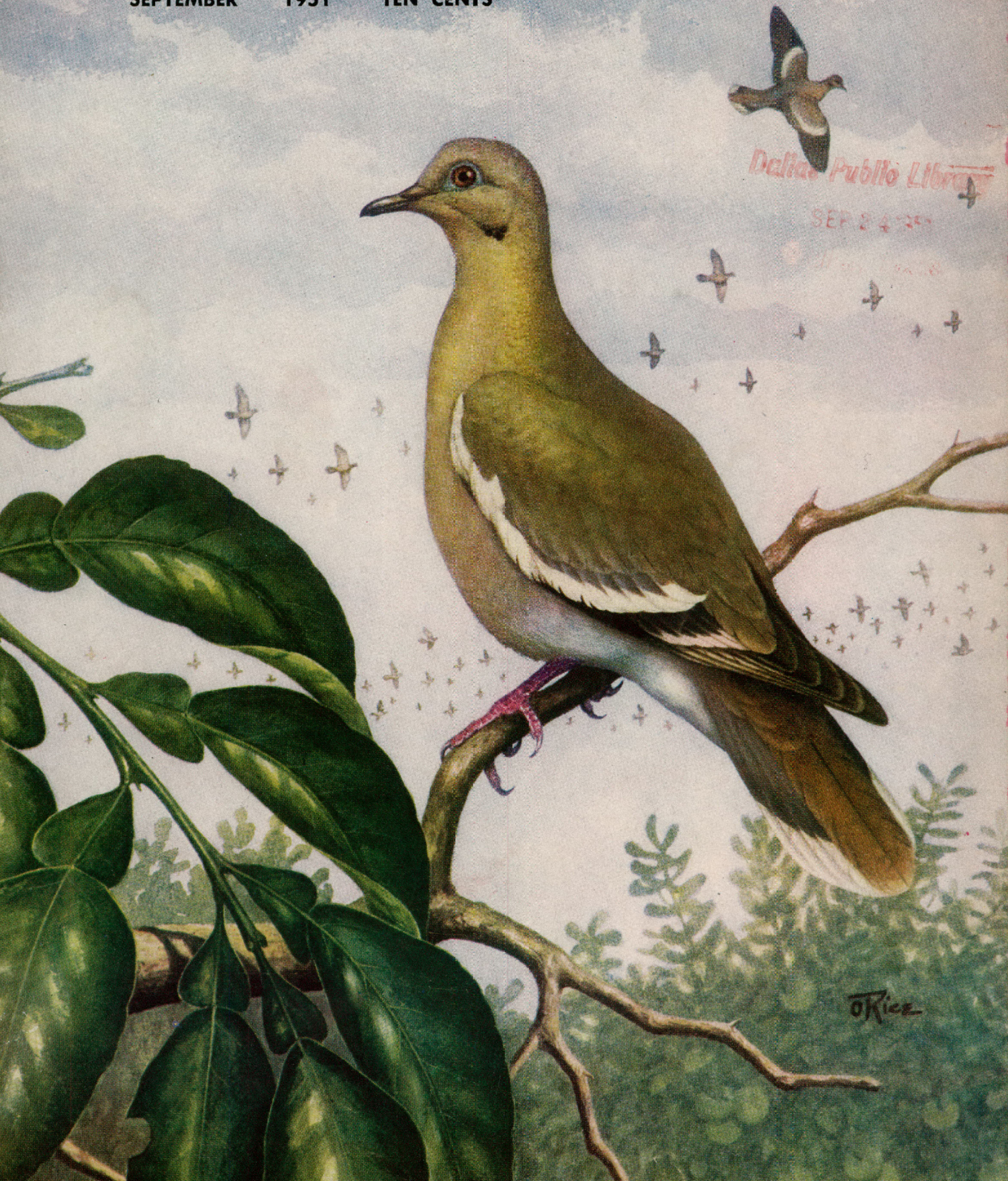


Texas Game and Fish

SEPTEMBER 1951 TEN CENTS



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O'Rice

Pictured here are two Rio Grande Valley whitewing hunters. For story on this dove, see page 5. The map indicating the different zones for the 1951 white-winged and mourning dove seasons is on the inside back cover of this magazine.



Texas Game and Fish

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

★

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★

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TEXAS GAME & FISH invites republication of material since the articles and other data comprise factual reports on wildlife and other phases of conservation.

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The Cover

The whitewing dove, with the distinctive white bar across its inner wing, is portrayed on this month's cover by Orville O. Rice. Unlike the mourning doves, whitewings fly in mass formation and thus provide a deceptive target for hunters who are tempted to flock shoot. It is slightly larger than a mourning dove but is swift in flight.

Wildlife and Soil

By EVERETT F. EVANS

BOBWHITE quail and white-tailed deer may not be personally interested in soil fertility, but they like to eat. (Confidentially, some folks write for the same reason.) The need for food is the simplest link between wildlife and soil. Yet, the total relationship is not simple. In fact, it is so complex that anyone who attempts to explain it has better than average chance for a headache. Standard equipment for writing such an explanation includes an oversize eraser, several volumes of research reports, a dictionary, and a generous supply of aspirin. After the task is finished, the weary scribe needs a safe place to hide until the experts recover from

their first violent reactions. Insurance to help defray hospital expenses is an added precaution. With these preparations out of the way, here we go.

At this point a confession is in order. Only a beginning has been made in studying the effect of soil types and soil fertility on the abundance and distribution of wildlife. However, much is known about the influence of soil on farm crops and livestock. Also, there is some convincing "circumstantial evidence" about Br'er Rabbit and other wild critters which indicates a few interesting trends.

There are a couple of soil principles which won't cause an argument: (1)

soil fertility definitely affects crop yields; (2) soil fertility influences the food and feed value of plants. Both of these principles are important in wildlife management.

Two corn fields are planted with the same seed, receive the same rainfall, and are cultivated in the same way; yet one field produces twenty bushels more corn per acre than the other. Chances are the difference is due mainly to the quality of the soil. Crop production can be boosted by soil-building crops and the application of fertilizers to supply missing plant nutrients. However, there is a limit to the extent to which soil fertility



King Ranch bluestem grass is stabilizing a gully (left) which has had an application of phosphate. Light grazing has increased the production of forage for livestock and cover for wildlife. A meadowlark chose this white Dutch and hop clover seed (right) as a nesting site. Soil-building legumes provide cover for birds and other small animals. (All photos accompanying this article are by courtesy of the Soil Conservation Service.)



N. J. Riley, Soil Conservation Service technician, examines a bicolor lespedeza border along a cotton field. Such borders are an excellent source of food for bobwhite quail.

can be increased, just as there is a natural limit to the wildlife population on a tract of land.

The first influence of soil on wildlife is the yield of plants which provide food and cover. On many farms only the worn-out land is available to native animals and plants while the best land is used for intensive cropping. As the natural habitat shrinks in size, its fertility becomes more important. Soil treatment for the specific purpose of improving conditions for wildlife is practiced only on a small scale. Creatures of the wild have a tough time in competition with crops and livestock which bring in cash.

This brings us to the second principle—the effect of soil fertility on the quality of plants. If a soil has plenty of phosphorus, calcium, potassium, and other minerals the plants grown on the soil and the animals which eat the plants are well nourished.

Livestock respond to the application of lime, phosphate and other fertilizers in three ways: (1) They graze treated areas first; (2) weight and growth gains are greater on forages from fertilized fields; and (3) better reproduction is apparent when feeds are produced on treated soils. Is it not logical that wildlife is influenced by soil fertility in much the same ways?

Take the case of bunny cottontail in Missouri. More than one hundred and seventy-five thousand rabbits were weighed in one experiment. The heavier rabbits came from counties where grain yields were high; rabbits from less productive soil areas were smaller. Four hundred and fifty cottontail rabbits from all of the main soil regions were used in one study of bone development in relation to soil fertility. Rabbits grown on good soils had larger and stronger bones than did rabbits from land of low fertility.

Similar results were obtained with rabbits raised in captivity. One group was fed lespedeza hay grown on poor soil which was not fertilized. A comparable group of rabbits were fed lespedeza from the same poor soil which had been fertilized. The rabbits fed hay from treated soil had leg bones eleven per cent heavier and forty per cent stronger than the average of rabbits fed hay from soil which had no treatment.

These results are eye openers, but bone weight and strength does not tell the whole story. Bones may develop at the expense of calcium and phosphorus supply in the muscles and other body tissue. Animals may have good bones in spite of a deficiency of minerals serious enough to hinder reproduction. The capacity of any wildlife species to reproduce a surplus population is extremely important in its management.



Field borders are planted to provide wildlife food and cover.

Two other studies in the Show Me State are applicable to this discussion. The distribution of several thousand raccoons taken in 114 counties showed that the five most fertile soil types had the highest raccoon populations for a given unit of land, but the soil area which ranked first in soil fertility did not have the highest raccoon population density. This could have been the result of land use for intensive farming. Weights of approximately

eight thousand raccoons showed that both males and females were progressively smaller in areas of poor soil; the less fertile the soil the smaller the animals. Records of approximately fifty litters of fox squirrels revealed that on fertile soils the average number of young per litter was slightly greater than on poor soils.

So far we have considered only soil fertility. What about soil types? These are important, too, because they are

closely related to both plant and animal life. Wildlife follows the general pattern of soil and vegetation. Definite plant and animal communities are found together in coastal marshes, prairies, deciduous forests, and coniferous forests.

Texas has about thirty-five soil types and the greatest variety of plant and animal species in the South. Each kind of plant grows in the soil to which it is adapted, and each kind of animal is associated with the habitat which best meets its requirements for food, cover, and water.

The game squirrels in Texas show an interesting distribution in different soil types. The Texas fox squirrel is found in the central part of the state where scattered stands of oaks and other hardwoods occur in a mixed pattern of pastures and cultivated fields. The soils have been derived mainly from limestone. Much of the upland soil has a low level of fertility and low water-holding capacity. Farther east the pine woods fox squirrel occupies the pine-hardwoods forests which make up the commercial timber belt. Soils in this area are generally acid and not very fertile. Abundant rainfall helps to compensate for the low water-holding capacity of the soil. The gray squirrel has a very limited habitat in the bottom land along the rivers and larger streams in East Texas. Here the fertile, moist soils produce a dense growth of hardwoods, including such nut-bearing trees as the walnut, hickory, and pecan. Adjacent corn fields are another good source of squirrel food.

McCulloch County, the geographical center of Texas, is a good example of the variation in soil types of the state. The Great Plains, Edwards Plateau, and West Cross Timbers meet in the northwestern part of the county. Mixed grasses are the principal native vegetation, and the land is used for range and the production of small grains. The wildlife is as varied as the soil types. White-tailed deer, bobwhite quail, wild turkeys, and jackrabbits are at home in McCulloch County.

The relation of soil to wildlife is closely linked with the relation of both to water. This third link in the conservation chain will be our next subject.



Marjorie Carter of Alvin, Texas, seems pleased with this crop of hubam clover. Crop rotations are beneficial to both soil and wildlife.

Have Whitewings A Future?

By P. B. UZZELL



Mr. M. E. Marquandt of McAller, Texas, has chosen a perfect site for his white-winged dove hunting. Concentration of birds in comparatively small areas tend to make the hunter feel there is an endless supply, but this is not true. Shooting in clean fields and with deliberation greatly increases the chance of recovering downed birds. In the background is the extreme in poor shooting sites—a dense stand of small grain. Equally as poor is a road stand between rank mesquite and brush growths.

AS WITH many other oft looked for festive and holiday seasons such as the Christmas period, the favorite annual football game and various other game animal seasons, the whitewing season, one of the foremost of the lower Rio Grande Valley, is near at hand. This year found things a bit muddled for the white-winged dove as far as breeding conditions were concerned. A severe freeze of four days duration in late January and early February, 1951, rendered much of the rather recently adopted citrus nesting cover unfit for

the purpose desired. This along with other factors has caused a shortage in the breeding population as well as greatly decreased production of young. All of this came just when the birds were beginning to show signs of adapting themselves to living with advancing civilization.

This year it is especially important for us to have the figures on the annual harvest by hunters and the per cent of the birds killed that are young of the breeding season just finished. Hunter cooperation in the field during the days of the hunt is a

MUST if we are to accurately answer the latter items. This hunter cooperation is made easy and facilitated by the use of data signs and information signs at entrance and departure routes of areas to be hunted. The data gathered will be an index to the whitewing's status and its potential capability to recover from the poor breeding season and the reduction in their number from shooting. Further, to be able to properly and wisely set hunting seasons for the present and the future, we need this information.

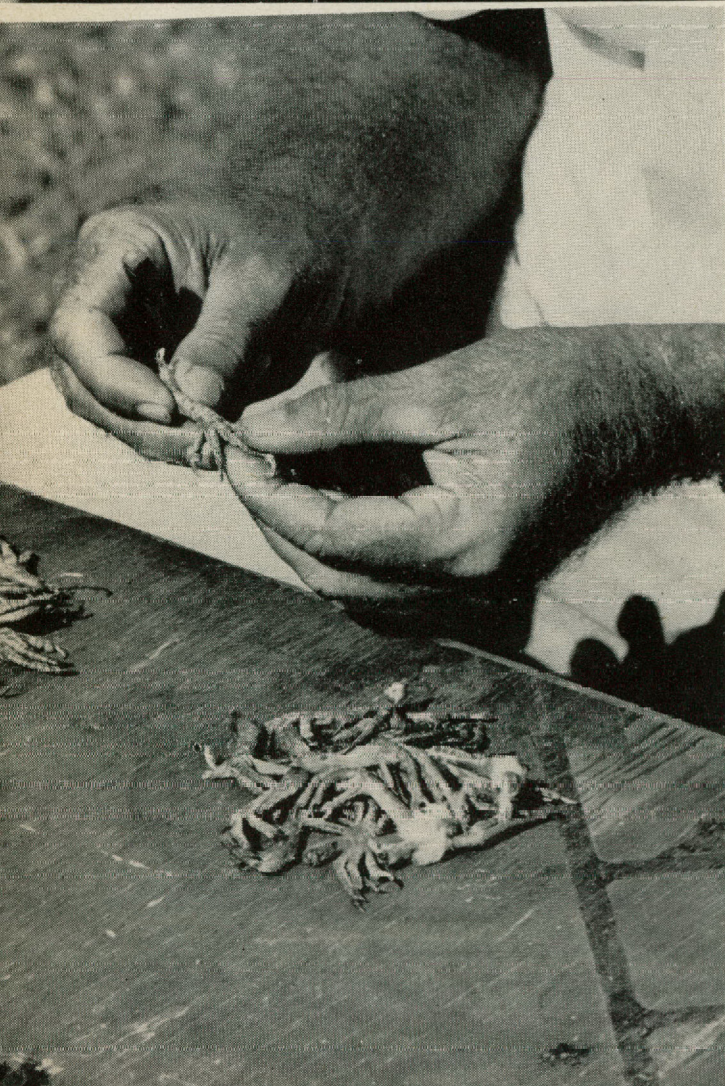
Mr. Uzzell is a wildlife biologist and his article is based on work conducted under FA project 30-R



Ardent hunters of the Rio Grande Valley's white-winged dove will likely have a crack at this young dove (above left), a juvenile which, along with his twin brothers and sisters will mature to legal shooting age by Sept. 14, the first day of the season.



A sack holder as it will appear to the hunter on his way in to the shooting areas is pictured to the left, above. Hunters should drive their cars near this stand and take only one bag per car. Hunter at end of day's hunt drops his sack (above right) containing legs in vicinity of pickup site and his valuable contribution to further biological research is ended for the day. Below: In an effort to prove that Texas was, at times, getting a fall drift of Mexican whitewings north across the Rio Grande, a party of professors, biologists, and wildlife students visited pre-selected sites in Mexico as far south as Ciudad Valles and Tampico with 12,000 bands. However, due to drought, small breeding population, insufficient cover foliage, and rampant predation only 318 bands were put on birds.



Thousands of stark orchards in the same condition as the one shown above raise the questions—"How badly has the shortage of nesting cover in the form of freeze destroyed citrus, severe pruning and bulldozing of citrus affected reproduction?" and "will the toll of the coming hunting season in conjunction with the poor breeding season tear down the slight edge gained the past few years by the persistent game bird?"

With hunter cooperation, and from the dove leg samples (below left) returned by them, biologists can determine the ratio between young and (old) adult birds killed or lost and from this derive the breeding success for the 1951 spring season. Much can then be learned by comparison of these statistics with those of 1949 and 1950.

The brief, printed questionnaire appearing on the sacks provided for return of the legs is filled out below to indicate to the hunter the proper method of recording important information.

GAME & FISH COMMISSION
Walton State Building

Austin, Texas

WHITE-WINGED DOVE HUNTERS

PLEASE
AFTER TODAY'S HUNT--

- (1) Fill out the form to the right.
- (2) Take one leg (only one) from each white-wing available and place inside this sack.
- (3) On your way home, drop the sealed sack in the vicinity of the box from which it was taken.

THANKS

PLEASE FILL BLANKS

Date *September 16, 1951*

How many hunters are in your car?
..... *three*

How many whitewings did your party kill today? *27*

How many mourning doves did your party kill today? *2*

What was the total of wounded and killed whitewings not recovered by your party? *3*



Passports To Paradise

By JAY VESSELS

Assistant Director, Departmental Publications

STOLID silence broken only by the puffing loaders and creaking trucks marked the dispatch of a few tons of bulky mail bags from the Game and Fish Commission headquarters a while back.

But the sound effects are picking up now because those sombre sacks

contained three quarters of a million hunting and fishing licenses.

Yes, it's strike up the band for the fall symphony—strike it up for the catchy tune of banging scatterguns and of whirring reels as sportsmen begin using their passports to paradise which is outdoor Texas.

The accelerated field and stream tempo, touching off many melodious variations, contrasts intriguingly with the routine setting in the Commission offices. There the preparation and mailing of the licenses to 1600 agents comprised a long and tedious task before the baton was passed along to Texans in wide open spaces.

There, late summer fishing is picking up. Mourning dove hunting is underway in the northern zone. Soon other species will become eligible for the gunning hordes.

Armed with these exhilarating new admission tickets to the far-flung amphitheater, sportsmen harmoniously sound their favorite notes to lure water and land species.

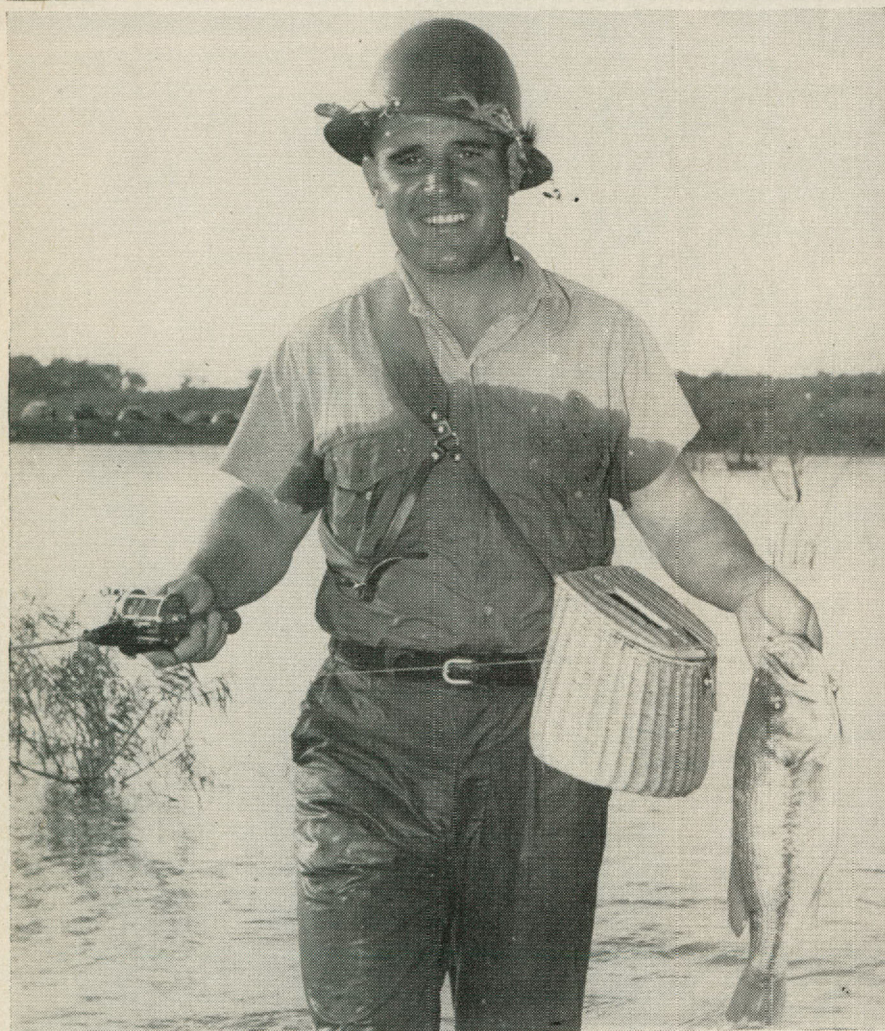
As plentiful as sheet music, the scraps of license paper solely describe the licensee but the implied admonishments would fill volumes. For these licenses are iron clad evidence of a Texan's privileges; of his inherent right to hunt and fish.

They are a high-priority script for a share of nature's blessings. They reflect charter membership in a corporation which pays manifold dividends for good sportsmanship, consideration for the right and property of others and never failing alertness to harvest limitations.

For the tiny discordant minority who accept these precious permits as a pinch bar to jimmy their way into forbidden Animal Kingdom extremes, the sympathy is great. Because those who shoot at everything that moves and who plunder fish life, never know the glory of legitimate conquest.

But they are not a major threat to wildlife. Rather their sordid example has stimulated the real sportsmen—a million strong in Texas—to modestly and fairly utilize their passports to paradise.

Ready, action, fire! This on-location photo (above) shows a young investor in Paradise, Inc., trying to collect, with no complaints against the firm—if he misses. This satisfied stockholder (below), happily parades his new dividend—a whopping big black bass.





Jackpot! this tired but contented nimrod (above) proudly poses with his tremendous bag of four wild geese, taken in a South Texas rice field. Below, the man behind the passports! E. W. Kinney, veteran employee of the Game and Fish Commission, checks out a part of the hundreds of thousands of hunting and fishing licenses issued annually. In the upper right corner is the new all-inclusive state hunting license that costs \$2.15. Below that is the parchment that invites access to the fresh water fishing thrills in which Texas abounds.

RESIDENT HUNTING LICENSE No. **3**

FEE \$2.15 NOT TRANSFERABLE EXPIRES AUGUST 31, 1952

THIS IS TO CERTIFY That V. E. Skaggs whose age is 57 yrs., height 5 ft. 9 ins., weight 138 lbs. color of hair Brown color of eyes Blue (and whose post-office address is Austin Texas, Tarrant County) having paid the license fee of \$2.15 is hereby licensed to hunt and kill game during the open season therefor in all counties in the State of Texas, subject to all the provisions and penalties provided for by the game laws of this State.

Dated at Austin Texas, this 1 day of Sept 1951

GAME, FISH AND OYSTER COMMISSION OF TEXAS,
By E. W. Kinney
County Clerk, or Warden

Effective from date to August 31, 1952.

GAME, FISH AND OYSTER COMMISSION OF TEXAS:
I hereby certify that I am a Citizen of Texas and promise that I will not violate any of the game laws of this State.

V. E. Skaggs
Signature of Licensee

This license must be carried on person when hunting and upon demand must be exhibited for inspection by any game warden or peace officer. This license does not give the holder permission to hunt on posted lands or State Game Preserves. GF&O-8966-151-400M

Name V. E. Skaggs No. 3
Street Austin
Postoffice Austin
Signature V. E. Skaggs
Date Issued 9-1-51

Name V. E. Skaggs
Street Austin
Postoffice Austin
Signature V. E. Skaggs
Date Issued 9-1-51

Expires Aug. 31, 1952 Expires Aug. 31, 1952

RESIDENT FISHING LICENSE No. **3**

NOT TRANSFERABLE FEE \$1.65

THIS IS TO CERTIFY that V. E. Skaggs whose age is 57 yrs., height 5 ft. 9 inches, weight 138 lbs. color of hair Brown color of eyes Blue and whose postoffice is Austin Texas, Tarrant County having paid the license fee of \$1.65 as required by law is hereby licensed to fish in the waters of this State until Aug. 31, 1952, subject to all provisions, restrictions and penalties provided for by the Fish and Oyster laws of this State.

Dated at Austin Texas, this 1 day of Sept 1951

EXPIRES AUG. 31, 1952 GAME, FISH AND OYSTER COMMISSION OF TEXAS,
By E. W. Kinney
County Clerk (Warden)

GAME, FISH AND OYSTER COMMISSION OF TEXAS:
I hereby certify that I am a citizen of Texas and will obey all the laws as to fishing in this State.

V. E. Skaggs
Signature of Licensee

GF&O-8966-151-500M



Fisherman's Luck

By JOEL F. WEBBER

WHEN Europe's sportsmen aren't employed in the ancient past-time of heaving miscellaneous combustible and explosive hardware at each other they can be pretty decent fellows — much like ourselves. And they, too, enjoy fishing, but under much different circumstances. Whether lord or commoners, they like to steal away from the press of business, seek out the distant streams and cast their flies while diplomats whet knives and sharpen bayonets.

They have superstitions, as do many Americans. However, the beliefs of the European sportsman are much older than those of his Yankee contemporary, and for good reason. While the Indian was the first real fisherman in this hemisphere, the ancient Druids, Romans and the races of the Mediter-

ranean were fishing commercially and for sport, and the latter aspect was not neglected.

Americans (some of them, that is) fish according to the phases of the moon, whether it be light or dark. In Europe, and I suppose some of the sun-beliefs came to us via that continent, they fish according to the sun and the moon. In the first belief, the luck is governed by the particular angle of the sun. And the fiery orb, describing its prescribed arc, can find a crop of devotees for every possible degree of its travels across the heavens.

Factually, if the fish aren't hungry—and whoever attempts to question fish as to their preferences—they won't bite regardless of the phase of the moon, or the angle of the sun. Since the moon is the most important planet

to fishermen for many and very ancient reasons, the lacking of a fish's appetite will not change to a ravenous state, no, not even if the Lady of the Night were to reverse herself and show her obverse side which all astronomers would gladly give their best eyes to see.

In England, speaking of the European angler, hunting with small arms is almost unknown except in the most rural areas. Then, it is for "hares" as the rabbits are known. The wealthier landowners do have shooting boxes in the remote parts of the British Isles. So, the little guy gets his pleasure from fishing, since he is eliminated from the hunting. Even here, he may run into trouble, for often the best fishing is found on the private estates. This is a tough situation, for the Englishman has been a sportsman, probably, from the time the last of the Druids, those charming people who practiced human sacrifice, were forced into oblivion.

Now, the average Englishman is burdened with both taxes and superstitions. He believes it extremely unfortunate to sneeze to the left when beginning a trip. And for somebody to inquire the number of fishermen in the party is to invite misfortune of catastrophic proportions. That curious person will probably find ground glass in his crumplet the next time he goes calling.

Some Englishmen, emulating our country boys, fish with bent pins. Now it would seem unlikely that something as small and insignificant as a common pin could have a superstitious connotation. But it does! More so, if the pin is found in a church, for the Englishman believes that it brings not only good luck but wards off the evil eye.

If the average superstitious Britisher starts out on a fishing trip and he meets a cross-eyed person, he usually smiles sadly, wraps up his tackle and returns home. A cross-eyed person is said to bring the worst kind of luck

if he is encountered when going on any kind of a jaunt involving luck. And like many sportsmen, when he has a good day, he often has a chance to sell a couple of fish. But if the buyer has broad thumbs, and provided the seller can see those flat digits, there will be no sale.

Scottish fishermen say that it is unlucky to meet a clergyman while on the way to your boat. This is particularly true on a Sunday when you don't have a really good excuse to give to the gentleman of the cloth for not going to church.

To ward off the damage of having a pig or hare cross his path, the European fisherman calls out, "Cold Iron" and then looks about for a piece of the metal to touch. From this old belief, we Americans probably derive our own superstition of knocking-wood to avoid the jinx.

If somebody calls after the European fisherman when he leaves his house, he might just as well stay at home. He knows that he won't do any good with the fish. And for another person to accidentally step upon the sportsman's shadow, it is enough to cause him to give up fishing; for the implication is that the clumsy oaf will soon have this person's grave to stumble over. Aren't you glad *you* have no superstitions?

Northern fishermen, particularly the Scandinavians, are supposedly without superstitions. Where this idea originated, I can't tell you, but it is a common belief among the Swedes that if a woman stands astride his fishing rod, he'll have no luck. This is unfortunate, indeed, for the Swede cannot throw off the superstition like his English friend upon whose shadow a foot has fallen. The latter may remove the curse of that indignity by making a cross on the ground with the point of a knife and then spitting upon it.

In Esthonia the fishermen believe that it is lucky to pick a fight with

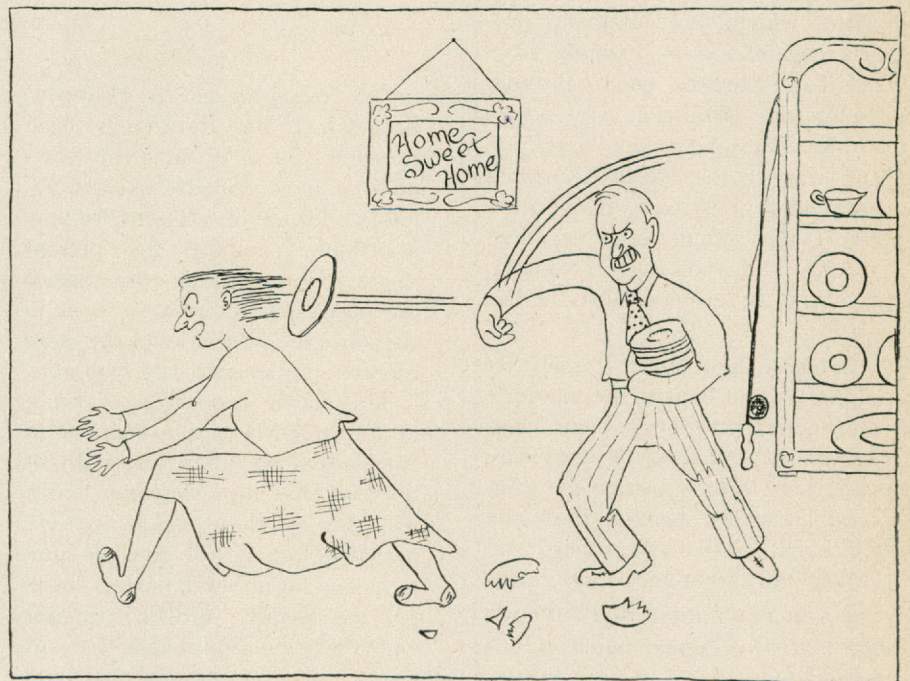
the little woman before starting out. And they often break dishes and lock their wives in storage rooms, just to start a dilly of a quarrel. This is very hard on wives and sometimes contributes to the making of widows if carried to extremes. But the menfolk seemingly ignore the hazards and egg their patient help-mates into violent and noisy family arguments all in the name of sport.

They also believe that their boats have strange powers over fish and pay a curious homage to their craft. A boat is never pulled stern first out of the water. Nor do they leave it and step ashore with their left feet. Strangely, this latter belief is held also by the Spaniards. Both of them believe that to point at a fishing boat is to commit a cardinal sin against the fisherman's luck.

Travelling south and east from Europe and to the northern part of Africa, the Egyptian fishermen to this day wear genuine or imitation emerald rings because of a superstition 3,000 years old. The goddess Isis was the patroness of the carp as well as being the goddess of the moon. In

those days, the carp was believed to be endowed with a fighting heart, capable of leaping waterfalls, like salmon. We, today, keep goldfish, a symbol of Isis, and a cousin to the carp, in our homes. For luck?

We Americans may consider some of the things we do are rather peculiar and difficult to understand. Perhaps, we're right, for we have thousands of our own interesting beliefs and practices. But it is interesting to know how part of the rest of the world believes and does things, too. And it is extremely possible that we won't have any real good superstitions for another thousand years until the archaeologists start poking around in the rubble of what was some forgotten city. (Remember it has been a little more than two thousand years since Troy, Carthage and the flourishing world of the ancients, were thriving centers of power and industry.) And there, one of the scientists will probably run across an interesting piece of tile depicting an American fisherman spitting on his hook and bait. What a find that will be for the scientific world to come!



"In Esthonia, the fishermen believe that it is lucky to pick a fight with the little woman before starting out."

FROM Kingsville to Baffin Bay," the cowman told me, "there was not a bush big enough to tie a horse to fifty years ago. Now look at it! Mesquite brush everywhere!"

This was not the first time the mesquite brush had been directed to my attention, but it was the politest way it had been spoken of. The cowman was from the fabulous King Ranch of South Texas, and he had every right to be profane concerning mesquite, because this brush meant collars lost in terms of grass converted into beef. But he wasted no time in lamentation. Removing the mesquite without destroying the land was a big task, which required keen minds, unclouded by bitterness.

What has interested me has less to do with destroying the mesquite than in discovering how it got there. If I could solve the problem cheaply of reclaiming the land which this too well adapted shrub now claims, my days in the classroom and the teaching laboratory could quickly be replaced with the undiluted joy which comes from doing research work alone. So important is this problem that huge sums are spent on mesquite control, and many good minds are hard at work on it.

Despite the fact that the mesquite—which, incidentally, is pronounced *mes-keet*—extends from deep in Mexico, north through Texas into Oklahoma, east nearly to the Texas-Louisiana boundary, and west to the Pacific Ocean, a knowledge of its early distribution before the coming of white man and his civilization is poorly known, except to a few specialists in the field.

Some of the folk lore, widely accepted as fact, is that the mesquite was carried into Texas from Mexico by cattle. The cattle drives are said, then, to have carried the seeds north along the Kansas Trail, the Chisholm Trail, and others. To clinch the argument these same folk sources point out that although the buffalo occupied much of this same range, the northward migration of the bison came at a season

when the mesquite beans were still not ripe, while the cattle were usually driven to market at a time when the trees and shrubs were loaded with the bronze and yellow pods.

To altogether discount such arguments would be inaccurate, because cattle do exercise a powerful factor, operating in the dispersal of the seed of the mesquite and affect-

wrote about it upon many occasions.

When John Russel Bartlett wrote in his *Personal Narrative*, recounting his experiences with the United States and Mexican Boundary Commission in 1853, he stated that he enjoyed chewing upon the yellow pods while he rode along, because of their sweetness. He also told of the *pinole* made from the beans by

Scar Tissue on

ing its change in density. However, data which has fortunately been preserved for us in somewhat scattered sources provides us with reliable information whereby we may accurately compare the present range of the mesquite with that of the past. This information rests in the journals and diaries of the more literate frontiersmen and explorers.

This hardy procession of keen-eyed men has been so overdrawn in fiction that we often lose sight of the fact that they were much like us, enjoying those sights and experiences which still give pleasure to us and, in no small part, account for the healthy, growing interest which is being displayed in the conservation of our natural resources today. They noted the mesquite and

the Coco-Maricopas Indians along the Gila River, and the use of mesquite wood for fencing and fuel. The roots, he says, were used at Correlitos, on the San Miguel, 160 miles from El Paso, for smelting silver ore.

Therein lay the initial virtues of the mesquite. It was a plant useful for food, fuel, and fencing, and to that list the adventuresome pioneer added a score of others. Because it served him, he began to love the tree, and, therefore, he wrote about it and left us with a botanical treasure of information which is seldom available to so thoroughly cover a species. From Father Fray Gaspar Jose de Solis, who in 1767 wrote about the huisache, cat's claw, cacti, mesquite, and snakes of

the Rio Grande country to our J. Frank Dobie of today, whose convincing literature makes us believe that only coffee cooked over a mesquite wood fire can have a true Texas flavor, the tough, hardy, pretty, fragrant, and often unwanted mesquite has been at the tip of the pens of many a writer over a period of nearly two hundred years of frontier history.

this country, from which we are now trying to eradicate it, a resident for over two and a half centuries. We cannot positively identify mesquite in the accounts of La Salle when the members of his colony landed on the present Texas coast in 1685, but the timber they saw near the entrance of Matagorda Bay cannot be easily accounted for in any other way.

So we turn page after page in the yellowed diaries and scan journals done in the brown iron and tannin inks of the frontier. We read microfilms of rare books and papers, in Spanish, in German, or French, and sometimes we stumble over the words. Always, however, we are

medicine, and the young leaves in tonics.

It was a useful tree then, and it took barbed wire fences and too many cattle per acre to beat the deep sod to death and to drive the hungry cattle to hunt out the mesquite beans and use them for food. Then the seeds, resistant to the acid digesting fluids of the animals' stomachs, fell upon this scarred soil and grew. They grew both because the soil was bare and because surrounding the seed was ample moisture and warmth. Nature was healing its wounds, and it was not her fault, but man's, that the wounds were there.

On my desk even now are three letters, from three different parts of the world, where the mesquite is considered valuable for forage. "Far from being a pest," writes Dr. St. John from the Hawaiian Islands, "the tree is considered a blessing." The same is said in different words from the arid areas of southern Australia, where mesquite is used for erosion control. The latest of these letters arrived from Pakistan, and in it are listed the values and the uses for our common *Prosopis juliflora*, the mesquite of south Texas which is trying to heal the scars of the subclimax grassland prairies, and which like all other kinds of scar tissue must not be removed too drastically for fear of injuring what lies beneath.

On mellow evenings, when the soft air brings upon it the fragrance of burning mesquite wood, especially when it is accompanied by the unmistakable aroma of barbecuing beef, I am glad we are still not able to destroy whole areas, killing the mesquite by airplanes and chemicals.

Like all remedial measures, the restoring of the range requires hard work, and sometimes it is necessary that such work proceeds slowly. Only in such a manner does the range have time to recover again some of its past verdure. Meanwhile the mesquite, in its own crude way, stands guard over the loose, injured soil, a poorly appreciated but worthy *compadre* along the Rio Grande.

he Range

By

EDWIN ROBERT BOGUSCH

Head of Biology Department, A. & I. College, Kingsville

These writers do not all call it by the same name, but they all come so close to it there can be no doubt that they mean the tree which bears the Nahautl name, *mesquitl*, from which mesquite has developed. The botanist John Merle Coulter used the Spanish *mezquite*. Bell, in his log of the Texas-California cattle trail of 1854, calls it *muskeet*. Mirabeau Lamar called it *muscet*, and William McClintock in 1847 called it *musquit*. They all added to our knowledge of the long history of our fellow American, the mesquite, for the mesquite has been long in

told that the mesquite was there, clinging to gravels and the deeper soils of the river bottoms and draws flanking the high, rolling prairies of knee deep grass. We are told of the work of the Indians who were firing the prairies and how only grass came back each spring and trees never came out upon them.

We read about the durable wood of the mesquite which can remain in contact with soil a hundred years and never rot, of the bread and beverages made from the bean by the Indians, Mexicans, and whites, of the use of the gum in

What Is Being Done About Conservation Education

By EVERETT T. DAWSON
Supervisor, Conservation Education

MANY and varied attempts have been made to establish conservation in several of the schools and colleges in Texas during the last 25 years. Some of these efforts flourished and showed great promise for a time but for some reason or other each of them slowed down and lost their momentum. Though these efforts did not reach the hoped-for objectives, the recognized need which prompted them has remained strong in the minds of many educators, teachers and others interested in conservation education.

An active state-wide program of conservation education got under way in the State in the spring of 1946. The move was set in motion when the State Superintendent of Public Instruction announced the appointment of a member of his staff as State Director of Resource-Use Education. In April of the same year the State Game and Fish Commission appointed an educational representative to find ways of presenting wildlife conservation education to the schools of the State. The Texas Forest Service appointed a school specialist early in 1946 to represent forest conservation in the schools, and likewise, the U. S. Soil Conservation Service made available a representa-

tive of that agency to work with the schools.

The Director of Resource-Use Education called a meeting of the representatives of these and other agencies in June 1946. This group considered ways and means of bringing conservation education into the schools of Texas. It was concluded that Resource-Use Education should be introduced to the schools of the State, and that it should be presented as correlated subject-matter rather than as a separate subject. It was further concluded that because the teacher-training institutions of Texas had made no provision in the past for training teachers for resource conservation, the agency representatives would need to obtain the cooperation of such institutions immediately to prepare teachers for this kind of work. It was apparent from the beginning that teachers were going to need instructional materials made available to them.

Following these two conclusions the group set out to contact college and university officials and seek their help in finding some way whereby teachers could prepare themselves quickly for teaching conservation and also consider the best means of making pertinent instructional materials available

for their use. Tangible evidence of results from the cooperative efforts of the agency representatives and the colleges and universities were not long delayed.

During the summer of 1947, six senior colleges conducted Resource-Use Education Workshops for teachers and a number of participants went back to their respective schools in the fall and began teaching conservation.

In like manner, in the summer of 1948, fourteen colleges and universities conducted workshops or courses in Resource-Use Education for teachers. Between four and five hundred teachers attended these summer sessions. Most of these participants prepared some sort of written project or unit on a resource subject, and in a form they could use in their own schools. Many chose wildlife and produced some very good teaching materials. Some of these materials have been reproduced and distributed free by the State Game and Fish Commission.

Besides the conservation education program carried on by the schools and colleges, some other organizations in the State took an active part in promoting the cause of conservation. Notable among these was the Audubon Camp established at Kerrville in the summer of 1948. About the same time the Friends of the Land, sponsored by Second National Bank of Houston, began a program to promote soil conservation in a number of East Texas counties.

In 1948 and 1949 the Texas Garden Clubs, Inc., adopted the theme of conservation for the two-year program and all Garden Clubs in Texas emphasized the need for Resource-Use Education.

During the summer of 1949, twenty colleges and universities carried on a conservation program. In the summer of 1950 still more teacher-training institutions joined the ranks



Vocational agricultural classes (8th to 11th grades) from Willis, Texas, high school, setting Kudzu crowns on eroded hillside for pasture. Left foreground M. F. Dickey, Soil Conservation service technician, and Clifton C. Hardy (standing) vocational agriculture instructor inspect a crown just after planting. (Photo E. W. Jenkins.)



Representatives of the four agencies concerned with bringing conservation education into the schools of Texas are shown at one of their frequent planning sessions. They are, left to right, Everett T. Dawson, Texas Game and Fish Commission; J. B. Rutland, State Department of Education; Everett F. Evans, Texas Forest Service; and David O. Davis, Soil Conservation Service. (Photo courtesy Texas Forest Service.)

and swelled the list to 24. Several thousand teachers already engaged in teaching and hundreds of pre-service teachers participated. About the same number of colleges and universities held Resource-Use Workshops or conservation courses in the summer of 1951. A wide interest has been shown by the demand for literature in the various categories of natural resources such as soil, water, forests and wildlife. Teachers have snapped up the literature offered free by the resource agencies. The pupils have welcomed the rich supply of down-to-earth facts about the environment made available to them by combining Resource-Use study with their daily school program.

Guided by the suggestions of the classroom teachers in the Resource-Use workshops and encouraged by their appreciation and use of wildlife materials, the State Game and Fish Commission has kept pace, in part, with the demand by the schools for factual literature. The Game and Fish Commission produced a considerable number of books, booklets, bulletins, leaflets, charts and posters. Many of these are in color. Some 40

(Editor's Note: This is the last in the series of articles on the basic needs for conservation of our wildlife and other natural resources.)

pieces of this material are available free to teachers in a so-called "teacher's packet." There is also a "pupil's packet" free to students, containing a number of pieces of materials in color suitable for use in the classroom.

The most recent development in conservation has been the state-wide Conservation Education Planning Meeting which was called by Dr. J. W. Edgar, Commissioner of Education, at A & M College, August 23 and 24, 1951. The stated purpose of this meeting was to review what had been done in Texas in Conservation Education, take a perspective view to see what needed to be done as next steps and then set out methods and means of reaching such objectives.

Zilker To Screen Texas Game Film

Tuesday, July 31,

Story Led With Pack Of Hounds

Texas' vaunted hound dog men will have a big evening when the new Texas Game & Fish Department's picture, "Outlaw of the Cameron" has its premier at Zilker Park Wednesday night under joint sponsorship of the American Statesman and City of Austin Recreation Department.

The story is based on the actual experiences of Brothers Luke and Bob Snow with mountain lions in the Texas border country. The famed Snow Brothers' pack hounds take a starring role as they pursue and finally track down one of the lions which still prey on wildlife and livestock alike in the Rio Grande river area.

The persistence and daring of the hound pack is portrayed in the film which captures the cries of the dogs and, through color, also shows the ruggedness of the scenic border region.

The Snow Brothers, who comprise one of the most famous hunting teams in the Southwest, matched wits with the big cats when they were youngsters. As boys in school they owned their own pack of hounds.

Soon tiring of chasing coyotes and other small varmints they went after bigger game. It was the beginning of their reputation as hunters, a reputation which has spread many miles from their habitat in South Texas.

People as far away as Canada have heard of the Snow Brothers and their adventures in tracking down mountain lions. (usual)



'OUTLAW OF CAMERON' SCHEDULED WEDNESDAY

The premier of the new Game, Fish & Oyster Commission motion picture—"Outlaw of the Cameron"—will be held at Zilker Park, Wednesday under a joint sponsorship of the Austin Recreation Department and The American Statesman.

The production, which will be released soon for general state use by sportsmen's groups and other organizations, will be shown at the outdoor theater in the Park. The program which will include the recent Game Department picture—"Master Whitetail"—will be at 8:15 p. m., according to the Sheffield, recreation director for the city of Austin.

Color picture and sound have been synchronized to record the thrilling hunting technique in tracking down and capturing alive one of the lions which still prey on wild game and livestock in the border area.

The story is based on the actual experiences of Luke and Bob Snow, who have mastered the trick of corraling one of the most savage of wild creatures in south Texas.

Luke Snow is sheriff of Willacy County. Brother Bob is a State Game Warden. They comprise one of the Southwest's most famed hunting teams. Many of the lions they capture are turned over to zoos in Texas cities.

'Outlaw of the Cameron' Is Smooth, Thrilling Film

By JOHN BUSTIN
Amusements Editor, Austin American-Statesman

It's indeed a rare day when someone grinds out a documented educational film that makes almost as lively fare as something out of Hollywood.

But that's the case with "Outlaw of the Cameron," the new production of the Texas Game, Fish and Oyster Commission which had its premiere here Wednesday night before several thousand enthusiastic spectators. The film, produced and photographed in color by Lon Fitzgerald for the Game Department library, had all the rousing elements of a full-fledged Western epic, and it even sported the tingling realism that the average sagebrush picture usually misses.

Well-integrated into the authentic story of tracking down a dangerous mountain lion are all the things necessary to a good outdoor adventure picture: Brilliant color and background set against the rugged South Texas wilds, fast-moving action of hound dogs, suspense, a fragment of humor and even a piece of gun play just to make the scenario complete.

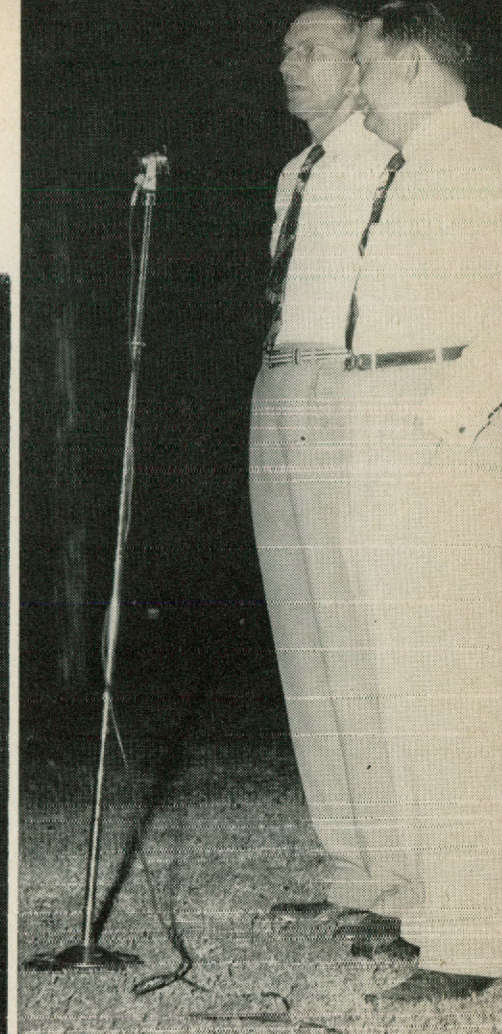
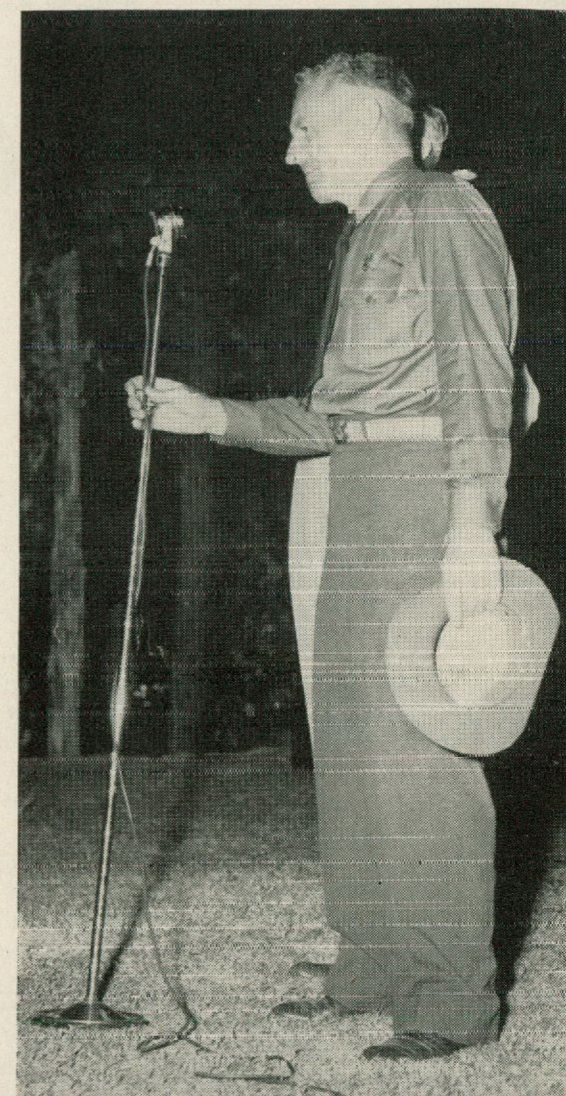
The characters of this little movie even fit the traditional standard. There are the heroes, Luke and Bob Snow, famed southwestern hunters; the comedian, a doleful-looking dog that climbs trees in pursuit of his quarry; and the villain, Tony, a lithe cat with a bloody past and lethal possibilities.

But the most impressive thing about "Outlaw of the Cameron," from a cinematic standpoint, is the thrill you get from knowing that what you see on the screen is an actual experience being filmed as it happened. For the jaded tastes of average movie-goers, this fact alone should make the piece worthwhile.

The wild-life photography, of course, is wonderful stuff by itself, but when it's pieced together in such a smooth, pleasing fashion it's really off the beaten track in film experiences.

"Outlaw of the Cameron" may soon be obtained from the Game Department for screenings by any group interested in wildlife.

Bob Snow (below), star of "Outlaw of the Cameron," is introduced at the premiere of the movie which was held in Austin, Texas. The story is based upon the actual experiences of Bob Snow and his brother Luke, who is sheriff of Willacy County. Right, Everett T. Dawson (background) interviews Lon Fitzgerald, who wrote and filmed "The Outlaw."



A small portion of the crowd which was present at Zilker Park for the premiere showing. The crowd viewed not only "Outlaw of the Cameron," but also "Master Whitetail," the story of the white-tailed deer in Texas. This picture, also written and filmed by Lon Fitzgerald, traces the deer from the pioneer days on through the market hunting era to the present time.

3,000 VIEW 'OUTLAW OF THE CAMERON'

A movie star who has never been asked for his autograph attended the world premiere of his latest picture in Austin Wednesday night—dispensed many manly handshakes—and went away still without scribbling his name.

But Bob Snow, star of the "Outlaw of the Cameron," had numerous fans at the film's first showing at Barton Springs.

Many youngsters crowded around to see the famous outdoorsman of the hound dog hunting team of Bob

The department produced the picture to illustrate its methods for controlling predatory animals. Some 3,000 persons gathered to see the show.

Luke, the other brother of the team, was unable to attend because

Swiss, Canadian Air Cadets in Dallas Today

his duties as sheriff of Willacy County interfered.

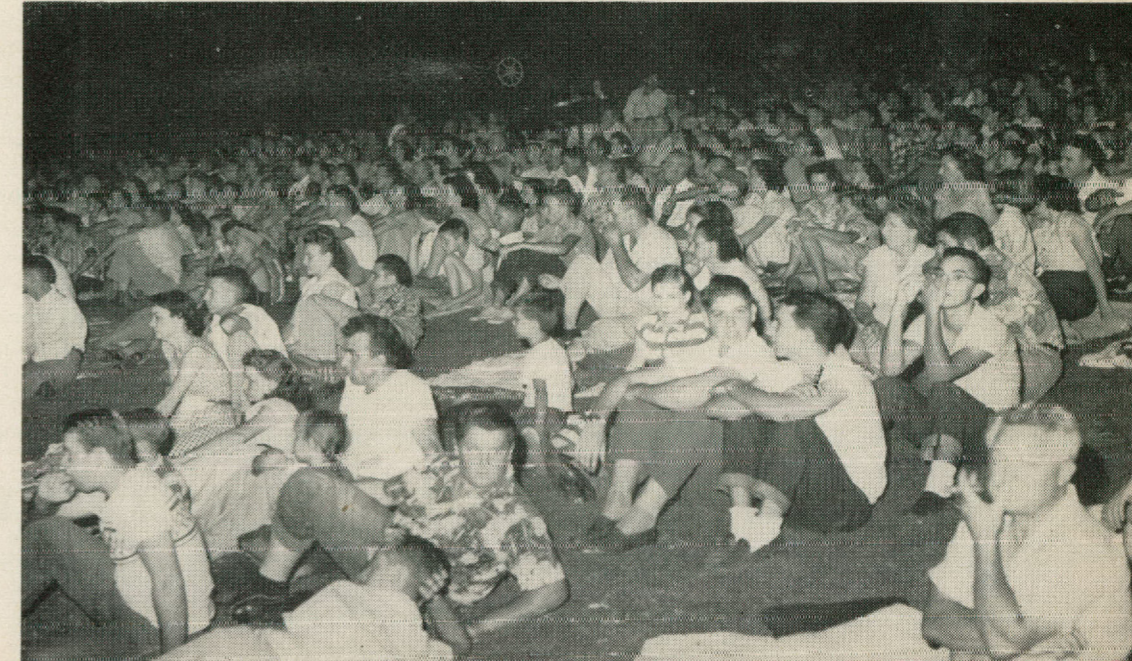
The real star of the picture wasn't at the park or even in the picture.

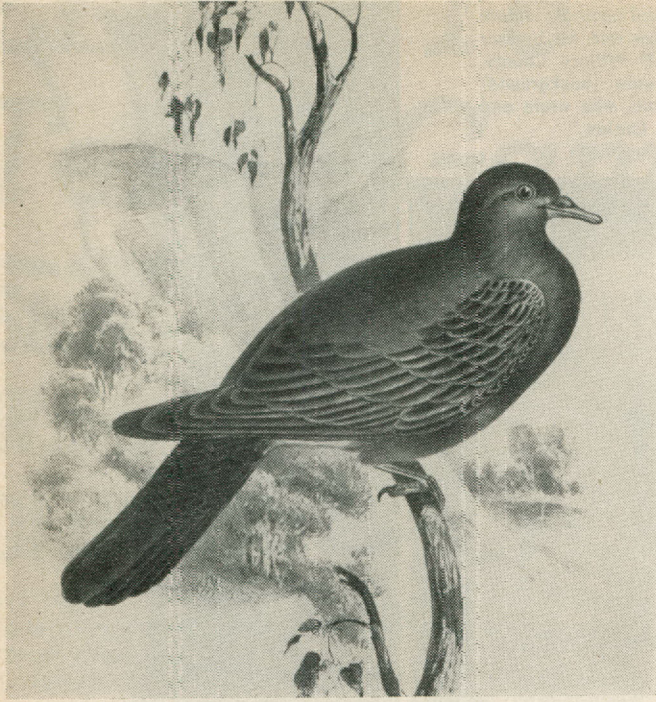
Bob remarked. That was Queenie, the hunting dog who tracked the javelinas used in the picture with the villain, Tony, the mountain lion.

"No I've never been asked for an autograph," Bob explained. "Guess I'm more of an outdoor hunter than game for autograph hunters."

Premier at Zilker Tonight of Texas' Own Lion Show

The constant war on predators and sound motion picture photography in the rugged Rio Grande Valley





The red-billed dove was not uncommon around El Paso.

TEXAS NATURAL HISTORY

One Hundred

By J. L. BAUGHMAN,

Part II

ON DECEMBER 22, 1852, the Commissioner's party left Ringgold Barracks for Corpus Christi. Passing over grassy prairies (How different from today's brush country!) they pushed on to the north. From here on Bartlett's description is so interesting, and so unlike conditions today that it is best to let him tell it in his own words:

"December 29th. The mustangs came around our camp in great numbers last night. They so alarmed the mules that, fearing a general stampede, the guard was obliged to fire upon them, which drove them off. The road today was heavy; the country an open rolling prairie, covered with luxuriant grass, and dotted with clusters of mezquit and oak. Now and then would appear a long line or belt of these trees, extending a mile or more. At noon, stopped in a grove of mezquit, and sent our animals to a lagoon half a mile to our left for water. After letting them graze an hour, we resumed our march. We reached a point four miles further,

and a little beyond a second and larger one. This water was covered with wild ducks and geese; but they took the alarm at the first appearance of the train, and were off before we could get a shot at them. Keeping on a few miles, we encamped on the open prairie. Large numbers of deer, antelope, and wild horses were seen during the day; but the latter kept at a respectful distance. Two deer were killed.

"December 30th. Off by break of day. The rolling prairie continued without trees or shrubbery, save here and there a little mot or group. As we approached Loma Blanca (White Hill), some low hills appeared, whose sides showed banks of white sand. Herds of mustangs, going at full speed, crossed and recrossed the broad prairie, presenting a beautiful spectacle as they stretched for a mile or more, with their long bushy tails streaming in the wind. They did not venture within a quarter of a mile of us. Deer and antelope were also seen in great numbers bounding over the broad plain or feeding in herds. They

too were shy, and had evidently come in contact with man before. As there was neither tree nor bush to be seen, and no cover of any sort, all our efforts to get within rifle-shot were unavailing.

"Near Loma Blanca is the bed of a laguna, which extends for more than a mile on both sides of the road. There was every indication that it had recently been filled with water; but we sought for some in vain. Deeply worn paths made by the mustangs were seen in every direction, showing that it was a place of resort for these animals. After travelling eight hours we reached a chain of lagunas called Los Olmos, which crossed our path. Having travelled more than twenty miles over a sandy road, and our animals showing signs of great fatigue, we encamped. The water was sweet and the grass abundant.

"December 31st. A portion of our journey yesterday was over the prairie, where there was no trace of a road. To-day continued the same; yet the man who pretended to guide us seemed familiarly acquainted with it.

DIARY EXCERPTS TELL OF MUSTANGS

Years Ago

Chief Marine Biologist



Bartlett mentions quail in the Huecc Mountains, and this is one of the naturalist's concepts of *kokwhite* as he looked in those days.

A few hours after leaving, the prairie near the horizon seemed to be moving, with long undulations, like the waves of the ocean. Unable to account for this singular appearance, I looked with my telescope, when, to my surprise, I discovered the whole prairie towards the horizon alive with mustangs. Soon after they could be seen coming towards the train.

"Major Emory at this time was in advance of me about half a mile with his portion of the wagons. We saw the long line of mustangs approach him, and soon after pass before, the whole herd following after, and extending as far as the eye could reach across the prairie. The mules became restive, and we could see the teamsters hurrying forward to the wagons for protection behind each other. On went the great stream, and the next moment one of the mule teams in advance sprang from the train and dashed off at full speed after and among the wild horses. The teamster in vain tried to restrain them. It was all to no purpose. Away they went, John Gilpin like, the wagon with six

mules, followed by all the loose animals that were driven with the train, which had also partaken of the stampede. The herdsmen, in order to check the runaways, left the train and went in pursuit, making altogether the most exciting spectacle we had yet witnessed. The chase continued for a mile; for the mules in the wagon had become perfectly frantic with fear, surrounded as they were by equally frightened mustangs, and all bounded over the prairie at their utmost speed. Seeing the danger, our men put on the lash, and we hurried forward to render such aid as lay in our power. The men of the other party fired at the herd, which had the effect of breaking the line, and turning it in another direction.

"The frightened herd made directly for us, in the same long line, the termination of which we could not see, as it lost itself far in the distance. I now became alarmed, fearing a general stampede among our mules; for nothing can restrain these timid creatures when frightened. If they cannot take their wagon with them,

they become so frantic that they will tear themselves from their harness and flee away. Our first precaution was to close up the wagons, so that only those in the first one would see the mustangs. The mules of the second were placed alongside of the foremost wagon, the next by the side of the second, and so on to the last, each wagon thus protecting the team that followed it. We now locked the wheels of all, and men stood by the leaders to restrain and quiet them. As I had no inclination to be carried off against my will among a herd of frantic wild horses after the fashion of Mazeppa, I dismounted and hitched my mule to a wagon, and with several others ran with my fire-arms to meet the advancing steeds, which were now nearly upon us, led off by a fearless stallion. We discharged our arms at them as they approached, and fortunately with good effect. The leader was turned, and the avalanche of wild animals swept by us like a tornado, much to our relief. We held in for a few minutes until the herd had passed, when we unlocked our wheels

G STAMPEDE AND PRAIRIE FIRE



Sennetts' thrashers occurred around the Rio Grande where the party was making its survey.

and hastened forward to the first of the train, which had halted.

"By the time we reached it, the runaway wagon and mules, with those who had been in pursuit, were just coming up after a most exciting chase. Fortunately no one was injured, and our animals were all captured and brought back, except one, and that one of the most valuable horses belonging to the party. This animal was ridden by the wagon-master, and when in full pursuit of the runaways, he stepped into one of the burrowing places which abound on the prairies, fell, and threw his rider over his head. Thus freed from restraint, he joined his wild brethren and disappeared on the prairie, with his saddle, bridle, and trappings.

"As we continued our journey, other herds of mustangs were seen coming from the east, but none approached us. Large numbers of deer and antelope were also perceived as we jogged along. In the afternoon we crossed a deep ravine, the dry bed of the Escondida, which bore the traces of recent

water; and just beyond this the great prairie was on fire.

"We had for hours noticed the huge volumes of smoke as they ascended from the plain, and attributed the flight of animals towards us, which we had seen during the day, to this fire. It stretched for miles in both directions, and was sweeping directly towards us. Whenever it reached a patch of high grass, volumes of dense smoke rose up, while the vivid flames leaped with greater rapidity over the plain. We rode up and down for some distance, but could find no opening through. At length a place was seen where the fire raged with less fury. Here the horsemen led the way; whereupon the teamsters put the whip to their animals, and uttering a loud whoop dashed through the flames.

"A short distance beyond we passed another chain of lagunas, or small ponds, known as Santa Gertrude. The water was good here; but finding that we could make a few more miles, I hurried forward. Five miles further, over an excellent road, brought us to

San Francisco River, which unfortunately had no water in it.

"The prairie had been more level to-day, and, except where burned, was covered with excellent grass. The bed and banks of the San Francisco were lined with large trees overhung with moss. We made thirty miles to-day, for about half of which distance the road was excellent.

"January 1st, 1853. At an early hour breakfast was despatched; and the tents were struck, and the party was in motion at the break of day. The prairie was now a dead level, the grass short, and the road very good. Not a bush or a tree was to be seen; yet there was no lack of prominent objects; for thousands of deer and antelope were scattered over it. Never before had we seen such numbers. Drove of mustangs also appeared. The deer and antelope were usually grazing in herds of from ten to fifty; and as we approached they leisurely trotted off to a short distance, and again stopped. We shot none; for as I was desirous to reach Corpus Christi before night, we were pushing forward on the run, and could not be delayed for the sake of game, tempting as it was. Among the antelope I noticed several of a pure white."

While in Corpus Christi, Bartlett experienced another norther and describes most interestingly its effects on the fish of the area.

"When these winds blow so vio-

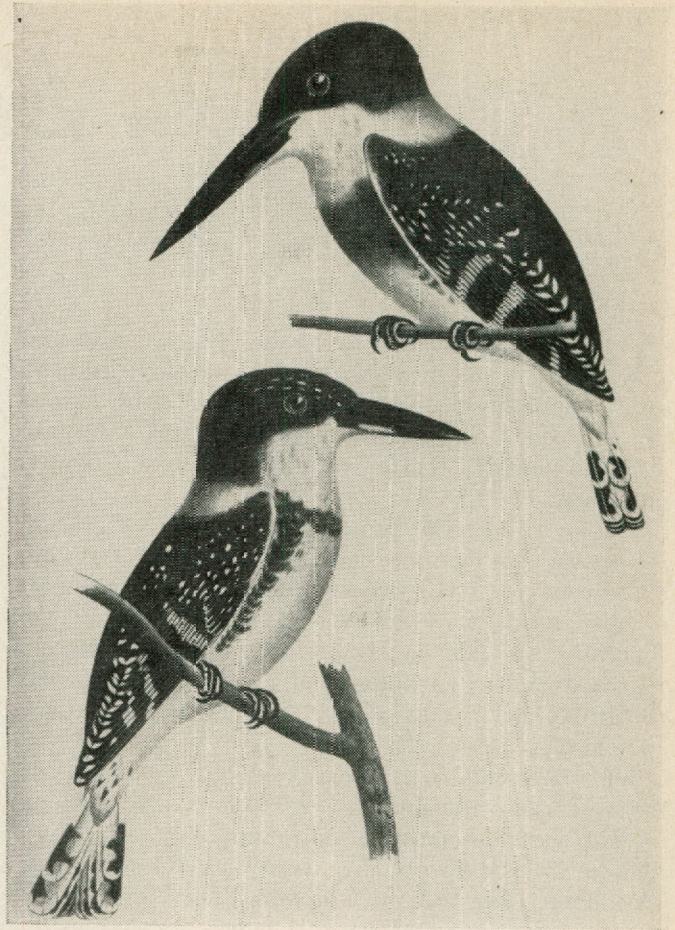


Horned toads lived in Texas even in 1850, and this drawing, made by one of the expedition's naturalists, looks no different than those seen today.

lently, they drive the water from the shallow lagunas into the Gulf, and increase the difficulty of navigating them. Many of the bars are then nearly dry. There is one in particular, across the mouth of the Nueces Bay, which deserves to be noticed. When the tide comes into this bay, as well as in all others, it is resorted to by large numbers of fish from the Gulf, to feed. The water may then be from five to ten feet deep, and is of the same temperature as that of the Gulf. But after a norther has blown for twelve or twenty-four hours, its temperature is so much reduced, that the fish become chilled, and not having strength enough to make their way over the bar, now more shallow than ever, they often lie there in heaps. At these times the people go to the bar with their wagons, and with a spear or fork pick up the finest fish, weighing from ten to a hundred pounds, and thus carry away loads. Many were brought in to-day, and they proved a great luxury to us . . .

"In the remarkable journey of Alvar Nunes Cabeca de Vaca from Florida to Cinaloa, on the Pacific coast, between the years 1527 and 1535, he remained for eight months among a tribe of Indians on the Gulf of Mexico, whom he calls the Avavares. 'They were all,' he says, 'ignorant of time, either by the sun or moon, nor do they reckon by the month or year; but they better know and understand

Texas kingfishers were also seen by Bartlett and his men.



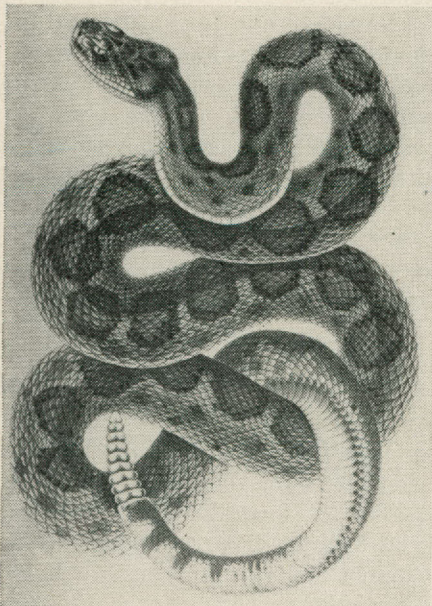
the differences of the seasons, when the fruits come to ripen, the fish to die, and the position of the stars, in which they are ready and practised."

"The season when the fish come to die, has never been understood. When Mr. Buckingham Smith, the learned translator and commentator of the "Narrative of Cabeca de Vaca," asked me, on my return from Mexico, whether in my journeys along the northern shores of the Gulf, I had seen or heard any thing that would enable me to elucidate the passage in question, the incident I have named as happening annually on the bars of the lagoons, when the northers blow, at once occurred to me; and on explaining what I had witnessed, Mr. Smith at once agreed with me that this was the true solution of the passage."

Leaving Corpus Christi, en route to Decros Point, at Pass Cavalla, where he was to take the steamer home, Bartlett says:

"Our course lay through a channel less than twenty yards wide for miles,

with bars of sand on both sides but an inch or two above the water. These were covered with myriads of water-fowl, including cranes, swans, herons, ibises, geese, ducks, curlews, plover, sand-pipers, etc. The large cranes and swans stood in lines extending for miles, appearing like a light sandy beach or white cliff; and it was impossible to dispel the delusion, until the vast flock, with a simultaneous scream that could be heard for miles, rose from their resting place. Occasionally, we would round a point which concealed a bay the surface of which was filled with ducks and geese; these, taking the alarm, would rise in one continuous flock, making a noise like thunder, as they flapped their wings on emerging from the water. Notwithstanding the vast numbers of these birds, I shot but few; for the water was so shallow that we could not get within gun shot of them with our boat. With a light skiff, and a few bushes or a bunch of grass, a gunner would have such sport as no other portion of the world can surpass . . ."



In the western portion of the state, as well as elsewhere, they found rattlers.

The Blue Jay

By C. E. CHAMBERLIN

AS I SAT in my study wondering which Texas bird should be the next on my list, an old friend, all dressed up in his blue coat, alighted in a tree just outside my window, cocked his eye at me and said, "Jaybird, Jaybird, Jaybird." There was the answer and here is my article.

The jay enjoys widespread reputation, and in general, is better known than any other American bird. With but few exceptions, it has some representative in every part of the world; however it is more abundant in the Americas, especially in Mexico and adjoining territory. Its colorful dress, its wild yell of "jay, jay, jay," and its peculiar behavior traits bring it to the attention of young and old of all classes.

There are some twenty species of jays represented on the American continent. The more common forms found in the United States are: the northern jay (common jay), Florida jay, California jay, Texas jay, Couche's jay, Woodhouse's jay, and the Green jay. The Florida jay is sometimes known as the scrub jay; the Green jay as the Rio Grande jay; and the Mexican jay; and the Canadian jay as whiskey jay, camp robber, whiskey John, moose bird, and meat bird. The Florida jay is somewhat smaller than the northern jay. The California jay is a cobalt blue, while the Canada species is much the color of a disheveled chickadee. The northern jay may be found generally over the northern, eastern, central, and south central sections of Texas and it might be considered the common jay of Texas. The so-called Texas jay is but a Texas variety of the northern jay. The Green jay of the Rio Grande region is one of the most beautiful of all the jays.

The northern jay, *Cyanocitta cristata* is the family *Cordivae* (crows, jays, and magpies) and is about 11 to 12 inches in length. The color of both male and female is a lead-blue above, a black collar uniting with some black feathers on the back, grayish white below, and wings and tail, a bright blue, barred transversely with black. The jay's head is finely crested.

Its song usually is a screaming cry of, "jay, jay, jay!" It has, however, some soft whistling bell notes for its love, or mating notes. It is a season resident and breeds throughout its range.

All jays build a crow-like nest but it is only about one-quarter of the size of the crow's nest. The outside of the nest is made up largely of thorny sticks with an occasional rag or snake skin thrown in as an ornament. The inside of the nest is lined with soft grass and feathers. Five or six eggs about an inch in length and of a brownish and gray color with greenish or brown spots may be found in the nest.

Birds are much like people in their behavior traits. Some are diligent workers, others are lazy and shiftless. Some

sing, others do not. Some are fighters, others never fight. Some seem to have a sense of humor, others are always serious. The jay has many of these traits and besides is a practical joker.

In habits, the jay is perhaps more versatile and interesting in its bird-habit traits than any other bird. His attractive military uniform with its distinctive coloring makes him one of the most beautiful American birds. He is boisterous and audacious; a thief, a robber, and in general, a mischief maker. He is more tyrannical than brave and like most boasters, he dominates the weak, dreads the strong, and tries to avoid his equals. Despite all this, he is a devoted parent, a jolly joker, and does much more good than harm. He does just enough meanness to get himself classed among the "bad" birds and most people think of him as being meaner than he really is. I would like him better, however, if he did not rob songbird's nests of eggs and young birds.

The jay does most of his robbing during his nesting season. He is quiet during that season so that he may successfully carry on his thieving operations.

It has been found that the jay's food consists of about 76% vegetable matter, some 20% insects and bugs, but not more than 1% of eggs, young birds, mice, and snails. He often rids a neighborhood of caterpillars. He is very fond of nuts and, like the squirrel, gathers and hoards them. Miser-like, he generally hoards more than he can enjoy or use. He often seems to forget where he has hidden his store of food—at least he never gathers all of it—and many of these forgotten nuts furnish the seed for trees which aid materially in reforestation.

The jay has a decided talent for mimicry, and seems to enjoy frightening other birds with his imitation of a hawk's call or some other frightening cry. His keen vision enables him to be the first to discover an intruder and his screeching cry of, "jay, jay, jay!" is a warning to all other nearby birds that a marauder is in their midst. He is very likely to announce the presence of a hunter (much to the disgust of the hunter) by saying, "here comes a gun, lookout."

The jay is not a songbird, yet he often whistles some soft, sweet, clear, flute-like notes. These are his love notes and are given during the mating season. Because these notes are flute-like, or trumpet-like, Wilson calls him the bird trumpeter. He seems to enjoy whistling to himself as he goes about his search for food. He may be heard humming, "jay-bird, jay-bird, jay-bird, too-dle-a-loot" as he goes about from branch to branch in his search for bugs, insects, or nuts. Sometimes his line of thought is not so wholesome. If he is annoyed about something he may turn loose and swear with fluency in a variegated, "vilifi-



cated" language which is always at his command.

He is a clown, a scoffer, and a practical joker. I have seen him do many cunning things. One wintry day I saw three or four jays quarreling over a scrap of fresh meat. Finally, one of the birds got the meat and succeeded in getting away from the other birds, and hid behind a board of the garden fence. He held the meat with one foot while he ate, and he would peep around the board from time to time to watch the other birds which were trying to find him. When he had fin-

ished his meal, he flew away screeching, "jay-bird, jay-bird, jay-bird," and appeared to enjoy immensely the trick which he had played upon the other birds.

I believe it was Mark Twain who told the story which illustrates the jay's sense of humor. The story is about a jay's storing nuts through a hole in the roof of an old house. The bird became quite irritated, and did considerable cussing, because he could not fill the space with nuts. Another jay went to investigate the matter and discovered that the first jay was drop-

ping the nuts into an empty room. He was much amused and told the joke to several of his friends. Then they all went about laughing and jeering at the first jay because of his stupidity.

Bad as he is, it seems that the jay is important and necessary in the world of birds. Abraham Lincoln said, "God must love the poor people because He made so many of them." God must have a place for the jays because they are to be found all over the world. His detective, or police, activities save many more bird lives than his thieving habits destroy.



Dove Banding,

Family Style—

By JAY VESSELS

Assistant Director, Departmental Publications

GAME Warden Tom Waddell called down from atop the step ladder:

"Let 'er up easy, Joe."

He was speaking to Joe Kallina, Garwood, Texas, businessman and wildlife conservationist extraordinary.

Tom and Joe were inspecting the dove nesting paradise near the Kallina home on the outskirts of Garwood.

Joe had reached up to hold down a huisache (pronounced we-sach) tree limb so that Tom could check the young doves to determine if they were ready for banding.

They weren't quite ready yet.

The sun was beating down mercilessly on the young birds. So Tom asked Joe to ease 'er back up, gently. But before that, Joe had passed up a handful of grass for Tom to spread as a sunshade to spare the little doves.

"Doesn't take much," said Tom, expertly. "The mother'll be right back to take care of that sun."

It was a triumphal inspection trip for the two men, who were accompanied, as oftentimes happens, by the entire Kallina family — Cecelia (the mother), Susan, (the daughter), age 6, and sons, Jodie, 13, and Jerry, 11.

Now, the bushy tract was a scene of tranquility, and of accomplishment. Countless doves, it seemed, nested, many of them with eggs; many with young birds.

Not long before, the peaceful spot

had been marked by strife and slaughter.

Game Warden Tom, wiry, greying, razor sharp, crouched in the sparse shade of a bush, to begin the chronology of the project:

"April 24, Jerry and Jodie found 11 dove nests. Two had eggs. May 5, they found 15 dove nests. Fourteen had eggs."

Tom checked his diary.

"The next day, May 6, the boys called me. Every one of the nests in the grove was destroyed."

The warden dropped one knee to the ground, as he eased into the tragic details.

"I went out there with the boys, who have been spotting dove nests for me. We found out that the damage was done by grackles which infest this 90,000 acre rice country by the millions."

So came revenge. The Elder Kallina, himself an authority on wildlife and particularly dove banding, got a case of shot gun shells.

They fairly burned the villains out of the doves' nesting area.

"We must have killed a thousand," said Tom, straightening up. He took a step. "See! Wings left from the dead predators. The place was carpeted with them."

Peace quickly settled over the brushy area after the 1,250 shell bombardment.

Warden Tom again referred to his diary:

"May 9, three days after we began exterminating the grackles in the grove, we found nests that had not been molested. Doves began taking over the grackle nests which are much stronger. The results were astounding.

"Each day produced more thriving nests. On May 26, we banded three birds. On May 31, we banded six. By June 26, we had banded 50. This total had climbed to 80 by July 17 and 106 by August 1, all in the one grove."

The place was fairly fluttering with adult mourning doves. A dozen nests could be spotted from almost any one position. One tree alone had four active nests.

Warden Tom went on to relate details of the grim life-and-death struggle elsewhere:

"On the Duncan Ranch, we found 14 nests with eggs, on May 10. The following week, I checked and found all destroyed. I watched this area for four hours. Saw grackles eat dove eggs; also young birds. Adding to the carnage was a white racer or prairie runner snake. It crawled from nest to nest, taking all the eggs. The snake worked the top of the trees and only bothered the grackle nests as the dove nests were on the low limbs. This area was watched carefully. No doves matured until after June 20 when the

Young Boys Aid Wildlife Management Program



grackles were through nesting and moved over to the Eagle Lake marsh.

Game Warden Waddell cherishes the extreme good fortune of such close contact with the Kallina family. He and the boys are practically inseparable. They frequently accompany him on overnight trips to his outlying camps.

"Good sportsmen and good campers," said Tom. "And they are going to grow up to be mighty good wildlife conservationists."

At the spacious Kallina home, dinner was served cafeteria style on the rambling porch.

A city guest, tired and scratched from the jungle tour, wailed from his deep lounge chair, for more chow. Jerry, at the moment, was replenishing his plate with chicken, new butterbeans, fried corn, sliced tomatoes, hot biscuits and fresh strawberry jam. He moved to respond.

"Aw, let him wait on himself," chided Waddell.

Jerry moved away with his own plate.

Warden Tom accepts these sturdy lads as semi-adult. And they deserve the recognition. Their own contribution to wildlife research through the banding project, and the example they set for others, certainly provides a bright and hopeful glow on the conservation panorama.

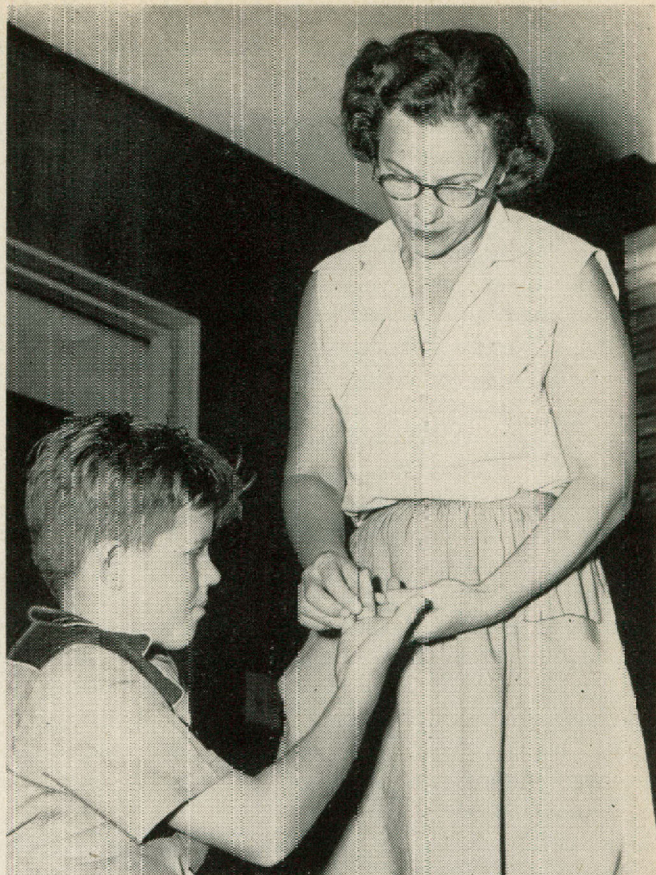
Teaming up with families such as the Kallinas—and he has several such combinations—is cut to Warden Tom's order.

"My own family has grown up," he explained. "My life is dedicated to safeguarding God's country down here in Colorado county. The actual help I get from such boys as Jodie and Jerry Kallina, and the encouragement I get from their parents, is a great inspiration, indeed."

Safely installed in a grackle nest, a young dove awaits its chance to wear a leg band and do its bit toward game management research. Warden Tom Waddell (below) checks a dove nest to determine whether the birds are big enough for banding.



Father Joe Kallinc, above, holds a five-day old dove for inspection by sons Jerry, left, and Jodie. Mother Kallina usually gets in on the act in some such routine as when Jerry reports in to have a band removed from a finger. Below, Susan hitchhikes a ride to the banding area when Jodie, at the wheel, and Jerry borrow their dad's pickup. The dove rendezvous is less than a mile from home on a private trail.



Let's Go Fishin'

By MARION TOOLE

Chief Aquatic Biologist

SEVERAL years ago the writer went to Marble Falls on a fishing trip and made an unsuccessful attempt to catch some white bass. While fishing, a young native about ten years old happened along, and engaged in a conversation about fishing, what the writer did for a living, etc., and finally moved on down stream to contact the other members of his party. He asked some of them if they wanted to hear something funny and told them, "See that big guy up there—he works for the Game Commission and he doesn't know how to catch fish."

When asked to expert on how to catch 'em, the writer recalled the juvenile brushoff and doubted his own qualifications to pass out anything worthwhile.

Assured that this series was solely for the edification of beginning anglers, he decided to risk the following information:

The best time to catch fish is late fall, winter and early spring. This statement can be verified by checking what happens to the fish population during the year. The game fishes the anglers are after are mainly carnivorous in their dietary requirements and are consequently on the lookout for tasty tidbits swimming by.

If large numbers of game fishes are present, and they usually are, and the supply of small forage fishes is scarce, the angler's lure, whether it be minnow, artificial lure or worm becomes interesting to the hungry game fishes.

On the other hand, should the water be teeming with millions of small forage fishes, your bait becomes very insignificant due to the competition it has with the millions of natural lures swimming about.

Consequently as soon as the first general spawn of fishes occurs, the waters are teeming with small fish

and a natural closed season on fishing is then in effect.

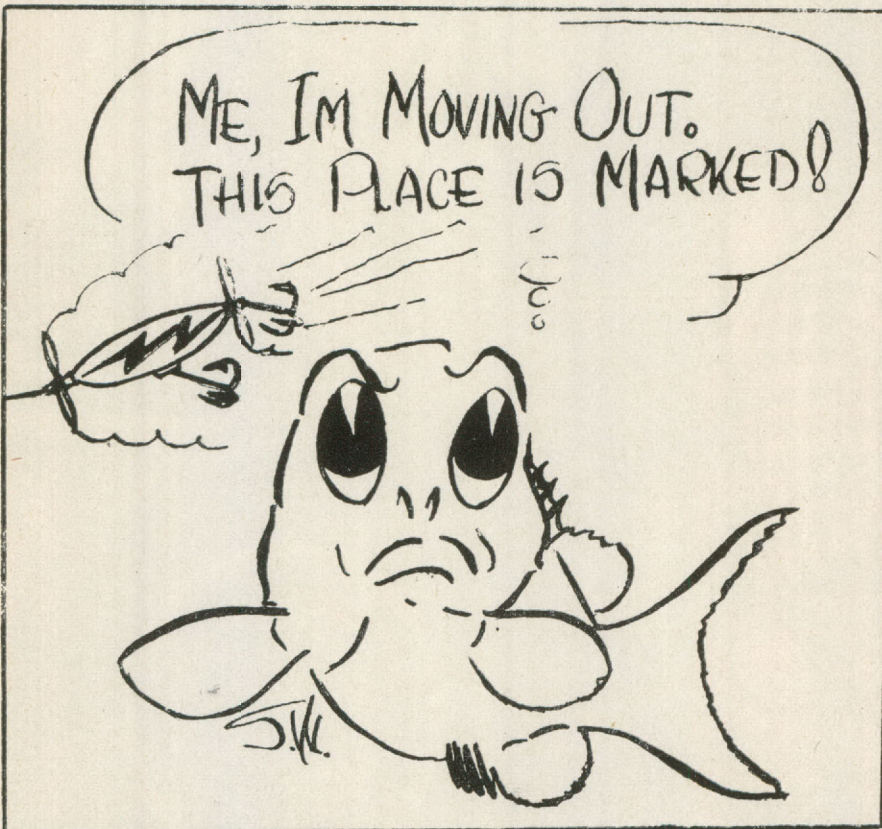
Many of the forage fishes spawn throughout the summer, keeping the waters well-stocked with food. Fortunately, the forage fishes have a rapid growth rate and by winter have grown large enough to become unacceptable as food to many of the smaller game fishes.

By winter, their numbers have also become thinned down due to the predation of the game fishes. It is then that your lure becomes effective again. Since the digestion processes are slowed up by low water temperatures, not as much food is needed during the winter and it is not until the water warms in spring prior to spawning that fishing becomes extra good.

One of the tools used in the study of fishes is the fish tag. Many fishes are tagged and released. When retaken, we obtain their rate of growth while at freedom and also obtain information on their movement from one place to another. It has been noted on several occasions that bass have been recaptured more than once from the same spot in a lake, which indicates to some extent that the black bass sets up a particular spot as its domain in a body of water.

The writer was acquainted with two fishermen who were retired businessmen and who capitalized on the tendency of bass to inhabit certain spots. They fished each day and set limits for themselves of five bass a day, which they were always able to achieve although they did all their fishing in a lake that everyone said was fished out.

Their fishing secret was to memorize about one hundred spots where a cast usually produced a strike. They would then work those spots only, passing up places that looked fishy, but had failed to produce strikes. They found that when a fish was taken from one of these spots they could usually catch another fish later



• Continued on Page 31

Marine Fishes of Texas

Whale Shark* *Rhinocodon typus*

By J. L. BAUGHMAN
Chief Marine Biologist

THE first recorded specimen of this great fish was found in Table Bay, Cape of Good Hope. Others have since been reported from Ceylon, the Gulf of California, Seychelles, the Gulf of Panama, Callao, India, Japan, the Philippines and the Arabian Sea. In all, Gudger has given a list of "76 definite occurrences . . . distributed as follows: Pacific Ocean 50 specimens; Indian, 15 fish; Atlantic, 11 specimens." Since that time a number of other individuals have been reported from the Gulfs of Siam and Mexico, and the waters of French Indo-China. Baughman also calls attention to the fact that this shark was evidently known to the Mortlock Islanders of the Pacific. Dr. Gudger, who knows more about these fish than anyone, is of the opinion that "the waters between northern Borneo and the southern Philippines—the Sulu Sea—is probably the center of origin and dispersal of the whale shark."

Whale sharks have been seen off Port Isabel, Port Aransas and Port O'Connor.

The upper parts of these great sharks are dark grayish, reddish or greenish brown, conspicuously marked with round white or yellow spots and with a variable number of white or yellow cross stripes. Lower parts are plain whitish or yellow.

The smallest specimen yet measured was 6 feet long, the largest about 45 feet. It is credibly reported to grow to a length of 60 feet or even more. The estimated weight of one of 38 feet was 26,594 pounds. The size at which sexual maturity is reached is not known, nor is it yet known whether or not the eggs hatch within the mother before birth.

For a period of 85 years after its first description little was known concerning the feeding habits of the whale shark. It was conjectured, from the teeth and from the structure of the gill-rakers, that it fed in the man-

ner of right whales, upon the small animals of the sea. Masses of algae were found in the stomachs of 2 specimens and at first it was believed that these sharks were vegetarians. Later their food was thought to consist of "minute crustacea and other oceanic animal forms."

In another specimen finely divided red matter was found in the stomach. Apparently this consisted of "the broken up, hard parts of crustaceans." It is also reputed to feed upon tang, but this statement needs confirmation. A sucking fish was found in one and cuttlefish bones, gobies, and other fish were taken from a Batavian specimen. Rivero says that it feeds upon sardines, bonitos, and squid, while standing vertically in the water, but gives no positive proof of this.

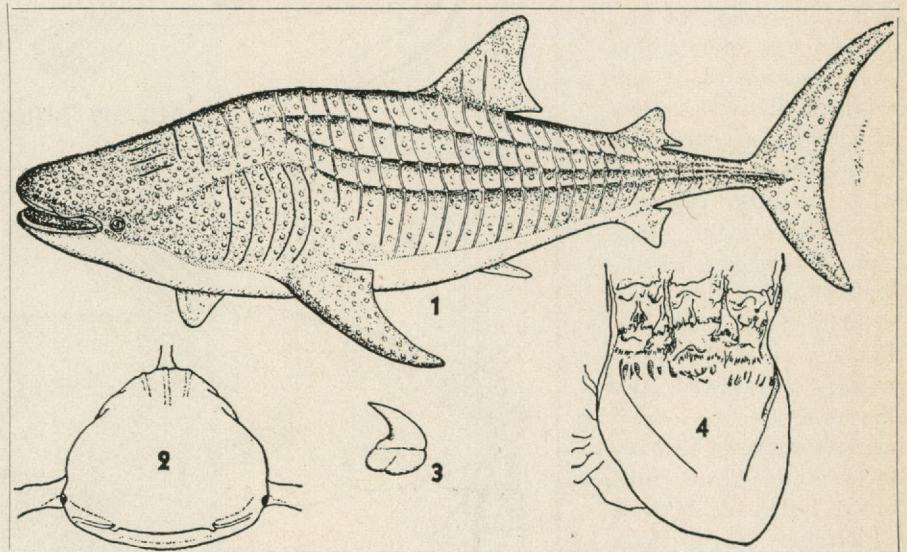
It remained for Dr. Gudger, of the American Museum of Natural History, to finally produce a factual account of the food and feeding habits of this great shark. From motion pictures taken off the Bahamas, and from correspondents in Cuba, the Seychelles and California, he has definitely established the fact that these sharks do feed upon plankton to some extent. However, due to the comparative

scarcity of these organisms in the tropical and sub-tropical waters inhabited by whale sharks, the greater part of its food must necessarily be furnished by other organisms, namely, sardines, and, as has been shown, squid.

In connection with its feeding the whale shark is so constantly found in association with various jackfish, bonitos and tunas, which also feed upon the sardines, that in the Seychelles the appearance of either jackfish or the whale shark is regarded as a sure sign of the presence of the other fish.

Off the coast of Hondo, Japan, the whale shark and the striped bonito are in constant association, and when the shark basks at the surface as it sometimes does, the bonito crowd together around it. On the California coast this same habit has been noted among the tuna.

Such crowding is evidently a manifestation of a habit exhibited by many other fishes, namely, that of concentrating in some numbers around a larger floating object. This has been noted with dolphin and similar instances are known in which the fish were jacks.



Figures 1 to 4. *Rhinocodon typus*: 1. *Rhinocodon typus* (after mounted specimen in American Museum of Natural History); 2. Front view of head (from *Sharks of the Caribbean*); 3. Tooth (from *Sharks of the Caribbean*); 4. Heart (after White).

* Abridged from Baughman, J. L., and Stewart Springer, *Biological and Economic Notes on the Sharks of the Gulf of Mexico*, Amer. Midl. Nat., July, 1950.

Fishes of Texas

THE BULLHEADS

By MARION TOOLE
Chief Aquatic Biologist

IT IS safe to say that practically everyone can recognize a member of the bullhead group when confronted by one—all bullheads being merely mudcats to most people.

As it happens, however, this group of catfishes is represented by several species, although only two different species have been recorded from Texas; the southern black bullhead, *Ameiurus melas catalus* (Girard) and the yellow bullhead, *Ameiurus natalis* (Le Sueur). Another species the speckled, brown or common bullhead, *Ameiurus nebulosus*, (Le Sueur) occurs from the Great Lakes southward to Texas, so it is possible that the speckled or brown bullhead might be found in this State.

The average angler's failure to differentiate one species from the other is entirely reasonable, because the three above-mentioned species are strikingly similar in color and shape. Their tails are either only slightly emarginate (having the margin notched) to square-cut, else they are rounded. Bullheads have big heads also and are rather stocky in build. Their colors range from black to yellow, while the brown cat is usually mottled. The color of the chin barbels offers a clue as to species, since the yellow bullhead has whitish chin barbels (the four barbels below the mouth), while the other two species have gray to black chin barbels. Carl L. Hubbs and Karl F. Lagler, in their GUIDE TO THE FISHES OF THE GREAT LAKES AND TRIBUTARY WATERS, offer the following key to distinguish between the black and brown bullheads, both of which have gray to black chin barbels: "Pectoral spine (the spine on the fin right behind the gill

cover) with strong barbs on posterior edge (appreciable except in old adults by the following test: grasp the spine in the plane of the fin tightly between thumb and forefinger and pull outward; if the grasp holds, the fish is *Ameiurus nebulosus*."

Differences also occur in the number of rays present in the anal fin. The southern black bullhead has fewer than 23 rays and the yellow bullhead has 24 or more rays. When anal ray counts are made, the short rays at each end of the fin should be counted.

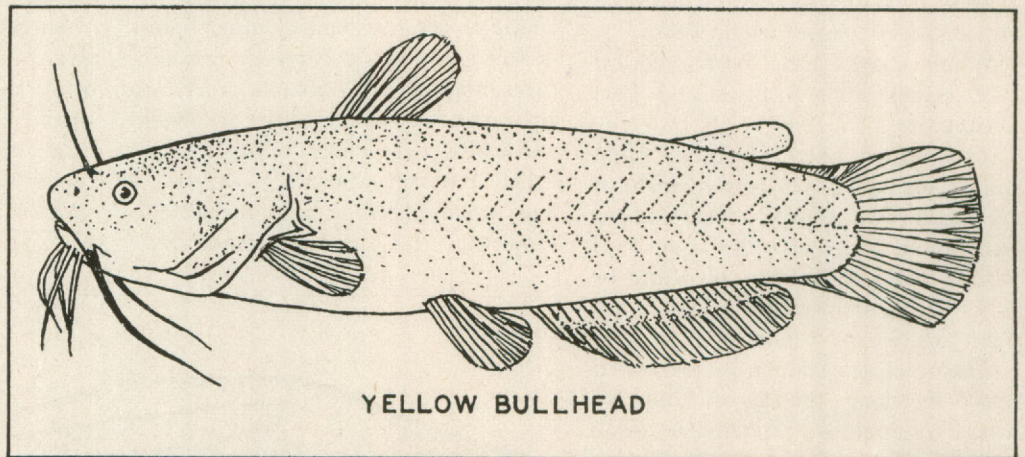
None of the bullheads grow very large. The top weight of the yellow bullhead is usually two pounds, the brown or mottled bullhead occasionally reaches a weight of from four to six pounds, and the black bullhead is

always of a smaller size than the other two species.

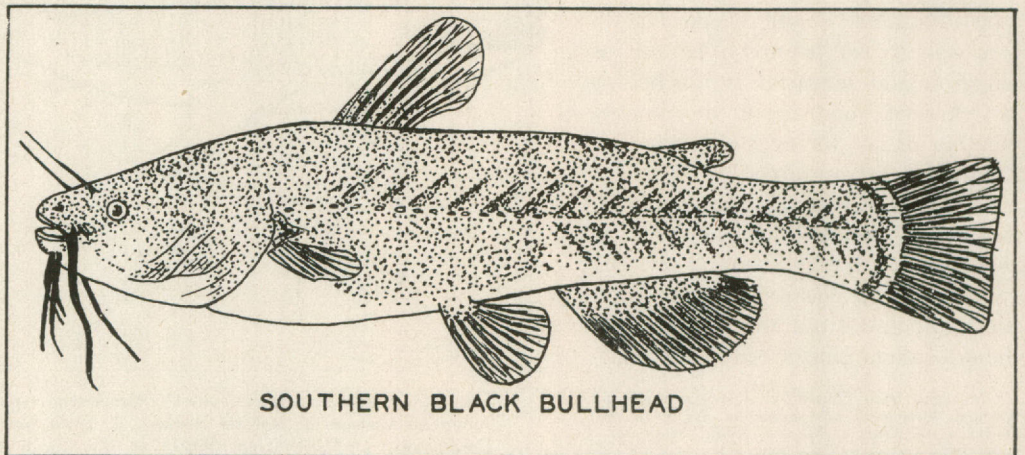
The spawning season for these fishes starts the latter part of April and continues for several months. Very young bullheads, one-inch in length, have been collected during the middle of September.

Bullheads are extremely good parents and take excellent care of their offspring until the little bullheads are well over one inch in size and have a good chance of survival. The parents search for a nest, and should they fail to find a suitable place for one, such as a hollow log or stump, an old bucket or a cavity in a bank or under a tree, they will excavate a nest. After the eggs are laid, both parent fish work in unison fanning and taking care of the eggs until they hatch. After the hatching, the female leaves and the male then guards the

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YELLOW BULLHEAD



SOUTHERN BLACK BULLHEAD

Do Your Guides Have Dirty Feet?

This provocative query has nothing to do with the tootsies of those weather-beaten individuals who charge you five bucks to take you where the fish aren't biting . . . The guides referred to are those on your fly rod, and the feet are the flat ends of the guide over which silk thread is wound.

When these feet become caked with line dressing, which in turn picks up minute particles of dirt, it acts as an abrasive. This is rough on good fly lines and it brings on that curse of all fly fishermen—a sinking fly line, according to Heddon's research department.

They advise a regular cleaning of guide feet, and here's how. Simply brush them out with a small paint

brush saturated with naphtha, about every three or four fishing trips.

And, Heddon's caution, remember that it's not how much line dressing you put on that counts, but how little you can apply and still give a complete coating to your line.

If a pad comes with your dressing, throw it away for it becomes a dirt catcher. Apply the dressing with your clean, bare hands, *after* cleaning your line with naphtha, and *before* every fishing trip. If your leader won't sink, try washing it with a small piece of abrasive soap.

In other words, a floating line, a sinking leader and a good Heddon fly rod mean enjoyable fishing—IF you keep those feet clean!

Let's Go Fishin'

• Continued from Page 28

from the same spot. As a result, they didn't spend very much time making unproductive casts.

It will also be noted they fished every day and were thoroughly acquainted with the water in which they were fishing. When lakes fluctuate a great deal it is most important to fish often enough to keep up with the fishing spots since they are subject to change.

If fishing is tried in the summer in a deep reservoir, the best results should be obtained by fishing fairly deep, but not too deep. As the water temperatures rise in the summer, the fishes go deeper to find cool water.

Many of the lakes stratify into thermal zones during the summer. These zones have been given technical names by the limnologist or men who make a study of lakes.

The upper zone is called the epilimnion, the middle zone or region is the thermocline and the bottom zone is the hypolimnion. The epilimnion is usually bountifully supplied with oxygen for the fishes to breathe, but the oxygen is usually depleted from the hypolimnion.

Fishes that enter the hypolimnion will usually die if they stay in that zone too long, from suffocation or from being poisoned by toxic gases that form in the hypolimnion. Usually

the epilimnion will extend down to a depth of about thirty feet.

If fishing with minnows, a minnow may be lowered and raised to the surface until the minnow is finally found to be dead when brought to the surface. If the minnow isn't hurt too badly when placed on the hook, its death could be attributed to being kept in the hypolimnion too long. You should then fish above that depth.

Game fishes will usually be found where forage fishes are found. Good places to try are out from points or along ledges that are submerged. In making fish population censuses with gill nets the writer has found that many fishes swim along the ledges.

Gill net sets have also indicated, specially with white bass, that the fish do most of their moving at night. Nets run at daybreak usually produce more fishes than the same nets set in the same place produce when the nets are run at dusk. Many anglers have found this out and on many of our lakes where white bass abound, productive areas will look like a lighted city, caused by the many fishermen with their fishing lights hanging over the side of their boats.

Since several issues could be filled with this subject, subsequent articles written by various writers will appear.

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Senate Committee Postpones Enforcement Increase

The Senate Committee on Interstate and Foreign Commerce gave the quick brushoff to a bill carrying the endorsement of nearly every conservation organization in the nation interested in waterfowl after listening to one opposing witness, according to the Wildlife Management Institute. Although the Institute, the Izaak Walton League of America, the National Wildlife Federation, the Outdoor Writers Association of America, and the International Association of Game, Fish and Conservation Commissioners have actively endorsed the bill, none of these groups was invited to testify at the hearing and none was given an opportunity to express its views.

The bill in question is S. 509, introduced by Senator Edwin Johnson of Colorado. It would provide for an increase, from 10 per cent to 25 per cent of duck stamp revenues, of funds which the U. S. Fish and Wildlife Service might use for enforcement of the migratory bird hunting laws. If passed, the bill would permit the Service to double its law enforcement staff which now numbers 90 men, little more than two for each state.

At the Committee hearing, Dr. Clarence Cottam, assistant director, and Jesse Thompson, chief division of wildlife management of the U. S. Fish and Wildlife Service, presented testimony in support of the bill and

urged that it be favorably reported. They were followed on the stand by Arthur Storz of Nebraska, a wealthy duck hunter and bitter critic of the Fish and Wildlife Service. At the end of Mr. Storz' testimony, the Committee voted almost unanimously to postpone the bill indefinitely in spite of reported objections by Senator Johnson.

If the Committee had to confine its non-governmental witnesses to one man, it could, without great effort, have obtained one who better represented the interests of the general public.

Fishes of Texas

• Continued from Page 30

young fish until they reach the proper size to shift for themselves.

Hatcheries in other states rear bullhead catfish, but the ones in Texas have had such remarkable success with rearing and planting channel catfish that bullhead propagation is ignored.

Bullheads are distributed widely over Texas. They are found in ponds, stock tanks, creeks, rivers and lakes. They have a marked propensity for muddy or sandy habitats, and weedy situations appeal to them also. These catfishes are very prolific and they eventually become the dominant fish in a pond. The southern black bullhead is found more frequently and in greater numbers over Texas than the yellow bullhead.

The dietary requirements for these fishes are not much of a problem since bullheads thrive on literally any type of food. Aquatic larvae, crayfish, crustaceans, clams and mussels, aquatic worms, dead fish, live fish, pondweeds and seeds of vegetation are all eaten with relish.

These fish are easy to catch, although their prolific nature makes it likely that you will catch an under-size fish; therefore, it is hardly worthwhile to spend much time trying to catch them. Trotlines, pole and line and throwlines can all be employed for taking them. Baits to use are numerous and include such items as earth-

worms, shrimp, crayfish, clams or mussels, cut fish and (in prewar days) cut beef heart, liver and kidney.

While conducting fish population studies, the author found that stock tanks and farm ponds containing bullheads usually had a very poor showing of other fishes present. Many such ponds contained hundreds of bullheads, the largest not exceeding eight inches in length. In the same localities, similar ponds without bullheads present had excellent populations of bream and bass. For that reason the author recommends that pond owners

refrain from stocking their ponds with these fish.

The author has caught these catfish on trotlines in lakes of twenty acres or more that weighed several pounds and has found them to be excellent eating, especially when they were taken from clear water lakes with sandy bottoms.

The bullheads will more than likely always be enshrined, along with the pumpkin-seed perch, in the heart of the small boy angler. No one else can feel so proud as does the small fisherman when he has some of these fish threaded on his string.

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for _____ years, starting with your next issue.

Name _____

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(You may expect to receive your first issue of Texas Game and Fish approximately six weeks after sending in remittance.)

MOURNING DOVE - WHITE-WINGED DOVE OPEN SEASONS 1951

MOURNING DOVES

OPEN SEASON - NORTH ZONE: Sept. 1 to Oct. 10, both days inclusive. Shooting hours, 12 o'clock noon to sunset.

SOUTH ZONE: Nov. 15 to Dec. 24, both days inclusive, except in Cameron, Hidalgo, Starr, Zapata, Webb, Maverick, Dimmit, LaSalle, Jim Hogg, Brooks, Comal, and Willacy counties where mourning doves may be hunted only on Sept. 14, 16, and 18, from 4 p. m. until sunset, and on Nov. 15 to Dec. 21 from 12 o'clock noon to sunset.

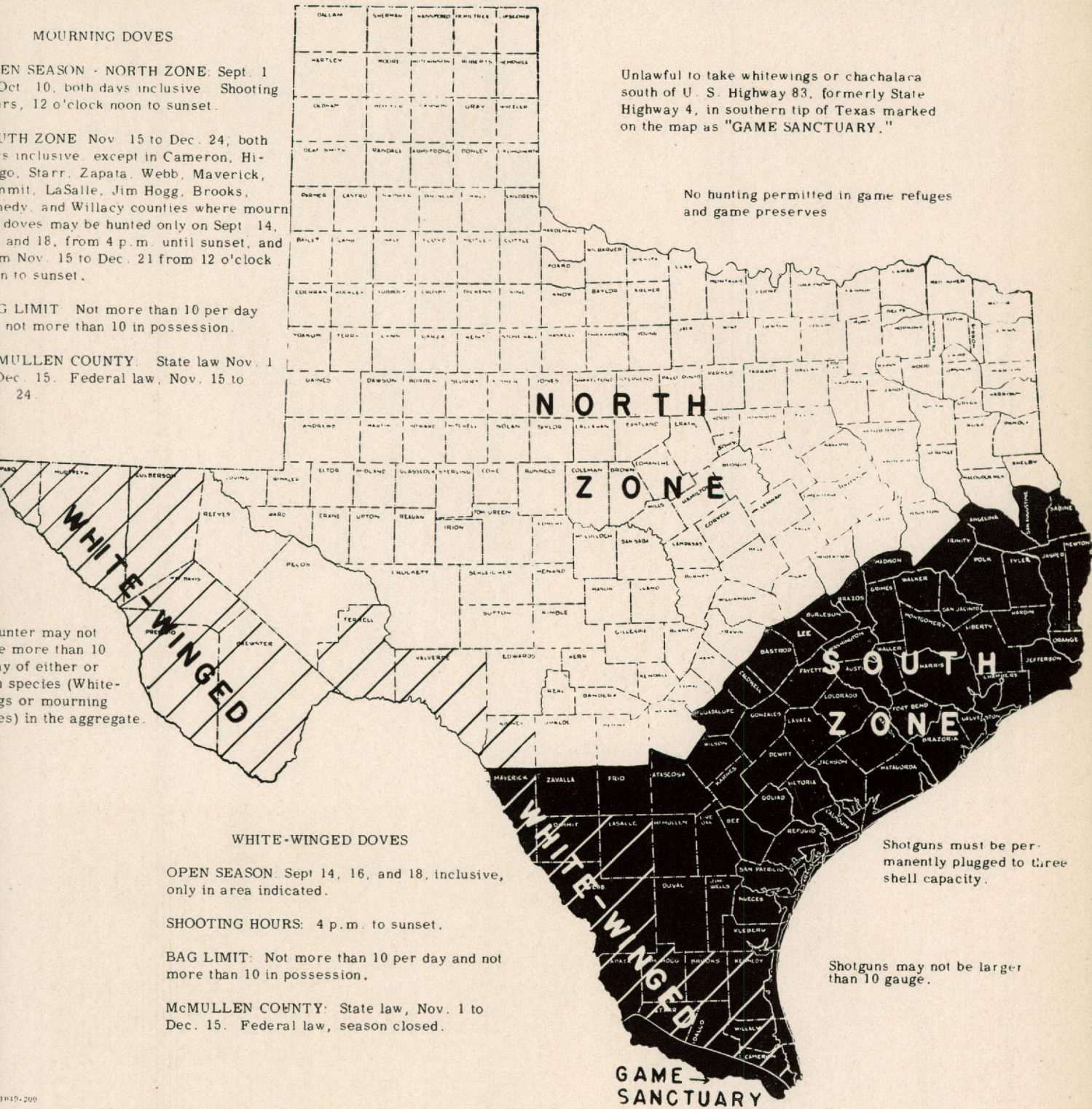
BAG LIMIT: Not more than 10 per day and not more than 10 in possession.

MCMULLEN COUNTY: State law, Nov. 1 to Dec. 15. Federal law, Nov. 15 to Dec. 24.

Hunter may not possess more than 10 of either or any species (White-winged or mourning doves) in the aggregate.

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

No hunting permitted in game refuges and game preserves



WHITE-WINGED DOVES

OPEN SEASON: Sept 14, 16, and 18, inclusive, only in area indicated.

SHOOTING HOURS: 4 p. m. to sunset.

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

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

Shotguns must be permanently plugged to three shell capacity.

Shotguns may not be larger than 10 gauge.

CONSERVATION



THE SPANIELS ARE WELL-BALANCED SPORTING DOGS, COMBINING BEAUTY AND UTILITY. THE MAJORITY INHERIT AN APTITUDE FOR RETRIEVING, AND LEARN TO MARK THE FALLEN BIRD WITH RAPIDITY. HE QUARTERS NATURALLY, AND IS TAUGHT TO WORK TO A GUN WITHOUT DIFFICULTY.