

TEXAS GAME AND FISH



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TEXAS GAME AND FISH

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GEESE

along the

GULF

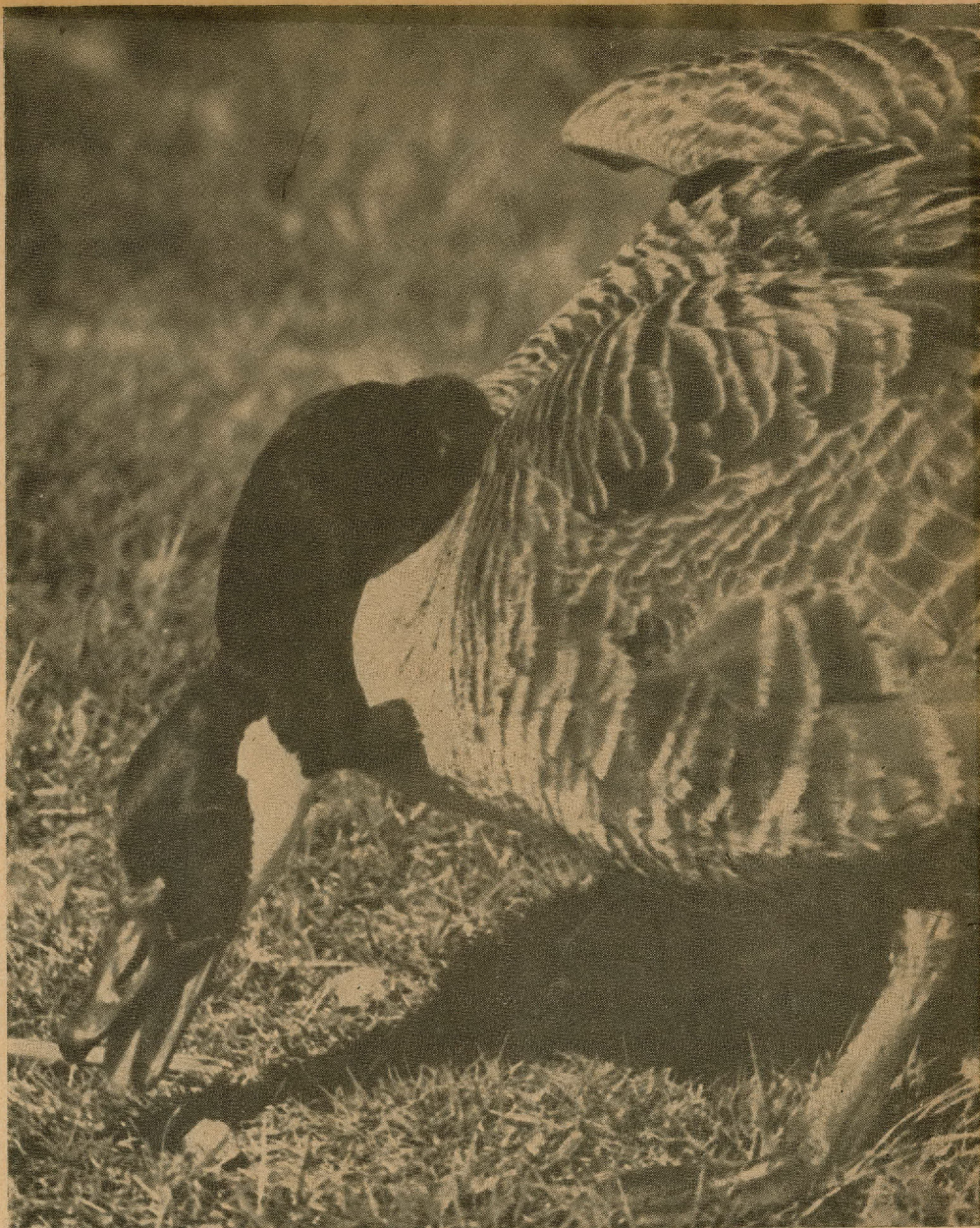
By W. C. Glazener

Wildlife Biologist

PROVIDENCE, geography, and the Texas Highway Department have greatly favored goose hunters along the coastal stretch of the Lone Star State. In the 500-odd mile strip of country from Sabine Pass to Boca Chica of the Rio Grande, where each fall comes a portion of that fabled mystery of the far north, the resulting circumstance is indeed a happy one. Into this area it seems that about one wild goose out of six or seven on the entire North American continent comes to spend the winter, giving a total winter population of from 250,000 to 300,000 geese. Of these, all are subject to legal hunting, and all are desirable from the standpoint of the hunter.

THE FLYING PARADE from the north begins in late September each year, with great V-formations of honking Canada geese leading the way. Throughout the following month they continue to come, by day and by night, until flocks are banked on marsh, prairie, pond and field up and down the entire coast. In these flocks are Canada, lesser Canada, Hutchins, lesser snow, white-fronted, and blue geese, forming striking contrasts of white, black, gray, sometimes mixed and again divided into separate color groups. Sight and sound of these flocks, most of them within sight from paved highways, constitute a terrific challenge and appeal to prospective hunters for weeks before the opening of the shooting season.

DUCK HUNTING HAS always been taken more or less as a matter of fact in this land of mild winter, but goose hunting is another matter. Here is a skin-tingling, hair-prickling source of alibis for the luckless who fail to get their birds, and of proudly recalled memories for those who can afterwards relate how they knocked down one or more of the big, far-flying wonders. Bag limit restrictions of the past few years appear not to have made any impression on the pleasure of this sport. As a rule,



No, he's not sore about anything. This Canada honker is just getting ready to grab a choice morsel of food on the grounds of the Dallas fish hatchery, a favorite feeding spot for geese winging their way southward from the northern breeding grounds.

the problem to be solved is getting the flights down within gun range rather than actually hitting them when they do come within the necessary distance. Once that problem is solved, two geese in the bag yield more thrill and pleasure in proportion than did three or four as allowed a few seasons past.

MOST GOOSE HUNTING is done on feeding grounds, with some more along flight lines from roosting or watering places. Weather plays a vital part in the success of a hunt. On cool, cloudy mornings most of the flights are low and the geese show less wariness about blinds and decoys. In contrast, on bright days the sky is literally the limit of their height, and decoys have little effect in bringing them down within reach of even the longest range guns afield. Decoys used vary from strips of white cloth or paper spread out on the ground, to painted silhouettes or profiles, and to fully shaped and lifelike models, differ-

ing with finances and preferences of the respective hunters.

RICE FIELDS OF Chambers, Jefferson, Brazoria, Colorado, Wharton and Matagorda counties afford considerable hunting area. Geese swarm into the fields for waste grain and hunters utilize straw piles as blinds from which to do their shooting. In the Wharton-Colorado section, at least 95% of the birds killed are white-fronted geese, but throughout the rest of the area indicated, lesser snow geese lead the list. Considerable numbers of blue geese are taken from Brazoria county eastward, and members of the Canadian group (Canada, lesser Canada and Hutchins) make up a minority of the rice land bag. In the corn-grain sorghum growing section from Calhoun county down the coast to Nueces county, most of the shooting is done from blinds set up in corn or sorghum

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NOTES FROM THE FIELD



Next to Going Home -

"Next to going home and seeing my family and friends, I'd like to slip off into the woods, or to a quiet stream, and do a little hunting or fishing."

This is the statement made by 75 per cent of the soldiers in a large army camp. They had been asked what they preferred in the way of recreation.

Of course, a trip home to see the folks and friends was the paramount wish in the minds of every soldier in the camp. No one is surprised about that preference. And no one is surprised to learn that next to going home, the youngster in the armed services wants to hunt and fish. That desire is typically American.

True, essential wartime restrictions are cutting down on both the number of sportsmen going hunting and fishing and the frequency of trips. Gasoline is jealously being hoarded for that one "special" expedition, and reservations are being made on a share-the-ride basis. All of which means that lakes, streams and fields near heavy population centers will bear the brunt of the hunting and fishing this year.

Hardships in the coming days may be great but of one thing we are certain. The traditional heritages of the American way of life, which have always included hunting and fishing as a major recreation, will not be entirely eliminated.

And to the soldier on furlough, the war-worker with a free week-end, the ordinary civilian with the wartime jitters—an opportunity to escape to the great out-of-doors with shotgun and dog, or tackle and bait, will do more to stimulate the home front morale than all the pep talks that can be crowded into a 24-hour day.



Consult Your Game Warden

On May 1 the general fishing season gets underway in Texas. Since the last fishing season many local fishing laws have been repealed, amended, or replaced by new ones. It is impossible at this moment to inform you about the new laws. That will be done just as soon as the Legislature adjourns. But in the meantime, just to be on the safe side, consult your local game warden about changes in fishing laws in his district. He is your friend and he wants to help you. Meanwhile—DON'T FORGET TO BUY THAT FISHING LICENSE, NOW!





These antelope are still pretty frisky even though they have been herded across miles and miles of open range into this main net pen. The animals are held in this pen until they quiet down. Then they are herded into another pen and

finally into the handling pen where they are captured, tagged, weighed and placed in crates for the journey to their new range. Note the neck bands and the "horse like" movement of the antelope.

Restoring The Antelope

by A. J. Nicholson

Field Biologist

PRONGHORN antelope, once abundant on the plains and prairies of Texas, are now confined to a few isolated ranges in the Trans-Pecos and Panhandle. However large portions of the vast former ranges, now unpopulated, are still suitable for antelope. Accordingly, in 1939, the Texas Game, Fish and Oyster Commission launched a program of trapping and transplanting in an effort to re-establish these animals over a larger portion of the State. Since 1939, 1386 antelope have been trapped and moved to 68 restoration areas in 34 counties. The success attained in this program definitely establishes the feasibility of the program and further efforts along this line will be continued in the future.

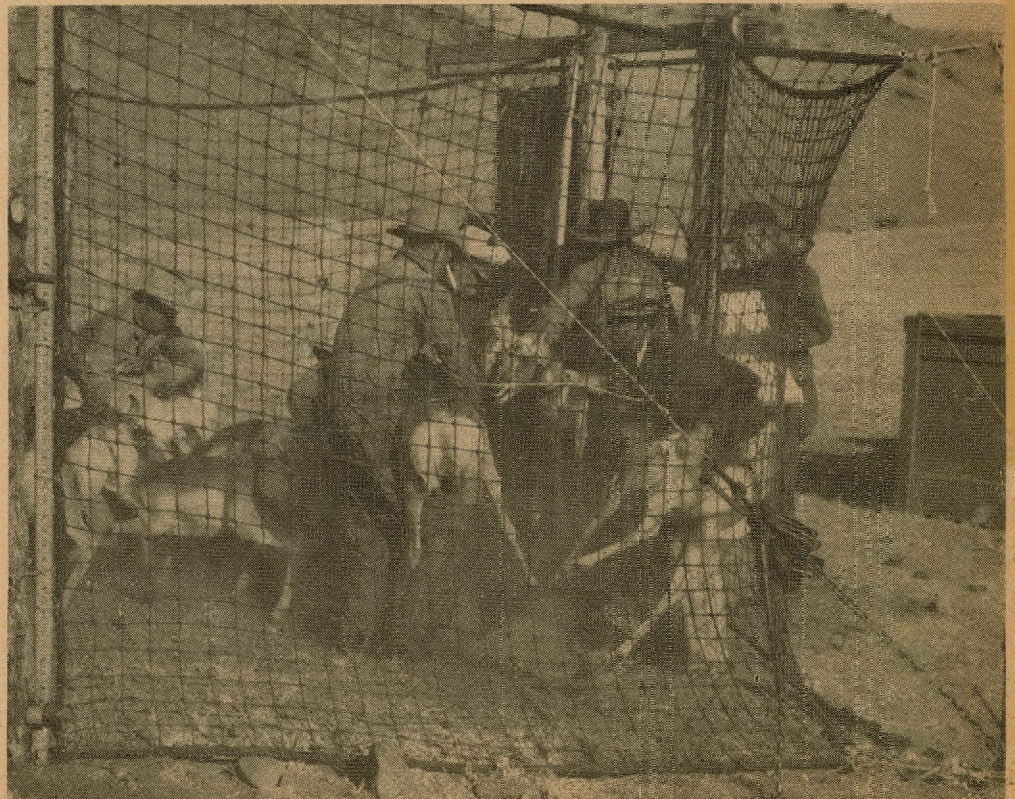
IT IS GENERALLY known that antelope live on the open plains and prairies where they are not easily approached, and that antelope are one of the fleetest animals in the Americas; therefore, one may wonder how the feat of catching 1386 antelope was accomplished. A trap designed after that used by the New Mexico Game Commission but with certain modifications, has been used. This trap is composed of 3 units; the Texas pen, made of 5 foot wire net; the main net pen; and the crowding pen. Both the latter pens are made of 2 inch mesh cord net. The Texas pen ordinarily contains about 6 acres, the main cord pen contains approximately 4000 square feet and the crowding pen is 14 feet square.

THE ANTELOPE ARE first driven

into the Texas pen where they are allowed to remain overnight. The following day they are driven into the main net pen and then are crowded into the crowding pen in lots of 4 to 8 where they are caught for tagging and loading. Antelope are caught for loading by "flanking" them, similarly to calves.

THE ANTELOPE ARE now driven into the Texas pen with an airplane. During the first year of operation, horses and men were used to round up and drive the antelope, but since then it has been found that this job can be accom-

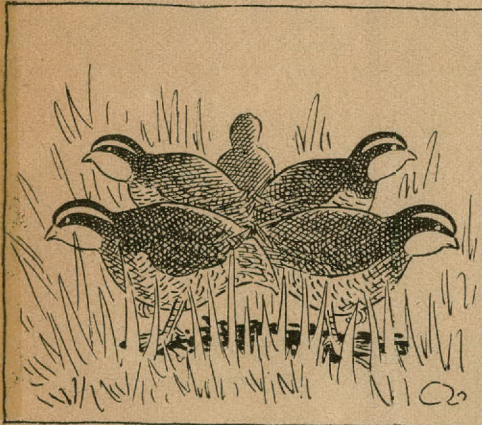
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After antelope are herded into the handling pen, trappers enter the pen and grab hold of the nearest animal. Once an antelope is off his feet, he is practically harmless.

SO you don't believe that bobwhite Squail roost in a circle with heads out and tails inward! For a considerable portion of my life I did not believe it either but now I know 'tis true. To those unfamiliar with the life and habits of bobwhites it seems foolish and unreasonable that these birds should act in this manner. Through the centuries quail have developed a pattern of life that best suits their needs and survival. There is a good reason, therefore, why they should roost in a circle with heads out. About dusk they, through instinct, select an open grassy field or meadow for their night's rest, assembling in the manner described above. If disturbed or attacked while in this formation, they flush automatically in all directions. Being scattered out—they are much more difficult to find—therefore a greater number survive the attack.

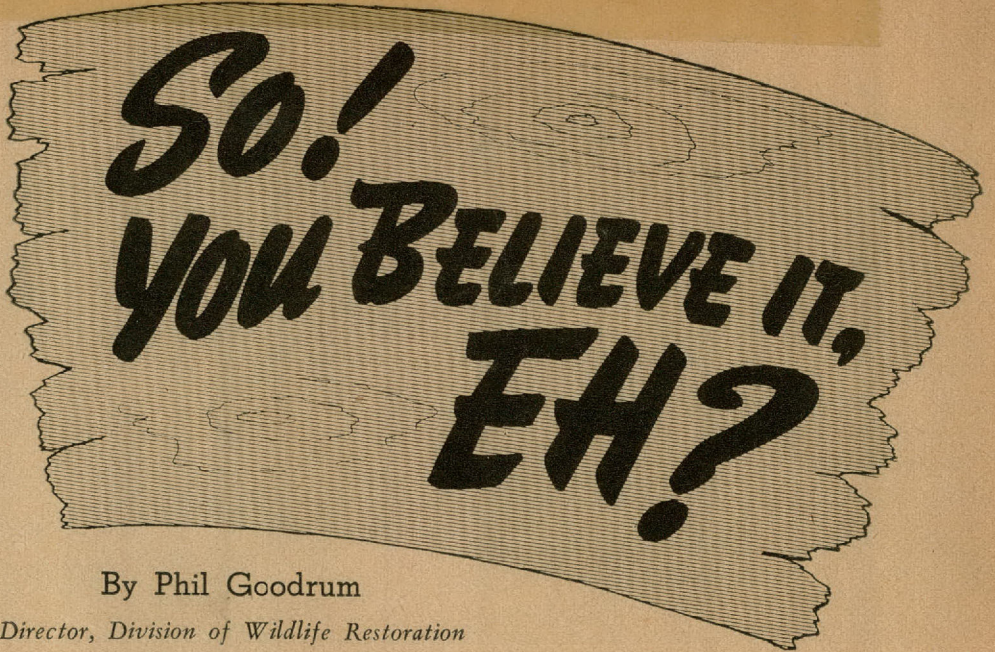
QUAIL ROOST IN circle groups for other reasons. On cold nights they are able to keep warmer. The colder the night the closer together they roost. On warm nights they spread a considerable distance apart to keep cool. If not disturbed, they roost in the same locality night after night, often in the same spot. Even in the spring and summer



when coveys are broken up and the birds are in breeding pairs, they roost on the ground side by side. Of course this is impossible when one of them is incubating the eggs. The bird not on the eggs, however, always roosts nearby.

ALTHOUGH QUAIL USUALLY sleep on the ground, they have been known to roost in low shrubs and in vines. Grape and berry vines are favorite places. Vine and shrub roosting is more frequent among quail in the southern States where the weather is warm.

AMONG THE UNUSUAL "So You Believe It, Eh's!" one was brought to my attention in August 1940, after delivering an address on wildlife conservation in Eastern Texas. A man about forty years of age came to me and told me of his experience with a covey of baby quail chicks the week before. He had gone into his pasture to drive up the milk cows when he heard a hawk creating a commotion near a clump of post-oak trees. Being curious, he went over to see what the commotion was all about.



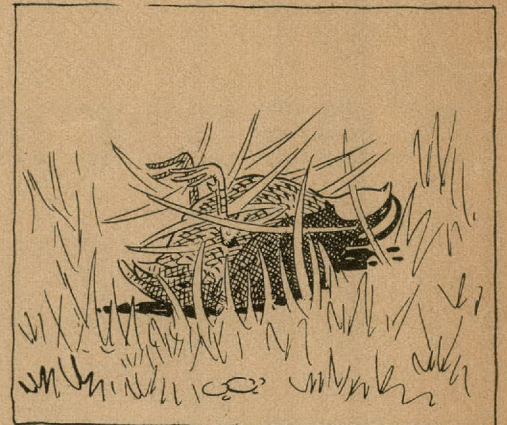
By Phil Goodrum

Director, Division of Wildlife Restoration

When about thirty yards from the clump of post-oak trees he heard a peeping noise in the weeds and grass. After a long and diligent search he found a pair of baby quail about the size of a large man's thumb lying on their backs with the feet extending upward; each bird held a small bundle of grass stems in its feet. This shenanigan, he said, was to fool the hawk.

NOW IN ALL my experience I have never seen any bird voluntarily lie upon its back. Furthermore, it is extremely doubtful whether or not a quail, old or young, could grasp grass stems in its feet for it is not in the nature of quail to do this. To my knowledge none of the writers on the life habits of quail have ever mentioned this alleged habit of the bird. Bobwhites have many ways of protecting themselves, and protective coloration is one of them. A quail sitting "tight" but on its feet is most difficult to see because its back is colored very much like the grass in which it may be.

With its belly up, it is easy to see for the underparts are of a color easier to



detect and therefore less protected. Fact or fancy? You be the judge.

* * *

Send in your "So You Believe It, Eh!" to Phil Goodrum, State Game Department, Austin, Texas.

War and Wildlife

WILDLIFE officials from 44 states, Mexico, and Canada met recently in Denver to discuss emergency wildlife problems. Many points of interest to sportsmen were brought out in general discussions.

ACCORDING TO the survey of the United States Fish and Wildlife Service, a total of 253,000,000 dressed weight pounds of game was harvested by some 8,000,000 licensed sportsmen during 1942. Of four common kinds of game, 32,500,000 pounds were ducks, 28,000,000 pounds were pheasants, 68,500,000 pounds were rabbits, and 22,000,000 pounds were squirrels. Of this total, Iowans cropped 13,031,630 pounds.

MANY STATES ARE facing potential crop damage from surplus wildlife crops. Because of the shell shortage, transportation difficulties, and the large numbers

of sportsmen that were unable to hunt last year, serious damage is anticipated in many areas. In this discussion Lewis W. Liscomb, one of the members of the W.P.B., stated that he would recommend to the War Production Board that 4,000 tons of non-defense metal be allotted to manufacturers of sporting ammunition for hunting loads. It was pointed out that all the Axis countries had allotted materials for sporting ammunition for the dual purpose of harvesting game as a food crop and protecting agriculture from surplus game. Sporting shells that would be loaded and made available to hunters would include 30.06 and 30.30 rifle shells and 12 and 16 gauge shotgun shells. The supply could be made available within 60 to 90 days.

The incubation period of a bobwhite quail is 23 days.

DEER in the Hill Country

By Henry C. Hahn, Jr.

Wildlife Biologist

WHEN discussing the agricultural and natural resources of the Edwards plateau region we inevitably think of deer as one of the outstanding crops. The importance of the deer as an economic and aesthetic asset has taken its place along with fine Hereford cattle, Angora goats and sheep.

DEER WERE NOT always abundant in the Hill Country. Old timers who first settled the country tell us that the deer in the Hill Country were reduced by intensive hunting. On uncontrolled ranges every year hunters killed wagon loads of deer for the market, taking only the hides and leaving the carcasses to decay. Deer in the vicinity of the frontier posts were practically exterminated due to the demand for venison to feed the armed forces stationed at these outposts. Many hunters in the Hill Country can remember when five or six deer in one day's hunt was a rarity. By 1914 the deer supply of the Hill Country had been so reduced that many hunted for them in vain.

WHILE A FEW ranchers initiated deer conservation as early as 1900, there was little general interest in such a program until later years. On these few protected areas deer prospered. Hunters offered to pay the landowners for the privilege of hunting on their premises. As a result of such offers, several groups of farmers and ranchers banded themselves together and formulated conservation regulations for their own property. General programs of predator control were initiated. Better law enforcement developed and reduced poaching. The enactment of a law against the killing of doe deer was a big factor in restoration. Ranchmen who rode their fences in the interest of livestock began to enforce the trespass law to protect game. The passing of the Shooting Preserve Law which allowed landowners to charge for hunting privileges stimulated even greater interest in the conservation movement.

THE WHITE-TAILED deer has shown an encouraging increase in the last fifteen years along with civilization. It has adapted itself so well to the ways of civilization that it is common or even abundant at only short distances from some of the most thickly settled regions. Thousands of bucks are killed each hunt-



ing season in the Hill Country by hunters who come from all sections of the State and from other states. More than 70 per cent of the deer harvested on the shooting preserves of Texas are taken from thirteen counties on the Edwards Plateau.

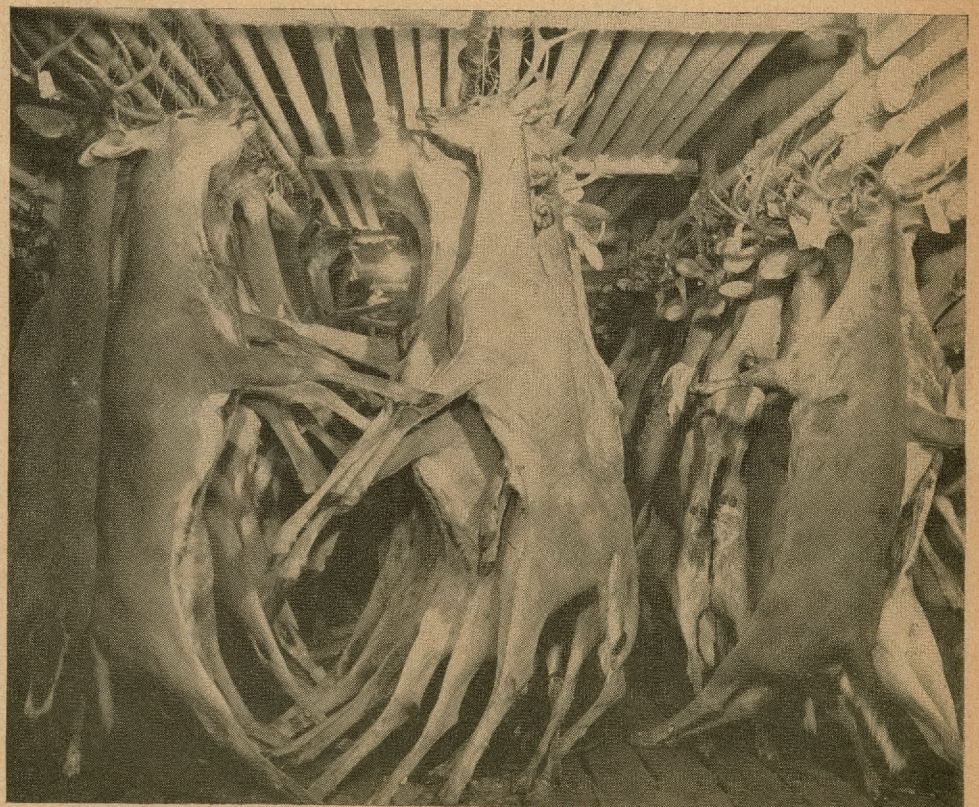
THE REGION IS now the center of a great wool and mohair industry, producing 80% and 95% respectively of Texas sheep and Angora goats. The carrying capacity of the range has reached a point of saturation in recent years and deer and domestic livestock are now competing to some extent for forage. With sheep, goats, and cattle being given primary consideration by the landowner, the deer have to suffer the ill effects of the conflict.

THE DEER POPULATION fluctuates widely because of the lack of proper management practices. Feed supplies available at certain seasons and the occurrence of disease from time to time also greatly influence deer populations. In some areas the deer population has increased to the point where the range cannot support them. A deer to each 4 or 5 acres is not uncommon in some areas. In such areas die-offs occur frequently due to malnutrition, diseases and parasites. Even though a food shortage may cut down the number of deer somewhat, it is desirable that hunters take a generous harvest from the surplus supply to prevent even greater disaster to the deer herds.

AN INCREASED harvest of the buck crop will not remedy such a situation. A continuous harvest of the buck crop year after year tends to upset the natural sex ratio of the deer herd. Female deer outnumber the male animals to such great extent in some areas that less than 50 per cent of the does are bred during the breeding season. The natural sex ratio among deer is a 50-50 ratio. Killing off the larger and better bucks each year tends to produce less vigorous animals and thus reduces the general size of the animal. In areas of the intensive hunting the buck crop is over harvested and as a result the majority of the bucks left to breed are one and two year old deer.

SOME RANCHMEN think of deer management in terms of good cattle management. They know that if a rancher harvests only his bull or buck

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Just a few of the deer carcasses stored in a cold storage plant in the hill country near Kerrville at the end of the 1942 hunting season.

Fliers Train In Anglers Paradise

By Jimmie Lingan

Houston Chronicle

MANY people are disturbed about what the men in service do in their off-hours. You read articles here and there about their night clubs, their honky tonking, their drinking.

I recently had the privilege of spending a few days with a bunch of youngsters, most of them in their early 20's.

IT WAS On an island off the Gulf Coast. There were no nightspots there. The whole island is controlled by the army air corps and coast guard. It is devoted to the final stages of gunnery training.

What do they do in the off-time? Go to the mainland and have a fling? Sit around and mope because they can't? Get homesick?

They seldom have spare time under the intensive training program, but they put in every spare minute they can in hunting and fishing.

It's Matagorda Island. Some of you readers don't even know where it is, or what purpose it serves in our war effort.

MATAGORDA ISLAND is separated from Matagorda Peninsula by Pass Cavalla. The northern end is just across Espiritu Santo Bay from Port O'Connor. It is about the size of Galveston Island, and extends along the coast to Cedar



Fresh fish for the mess at Matagorda Island. Anglers among the officers, cadets and men saved their fish until there were enough bull reds like these to serve a portion of fish or more to every soldier at the post.

Bayou, which separates Matagorda and St. Joseph's islands. St. Joseph extends to Aransas Pass, just opposite the town of Port Aransas.

Fishermen know Matagorda Island, however. A little more than two years ago, when Texas coastal sportsmen learned that an army bombing range was going to put an end to fishing for redsnappers and kingfish along a large



Anglers look over 215 pounds of reds and trout, taken from landing slips near the camp. Left to right are Sergeant Prihoda, Lt. A. S. Vandervoort, Lt. Edward Dryden, Lt. William I. Eaves, Lt. Col. Charles A. Miller, post commander; Maj. Frank T. Geyer, Lt. Harold H. Huffman and Lt. Howard C. Alexander.

part of the gulf, a great many of them were more than a little dismayed.

"Why don't they drop those bombs in the Davis Mountains?" some asked. "Why do they have to spoil the best fishing along the entire coast?"

BUT THE ARMY was not impressed, and the fishermen forgot it. The ranges were established. The coast guard pressed most of the sportsmen's boats into service, and only commercial boats, mostly engaged in shrimping, continued to operate in the gulf. Many of these were switched to other work jobs.

Of course fishing for redsnappers and kingfish just about came to a standstill. Surf fishermen continued their sport along Galveston and Mustang islands, but Pass Cavalla, one of the finest spots for this sport on the Texas coast, was right in the middle of the proposed bombing range, and they passed it up.

THERE ARE NO places of recreation on the island except those provided by the army.

But there are plenty of fish, and they bite almost every day. Through the summer and fall many trout and flound-

ers were caught during the soldiers' spare time. Since winter set in most of the catch has been redfish, which are taken both in the slips near the camp and along the beach near Pass Cavalla.

UNTIL JANUARY 10, when the season closed, many of the officers and men who had shotguns hunted ducks along the island and in the bay. The duck stamp law was rigidly enforced.

Cadets have a chance to relax at both of the Matagorda gunnery schools. Until they are ready for this last step in their training, the boys, who are mostly young men between 18 and 25, have had a busy time with their studies—so busy that many of them pass up all dates until they get their wings.

BUT AT MATAGORDA they sometimes have a few hours off their training program, usually a few half days to do as they please. Those who know what to do at the beach pitch in and do it. Others—many of whom have never seen salt water before—begin to learn.

Consequently there is a lot of fishing going on every day—even when it freezes

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Gar Fishing Is Thrilling Sport

By Marion Toole
Chief Aquatic Biologist

BENDING rods, long runs with lines swishing, the fish repeatedly leaping tarpon-like out of the water, all making a test of skill, sums up sporting pleasure that makes you give a bow of admiration to the erstwhile lowly-regarded gar.

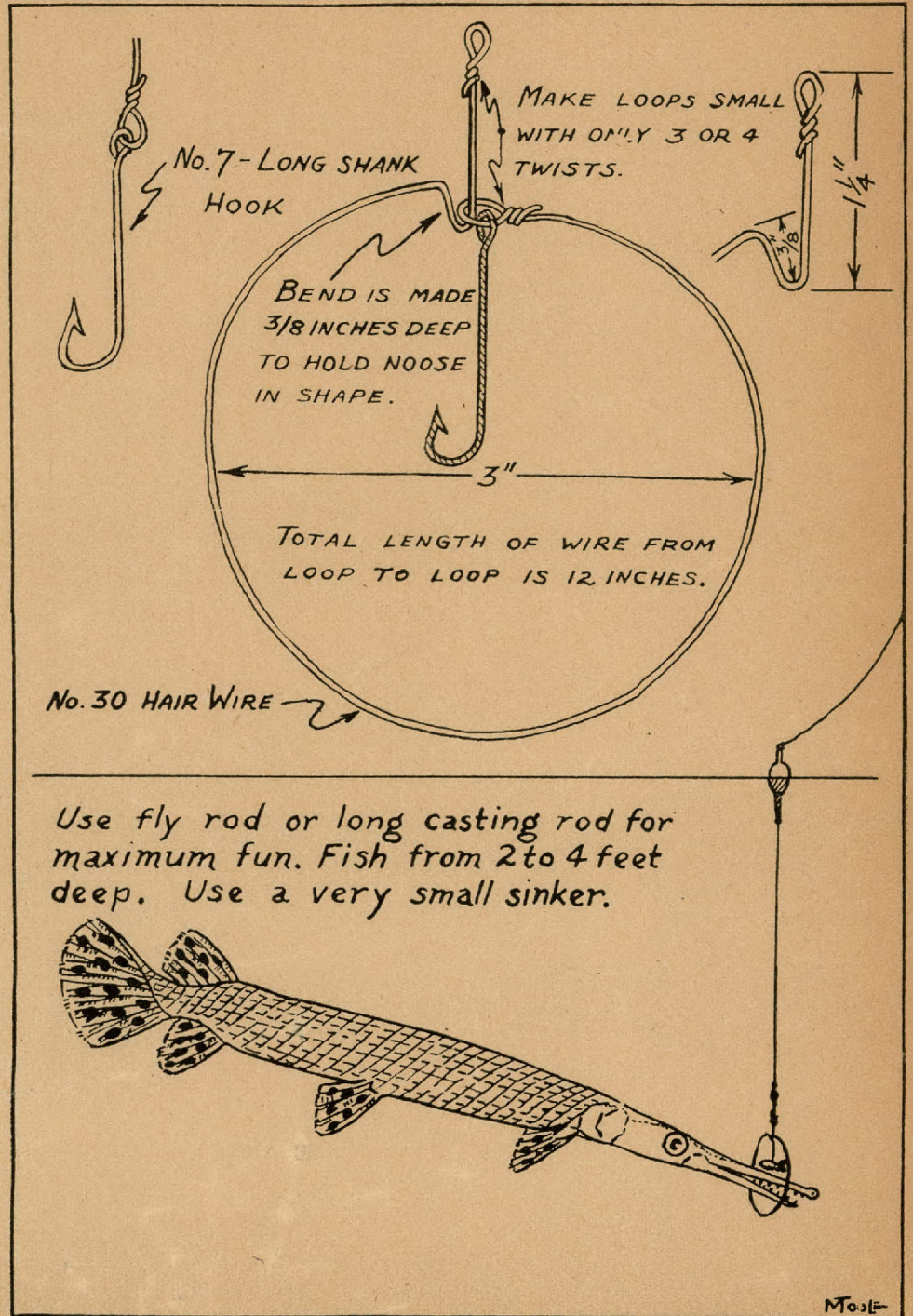
REQUIREMENTS FOR entering this new realm of angling pleasure being rapidly discovered by Texans are simple. Needed equipment is a spool of No. 30 hair wire (cost 10 cents), a few No. 7 long-shank hooks, several buckshot weights and a cork float. Your line can be placed on a casting rod, fly rod or long bamboo pole. The lighter and more limber the pole or rod the more fun for the angler.

THE LOOP, OR noose was perfected by Jack Sparks of Waco. It takes only one minute to make a loop by following the instructions. After the noose is made be sure the hook hangs straight in the middle of the noose. Tie the loop to your line and place a shot weight above the loop. Set your cork at from one to four feet, the depth being arbitrary and depending upon how the gar are running. On a warm, sunny day they will be close to the surface. Gar apparently are not afraid of boats and will strike the bait even a few feet from one.

MINNOWS ARE USED for bait and it has been found that live bait is best, although gar will take dead minnows readily, especially in waters not abundantly supplied with minnows. The gar sticks his snout into the noose and strikes sideways at the minnow. At times it is almost impossible to ascertain whether you have a strike, so at the slightest strange behavior of your cork, give a hard, rapid jerk to your line in order to draw the noose tightly around the snout of the gar. If you struck true, the fight is on. Many fish will be lost at first, but with practice you will capitalize on more and more strikes until you are catching a high percentage of fish.

GAR USUALLY TRAVEL in schools and are most considerate about letting their presence be known because of the necessity of their breaking water as a part of their process of breathing. Concentration of gar will usually be found below dams on rivers and in coves and inlets of lakes. When you locate a school of these fish and swing your baited noose into the water the fun begins.

MANY ANGLERS DO not care about catching fish to eat, but merely fish for fun. Many bass fishermen release their catches. Tarpon fishermen expend much energy bringing a silver king to gaff, yet the tarpon is not edible. You might think it below your dignity to fish for gars, but many ardent bass fishermen of the old school who have recently tried



out gar fishing now openly admit it is the greatest fishing they have ever indulged in. Too, by killing the gar you catch, you are helping to restore the balance between game and rough fish

and thereby doing your part in fish management work. The main idea to remember, however, is that gar angling is a thrilling sport. Try it once and you'll be an addict for life.

A female mink reared her litter of young under a farmer's corn crib in Howard County, Missouri, during the summer of 1942. The mink family cleaned up all mice and rats around the farm, but never molested chickens which were around at all times.

The wild mallard breeds freely and abundantly in captivity and domesticates rapidly. Most of the world's domestic ducks are descendants of this fine wild waterfowl.

The kangaroo of Australia is a near relative of our native opossum.

The marsh hawk's haunts are not limited to marshes. It is common on the prairies and plains of the Middle West.

A Sure Game Supply

(The second of two articles on the Shooting Preserve System in Texas)

By Wm. J. Tucker

Executive Secretary

Game, Fish and Oyster Commission

TEXAS Shooting Preserves are operated mainly in the livestock country. Much of this range has been badly afflicted by drouth during the last two decades and many of the landowners are learning the penalty that must be paid for overgrazing. A few of them have been forced to abandon pastures to restore grass and thereby game has been benefitted from which they were still able to derive some revenue. With more favorable moisture conditions, it is expected that provision will be necessary to dispose of the surplus does on many of these properties. In some places the herds are badly out of balance. Because of the necessity of restoring deer in many sections of the State, while still permitting some hunting, Texas has never permitted the killing of does since a real start was made on game protection in this State.

ALTHOUGH A FEW experiments have been made in operating properties with game as the primary crop, the returns have not been encouraging. The better lands produce the most game, and returns from hunters will not pay the investment on such property. Game is nevertheless a source of important revenue on both good and poor range lands. A nine-year record of lease earnings on the James River Ranch in Mason County shows a total of \$38,004.38. It is a 43,000-acre property, where the only abundant game is deer. It also carries 8,000 goats and kids and many cattle. One ranchman in Kerr County was able to pay for his property by the money received for hunting privileges.

IN 1941, THE last year for which complete statistics are at hand, Shooting Preserves devoted to deer and turkey accommodated 36,479 hunters. They were on the preserves 81,458 hunting days and killed 11,108 deer and 3,936 turkeys. Because of unseasonable weather it was one of the worst hunting seasons in several years. The aggregate earnings of the Shooting Preserves was approximately \$500,000.

PROBABLY VERY few of the 36,479 hunters who were able to do some hunting during a bad year would have found a place to hunt except for the operation of Shooting Preserves. We do not mean to infer that all of the good deer and turkey hunting is found on Shooting Preserves. Many landowners have never made a charge for hunting and some of their property is a model of private

game management. Fortunate indeed are the friends of landowners such as these.

THERE IS A considerable variety in the manner in which charge is made for hunting in this State. Some make a daily charge, others charge by the season. A few make long-time leases of the hunting rights of their property to a group of hunters, who operate that property as a private shooting club. Where the same group of hunters lease a place year after year the most satisfactory arrangement is conceded by both the sportsman and landowner. Under such an arrangement the landowner has some assurance that the game will not be too closely harvested, for many of these groups take as much interest in the game of the property as does the landowner himself.

DURING THE INCEPTION of the legalized shooting preserve in this State there was a tendency on the part of some landowners and lessors of property to procure a license for their property and then make a charge for hunting where little or no game existed. Other landowners admitted an excess of hunters and permitted an excess kill of game on their properties. Both of these practices have abated to a considerable extent. The hunter has learned that the mere possession of a Shooting Preserve license for a given property is no guarantee that he will get good hunting thereon. He has learned to make advance investigation of prospective hunting right purchases just as he would investigate any other purchase that he was making from a stranger. State Game and Fish Wardens have always endeavored to assist the hunter in this regard. Whereas they are quick to inform the hunter of a desirable lease, they are just as ready to inform him of any Shooting Preserve where he has no opportunity to get his money's worth from a reasonable effort. Most landowners, who intend to stay in the Shooting Preserve business, have learned that they must regulate the harvest of game from their properties as expertly as they regulate the harvest of their domestic livestock. Many of them, with immediate monetary returns in sight, have refused to admit hunters after there has been a heavy natural mortality on their properties, or when

increase has been inhibited by unseasonable conditions.

WHEN ONE IS aware of how slow other desirable agricultural practices were adopted in this century, it is rather encouraging, after only about fifteen years of legal operation of Shooting Preserve, to know that the operators who are still in the business are those who have made reasonable efforts to sustain their enterprise. It is a good argument for the future success of this large-scale game management endeavor to know that many of them are willing to make temporary sacrifices for the benefit of ultimate gain; that a few of them have learned to understand the principles underlying sustained game yield quicker than most landowners learned to understand the principles underlying sustained domestic livestock yields.

PRICES PAID FOR hunting privileges are in ratio to the accessibility of the reserve and the abundance of game thereon. The places in reach of a large population of hunters, where are found supplies of game from which the hunter is sure to affect a good kill, command a high price, in a few instances as high as \$200.00 for a single hunter for the season. The average seasonal price for fairly good hunting areas is about \$30 a person, where there are both wild turkey and deer in prospect.

LANDOWNERS IN THE plowed region of the State have not succeeded with paid hunting to any considerable degree. Those areas offer an attraction of only quails and squirrels. Most of them are devoted so extensively to cotton, wheat, rice or other annual crops that there is little satisfactory habitat for game. Some of the good grazing lands that still support a large quail population have commanded good prices, however, that range as high as 25 cents for each bird removed therefrom. It is obvious that a farm which would return an annual harvest of as many as 50 quail, which would require as much as 200 acres in most of Texas, would not produce a monetary return sufficient to defray much cost of management and protection.

THE LIVESTOCKMAN of Texas is naturally friendly to game. He wants it on his premises as one of the natural attractions of the environment, but in many instances he could not afford this luxury and the competition which it offers to his livestock if it were not for the profit that is to be derived therefrom. The small ranchman, because of the profit to be made from deer, is willing to

(Continued on Page 16)

Shooting Preserves Help All

Quail Management In North Texas

DURING the past season, 1942-43, quail hunting in the post oak section of North Texas was enjoyed by almost as many persons as in previous years. Due to the shortages of ammunition near the end of the season and transportation difficulties, somewhat fewer quail were killed. This factor, together with the large seasonable quail crop, will cause a large number of quail to be left as breeding stock. Barring a poor hatching season and other calamities, a large crop is expected next season. Bobwhites have made phenomenal increases in the post oak section of northern Texas.

IT IS THE unanimous opinion of all that the present population of quail is the best in twenty years. Many hunters that have known the hunting situation in this section for a great many years relate the scarcity of the birds prior to 1940. From available data, the past two nesting seasons have been very successful, and a phenomenal increase of quail has resulted.

THE INCREASE IN quail in the post oak section of North Texas, however, is not all accidental. Of course climatic conditions such as rainfall, wind, and temperature have played an important role; but the added consideration of the landowner for the birds has been an important factor. Conservation agencies have given their aid to the landowners, and the landowners have in turn cooperated in every reasonable way to better the conditions for quail.

THROUGH THE LEADERSHIP of agents of the Game, Fish and Oyster Commission, tracts of land have been set aside as refuges and preserves on which experimental quail management practices are being carried out.

On one area in Denton and Tarrant counties, practices such as clearing, burning and grazing have been used to thin the dense underbrush; and food plots have been established as a trial of the value of supplementing the food supply.

IT IS APPARENT that the major limiting factor for a maximum quail population in this section is the unbalanced condition between the open fields and dense post oak timbered areas. It is difficult to state what is the one best method to thin the brush. Of course, it is possible to go into the woods and cut out the desired number of trees by use of an ax; but this method is not always feasible from a standpoint of time and expense. Therefore, the combination of clearing, burning, and goat grazing has been used to good advantage.

THE CLEARING OF the land has been the most popular of the practices

among the landowners. Much of the experimental land has been bought in recent years by business men from Dallas and Fort Worth, and realizing the land was of little use for grazing and farming in its present condition, set out to clear it. Many of the landowners have cleared small fields of from 2 to 15 acres in size during the past two years. The cleared fields have been highly beneficial to quail as feeding and nesting areas.

BURNING, AS A means to thin brush, was used on only one farm. During February of 1942, approximately 60 acres of the most dense timbered section of the

By Travis Roberts

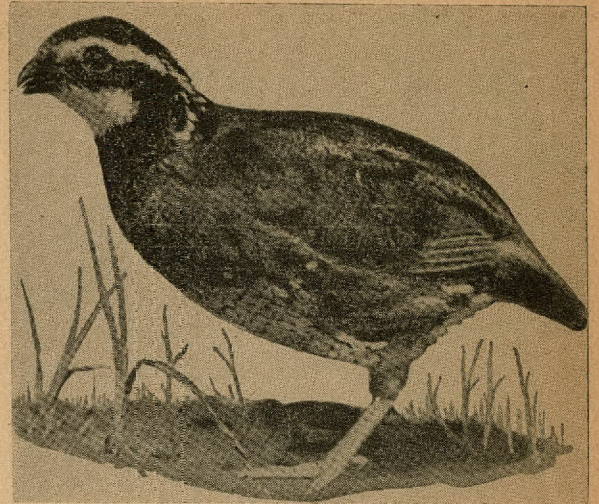
Wildlife Biologist

area was burned. A brisk south wind was blowing from the south, and the ground cover was very dry. This insured a hot fire, and many of the saplings with a diameter up to 3 inches were killed in the blaze. After the brush had been killed by the fire it was possible to clear the rubbish from the burned area and make additional space for seed and cover plants to grow.

IN BURNING BRUSH areas, every precaution should be exercised to prevent the fire from getting out of control. This is possible by plowing a fireguard around the area or by back-burning a space to keep the fire in the desired area. On the project in Tarrant county it was possible to use roads on every side of the fire as a control.

THE THIRD METHOD used to improve cover conditions for quail on the Denton-Tarrant Counties Project was rotation-grazing of goats. This method was highly successful in thinning out the brush, but at the same time a sacrifice of seed and cover plants had to be made. However, if the goats are rotated from one pasture to another, the plant situation may be controlled by natural succession. It has been proved on the experimental area that the grasses and seed plants will return to a goat-grazed area in only a short time.

AT THE SAME TIME the cover manipulation practices were being conducted on the post oak section, other experimental work was in progress on food and feed conditions for quail. In the spring of 1941, eight food plots were established on the area. These were plowed and planted to seeds thought to be taken as food for quail. The success



of the plots was not completely ascertained during 1941, so five plots were plowed, fertilized and planted again in 1942. These areas were closely followed to determine the use of the areas by quail, and some of the birds were collected and the crops analyzed to see the amounts of the cultivated seeds that were taken as food. From this study it was determined that the food areas were used very little by quail due to the abundance of native and domestic seeds available in the fields, pastures, and hedgerows. Therefore, it is possible to say that food plots are not practical as a quail management practice in this section, because if the rainfall and other conditions are favorable for a good vegetative growth, wild food will be plentiful, and if the conditions are adverse the food plot vegetation will fare no better than the wild food plants in the fields and pastures.

THEREFORE, FROM THE results of the experiment in Denton and Tarrant counties, it appears that environmental improvement of the quail habitat holds great possibilities.

WITH THE WARDENS

C. R. Weeks has been re-employed as game and fish warden, effective March 20. Headquarters at Daisetta, P. O. Box 343.

P. B. Harbison, Hebronville, has resigned effective April 1.

A. W. Lewis, Dallas, resigned effective March 1, to enter the Army.

A. A. Stein has been transferred to Dallas to take Mr. Lewis' place.

In 1895 Montana permitted the killing of 8 deer, 8 sheep, 8 antelope and 8 Rocky Mountain goats per person during a season extending from September 1st to January 1st.

FISHES OF TEXAS

The Sunfishes

HAVE you ever caught a sunfish in Texas with a black blotch or spot at the base of the last soft rays of the dorsal fin? If so, it's a good bet that you have caught one of three species of fish; either a Bluegill, Green Sunfish, or Small Sunfish. Other species of sunfish found in the United States have the dark spot in the dorsal fin, but fish distribution

studies made in Texas show that only the three species mentioned are likely to be seen in this State. These fishes can be easily identified individually. Sometimes the angler might catch an unidentifiable fish that carries such a mark because various species of sunfishes frequently cross-mate, causing hybrids that can be identified only by a taxonomist.

Green Sunfish

Lepomis cyanellus (Rafinesque)

THIS ATTRACTIVE member of the sunfish family has a body color of green, usually olive, on the back and sides, with a yellowish color below. Each scale generally has a bright blue spot on it, forming rather distinct lateral streaks. It frequently has dusky vertical bars, also. On its cheeks can be seen three or four narrow emerald-green lines. The iris of the eye is red. There is a yellow or nearly white edging around the caudal and anal fins which is so conspicuous as to be observed even when the fish is in water. A large black blotch is found at the base of the soft dorsal fin. The green sunfish has a large mouth, with the lower jaw protruding, giving the mouth the appearance of the black bass's mouth. This fish usually reaches a size of 8 inches and a weight of over 5 ounces.

THESE FISH SPAWN from March to September. The nests are built by the male in shallow water to a depth of about 3 feet. Nests are placed on shoals and in weed beds or around stumps. The fishes use their tails to fan away dirt and debris until a suitable bottom is obtained. Sand, gravel, and roots of aquatic plants are the most desirable types of material for their nest-building. The smaller sunfishes, unlike the basses and crappies, place their nests very near to each other. The author has observed as many as 6 nests in an area of 7 sq. ft. After the nest is completed, the male entices a ripe female to the nest where she deposits the eggs, which are fertilized simultaneously by the male. After the egg-laying is completed, the female is driven off, and the male zealously guards his nest of eggs from all intruders until the eggs hatch and the new fry are a few days old. The young then scatter about among plants in shallow water to start their battle for life. The author has seen the same sunfishes spawn more than once during the same summer.

GREEN SUNFISH ARE found mainly in small streams, rivers, and small ponds and lakes and are well distributed over

Bluegill

Lepomis macrochirus (Gunther)

BLUEGILL HAVE many common names, among which are bream, brim, blue sunfish, coppersnosed bread, pumpkin seed, and perch.

They sometimes grow to a length of 10 inches and attain a weight of 1 pound.

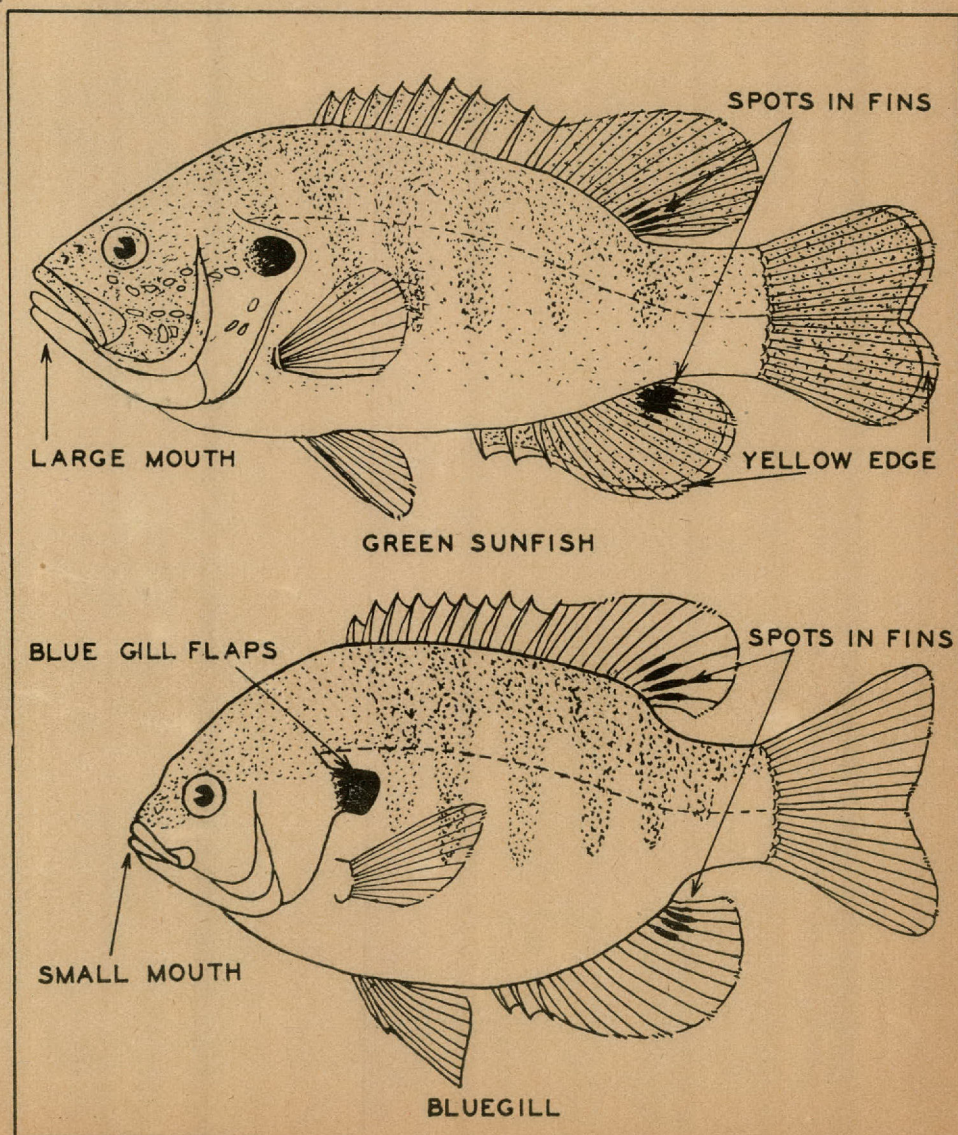
THESE FISH, LIKE the green sunfish, have the dusky spots on the base of the soft dorsal fin but can easily be differentiated from the green sunfish because they have a very small mouth, not reaching back farther than the eye. The gill flaps found on the operculum are short and tinted a velvety blue-black. They have an olive-colored black and light green or lavender-colored sides. At times the belly is yellow-colored. Dusky vertical bars occur on these fish.

The spawning habits outlined for the green sunfish are also applicable to these bluegill.

BLUEGILL ARE primarily a lake fish, but they are also found in rivers and small streams. They thrive excellently in ponds and are particularly fond of brush heaps and dense vegetation. Apparently the type of bottom in the lake pond or river in which they live does not affect them perceptibly, since they do equally well in muddy or clear water.

BLUEGILL FEED mainly on small crustaceans, aquatic insects, worms and aquatic plants.

They may be caught by the same methods as outlined for the green sunfish, with the exception of plug casting. Their small mouth prevents them from taking a large artificial lure.



(Continued on Page 17)

Legislation Affecting TEXAS WILDLIFE

FOUR bills affecting Texas wildlife were passed by the Legislature during the period February 17 to March 17. Three of the four bills passed became effective with their signing by the Governor.

In addition, 22 bills affecting Texas wildlife were introduced in the House, and one bill was introduced in the Senate.

Wildlife bills passed or introduced during the period Feb. 17 to March 17 are summarized below.

BILLS PASSED

H. B. 241. By Simpson, Love, Hull and others. Amends the Lake Work-Eagle Mountain Lake fishing statute to provide: (a) compensation in the form of fees for agents who sell Lake Worth-Eagle Mountain Lake fishing licenses and; (b) abolishes the present 25-cent daily permit to fish in those lakes and provides for a 5-day permit costing 35 cents; (c) gives regulatory powers to the Game, Fish and Oyster Commission insofar as they pertain to fixing means, methods and devices that may be used for taking fish in Lake Worth and Eagle Mountain Lake, and (d) closes season on all fishing in the two lakes during a three-month period each year from February 15th to May 15th. Signed by Governor March 11, 1943, and became effective that date.

H. B. 190. By Spacek, by request. Permits the use of seines and nets (except drag seines or nets) of not less than one inch square mesh for the purpose of taking suckers, buffalo, carp, shad and gar in Fayette County during November, December, January, February, May and June. All bass, crappie, white perch, catfish, bream or trout caught during these operations have to be returned to the water. In addition the new law permits the catching of suckers, buffalo, carp, shad and gar by wire, rope or gig at any time of the year, but as in the case of the use of seines and nets, all game fish mentioned above if caught by these methods must be returned to the water. Signed by Governor on February 25, 1943 and became effective that date.

H. B. 85. By Spacek. Closes season on the taking of bullfrogs in Fayette County during the months of March, April and May of each year. Signed by Governor February 25, 1943, and becomes effective 90 days after adjournment of Legislature.

H. B. 119. By Parker. Makes it lawful for anyone to hunt, take or kill squirrels at any time in the counties of

Young, Tom Green, Irion, Sterling and Jack; makes it unlawful to hunt, take or kill squirrels except from Nov. 10 to Jan. 10 of each year in the counties of Jasper and Newton. Signed by Governor February 18, 1943 and became effective that date.

HOUSE BILLS INTRODUCED

H. B. 388. By Wood. Provides an open season, Nov. 16 to Dec. 15, for the taking of wild deer in San Augustine and Sabine counties. Also limits the bag to one wild buck per year. Also provides for an open season on squirrels during October, November and December.

H. B. 396. By Garland. Amends a law passed in 1941 to permit the taking of raccoon in Commissioners Precinct No. 4 of Red River County.

H. B. 429. By Sharp. Prohibits the killing of wild fox in Lamar County for a period of five years.

H. B. 448. By McLellan. Provides for the transfer on August 31, 1943, of the balance on hand in the state treasury in the credit of the Fish Propagation and Protection Fund, Sand, Shell and Gravel Fund, and Medina Lake Fund, to the credit of a special fund to be known as the Game and Fish Fund.

H. B. 450. By McLellan. Empowers the Game, Fish and Oyster Commission to regulate all fishing in the State of Texas.

H. B. 451. By McLellan. Defines migratory game birds, and provides for the issuance of permission by the Game, Fish and Oyster Commission for the taking, possession and retention of migratory game birds.

H. B. 483. By McMurry. Provides for a 5-year closed season on wild turkey in Archer County.

H. B. 479. By Chessher. Makes it unlawful to take minnows for sale from the waters of Trinity and Polk Counties.

H. B. 480. By Chessher. Provides for an open season during the months of October, November and December for squirrels in Trinity and Polk Counties.

H. B. 620. By Manford. Would change the deer season so that it will run from Dec. 1 to Jan. 15. The present open season on deer is from Nov. 16 to Jan. 1.

H. B. 606. By Daniel. Makes it lawful to hunt wounded wild deer with one dog in Hardin County.

H. B. 583. By Hartzog. This bill provides that the members of the Commis-

sioners Court of Goliad County shall also be the conservators of game and fish resources of Goliad County and puts the activities of game wardens in Goliad county under their supervision. For acting as conservators of game and fish in Goliad county the members of the commissioners court would be paid \$30.00 per month.

H. B. 582. By Phillips. This bill has the same provisions as H. B. 583 for declaring the members of commissioners court of Brazoria county to be conservators of game and fish at a monthly compensation of \$30.00.

H. B. 578. By Kirby. Provides for open seasons and bag limits on game mammals, game birds and fur-bearing animals in El Paso, Culberson and Hudspeth Counties.

H. B. 572. By Kirby. Provides that not less than 90 per cent of the funds derived from the sale of hunting and fishing licenses in El Paso, Hudspeth and Culberson counties be expended by the Game, Fish and Oyster Commission in those counties. The bill further provides that only two turkey gobblers can be taken in any one season in the counties named.

H. B. 563. By Manning. This bill provides an open squirrel season during the months of November and December, and from May 1 to May 31 in Jackson, Lavaca, Fayette, Lee, Milam, Falls, McLennan, Bosque, Somervell, Hood, Parker, Wise, Montague counties, and all counties of Texas east thereof. Provisions of the bill also limit the daily bag to six squirrels.

H. B. 519. By Fenley and Gilmer. Provides for a special license to fish in Medina Lake. Special license to cost \$1.10. Bill also provides for the issuance of daily fishing permits to cost thirty cents. Funds derived from the sale of these special licenses will be placed in the Medina Lake Fund. This special license is an addition to the artificial lure license.

H. B. 631. By Walker. Eliminates Hill County from the provisions of a law prohibiting transportation of minnows.

H. B. 634. By Bundy, Mills, McMurray, et al. Repeals special law passed in 1925 giving certain protection to fish in the Big Wichita River in Wichita, Archer and Baylor Counties.

H. B. 636. By Davis. Provides for closing season on fishing in Gillespie County during March and April.

H. B. 638. By McCann, Dunn and Hileman. Provides a five year closed season on deer and turkey in Mason, Cass and Bowie Counties.

H. B. 637. By Avant. Prohibits the taking of alligator in Harrison county for a period of two years.

SENATE BILLS INTRODUCED

S. B. 290. By Hazlewood. Provides for a 4-year closed season on deer and non-migratory birds in Randall County.

Why Laguna Madre Is Drying Up

L AGUNA Madre, the section of the coastal lagoon between Corpus Christi Bay and the Rio Grande, now has only small areas of open water in comparison to its great size (4 to 10 by 125 miles), as shown by aeronautical charts of the U. S. Coast and Geodetic Survey. Marine navigation charts of the survey, however, show open water once to have been rather general over the lagoon. The basic work on marine charts was done in 1881, with minor revisions in 1909 covering only the navigable waterway along the mainland. The aerial maps were made in the decade 1930-40. Widespread filling of the lagoon has taken place.

A MAP PUBLISHED by the Texas Game, Fish and Oyster Commission (1929-30 yearbook, p. 56) shows a great encroachment of low sand foreland from Padre Island, the offshore bar separating the lagoon from the Gulf. The encroachment is in the open water of the lagoon just north of the mouth of Baffin Bay (Figure 1). The compiler of the yearbook, J. G. Burr, predicated that Baffin Bay would in a matter of years be cut off from the upper Laguna by further encroachment of the foreland. Twenty miles below the mouth of Baffin Bay the Laguna is completely divided today and Padre Island is connected with the mainland except at the highest tides, when water a few inches deep connects the upper and lower Laguna. This change has taken place since the mapping of 1881.

AN ITEM RELATED to the late sanding-up of large parts of the lagoon is the thinning of vegetation on Padre Island. In a statement to the senior author a retired foreman of the Laureles Headquarters of the King Ranch, confirmed by John Kenedy of the Kenedy Ranch, said that Mifflin Kenedy, founder of the ranch, found Padre Island when first seen by him, "as green as a garden." Pat Dunn, former owner and ranchman of Padre Island, recently deceased, said that this verdure disappeared sometime after 1870, along with the numerous cotton-tail rabbits and spotted skunks which formerly inhabited it. Today, the jack-rabbits and coyotes are the conspicuous large mammals of the island. Green meadows are scattered over the inner parts of the island, but up to 1941 large parts were bare sand, and in general it had the appearance of a desert.

THE SUDDENNESS OF THE disappearance of the skunks and rabbits, as reported by Dunn, may have been only the laymen's somewhat sudden realization of the effects of a more gradual change. Or their departure may have been hastened by the effects of a severe drought. That the vegetative denudation was not quite so sudden is indicated by the fact that men living today whose age is about fifty years, can remember when

Filling of Laguna by Sediments And Thinning of Island Cover

Padre Island was "green." The same change took place on Mustang Island, just to the north. Bailey (1905) states shin-oaks up to eight feet tall extended along the bay shore of the upper end of Padre Island for seven miles. Wild celery abounded in the lagoon. A few willows, buttonbush and huisache grew on the north and the center of the island, while salt grass and waxy and creeping plants grew on the south part of the island. Today all the woody vegetation has disappeared, the wild celery has gone from the lagoon and the southern portion of the island is almost bare of grass. The great reduction in the vegetative cover of the sand has permitted hurricane tides and winds, and normal trade winds more readily to carry sand from the beach and dunes across the island into the lagoon. Thus depletion of vegetative cover "after 1870" promoted filling of the lagoon.

CURTON DUNN OF Corpus Christi, son of Pat Dunn, reports that sheep were grazed on the island at an early date, but only for a few years because of the depredations of coyotes. Also, the sand began to "blow" following the grazing of sheep and an ensuing series of dry years prevented restoration of range. Whether there had been a noticeable reduction of the vegetative cover before the sheep were run, seems not to be clear from the available record. In the present ranching, Mr. Dunn reports only 800 calves a year are branded on the north 25 to 30 miles of the island, whereas, in the 1880's the number for the same area was 1,600. There has been no decrease in the size of part of the island since that time. On the south 50 miles of the island no cattle now range. Mr. Burton Dunn reports there has been "no grass" there since it was severely denuded by high water of the 1933 hurricane. The northern part of the island was also flooded, but less eroded and, according to Mr. Dunn, this area has more grass now than at any time in the past forty years. There has been very heavy rainfall in this region during the past two years, (Gunter, 1941).

AN EVENT IN this filling of the Laguna Madre was described to the senior author by one of the owners of the King Ranch. In the strong hurricane of 1919, Gulf waters poured over Padre

Island and its dune wall as a hurricane "tide." Cattle, driven into the lagoon before the offshore wind, were later overwhelmed by quicksand following the entry of the Gulf waters. After the storm three thousand pairs of horns were counted sticking up out of the sand of the lagoon bottom. The assumption is that this quicksand was largely composed of sand newly entering the lagoon from the Gulf, the beach and higher parts of the island with the hurricane tide. Much of the general filling of the lagoon has probably been by wind-blown dune and beach sand from Padre Island, which has been carried into the Laguna at an increased rate by the prevailing southwest trade winds, since the onset of denudation of the vegetation of Padre Island. Some sand may have been blown in from the land by hurricanes, for the prairie is deeply sand covered south of Baffin Bay for a distance of fifty miles. During hurricanes the transportation of dune and beach sand by wind is greatly increased up to the time when all is soaked by rain and flood waters. Airplane photographs of the island show its western side to be composed of great overflow fans of sand washed by flood waters from the Gulf pouring through high-level gaps in the line of sand dunes which faces the Gulf of Mexico. If the vegetative cover had remained intact these movements of sand would have been considerably reduced.

IN RECENT YEARS THE Game, Fish and Oyster Commission has been much concerned about the oversalting of Laguna Madre, which kills large numbers of fish, and has cut one pass through Padre Island to the Gulf (completed in April, 1941) in hopes of alleviating this condition. The pass filled and recutting was completed in November, 1942. Burr, in the paper cited above, the junior author and others, have collected samples of lagoon waters in this region, which in some cases, were three times as salty as sea water. The data are mostly unpublished. It is assumed that since the filling of the Laguna, the water on shallow flats becomes warmer and the rate of evaporation has increased. Young men who sailed the Laguna fifteen years ago say much of the old open water is gone. It would follow that the development of over-saline conditions occurring periodically every ten years or so, in dry years, has been more frequent since the turn of the century, but on that there is no information due to lack of records in former years. If the denuded state of the southern half of Padre Island continues,

By W. Armstrong Price
Consulting Geologist
and Gordon Gunter
Marine Biologist

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DEER

(Continued from Page 7)

crop year after year and allows the heifer or doe crop to overpopulate the range and die, he is a poor business man and cannot stay in the business very long. The same principal can be applied to deer management.

Prompt action is needed to increase the production of fawns and decrease deer deaths in certain sections of the Edwards Plateau. Excess does could be trapped and moved to other sections of Texas where brood stock is badly needed. When trapping alone proves to be an inadequate measure of control, doe deer could be harvested by licensed hunters. This control could be operated in such a manner as to maintain the most adequate number of buck and doe deer on the local range. More and better bucks could thus be produced and the death of many hundreds of deer each year from lack of food would be prevented.

MORE HUNTERS THAN ever before invaded the Hill Country last hunting season and many were forced to return home without finding a place to hunt. This was the first time in the memory of the oldest inhabitant that such a condition has existed. The hunters who did find a place to hunt went into the woods with a more serious purpose than in many years because the meat they brought home supplemented the limited supply of beef, veal, mutton, and pork available for civilians. In one cold storage vault in a Hill Country town there was over 90,000 pounds of venison stored by hunters during the hunting season.

MANY SPORTSMEN had their trophies mounted as an everlasting reminder of a successful hunt and a great time out-of-doors. The hides were tanned and placed in homes and offices as ornamental rugs or made into jackets, gloves, and other items needed by the individual. Over one hundred deer hides were donated to the armed forces by hunters in one county. The sportsmen donated the hides because they knew that they would be put to the best use if in the hands of our fighting men. The hide is a contribution to the nation's supply of tanned products.

THE GREATEST VALUE of our deer resource is found in its recreational potentialities. Hill Country ranchmen and farmers also realize a substantial economic benefit from deer hunting leases. The net income from hunting leases during the season just past totaled well over a quarter of a million dollars in one county alone. In 12 Hill Country counties there were about 1,000 ranchmen who sold hunting privileges. The total acreage leased out amounted to approximately 2,565,000 acres, which is about one-half of the total acreage on which deer are taken.

THE PRESENCE OF deer on any range tends to increase the value of that



Hill country deer browsing on good range.

land. Land buyers often pay three to five dollars more per acre for land that is well stocked with game. Where overgrazing and overbrowsing exist, game is never plentiful. Many landowners recognize the production of game as good land use, but very few see to its proper management.

There are millions of acres of land in Texas which are suitable for deer. A more rapid restocking of deer can be

carried out on that land if and when the people want it. Such an undertaking is highly desirable if the people of a community appreciate this fine animal enough to maintain and protect it. When the range of the deer has been extended into all suitable sections of the state, those who are today unable to enjoy the privilege of deer hunting may again become participants in this wonderful sport.

GAME RECIPES

ROAST OPOSSUM

After skinning, dress the opossum much as one would a suckling pig, removing the entrails and, if desired, the head and tail. After it has been dressed, wash thoroughly inside and out with hot water. Cover with cold water to which has been added one cup of salt and allow to stand

overnight. In the morning drain off the salted water and rinse well with clear, boiling water. Stuff opossum with opossum stuffing; sew opening or fasten with skewers. Place in roaster, add 2 table-spoons water and roast in moderate oven (350 degrees F.) until tender and richly browned, about 1½ hours. Baste every 15 minutes with drippings. Remove skewers or stitches, and place opossum on heated platter. Skim fat from gravy remaining in pan. Serves 10.

OPOSSUM STUFFING

1 large onion, chopped fine
1 tablespoon fat
Opossum liver, if desired
2 cups bread crumbs
Chopped red pepper
Dash Worcestershire sauce
1 hard-cooked egg, chopped fine
Salt

Brown onion in fat. Add finely chopped opossum liver and cook until liver is tender. Add crumbs, a little red pepper, Worcestershire sauce, egg, salt and water

A Sure Game Harvest

(Continued from Page 10)

sacrifice whatever tillable land he may have on his premises or to tolerate the ravages of these animals on such tracts so long as he has customers who are paying him liberally for the attention he is giving his game supply. During years of food scarcity, when it is necessary to purchase feed for his livestock, he is willing for the deer and turkey to share it. But such is not always the case with a small farmer near a range of deer abundance. With too little land for leasing to hunters he violently and justifiably resents the intrusion of deer in his growing crops, although the deer in that area may be a hundred-fold more valuable than the fondest expectancy from his crops. Just as in an earlier day when farmers argued with cattlemen that it was their duty to fence their cattle in and the cattlemen retorted that it was the farmer's duty to fence them out, so does the argument now wax hot between farmer and ranchman as to whose duty it is to prevent the ravages of deer.

SHOOTING PRESERVE licensing has not invaded the extreme eastern portion of Texas to any considerable extent. To a large extent the 16,000,000 acres of timbered land in that section of the State are still unfenced, but as there is a gradual decline in the production of farm crops because of the low price of those commodities, and more attention is devoted to its intended destiny of timber and livestock production, it is likely that fences will become more of a necessity. Many of the land holdings are of considerable area and it is likely that those landowners (as a few of them already have) will realize the benefits to be derived from the management of wildlife. Along with livestock it will bring an annual return while waiting for timber to reach a merchantable growth.

THE TIME IS ALREADY ripe for landowners who have husbanded their antelope supply to make a profit therefrom. Killing of a few of the old bucks would be a distinct benefit to some of the herds and the landowners who have brought them up from meager numbers are entitled to share with the State the return that should come from a harvest of these animals. Because it has not been long since the prong-horn was a vanishing species, strict supervision must attend any liberties that may be given.

MUCH THOUGHT HAS been given to the matter, but no practical way has been devised whereby an over-kill of game on a shooting preserve may be prevented. Neighborhood pressure from those well-informed in the principles of game management and direct advice given the landowner by qualified game technicians is probably the best answer. For many years the shooting preserves op-

erated with the benefit of no technical advice and with no wildlife research conducted in their behalf. This has been corrected. However inadequate our force is in other particulars, Texas now has one of the largest and best-manned game technical staffs in the Nation and they are in constant touch with the landowner, showing the way to improve habitats and trying to solve the intricate problems involved in game management.

AS A RESULT OF studies which he made of the shooting preserves of Gillespie, Kerr, Llano and Mason Counties, Biologist Earl Sanders, then employed by the Game, Fish and Oyster Commission on a Pittman-Robertson Act project, made some interesting observations. He found in Gillespie, Kerr, Llano and Mason Counties that "The number of acres of land, exclusive of that in cultivation, per animal unit in each of the respective counties are 10.6, 16.0, 13.6 and 11.3," based on the Federal census of 1935, which did not include goats, very numerous in Kerr County. He then observes that the 1935 shooting preserve records reveal that one buck was taken on each 188 acres in Gillespie, one for 340 acres in Kerr, one for 181 acres in Llano and one for 148 acres in Mason County. Mr. Sanders weighed and measured many deer from these counties, killed by hunters. He found, "The average weights for all the deer in each of the respective counties to be 67.88 pounds for 72 deer in Mason, 72.46 pounds for 388 deer from Gillespie, 73.52 pounds for 210 deer from Llano and 79.56 pounds for 156 deer from Kerr." He then concludes, "The county which has the lowest average weight of deer has the largest deer kill per acre on its Shooting Preserves. The county which has the highest average weight of deer has the lowest deer kill per acre on its Shooting Preserves. The county which has the largest number of acres per animal unit (goats not included) has also the heaviest deer kill, while the county which has the lowest average weight of deer has approximately 50 per cent more animal units per acre."

THERE ARE MANY speculations which one might make from Mr. Earl Sanders' findings, but the one that in-

for good hunting is not likely to decrease in Texas for a long time, but as long as a few landowners are getting a high price for hunting leases a larger and larger number of landowners will be induced to protect and increase their game resources looking for commensurable returns from game. Perhaps finally, with as much favorable habitat for the production of game as there is in Texas, like every other land commodity with which this State has experimented the supply will more than meet the demand.

SOME HAVE FEARED the encroachment of paid hunting, believing that under such a system that game hunting would be available only to the wealthy in Texas, just as it was in pre-war Europe. There is a vast difference in the Texas system and in the old European system. In Texas game is still the property of the State, and can only be taken under regulations made by the State. As long as the State maintains title to the game supply there will be no incentive for any wealthy person to bargain for hunting privileges that would permit him to kill more than the limit prescribed by the people's Legislature. In Scotland large kills were effected without restraint and the only time the average citizen participated in game was when he purchased it as food in the market place. In Texas no person is likely to be permitted to kill more game than he and his family or immediate friends can consume. Low bag limits, adequately enforced, should always be a sufficient curb on selfishness. This places the Shooting Preserve at no disadvantage for it only means that a larger number are participating in the harvest than probably would be the case if there was no legal bag limit.

IF TEXANS ARE ALERT game should always remain the property of the people, with a reasonable opportunity available to everyone to have a chance to do some hunting, although he may be neither a landowner nor the favored friend of a landowner. There is a danger in the sale of hunting rights so long as the public is necessary to effect the harvest. Knowing that this will remain a State of privately-owned lands we should bend our efforts toward every encouragement to those who occupy Texas land to give reasonable attention to game, and take every means of making it economically as well as socially desirable to do that necessary work.

The End

A new book which should have a large circulation among sportsmen is *The Ducks, Geese and Swans of North America*, by F. H. Kortright. The price is \$4.50, and it may be secured from the American Wildlife Institute, Investment Building, Washington, D. C. It is illustrated in color and offers a reliable means of becoming acquainted with the appearance of these game birds in their various plumages.

THOSE WHO HAVE resisted the idea of paying for hunting rights may still look with repugnance upon any system that fosters this plan, but they may be answered by many Shooting Preserve operators who have produced a shootable game population where none remained after years of free hunting. The demand

Restoring Antelope

(Continued from Page 5)

plished more easily with a small, slow flying airplane. After a herd is located from the plane, it is started in the general direction of the trap by "zooming" towards them with the plane. At this point, one or more other herds can be started in the same general direction. If more than one herd is to be driven into the trap, they will ordinarily come together of their own accord after once being started in the same general direction. After bunching, the animals are slowly forced in the general direction of the trap by "jazzing" the motor, and diving and turning the plane to the side

and the rear of the herd. The plane operator never dives directly at the herd, except in special instances where the herd stubbornly refuses to proceed.

AS SOON AS the animals enter the mouth of the trap (about 300 feet wide), the plane operator signals the ground crew who are hidden from several yards to a mile away. Upon receiving the signal the ground crew rushes to the mouth of the trap and sets up a wire gate. The animals are then left to rest until the following morning before being put in the main net pen. To facilitate penning and setting up the gate, it is desirable to so place the trap that the cord pens are hidden behind a hill so that the animals are well in the trap before discovering they are penned. Ordinarily, under the above conditions, the ground crew can be at the trap opening and setting up the gate before the animals return to the mouth of the trap.

ANTELOPE ARE DRIVEN into the main net pen by gradually working them down the Texas pen. This is accomplished by seven or eight men slowly walking down inside the pen holding a canvas strip between them. Extreme care should be taken in this operation that the animals do not become unduly frightened and hit the fence. Sometimes two to four hours are consumed in this operation. After two to three hours rest, the antelope can be crowded into the crowding pen in lots of 4 to 8 and then loaded for transportation. The lower photograph illustrates the method of catching antelope in the crowding pen. This operation should be accomplished as quickly as possible to prevent injury to the animals and operators. Immediately upon "flanking" an antelope, its feet should be lifted off the ground to prevent undue kicking and struggling.

Fishes Of Texas

(Continued from Page 12)

the entire state. The fact that they thrive so well in creeks has caused them to be called "creek" or "Branch" perch by many anglers.

The author has also found that many anglers call green sunfish "rock base" or "goggle-eye." This is a natural error, because the anglers are probably misled by the red eyes and the extremely dark color that these fish assume when they are taken from clear water.

The food of green sunfish consists of insects, worms, crayfish and small fish.

THESE FISH CAN be caught by pole and line, plug casting and fly casting. Considering the size of green sunfish, it is indeed surprising how great a fight one of these small fish can put up before it is taken from the water. Baits for

pole and line fishing, are earthworms, grubs, shrimp and cut bait. Flies, small spinners, etc. are readily taken during fly casting. The author has caught quite a number of these fish on shimmy wigglers and bucktails while casting for bass. Many green sunfish will be caught from casting with a shimmy wiggler and bucktail, if a small long shank hook is attached to the large hook of a bucktail. Stumps, brush, beds of vegetation and piling are the best places to look for these fish.

Small Sunfish

Lepomis symmetricus (Forbes)

THESE FISH ARE so small, rarely reaching a size of 2½ inches, that they are of little concern to the anglers; but they, too, have the dark spot at the base of the soft dorsal fin and are included in order that the reader may be able to differentiate them from the two species also mentioned in this article.

BY LOOKING AT the accompanying illustration, you may discern a line on the sides of both fish. This line, running

from the top of the gill cover to the middle of the tail, is called a lateral line. Both bluegill and green sunfish have a complete lateral line, but the small sunfish has one that is incomplete. The lateral line starts at the head, like that of the other fishes, but stops before it reaches the tail.

Flyers

(Continued from Page 8)

as it did when Major Bering and this writer were there.

We had no trouble encouraging First Lts. Edward M. Dryden and James W. Goodwin, Second Lts. William I. Eaves, John W. Harrell and others to fish with us either in the slips or the surf when they had time to spare.

YOU DON'T CATCH many fish when the wind is blowing 30 miles an hour out of the north and the temperature is closer to 30 than 40. Neither did we. But fishing goes on regardless.

Laguna Madre Is Drying Up

(Continued from Page 14)

and if the northern part is again denuded, filling of the Laguna will continue and there is nothing that man can do to minimize or alleviate the development of oversaline conditions.

THE FILLING OF Laguna Madre is not an isolated phenomenon. There are not specific data at hand to establish the rate of filling over a century, but there seems to have been an acceleration since 1880. It is certain that a critical stage of shallowing has been reached since 1881 when the survey for the hydrographic charts was made.

OTHER FACTORS THAN sand transportation have been slowly active to a minor extent in the filling of Laguna Madre. The accumulation of the bodies of marine grasses and algae, gypsum deposition (Baker 1929) and the salcareous shells of worms and other organisms have played their part. Shallowing of the lagoon and the occurrence of droughts would cause an increase in gypsum precipitation. The precipitated salts would be renewed by inflowing tides. It is a common phenomenon for dredges to find large bodies of crystalline and alabaster gypsum in the coastal bays.

IT IS CONCLUDED that the disappearance of much of the native vegetation of Padre and Mustang Island—noticeable some years after 1870—accelerated the rate of filling of the Laguna Madre by sediments and that the incidence of droughts combined with the ac-

tivities of grazing animals was responsible for the creation of desertic conditions between 1880 and 1941.

"I pledge my heart and my right hand to my flag and my country.

"I further pledge myself to help carry out the wildlife conservation program, now in progress, to the end that your boy and my boy, now serving his country, may find the good hunting and fishing he has a right to expect, when he returns to civil life."

By livetrapping wild ducks and examining them by X-ray and fluoroscope it has been found that an average of three out of every ten have shot in their bodies. The conclusion reached by the investigators is that a lot of hunters are guilty of the unsportsmanlike practice of shooting at birds known to be out of reasonable killing range.

Geese

(Continued from Page 4)

fields. It is in this general section that decoys come into greatest use, and the kill consists largely of members of the Canadian group, with lesser snow and white-fronted geese following in order. Some farmers in this section leave strips of standing feed stalks for use as blinds, while other fields have scattered blinds made of bundles of corn or sorghum stalks, or even of sweet bay brush. In some cases holes are dug where hunters may lie in wait for the geese.

IN MARSH AREAS two hunting methods are followed. Some hardy souls break their way through mud, reed tangles and dense canes to jump-shoot their choice of what may rise before them. More commonly, however, marsh hunters take recourse to blinds and decoys around short marsh vegetation and wait for geese to come their way. For real activity on a snappy morning the first procedure is highly recommended, but for a restful outing the second takes precedence. A similarly easy technique is in vogue around watering ponds on some coastal prairie ranches. At these points, either native shrubbery or artificial blinds are used as shelter and geese shot as they come in at mid-day for water. This is a very limited practice and very few birds are taken in such a manner.

THAT GOOSE HUNTING finds favor with others besides residents of the immediate coastal area is readily determined through any check on hunters. In the 1940 season, for instance, of 1,259 hunters visiting certain shooting clubs along the coast, 22 were from other states, and 1,116 were from counties away from where they hunted. Texas cities represented in the latter group included all portions of the state from El Paso to Marshall, and from Laredo to Amarillo. Out of state hunters hailed from New York, Indiana, Missouri Oklahoma, California, Colorado, and Florida.

AS TO THE TOTAL number of geese killed annually in Texas, no reliable figures are available. In 1940, however, investigation of club records revealed that for 2,388 hunter-days in the field, 2,420 geese were taken. Inasmuch as this occurred in the very best hunting area of the entire coast, the figures are not truly representative. On the other hand, they do indicate the possibilities that exist for the goose hunter fortunate enough to make a hunt there.

CATTLE GRAZING, long the principal Texas land use, bears an intimate relation to the winter geese population along the coast. The major portion of wintering geese roost inside ranch areas entirely, and many of them feed more or less at some time on range where cattle graze. Furthermore, it is only within large pastures, free from trespass and



Too many fishermen have condemned the carp fish as unsuitable for the table. Some of the best authorities on food have agreed that the carp can be prepared in such a way as to make it one of the best dishes you ever tasted.

War conservation of food calls for common sense efforts. In hopes some of our fishermen can be encouraged to look on the carp more kindly, Outdoor Georgia offers several methods for preparing the fish. Carp will play a part in the winning of this war if we will just permit. We need all the food we can get.

* * *

BAKED CARP

Take carp of 1 to 2 pounds; scale and clean well; rub inside and out with plenty of salt; let stand an hour or two. Wipe dry with a towel, roll in well-beaten eggs and bread crumbs or meal, and bake in plenty of butter till nicely brown. If desired, the body cavity of the fish may be filled with stuffing prepared the same as for stuffing turkey. A quantity of dressing may also be packed around the fish.

disturbance that the flocks may seek safety when hunting pressure becomes extreme. There the geese find not only water and resting space, but they graze on native grasses as substitutes for waste field grains which they appear to prefer as long as the supply exists. With regard to feeding habits of geese, certain aspects of range management are influential. Geese avoid tall, rank vegetation, taking instead to pastures or smaller spots in pastures where vegetation is short and succulent. Just what the plant species happens to be does not seem to matter so much as the growth be tender and green. Fall burns in sacahuista or cordgrass, rank growth of which is unpalatable to livestock, result in development of new shoots which geese favor and leads to concentration of geese on areas previously avoided entirely. At the same time, the tender sacahuista shoots and other plants that come out are highly relished by livestock, so the burning acts doubly beneficial. Again, geese invariably frequent pastures where summer grazing has been heavy enough to leave a short turf, with particular reference to upland pastures. There are indications that during the coming years, the goose population of Texas may well go as goes the coastal cattle range, be it for better or worse.

DEEP FAT FRYING

Skin the carp and wash thoroughly in strong salt water. Allow the fillets to remain in the salt water for about two hours, drain and wash in clean water. Dry with a towel, roll in corn meal or flour. Fill frying pan with enough fat or cooking oil so fish when placed in the pan will be submerged. The fat should be very hot. Fry until golden brown.

* * *

STEWED CARP

Scale and clean the carp; dry with towel and season well with salt, pepper, and a little mace, which ought to be rubbed in thoroughly. Place in a sauce pan or stew kettle with some chopped parsley, sliced onion, celery tops, and a few potatoes and carrots if desired. Pour on sufficient water to cover and let stew until the flesh leaves the bones easily.

* * *

PICKLED CARP

Clean the carp inside and out; split it the whole length; cut in pieces; wash, and cook it in water with salt, spice, onions and a few bay leaves. After it is cooked let it get cold in the cooking vessel. When cold put into a drainer or sieve to dry. Now pick to pieces, taking out all bones; mix with sauce consisting of Worcestershire sauce, vinegar, olive oil, and yellow mustard, according to taste, all well beaten and mixed, olive oil and vinegar being in preponderance. Serve with capers, olives, and mixed pickles.

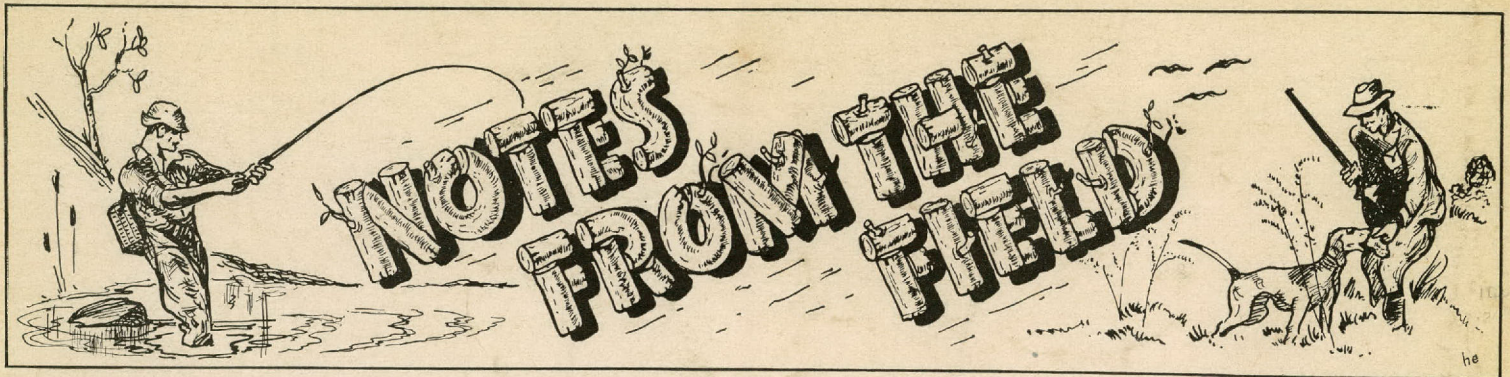
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FRIED CARP

Scale and clean the fish and make some slight incisions on both sides; if too large, cut in pieces. Wipe the fish dry, sprinkle slightly with flour, dip in beaten eggs, and roll in bread crumbs. Put the pieces in boiling lard, so as not to touch each other. When sufficiently brown, take them out and lay on a hot sieve to let the superfluous fat run off; sprinkle with salt and lay in a hot dish without cover. Serve very hot.

The success of hunting clubs near Lufkin has proven that protection of breeding stock will insure good deer hunting.

When illegal deer killing is stopped, the pine woodland country will produce more venison than beef or pork.



Texas hunters and fishermen enjoyed good hunting and fishing during 1942, according to estimates of the number of game birds, mammals and fish taken during the year. The estimates are purely estimates as complete reports have not yet been received from all checking stations but the figures won't be far off when the final count is tabulated. Here's the estimated game and fish harvest* for 1942:

GAME BIRDS

Species	Number Harvested
Turkey	15,000
Ducks	800,000
Geese	65,000
Rails and Gallinules	5,000
Doves	3,000,000
Whitewings	100,000
Quail	3,000,000

This number of birds represents about 4,793,333 pounds of dressed meat, excluding feathers, head and feet.

MAMMALS

Species	Number Harvested
Deer	40,000
Squirrels	800,000
Armadillos	25,000
Javelinas	20,000
Rabbits	1,000,000

This number of mammals represents about 5,533,333 pounds of dressed meat excluding hide, head and feet.

PAN AND GAME FISHES

No. lbs. harvested 30,000,000 after gutting

And to harvest all this game and fish, 137,072 hunting licenses were sold and 131,715 fishing licenses.

Routine report from Warden A. R. Williams, of Alpine: "Helped catch 19 antelope with plane."

And speaking of trapping, Game Warden T. T. Waddell relates that after a red wolf had brought down a doe deer in Colorado County a bunch of interested people asked that something be done about it. Waddell set out eight traps near the place of the killing, caught two red wolves, two bobcats and a gray fox. At last accounts no more dead deer had been found in that spot.

Duck and goose meat filled the tummies of Dallas orphans recently when Warden A. A. Stein and Federal Game Warden E. M. Elmore confiscated 245 ducks and 19 geese while checking frozen food lockers. The confiscated fowl were given to the orphanages.

HERE'S a real believe-it-or-not from H. C. Hahn, Department biologist, who was an eye witness to a rat vs. snake battle. The epic struggle took place on the Frank Geistweidt ranch, about 25 miles south of Mason. Hahn was watching deer grazing on the ranch when he looked to his left and saw a 5-foot racer snake crawling up a mesquite tree with a squirming and squealing rat in its mouth. When about two feet above the ground, a second rat ran up the trunk of the tree and attacked the snake when it was about four feet above the ground.

The rat bit the snake five or six times on the dorsal side in the middle of the body. The snake tried to cross to another climb with the rat still in its mouth but failed to make it. The rat on its back just dug in a bit deeper and hung on. Finally the snake dropped the rat which was in its mouth. The second rat turned the snake loose, jumped to the ground and ran off with the first rat. The snake crawled down the tree trunk and went off in the opposite direction. The entire battle took just one minute according to Hahn's watch and it took place at 5:20 in the afternoon.

Another fish sanctuary has been created on the South Llano River. The proclamation declaring the fish sanctuary says that "said fish sanctuary in Kimble County, Texas, shall include all of that area in the South Llano river

beginning at a point on the South Llano River approximately 17 miles southwest of the town of Junction, Texas, on old State Highway 29 where it crosses the South Llano River at on near the mouth of Big Paint Creek on the east or southeast of a certain concrete slab, used as a river crossing; thence up said South Llano River following its meanders to a point where the Kimble and Edwards County line crosses the river." This portion of the South Llano River will remain a sanctuary until May 1, 1948.

A fish sanctuary has been created on the Devil's River in Val Verde county. The proclamation says that "all of the water area for a distance of one-fourth mile below Devil's Lake Dam, and all of the water area for a distance of one-fourth mile below Lake Walk, both of which dams are situated on Devil's River in Val Verde County, are hereby established as fish sanctuaries for a period of five years." In other words, fishing will be prohibited in those waters until 1948.

Boy Scout troops are calling more and more on game wardens to act as guides and wildlife counsellors on overnight camping trips. The latest to be "drafted" by the Boy Scouts is Warden J. T. Shannon, of Uvalde. The scout troop studied wildlife on the Roy Davenport ranch.

The Game Wardens

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

*Asbes to asbes,
Dust to dust,
If the sportsman won't do it
The Game Warden must!*

—Gilbert Russell Brackett.

Pierre Fontaine
Aquarium Director
City Hall
Dallas, Texas

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