

Texas Game and Fish

APRIL

1950

TEN CENTS



PICTURE OF THE MONTH



Texas Game and Fish

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

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COVER—By Orville O. Rice

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ROBERT G. MAUERMANN
Editor



The Cover

A flash of blue and white and the high pitched call of the *Belted Kingfisher* are familiar to most summer fishermen in the United States. He is a solitary fisherman by profession and guards his preserve jealously as he watches for small fish from a vantage point above the water. *Belted Kingfishers* are summer residents of the U. S. and move to the warmer countries south of the border in winter.

WHITE

BY P. B. UZZELL

The white-winged dove hunting season is a year around topic among the population of the lower Rio Grande Valley. This bird, its fall feeding flight habits and the method by which it is hunted combine to make it one of the most sought after game birds in Texas. Annually thousands of hunters from all walks of life sally forth during the short open season.

Early history put the whitewing population in the South Texas region at the twenty million figure. Annual estimates for the past five years have shown a maximum of two million birds in Texas during the fall feeding flight of one season. Eight hundred thousand to 900,000 is a more consistent annual figure. However, one of the recent years had less than 100,000. A common occurrence is for a concentrated flight of 50,000 to 100,000 birds to be misleadingly labeled a million bird flight by the public.

The white-winged dove is a migratory species and only seldom do a few winter in Texas. Fall departure time from their Texas haunts varies with food and weather conditions. Usually, however, some movement begins in September with the bulk of the birds gone by mid-October. Straggling flocks can be found through early November. Persisting cool to cold windy and rainy weather generally change their thoughts to migration. Contrary to what many people believe, the first wet norther will not immediately cause a mass exodus to the warmer southern climes. It may temporarily disrupt their schedule and cause a shifting of flights and even move some south. Large flights have been known to continue for weeks despite the most disagreeable of wet, chilly September and early October weather.

After five or six months in the tropics of Mexico and Central America, the white-winged doves begin to return to the Texas brushland nesting areas. The early arrivals appear in late March. Their numbers are constantly added to until around late May. By mid-April courtship and nest building is in full swing. The first eggs of the new breeding season are laid during the last week of April. Nesting momentum gains in native timber until a peak is reached between mid-June and mid-July. This is followed by a gradual decline to the end of the breeding season in late August.

Recent years have seen all of the best native brush nesting cover in the lower Rio Grande Valley bull-dozed off and the land put in cotton, in truck crops or in citrus

Marginal cover of eight-year-old Walker Lake near Mission, Texas, is shown in upper left photo. This cover consists of huisache, granjeno, mesquite, blackbrush, ebony and brasil. Second picture shows marginal cover of 25-year-old Penitas Lake, also near Mission, which consists mostly of ebony with some brasil and granjeno. Lower photo shows two whitewings on dead twigs of citrus tree near McAllen, Texas. This orchard averaged 49 pair of breeding white-winged doves per acre during the 1949 breeding season. Bottom photo is of a mature citrus grove west of Mission. It is the type of citrus used by white-winged doves for nesting. This grove averaged 40 pair per acre in 1949.



WINGS; COMING BACK?



A whitewing on a nest in an ebony tree west of Mission, Texas. Ebony is the native nesting cover of South Texas, however, the whitewings have moved to cover in citrus groves as the ebony has been cleared. All photos on these pages by P. B. Uzzell.

orchards. If the previous year's nesting area has been destroyed, the birds must seek another which is suitable or near suitable. Preferring dense chaparral type of native cover, they are now hard pressed to find a 150 acre plot which remotely meets their former high standard.

Once a nesting site is chosen, the white-winged doves' troubles have just started. They must contend with a host of predators and with nature which together destroy a portion of their eggs, young and nests. It is a fortunate pair of birds that raise two successive pair of young with as many eggs laid. Wind, rain and hail storms take a toll of eggs, young birds and nests. Greatest, however, is the loss of eggs to predators. Boat-tailed grackles are the major offenders. Green jays, bull snakes and rats also take numbers of eggs. The Norway rat, and possibly the cotton or javelina rat, and snakes take young

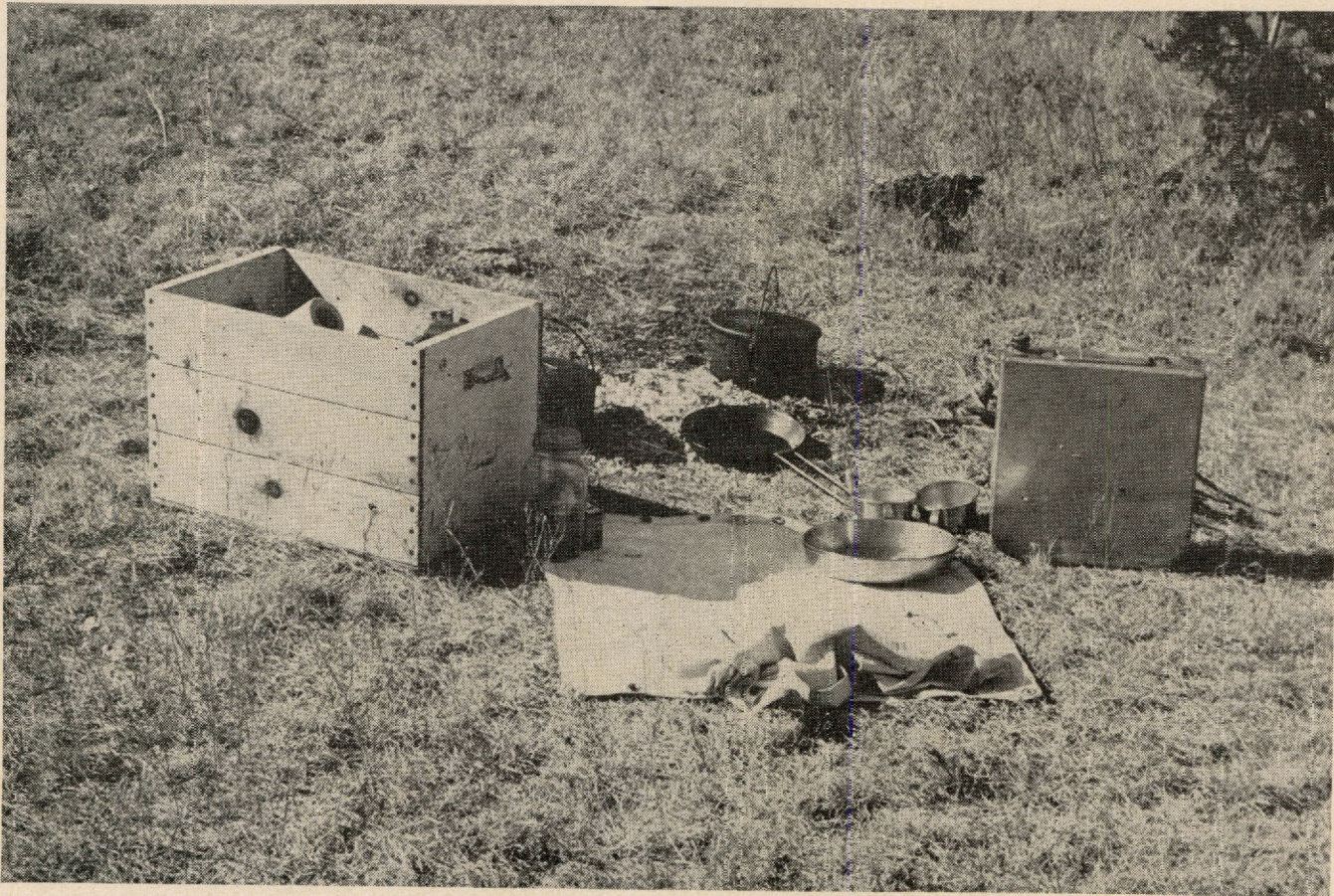
birds. Egg and young losses are so great that the average breeding success from year to year is approximately one bird per nest for the entire nesting season. White-wings are persistent nesters and will try time after time to raise and fledge their young. Records of some birds laying from four to five pairs of eggs before being successful in fledging one young are not uncommon. Some fledge none, and an occasional pair will fledge three sets of young without suffering any form of precation.

By early August, young birds and adults that have finished nesting begin forming feeding flocks. They move from nesting grounds to areas having grain fields or heavy crops of native foods such as doveweed or goatweed and leather weed. The birds forming the

• Continued on Page 34

They're Nesting in Citrus Orchards

Camping's Different



Camping equipment should include a chuck box, stainless steel cook-kit of pots with bails and covers, cups, plates, frying pan with handle, and a cloth case containing the knives, forks, and spoons.

By A. EARL JOURDE

TEXANS ARE CAMPERS, many are year-around campers, but from the deluge of printed words that pour out of the outdoor magazines, one would be forced to believe that all of the camping in North America is limited to the northwoods or to Canada.

T. K. Huddart, in the July 1948 issue of *Texas Game and Fish*, describes camping as it may be done in Canada or on public lands; but woe unto the camper who would attempt that manner of camping in Texas. Huddart's described style of woodcraft and handiwork have contributed largely to the many camping restrictions and the posting of lands against campers in Texas. For instance, the cutting of timber for tables, benches, tents, and tarpaulin would necessitate the cutting of five saplings and approximately forty smaller trees two inches in diameter.

No landowner will tolerate this. Huddart did not state what disposition was made of the pile of small limbs and leaves that were trimmed from the trees, nor how he disposed of the tables and benches when his camp was broken. Were they left as fire hazards or eyesores for a year or two, only disappearing from the landscape when they had rotted away?

Texas camping and camping conditions demand a different technique, and different camping equipment. Almost all land in the state is privately owned and fenced; therefore, permission from the landowner is required before the camper can enter. Many landowners rightly object to the abuse their premises receive and to the heap of garbage left by some campers.

In picking your camp site, try to select one that is level or has a slight slope, free of tall weeds and tall dry grass. A site like this, with no clearing to be done, saves time in making camp. Remember that a lot of work

preparing a camp site takes time which robs you of your few precious hours of fishing or hunting.

If it is summer, pitch your tent facing the breeze. If winter time, pitch it behind a windbreak, if one is available.

When mealtime comes, clear away the grass and leaves before starting a fire, even though you use a gasoline stove. If an open fire is preferred, keep it small. A small fire is easier to cook on. Clear a place at least six feet in diameter for your firesite. In the center of the cleared area dig a small pit as wide as your pans and long enough for at least three of them, then build your fire in it. When the pit is full of coals it is ready for use and makes an excellent cooking fire, free of smoke.

A tent for use in Texas and the Southwest should be airy, light in weight, insect proof, and easily erected with folding or collapsible poles and steel stakes. For the past several

years I have used a Comstock type tent which meets most of these requirements. It is seven feet square, six feet high at the peak, has a one foot rear wall, a sewn in ground cloth and mosquito bar, and weighs approximately nine pounds. It can be erected with a telescoping steel pole or folding shears, a minimum of five steel stakes, and with the rear wall tied to the automobile or other support. In a strong wind more pegs are used. This particular tent has seen seven years of steady use. It has withstood everything from whipping torrential rains of North Texas to Arizona sandstorms.

The bedroll should be adaptable to the varying conditions met in this area throughout the year. It should be so made up that in summer very little bedding is carried, then when winter comes, more can be added. This automatically eliminates the sleeping bag or robe because they are made for cold weather use only, colder

takes care of the small hand axe, flashlights, extra tent stakes, and what have you.

Polluted streams and lakes, and arid sections, make it necessary to carry your water. To save space, avoid round containers as avoiding a plague. A handy and compact way of solving the water supply is cans, twelve inches square by three inches thick. Cans of this size are easily carried in portable refrigerators. Your local tinsmith can make them of either stainless steel

or galvanized steel. The stainless is the better of the two, and of course, it costs at least twice as much as the galvanized cans. Its advantages are: It will not rust, and does not corrode as do the cheaper ones. The life of the stainless cans is practically indefinite. The life of the cheaper cans, on the other hand, is generally about three years because of the white deposit that forms on the sides. Too, this deposit washes and flakes off,

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Two views of the type tent which the author uses.



It's Important That You Have The Equipment

weather than is generally seen in Texas. The air mattress, sheets, and wool blankets fulfill these requirements. In summer one blanket or none may be needed. In winter, the camper may require two or maybe three blankets. Such a bedroll as this, for a party of two, for winter use, when tightly rolled and fastened with web straps, is easily carried in a drawstring canvas bag, ten inches in diameter and thirty-six inches long. The bag serves the double purpose of keeping the bedding clean and free from minor snags, etc.

Where week-end camping is the rule, some handy provision should be made for carrying food and cooking utensils. A chuck box fills this need. I have found that a box, twelve inches square by eighteen inches long, fits my requirements. In it, in a bag, is carried a nesting stainless steel cook-kit of three pots with bails and covers, three cups, four plates, frying pan with folding handle, a cloth case containing the knives, forks, spoons, and a pair of bent nose pliers. The pliers have many uses, but the primary one is for lifting lids and pots from the fire. A piece of heavy canvas two feet square is handy about the cook-fire. It is spread on the ground to keep the food out of the dirt. The chuck box has become a catchall. Besides food and utensils, it

SOUR GRAPES FOR

By W. C. Glazener

WITH WIDER distribution of deer in Texas, and development of high populations adjacent to cultivated farm lands, serious problems frequently result. In the past ten years, the writer has had intimate contact with a number of such cases.

People in different localities have used various methods of excluding deer from their gardens and field crops. The best, and most expensive, is a deer-proof fence. Some people have used noise-making devices, such as tin cans on fences. Others have strung asafoetida and blood along fences in Bull Durham sacks. A few have staked vicious dogs in fields to scare foraging deer. Still others tried various combinations of electrified wires.

Game wardens and biologists of the Game, Fish and Oyster Commission are always on the alert for new ideas along this line. A few of the field men giving special attention to the problem include H. C. Ward of Catarina, T. T. Waddell of Eagle Lake, F. E. Hollomon of Seguin, Bill Garrett of Comfort, O. J. Erlund of Comfort, J. M. Carlisle of Lufkin, and C. C. Newman, formerly of Silsbee.

Effectiveness of these efforts under a wide range of circumstances have varied from good to useless. However, a few points are known to be essential. The success of any method depends largely on its being put to use before deer depredations commence. Also, once a method is installed, it must be given regular care to insure the best possible performance. On the other hand, if deer once begin feeding in a field, only the most drastic steps seem to drive them away for any length of time.

In several cases involving herds accustomed to feeding on crops, the slaughter of a number of deer had little or no deterring influence on others. This has been particularly true on small farms surrounded by large ranch pastures. The result is naturally more crop damage and general dissatisfaction.

At the North American Wildlife Conference in March 1949, the writer learned of a new chemical deer repellent developed and produced by the B. F. Goodrich Chemical Company of Cleveland, Ohio. The Game and Fish Department of the State of Maine had tested the chemical on numerous crops and fruit trees and recommended it as a deer management possibility.



The repellent, *Goodrite z. i. p.*, was described as a non-poisonous paste, soluble in water for application as a spray. Small doses taken by laboratory men gave reactions similar to laryngitis or severe sore throat. It was reported to drive deer from crops on which they had begun heavy feeding. Corresponding effects were observed on rabbits, field rats, and mice. Domestic livestock would probably suffer the same reactions, if fed treated

plants.

In April 1949, a request was placed with the Goodrich Company and they sent a few gallons of *z. i. p.* to Texas for experimental use. Some landowners in Colorado County financed an order for several more gallons to apply in their vicinity. This group also purchased some Diamond L Brand Deer Repellent, produced by the Henry N. Leckenby Company of Seattle, Washington. Other commercial repellents,

DEER

known to be available but not observed in use, include "Acme Toxo" and "Deer Fear." The former is a product of Progressive Biological Company, Co-boes, New York. The Sparhawk Company, New York, manufactures and distributes "Deer Fear," a scent repellent.

T. T. Waddell, State Game Warden at Eagle Lake, and S. E. Chase, County Agricultural Agent at Columbus, supervised spraying operations in Colorado County. They made applications on peas, beans, peanuts, milo maize, cotton, and watermelons, using a three-gallon pressure sprayer. Near Seguin, Guadalupe County, Warden F. E. Hollomon sprayed a strip around a ten-acre watermelon field.

Deer were actively feeding in each of these fields prior to treatment. However, in each instance, damage ceased following one application of repellent spray. Waddell reported that Joe Hnatek, near Columbus, harvested sweet potatoes and peas for the first time in ten years. He gave spray treatment full credit for the harvest.

Hollomon sprayed watermelon vines on May 28, and not until after June 7 did he observe further feeding. That was very light, deer having begun to nip off some of the young runners that developed after the spray was applied.

Apparently, any available type of commonly used spray equipment handles these chemical repellents satisfactorily. Hollomon reported that straining the diluted solution eliminated a tendency to clog up the nozzle he used.

As yet, we do not have dependable cost figures on the above repellents. While the concentrates list for \$7.00 to \$8.00 per gallon, they may be diluted considerably. Limits of dilution and rates of application will vary with size of plants and density of stand. Duration of effects under dry conditions and rainy weather must also be determined through experience. Also, it seems logical to assume that improved methods of quantity production might be expected to reduce manufacturing costs.

No effort is made here to evaluate chemical repellents as protective measures against deer damage to cultivated crops. Only through systematic testing of all available products could such a step be possible. However, for those interested in the matter, the foregoing reports may suggest feasible lines of action.



Pierce B. Uzzell, game biologist of the Game, Fish and Oyster Commission, examines what is left of the 37 whitewings that a cat destroyed in one night. The birds were being hand-reared for a transplant project in the Cuero area. Photo by Val'ey Evening Monitor.

A CAT'S WORK

Devastation caused by uncontrolled house cats was tragically demonstrated in a night-time raid on a bird stocking pen at McAllen. A stray feline, within a few hours, converted a wire enclosure into a veritable slaughter house. Thirty-seven white winged doves and three ringnecked doves were destroyed.

The sneak attack set back an entire whitewing restocking project at least one year, according to Pierce B. Uzzell, Wildlife Biologist of the Texas Game, Fish and Oyster Commission. Uzzell, who had hand reared the birds for stocking purposes, said the havoc was caused by a single prowling cat. The other birds in the

pen were spared, presumably because daylight ended the marauder's blitz. The survivors included eighteen whitewings, three white sacred doves, six ringnecked doves, two mourning doves and one whitefronted dove.

The birds had been reared for transplanting at Cuero. Stocking whitewings near Cuero was begun a year ago in an effort to establish a nesting colony in this area. At that time, forty-seven whitewings were released. Uzzell said at least some of them reared young last summer.

The destructive raid greatly disappointed Cuero sportsmen who had been looking forward to helping Uzzell release the additional birds this year.

CONSERVATION CONTEST

The Fort Worth Press since 1946 has sponsored a comprehensive soil conservation contest for citizens who use or encourage the use of approved methods of saving soil and water.

Awards total \$13,000, and special prizes are given to outstanding conservation farmers, to landowners who have done the most in forestry management, to business or professional men who have given the most support

to soil conservation, and to individuals who have rendered the greatest service to water conservation. Cash prizes or bronze plaques are awarded to municipalities and soil conservation districts which further soil conservation most, to radio stations, and to weekly newspapers. An essay contest for school children is included so that the entire public may participate one way or another.

THE GRAY FOX

By Eugene E. Plummer

Meet Br'er Gray Fox, a furbearer of Texas who is unpopular with and often misunderstood by poultrymen and game bird hunters, but heartily accepted by those who love the excitement of a chase and the sound of a pack of baying hounds.

Averaging three feet long, the gray fox of Texas can be identified by his distinctive appearance and coloration. His upper parts are a grizzled gray in color and his underparts white to ashy gray, while his bushy tail with a concealed mane of stiff hairs running its full length is dark gray on the tip with a black stripe above. Except for a thin, elongated muzzle and sharply pointed ears, the gray fox looks a great deal like a neighbor's German police dog in miniature. He has a shorter muzzle, longer legs, and a smaller body than does the true red fox (*vulpes fulva*).

Common in practically all of Texas, but less abundant in some areas of the Lower Rio Grande Valley and parts of the Panhandle, the gray fox can also be found in most other states. He commonly inhabits lightly timbered, brushy, and swampy areas in the warmer regions, occasionally appearing in or near desert country, and

his den is usually in a hollow tree or log, a cavity in the rocky breaks along creeks and dry gulches, or holes in rock piles.

Largely omnivorous, the Texas gray fox feeds on cottontails and jack-rabbits, miscellaneous rodents, nesting ground birds, lizards, wild fruit, and a variety of insects. He has been accused of damage to bobwhite quail, young wild turkeys, other game birds, poultry, and even young hogs and lambs. In areas where an overpopulation of foxes occurs, their predation upon game birds tends to increase. Some Central Texas counties have resorted to a bounty for controlling the fox, while in many counties he is protected throughout the year. In an analysis of stomachs collected through the years prior to the war, fewer than six of several hundred fox stomachs examined were found to contain traces of domestic and game birds. In many instances, loss of game birds is offset by the fox's taking great quantities of rodents and insects that damage field and pasture crops.

Let us not make the mistake of thinking that since the fox preys on other species, that he is entirely free of enemies. Along with man, who



heads the list, there are the eagle, great horned owl, coyote, wolf, and bobcat to face throughout his often short and always exciting life.

Neither as cunning nor as bold as the true red fox, the gray fox, when chased by dogs, will scurry into a burrow or up a tree, climbing much better than any other species of fox.

Breeding and rearing season extends from February through May. The period of gestation is fifty-one days. Normally the gray fox has one litter a year, averaging five young. Young foxes are weaned before the peak of the bobwhite nesting season, are ready to come to the den entrance when five weeks old, and generally abandon the den when eight to ten weeks old. By early summer young foxes are often out on the world and foraging with their parents.

Shy, cunning, and a desperate fighter when at bay, he loves the trees and yet rejoices in the briar brush. He can run for hours and is adept at trick-trailing, but will often hide in a burrow or up a tree. Thus we have the gray fox, a mixture of equal parts of red fox, coon, and bobcat, seasoned with a strong dash of cottontail rabbit, and the places he frequents are the places where any one of these can be found.

The ant has two stomachs. One he uses for himself. In the other, he stores food which is to be shared with other ants in the nest.

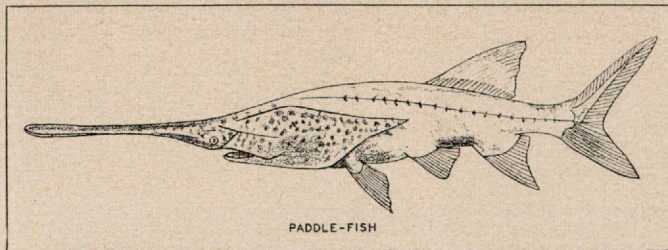
The elephant is the only mammal that kneels when reclining. His knee joint rests on the ground while his hind foot sticks out backward.



FISHES OF TEXAS

THE PADDLE-FISH

By MARION TOOLE



The paddle-fish, one of the strangest fish found in fresh water, has a large spatula-like snout that is about one-third the length of the whole fish.

Paddle-fish, *Polyodon spathula* (Walbaum), are the strangest fish to be found in fresh water. Early ichthyologists were confused when they first saw these fish. Two such scholars engaged in classifying animals, namely Walbaum and Rafinesque, both described the paddle-fish as a shark. Their mistake was natural since the mouths of these fish are shark-like, they do not have scales, their intestines are with spiral valves which is typical of the sharks, and their skeletons are chiefly cartilaginous (gristle). Of course, the shark's skeleton is completely cartilaginous and never ossified or formed into true bone.

The fact that they are scaleless has caused fishermen to label these fish spoonbill catfish.

These fish have a large spatula-like snout that is about one-third the length of the whole fish from snout to tail tip. This snout must play a part in the life of these fish, but it is doubted that any person definitely knows its use. For years it was surmised that these broad snouts were used to stir up the bottom mud so that the fish could more easily procure their food. But Dr. C. A. Kofoid, observing paddle-fish feeding in captivity, found that they never used their bill in this way. The author also kept some of these fish for a period of several months and likewise never observed them using their snouts for digging or stirring the bottom. In nature, though not in captivity, certain forms of animal life exist on the bottom of lakes and streams. Buried in the mud or silt for example, are tubifex worms that build soil tubes in which they can hide when a fish swims over them. Burrowing mayfly nymphs are also found in the mud. These forms of life would be excellent food for a paddle-fish if the fish could extract them from their muddy homes. Their paddles could stir up the mud and cause the food to float, thus making it available for consumption. Kofoid also states that the snout is purely a sensory organ.

While keeping the paddle-fish in a large tank the author observed that they finally wore off the end of their snouts by rubbing them on the wall of the tank, exposing a network of small blood vessels. Shortly after rubbing through the walls of the snouts the fish all died.

Another amazing fact about these fish is that they attain a very large size and yet never eat any item of food larger than about an inch in length. Most of their food consists of animals no larger than a pin head. They are provided with gills that have extremely long gill rakers. These fish swim through the water with their mouths wide open, forcing water through their gills, and the gill rakers act as a sieve straining out all particles of food.

Their food consists of water-worms, water fleas,

algae, small crustaceans and soft-bodied aquatic insect larvae.

As previously stated, their size is large. A specimen obtained in Lake Manitowish, Indiana, weighed 163 pounds. In length, specimens sometimes reach six and one-half feet, though, most of these fish grow to only four feet in length and about thirty pounds in weight.

For years, fishery technicians and zoologists tried to discover a small paddle-fish so that more could be learned about the species' breeding habits. Facts about the first paddle-fish were mentioned by Pere Marquette in his works prepared from 1673 to 1677, yet it was not until 1934 that the first baby paddle-fish under six inches long was discovered by Dr. Thompson of the Illinois Natural History Survey. This young paddle-fish did not have the form of the adult. Evidently they must attain a size of about five or six inches before the familiar paddle snout forms. The young of the swordfish resembles the paddle-fish in that they are hatched without the sword, and it is not until they grow older that they attain their adult form.

Ripe females laden with roe have been taken before March, but females taken after May had spawned, thus setting that period as their spawning period. Jordan and Evermann (1908) fix their spawning dates at March and April in lower Mississippi Valley and during the latter part of May and June northward. They spawn in the ponds and bayous along the river.

In Texas they occur in the Red River and from the Trinity watershed east. Elsewhere in the U. S. they are found only in the Mississippi River watershed.

Only one other member of the paddle-fish family exists in the world and that other genus is found in China in the Yang-tse-Kiang River. Members of the Chinese genus attain a length of twenty feet.

While the flesh of these fish is now being eaten extensively, they are still chiefly valued for their roe, from which is made high quality caviar.

These fish will not bite on hooks. They are caught in nets, on snag lines and by seines.

Truly these are strange and odd fish that are as important biologically as economically since they are primitive, prehistoric fish that may be used for tracing the descent of the bony fishes such as bass and salmon.

Sometimes Called the Spoonbill Catfish

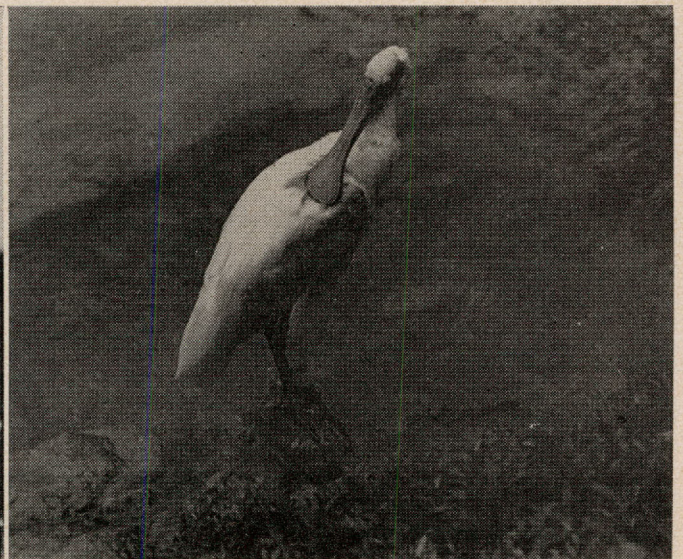
PENINSULA PRIMEVAL

By J. L. Baughman

A little known and lovely spot, the Aransas Wildlife Refuge, lies within a four-hour drive of Houston, yet few Houstonians know it, and fewer still have visited it. About halfway between Palacios and Corpus Christi, hemmed in by San Antonio Bay on the Gulf side and St. Charles Bay on the back, it occupies 22,000 acres on Blackjack Peninsula, so named after the blackjack oaks which, with sweet bay, beloved of deer, forms the major portion of its vegetation.

Here, in a primeval setting which Cabeza de Vaca might have seen in his long trek down the coast, is the winter home of the last flock of whooping cranes. It was to protect these birds that the refuge was established. Seventeen of these giant birds, pure white with black-tipped wings, standing four and one-half feet high and having a wing spread of over eight feet, come here to winter from their far-off breeding grounds in Saskatchewan. These are the birds of which Nuttall, an early American ornithologist, said, over 135 years ago, that he heard a "mighty host. Their flight took place at night, and the clangor of the numerous legions pass-

The bobcat, upper left photo, preys on the smaller animals and birds in the refuge. "Lord of the night," lower left, a refuge rattler, is ready for business. Lower right, a shy roseate spoonbill preens its plumage after feeding.



ing along high in the air seemed almost deafening. As the vocal call continued throughout the entire night, some idea may be formed of the immensity of the numbers now assembled in their annual journey to the regions of the south."

However, like the passenger pigeon, the whooping cranes have seen their day, and these few remaining birds return each fall to spend the twilight of their race in a sunny, Southern land which once knew them by the millions.

Whooping cranes are not the only residents of the refuge. Deer and wild turkey are there in numbers, as well as a whole host of lesser folk, among which are Texas' own red wolf and coyotes and bobcats, which present a continual problem to the refuge trapper, whose job it is to eliminate these pests, so that the other animals may thrive.

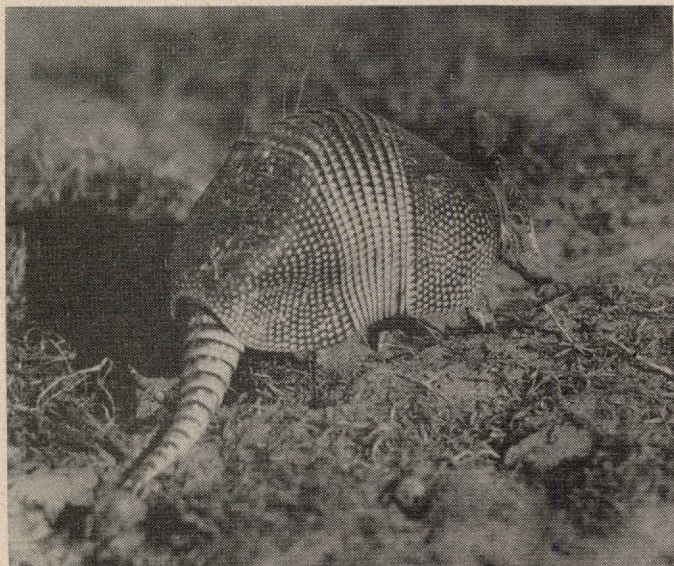
A small herd of javelinas is sometimes seen. 'Possums come begging for food around the refuge biologist's door each night, and in the early morning it is not unusual to see some black-masked 'coon ambling across the flats on his way home from a night's fishing and oystering in the shallow inlets along the shore.

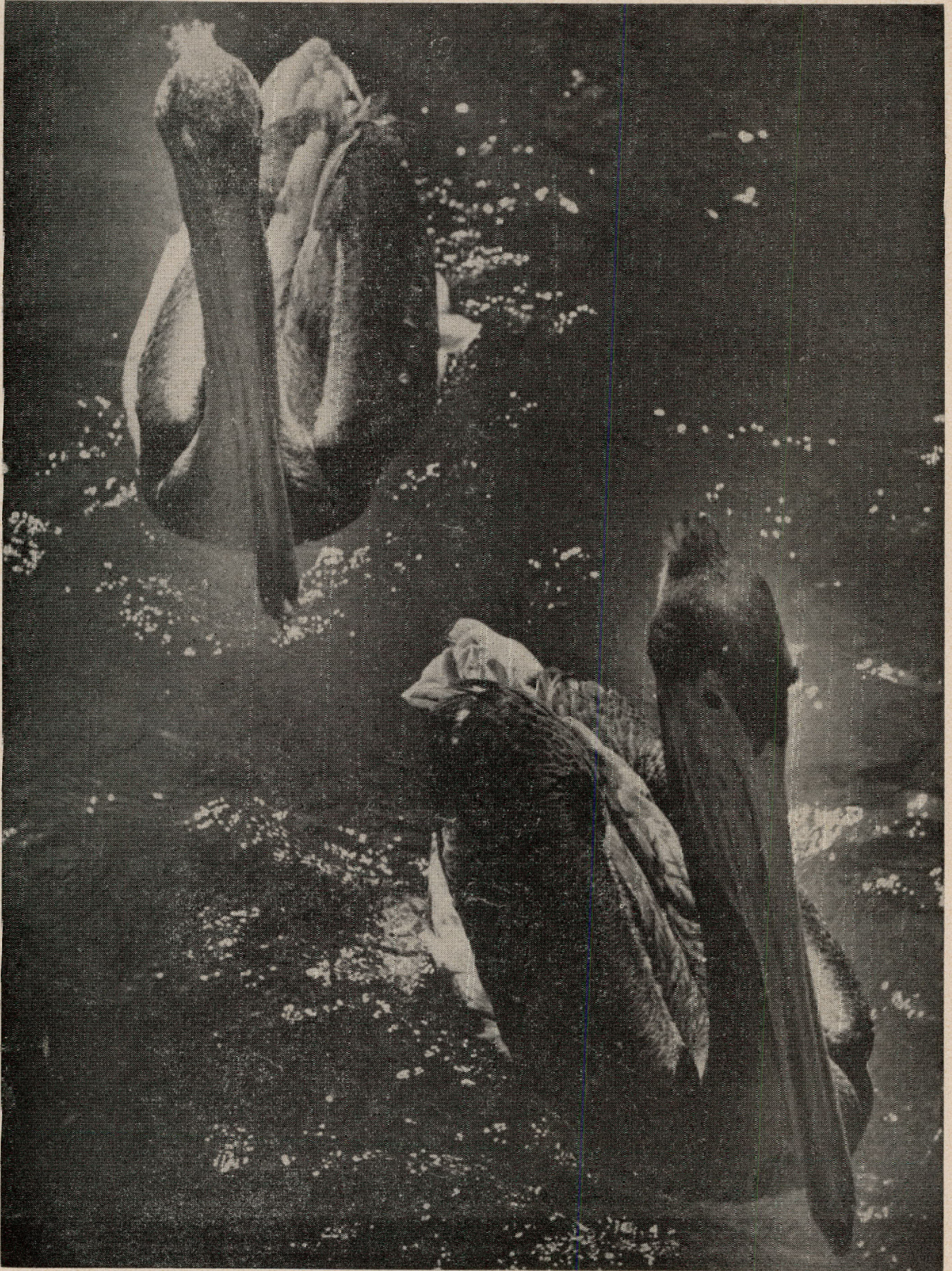
Mexican eagles, or caracaras, sometimes nest on the refuge, as do Attwater prairie chickens, another vanishing race. Black vultures and turkey buzzards are the scavengers on the refuge itself, while along the shore millions of blue crabs aid in the work as water garbage collectors. A huge bull alligator inhabits one of the lakes, along the edge of which wade solemn Ward's herons, slim American egrets and beautiful roseate spoonbills. Roadrunners trot along the trails ahead of you, and occasionally an armadillo will scuttle off in its quick, clumsy way, or you will see the twisting tail where a rattler, lord of the night, has squirmed along the path.

Ibises, our American storks, are everywhere: both the Snowy and its darker colored cousin, the Glossy, wading, feeding or flying with their distinctive wing beat. And there are scissortails, cardinals and mockingbirds. Fat brown pelicans sleep on old piling

• Continued on Page 34

Typical refuge country is wild and cactus-grown as depicted below. In lower left photo, an armadillo scuttles about in the thickets, rooting for insects and grubs. The turkey buzzards, lower right, are the refuge scavengers. Ugly as sin, they are nevertheless part of nature's economy.





Solemn brown pelicans are among the common birds of the refuge. These two sat contentedly for their portraits.

Below are young Audubon's caracaras in the nest. The showy adult birds are fairly common. To the right is a whooping crane, calmly surveying its surroundings. In the bottom photo, a Portuguese-man-of-war, its stinging tentacles beneath it, lies stranded on the beach.



Coastal Fisheries

By J. G. BURR

There has always been a question as to the maximum possibility of marine food production on the Texas coast. A failure to acquire more definite information in the past has been the result of instability of fishing conditions. Such is the case because a major part of fishery activities is confined to the bays which are subject to violent changes; success and failure hanging largely on what the weather is doing to fish, oyster and shrimp.

There is a wide fluctuation of heat and cold in summer and winter. Fish leave the bays for the Gulf when the weather is too hot or extremely cold. Ordinarily the winter temperature of the bays is around 60 degrees. However, extremes in either direction occur, depending much on the depths of the bays. Besides the temperature, there is rough weather when fishing is impossible and there are freshets from swollen streams which sometimes convert the bays into fresh water lakes. This drives marine organisms into the Gulf in search of an environment to which they are accustomed. Conditions are therefore in wide contrast to those of deep sea fishing where stability is the rule if we except the occasional tropical disturbance. However, not all the blame can be laid on the weather. Sometimes the market is weak and the product cannot be sold for enough profit to justify maximum catches.

In recent years the Texas Game, Fish and Oyster Commission has kept reliable data on the coastal catch, but previously no accurate system had been worked out. However, the federal government had gathered statistics that can be used for purposes of comparison. For example, in 1918, the last year of the first world war when demand for commodities was at its peak, the Texas coast produced 25,015,000 pounds of sea food. It should be noted that the large catch of that year was credited not only to a large war time demand for sea food but also because of a temporary suspension of statutory fishing restrictions.

The report five years later, 1923, showed a drop to 19,560,000 pounds. In 1927, there was a substantial advance of production, the total being 21,083,000 pounds which was valued at \$1,054,000, the highest money return received during the history of the industry up to

that time. Significantly, in 1929, with added fishing restrictions, the catch dropped to 16,624,000 pounds, but the harvest was sold for \$908,000, or nearly as much as was received for the 1927 yield of more than 21,000,000 pounds. A further fluctuation in both price and quantity is the record of 1934 when the coast produced 25,869,000 pounds of marine food which was sold for only \$912,000.

There is no control of the weather, but something can be done with the markets. Record catches are sometimes dumped on the market with demoralizing effect, there being no adequate cold storage to make possible a more uniform movement of the sea food harvest. Some relief is provided at Port Lavaca by a new plant with a capacity of seven car lots, the cost of the concern being about \$180,000.

The black drum, a fish that has always commanded a low price, has been coming into its own. Up to 1890, according to the record, few if any drum had ever been marketed from the Texas coast, being regarded as too coarse and tasteless for a discriminating palate. But in 1897 over 50,000 pounds were sold, and in 1907 a single concern, the W. C. Gibson Company of Corpus Christi, marketed 300,000 pounds of young drum. Though not commanding as high a price as other species, the black drum has supplied a vast amount of food to people who could pay the smaller price. Thus, the law eliminating the use of the larger and coarser product has given to the public a very acceptable item of food, which now rivals in quantity that of any other fish of the Texas coast. In 1934, the yield of drum was more than 2,000,000 pounds, the highest recorded catch.

Red snappers, *Lutianus campechanus*, and other allied species are caught far out in the Gulf, as was pointed out in an earlier chapter, but too much cannot be said for the large catches being taken on the Campeche and Yucatan banks off the coast of Mexico. The bulk of the Texas catch is landed at Galveston and the total annual catch may sometimes reach a million pounds. Other snapper ports are Port Aransas and Port Isabel. It is the most valuable and best known of the snapper group and is highly valued as food because of its juicy meat and fine flavor and because it

is easily shipped from the southern coast for great distances through the United States.

The year 1935 was a tragic time for fish. In the early summer all streams that enter the Gulf were swollen for a long period, converting the bays into veritable fresh water lakes, even to the freshening of the Gulf itself for miles out. Countless tons of fish died, not from fresh water, because fish can and do swim out of that, but from some mysterious reason which the writer attributed to volcanic action and poison gases at the bottom of the Gulf. For two months prior to the fish tragedy, rainfall had been unprecedented, and the four major rivers from the Brazos to the Nueces, in the months of May and June, had dumped 10,000,000 acre-feet of water into the Gulf. The weight of this vast volume of water was fourteen billions of tons. That was six times the usual heavy run-offs for any two months, according to run-off records of the U. S. Geological Survey. Whether this added weight was only coincidental with what was about to happen or whether it contributed to buckling of the sea bottom is not known. Late in June, the flood peak was reached and the first dead fish were seen floating miles east of Mid-Padre Island by Bob Crossman and his crew of red snapper fishermen on June 29.

Shrimping was at a standstill much of that year, and the shortage that winter was such that Galveston boats in November and December went into Louisiana waters for their catch. The record showed 1935 to be a banner year for shrimp on all the Gulf coast except Texas.

A major industry of the coast, the shrimp yield is around 15,000,000 pounds annually. It began about 27 years ago, and since then, a number of canneries have operated from Galveston to various ports southwestward, employing more regular laborers than all other fishery coastal activities combined.

Spawning and hatching of the shrimp larvae take place in the Gulf. The larval young move through the passes and into the bays where they spend their first months of growth. Several years of study of the life history of shrimp, and their abundance do not indicate any depletion of the Texas supply, notwithstanding the

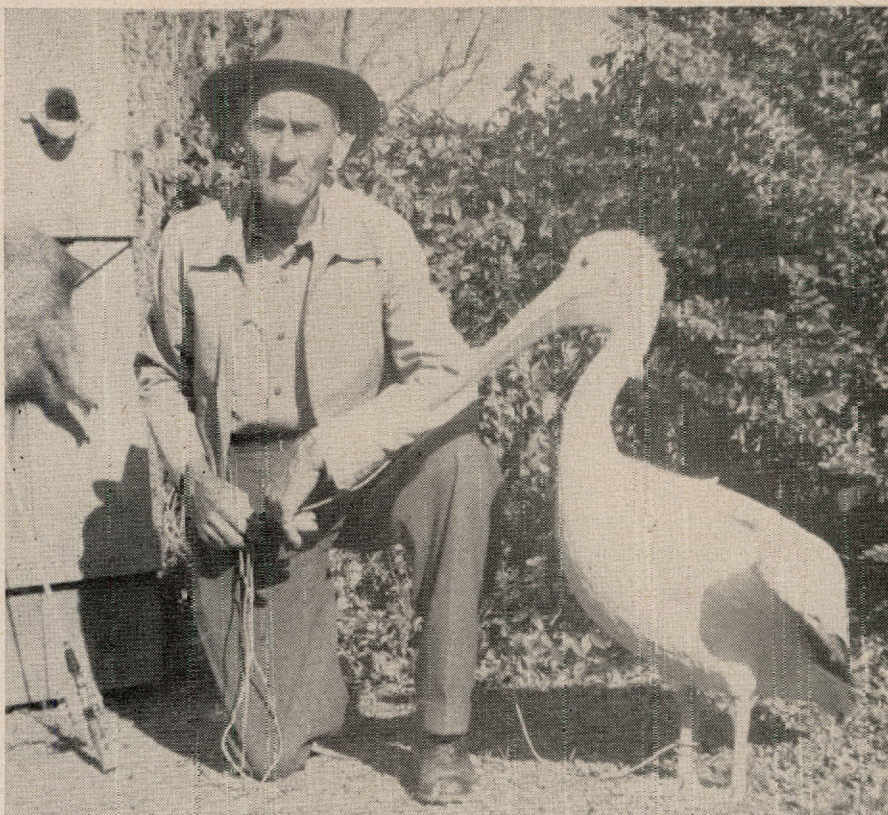
enormous quantities that are annually marketed. The big demand for shrimp has been even greater in past years. Because of this, fishermen have turned their attention to shrimping to the extent that the catch of trout in one year dropped to half the usual amount taken, and other species to a lesser degree. Also, the freeze of January 1947, had much to do with the continued fish shortage.

Though the oyster industry has been going badly for the past quarter of a century, some say that oyster output by cultivation can be made to take second rank in importance with the shrimp. Constant exploitation of the public reefs has been far in excess of the ability of natural forces to maintain the supply. Artificial culture for many years has been the rule in the North Atlantic, and it seems that only by such methods will it be possible for Texas to remain in the oyster business. There are many factors favoring successful cultivation. While it requires four years for an oyster to mature in the cold northern waters, it will mature in from one and a half to two years in the warmer southern waters. Also, in the south there are fewer natural enemies.

The first explorers who visited the coast some hundreds of years ago found the Indians helping themselves to this valuable sea food, the abundance of which disappeared under the pressure of civilization. The larger part of the history of oysters lies buried in the deep. Before man and his industries were able to scratch the surface of supply, there were layers upon layers of oyster reefs; the bottoms of many of the bays are built of defunct oyster beds a dozen or more feet deep. These shells buried in the mud are called mud-cells and are being mined by dredges. They are about fifty per cent lime and are used by concerns in Houston for the manufacture of cement and lime, and by the Dow chemical plants at Freeport, Velasco and Southern Alkali at Corpus Christi for various uses. This natural resource belongs to the state and all dredging is under the control of the Game, Fish and Oyster Commission, which receives seven cents a yard from the dredging companies.

These are the buried treasures of the sea which will be dug for the next thousand years or more. The fate of the oyster, the shrimp and other species of sea foods belongs to the realm of prophecy. But we can say with some degree of assurance, and despite the ban on Texas weather prophets, that heat and cold will prevail; freshets and storms will continue, and we will tangle with the puzzling weather fluctuations as before.

Another chapter in this series on the history of wildlife conservation will appear in an early issue.



Cap. John Byars, Hillsboro, Texas, has been fishing for 50 years, but last November 26 he received a thrill he had never before experienced. He caught a pelican on a lure!

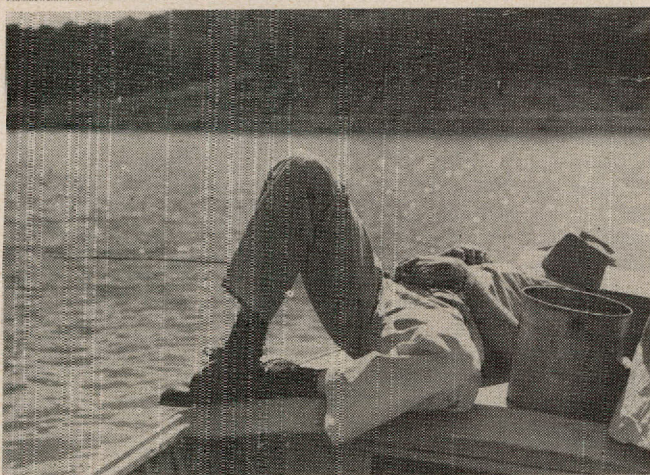
It was late in the afternoon when the pelican came in for a landing. Byars was fishing for bass about 75 feet away, and he immediately cast his lure in the direction of the bird. He moved the lure just a little and the pelican started grabbing for it.

"He must have thought it a frog," says Byars, "for after three or four grabs, I felt him and set the hook."

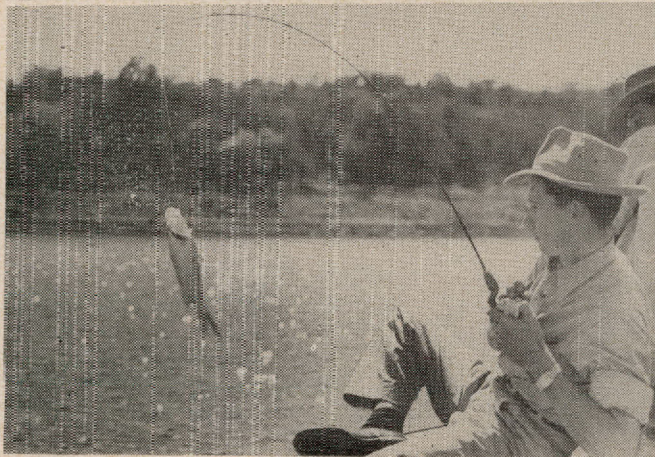
Before seventy-three-year-old Byars could check the bird, it had taken nearly 150 feet of line, and was about 100 feet high. Upon being reeled in a little, the pelican became tangled in the line and plunged downward. Ross Cockrell and Brooks Hoard helped to tie the bird's feet.

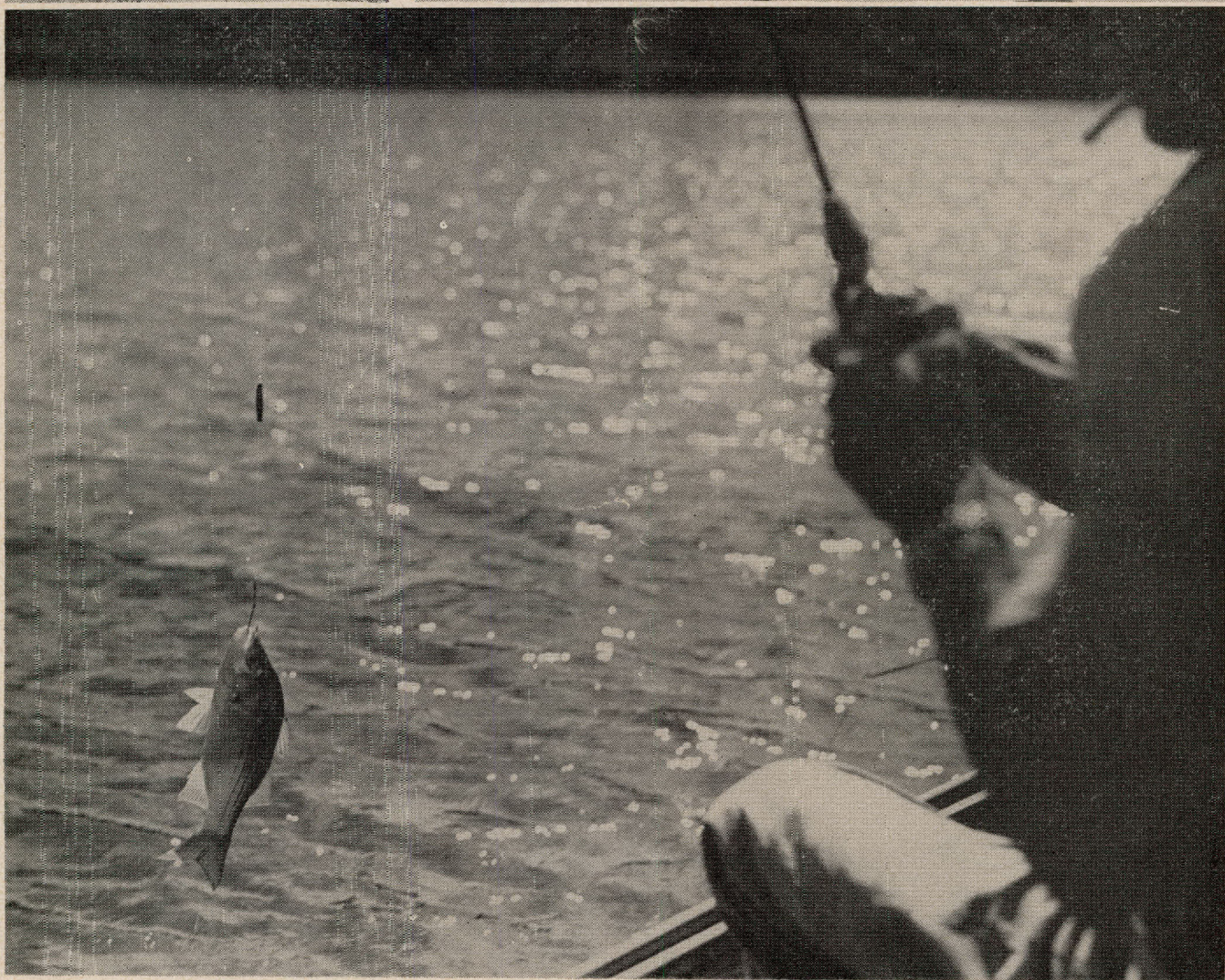
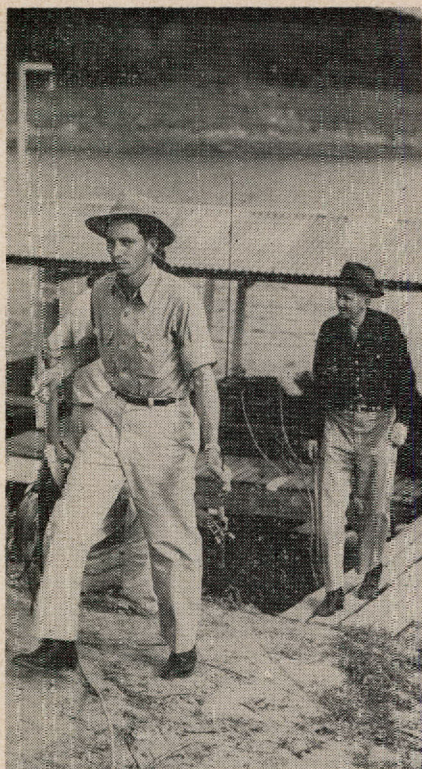
However, Byars couldn't find anyone who wanted it, so after two weeks, he took it to the same locality and turned it loose. The bird appeared none the worse for wear and tear. He says that the minnows and fish which kept it in good shape were too expensive.

White Lightning



Comparable to spasmodic flashes of lightning, the white bass strikes without warning. The fishermen in the upper photo are getting an early morning start in attempting to outwit some of these underwater gamesters near Spicewood, Texas. In the center picture, Scott Henry of Nixon, dozes lazily, waiting for that first tug on the line. The result of his "not so energetic" attempt is shown in the lower left photo. The picture below shows another catch at the instant it was reeled into the boat.





In the closeup above, a white bass wriggles desperately to gain freedom. Above right, Tom Ellis, Ludwig Wendlandt, and Eugene Peterson of Austin, display their catches. These fish were caught on minnows in less than two hours. Above left, Henry leaves the boat docks with a fine stringer, ending a perfect day of white bass fishing.

Lake Kemp Fish Rodeo

By Ed Bonn

MANY STRANGE facts were discovered by the tagged rodeo held at Lake Kemp in 1948. A similar contest, sponsored by the Lake Kemp Anglers Club in 1947, was held in only one section of the lake and the work was carried on by the residents of Seymour. The 1948 contest was enlarged to include all of Kemp and also Diversion Lake.

Merchants and business men from Iowa Park, Electra, Vernon, Wichita Falls, and Seymour donated prizes which were given to anglers who caught the tagged fish. Proceeds from

the rodeo, derived from membership dues in the Lake Kemp Anglers Club, were used to improve fishing conditions of the two lakes. Official dates of the rodeo were from May 1 to December 31, with a small cash prize being offered for any tag turned in after the official ending of the contest.

The waters of Lake Kemp were impounded in 1923 by a dam built across the Big Wichita River, seven miles north of Mabelle in Baylor County, Texas. The reservoir site, at spillway level, covers 22,827 acres and has a shoreline of 125 miles. Eleven miles

down the Wichita River is Diversion Lake, which covers 3,419 acres and has a shoreline of 28 miles. Both lakes were built principally for irrigation. Flood control, municipal water supply and recreation are secondary uses.

Approximately 300 tagged fish were released in Lake Kemp, while 100 were placed in Diversion. Conditions, however, did not permit complete records to be kept on both lakes, and only a report of Lake Kemp is made here.

TAGGING AND RELEASING

The original plans were for 300 fish to be tagged and released in Lake Kemp in the approximate ratio of 100 black bass, 100 crappie, 50 channel catfish, 25 white bass and 25 carp. However, the collection of these fish proved more difficult than anticipated and the ratios were altered to 53 black bass, 64 crappie, 48 channel catfish, 101 white bass and 32 carp, making a total of 298 tagged fish. Two tags were misplaced or lost during the tagging process. Size number three monel-metal tags were placed in the upper jaw of each fish for marking.

The fish used for tagging were collected from various sources including hook and line catches by anglers in the lake itself, seining farm ponds and the Wichita River, and some were obtained from the state fish hatchery at Dundee. Fish donated by anglers in advance of the tagging date were held in rearing ponds at the hatchery. No complete record could be kept of the original source of individual fish.

All fish were tagged and released between April 26 and 29. An accurate record of each species, tag number, total length, weight, releasing point and date was made. Releases were made from the state fish distribution boat at selected points in the lake. The selection of these releasing points (Figs. 4, 5, 6, and 7) was based on the location of fishing camps and popular fishing spots.

All but a small number of the releases were supervised by the writer, but only a scattered few of the returns were checked in by him. The total lengths were measured to the nearest one-fourth inch and the weights were taken in ounces instead of the standard length measurements in milli-

PER CENT OF FISH RECAPTURED

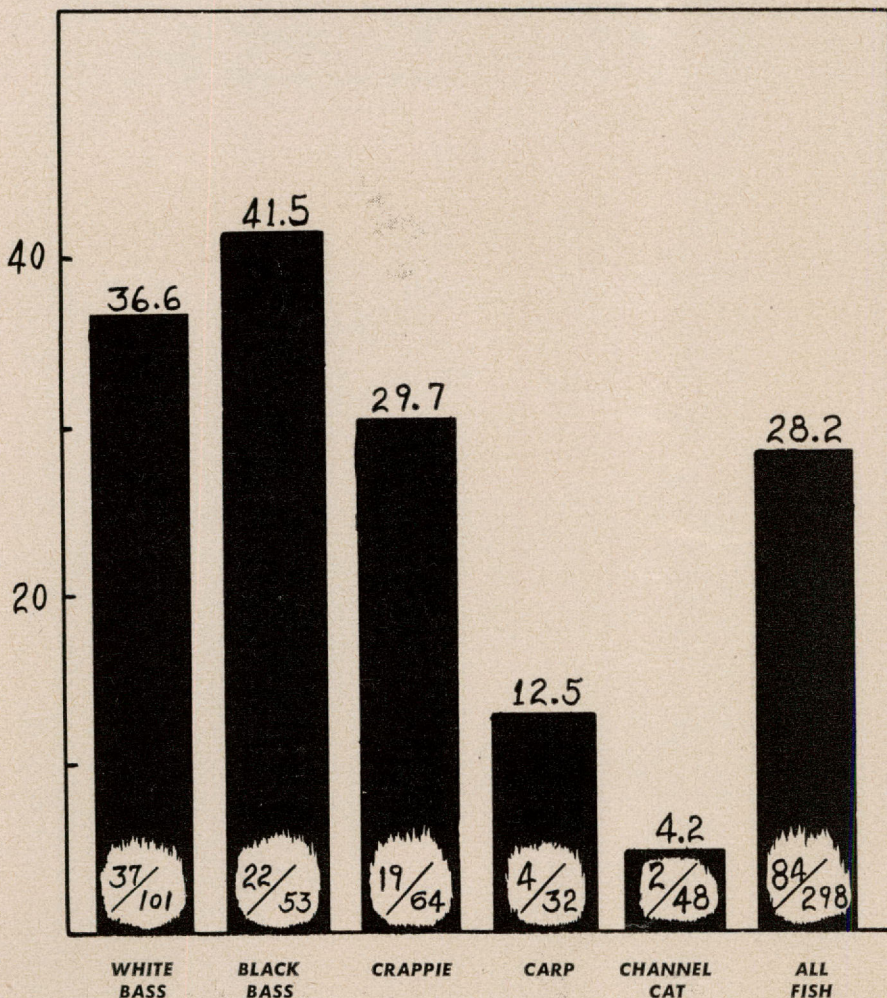


Figure 1. Per Cent of Fish Recaptured. Showing the per cent of each species and total of all tagged fish recaptured. Fraction indicates number recaptured as compared to number released.

meters and weights in grams ordinarily used in fisheries work. No differentiation was made in sexes of the fish, since the returns were recorded by non-technical fisheries personnel.

Of the 53 black bass released, 13 were spotted black bass (*Micropterus punctulatus*) and the remainder were largemouth black bass (*Micropterus salmoides*). Four spotted black bass, or Kentucky jumpers as they are called at Kemp, were recaptured and notations are made in this report where their records differ from those of the largemouth black bass. Of the 48 catfish, one was a flathead (*Pilodictis olivaris*) and the remainder were channel catfish (*Ictalurus lacustris*). No return was made on the flathead catfish and so the entire group will be treated as channel cat. Only one black crappie (*Pomoxis nigromaculatus*) was released with the group of 63 white crappie (*Pomoxis annularis*) and it has not been recaptured; therefore, this group will be referred to as crappie. The white bass were all *Lepibema chrysops*, known as sand bass in North Texas, and the carp were all *Cyprinus carpio*. Carp were included in the tagging to encourage fishing for this undesirable species, thereby aiding in the removal of rough fish from the lake.

RECAPTURES

There are three entrance gates to Lake Kemp and each of these was made an official checking station for any fisherman catching a tagged fish. Here a record was made of weight, length, date and place caught, and the bait used. (Table 1). The angler was given a receipt for his catch which entitled him to claim his prize from the merchant or business man sponsoring that fish.

As previously stated, the rodeo officially ended December 31, 1948, but during the full year from May 1, 1948 to May 1, 1949, a total of 84 tagged fish of all five groups were recaptured. This represents a total of 28.2 percent returns from the 298 fish released. (Figure 1).

A check on returns for Diversion Lake in July showed 29 percent of the total tagged fish had been returned. Twenty-eight of 44 black bass, or 63.6 percent, and one of 18 white bass, or 5.5 percent had been recaptured. None of the 25 crappie, six channel catfish or seven carp had been taken from Diversion. A second check of returns early in December revealed no additional tagged fish had been recovered, and as far as is known, the total returns are the same as they were in July 1948.

AVERAGE INTERVAL OF FREEDOM OF RECAPTURED FISH

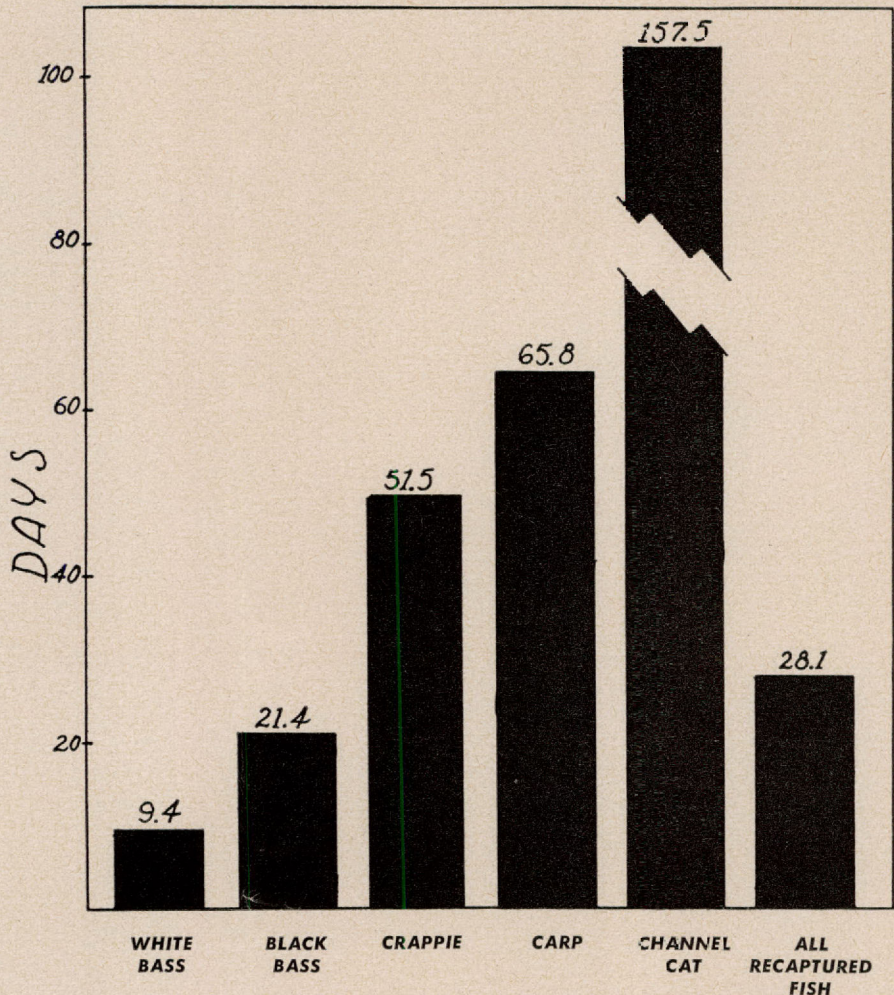


Figure 2. Average Interval of Freedom of Recaptured Fish. Showing average number of days freedom of each species and total average.

NUMBER FISH OF ALL SPECIES RECAPTURED BY MONTHS

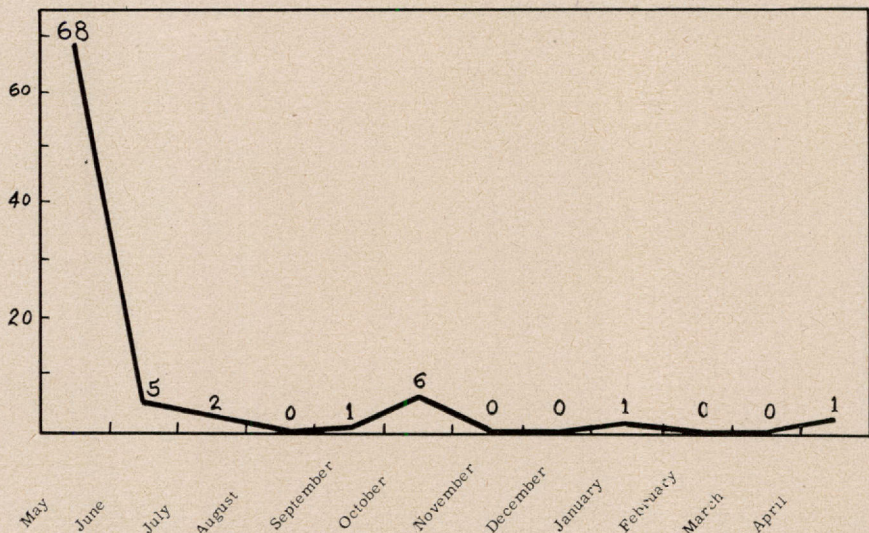


Figure 3. Number Fish Of All Species Recaptured By Months Rodeo officially ended December 31, but two fish were taken after this date Note decided fishing slump during hot weather in July, August and September

• Continued on Page 27

RETURNS OF THE
LAKE KEMP TAGGED FISH RODEO

BAYLOR COUNTY, TEXAS 1948

Tag No.	Species	Date Released	Lgth. In.	Wt. Oz.	Grid	Date Recaptured	No. Days Freedom	Lgth. Increase In.	Increase Decrease(-)	Wt. Increase Oz.	Increase Decrease(-)	Grid	Movement Miles	Bait	Remarks
193	White bass	Apr 27	12 1/2	14	J 24	May 1	4					G 26	1.7	Minnow	
133	Crappie	" 26	11 1/2	16	G 25	May 1	5					E 25	1.2	Minnow	
246	Black bass	" 27	8 1/2	3	G 25	May 1	4					J 26	1.6	Minnow	
164	White bass	" 29	12	11	K 19	May 1	2					G 26	3.9	Minnow	Returned to original area.
434	White bass	" 29	11 1/4	9	C 16	May 1	2	11 1/2	1/4	8	-1	E 17	1.2	Minnow	
379	Crappie	" 27	12 1/2	16	D 17	May 1	4	12	-1/2	12	-4	D 17	0.0	Minnow	
196	Black bass	" 27	10 3/4	9	G 25	May 1	4	11	1/4	12	3	D 16	5.2	Minnow	
132	White bass	" 26	11 1/4	11	G 25	May 2	6					G 26	0.5	Minnow	
159	White bass	" 27	13 1/2	16	K 19	May 2	5					G 26	3.9	Minnow	Returned to original area.
279	Crappie	" 29	8	6	K 21	May 2	3	8 1/4	3/4	4	-2	L 21	0.7	Minnow	1 PM
424	White bass	" 29	11 1/2	9	G 19	May 2	3	11	-1/2	10	1	E 17	1.4	Minnow	
437	White bass	" 29	10 3/4	8	C 16	May 2	3	10 3/4	--	8	--	E 17	1.2	Minnow	
111	White bass	" 29	11 1/2	10	G 19	May 2	3	11 1/2	--	10	--	G 18	0.5	Minnow	
449	White bass	" 29	10 1/2	7	C 16	May 2	3	10 1/2	--	8	1	E 17	1.2	Minnow	
440	White bass	" 29	11 3/4	10	C 16	May 2	3	11 1/2	-1/4	12	2	E 16	1.0	Minnow	
139	Black bass	" 27	11 1/2	11	G 25	May 3	6	11 1/2	--	12	1	G 23	1.0	Minnow	
161	White bass	" 27	13	14	K 19	May 3	6	13	--	15 1/2	1 1/2	H 26	3.9	Minnow	Returned to original area.
140	White bass	" 26	10 1/4	7	G 25	May 3	7	10	-1/4	8	1	D 17	4.7	Minnow	
219	Black bass	" 27	8 1/4	4	G 25	May 4	7					G 26	0.5	Minnow	
272	Black bass*	" 29	11	9	M 19	May 4	5	10 1/2	-1/2	10	1	J 21	1.6	Minnow	
446	White bass	" 29	11 3/4	10	C 16	May 4	5	11	-3/4	12	2	D 17	1.0	Minnow	
433	White bass	" 29	12 1/4	10	C 16	May 4	5	12	-1/4	16		D 17	1.0	Minnow	
404	White bass	" 29	13 1/2	13	C 18	May 5	6	12 3/4	-3/4	16	3	G 26	6.3	Minnow	
295	Crappie	" 29	12	13	J 23	May 5	6	11 1/2	-1/2	10	-3	J 21	1.0	Minnow	1130 AM
138	Black bass	" 27	12 3/4	18	J 24	May 5	8	13	1/4	18	--	J 22	1.0	Minnow	11 AM
415	White bass	" 29	12 1/2	12	C 18	May 5	6	12	-1/2	12	--	D 17	0.6	Minnow	
291	Black bass	" 29	9	6	J 23	May 6	7	9 1/4	1/4	5	-1	J 22	0.5	Minnow	
310	Crappie	" 26	11	11	J 24	May 6	10	11	--	12	1	K 23	0.7	Minnow	
412	White bass	" 29	10 1/4	6	G 19	May 6	7	9	-1 1/4	8	2	D 17	1.8	Minnow	
185	White bass	" 27	11 3/4	10	G 25	May 7	10	11 1/2	-1/4	12	2	G 26	0.5	Minnow	
208	White bass	" 27	11 1/2	10	G 25	May 7	10	11	-1/2	9	-1	F 17	4.2	Minnow	
442	White bass	" 29	8	4	C 16	May 7	8	7	-1	6	2	E 17	1.2	Minnow	
416	White bass	" 29	10 1/2	7	G 19	May 7	8	9 1/2	-1	7	--	E 17	1.4	Minnow	
250	White bass	" 27	10 1/2	8	G 25	May 7	10	11	1/2	8	--	G 19	3.1	Minnow	
439	White bass	" 29	14	16	C 16	May 7	8	13 1/2	-1/2	16	--	E 17	1.2	Minnow	
448	White bass	" 29	12 1/4	10	C 16	May 8	9	12 1/4	--	12	2	K 24	5.9	Minnow	
200	Black bass	" 27	18 1/4	72	G 25	May 8	11	18	-1/4	72	--	G 25	0.0	Crayfish trotline	
216	Black bass	" 27	11	12	G 25	May 8	11	11	--	12	--	G 24	0.5	Minnow	
115	White bass	" 29	10 1/4	6	C 16	May 8	9	10	-1/4	7	1	D 17	1.1	Minnow	
168	White bass	" 27	10 1/2	8	K 19	May 9	12	10 1/4	-1/4	8	--	J 22	1.5	Minnow	1015 AM
441	White bass	" 29	10 1/4	8	C 16	May 10	11	10 1/2	1/4	8	--	E 17	1.1	Minnow	
134	Crappie	" 26	12 1/2	19	G 25	May 11	15	12	-1/2	18	-1	G 25	0.0	Minnow	
212	White bass	" 27	12 1/4	14	G 25	May 11	14	11 1/2	-3/4	16	2	G 26	0.5	Minnow	
305	Crappie	" 26	13	17	J 24	May 11	15	12 1/2	-1/2	17	--	G 25	1.6	Minnow	
178	Black bass	" 27	12	16	J 24	May 12	15	12 1/4	1/4	15	-1	L 25	1.1	Minnow	1250 PM
314	Crappie	" 26	11	14	J 24	May 12	16	11	--	14	--	I 21	1.2	Minnow	
239	White bass	" 27	11 1/2	12	G 25	May 12	15	10 3/4	-3/4	12	--	G 26	0.5	Minnow	
192	Black bass	" 27	10	8	G 25	May 13	16	10 1/2	1/2	8	--	G 18	3.8	Minnow	
201	Black bass	" 27	8 1/2	4	G 25	May 13	16	8 1/2	--	4	--	G 26	0.6	Minnow	
218	White bass	" 27	14 1/4	19	G 25	May 13	16	14	-1/4	20	1	G 25	0.0	Minnow	
320	Crappie	" 26	12 1/2	16	J 24	May 13	17	12	-1/2	17	1	F 25	1.8	Minnow	
126	Crappie	" 26	12 1/2	18	G 25	May 13	17	12	-1/2	16	-2	G 25	0.0	Minnow	
432	White bass	" 29	10 1/4	8	C 16	May 14	15	10 1/4	--	8	--	D 16	0.5	Minnow	
235	White bass	" 27	8 3/4	6	G 25	May 14	17	8	-3/4			E 25	1.2	Minnow	
213	Black bass*	" 27	11 1/2	14	G 25	May 15	18	11 1/4	-1/4	13	-1	G 25	0.0	Minnow	
127	White bass	" 26	10 1/4	8	G 25	May 16	20	10 1/4	--	8	--	L 25	2.4	Minnow	1055 AM
251	Black bass*	" 29	11 1/2	10	L 20	May 16	17	11 1/4	-1/4	10		M 21	0.7	Minnow	1030 AM
413	White bass	" 29	10 1/2	7	G 19	May 17	18	10 1/2	--	8	1	D 17	1.8	Minnow	
444	White bass	" 29	13 1/4	12	C 16	May 19	20	12	-1 1/4	12	--	D 17	1.0	Minnow	
277	White bass	" 29	14 1/2	18	K 22	May 19	20	14	-1/2	16	-2	B 17	5.2	Minnow	
321	Crappie	" 26	13	19	J 24	May 19	23	13	--	18	-1	B 17	5.8	Minnow	
421	White bass	" 29	8 3/4	4	G 19	May 21	22	8 3/4	--	4	--	L 21	2.5	Minnow	11 AM
445	Black bass	" 29	13	16	C 16	May 23	24	13	--	20	4	C 15	0.6	Minnow	
158	Black bass	" 27	13 1/2	23	K 19	May 23	26	13 1/2	--	24	1	H 19	1.4	Heddon chugger	
312	Crappie	" 26	11 1/4	13	J 24	May 23	27	11 1/2	1/4	12	-1	M 24	1.6	Minnow	845 AM
229	Carp	" 27		125	May 25		28	21 1/2		76		M 24	2.2	Doughbait	4 PM
179	Black bass	" 27	18	55	K 19	May 25	28	18	--	44	-11	K 23	2.5	Hawaiian wiggler	1115 AM
209	Carp	" 27	13 1/4	16	G 25	May 31	34	13 1/2	1/4	20	4	I 25	1.0	Doughbait	230 PM
380	Carp	" 27	10 3/4	9	D 17	June 1	35	10 1/2	-1/4	8	-1	B 17	1.0	Doughbait	
322	Crappie	" 26	12 3/4	19	J 24	June 5	40	12 1/2	-1/2	15	-4	G 25	1.6	Minnow	1130 AM
136	Black bass	" 27	16	43	G 25	June 12	46	17	1	44	1	G 24	0.5	Plug ?	
447	Black bass	" 29	11	7	C 16	June 13	45	11 1/4	1/4	12	5	C 16	0.0	Minnow	
174	Black bass*	" 27	14 1/2	30	K 19	June 30	64	14 1/2	--	28	2	J 26	3.5	Minnow	
198	Black bass	" 27	14	26	G 25	July 7	71	15	1	28	2	E 22	2.0	Minnow	
307	Crappie	" 26	12	17	J 24	July 28	93	12 1/2	1/2	12	-5	G 25	1.6	Minnow	
303	Crappie	" 26	11 3/4	15	J 24	Sept. 19	143	11 3/4	--	12	-3	D 16	5.1	Minnow	
299	Channel cat	" 29	11	6	K 21	Oct. 1	155	10	-1	4	-2	J 22	0.8	Stinkbait	NOON
315	Crappie	" 26	12 1/4	15	J 24	Oct. 3	160					F 21	2.5	Minnow	
426	Channel cat	" 29	18 3/4	34	C 16	Oct. 6	160	19	1/4	36	2	K 25	6.3	Minnow	330 PM
325	Crappie	" 26	11	11	J 24	Oct. 8	165	11	--	8	-3	K 25	0.7	Minnow	430 PM
249	Carp	" 27		125	Oct. 10		166	21 1/2		64		I 25	0.0	Stinkbait	745 PM
276	Crappie	" 29	11	8	J 23	Oct. 14	168	10	-1	8	--	G 25	1.8	Minnow	
306	Crappie	" 26	11 1/4	13	J 24	Jan.				13	--	E 25	2.7	Minnow	
177	Black bass	" 27	11	13	J 24	April				20	7				

*Spotted Black Bass (*Micropterus punctulatus*)

Table 1. Returns of the Lake Kemp Tagged Fish Rodeo - 1948. Giving pertinent data on all recaptured tagged fish. Time in "Remarks" column indicates hour of day fish were recaptured.

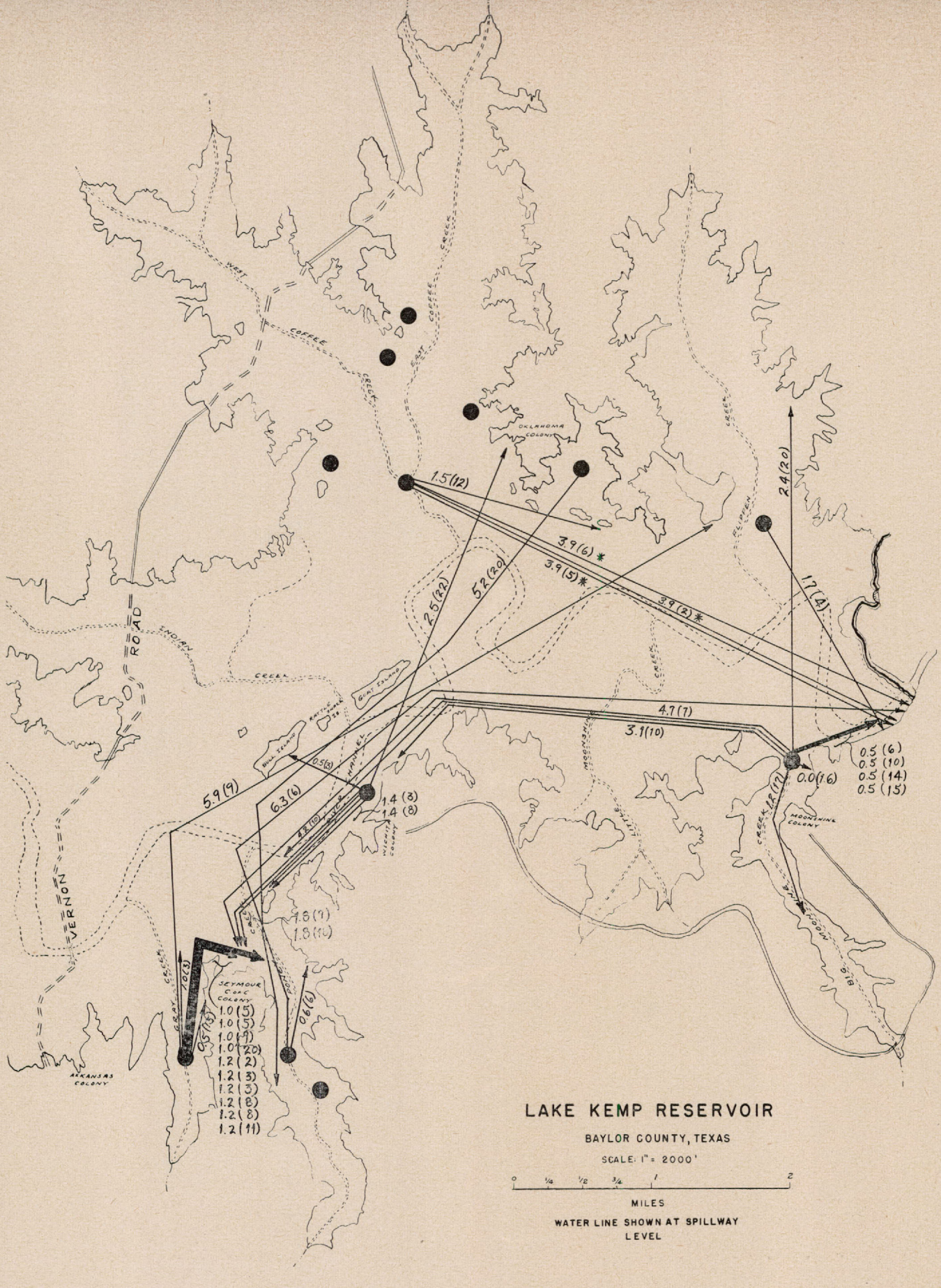


Figure 4. Movement of white bass, showing shortest possible distance in waterline miles from releasing area to point of recapture. Number of days freedom shown in parenthesis.
 *Indicates these fish returned to their original area.

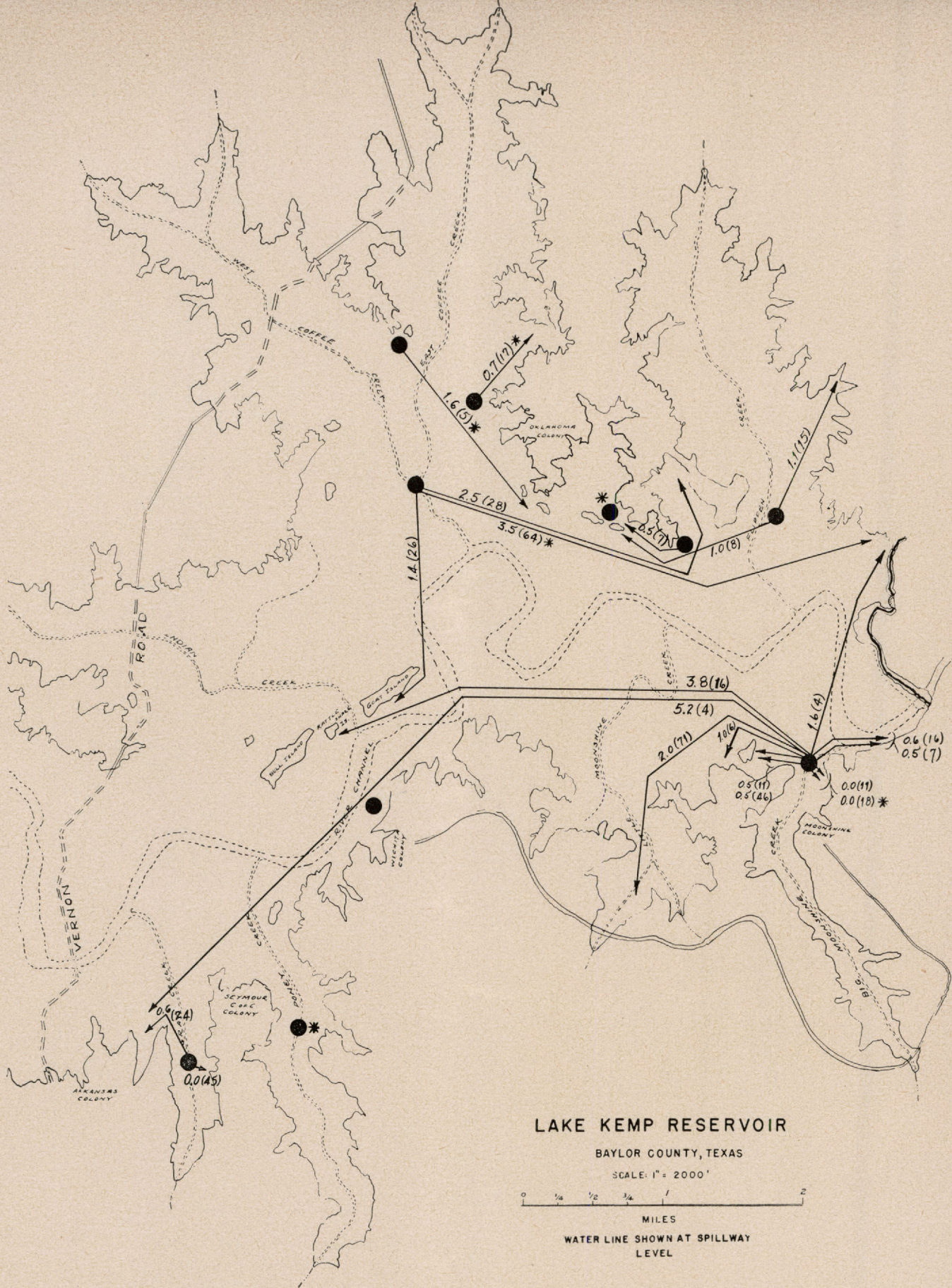


Figure 5. Movement of black bass, showing shortest possible distance in waterline miles from releasing area to point of recapture. Number of days freedom shown in parenthesis.
 *Indicates spotted black bass (*Micropterus punctulatus*).

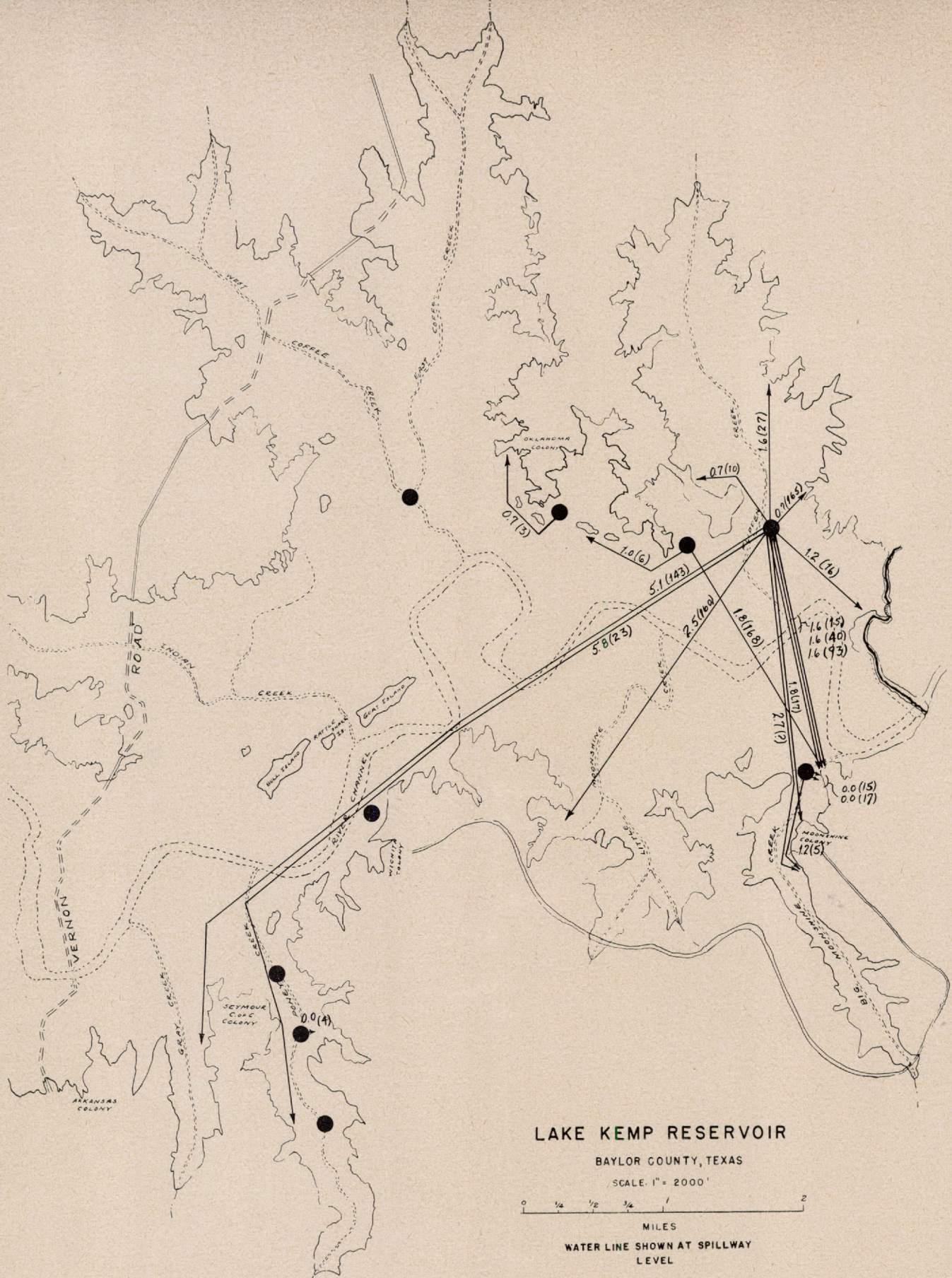


Figure 6. Movement of crappie, showing shortest possible distance in waterline miles from releasing area to point of recapture. Number of days freedom shown in parenthesis.

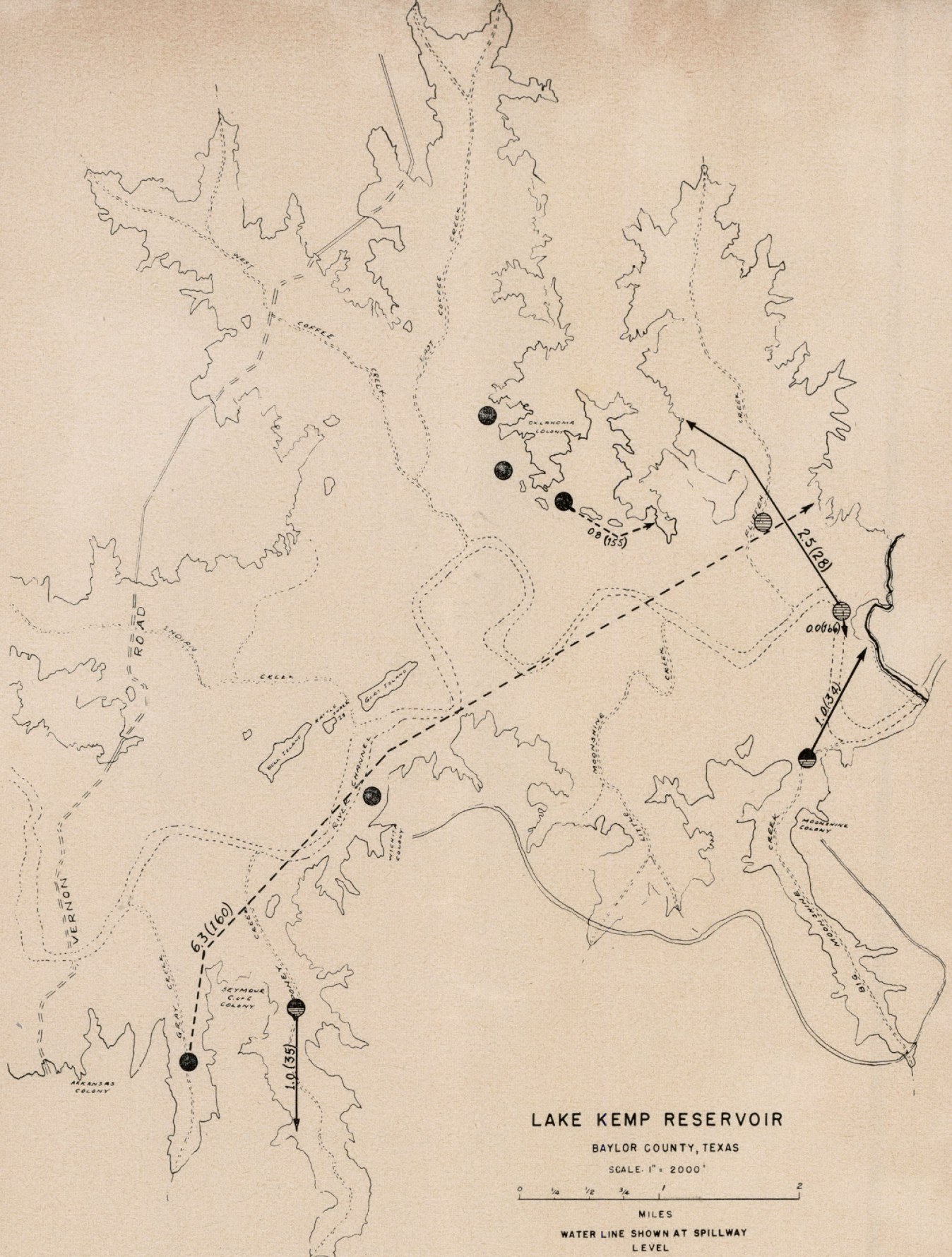


Figure 7. Movement of channel cat and carp, showing shortest possible distance in waterline miles from releasing area to point of recapture. Number of days freedom shown in parenthesis.

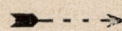
Releasing Area



CHANNEL CAT

CARP

Direction of Movement



AVERAGE MOVEMENT OF RECAPTURED FISH

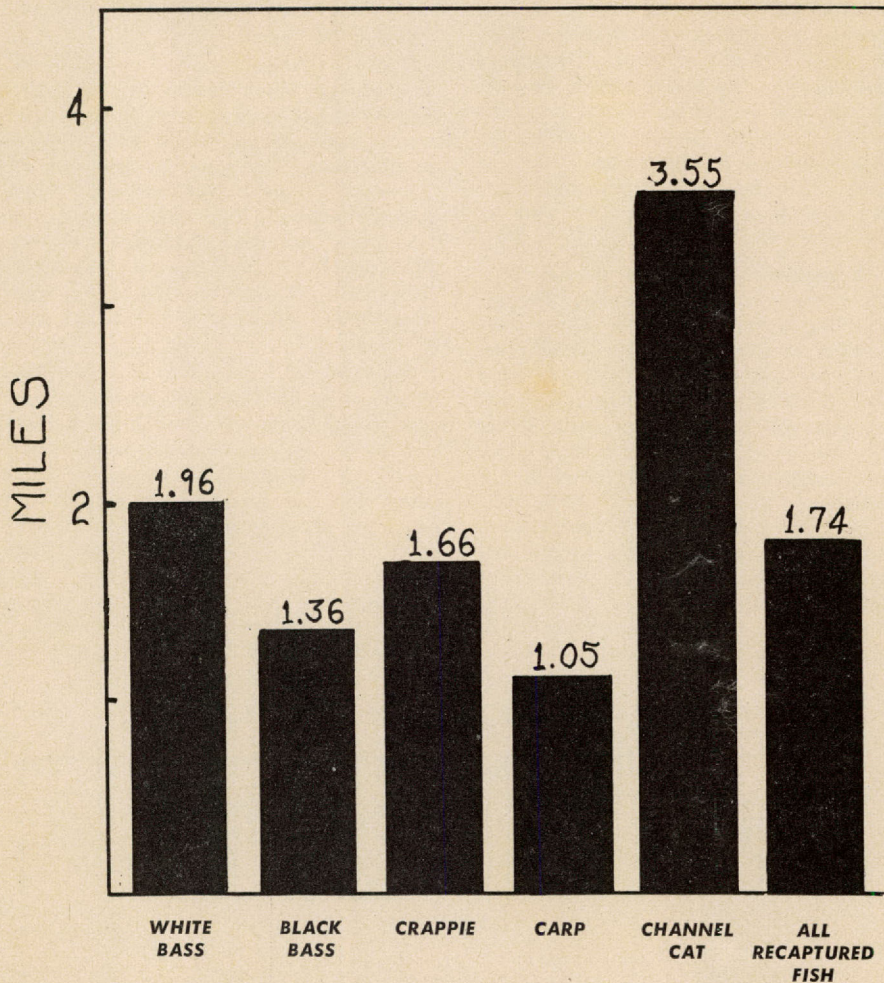


Figure 8. Average Movement of Recaptured Fish. Showing the average of each species and total average in miles.

• Continued from Page 21

The highest percent of fish retaken was black bass with 22 of the 53 released being recaptured. This was a total of 41.5 percent of all black bass. A breakdown between largemouth and spotted black bass reveals that four of the 13 spotted bass, or 30.8 percent, were returned, while 18 of the 40 largemouth bass, or 45.0 percent, were retaken. Spotted black bass are common in Lake Kemp, but it has been only recently that most fishermen have distinguished between the two species.

Of the 101 white bass tagged and released, 37 or 36.6 percent were recaptured. Nineteen of the 64 crappie were returned, making 29.7 percent of those released. The remaining two species were below the total average retaken. Only four, or 12.5 percent of the 32 carp were checked in and only two of the 48 channel catfish, or 4.2 percent were recaptured.

Thus it appears that the largemouth black bass is more susceptible to the hook than any of the other species represented. Lake Kemp was at one

time well known for its excellent black bass fishing, but in recent years the crappie and white bass have become more popular with the anglers there.

INTERVAL OF FREEDOM

An interesting fact disclosed by the rodeo is the number of days freedom various fish had after being released. The overall average from time of tagging and releasing to time of recapture was 28.1 days. (Figure 2). No tagged white bass were taken after May 21, only 22 days after their release. This gave them an average interval of freedom of only 9.4 days which was quite different from the channel catfish whose average was 157.5 days of freedom. Black bass were slightly under average with 21.4 days of liberty, while crappie and carp averaged 51.5 and 65.8 days of freedom respectively.

The fact that no tagged white bass were taken after May, which corresponds with their spawning season in Kemp, may further add proof to the thought that white bass in Texas seldom reach their third year and the

greater majority of them die after their second spawning season.

When using the returns of the tagged fish as an index for all fishing on the lake, a look at the recoveries by months (Figure 3) gives a good picture of the summer fishing slump. During July, two tagged fish were caught and none were taken during the hot weather in August. One was taken in September, but six were taken in October. This increase in catch in October corresponds with the arrival of cooler weather and an increase in fishing activity throughout the state. Fishing pressure, as well as returns, is lighter during the hot weather and probably the cause of one fact would lead to the reason for the other.

All fish had at least two days of freedom since tagging and releasing were completed on April 29 and the contest opened two days later on May 1. May 1 and 2 were on a Saturday and Sunday and seven and eight tagged fish were caught on those days respectively. The third day of the rodeo was a Monday and only three tagged fish were turned in at the checking stations as compared with 15 taken by the week-end fishermen. However, May 1 is always a big day on Lake Kemp. This has become an unofficial holiday in that area, resulting from past years when May 1 marked the opening day of fishing season.*

MOVEMENT

One of the major objectives of the study associated with the tagged fish rodeo was to obtain data on the movement of the various species of fish in Lake Kemp. This information was secured by giving each check-in station a map of the lake with a half mile grid superimposed on it and by instructing every successful angler to locate on such a map where he made his catch. Thus the shortest waterline distance between the point of release and the point of recapture could easily be measured. (Figures 4, 5, 6, and 7).

Figure 8 shows that channel catfish traveled an average of 3.55 miles from the point of release before being recaptured, while white bass traveled an average distance of 1.96 miles. The average of all recaptured fish was 1.74 miles, with black bass, crappie and carp below average. Carp showed the least wanderlust with an average movement of only 1.05 miles from their point of release.

The maximum speed with which these fish traveled cannot be correctly determined since they certainly did not swim in a straight line as depicted in the figures; it is possible for them

*Texas abolished the closed Spring fishing season in 1945.

to have been in an area several days before being retaken by an angler. However, a comparison of the data available in Figure 9 indicates that the white bass traveled further per day of freedom than all the other four species combined. In Lake Kemp, the average movement per day of freedom of all fish was 0.062 miles. White bass averaged 0.208 miles, while black bass moved 0.064 miles and crappie 0.034 miles per day. Channel catfish, which moved further than any other species, traveled slower than any other, averaging only 0.020 miles per day of freedom.

The fastest travel of any individual fish was done by a white bass which moved 3.9 miles in two days. All white bass except one traveled at least 0.5 miles. The one stay-at-home was caught less than 0.5 miles from the point of release. Three or 14.3 percent of the black bass moved less than that distance and three or 15.8 percent of the crappie did not travel. Carp showed the greatest tendency to remain stationary with one of the four or 25 percent recaptured moving a negligible distance.

More concrete information was obtained on the movement of white bass since a greater number of them were retaken. Figure 4 shows two concentrated areas where most of the white bass were recaptured. Ten were taken from an area near the southeastern end of the dam and one was caught after moving one and a half miles toward that point. Sixteen white bass were recaptured in the vicinity of the Seymour Colony, and six more were taken after making a movement towards that concentration point. Only four white bass were retaken at scattered points in the lake; this catch showed no movement in the direction of the two areas mentioned.

These two areas in Lake Kemp are both known as "hot" spots for white bass during the months of April and May. A comparison of the two shows that they differ in depth, wind exposure, topography of surrounding shorelines and current. However, both areas have the same bottom type—a limestone rubble and gravel. Correlating the physical conditions of Lake Kemp, the season of the year and the findings of other biologists, it seems apparent that these locations are utilized as spawning areas for the white bass and that in Kemp these bass do not ascend the tributary streams as they are found to do in other large lakes.

The attraction of these particular areas for spawning is so great that some white bass traveled long distances across the lake and were recaptured by anglers fishing in these areas. On April 27, various anglers who were fishing near the dam donated some white bass to be tagged

for the rodeo. Of these, 12 white bass were tagged and released at the junction of East and West Coffee Creeks, a distance of 3.9 miles from the dam. Three of those fish were retaken from the site of their original capture and a fourth moved approximately half the distance in that direction before it was recaptured. The three white bass which completed the return were retaken two, five, and six days after their release.

There also appeared to be considerable cross movement between the two spawning grounds. Three white bass released in Big Moonshine Creek, less than one mile from the dam spawning site, traveled toward the Seymour area and one of them was taken from the site itself while the other two were retaken before they reached that location. On the other hand, two white bass passed the Seymour area and traveled down the lake toward the dam. One was retaken six days later at the dam spawning site, a distance of 6.3 miles away. The reason for this preference of spawning area is

unknown. Perhaps the determination of sex or age of the tagged white bass would have placed more light on the subject.

There seemed to be no general tendency in the movement of black bass as shown in Figure 5. Both largemouth and spotted black bass moved up and down the lake, in and out of protected bays, and across open water. Distances traveled varied from 5.2 miles by one individual to no movement by three other largemouths. Movement of the spotted bass was comparable and showed no marked differentiation.

The general movement of the crappie, as seen in Figure 6, reveals that they seem to move further back into the bays and protected areas. The points of recapture of crappie indicates that the practice of baiting or brushing an area has certainly given good results in Lake Kemp. The catches in Big Moonshine Creek alone bear out this fact. The past two years has seen a great increase in this activity, both by individual anglers and by

AVERAGE MOVEMENT PER DAY OF FREEDOM

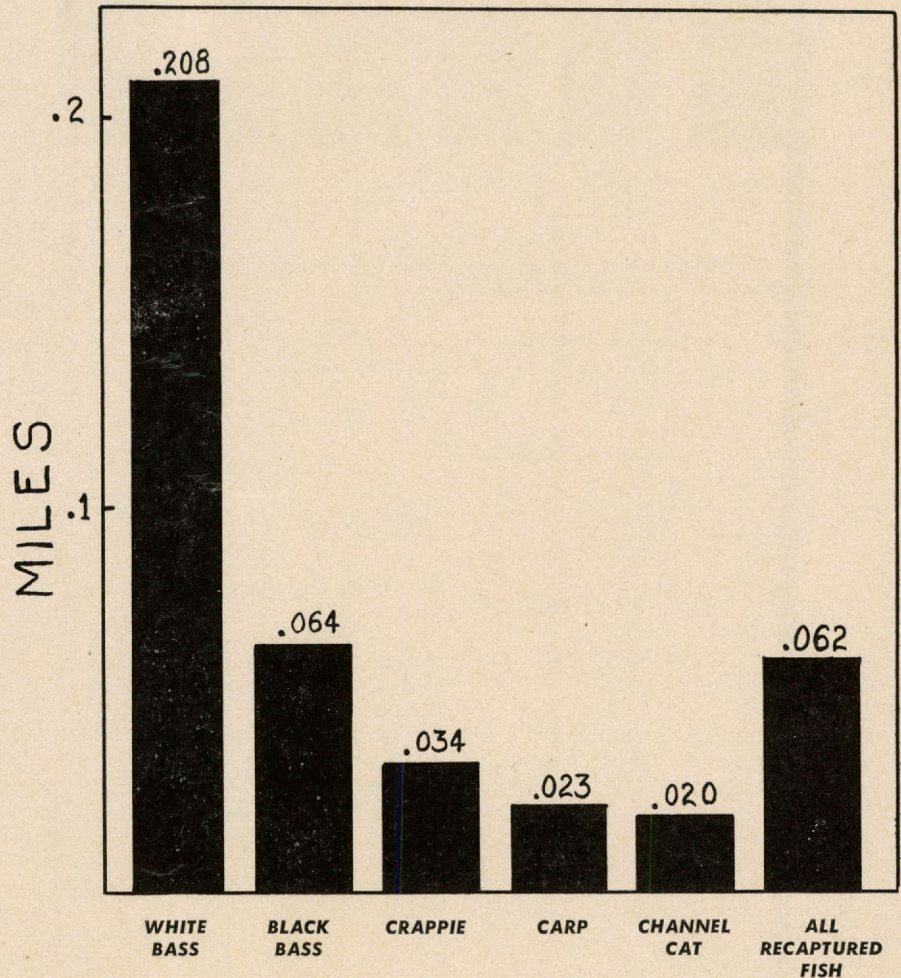


Figure 9. Average Movement Per Day of Freedom. Showing comparison of total movement in tenths of miles for total days of freedom of species and average of recaptured fish.

sportsmen's groups. Crappie have been attracted with soured grain, meal and hay. Submerged brush piles of green mesquite limbs have also concentrated the crappie and added to a greater yield of this species.

Figure 7 shows the movement of the four carp and two channel catfish which were recaptured. The few recaptures of these two species do not offer enough data upon which to form an opinion on their general movement in Lake Kemp.

BAITS USED

Each successful angler was asked on what bait he caught his tagged fish. These results are tabulated in Figure 10 where it can readily be seen that minnow fishermen were by far the most successful, taking 86.9 percent of all tagged fish recaptured. A breakdown of the total catch shows that 100 percent of both the white bass and the crappie were retaken with minnows. Also 72.7 percent of the black bass and 50 percent of the channel catfish were caught with this popular bait. Only three black bass were taken on artificial lures and one was taken on a crayfish-baited trotline. The successful baits used in taking two black bass were unreported. Three of the four carp were taken on dough-

bait and one was taken on stinkbait, while one catfish was taken on a minnow and the other on a stinkbait.

By far the greater majority of the fishermen use live bait in Lake Kemp, while the lure casters and fly fishermen are active in the spring and early summer.

In Table 1 some entries under the "Remarks" column give the time of day the catch was made. Since the report on this item is not complete, no concrete information can be obtained on this subject.

GROWTH

Each check-in station was furnished with a measuring board marked off in one-fourth inches and a Hanson spring scale graduated in ounces for measuring and weighing the recaptured fish. The returns, both measurements and weights, show a great deal of variation from the release records. (Table 1).

Figure 11 shows a decrease in total length for white bass, crappie and channel catfish, while black bass made a slight increase and carp averaged out even. The greatest decrease for an individual white bass was 1.25 inches which occurred in only eight days of freedom. The greatest increase was 0.5 inches gained in 10

days of freedom. Twenty-one white bass decreased in length while nine made no change and only three grew longer. This resulted in an average decrease in length of 0.35 inches.

The overall average weight increased 0.66 ounces. (Figure 12). Only three white bass showed a loss of weight, the greatest loss being two ounces while 15 fish showed a gain in weight, the greatest gain being three ounces. Thirteen showed no change and six were not reported. Black bass and carp also showed an increase in average weight, while the catfish remained unchanged and the crappie lost weight. The greatest loss in weight of any individual fish was a black bass which lost 11 ounces over a period of 28 days. The greatest individual gain was made by a black bass that gained seven ounces in slightly less than one year.

On the whole, the average growth of the fish by species can be summed up in saying: White bass gained weight and lost length, black bass gained both weight and length, crappie lost weight and length, carp gained weight and averaged even in length, and channel catfish stayed the same weight and decreased in length.

The possibility of losing weight can be readily understood, especially during and after spawning season. The

BAITS USED IN RECAPTURE





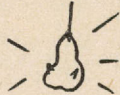

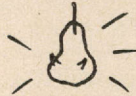

WHITE BASS	100% Minnows (37)				
BLACK BASS	72.7% Minnows (16)		13.6% Artificial lures (3)	4.5% Cray fish (1)	9.1% Unreported (2)
CRAPPIE	100% Minnows (19)				
CARP	75% Doughbait (3)			25% Stinkbait (1)	
CHANNEL CAT	50% Minnows (1)		50% Stinkbait (1)		
ALL RECAPTURED FISH	86.9% Minnows (73)				ART. LURE DOUGH BAIT STINK BAIT UN- REP. CRAYFISH

Figure 10. Baits Used in Recapture. Showing per cent of each species and all recaptured fish and bait on which taken. Numbers in parentheses indicates total number taken.

jaw tag itself may have caused interference in feeding and consequently caused a loss in weight. The shrinkage in total length can be understood in some species that wear off their tail fins fanning a nest during spawning. Evaporation and muscle contraction are also possible causes of weight and length shrinkage. Natural feeding and growth would compensate for an increase in both weight and length. However, it should be remembered that the greater majority of the return records were made by non-technical fisheries personnel which would tend to increase the possibility of error. In addition, since all fish turned in for prizes were required to be alive or fresh, a person finding a dead tagged fish was quite capable of placing that tag in the jaw of another fish of comparable size, thus altering the results of the entire rodeo project.

The 1948 Lake Kemp Tagged Rodeo was indeed a success. The membership of the Lake Kemp Club increased from 354 in 1947 to 1,215 in 1948. In addition the lake furnished more and better fishing than it has in several past years. The directors of the Anglers Club were well pleased and the Lake Kemp Tagged Fish Rodeo for 1949 was equally successful.

ACKNOWLEDGMENTS

The writer wishes to extend his grateful thanks to a number of people without whose efforts this report could not have been written. To J. L. Meads and Curtis Thurman of Seymour, Marvin Price and M. V. Liles of Vernon, and Warden W. C. Cave of Wichita Falls for their assistance in collecting, weighing, measuring, tagging and releasing the fish. And to Mr. and Mrs. Walter Ferguson, Mr. and Mrs. Jack Propps, and Mr. and Mrs. Oscar Bates for the information gathered on the recaptured fish. And to all the others who aided in numerous ways to make the entire project a success.

PRESENT-DAY APPROACHES TO CONSERVATION PROBLEMS

In recent years many undesirable wildlife conditions have arisen to plague conservation agencies and farmers in this country. Imagination, modern equipment and sound management have combined to overcome many of them, as in the following examples:

In successful restocking programs, fish and beavers have been dropped from airplanes at inaccessible places.

Last summer, it was found that Minnesota's moose in the Red Lake

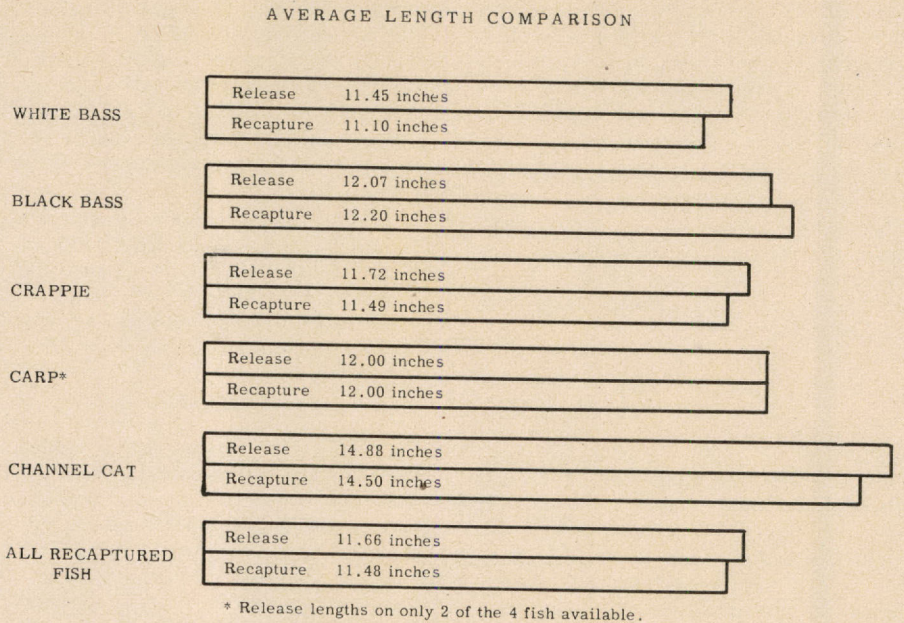


Figure 11. Average Length Comparison. Showing increase or decrease in inches of average total length of each species and of all recaptured fish.

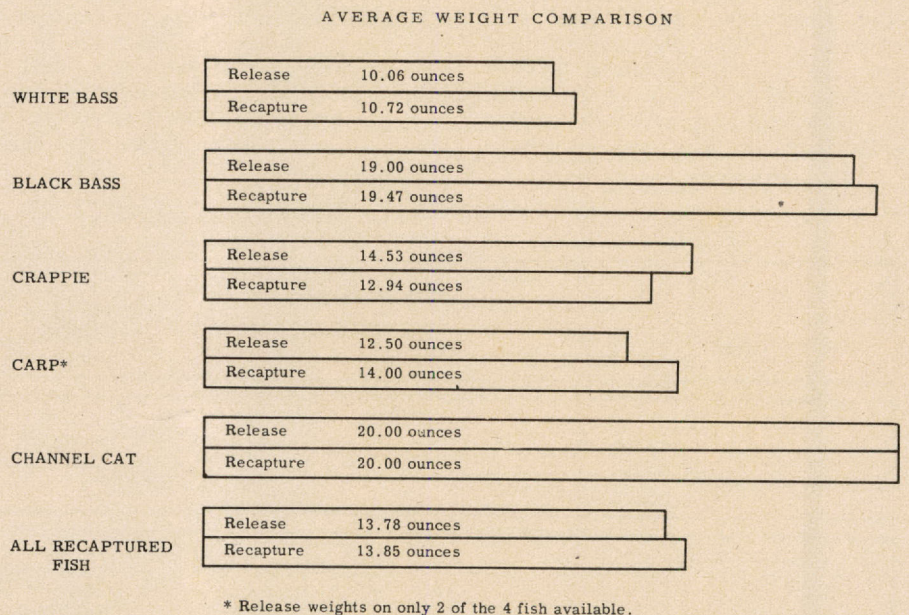


Figure 12. Average Weight Comparison. Showing increase or decrease in ounces of average total weight of each species and of all recaptured fish.

Game Preserve were suffering from lack of water. A 3,000 square-mile area there often dried up completely. That situation left moose without protection from blackflies, deerflies and midges. Without deep water in which to escape insect tormentors, moose frequently go blind and starve to death.

The Naval Air Station provided planes and 1,000 pound bombs to overcome the undesirable condition. Seven deep craters, averaging 100 feet in diameter, were blasted into the bog area, providing adequate protection and drinking water for the herd.

In North Dakota, farmers were advised last fall that harvested crops likely to be eaten by deer should be brought into feed yards. The Game and Fish Department advised that where this was not possible in the case of some alfalfa stacks, eight-foot fences should be established about the stacks as a protective measure.

In Nebraska beavers were recently accused of cutting the pilings under a bridge, causing it to collapse in high water. If the beavers try to repeat they will have aching teeth. The wooden pilings were replaced by steel ones.



WILDLIFE RODEO

THINGS YOU MAY NOT KNOW

The rabbit has a bulging curved eye that enables him to see behind his back.

* * *

The tongue of the gecko lizard is so long that the reptile can use it to wash its eyes.

* * *

Not only are whale babies the largest babies in existence, but they are also the largest in terms of the relative size of their parents. Often a baby whale is half as long as its mother at birth.

* * *

The planarium, a flat worm, can grow a new head to replace one that is lost.

* * *

When swimming, the squid's body looks like streaks of water in motion. The effect of camouflage is different when the squid is motionless, for then it looks like a bed of water weeds.

* * *

By order of Henry VII, the wolf was exterminated in England early in the 16th century.

The annual wildlife rodeo of the Texas Wildlife Federation at Brownwood, May 27-28, will be observed by national authorities as a basis for possible recommendations for widespread adaptation. Fred Weston of San Antonio, president of the state group, said inquiries have been received from the American Wildlife Federation and from other leading organizations about the nature and date of the event.

The 1950 rodeo which will be staged on the scene of the original program last year, is expected to attract thousands of persons from all over the state. Entries in the various contests last year which totaled 387, are expected to reach at least 700 for the 1950 event. Weston said advance inquiries indicate the total might even reach the one thousand mark.

The rodeo has tremendous drawing power for competing sportsmen. The rodeo becomes the common competing site for all—for the rich skeet shooter from Dallas and the single-barrel shotgun exponent from East Texas, as well as for the effete archery fan from San Antonio and for the coyote trapper from West Texas.

Contestants will compete for trophies, merchandise, medals and cash worth in the aggregate more than \$3,000.00. Many of the events will be very colorful, such as the marksmanship contest for muzzle loading riflemen and the field trials for coon hounds. Life size deer targets will be whizzed across the range for the sharp shooting big game hunters. The wild turkey shoot likewise will simulate actual field conditions.

The 1950 rodeo again will be sponsored by Brown County outdoor enthusiasts with the Brown County Sportsmen's Club and two other local organizations cooperating in the unique project. The site again will be the old Camp Bowie grounds which is practically within the Brownwood city limits. There are almost limitless indoor facilities and a vast wooded tract. Paved roads lead to the camp and the streets within the grounds are improved. All modern facilities such

as electric lights, water, showers and such are available.

One of the features which adds greatly to the rustic environment is the camping area where contestants and visitors spread their tents and park their trailers to "rough it" during the three-day rodeo. Because of the varied facilities, contestants thus may virtually compete from their own "front porches." A casting pool, rifle range, pistol range and other appurtenances are immediately available.

The Texas Wildlife Federation is sponsoring the rodeo as one of the major annual programs for persons interested in the various affairs associated with the outdoors. The primary purpose of the Federation is to give sportsmen's groups a strong central organization through which they can coordinate their efforts for the benefit of all conservation-minded Texans, present and future.

FISH WORMS

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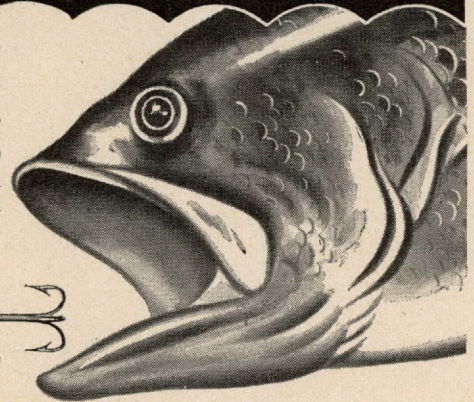
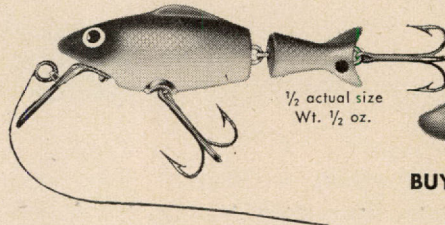
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EINARSEN IS GIVEN AWARD

The National Association for Conservation Education and Publicity recently presented Arthur S. Einarsen its 1949 award for "outstanding service to conservation through a technical book." His book is "The Pronghorn Antelope."

Awards of the Association are usually made at the annual meeting held in September, but since the judges had not reached a decision, the award was not made at that time. The Association is composed of conservation education and public relations personnel of state conservation and fish and game departments.

The information and education department of the Oregon State Game Commission nominated Mr. Einarsen's book. It is based largely upon studies carried on in Oregon for a number of years. Mr. Einarsen has been director of the Oregon Cooperative Wildlife Research Unit at Corvallis since its beginning in 1935; the antelope problem was one of the first research projects assigned to him by the Oregon State Game Commission.

Sea lilies are really animals but they look like the plants for which they are named.

DO YOU REMEMBER?

It was considered quite proper to load up the old eight-gauge (now outlawed) with any kind of scrap iron to pot shoot wild ducks indiscriminately?

Swimmers waded across the Colorado River above Austin at low water stage in the dry summer months? (That was before the dams were built.)

Market hunters used huge brush fires at night to lure deer into range? (One gunner boasted that he killed seven deer with one double-barreled blast of his ten-gauge shotgun loaded with double 0 buckshot.)

The government urged greater wartime emphasis on eating carcass of 'coons, 'possums, muskrats and other fur-bearing species as a food-conserving aid? And the ensuing chuckles by old timers who didn't have to be reminded what could be done with sweet potatoes mated with 'possum and such meat for cuisine purposes?

Some hunters thought that outlawing live decoys had ruined duck hunting?

UNINVITED DINERS

The Associated Press recently reported a "war" near Niland, California. In the irrigated desert there, wild ducks and geese are playing havoc with great acres of vegetables being grown for market. Federal and state conservation agents are cooperating with farmers in an effort to reduce losses without destroying the wild-fowl. Searchlights, guns, flares and bombs are employed to scare off the uninvited migratory diners.

The endurance of the American bison was remarkable. He could tire out three sets of horses, often running 40 miles at a time.

* * *

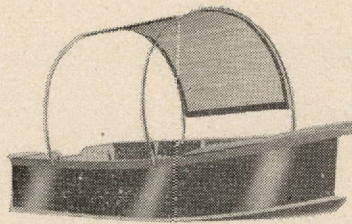
Some shrimplike animals live on the edges of the ice near the North Pole; others are found in the boiling waters of hot springs.

* * *

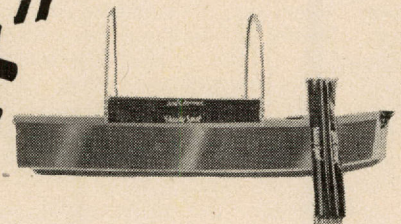
The Australian Sea Horse is almost invisible when in the midst of seaweeds due to the leaflike growth on its body.

* * *

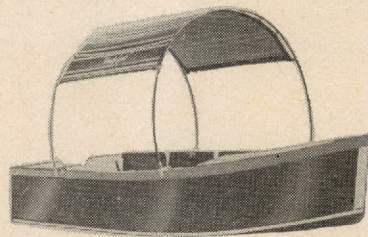
The male gorilla rules his family with an iron hand. At night he sends the members to bed in the branches of a tree he has selected, and then makes his own bed at the foot of the tree.



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Camping —

• Continued from Page 7

giving the water a milky appearance.

Kapok cushions have a place in every camping outfit. All of these pillows are similar, the principle difference being size and types of cover materials used. After trying several kinds of covers, I have found the cloth cover gives the most satisfactory service. It is not torn as easily by rocks and thorns as the cover made of fancy imitation leather. The uses of these cushions are many and they meet them all well. They serve the double purpose, in a boat, of a cushion and life preserver. When the day is done, they are convenient while lounging around the campfire, and finally, for sleeping.

A deluxe piece of equipment, and one needed by all fishermen, dove, and early season squirrel hunters, is a portable refrigerator. It preserves not only the catch or kill, but your food as well, permitting you to carry fresh meat, butter, and thus giving you relief from bacon, corned beef, and canned beans. The little iceboxes are made in all price ranges. Some are of stainless steel, some of aluminum, some are lined with galvanized steel. All of these are good if properly made; but beware of the cheap ones that do not have soldered seams, or are not stamped from one piece of metal. The type sold by soft-drink manufacturers has proved to be very satisfactory and it is fairly reasonable in price.

Another indispensable article is a tarpaulin. This should be made of light weight, waterproof material, affording ease in handling and packing. A good size is eight by ten feet. When a tent is not pitched, the tarpaulin can be used as a cover for your bed. In hot weather it can be erected as a fly, with suspended mosquito bar beneath it, thus allowing whatever breeze is available, to reach you. Its other uses, when the camp is of a semi-permanent nature, are as a fly over the tent, reducing the daytime temperature inside, affording extra protection during heavy rains, and when traveling, one may find it makes an excellent cover for the bedroll.

Some miscellaneous items that should always be in the outfit include:

Axe—A small hand axe, with sheath to protect the edge while traveling, meets the requirements of most campers today, better than the larger ones.

Machete—Now here is a tool of more uses than the axe, yet which easily does all of the work of the axe. With it one can cut firewood,

Attention! Sportsmen's Groups

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build duck blinds, clear the camp site, or cut brush. Did some one say you cannot drive tent pegs with it? Just use a piece of that firewood you cut with the machete, to drive that tent peg.

Rope—Sash cord, in a fifty foot length, is fine for erecting the tent or tarpaulin, extra line on a boat, or as the necessity may demand.

Lights—Kerosene lanterns, gasoline lanterns, flashlights, and headlights can be seen wherever campers meet. Each has its staunch supporters. The kerosene lantern does not furnish as much light as the gasoline lantern, but it is much sturdier. While the gasoline lantern puts out much more light, its fragile mantles and mica chimney are its chief drawbacks. Flashlights are familiar to all, but select one of small size, preferably of the two cell variety, with a reflector the same diameter as the case. It is easy to carry in the pocket and requires little space when not in use. Headlights are of two types, carbide and electric. The carbide light has one big disadvantage. It is not safe to use in dry woods. The electric headlight of three or five cells is the better choice. It is safe to use in dry timber, and before or after the coon hunt, it easily doubles as a flashlight.

Make your own first-aid kit. Put in those items that you use at home because you are familiar with their uses. The kit purchased at the corner drug store is not of much use for all it contains is a few small bandages.

If you feel that you need a snake-bite kit, be certain it is of the suction type. Make it a point to test the suction pump occasionally to see that the piston still functions. But remember, a kit in a car pocket three miles away will not help you. Carry the kit in your pocket.

Go over your equipment now, and discard the items not used. They take up space that a needed article can occupy. You may be sure, any amount of time spent developing and improving the camping outfit will greatly repay you in comfort received, and may save many hours of back-breaking labor and trouble.

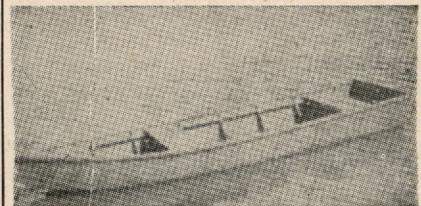
Fly-Tying School Held in Ft. Worth

The phrase "and a little child shall lead them" became a reality in Fort Worth on the night of March 30, 1950. A fly tying school for adults was held at the Fort Worth Y. M. C. A. and had as instructors the members of the Fort Worth Junior Anglers' Club. This course will continue for eight weeks and will be held on Thursday nights.

The boys who teach this course are those who have taken fly tying for the past two years with such instructors as Roy Stone, Jack Dunham, West Hickey, C. L. Manning and Dr. Bob Cook. These men gave their time to the boys and the boys now pass on to others the skills they have been taught. This is the true spirit of sportsmanship and is one of the things that the Junior Anglers' Club strives to develop in its members. A boy who learns to be a sportsman in the true sense of the word is a boy who will develop into a good citizen.

The art of fly tying is not a hard one to learn and requires little in the way of equipment. The end product of fly tying is to produce a lure that will take a fish. There is no greater thrill in fishing than to catch a fish on a homemade lure. That's really fooling them! And to take a big one this way is tops in the field of fishing.

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WATER CONSERVATION

In a hard-hitting article "Turn Off That Faucet," which appeared in the February issue of the *Atlantic Monthly*, Arthur Carhart, one of America's most vigorous campaigners for the cause of conservation, wades into the water problem with both fists swinging.

Although New York City, because of its size, density of population, and industrial importance has received much publicity, the water shortage is not local. As Carhart points out, it extends from the cranberry bogs of Cape Cod to the oil refineries of Texas, from Oregon's apple orchards to Florida's coastal resorts. In some localities, as in New York, there are adequate supplies, in other cases, the problem is more complex and even more critical, for some communities have no available ground water supplies which are not already being tapped. In many of these, pumping far exceeds the rate of flow into subterranean reservoirs.

The solution, as seen by Carhart, lies in better watershed management; the adoption of a flood control program aimed at holding water on the land where it may be absorbed instead of running through ditches into dredged and leveed rivers to the sea; and in cleaning up polluted streams so that their waters may be used by industries without tapping underground water supplies.

PENINSULA PRIMEVAL —

• Continued from Page 13

along the waterfront; squabbling gulls sail overhead, and purple Portuguese men-of-war wash up on the shore, where their stinging tentacles can do no harm.

In the fall, great flocks of ducks and geese squatter and paddle and squabble over the ponds, and occasionally some proud antlered buck will bound across the road with his curious rocking gait and his white tail carried high.

Offshore, in San Antonio Bay, are islands where in the springtime egrets and ibises, pelicans and gulls, cormorants and bitterns and herons all join in one vast, noisy mass to raise their young.

No man harms the wild things here, and no hunter's gun can slaughter them. And so they live as did their forefathers, in an almost untouched wilderness, only four hours' drive from Houston—a picture of the Texas that is almost gone.—Houston Chronicle.

White Wings

• Continued from Page 5

flights roost in pastureland brush tracts and fly out in early morning to feed. They return to watering and shading places for the hot part of the day. During early evening, they go back to the same grain field or another in the near vicinity for another feed and then return to the roosting site for the night. All of this routine is on a strict schedule and is varied only by the interruption of unusual weather.

Shifting of small flights and flights numbering in the hundreds of thousands occur when feed becomes scarce. An example of this took place in 1949 when a majority of the birds in western Hidalgo County moved to east central Willacy County, more than doubling flight numbers there in a week's time. Specimens have been banded during spring and summer and taken during hunting season of the same year more than 100 miles from where they were raised.

In spite of the tremendous destruction of brush, the Lower Rio Grande Valley is still the principal Texas nesting region. Only widely scattered pairs and a few relatively small colonies of nesting birds occur above the Valley, as far north as Del Rio, San Antonio and Corpus Christi. For the past three years an annual breeding season survey has been made of the white-winged doves occurring in this more northern region. This was done to determine, if possible, whether white-wings from the lower Rio Grande Valley were moving northward to nest after the destruction of the Valley native brush cover. Also, this study was to reveal the effect of the closed season since 1944 in several of the northern counties. The "no hunting law" was inaugurated in those counties to see if protection of established random nesting colonies could be a factor in building up the population as well as extending the range. Of the three years of survey just finished, the third showed a substantial increase of birds over both the first and second years. This, it is believed, was brought about by the closed season and the build up of birds raised there during that time.

A 1949 breeding season check revealed 343,700 pair of whitewings nesting in the Valley citrus orchards. As yet, their heavy concentrations are not too widespread. However, they have been found in increasing numbers wherever the citrus is in large blocks. Because of the lack of dependence on favorable climatic seasons, irrigated groves can be expected to afford an annual sustained and increasing amount of satisfactory nesting cover. Hence, adoption of citrus groves for nesting sites is probably the most important white-winged dove development in recent years.

The future of the white-winged dove in Texas as a game bird appears, at this time, to have taken a turn for the better. This assumption is drawn from the recent increase of nesting birds in upper South Texas and the trend of Lower Rio Grande Valley whitewings toward utilization of vast citrus groves available for nesting cover. The next several years should prove whether or not we can depend on these trends. In the meantime, there is no justification for relaxing our efforts to help the birds in every possible way.

(This study is based on work conducted under Federal Aid Project 30-R.)

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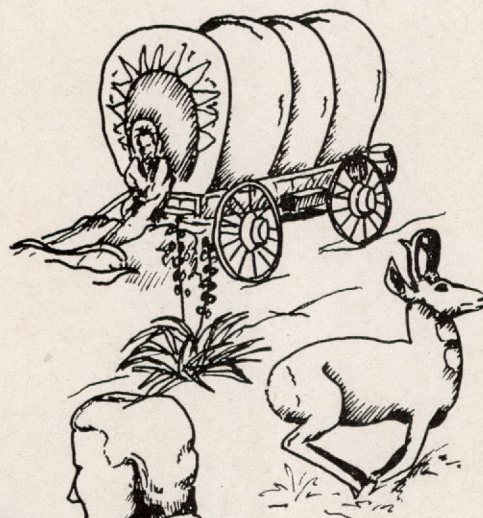
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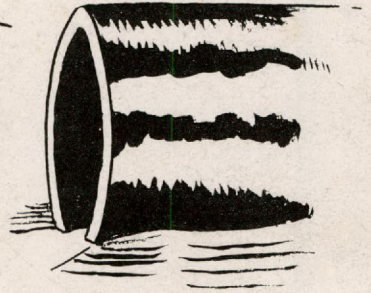
With the tremendous increase in hunting pressure, competition for places to hunt becomes greater each year. Particularly is this true in the case of the quail hunter. Modern land use with emphasis on maximum production of agricultural products has reduced quail habitat and limited their numbers. Present day methods of transportation, an improved economy of our people, and more leisure time have made areas formerly remote, accessible to most city hunters.

The day when quail hunting consisted of going where and when we pleased has become a part of our past history. Today, hunting requires advanced planning and joint sharing of the responsibility for the wildlife we hunt during our open seasons. Game animals cannot be forgotten from the close of one season until the opening of the next season. Now is the time to make your hunting arrangements for next year. And as a hunter, one of your responsibilities is to learn the habits and habitat requirements of the game you hunt. Visit the landowner on whose place you would like to hunt next year and offer to help him improve food and cover for game. Do more than tell him it is a good idea to plant a hedge row or fence an area where native vegetation may develop and provide year around food and cover for quail. Help him do it!

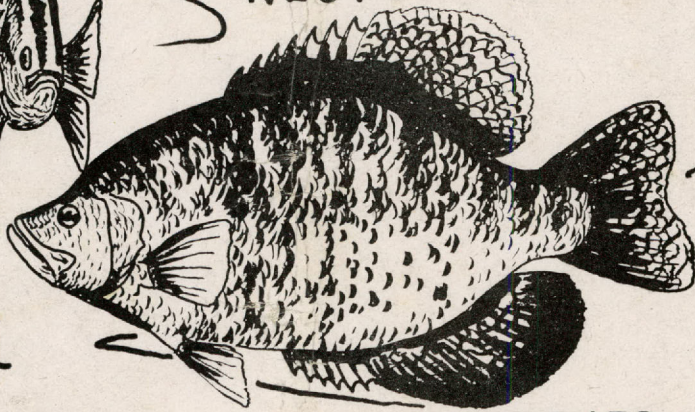
By assuming your share of the responsibility, you will not only assure yourself of a place to hunt, but you will also have better hunting as well.



CONSERVATION AT WORK



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NESTS FOR CATFISH



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HELPS TO
CONTROL FOOD
AND HABITAT

WHETHER YOU HAVE
LARGE OR SMALL
SUNFISH DEPENDS ON
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