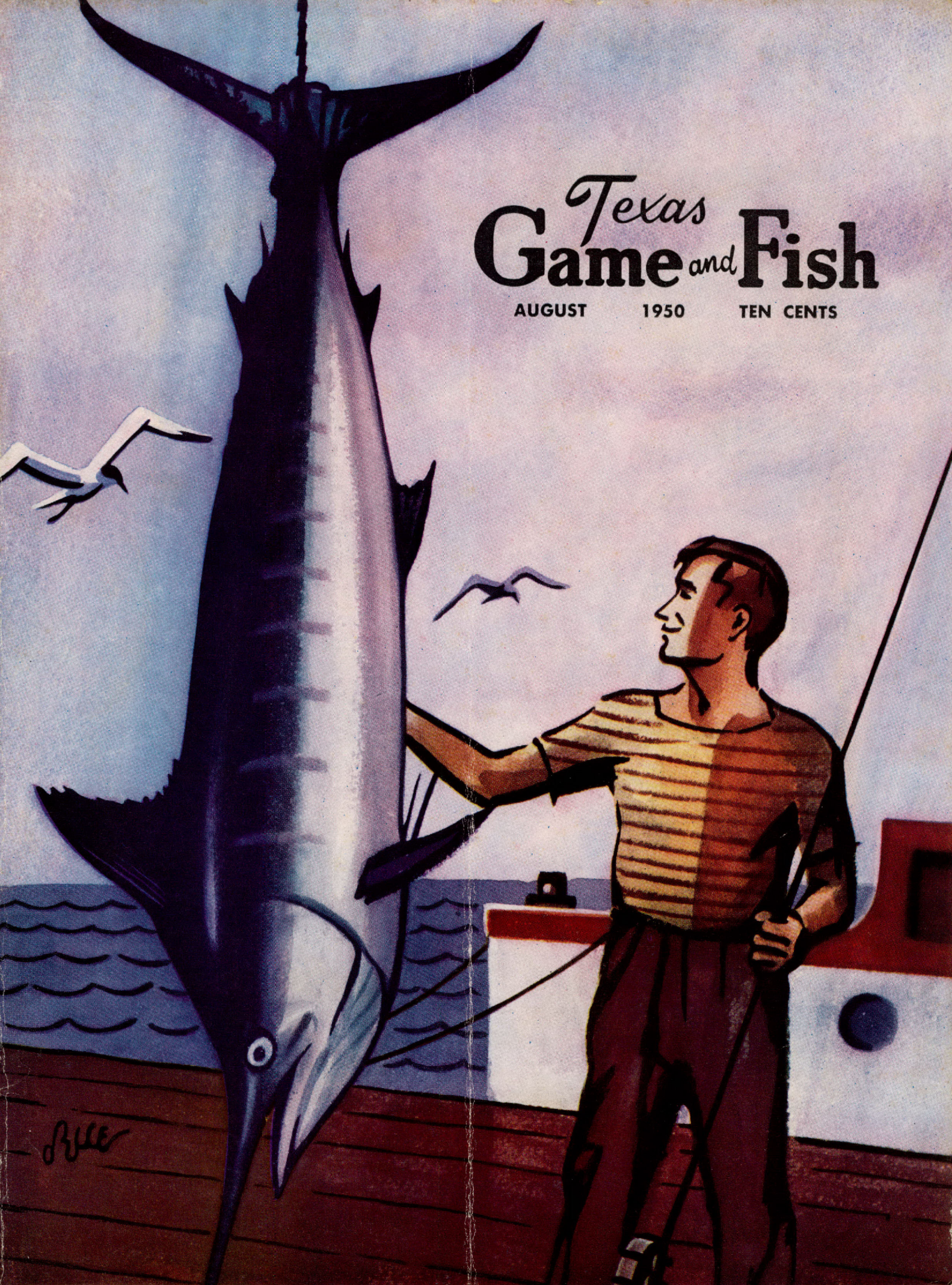


Texas Game and Fish

AUGUST 1950 TEN CENTS

MOURNING DOVE – WHITE-WINGED DOVE OPEN SEASONS 1950

MOURNING DOVES-

OPEN SEASON - NORTH ZONE: Sept. 1 to Oct. 15, both days inclusive. Shooting hours, one-half hour before sunrise to sunset.

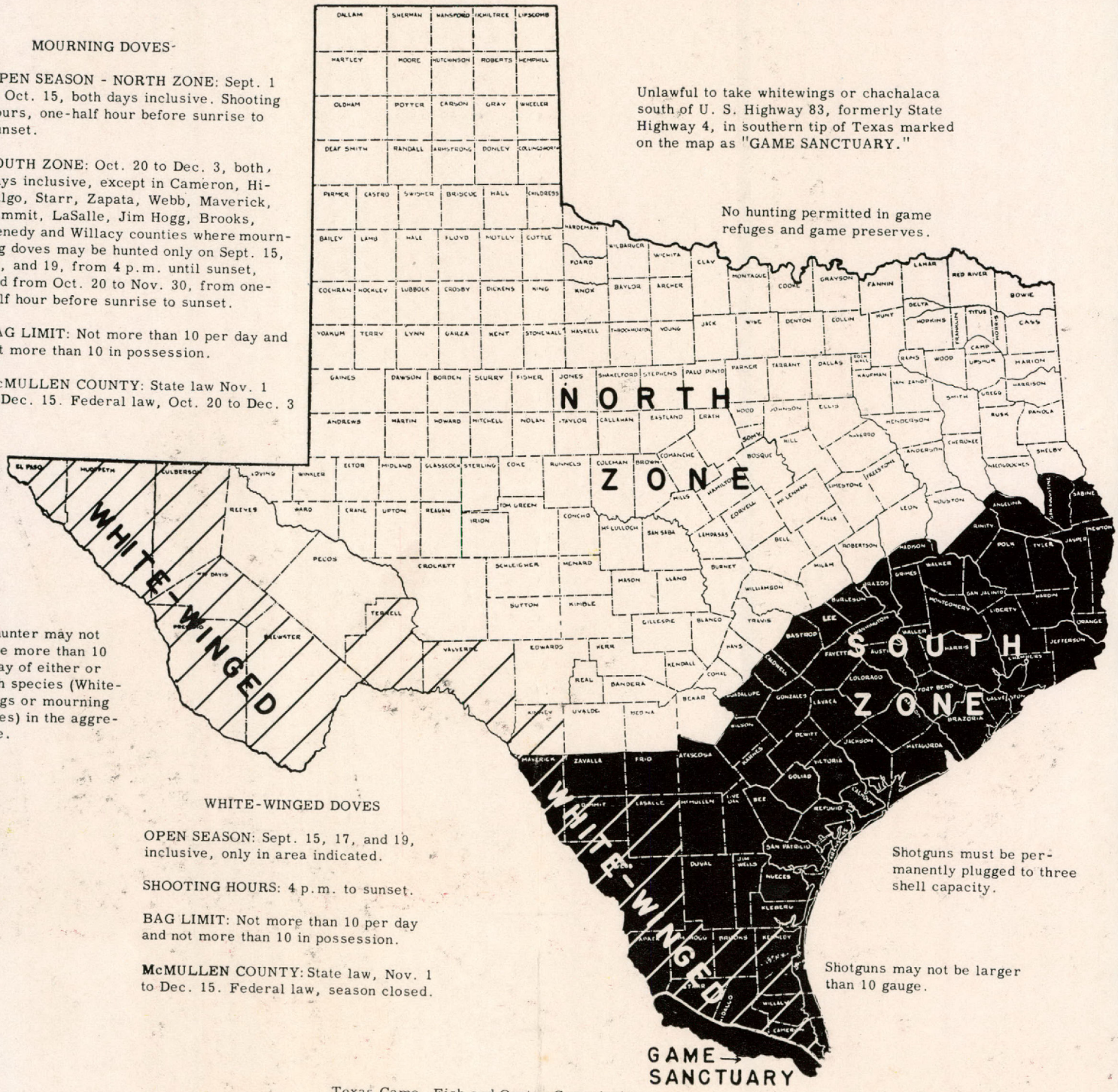
SOUTH ZONE: Oct. 20 to Dec. 3, both days inclusive, except in Cameron, Hidalgo, Starr, Zapata, Webb, Maverick, Dimmit, LaSalle, Jim Hogg, Brooks, Kenedy and Willacy counties where mourning doves may be hunted only on Sept. 15, 17, and 19, from 4 p.m. until sunset, and from Oct. 20 to Nov. 30, from one-half hour before sunrise to sunset.

BAG LIMIT: Not more than 10 per day and not more than 10 in possession.

McMULLEN COUNTY: State law Nov. 1 to Dec. 15. Federal law, Oct. 20 to Dec. 3

Unlawful to take whitewings or chachalaca south of U. S. Highway 83, formerly State Highway 4, in southern tip of Texas marked on the map as "GAME SANCTUARY."

No hunting permitted in game refuges and game preserves.



A hunter may not have more than 10 a day of either or both species (Whitewings or mourning doves) in the aggregate.

WHITE-WINGED DOVES

OPEN SEASON: Sept. 15, 17, and 19, inclusive, only in area indicated.

SHOOTING HOURS: 4 p.m. to sunset.

BAG LIMIT: Not more than 10 per day and not more than 10 in possession.

McMULLEN COUNTY: State law, Nov. 1 to Dec. 15. Federal law, season closed.

Shotguns must be permanently plugged to three shell capacity.

Shotguns may not be larger than 10 gauge.

Texas Game, Fish and Oyster Commission.

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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COVER—By Orville O. Rice

★ In This Issue ★

August, 1950 • Vol. 8, No. 9

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ROBERT G. MAUERMANN
Editor

The Cover

The blue marlin of the Atlantic Coast is the subject of this month's cover by Orville Rice. This highly prized big game fish occurs in the Gulf of Mexico, and in recent years this deep sea fighter has been taken by sportsmen off the Texas Coast.

El Paso Fish Blitz

EL PASO, in far western Texas, is looking forward to better home fishing facilities now that Ascarate Lake is undergoing a general overhauling. An examination of the lake by Game Department biologists indicated that poor fishing was caused by an overpopulation of rough fish. Since the lake was too large for seining operations, biologists considered it desirable to eliminate all of the fish in the lake by chemical means. By completely eliminating the fish population, Ascarate Lake will take on the characteristics of a new lake. And all fishermen know that when a new lake is properly stocked, it takes only a short time for it to produce good, catchable fish.

State Game Department crews sprayed the lake with a chemical which caused the fish to rise to the surface. The chemical used by the biologists causes the fishes' gills to swell making it impossible for them to extract oxygen from the water. Although the fish are killed they are not unpalatable.

Restocking the lake with bass, catfish and crappie will begin late this summer. A filter system will be installed at the inlets of the lake to keep out the undesirable species. Tentative plans are to reopen the lake to angling next May.

Marion Toole, Chief Aquatic Biologist of the Game Department, shown above standing next to the barrel on the float with back to camera, said the work on the Ascarate Lake represented the largest fish improvement project in the state's history. The El Paso representative of the Game Department is Game Warden Norman Chamberlain who is shown on the right side of the platform in the photograph.

BIRD FESTIVAL

By FRED D. THOMPSON

AN AVERAGE TRAVELING man pulling up at Rockport Cottages for a comfortable place to spend the night is greeted politely, shown to his bed and bidden goodnight and sound sleep. It's all in the day's work for Jack Hagar, owner of the cottages.

Usually, however—indeed in recent years it almost has become the rule—the filling of cottages with customers is a much more dramatic occasion calling for the assistance of his wife, Connie Hagar.

My wife and I arrived early in the evening on the first day of April. Doris had a binocular case swinging from the shoulder. That was the tip-off. "Come here, honey," Jack cried good naturedly. "Here's a couple of bird nuts!"

"Bird nuts"—including most of the leading ornithologists of the United States as well as many in-between students and rank amateurs, in which class we belong—have been the chief patrons at the cottages for many years. This is due exclusively to the intelligent interest Connie Hagar has shown in bird life of the Rockport area. An "average traveling man" seldom is lucky enough to get accommodations there. Even the most important ornithologist in the country has long since learned to make reservations a week or more in advance. Rockport's bird festival—wave upon wave of land, shore and water birds going or coming to their seasonal nesting or wintering grounds—is a year-round show. It is not appreciated by Texans. Only three or four professors from Texas educational institutions have made regular trips to Rockport to observe and study the birds. On the other hand, the cottages were almost filled with learned men and amateur birders from New Jersey, Pennsylvania and New York when we arrived. And when we left in mid-April they housed eighteen orinthologists from Purdue, the University of Illinois and Kansas State.

Connie Hagar is a tiny, dainty but not prissy individual of 93 pounds with a sharp, well-trained mind. She impresses beginning birders with the necessity of thoroughness and accuracy. Every morning and every evening for about 16 years she has been observing and studying birds along the Rockport beaches, in the grove of 252 beautiful hurricane-swept live oak trees in the really spacious backyard of their 11-acre tract, and on the wet prairies of the surrounding area. In those years she has identified 477 species and sub-species of birds, more than ever have been reported from any Texas locality by any one individual. Her observations have overturned several pet theories of migration routes held by men high in the field of ornithology. Some of her discoveries were of birds that "didn't belong there" under any circumstances. But her reports were so persistent and well-authenticated that finally some of the high ornithological brass had to make personal trips to Rockport to investigate. That is how the year-round "migration wave" of ornithologists to Connie Hagar's place started. There may be other spots along the Texas coast just as rich in bird life, or richer. But until they produce a Connie Hagar to make that fact known, Rockport will remain not only the bird capital of Texas, but one of the bird capitals of the entire world.

Dr. and Mrs. Robert Lockwood

"Connie" is her nickname. He real name is Conger. Her father, Judge R. S. Neblett, was born in Old Anderson near Navasota in Navarro County and later moved to Corsicana, where Connie was born in 1886. He was a man with considerable perception of Nature's workings, and it was from him that Connie, then about seven, received her introduction to the mysteries of bird life—by being told firmly but kindly not to rob birds' nests of their eggs! The little girl's interests were not confined to birds. She began studying piano at the age of six and after finishing high school continued her musical education at Forest Park College in St. Louis and the American Conservatory of Music at Chicago. While in the latter city she at the same time majored in literature at the University of Chicago.

Unlike many wives, she has used her formal education not as a retreat to self-satisfaction but as a doormat to further maturity. Any bird conversation one has with her might at any moment branch off into philosophy, literature, music, politics (rarely), trees, flowers and other vegetation and even seashells, of which she has a remarkable knowledge. Every Sunday she plays the organ at the Christian Science Church at Aransas Pass, but she does not belong to that or any other church. She says Nature, not men, preaches the best sermons.

And Jack Hagar—oh, him! He's not a "bird nut" but as there are few husbands anywhere who would pick up bag and baggage and move to another city because his wife liked the birds there better, Jack Hagar's picture deserves to hang in some national Hall of Fame.

Connie married Jack, a native of Boston, soon after she returned from her schooling in Chicago. He is of English extraction and a man of never-failing humor. He

AT ROCKPORT

was well-off financially, was soon to retire from active business and spends his time looking after his various properties. Connie spent her spare time for 11 years banding fledgling birds for the Bureau of Biological Survey (now the U. S. Fish and Wildlife Service) and took a leading role in a nature club she had organized. Things seemed delightfully settled.

Then came May of 1933. Connie went to Rockport, which she had never visited, with an ailing sister who had been ordered to rest in the salty sea breezes of the coast. (It later turned out there was nothing drastically wrong with the sister, but Connie still feels that the doctor who ordered the trip deserves some sort of bonus). They put up at a tourist camp and stayed through August. In those four months Connie Hagar saw more birds on some single days than she had seen in all her life at Corsicana. Water birds and shore birds along the beaches and salt flats in front of the cabin, and behind and around her scores of species of land birds, especially during the spring migration, or Big Push! It was a huge dish for an inlander.

"And I didn't have a Peterson's Guide with color plates to help me identify them," Mrs. Hagar recalls. "I needed so much help, but there wasn't any. I had to tackle it alone."

Returning to Corsicana with her sister in September, Mrs. Hagar, with utmost tact, began the "Let's Move to Rockport" seige. It wasn't much of a seige, Jack Hagar being the kind of man he is. In 1934 they visited Rockport together and Jack bought the cottages where his wife and sister had lodged the previous summer. He had never been in the tourist trade business. But, he said, "I had to have something to do while Connie went out to look at the birds." In January of 1935 the deal was completed and the Hagars moved in permanently.

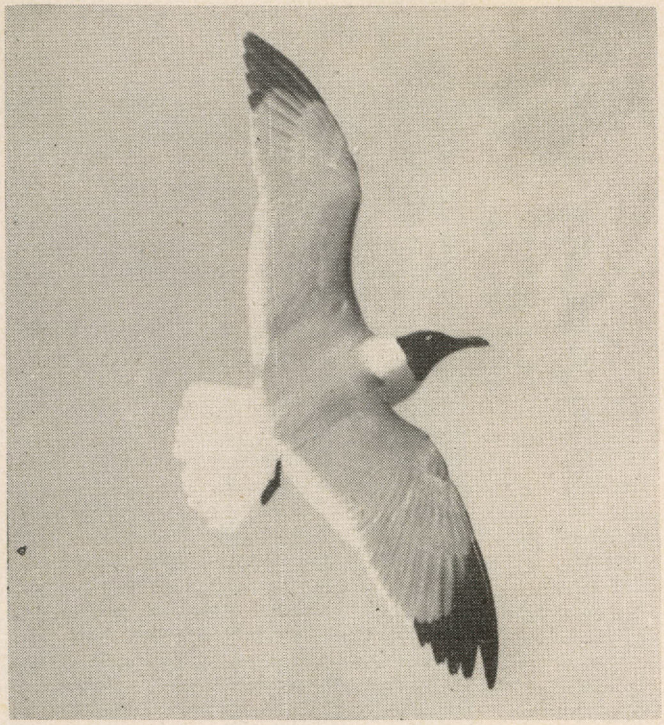
And in the intervening years Connie really came to know the birds. In winter the hunters blazed away at ducks drifting in by the thousands and tens of thousands, while Connie hunted them down with binoculars. Her "bag" was heavy. Into it through lenses went the ruddy duck, red-breasted merganser, buffle-head, goldeneye, lesser scaup, canvasback, ring-necked, redhead, shoveller, cinnamon teal, blue and green-winged teal, pintail, baldpate, gadwall, black duck, mallard. And for extra measure she "brought home" the comical black skimmers, terns, gulls, sanderlings, godwits, dowitchers, yellowlegs, willets, sandpipers, curlews, Wilson's snipe, ruddy turnstones, plovers, oystercatchers, rails, ibises, American and snowy egrets, herons, cormorants, pelicans, loons, grebes—and the list could go on. Spring meant more shore birds and as they arrived the Big Push of the land birds started. Wave upon wave of warblers, swallows, orioles, tanagers, sparrows, vireos, grosbeaks, buntings, gnatcatchers, flycatchers and other forms swept up from the coastal prairie, lighted in the Hagar oaks and then kept flying north. In the ornithologically "dull" season of August and September egrets and other nesting water and shore birds were bringing off their young, and Connie was kept as busy as ever banding them.

As she took in the grand pageant, citizens of Rockport began to take her in. They couldn't quite figure her out. By and large, they still can't. But they have developed a larger tolerance for her enthusiasm for birds. A restaurant man with whom I talked put it squarely on an economic basis. "She's good for the town," he said. "She brings a lot of people in here, and they spend money." As Connie over the years came to be more and more in demand over Texas as a speaker on various aspects of Nature and conservation of natural resources, her fellow citizens grew proud of her, even if they didn't fully understand her. She gave the town an intellectual lift.

Meanwhile back in 1935 as she struggled to identify this species and that, she longed for an intellectual lift herself. By accident she found it. George Williams, professor of English Literature at Rice Institute in Houston, studies birds as a hobby. He was preparing to publish the first issue of the GULF COAST MIGRANT, a publication now highly esteemed by bird students everywhere. He wrote the Rockport superintendent of schools requesting bird lists from the Rockport region. These would be incorporated into a digest which would attempt for the first time to correlate records of independent observers along the coast. The superintendent turned the letter over to Mrs. Hagar. She responded immediately with such an impressive succession of lists that Mr. Williams soon paid her a visit, and for the first time she felt the exhilaration of bird watching with a person who really talked her language.

Her contributions to the MIGRANT came to the attention of Dr. Harry C. Oberholser, then senior biologist of the Biological Survey and THE authority of all

Mrs. Connie Hagar



Franklin's Gull

authorities on Texas birds. He has now, after 50 years of painstaking research, completed a monumental three-million-word book on the birds of Texas only to find that publishers won't accept it for publication because it has only "local appeal"—this despite the fact that nearly two-thirds of the birds of the entire United States either live in Texas or pass through this state in migration. But that is another, and tragic story which hundreds of bird students in Texas and many other states hope will someday find a happier ending.

Dr. Oberholser wrote to Mrs. Hagar in June of 1937 asking for lists of Rockport birds. Mrs. Hagar was unaware of his great reputation as an ornithologist. She furnished him lists gladly, assuming he was just another person interested in birds. It happened that on one of the lists she reported seeing a nesting warbling vireo and a sooty shearwater.

Dr. Oberholser wrote back, asking if Mrs. Hagar were sure. The good doctor said Mrs. Hagar probably had the warbling vireo confused with the Bell's vireo. Otherwise, Mrs. Hagar had the warbling vireo nesting 400 miles south of its nesting range as then known.

As to the shearwater, Dr. Oberholser had a few questions. Where was it seen? What was it doing? How close did she get to it? For how many days did she see it? Who else saw it?

She showed the letter to her husband. Now Jack may not be a bird watcher, but he's no person to stand idly by and see his wife practically made out a liar.

"Who is this Oberholser fellow anyway?" he stormed. "Don't answer that letter! Throw the d - - - thing in the wastebasket! No man is going to doubt my wife!"

But Connie answered the letter. She explained that she knew the warbling from the Bell's vireo because she had banded the Bell's in Corsicana: and as for the shearwater, two friends of hers, both birders, were along when she identified it and then one of them took a picture of it. She enclosed the picture.

Dr. Oberholser was convinced, not only of the identification, but of the fact that Mrs. Hagar was working in an ornithological gold mine. Soon he paid her the first of six visits, all mutually profitable. And others started coming, including Ludlow Griscom of Harvard, regarded as America's greatest field ornithologist: Dillon Ripley of the Peabody Institute, Yale University and the list could be extended into a Who's Who of the bird student's world.

Mrs. Hagar has added six birds to the Texas state list: the shearwater already mentioned, the Lucy warbler, great white heron, Wurdemann's heron, American scoter and the harlequin duck. In addition she reported the only Flamingo ever known to be seen on the Texas coast—a straggler apparently blown in from its tropical home by a hurricane in 1941.

Mrs. Hagar has never killed a bird, nor has she collected eggs, with the exception of that one time in her early youth. She has little use for the habit of many prominent ornithologists of "collecting" specimens to verify identification or to mount in some museum as testimony to their prowess as bird watchers. On occasion she becomes irked with some of her learned visitors. While we were there, standing almost terrified among such bird authorities as Mrs. Hagar, Dr. Robert Lockwood and his wife, Ann (about whom more later), and a whole squadron of ornithologists from Purdue, Illinois and Kansas State, the story got around that one of the experts had wanted to "collect" eggs from the nest of a roadrunner nearby. Through the tactful interference of Dr. Lockwood, the nest was not molested.

"Do you think it would hurt if I collected those eggs?" the expert asked.

"I don't think Mrs. Hagar would like it," replied Dr. Lockwood. Mrs. Hagar's likes and dislikes count for something in those parts, no matter how high in scientific circles the would-be nest raider might stand.

It can be easily gathered that with great men of science swarming into Rockport Cottages during the spring, and coming and going steadily the rest of the year, Mrs. Hagar cannot possibly give to each the time

Young Great Blue Herons

Snowy Egret

necessary for a comprehensive bird walk. And remember, she gives just as much time to amateurs as she does to the experts. She needs the kind of assistance not easily found. For the last three years she has been fortunate in having as guests at her cottages the Lockwood family.

Dr. Robert Lockwood is one of those rare medical men whose knowledge of wildlife extends radically beyond that indicated by the moose head so many medical men display in their reception rooms. A native of Haverford, Pa., he is the son of a college professor who invited but did not order his son quite early in life to participate with him in an understanding of the out-of-doors. Young Robert took to birds like ducks to water.

Brilliant in his studies, he finished work on his medical degree at Harvard at 21 and then joined the medical corps when World War II broke out. He was stationed for a time in Louisiana, where his terrific energy in an Army hospital backfired, rendering him a patient. Long stays with the birds at Rockport over a three-year period have now mended him and he is back at work in a Veterans Hospital at McKinney. Ann Lockwood knew nothing of birds when they first went to Rockport. With her husband's encouragement a natural feeling for Nature blossomed. There are few if any birds on the Texas coast beyond the ken of either "Dr. Bob" or Ann. And without their voluntary aid in taking scores of bird watchers into the fields, Mrs. Hagar during the months the Lockwoods lived there would have been perpetually swamped.

Such was the environment, physical and intellectual, in which we found ourselves when Jack Hagar boomed out that a couple of "bird nuts" were here. Connie Hagar stepped into the reception room briskly, neatly dressed, not at all resembling the Outdoor Woman of popular fancy. Her blue-gray eyes danced as we told her we didn't know anything about birds—much—but would like to learn. We had been at the business for two years and had identified, for sure, 29 species of birds of the Austin region, we said, but our friends Roy Bedichek and Dr. Thomas P. Harrison of Austin had kept urging us to go on a bird walk with her, and here we were. Would she possibly have time to take us on just a brief tour?

She would gladly show us the whole works, she said. Which she did, beginning promptly at 2 o'clock the next afternoon. (When you make an appointment with Connie Hagar you'd better be there on the dot!) We wore khakis and blue jeans; Mrs. Hagar's birding costume was a smartly tailored red dress, again in violation of the Outdoor Woman tradition. With binoculars readied for action we three and Patch set out. Don't forget Patch! He's a black and white terrier, Mrs. Hagar's constant companion on bird walks. And he knows what to do when there are birds around—he never makes a move or a sound. He might bark all he wants to at cars up ahead, but Mrs. Hagar has properly trained the frisky creature as to his conduct when with birders.

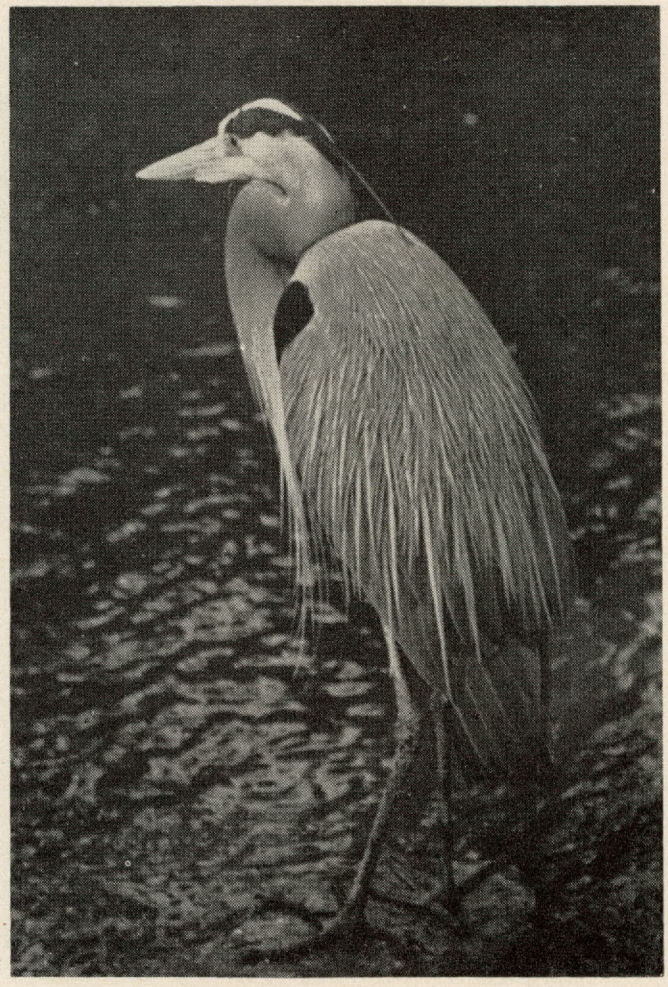
Yes, Mrs. Hagar showed us the works—over a hundred species and sub-species of birds, all new to us, in the space of five hours! Small ponds on the prairies were alive with snow geese; long-billed curlews swirled in front of our car near the bay waters, gulls, terns, willets and ruddy turnstones had us tearing the guide book from each other's hands. There were black-necked stilts resembling sophisticates from the pages of the New Yorker, and avocets, American, snowy and reddish egrets and marbled godwits, dowitchers, and cormorants—how long would it take a person to learn all this!

We returned to the cottages with a bad case of mental indigestion. But Mrs. Hagar was encouraging. "What you both should do," she said, "is get a good night's rest. And then in the next few days go out by yourselves and see if you can identify all the birds I've helped you with today. Don't rush. Don't try to learn in two weeks the things it took me sixteen years to learn."

We learned much in those two weeks. Such knowledge is hard to evaluate. As Abraham Lincoln said, "For people who like that sort of thing, that probably is about the sort of thing they like."

We like it. As bird watchers we still are greenhorns, first class. But we know the challenge of a strange color on beating wingtips, or the unfamiliar eloquence of some transient singer. And the song of the lark sparrow is comforting after listening all day to the whines and shreikings of men and their machines.

Great Blue Heron



Fisheries Exploration in the Gulf of Mexico

By J. L. BAUGHMAN
Chief Marine Biologist

THIS SUMMER two vessels, one to do exploratory work, the other to solve biological problems, will begin work in the Gulf of Mexico. These vessels, the Alaska and the Oregon, staffed by members of the U. S. Fish and Wildlife Service, and working in cooperation with the Gulf States Marine Fisheries Commission, are beginning a long needed survey of the fisheries potentialities of the Gulf where, west of a line running roughly from New Orleans to Cabo Catoche, Yucatan, we know almost nothing.

It is true that an occasional survey vessel has touched the eastern portion of that area. The Dana expedition crossed the southern tip of it, between Cabo Catoche and the western end of Cuba and once or twice a survey boat belonging to one of the Federal agencies has crossed the line, making a few minor collections. Within recent years, the Atlantis (concerned primarily with hydrography and deep-sea collecting) has also covered a part of the area, although this work was interrupted by the war. The Pelican was for some years utilized in this area in shrimp investigations, also, but as no reports have as yet been published on the findings, there is no way of determining what fishery observations, other than shrimp, were made by the scientists composing her crew. However, our knowledge of the area is still limited.

This is unfortunate for the great growth of our Gulf fishing fleet during and since the past war, resulting in over 4,000 fishing boats in the western Gulf of Mexico at the present time, exclusive of those under Mexican registry, has placed an undue pressure on our fisheries, particularly in the states of Louisiana and Texas, where these boats are located. As a result such a survey becomes increasingly desirable and necessary, because only by accurate knowledge can we utilize and conserve these resources to their fullest extent, and perhaps, provide for the expansion which must take place if we are to retain our present fleet.

The shore resources of the region, both fin fish and crustacean, (although even now we do not have enough knowledge of the life histories of most of the species involved), are fairly well known and it is not in this direction that such an investigation should be pointed. Rather we should, once and for all, determine the offshore potentialities of the vast and mysterious region in question.

Some years ago, off Port Isabel, Texas, a number of tuna were caught which proved to be Lesson's black-finned tuna. Fishermen, to whom I talked later, said that at times miles of the Gulf's surface was white with the plunges of this and other larger species which they believed to be the yellow-fin. Linder and others of the U. S. Bureau of Fisheries, in listing the fishes of the Caribbean, state that there are at least four species of tuna present in that area, as well as albacore, and 3 species of bonito.

Two Survey Vessels To Conduct Research

I quote from an unpublished report of these gentlemen:—

"Open-surface offshore areas are the least known of the Caribbean habitats," and, interpolating, of the Gulf of Mexico. "The off-shore-oceanic region is perhaps the least productive of food-organisms, for the supply of nutrient salts is low. Yet all available evidence points to considerable supplies of fish in the 'blue' waters. The fish in this habitat may be divided into two groups—the long-range migratory species such as tuna, swordfish, marlins and sailfish, and the limited migratory species such as Spanish mackerel, kingfish, flying fish and dolphins. The first group appears seasonally, passing through the Caribbean along fairly definite channels; the second group has been available to shore fishermen only at certain times of the year, but may possibly be taken in quantity offshore at other times." **Hardly anything is known of the distribution, abundance, migration routes, or seasonal occurrence of the pelagic fishes.** "Since the abundance of these migratory fishes is not directly effected by the low productivity of the Caribbean Sea, there is some reason to believe that considerable amounts might be taken with proper methods. Limited migratory species . . . are not now being utilized to the extent possible, and this is due chiefly to the limited radius of the present fishing methods.

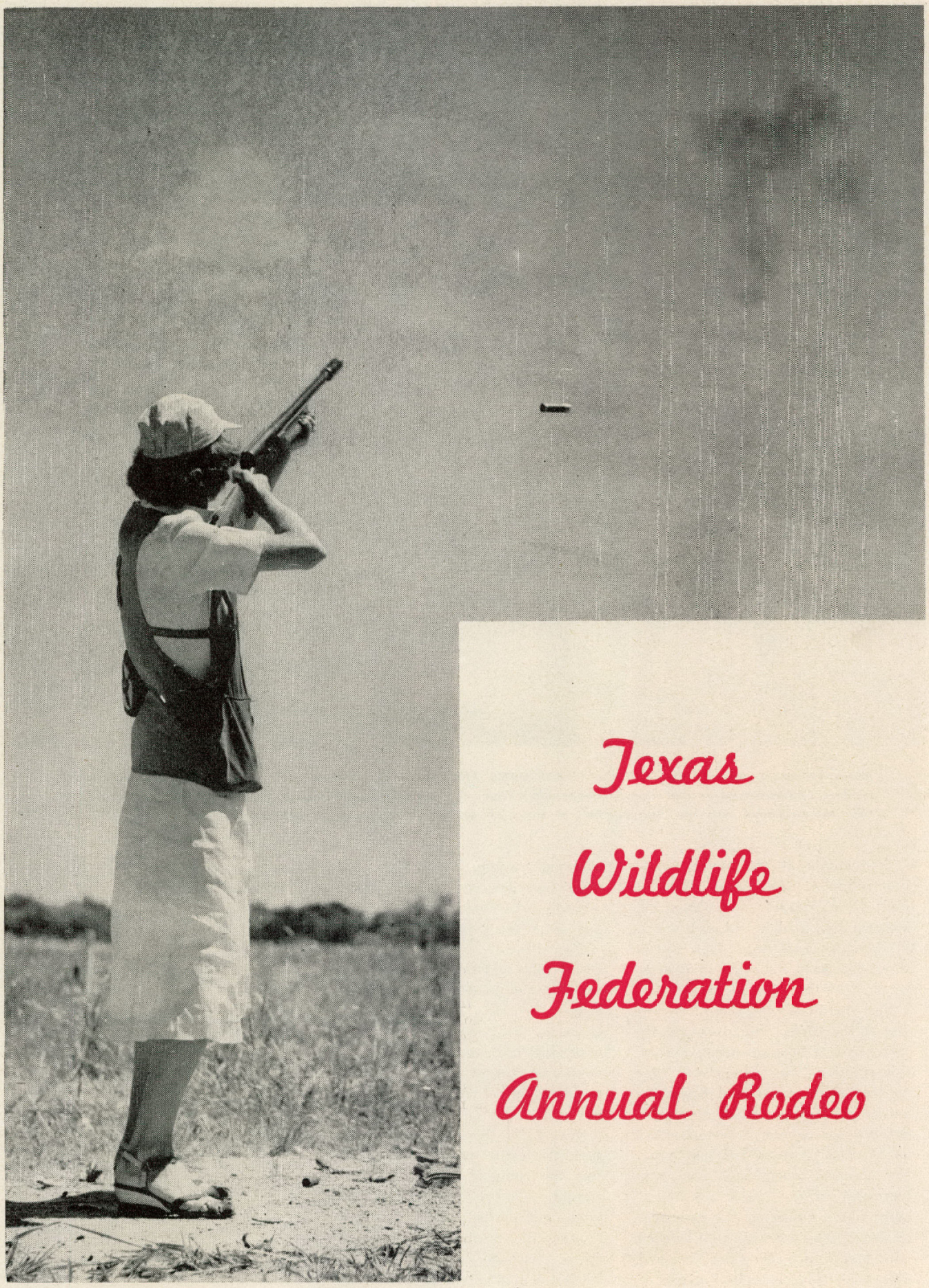
"From all evidence available and after consideration of the other habitat types, it is suggested that the fisheries for the pelagic species . . . both inshore and off shore . . . offer the greatest possibilities for fishing expansion in the Caribbean area."

The conclusions stated above probably hold true for the Gulf of Mexico also. Most of the species mentioned as occurring in the Caribbean also occur in the western Gulf. A noteworthy fact is that while Lindner's commission lists these species as occurring in the eastern Caribbean, they do not know where they come from, or where they go, and if they have any knowledge of the western Caribbean, they do not mention it. They do say, however, "There are many gaps in the area studied, and new species, doubtless, will be found with more intensive field work and collecting methods."

The above statement might just as well read "old species will be found in new areas with more intensive exploration." Such intensive exploration cannot be done, however, on shore. Exploration of a vast area of sea surface takes boats, men, time, and effort, which should be furnished by the federal government.

An interesting possibility that might be developed by such a fisheries survey is connected with the Pacific tuna fishery. Whether or not we can develop a Gulf or Caribbean tuna fishery remains to be seen, but, the fact is, there are tuna within fishing distance of the Gulf ports that we now know about, for the tuna fishing ground of the Pacific are many hundreds of miles closer to Houston and New Orleans than they are to the Californian ports from which the tuna clippers now operate. Development in the Gulf and Caribbean of the pres-

• *Continued on Page 29*



Texas Wildlife Federation Annual Rodeo

Adam Wilson III, former Gun Editor of TEXAS GAME AND FISH, tries his hand at firing one of the old time muzzle loaders. Enthusiasts of ancient model rifles trekked from the far corners of Texas to try their skill in this event. The rifle shown above was the "Big Bertha" of them all and is the property of John Brown, Stacy, Texas.

Contestants at the annual wildlife rodeo of the Texas Wildlife Federation competed for trophies, merchandise, medals and cash worth in the aggregate more than $3,000 when the meet was held in Brownwood the latter part of May.

The facilities in Camp Bowie, site of the 1949 rodeo, were greatly increased for holding all the events. Construction was completed for another skeet range and house together with traps which accommodated twice as many skeet shooters as there was room for last year. The casting tournament pool was increased in size to a seventeen-acre lake containing 135 acre-feet of water. The lake was well stocked with bream and other pan fish and was ready for the added event of a Junior Anglers contest. Prizes were awarded to Junior Anglers according to contest rules without any entry fee being charged.

The Brown County Rifle and Pistol Club and the National Guard completed a modern indoor target range for pistol and small bore shooting. This range was equipped with steel backstops; sand pits, and automatic target carriers. It accommodated as many as nine shooters at a time.

One of the features which added greatly to the rustic environment was the camping area where contestants and visitors spread their tents and parked their trailers to "rough it" during the three-day rodeo. Because of the varied facilities, contestants thus were virtually able to compete from their own "front porches."

The Texas Wildlife Federation, in cooperation with the Brown County Sportsmen's Club, sponsored the rodeo as one of the major annual programs for persons interested in the various affairs associated with the outdoors. The primary purpose of the Federation is to give sportsmen's groups a strong central organization through which they can coordinate their efforts for the benefit of all conservation-minded Texans, present and future. Officers of the Wildlife Federation are Loy Brown, Brownwood, president; Dr. Frederick Weston, San Antonio, vice-president; and W. G. Streckert, Brownwood, secretary.

In the finals of the bird dog bench show line-up before the critical eyes of the judges are left to right, W. J. Barker and his setter, Patsie; C. L. Rothacher and Punch; and Joe Wilson and Joe's Wahoos Pal. Below, C. L. Rothacher and Punch, winner in the best derby contest.

The photo on the right shows a few of the contestants lining up for the fishermen's event. Below, members of the Andy Davis family, of Ft. Worth, display their trophies and prizes. Mr. Davis won second prize in the seniors' 5/8-oz. fishermen's event. Mrs. Davis was runner up, taking third place. Bennie Davis, third from left, won first place in the 5/8-oz. junior fishermen's event. His brother, Jackie, took fourth place.

Jack Garrett, Amarillo, is taking his turn in the skeet shooting event.

The trap shooting range saw keen competition between some of the outstanding marksmen in Texas. The picture at right shows several of the trap shooters in an early morning warm-up.

Wherever tests of skill are exhibited, there is usually an audience. Both contestants and observers had ringside seats at the skeet and trap shooting events.

The pistol range was popping with activity throughout the three-day meet. In the upper photo, individuals and team members check their sights before competition begins.

Quail Populations Reflect Agricultural Changes

Declining bobwhite populations have caused much concern to sportsmen, game administrators, nature lovers, and landowners throughout the broad range of this popular bird.

Except in a few localities, quail numbers have declined in spite of reduced bag limits and curtailed seasons. Through history, quail have fluctuated with the quality and quantity of their habitat, and few important game species are more dependent upon human activity for survival. When Columbus landed, the bobwhite found conditions it required only along the coast and on river plains, on the fringes of prairies, and around Indian agricultural clearings. When the white settlers pushed inland, cutting and hewing homesteads from the forests, the quail followed.

Agricultural methods of a few decades ago provided ideal conditions for the bobwhite. Rail fences overgrown with a variety of vines, relatively small fields, and weedy croplands produced an abundance of food and unsurpassed cover. The development of mechanized farming changed all that. Fields became larger, and barbed wire replaced the brushy fencerow. Corn and small grains, once harvested inefficiently by hand, and often stored in shocks in the field, were reaped with increasingly improved mechanical pickers and stored in bins. Weeds that come in after the harvest and which might have provided an excellent store of food were discouraged by chemical weed killers. The farm in many places became a production unit as efficient as a rolling mill and provided only a little more year-around food and cover for quail.

Today we are undergoing a second major agricultural revolution. Without sacrificing an iota of efficiency, farms, through the soil conservation program, are being made more attractive to wildlife. Barbed wire gradually is giving way to multiflora rose, woodlots are being fenced against grazing, and lespedeza field borders are replacing barren, eroded margins of cropland. The greatest hope for the future of the quail as a gamebird lies in the success of this program. Many sportsmen are working closely with farmers and with local soil conservation districts to increase its acceptance and to spur its progress. These men will be hunting quail when others are reminiscing of the quail hunts of yesterday.

Fish On A Mandolin String

By Marvin R. Mace

"FISHING SURE was good this afternoon; those babies were sure playing a tune," a central Texas angler confided in me as I stood in the local hardware store trying to decide on a bait that would look good enough to a big bass.

"What they hitting?" I asked eagerly.

"Size E mandolin string," he replied in such a manner that I almost believed him for a minute. Then this sun-browned Texan proceeded to show me how he had fought and landed more than 100 pounds of gar that hot afternoon on a piece of wire no bigger than your hair.

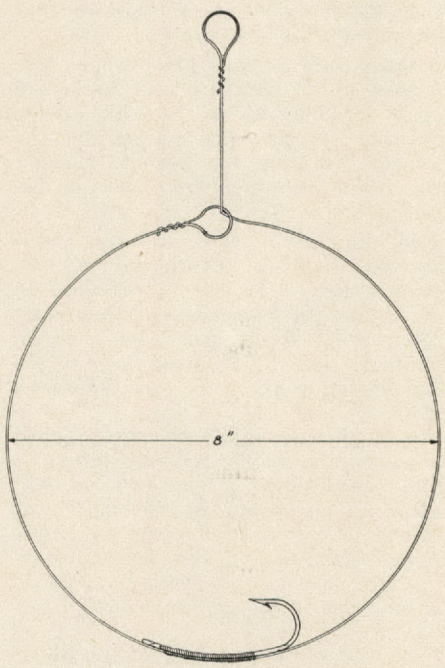
First, he twisted a small eye in the end of a mandolin E string. Next, he threaded the loose end back through the eye to make a miniature lasso. Then he placed a number 2 hook at the bottom of the loop and wrapped it to the lasso with fine copper wire. While he waited for a soldering iron to heat, a few of the local boys, who had been brought to life by his running commentary, gathered around. Now a few drops of solder were spread over the copper wire to hold the hook in place. With the hook in place he spread out the loop until it was about eight inches across, and then he crimped the wire so the loop would stay spread out. He next made a small eye on the free end of the mandolin string to fasten the fishing line onto.

"What time tomorrow will you be ready to go?" he asked.

One o'clock found us drifting lazily in the current of the Guadalupe River, until we reached a place where the river got tired of rushing and widened to form a deep hole. The current carried us up the other side. My friend slipped a minnow on the hook, set his cork up about six or seven feet and cast out into the slow-moving current where gars were rising every few feet, with characteristic "p-l-o-o-p" to take in air. It was only a minute until my partner's cork started to move slowly—not bobbing or disappearing—just moving along the surface of the water at a steady rate. He played out 15 or 20 feet of line; then he struck and was fast to a fish. "It's a gar," he shouted, and the battle was on.

The gar isn't a flashy fighter. He doesn't jump; he doesn't even show himself until he is licked; but the quiver of the rod told me that he was a powerful swimmer and a worthy foe. Slowly but surely the bending rod and heavy line tired the gar, but only after three long runs and a couple of anxious moments. My friend eased the fish to the side of the boat. "He will go 15 or 20 pounds and must have eaten a lot of other fish to grow that big," he said with a satisfied smile.

He lifted the fish into the boat, then I saw the wire noose had slipped over the upper jaw and was holding fast. The needle-sharp teeth prevented the noose from slipping forward or backward. This versatile Izaak Walton had shown me how to catch a fish on a mandolin string.



Sketch by Robert Boyd

As we drifted in the current my new friend packed and lighted his pipe; we baited up again, cast out, and then settled back to talk a little about gar fishing.

"My first gar fishing was with regular casting plugs," he mused, "but I never had much luck, so I picked up a little information here and there and finally came up with the rig we are using today. I have tried two or three other methods, but this little noose has worked best for me," he continued. "I have also had good luck with another simple setup, using a number 2 hook with coils and tangles of thread hanging down just to the bend of the hook. To get a minnow from the hook a gar usually catches a tooth or two in the thread and is pretty well caught unless the thread breaks." He explained that you don't have to set the hook in this type of fishing. You just tighten up on the line and hope the thread can hold.

We boated three more nice-sized gar and decided to call it a day. When we reached the shore he pulled out an old glove, which he used to protect his hands from the sharp teeth, and grasped each gar by the snout and bent its head back until its back was broken.

"Don't want to be bothered by these again," he explained, "and I don't want them feeding on those other fishes that will start biting these plugs of mine in another month."

The next time the weather is hot and sultry and the bass are lying deep and not having any wood, paint and hooks, why not think of the cool waters and the thrill of something really big on the end of a line. Then haul out the wire, solder and hooks and try those big gars on a mandolin string.

Big Bend Panthers

By Cas Edwards

Bruce Duncan, left, and his brother, Lee, with two panthers they killed one Saturday morning late in February, 1950.

ONLY TWELVE miles southeast of Alpine, near the 6,800-foot peak of Mount Ord, is a mountain country known for its many and large panthers.

On January 24, 1950, Bruce Duncan, predatory animal hunter, discovered the carcass of a blacktail deer while hunting in that vicinity, so he immediately put his dogs on trail of the panther that had made the kill. It was not long before the dogs sighted the big cat and drove it to bay on the rocky slopes near the summit of Mount Ord. Unable to get to a tree or cave, the panther sought safety atop a boulder, but it was low enough for the dog to drag the cat back to the ground where a big fight started. When Duncan arrived on the scene there was such a tangled mass of dogs and panther that he was unable to get a killing shot at the big beast for fear of hitting one of the dogs. Cut and bleeding the dogs finally killed the panther. Then Duncan loaded the big cat in one truck and the dogs in another and drove to Alpine where the wounded dogs were looked after by a veterinarian. From the tip of its nose to the tip of its tail the panther measured nine feet, four inches. Its neck girth was 19 inches, its front paws measured five and one-half inches in diameter and it weighed 216 pounds. This was the fifth panther killed by Bruce Duncan in that vicinity during the winter months.

Bruce said he was glad to get this largest of all panthers seen in his 20 years of hunting in the Big Bend, but his success was marred by the loss of Old Blue, his favorite hunting dog, that later died from wounds received in the fight.

In January, 1931, Duncan first started hunting panthers on the George Brown Ranch, 14 miles south of Alpine. In September of that year, after 5,760 sheep had been sheared, panthers killed 740 head before the end of the year, or in less than four months.

One panther killed 28 two-year-old ewes in one night, without taking a bite. Sometimes a panther will kill after having eaten its fill and later return to eat when hungry. A single female panther and her cubs, numbering from one to four, will eat a sheep a day and leave nothing but a few bones.

On the Abbington-Sohl Ranch about eight miles southeast of Alpine panthers killed 2,100 fine sheep in three years. Accepting a job as foreman of this ranch, Duncan put his well-trained dogs to work and cut losses to almost nothing in 1948. In 1949 Duncan marked out 783 lambs and delivered 781. In this same year he killed 11 panthers on this ranch and the adjoining Gage Ranch.

In his thirty years of hunting predatory animals for ranchmen of the Big Bend of Texas, West of the Pecos, Bruce Duncan has killed 62 panthers besides bear, wolves, eagles and other killers that destroy the rancher's livestock.

Panthers are more numerous and larger in the Big Bend country because they can range in their favorite mountain country above the 5,000 foot level where there are few hunters to molest them, and where fat deer as well as fat livestock range from Colorado to Mexico.

Panthers are the widest ranging of all our wild animals. A mother panther will sometimes hunt within a five-mile radius when cubs are too young to follow, but when the cubs are old enough to travel and game is scarce, the family may cover a radius of from 20 to 50 miles from their home den.

A lone male is a wide roamer. When food is scarce he may travel a hundred or even several hundred miles. That is the main reason they are always plentiful in the Big Bend even though many are killed off each year. Some hunters say that the panther is a solitary beast and that the male and female are together only a short time during mating season. Others say that they have found male and female hunting together. Bruce Duncan explains it by saying that panther, like human beings, have different characteristics. Bruce says that panthers prefer a cave for a den, but if the cave is not available, they will den up in a thicket or canebreak.

The young are born from January to June, but the most frequent time is mid-winter or early spring. Their eyes open in eight or nine days and their first teeth appear in about 20 days. At ten weeks the cubs begin eating meat and at four months they are generally weaned. In from six months to one or two years they learn to hunt alone, says Duncan, and he believes that many live to be well past 20 years old.

For a short distance they are one of the speediest animals, but when

crowded by hounds and hunters they soon tire and take to a tree, cave or high pinnacle to rest. The best of them can easily clear 30 to 40 feet in one leap and they often use this power by leaping from a ledge or tree to knock down their prey,

Often the panther misses his leap in attempting to knock down a wild animal, and when this happens in the case of a deer the intended victim generally gets away. Duncan says that they probably succeed in bringing down a blacktail deer about once in every three or four tries.

When the mother panther makes a kill, while out hunting with her young cubs, she drags her victim to a secluded spot where she carefully buries it. Then she goes for her brood and calls them as a mother cat calls her kittens. They follow her to the food where they gorge themselves while growling at each other as kittens do. After the meal the mother carefully reburies the remaining food until it is needed again.

If water is near, the mother panther often washes the buried food after digging it up.

Panthers will sometimes attack and kill a bear when other meat is scarce. The bear stands on his hind feet when the attack is made and tries to keep the panther off his back by boxing with his powerful forepaws and biting the attacker. If the panther succeeds in getting on the bear's back he generally makes a kill, but if he does not the bear gives him such a beating that he is glad to get away.

Panthers are the greatest natural enemy of deer. They will kill about two deer a week or two or three a day if deer are plentiful. The male panther is much worse about killing more food than he can eat than is the female. The mother panther will usually kill one animal which she eats and another to take to her cubs. Like all cats, they do most of their prowling at night and stay in a cave during the day, making it very difficult to find them.

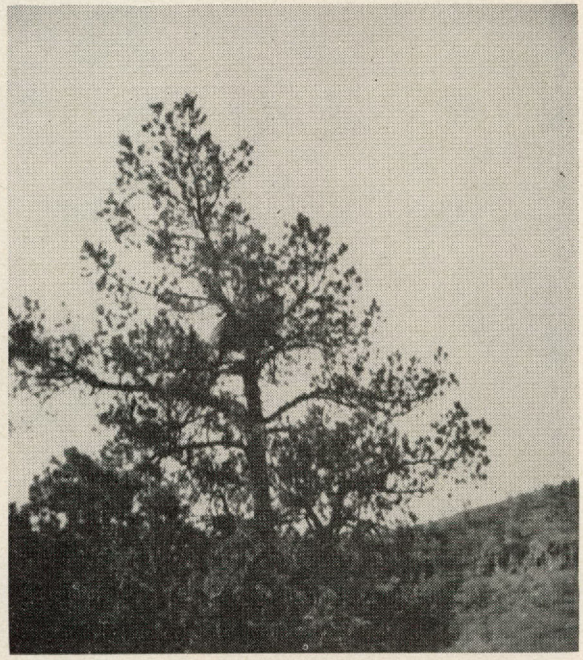
Duncan says that nearly all panther hunters agree that panthers like young colts better than any other food. Walter Fulcher, ranching near the west end of the Big Bend National Park, lost five out of six young colts in a single year, but the panthers did not bother his young calves. They will kill calves without a mother, but they seem to be afraid of a cow, especially one with horns.

Duncan has tracked panthers to their den from a kill made fifteen to twenty miles away. A mother panther will often avoid killing game close to her den to keep from being tracked there.

Since much more water has been developed in the land West of the Pecos, more livestock, especially many more sheep and goats are raised. This furnishes abundant food for an increasing population of panthers that range in the rugged mountain regions. In a few hunting days panther hunters can now find these big cats in nearly any Big Bend mountain country above five thousand feet. Although many of these predators are killed in this area each year the population is not greatly decreased.

Lee Duncan, brother of Bruce, is also a panther hunter of note, having killed 38 since he has been hunting in the Big Bend. Like Bruce, Lee is reluctant to relate his often dangerous exploits in tracking down and bringing a panther from his cave.

Since it is generally believed that in his normal lifetime one panther may kill as many as 1,000 sheep and about as many other domestic animals, which are worth thousands of dollars, it is easy to figure that the Duncan brothers have saved the ranchmen of the Big Bend many thousands of dollars in the years they have worked as panther hunters.



The big cats nearly always take to a tall tree, right, if one offers handy refuge from pursuing hounds. After a rest period they sometimes leave the tree and take off through the mountains again, if the hunter does not arrive in time to shoot them out. Cas Edwards, the author, left, below, and Duncan, right, stretch out a big panther that the latter killed on Mount Ord, twelve miles southeast of Alpine, in January, 1950. This cat measured nine feet, four inches from nose to tip of the tail.

Duck

THE TENOR of the photography framed around these Texas ducks is definitely on the simple side . . . there just doesn't seem to be anything involved or risky, or significant about the mere hatching and raising of ducklings.

First you have the nest, then the hatching birds and next there's the fuzzy character in the lower left hand corner ready for weed seeds or some choice aquatic tidbits. In the panel to the right, the transition from down to feathers is indicated as the waterborne beauties propel their way through rushes.

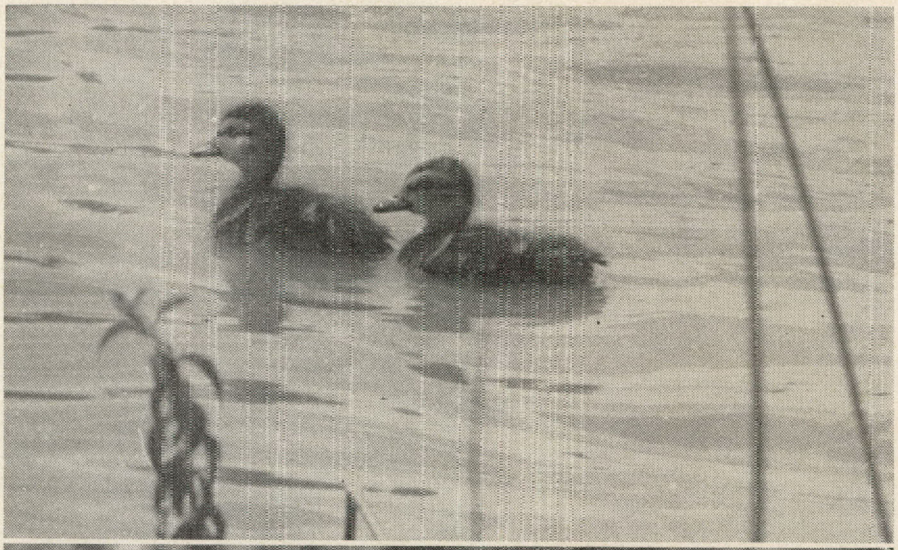
Seems practically an effortless procedure! And that's just one of the frailities of spot photography. Because the complete sequence of photos telling the camera story of a duck's origin would be anything but light and gay. Actually, it would have mostly tragic chapters.

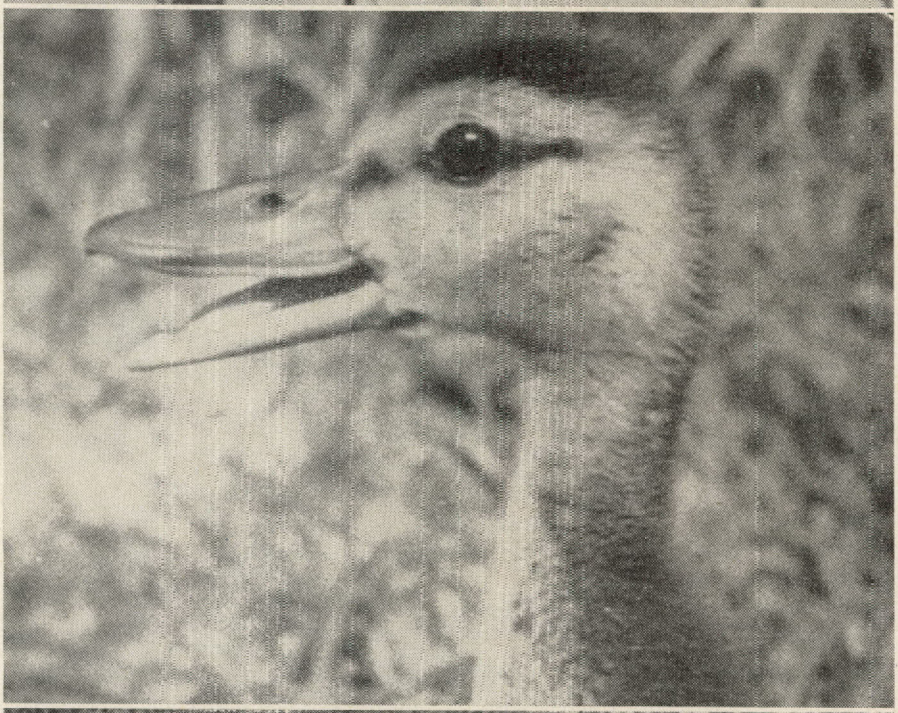
An authority for that observation is Gus A. Engeling, a wildlife biologist on the staff of the Texas Game, Fish and Oyster Commission. Engeling has been banding mottled ducks in the coastal marshes the past two summers and has done vital first hand charting of duck nesting and hatching.

Engeling's enthusiasm and persistence have carried him through almost as many discouragements as those of a female duck in a bad nesting season. He suggests that some folks who think the world is down on them might take a lesson from some of the ducks. For instance, take the mottled ducks which nest in the Gulf coast areas of Texas, Louisiana and Mexico.

The wildlife biologist plotted the case history of one mottled hen

Diary





which finally hatched a brood of nine ducklings after four previous nests were broken up. According to Engeling's records, the duck laid six eggs before the first nest was destroyed. She had laid three on the second one, six on the third and ten on the fourth before losing out for one reason or another. The final clutch of nine hatched.

Engeling and his summer assistant are headquartering at Rosenberg. They began banding operations about June 10, with a goal of "several hundred" birds to be marked during the summer. Two hundred and forty ducks, both young and old, were banded by biologists last summer. Hunters returned 29 bands after the 1949 hunting season.

The Game Department is using the bands as a means of studying habits of the mottled duck. Because of its popularity with Texas waterfowl hunters, expansion of their numbers may become increasingly important. It is a large duck, being often mistaken for the ordinary mallard hen. Its darker overall color and the white wing patches are the main distinguishing marks.

The mottled duck, in abundant years, has comprised forty percent of the early season's bag in Southeast Texas. Normally this species comprises about twenty percent of the early kill in this area. The mottled duck provides sporty shooting and rates high for edible qualities.

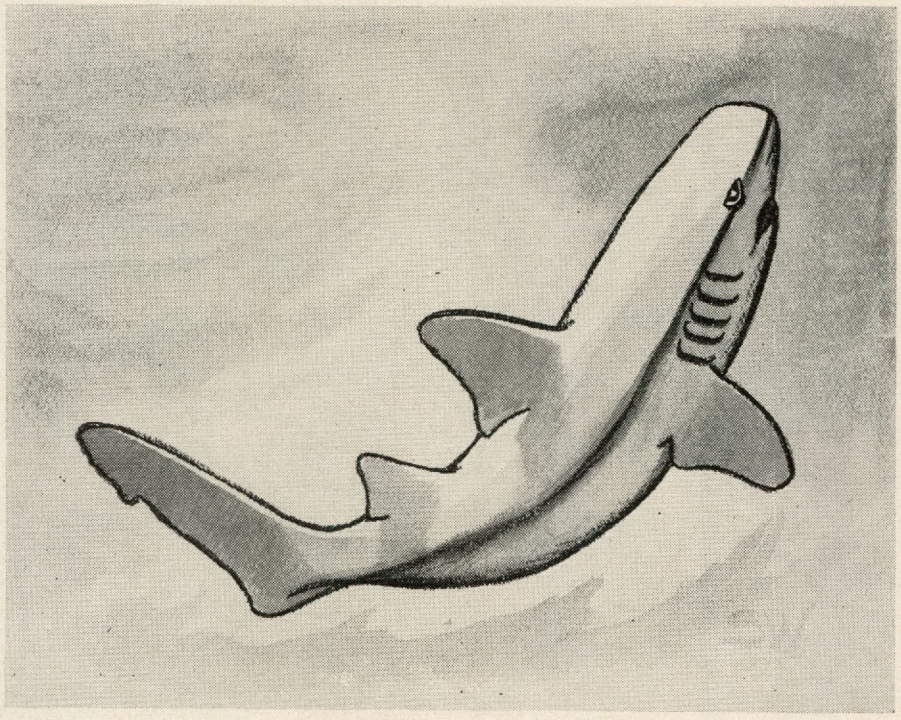
The Game Department considers that ample reason for the emphasis placed on summer research by biologists.

The Marine Fishes of Texas

The Nurse or Cat Shark

Ginglymostoma cirratum

By J. L. BAUGHMAN
CHIEF MARINE BIOLOGIST



NURSE SHARKS are found throughout the tropical Atlantic, being common in the West Indies and off the western coast of Africa. Reported from many localities from southern Brazil to southern Florida, it ranges northward both to the northern shores of the Gulf of Mexico and to North Carolina. Occasionally it is found as far north as New Jersey. In Pacific waters it is found from the Gulf of California to Ecuador. This is the "Nurse," of which Dampier (1699) speaks, saying that in the Bay of Campeche they saw "Sharks, Swordfishes, and Nurses . . . The Nurse is just like a shark, only its skin is rougher." Today, in the same territory, nurse sharks are still found. The Mexican Servicio de Pesca lists them from the waters off the Territory of Quintana Roo, and from the coasts of Yucatan, Campeche, Tobasco, Vera Cruz, and Tamaulipas.

This shark has been reported by fishermen operating around Port Aransas and a five-foot specimen taken near there is now in the Marine Laboratory at Rockport.

In color they are yellowish or grayish brown above and a paler shade of the same hue below. Smaller ones are variously marked with small dark spots and cross-bars, but adults often lose these markings.

When born nurse sharks are generally no more than a foot in length. They mature at about five feet or even less, but grow to 12 or, possibly, 14 feet.

Nurse sharks are generally found inshore and often in water only 2 or 3 feet deep, as in channels among mangrove keys, and on sand flats, bars, etc. They are sluggish and easily approached. Invertebrates, squid, shrimp, **Palinurus**, short-spined sea urchins, and algae (Gudger, 1921), have been found in the stomachs of Atlantic specimens, while a Pacific example (Beeve and Tee Van, 1941) contained five small fish and two carideans.

The breeding habits of this fish have been extensively studied by Gudger (1912a, 1921, 1940) and it is from his papers that the following account is given:

"Nurse sharks came into very shallow water to mate and pairs, so engaged, are often seen.

"External signs of the breeding season may be shown by the tattered hinder edges of the pectoral of the females."

This is the best of all American sharks for the production of leather, and the only one on which a premium is paid for the hide. The fins are not used, but the flesh is better than average, being white in color and suitable for use, either salted, filleted, or fresh. The vitamin content of the liver oil is generally low, ranging up to 6000 U. S. P. units per gram. This shark is eaten in the West Indies (Fowler, 1915), and on the Brazilian coast.

*This article is abridged from Baughman, J. L., and Stewart Springer—1950—Biological and Economic Notes on the Sharks of the Gulf of Mexico. Amer. Midl. Nat. May, 1950.

Wildlife Research and Management

CHAPTER XIV

By J. G. Burr

EARLY IN this century a certain school of thought (if you could call it a school), held in contempt the idea that science is vitally concerned in the welfare of man or beast. A biologist was facetiously dubbed a bug-ologist. In those days, a candidate could hardly hope to be selected Commissioner of Agriculture if he were not a "dirt farmer," or to be appointed on a game commission if he were not a "good shot and interested in fishing and hunting." An unquestioned qualification for the game post might be found in an ammunition dealer or a dog fancier. Buffalo Bill, who allegedly aided in the extermination of the buffalo, if still living, could have been chosen by acclamation. to head a conservation department. However, no offense is intended to the many excellent gentlemen who have served in these capacities.

After long-continued uses and abuses of the gifts of Nature, there came the inevitable break-down, and the biologists and the agronomists were called into consultation. The field for exploring the opportunities for land management in the interest of wildlife is a rich and alluring prospect. Studies of that kind were being carried on in many parts of the country, and the Texas Commission has kept abreast of the times; but the first significant gesture was made in 1935 when the Cooperative Wildlife Research Unit was begun in Texas and other states.

This new venture into the field of research was prompted by a recognition that many states were willing to take advanced steps, but were without the educational facilities necessary for carrying on a constructive program in wildlife restoration. Ordinary college training had not turned out workers qualified to do wildlife research and management. Hence, it was necessary for Research Units to blaze the way. These Wildlife Research Units are cooperative organizations composed of the Game Departments, the Fish and Wildlife Service, the Land Grant Colleges (A. & M. in Texas), and the Wildlife Management Institute of Washington, D. C.

The work done by the Cooperative Units, in opening the way for research, quickly developed a demand on the part of students for specific training in wildlife. The result has been that such training was provided in the Land Grant Colleges in ten states. They are: Texas, Maine, Ohio, Pennsylvania, Virginia, Alabama, Iowa, Missouri, Utah and Oregon. From these institutions had come out more than 600 graduates by 1948. Other units have since been added in Oklahoma, Arizona, Montana and Alaska.

The Texas Research Unit was headed by Dr. Walter P. Taylor as senior biologist, and Dr. W. B. Davis as head of the Department of Fish and Game at A. & M. College.

As this program was begun, Dr. Taylor made the following statement: "Texas is fortunate to be one of the nine states selected (at first) by the United States Biological Survey for a Cooperative Research Unit. Competition of the states was keen, and it is understood that Texas was chosen in virtue not only of the tremendous possibilities of game increase, but also of the intelligent and progressive cooperation offered by the Texas Game, Fish and Oyster Commission, and the Agricultural and Mechanical College of Texas."

In this virgin field of research, methods were to be studied for the increase of game that we now have, but consideration was to be given also to vanishing and extinct species. Among Texas extinct species are: Merriam elk, Texas grizzly bear, jaguar, greater prairie chicken, and passenger pigeon. Species threatened in Texas include: Attwater prairie chicken, lesser prairie chicken, chachalaca, black-bellied tree duck, ivory-billed woodpecker, white-fronted dove, red-billed pigeon, black-footed ferret, collared peccary, Mississippi Valley wolf, lobo wolf, buffalo, ocelot, Texas beaver, Texas otter, Texas big-horned sheep, prong-horned antelope and mule deer.

The graduates in wildlife, having found places in the conservation departments of the nation, have entered the game fields equipped with a "know how" that has inspired faith in the minds of landowners who have game or who would like to have game. The Land Grant Colleges are especially interested in land management and, working as they do with farmers and ranchers in solving their problems, it is but a short step from domestic to wild animals. Therefore, the men trained in biological research can meet the landowner on common ground as valued helpers. Their training in animal husbandry provides a knowledge of disease of animals which may sometimes baffle a stock man, when the college man might readily have an answer to the problem.

The research work includes fisheries as well as game, and other forms of wildlife. And these workers are finding places in a variety of ways. Besides the state and federal agencies which employ many of them, some are in demand by private concerns, such as rod and gun clubs, or large landowners of which the King Ranch of South Texas is a notable example. Admiral Byrd used one of these graduates in his South Pole exploration. Many of them are in the army doing pest and rodent control work, as well as malaria control.

Out of wildlife research has grown the practice of wildlife management. Research has led the way for bettering land conditions conducive to the welfare of both wild and domestic animals. Control of ranges to prevent over-grazing, the thinning of populations where there is a game surplus, and their transfer to sections where game is scarce or entirely absent, have received emphasis.

Cooperative Research Units have opened the way for the enlarged research and management program inaugurated with the coming of the Pittman-Robertson appropriation of the federal government. This made possible the hiring of game managers in every state in the Union and in some of the island possessions of the United States.

The first steps taken under the federal aid Act were set forth in our 1938 pronouncement, styled Bulletin No. 18, which is here summarized.

The restoration and conservation of game and fish on a scientific basis is an adventure that is still in its infancy. Texas, the first state in the Union to organize projects for game restoration under federal aid, is advancing rapidly on many and varied paths, with the aid of trained biologists, who in 1938 laid the foundation for a long time program of research into the wildlife problems of the state.

Major attention was given whitetail, mule and fantail deer, wild turkey, peccary, scaled quail, bobwhites, white-winged doves, gambel quail, gray and fox squirrels, Attwater prairie chicken, lesser prairie chicken, prong-horned antelope, and Texas big-horn mountain sheep. Minor attention was given to the distribution of beaver, foxes (gray and red), badger,

• Continued on Page 26

FISHES OF TEXAS

The Shad

By MARION TOOLE
Chief Aquatic Biologist

THE HICKORY or gizzard shad, **Dorosoma cepedianum, (Le Sueur)** apparently has but one mission in life and that is to be eaten by other fishes.

Of course, this mission is an important one in the scheme of nature. The fishes, such as black bass, white bass, and crappie, that are so highly esteemed by the sportsmen, consume small microscopic plants and animals (plankton) after they first hatch. Should this plankton be abundant their growth is fast and they soon are fishes of two or three inches in length. They must then have larger food and since they are carnivorous they relish a diet of fishes that are slightly smaller than themselves. Should only their own kind be present they turn into cannibals, and under such a condition, the larger brothers and sisters eat their smaller kinsmen until only a few large individuals are left.

Should the young of some other non-game fish be present, then they are eaten, resulting in a larger crop of the basses, etc. The carnivorous or game fishes continue eating other fishes until they die or meet an untimely death by being fooled by an angler's lure. Consequently, this is the shad's mission—to be the food of the more desirable fishes. Shad remain plankton and mud eaters throughout their lives and convert microscopic food into a form of food that is relished by the game fishes. Other than the afore-mentioned mission, they are considered worthless with two minor exceptions. They might become valuable as hog or cattle food or as a fertilizer if they are converted into fish meal. A trotliner or a cat fisherman, of course, find them valuable because they make excellent baits.

Shad occasionally reach a size of from twelve to fourteen inches, but the majority never live long enough to allow that size.

These fishes are basically silvery colored with their backs assuming a bluish hue. The young of shad have several characteristics that are dimmed or obliterated with increasing age. The young shad are shaped differently from an adult, being slender and minnow-like. During the youthful period of the shad's life, it is provided with a row of fine teeth in the upper jaw, but after adulthood arrives, it becomes toothless. A dark spot occurs behind the gills of young shad that becomes more obscure with increasing age. The most amazing change that takes place is the development of the digestive system from a short, straight intestine, found in the very young, to a long and convoluted small intestine, found in the adults.

Shad have a thick-walled muscular stomach that is similar to a gizzard of a fowl, and the fact that they possess such an organ has caused them to be called gizzard shad throughout most of the United States.

The food of the shad changes with the intestines from youth to old age. The young shad eat crustaceans, insect larvae, and other small animal forms, but after they become adults and toothless, they become vegetarians. Adults derive most of their food from the small plants we call algae. Some of the small plants are strained from the water and other small plants are ingested by eating mud from the bottom that is interspersed with algae and vegetable debris.

Hickory or gizzard shad are widely distributed in Texas. Few sloughs, lakes, rivers, or streams fail to harbor these fish.

Spawning occurs from March to May; they prefer muddy bottoms for spawning. They are extremely prolific, and the waters in which they occur fairly teem with young shad in the spring. The adults migrate up streams and sloughs to spawn.

The writer has tried to spawn shad in ponds on several occasions. Most attempts failed, but two such attempts were successful. A review of the literature available on the subject of spawning shad in ponds bears out the writer's results. The shad will spawn in ponds, but not very successfully.

Since the flesh of these fish is coarse and unsavory, and well supplied with fine bones, it follows that few anglers are concerned with trying to catch hickory shad except for bait. Because of their eating habits, it is easy to see that the chances of catching a shad on a hook is practically out of the question. The only method of taking these fish is by nets or seines. It is always wise to check on local game and fish laws before using a seine. Most counties permit the use of a minnow seine of one-fourth inch mesh as long as it is twenty feet in length or less. The hickory shad is excellent for baiting trotlines and can be used either whole or as cut bait. They are not suitable bait for bass or crappie because they die almost immediately after being taken from a seine.

The hickory shad doesn't have to be esteemed by the angler for its game qualities. However, the angler should have a warm spot in his heart for this lowly fish because its presence in a lake or stream means a better crop of black bass, white bass, crappie or catfishes will be available for him to try and catch.

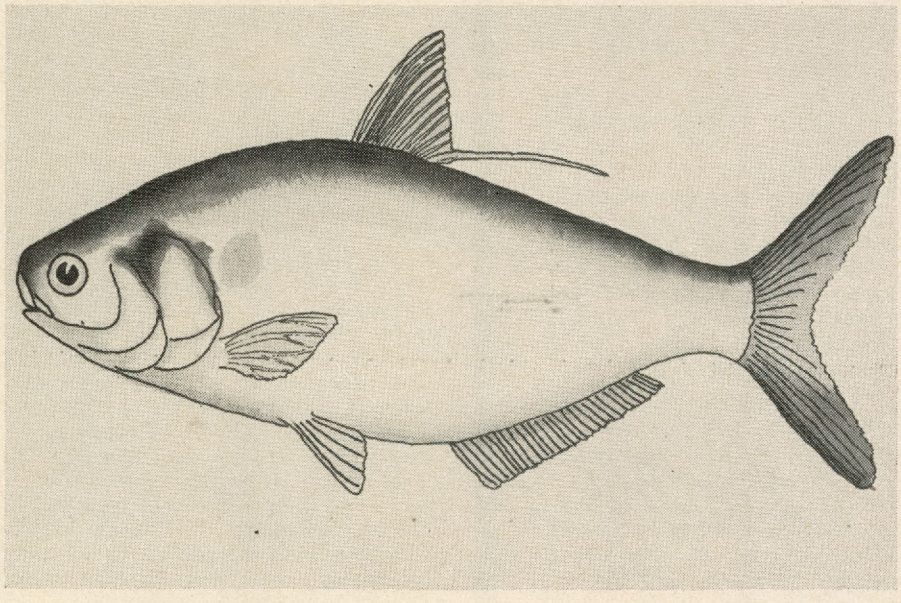
OTHER MEMBERS OF THE SHAD (CLUPEIDAE) FAMILY

To make our discussion on the Fishes of Texas more complete, it becomes necessary to briefly discuss the other members of the shad **(Clupeidae)** family that are found in Texas.

Three other members occur in Texas. These are the small shad or thread-fin shad that are divided into two subspecies, the Mexican thread-fin shad, **Singnalosa petenensis mexicana** (Gunter) and the Louisiana thread-fin shad, **Singnalosa petenensis atchafalayae** (Evermann and Kendall), and the fresh water skipjack, **Pomolobus chrysochloris,** (Rafinesque).

Fishes that belong to the **Clupeidae** family, which includes the hickory shad that has been discussed separately, have strong spiny scutes on their bellies. This characteristic is so pronounced in the skipjack that the

© *Continued on Page 28*



Chuck Wagon . . . 1950 Style

By Scott Moore

•

Whether it is fishing or round-up time, a chuck box comes in handy. The box shown in the above photo is made of one-half inch plywood and built to fit into a car trunk, the "1950 chuck wagon."

Such a box will carry about everything in the way of utensils and groceries that the camper needs. After a meal, the box may be closed, the trunk top let down, leaving the box weather tight.

In building such a chuck box, it is not a bad idea to build a cardboard model to fit the trunk of the car to be used and work from that model. Allowance has to be made for the trunk hinges, because they usually drop down pretty far. The box should be about three times as deep at the bottom as at the top, since the longer the slant, the larger the table when the front of the box is let down. Folding drawer handles on the sides facilitate moving the chuck box in and out of the car.

Allen Donnelly, H. S. Frady, and Clem Peters, all of Yoakum, caught the fish shown in the lower right camp scene. The fish were caught in the Guadalupe river, near Yoakum.

Wildlife Research —

• Continued from Page 23

mink, muskrat, opossum, raccoon, otter, ringtails, skunks, bobcats, mountain lions, coyotes, wolves, bear, armadillo, cottontail rabbit, jack rabbit, swamp rabbit, roadrunner, and starling.

As wildlife species cannot be managed successfully until some idea is gained of population densities, game managers have taken initial censuses on type localities in various parts of the state. In open long-leaf pine cut-over land, subject to hunting, Dan Lay found one quail to six acres. Siegler found a comparable density of one bird to 5.9 acres. Nearly one quail per acre was recorded at Cat Springs, Colorado County. Such high ratios are possible only by intensive management which includes providing food and cover as well as protection from over hunting. Prior to intensive management on some South Texas areas, the quail population was about one bird to ten acres which was about average for good quail territory in this section of the State.

Nesting density for mourning doves in Guadalupe county was found to be one breeding pair to fourteen acres over a 2,127 acre tract. On the coastal prairie, fur-bearers existed in the following densities: common skunk, one to thirteen acres; opossum, one to fourteen acres; mink, one to fifty-one acres. Trappers in the muskrat marsh of Jefferson county have caught as many as ten rats on one acre. Through management it is possible to increase these yields of fur-bearers to fit into their rightful place in the land use program.

An actual count of deer on 700 acres in Comal County gave one deer to twelve acres. An analysis of shooting preserve records in Mason county revealed even a greater density, one to nine acres. Since these populations compare favorably with livestock densities, obviously many ranches in the Edwards Plateau region are carrying too many deer. Plans were to work through interested ranchers to demonstrate how this condition could be corrected. Data compiled by biologists showed that smaller deer are killed on the smaller ranches which are stocked more heavily than are the larger ranches.

Some of the problems receiving attention included the following:

1. The use of land by sheep and goats as it affects deer and turkey.
2. The effect of drought on deer, turkey and quail.
3. The condition of inland ponds and lakes as related to ducks.
4. Hunting pressure on whitewing doves.
5. The effect of plant succession on muskrats in the coastal marshes.

A study of waterfowl along the Texas coast revealed many interesting things. A check of hunters' bags indicated that the most important species of ducks were mallards, pintails, lesser scaup, and teals (mostly green-winged teal, the blue-winged teal migrated to Mexico before the duck season opened), and mottled ducks, in the order given. It is a significant fact that the resident mottled duck represented about twenty per cent of the kill during the first fifteen days of the open season in the upper coastal region. As the season advanced, mottled ducks appeared less often in hunters' bags because of migration. This indicates the importance of home raised ducks and suggests the need of habitat improvements so this species can have better places to hatch and raise their young. The check revealed that northern mallards prefer the upper coastal region to the southern coast region, while the lesser scaup is just the reverse. Among other ducks taken in less numbers are shoveller, gadwell, ringneck, ruddy, baldpate, redhead, canvasback, golden eye and Mexican squealer.

A two-year record from 1936 to 1938, from a hunting club in Aransas county showed twice as many ducks killed in 1938 as in 1936. Although definite records for other points along the coast are lacking, interviews with sportsmen indicate a similar increase all along the coastal area. According to figures supplied by the Rice Growers Association the amount of waste rice available to wildlife in the rice belt was 32,936 pounds in 1937 as compared to 1,112 pounds in 1934. No doubt this waste rice has played an important part in the food of ducks in those sections, and may have an important influence on the occupation of these areas by ducks in the future.

Sight records by field biologists have shown that the exotic starling was in every section of the state during the winter of 1938 except in the far western counties of the Trans-Pecos region. These birds are already becoming a nuisance by appropriating city buildings as their roosting sites in North Texas and the Panhandle. No nestling starlings have been observed in the state so far.

Since farmers in eastern Texas constantly complain that the mourning dove damages planted corn, a preliminary investigation was made. It revealed that doves do not scratch or pull up corn but will take only those grains that are not completely covered by soil.

In order to test the various wildlife management techniques, experimental areas were chosen in each of the five game management regions of the state. The idea of experimental tracts was to acquire information which would facilitate the restoration and maintenance of the natural environment for wildlife indigenous to the area under management. At that time (1938) thirty-two projects of this kind were under the control of the game managers. Twenty-three of these projects dealt with quail, and on three experimental areas, duck management was being conducted. Since lack of duck food seemed to be a limiting factor, the restoration of desirable duck foods was the primary objective on these areas.

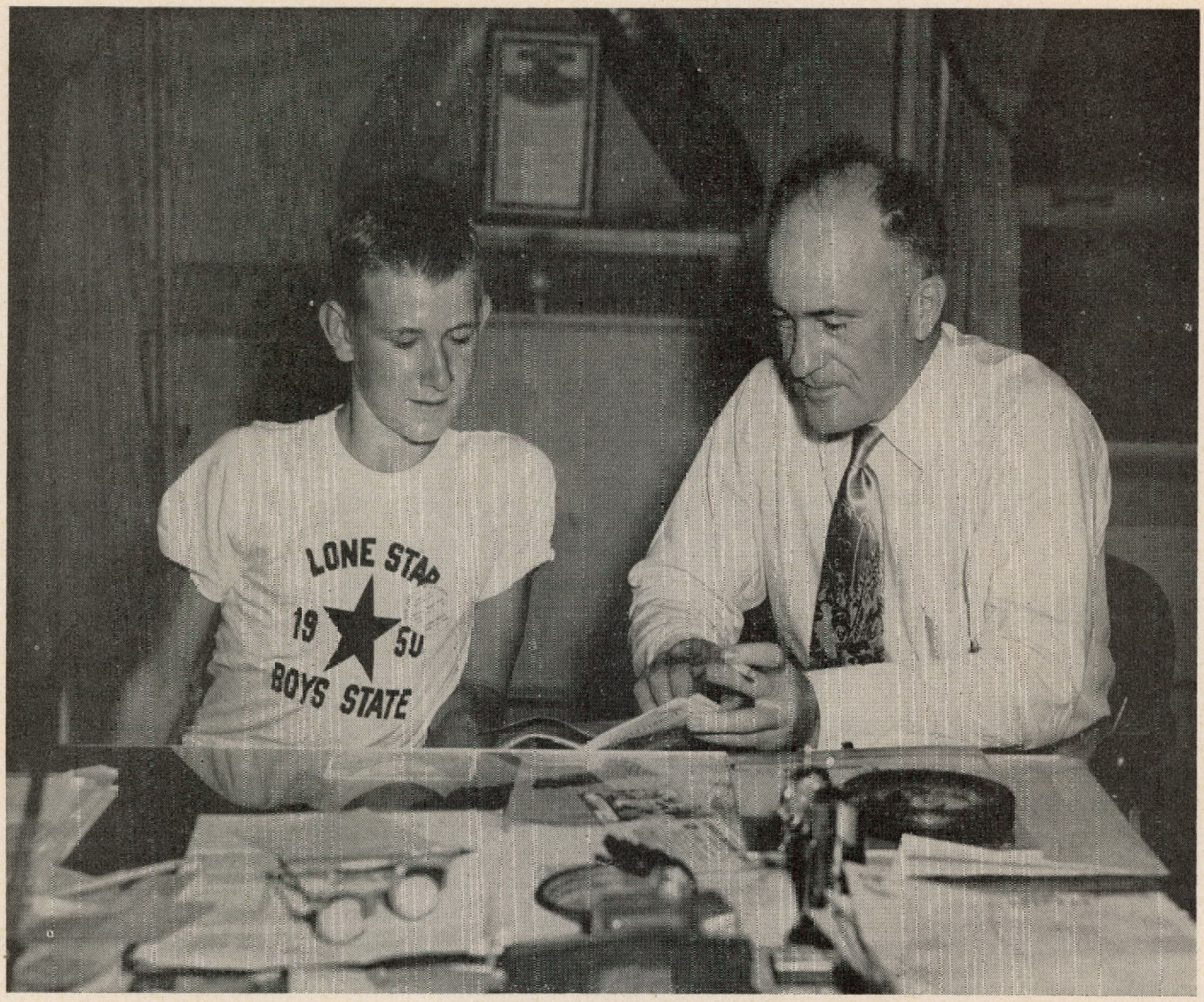
The management of muskrats in the coastal marshes of Jefferson, Chambers and Orange counties was undertaken. Special attention was given to the raising of water levels by dyking so as to control the succession of vegetation on these areas. The presence or absence of muskrats seems to depend upon the presence or absence of certain sedges (a plant). Sportsmen of northern Texas for a long time have complained of a lack of hunting opportunities in that section. Accordingly, pond and lake refuge and duck food management work was being tested in that region.

Turkey management was studied on two areas; one in the hill country and one in eastern Texas. In the eastern Texas area about 150 wild turkeys of pure strain were believed to still exist. Plans were under way for a turkey restoration project in that region.

In the hill country one ranch of twenty-seven sections was selected for intensive study of the deer and turkey populations. An investigation of malnutrition caused by range deterioration, and upset sex ratio, through excessive killing of virile adult buck deer, was begun to determine methods of correcting these evils of long standing.

Other Pittman-Robertson projects include a plan to restore antelope to areas not now occupied, but suitable to the antelope. Since sheep fences have prevented the natural spread of antelope over most of the antelope range, it has become necessary to trap the animals in huge rope nets for transplanting to suitable habitats. Also, through the aid of the Texas Cooperative Wildlife Reserach Unit, a beaver Restoration project was inaugurated. These animals were trapped from the areas where they were not wanted, and transferred to suitable streams in other parts of the state.

"Methods are the masters of masters," said a famous Frenchman, and in a successful management of wildlife we must use agencies and devices. We have selected first, such cooperating agencies as may serve interests kindred to wildlife. For example, county agents, and teachers of vocational agriculture; the U. S. Soil Conservation Service; land use and range improvements; 4-H clubs, garden clubs, outdoor clubs, Chambers of Commerce, and all civic clubs which would consent



Executive Secretary Howard D. Dodgen found himself outranked when the annual Boys' State day was held at the statehouse. Frank Fred Metzer of Bryan, was designated as chief of the Game, Fish and Oyster Commission for the day. Young Metzer modestly reckoned he knew something about wildlife and conservation since his parents, Mr. and Mrs. Ben Metzer, live on a farm. The sixteen-year-old boy decided for certain he would have some awesome reports to take back home to impress his ten-year-old sister, Barbara. Lone Star Boys' State Day was sponsored by the Texas Department of the American Legion.

to lend a hand in the restoration of wildlife.

A survey of total costs for 122 hunters in Llano and Gillespie counties indicated that they spent $40,490.00 in each county. Thus the investment for hunting in the thirteen counties at the same ratio should be approximately $526,370.00. The landowners received about one-third of this amount for hunting leases. The cost to each hunter was $33.00. That hunting costs for each deer averaged $21.60 does not mean that each successful hunter paid the landowner that much, for not all hunters were successful. Two or three hunters usually contributed the payment. In this case it was 1.8 hunters per deer. That hunters assumed costs for deer they could not get is due mainly to the fact that there were not enough deer to supply the army of hunters. For that reason our men are afield perfecting plans of wildlife management so that perhaps some day every hunter, if he is a good shot, can be successful.

The average hunter's cost in the hill country is less than for hunters in North or South Texas. In Frio and Webb counties, the average hunter for a season paid $79.00. In North Texas 35 hunters averaged $94.44.

In twenty East Texas counties, $321,973.00 was spent on quail hunting in one year, which of course included dog maintenance. This would be $16,098.00 per county, and each quail cost $1.63.

The hunting season stepped up sales of merchants by $15,000.00 in the four towns of Hebbronville, Beeville, Falfurrias and Rio Grande City. Along the coast from Galveston to Matagorda in half a dozen towns, $243,100.00 was spent for hunting and fishing equipment.

Crops from fur-bearing animals are an important item valued at $281,383.05 in one year on the poorest market basis. Muskrat fur from Orange, Jefferson and Chambers counties was estimated at $240,070.00 but only fifty-four percent of the muskrat area was harvested for the year considered.

A survey of the bat caves of Texas showed a computed annual income from guano of $12,757.50.

The figures on the economic value of wildlife are fragmentary, but they indicate the enormous amount of money expended annually because of these resources. The Game, Fish and Oyster Commission is not in the money-making business, but it is a business that pays its own way without using any of the General Revenue Fund.

SUMMERTIME IS 22 TIME

EVER SINCE the birth of the nation, shooting has been a national pastime. The sport has always had an especial appeal to youngsters, particularly when the 22 caliber rifle is the firearm used. And with the arrival of summer comes the ideal time for 22 rifle practice.

The first thing anyone, youngster or senior, should think about in connection with firearms practice is a safe place to shoot. Start out right by finding a location that is absolutely safe for rapid-fire shooting at movable and breakable targets.

One type of safe place to shoot outdoors is on a plot of ground where a nearby hill or a cut bank affords a positive backstop. This backstop must be free from rocks, fences or other hard objects which would cause a bullet to ricochet, thereby endangering persons or property beyond it.

Another type is on any open area affording clear vision for at least one mile in any possible firing direction. Rivers, lakes and other bodies of water cannot be included here, for in practically all cases they constitute public waters on which shooting is subject to regulations. And, too, water often causes ricochets.

In most parts of the country outdoor shooting had best be confined to areas that offer good backstop facilities. These can be made in cuts in high hills, cut banks of streams and abandoned roads, strip pits left by shallow mining operations and old rock quarries. Extra caution should be taken, however, in the selection of strip pits and rock quarries, as the shale, slate and rock that may be encountered are liable to cause ricochets. And in the more open spaces of the western states, the shooter should not depend on visible distance alone for shooting safety. Even here it is best to have a good backstop. Old railroad ties and waste lumber can be employed as backstops to good advantage.

While outdoor shooting offers more summertime fun, one should not overlook the fact that indoor ranges are comparatively easy to build and afford excellent opportunities for practice. These ranges are usually limited to a distance of not more than 50 feet. Quite often the distance is reduced to as little as 20 feet. Here safety is again the prime consideration. It is necessary to provide a safe backstop and the entire end of the range should be so constructed that there is no danger of bullets penetrating thin walls and endangering life and property. Remington Arms Company, Inc., has recently announced a new and improved "Spatter-less" bullet especially designed for shooting gallery and indoor shooting. Its composition bullet, while providing high accuracy, disintegrates entirely upon impact, thus eliminating any possibility of ricochets. Plans for setting up home ranges can be secured free of charge by writing the Sporting Arms and Ammunition Manufacturers' Institute, 343 Lexington Avenue, New York 16, New York.

Outdoor shooting with a 22 rifle offers sport of a varied nature, ranging from the big matches, where precision shooting is the order of the day, to plain ordinary informal plinking for pleasure or practice or both.

The most commonly used target is a sheet of heavy paper or cardboard with a bullseye in the center. But the average users of a 22 rifle like to see a little more action. They want to see a target move or break when it is fired at. The fact that almost any sort of target may be used in outdoor 22 rifle shooting makes the sport all the more fun. Breakable targets may be made by sawing a piece of 2" x 2" lumber into 2" lengths. These targets really shatter when struck by a modern 22 bullet.

A cheap but highly effective target is the Bustible Bullseye, a small black disc similar to the "clay" targets used in trap and skeet shooting. They are inexpensive and can be procured from many sporting goods stores. They are pierced so that they may be hung on a string for swinging targets, and are easy to attach on any sort of surface. These little targets make a good "show" as they smash into bits if only nicked by a bullet.

There are all sorts of competitive games which two or more shooters can play outdoors with a 22 rifle. Some of them are team shooting, where the combined team score determines the winning team; miss-and-out, where each shooter continues to fire until he misses a target, swinging or stationary; hit-and-move-back, where each shooter takes a step backward each time he breaks a target, thus giving himself a distance handicap. It is easy enough for the shooters themselves to devise their own game to suit the existing conditions.

Among the many good things about 22 rifle shooting are it teaches youngsters how to handle a gun safely and well, it is a sport of high flexibility, it offers exceedingly good practice in the fundamentals of shooting . . . and it is comparatively inexpensive.

Fishes of Texas

• Continued from Page 24

common name of "sawbelly" is applied to the skipjack in many localities. The skipjack can easily be distinguished from the other shads because its last dorsal ray is not elongated and the lower jaw projects similarly to a tarpon's lower jaw. Both thread-fin and hickory shad have elongated last dorsal rays and their lower jaws don't project.

In order to distinguish between the hickory and thread-fin shad the following characteristics will help. The hickory shad have from twenty-nine to thirty-three rays in their anal fins while the thread-fins have from twenty-four to twenty-eight rays in their anal fin. Both genera of shad have the black shoulder spot, but the thread-fin's is smaller.

Much of the discussion regarding the hickory shad is also applicable to the thread-fin shad; however, the skipjack is different. These fish are found in the Mississippi valley and in the streams entering the Gulf coast. The resacas (lakes) and irrigation canals in the lower Rio Grande Valley have long been inhabited by these fish. In November, 1942, one was caught below Lake Austin Dam in the Colorado River at Austin. The fisherman thought he had caught a small tarpon. Since then, the writer has seen many of them skipping over the water surface at the same site as given above. They have also been caught from the Big Wichita River, a tributary of the Red River. They enter salt water along the coast of the Gulf of Mexico.

After having once seen these fish at work or play skipping over the water surface it is easy to understand why they are called skipjacks. They swim rapidly under water and then come shooting from the water, landing on their flat sides for several skips in much the same manner as the flat rock all youngsters at one time or another have thrown and skipped across a creek or pond.

The young skipjacks feed on insects and the adults eat other fishes.

The spawning is similar to that described for hickory shad. The Game, Fish and Oyster Commission usually has a "bumper" crop of small skipjacks in its Olmito hatchery located near Brownsville.

Other names by which these fish are known are golden shad and blue herring. They have little value as a food fish.

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FISHERIES EXPLORATION

• Continued from Page 10

ence of an assured live bait supply for this fishery, by such a survey, would be of inestimable benefit to American fishermen in many ways. Live bait, on the west coast, is as a rule, obtainable only in Mexican waters, and for years the Mexican government has levied exorbitant taxes on such bait. A supply in Gulf and Caribbean waters would make it possible for boats operating from the Gulf to travel to the Pacific grounds without the payment of these prohibitive taxes, thus possibly giving badly needed room for expansion to our Gulf fishermen. Moreover, no such fishery could operate in either the Gulf or Caribbean unless they were certain of sufficient bait.

Putting aside, however, the possibilities of the development of such fisheries as I have outlined above, by the means of intensive research in the Gulf, we do have fisheries already established for limited migratory and reef fisheries that are badly in need of research and encouragement by every means in our power. They might be expanded by such research until they would furnish many additional millions of pounds of food to a hungry world.

The kingfish and Spanish mackerel of the western Gulf have never been utilized, and yet great schools of them occur. At this time (although Florida fishermen catch several million pounds a year) less than 50,000 pounds are produced in the states of Louisiana and Texas, and no one has the slightest idea as to the potential capacities of such a fishery. Similarly, blue fish once supported a small commercial fishery on the Gulf coast, but now seem to have disappeared. Why? No one knows, and only such a survey can find out. Menhaden, another of our Gulf fishes, are worthy of investigation.

There are two other possibilities that I shall mention in closing. The first case is that of the red snapper. No one knows anything about it. Are they migratory or non-migratory? Have we more snapper banks along the Continental shelf than our fishermen have stumbled over? Can this fishery for this fine food fish be expanded?

The second concerns that vast and sandy plain beneath the sea that extends, sometimes, as much as 100 miles offshore from our coasts to the 100 fathom curve. In the Carolinas, where the fish are much the same as in the western Gulf, an extensive winter trawl fishery is prosecuted for flounder. Does the Gulf present the same possibilities? Are we overlooking a bet that would mean many additional pounds of food with an attendant increase in fishermen's incomes?

Only research can find out, done from a properly equipped survey vessel, and with competent personnel that will be allowed to continue till we have these answers. It is imperative, for the welfare of the states concerned and of the nation as a whole that we obtain them.

Perhaps the Alaska and Oregon mark the beginning of a new day.

While the grownups were doing a professional and futile job of fishing for black bass recently, five-year-old Tommy Manford quietly carried on with a little old pole and line and a small portion of shrimp for bait. What happened could only have happened to a diligent Young American. Tommy hooked a five-pounder plus. Although he did need some help in landing the boisterous beauty, he gained stature among the family angling group. Tommy is the son of Mr. and Mrs. Durwood Manford. Mr. Manford is Speaker of the House of Representatives.

THE FISHERMAN'S ENCYCLOPEDIA, edited by Ira N. Gabrielson and Francesca LaMonte. 698 xxiv pages. Illustrated with hundreds of half-tones, many line drawings, and 18 superb color plates. Published by Stackpole and Heck, Inc., Harrisburg, Pennsylvania; 1950. Price $12.50.

The editors of this new and monumental publication somehow have been able to cram, without crowding, a complete and authoritative library on sport fishing between two covers. The scope of this publication is so broad that it would be difficult to assemble any dozen previous works which cover the ground as thoroughly and as accurately. More than 600 prominent sportsmen, outdoor writers and editors, ichthyologists, curators of museums, directors of state game and fish agencies, and federal authorities on aquatic resources combined their talents to produce it. In all, there are 28 major divisions, beginning with the life history of each game fish and ending with valuable information on such topics as what to do when lost, planning a canoe trip, camp cookery, and other topics of interest to the outdoorsman. There are keys for the identification of fishes, drawings to emphasize points brought out in the text, and many charts. Fishing techniques used in all waters and in all parts of the world by the most successful anglers are described in detail.

Aside from its comprehensive contents, the book is superbly printed and bound. The color plates show all of the principal game fishes found in both salt and fresh water in North America, and there is a second color section showing all popular patterns of flies, plugs, spoons, and spinning lures. To the fisherman planning a vacation, the where-to-fish section could well be worth the price of the book. Each state and prominent salt-water fishing region has been handled by a man best qualified to tell the angler where to look for the big fish. In many cases the writer is the state's fish and game director or its fishery biologist. This is a book which should be in the library of all anglers. To the beginner it will prove invaluable, and even the experts will find much new material on its pages.

INDIAN LEGENDS OF AMERICAN SCENES by Marion E. Gridley. 127 pages. Illustrated with 11 full-color plates and numerous black-and-white illustrations and initial letters by Chief Whirling Thunder. Published by the M. A. Donohue Company, 711 South Dearborn Street, Chicago 5, Illinois; 1949. Price $1.50.

The American Indians, like other primitive races without benefit of modern geology and research, sought to explain natural phenomena and odd rock formations as manifestations of the supernatural. The colorful imagination of the aborigine, given full rein, chrystallized into folk tales which were passed on from one generation to another in the form of legends. Many of these beautiful tales are gradually being lost as civilization changes the ways of the ancient tribes. This book attempts successfully to record in a permanent form many of these ancient stories before they can be lost.

The author spent much time on Indian reservations and is secretary to the Indian Council Fire a national organization devoted to Indian affairs.

Indian legends have given many of our prominent scenic areas their colorful names. Starved Rock, Illinois; Devil's Rock, North Dakota; Pipestone Quarry, Minnesota; and many others are derived from these sources. The author has taken one feature from each of the states of the Union and recorded the legend which the Indian used to explain it. The book makes fascinating reading.

THE OUTDOOR CHEF, by Paul W. Handel. 255 xiii pages. Illustrated with forty pen-and-ink sketches. Published by Harper and Brothers, 49 East 33rd St., New York 16, New York; 1950. Price $3.00.

The current trend toward outdoor living is reflected in the pages of this new book, which is devoted to the preparation of savory meals cooked over an open fire, an art which was once regarded as doomed by the invention of the electric range and the pressure cooker except in our more primitive communities. Perhaps as a sign of rebellion against the complexity of modern civilization, the popularity of the out-door meal is growing rather than diminishing, and the barbecue pit and outdoor fireplace have become standard equipment of the suburbanite. This book tells all that one needs to know about outdoor cooking, whether in the backyard or in the hunting camp. There are complete instructions on the construction of outdoor fireplaces, from elaborate structures down to makeshifts for emergency use.

The true outdoorsman will be more interested in the part dealing with camp cookery. Numerous methods for adding variety to camp fare are described and there is an exhaustive set of practical menus for all occasions. Instructions for planning grub lists are explicit and complete.

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Wildlife Conservation Education

In the early days, Texas had an abundance of wild game. There was no need for conservation practices to maintain an adequate supply. Nature had made ample provision for all her children with an almost limitless supply of virgin soil, a vast system of rivers, lakes and streams, a variety of trees, shrubs and forbs to support a capacity population of the many wildlife species that have been common to Texas.

With the coming of the first colonists under Stephen F. Austin, this picture began to change rapidly. The colonists brought with them all of the basic elements of civilization such as the axe and the plow, the oxcart, cattle, horses, chickens, dogs, cats, and a zeal to clear and plow the wilderness to make it a desirable place in which to live. These newcomers quickly seized the opportunity to exploit the virgin natural resources. Agricultural activities expanded by leaps and bounds. The colonists took larger and ever-increasing quantities of game. The human population was accelerated by immigrants from the deep South and the Eastern centers of population.

The expansion of human population, the development of modern agricultural practices, the increase of domestic livestock, the cutting of timber to build homes and cities, together with intensive use of wildlife resources for food and clothing forced the game to give way and retreat to the remoter sections. As this process of habitat destruction was accelerated, game was correspondingly reduced in numbers. This process of exploitation has continued up to the present with an accelerated tempo.

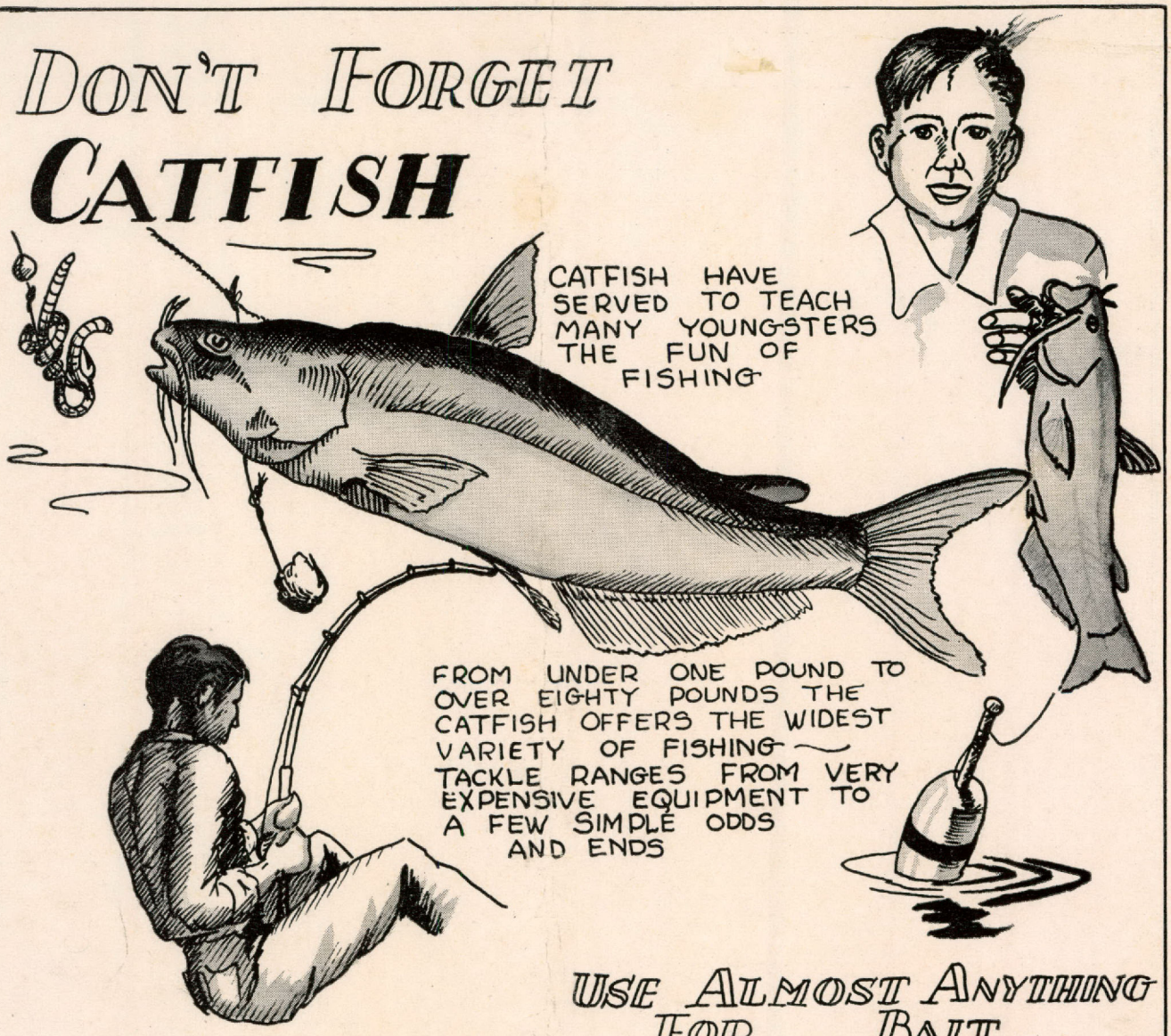
Many wildlife species have not been able to withstand modern land-use practices. Because of this, further reductions in game numbers are inevitable. Only positive action in its behalf can stem the tide of its continued reduction in volume.

According to the first law in the game code all wild game belongs to the people of the state. And since all the people of the State have a pro rata interest in wildlife, it follows that all the people of the state deserve to know the facts about that which they own. A great educator has said that "Whatever is taught the boys and girls of a country determines the character of that country." The pupils now in the schools will some day own the land. The responsibility of maintaining usable wildlife populations on the land in Texas lies with the owners and operators of the land. The production of wildlife in the past has been left, for the most part, to accident and the coincidence of favorable natural environment. Sufficient populations cannot be maintained this way.

The modern demand for hunting and fishing privileges far exceeds the capacity of the land as it is now managed. Trained wildlife managers are working with the owners of the land in developing methods of producing more wild game. Educators, game managers and sportsmen are agreed that one way to increase game in Texas is to include in the school program information dealing with the basic facts about wildlife and its needs. That is conservation education. Wildlife conservation education should begin with the child's first year in school and continue through college. Such is the plan of the present wildlife conservation education program in Texas.

Everett T. Dawson
Conservation Education Specialist

DON'T FORGET CATFISH



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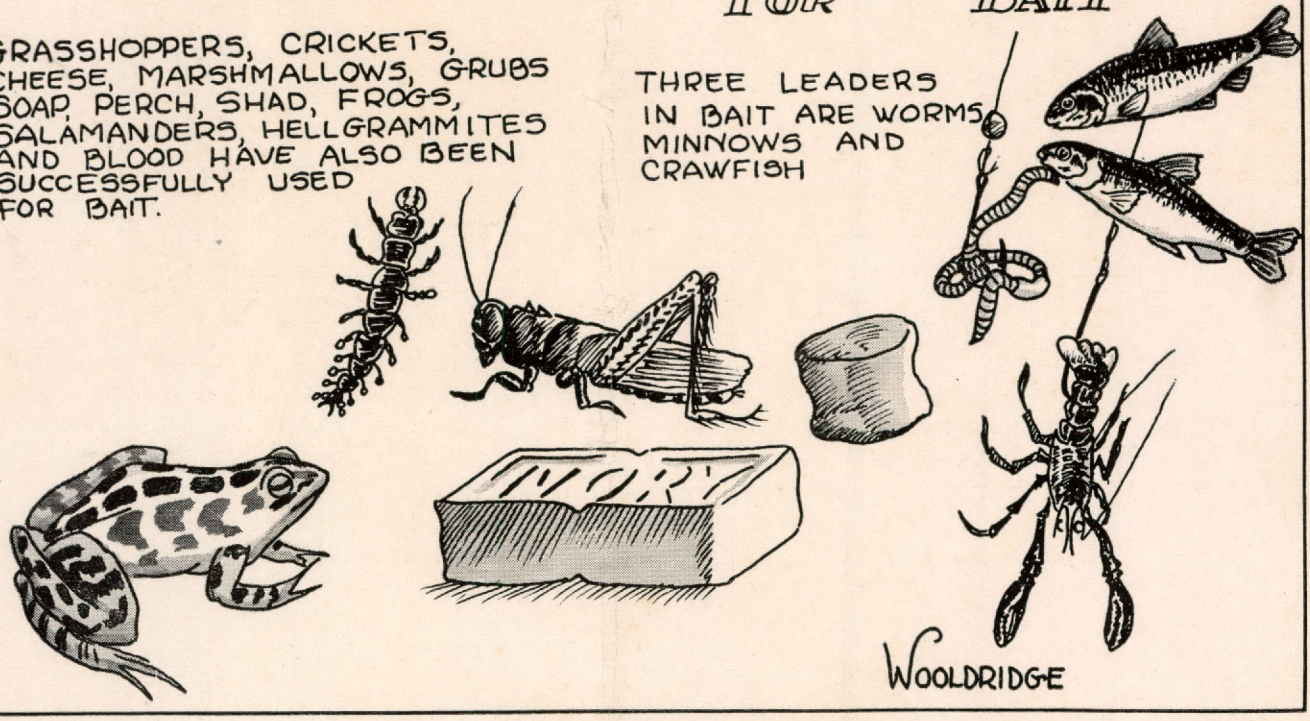
GRASSHOPPERS, CRICKETS, CHEESE, MARSHMALLOWS, GRUBS SOAP, PERCH, SHAD, FROGS, SALAMANDERS, HELLGRAMMITES AND BLOOD HAVE ALSO BEEN SUCCESSFULLY USED FOR BAIT.

THREE LEADERS IN BAIT ARE WORMS MINNOWS AND CRAWFISH



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