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PARKS & WILDLIFE



May 1977 • 50¢



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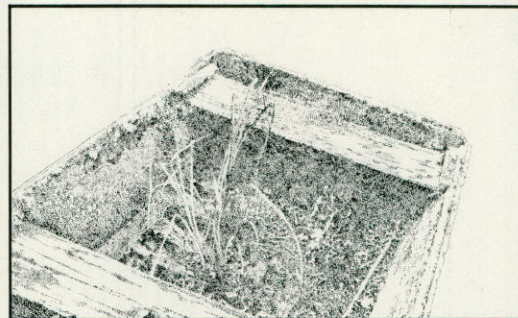
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Front and Back Covers: Indian paintbrush add color to this East Texas field of wild daisies. Photo by Leroy Williamson.

Inside Front: Exploitation by pet suppliers coupled with a low reproduction rate caused the Texas tortoise to be added to the state's list of protected species. Photo by Bill Duncan.

Once abundant throughout the state, wolves are now **Almost Gone**

by Joe T. Stevens, Wildlife Biologist

Two North American species of wolves once roamed the hills, valleys and prairies of Texas. The large gray or timber wolf, *Canis lupus*, ranged over the western part of the state while the somewhat smaller red wolf, *Canis rufus*, inhabited the eastern section. Their ranges overlapped in the central region. Today the gray wolf no longer resides in his former range, and the red wolf is near extinction in the extreme southeastern part of the state.

THE GRAY WOLF

When the first aboriginal tribesmen ventured down into the area now known as Texas, they were greeted by a melodious voice that surpassed in significance all other wild sounds on the North American continent. It made them feel welcome in the new land to which the Great Spirit had led them. Their ancestors in Siberia were familiar with this voice that had been present as they migrated through present-day Alaska, British Columbia, Washington, Oregon, California, Arizona and New Mexico toward Texas.

It broke the awful solitude in an uninhabited land; it brought comfort from loneliness; it warned them of danger; and it brought suggestions of the presence of food. Truly it pierced their inmost spirit and became interwoven into their very being, no doubt adding a strong link in the chain of relationships that produced almost unbelievable understanding and communication.

In the western half of the state the almost phantom voice belonged to the large gray wolf. This carnivore had preceded these primitive tribesmen by thousands of years. Experience had taught them to respect its existence in the natural realm, and their lifestyle did little to disturb the large predator's range or to disrupt its habits for another several thousand years.

All of this changed, however, when the Europeans arrived. Myths in their folklore emphasized a fear of the wolf. They were not attuned to coexist with anything, but rather to subdue the tribesmen, plants and wild animals they found in the New World.

Their struggle for survival and, in many cases, their greed led to the exploitation of the millions of buffalo that roamed the plains of Texas. Deer, antelope and wild turkey also fell before their guns as if there were an eternal supply. Since these creatures were the wolves' main prey species, the wolves either turned upon the white man's domesticated animals or starved to death. Naturally, the protection of livestock intensified man's pressure upon the wolf.

Before the turn of the century, the battle of man against wolf was in full swing. The No. 4½ Wolf Trap had been developed as a means of curbing wolf depredation. Farmers, ranchers, cowboys, government trappers and everyone who could shoot a gun, set a trap, poison a bait or follow a wolf dog were continually active or on the alert.

For two years between 1892 and 1894, my father and his older brother camped several miles from the ranch headquarters eight miles north of Bandera, herding a large flock of sheep, protecting them day and night from the wolves. This was a typical experience during those days for sheep, goat and cattlemen in Texas.

Since the black and tan coonhound used on mountain lions and bobcats was too slow for wolves, Robert Real on the Live Oak Ranch in Real County paid a handsome price for the faster hounds developed in Kentucky by the Walker Brothers. Through vigorous training, careful selection and breeding, top packs of wolf hounds were developed to help eliminate many wolves throughout the state.

Between 1912 and 1913, Q. T. Stevens caught an entire pack of gray wolves off the old Hildebrand Ranch, located in the rugged hills south of Kerrville. He related that his hounds jumped one big gray wolf and finally bayed it in a cave after a chase of at least 25 miles. Stevens rode his mount so hard over the rugged hills that the horse became stringhalted (lameness caused by muscular spasms) and had to be abandoned. He then followed the hounds on foot for the last five or six miles. After shooting and skinning the wolf, he carried it back to a horse trap where a five-year-old unbroken mare was finally corralled and saddled with a great deal of difficulty. She furiously resisted his getting into the saddle, much less putting



the wolf skin behind him, but he managed, and she was about broken by the time he rode her the remaining 20 miles home.

Hundreds of similar stories emerged all over the Lone Star State in those days. No doubt the most famous wolf hunt that ever originated in Texas took place in the spring of 1905 when President Theodore Roosevelt came to Dallas, and from there took a special train to Quanah, in Hardeman County, named after the famous Comanche chieftain Quanah Parker. From this point, President Roosevelt rode horseback into Indian territory to hunt wolves. Accompanying him was a troop of cavalry, cowboys from ranches in the area and a party of dignitaries, including the Comanche chieftain himself.

The last gray wolf in Bosque County was seen in 1908, by Aaron Johnson of Morgan, Texas. Henry C. Hahn, former wildlife biologist for the old Game and Fish Commission, in his historical research on the Kerr Wildlife Management Area near Hunt, reported the last wolf in that area was killed in 1913 by a freighter, who was paid a \$500 bounty by the local ranchers. This indicated how serious they considered the wolf's predatory habits to be upon the economy of their livestock operations.

Since World War I a few gray wolves have been killed in the extreme western part of the state. Nelson Elliott killed a large gray wolf, identified as *Canis lupus monstrabilis*, on April 19, 1942, on the Cleveland Ranch 30 miles south

Gray wolves eat from four to 10 pounds a meal, but they can gorge up to 20 pounds if they have been without food for a week or two. Normally they eat all of the wild prey killed, but only partially consume domestic stock. The only gray wolves found in Texas today are most likely transients from a struggling population in Mexico.

of Marfa in Presidio County. The most recent records show two males, identified as *Canis lupus baileyi*, taken in Brewster County in 1970. They were most likely transients from a struggling population in Mexico. Their skulls were given to Sul Ross State University at Alpine.

The gray wolf is the largest wild member of the dog family. Males

stand from 26 to 32 inches at the shoulder, sloping slightly toward the rump, and usually weigh between 75 and 110 pounds. Females average 50 to 85 pounds. They possess a heavy, broad skull and muzzle and long canine teeth, capable of stripping the ligaments from the hindquarters of a buffalo, elk, antelope or deer. The tail is quite short and black-tipped. The dominant color is gray with black-tipped coarse hair, but black individuals are rather common. The head and underparts of the dominant grayish individuals are light cinnamon to buff.

One of the most outstanding traits among wolves is their capacity to form deep attachments to other individuals. They are thought to mate for life.

Breeding season occurs during the winter months and the dominant female in the pack generally is the one that becomes pregnant. The gestation period, similar to dogs, is usually 63 days. About three weeks before the pups are born, the female seeks out one or more possible den sites under rock ledges, at the base of a large tree or on a well-drained, sandy ridge near an easily accessible source of water. She digs a tunnel six to 10 feet, prepares an enlarged chamber and lies near her favorite burrow during the last days of her pregnancy. When labor is near she retreats into the den chamber and gives birth to from four to 12 pups. They weigh about a pound, are blind and deaf, and have a dark fur. The first few days are spent almost entirely with the pups, the mother giving them the best possible start. During her period at the den site, she receives food from her mate and other members of the pack.

Within three weeks the inquisitive pups appear at the mouth of the den, amazingly strong and well developed. Soon they are romping and playing in the most robust manner. Their social status within the litter is firmly established within another week. Both parents and adults in the pack bring them food, sometimes from a distance of 10 to 15 miles. They greet their providers with whines and yips of glee and with

much licking around their mouths. Growth is very rapid. Within two months their large heads and feet indicate the size to which they will grow. About this time the den is abandoned, and the pups are moved to a well-drained site near water and cover. They remain in this type of habitat for the rest of the summer with a baby-sitter from the pack watching over them each day while the others hunt in the surrounding area. Here they learn to run, climb, jump, play and howl in most adult patterns. Tooth development is accompanied by intensive chewing on everything possible, even strip-

ping small trees as if they were practicing on the hind leg of an elk. Predatory habits are developed as the older members teach them how to dig out mice and catch rabbits and other small prey.

They begin to resemble adults at six or seven months and follow the pack consisting of possibly six to eight adults. The dominant male insists that they follow his leadership and master his signals of communication. The height of his tail indicates he is the unquestioned boss. His expressive facial staring is used for social control. He growls when displeased, barks when alarmed

Within a year the pup below will grow into a long-legged, rangy red wolf like the caged adult on the opposite page. Captured in Chambers County, the adult has since been shipped to the Point Defiance Zoo in Tacoma, Washington, to participate in their captive breeding program. In the marshlands along the Texas coast, red wolves have been tagged with radio transmitters to assist biologists with distribution and population surveys.



Perry Shankle Jr.

and howls to assemble the wandering pack. When he stops with head in the air and tail on point, game is ahead.

The young learn to assemble in a ritualized ceremony around the leader, licking his mouth and showing submission to him. Then, in unison, they rush the prey with him. They give up quickly when they fall behind, but give chase if they anticipate being able to catch the victim. The young wolves soon develop stamina and learn to travel at a trot for hours. They generally are able to catch the very young, old or diseased. Each wolf eats from

four to 10 pounds a meal — but he can gorge up to 20 pounds if he has gone without food for a week or two. Normally they eat all of the wild prey killed, but only partially consume domestic stock.

Wolf population den sites are determined by the year-round availability of large prey species. The gray wolf in Texas evolved over a period of thousands of years with the buffalo, antelope and deer. Most likely they were the main predator that helped keep these populations in balance. At that point in time there was probably a pack of 10 to 20 gray wolves for every 100,000 to

200,000 square miles in Texas. These packs had a well-disciplined pack order and scent-marked home range. They kept in constant communication by howling and had definite respect for the other packs' territories.

They were in competition with the black bear, mountain lion, bobcat, coyote and eagle, but apparently these neighbors did not significantly alter their habits. The wolves were infested with both internal and external parasites to varying degrees at diverse times, but those pups that survived the first week generally lived seven to 10 years unless killed in the attack upon a large prey species. However, their serious depredation upon domestic livestock sealed their fate. They were not able to withstand the white man's conquest of Texas and coexist in modern civilization.

Through the years their mournful howls, so prominent and electrifying on the frontier, have faded toward the land of the northern lights and seldom are heard in the Lone Star State any more. The hair-raising splendor of nature's grand opera — a pack of gray wolves in full cry — has been lost forever to Texans.

Bill Reaves



Perry Shankle Jr.

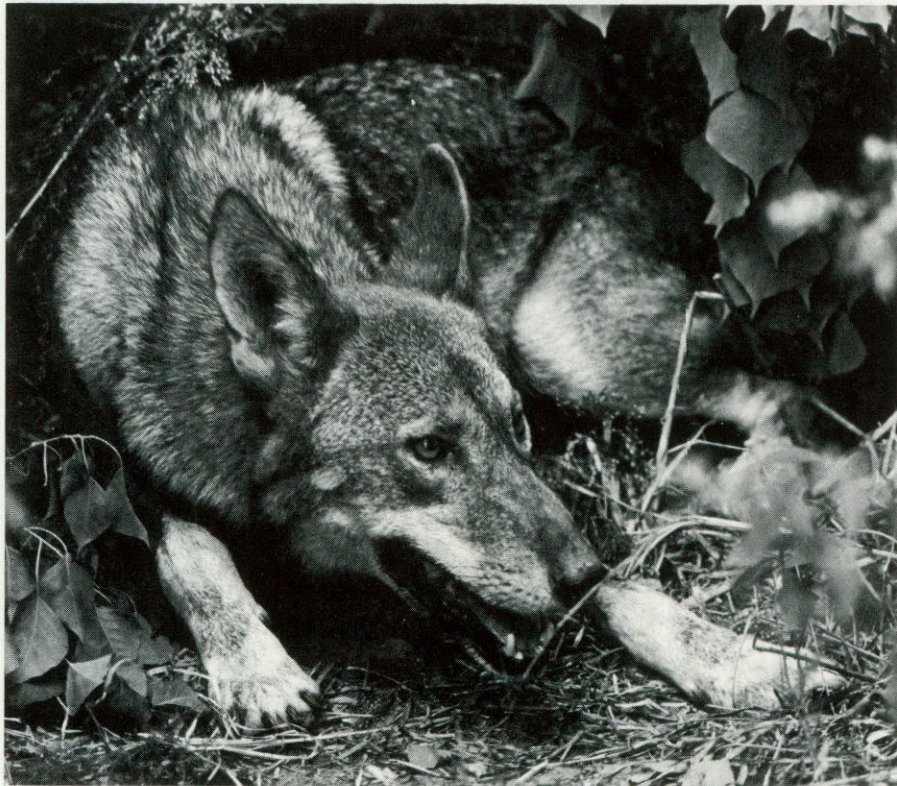
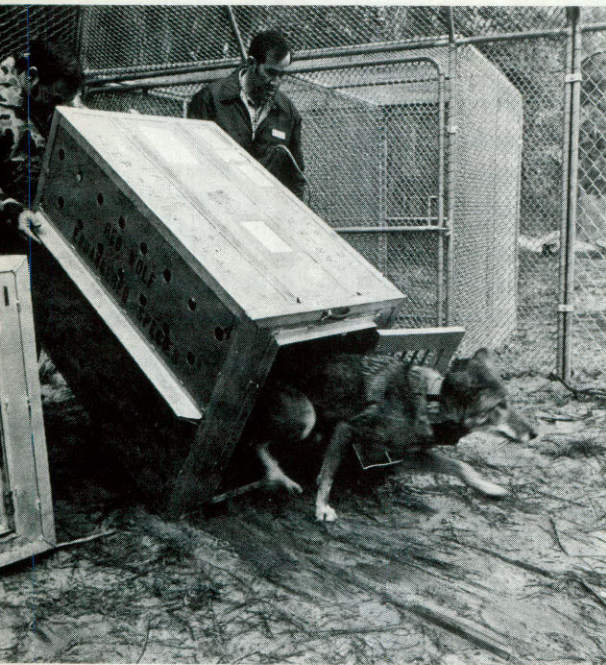


THE RED WOLF

The Indians who had the privilege of hearing the howls of the gray and red wolves and those of the coyote, *Canis latrans*, possibly characterized the red wolf's voice as intermediate between the two. This lanky predator shared his range with the coyote and overlapped on the western edge with the gray wolf.

The status of the red wolf has been the subject of taxonomic debate for almost 200 years. John James Audubon, who had more experience with wild canids than any other naturalist in the area inhabited by the red wolf, considered animals revealing the so-called red and black color phases to be separate varieties of *Canis lupus* (1851). Vernon Bailey in his early biological survey of Texas (1905) listed the animal as *Canis rufus*. It was later changed to *Canis niger*, but presently has been restored to *Canis*

Photographs courtesy of South Carolina Wildlife and Marine Resources Department



rufus by the International Commission on Zoological Nomenclature.

The red wolf, formally occurring from Central Texas eastward, is making a last-ditch stand in Liberty, Chambers and Jefferson Counties in extreme southeast Texas. This small area of approximately 1,260,000 acres on the coastal prairie, including marshes, is for the most part privately owned. About 90,000 acres are forested, somewhat similar to the wolf's former historic range, while the rest consists of coastal prairie grass and farmland.

The pure, rangy, long-legged red wolf is smaller than the gray or timber wolf, but definitely larger than the pure coyote. The general profile and more massive head, broader muzzle and wide nose pad distinguish its wolflike appearance from the more pointed foxlike head of the coyote. The dull, yellowish brown coloration resembles that of

the coyote, but the wolf has a much lighter cinnamon color around the muzzle and the eyes. Its howl is somewhat coarser and of longer duration than that of the high-pitched tone of the coyote. It makes a larger track and takes a longer stride than the coyote. However as a result of hybridization, there are a large number of animals that vary in appearance between coyote and wolf. Therefore, field personnel responsible for the preservation of this species are faced with the task of using the most precise means and qualified techniques to identify individuals.

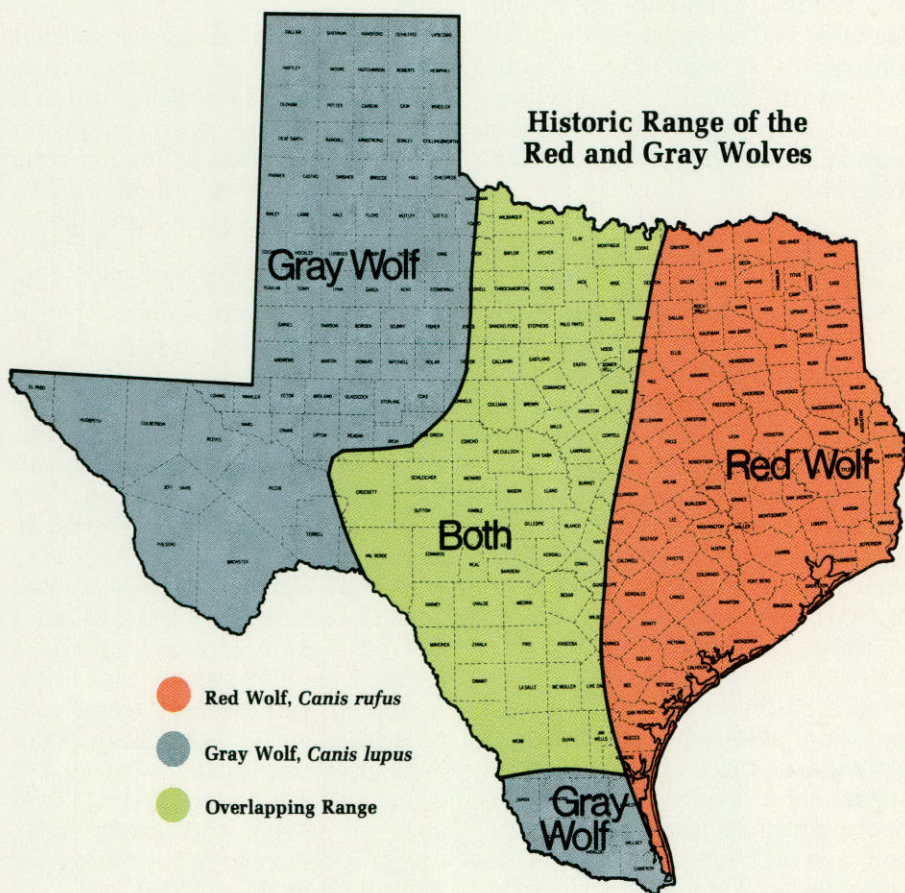
Reproductive habits of red wolves seem to follow a similar pattern to those of the gray or timber wolf; however, the females whelp fewer pups per litter. Both parents participate in rearing the young, and yearlings from the last mating are often seen in the vicinity of the

den as nonparticipants. Yet the pack does not play as prominent a role in the early life of the offspring as it does in gray wolves.

Consequently, one concludes the animals in the declining population of red wolves are less sociable than gray wolves, but more so than coyotes. Small packs of three to four are seen traveling together, but since their present restricted range offers only small prey species, such as rats, nutria, muskrats and swamp and cottontail rabbits, it is unnecessary for them to hunt in packs.

At one time, they preyed heavily upon free-ranging hogs in East Texas. More demands for government control were prompted from this loss than from cattlemen, who were in general disagreement as to the extent of red wolf predation upon their livestock. Furthermore, landowners in areas where the range of both species of wolves

Historic Range of the Red and Gray Wolves



overlapped considered the red wolf to be much less destructive to domestic animals than the larger gray wolf. Thus, the red wolf did not receive the relentless extermination efforts its larger relative did.

What, then, has caused its decline and near extinction? The primary factor seems to be its inability to adapt to the loss of prime habitat to modern agriculture and commercial land use. Secondly, hybridization with coyotes has disrupted the red wolf's inherited characteristics. If Dr. Howard McCarley, Professor of Biology at Austin College, Sherman, Texas, had not alerted the scientific community of the dangerous status of the red wolf in his study, "The Taxonomic Status of Wild Canis (Canidae) in the Southcentral United States" (1962), the unique animal might have been doomed.

Fortunately, since this alert

much has been done. The U.S. Fish and Wildlife Service, in cooperation with the Texas Parks and Wildlife Department and the Louisiana Wildlife and Fisheries Commission, has established a red wolf recovery program to try to save the wolf from extinction. Involved in the project are a professional office and field staff at Beaumont, Texas; a captive breeding program at the Point Defiance Zoo in Tacoma, Washington; and a recovery team composed of representatives from the three government wildlife agencies, as well as technical advisors.

The team is capturing wolflike canids from the southern portions of Liberty, Chambers and Jefferson Counties, identifying them and subjecting them to intensive studies. Exceptional red wolves are placed in the captive breeding program at the Point Defiance Zoo in Tacoma, Washington, in hopes that the

To determine if red wolves can be transplanted to other areas to propagate, a pair was shipped to Bulls Island off the South Carolina coast. This site was chosen because the island has no canine population and is accessible only by boat. The wolves, equipped with radio collars, were kept in a holding pen on the island for six weeks and then released.

offspring can be adapted for reintroduction to coyote-free areas within their historic range. Wolves not used for captive breeding are returned to the wild, marked for identification and often collared with radio telemetry devices to learn more about their movement and behavior. When possible, they are released at their point of capture to ensure continued survival. Otherwise, an isolated area is sought where they will be safe and cause no depredation. The team never releases a wolf on private land without the landowner's knowledge and cooperation.

Last December an experimental program for reestablishing the red wolf started with the shipment of a male and female animal from the Point Defiance Zoo to Bulls Island off South Carolina. The island had no resident canine population and hopefully the two animals will establish a family on the island which is a part of the Cape Romain National Wildlife Refuge.

Both individual and collective cooperation with this recovery team has shown reassuringly that a great many people care about the wild animals of Texas, and the struggling red wolf in particular. It is sincerely hoped that their efforts will ensure that the silent tracks of *Canis rufus* will never completely disappear, and his electrifying howl may forever remind man to keep other unique species from the brink of no return. **

by Joan Pearsall

Catfish and carp fishermen who prefer do-it-yourself baits often develop their own prize recipes. It is interesting to compare them, and see what is the reason for the other fellow's full stringers. Here is a collection of tested concoctions, guaranteed to get results — other than a messed-up kitchen and rebellious wife.

The main requirements for catfish and carp baits are that they should be smelly, and tough or thick enough to stay on the hook. These recipes all fill the bill in these respects. Picking the right time and place is, of course, also important for successful fishing. A likely area for catfish would be one with rocks and stumps offering natural shelter. Choose a time when the fish will naturally be comfortable in feeding. They are not likely to respond during extreme heat or cold.

CHEESE RECIPE FOR CHANNEL CATFISH — Use Roquefort or blue cheese. Allow to age; make a flour and water paste; add a tablespoon of powdered sugar per pound of cheese. Mix sugar with flour and water; grind or mash cheese until soft; mix all ingredients together to consistency of a very heavy paste. The bait must be dry enough to work around the hook. Treble hooks will hold well. — (W.R. Long, Dublin)

FROZEN BAITS — One of the best baits for catfish is the shad. Since it is extremely difficult to keep this fish alive, most bait dealers don't handle shad. And frozen shad is no good unless it has been properly processed.

It's usually up to the fisherman to get his own bait. Seining your own shad is fairly easy and, if you will go to a little trouble, you can put up enough bait at one time to last for a year. The trick is in the processing. Get a supply of pint ice cream cartons — there are 200 in a case. After seining the shad, put as many as you can into a carton, then fill the carton with water and put on the lid. You don't have to gut the shad or clean them in any way unless you want the gizzards separate. Shad guts make good bait also, but cleaning

shad is really a lot of unnecessary trouble. Place the full cartons in a deep freeze until you use the bait. (Incidentally, you can prepare grasshoppers and crickets the same way.)

When you go fishing just take out as many cartons as you need. When thawed, the shad will be firm and stay on the hook. If you don't put water in the carton before freezing, the shad will be mushy when thawed and no good for bait. — (Conrad Fath)

DOUGHBAIT FOR CATFISH — Use a prepared bread dough, biscuit dough or pie shell dough for the base of this recipe. Grind limburger cheese, about one pound of cheese per pound of dough. Grind one can of sardines packed in oil. Mix all ingredients together, adding flour to thicken, if necessary. — (W. R. Long, Dublin)

MINNOW STINK BAITS — Permit mashed minnows to decay in a buried glass container, usually a fruit jar. A small sponge on a hook, saturated with this bait, works well to attract catfish, especially channels. Best results can be expected in slow-moving water. To this bait may be added: cottonseed meal, sweet anise, cornmeal or flour. — (Frank Etheredge, Waco)

Use one pint jar minnows, shad or small fishes. Carp or rough fish may be used if desired. Allow the minnows to dry, cover with a liberal layer of flour and add a few drops of oil of anise. Mix well and grind twice through the fine plate of your food chopper. Add water if the mixture becomes dry. Form the bait into small balls that may be molded around the hook. (W.R. Long, Dublin)

The stink baiters I know use certain basic things and then throw in about anything else they can find. The basic ingredients usually are dead minnows, old cheese (the smellier the better), a can of sardines complete with fish oil in the can, spoiled or rotten fish of any kind, crackers, canned dog food, cod liver oil, yeast and a little water.

Put this mixture in a five-gallon glass jug with a good stopper on it, then stick a small copper tube about four feet long through the stopper.

Try Your Hand at Homemade Baits



Take the jug out in the yard and bury it. When you bury it, be sure to let the copper tube stick above the ground about six inches so that the gases can escape while the mixture is fermenting. If you don't, it is liable to blow up all over the yard. (If this happens, there's only one thing left to do — MOVE.) After about four months, dig it up and pour the contents in small bottles with good sealed stoppers on them.

Now all you need is a sponge, and you are ready to fish. Cut a sponge up in squares about one inch thick and impale one of these squares on your hook. Dip the sponge in the bottle of stink bait, getting it well saturated. (Try not to get any on your hands.) Drop the sponge in the water, then watch out because this bait will really take catfish. — (Conrad Fath)

CARP BAIT — Mix two cups of cornmeal (preferably white), one cup flour and a tablespoon of salt. Pour in enough boiling water to make a stiff mixture and roll into balls about one-half inch in diameter. These dough balls should be the size of the bait desired. Drop in boiling water and let stay until they are partially cooked. When properly done, the dough will stick on fish hooks for long periods of time. For best sustained yield, throw any bait left over into the water in your favorite fishing spot. This will aid in shortening the time between bites on your next trip. For variation, add a dab of cottonseed meal to the above recipe, about two tablespoons. A less amount of blackstrap molasses is another good additive. — (Frank Etheredge, Waco)

Mix one cup white cornmeal and ½ cup flour with a little water to make a paste. Knead and add one tablespoon vanilla extract and two tablespoons powdered sugar. Continue to mix and add flour until the dough becomes stiff and hard to work. A good idea is to put extra flour in a large pan, put in the dough, and gradually work in the extra flour needed. This type of bait is successful when carp are feeding, but requires the use of a small treble hook, preferably the type with the small coil spring around the shank. The spring helps hold the dough on

the hook. — (W. R. Long, Dublin)

Mix well one cup flour, one cup yellow cornmeal, ½ cup oatmeal, ¼ cup grated cheese (canned cheese is best) and one teaspoon sugar while dry. Then add just enough cold water to make a thick, heavy dough. Knead well; if you have gotten the dough too thin, stir in flour until dough ceases to be sticky. Roll the dough into balls about the size of a chinaberry, and drop into boiling water in which an onion has been boiled until done and removed. Let the balls boil until they begin to float around; then remove and place on waxed paper to cool and dry; then place in a glass jar and set in a cool place. Do not wrap the bait or place in a container until it has become cold and dry. This bait will keep for several days, and may be refreshed by placing a slightly dampened cloth on top of the bait in the jar. — (C. A. Wheeler, Austin)

Stir together two heaping tablespoons of quick-cooking oats, one level tablespoon of sugar and one cup of cold water. Then add one cup yellow cornmeal. Place on a medium hot fire, stirring constantly for five to seven minutes, until the dough works up into a stiff ball. Remove the pan from the fire. Sift ½ cup more cornmeal into the cooked dough and work it well into the mixture. Place the resulting dry dough on a paper and thoroughly knead it. Before wrapping the dough in paper for a fishing trip, allow to cool; if not, the dough will sweat and soften. If too much sugar is added, the dough will be sticky. If not enough sugar, the dough will be rubbery. — (Art Williams, Des Moines, Iowa)

Thoroughly sift two cups flour, three cups white cornmeal and one cup sugar together into large mixing bowl. Beat two egg whites and one cup cold water in another bowl until you obtain a smooth mixture. Then add a small box of aniseed and stir. Add the damp and dry mixture together, and stir to even consistency. Add either more water or more flour and meal to get a mixture that is stiff. Flatten the dough to about 1½ inches thick, place it in a small cloth bag or flour sack and tie with string. Drop this into two quarts

boiling water, cook about three minutes on one side, turn and cook three more minutes. Lower the fire and simmer for 15 minutes. Remove from water, remove dough from sack, let cool, work dough thoroughly, roll into a ball and pinch off size needed for bait. — (W. R. Long, Dublin)

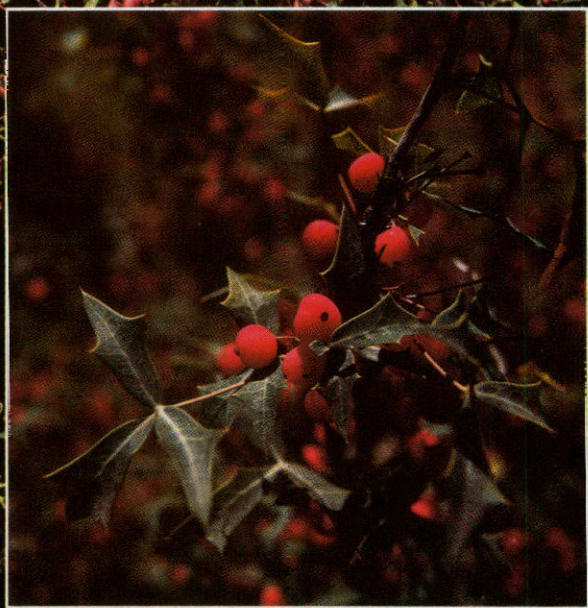
Mix one part cottonseed meal, two parts soaked corn (soak two or three days) and one part old stale white cornmeal. Then add one cup of sugar and one small box of aniseed (whole seed preferred). If fresh corn is available, use this in place of the soaked corn, using whole kernels after running a sharp knife through each row. — (Ed Marth, Victoria)

Pour two cups yellow cornmeal into a two-quart pot and add light syrup until it starts to run off the spoon. When thoroughly mixed, set to boil for 10 minutes or until it seems smooth, stirring continually. Take off stove, start to add white flour, stirring until it starts to form dough. Dump it on kneading board, work it into soft but firm dough, as the syrup tends to harden dough-balls when it hits cold water. — (John Majer, Portage, Pennsylvania)

Boil two ounces licorice root and ½ ounce aniseed in one quart water. Continue boiling the liquid solution until it is reduced to about one pint, then strain and stir in ½ cup sugar and enough flour to make a stiff rubbery dough. Mold the dough into small baits and drop these into boiling water. When they rise to the top, remove and store in a tight container.

Another long-lasting bait is prepared by first wadding cotton into small bait-sized balls. Melt ½ cup grated cheese in a shallow container and immediately drop in the wads of cotton. When the cotton wads have thoroughly absorbed the melted cheese, remove and place them on a piece of board or in a shallow pan to harden. As soon as the baits have hardened, store in a tight container.

Other good carp baits are: corn, hominy, small squares cut from a ripe tomato, a small wad of wet moss and small pieces of marshmallow. **





desert holly

by Gordon Whittington

Agarita is but one of many Texas plants that seemingly make little effort to be friendly. Each of its leathery, blue-green leaves is armed with needle-sharp spines to menace anyone careless or foolish enough to brush against it.

But agarita, also known as desert holly, is not all bad. It provides food and cover for many birds and game animals; its fruit is edible; and its roots can be utilized as a source of yellow dye. The plant also is a landscaping favorite in its native areas.

Known scientifically as *Berberis trifoliata*, agarita is an evergreen that can grow six feet tall. The most common Texas member of the large barberry family, *trifoliata* often forms a dense spiny thicket that can be a formidable adversary for outdoorsmen, livestock and even large game animals such as deer.

Each leaf consists of three tough, lance-shaped leaflets, with blue-green to gray-green topsides and undersides of a brighter green. Two to eight stiff teeth rim each leaflet. The branches themselves bear no thorns and are quite brittle.

In Texas, agarita ranges generally south and west of an arc from Abilene southeast to Waco and Bryan, and south to Bellville and Edna. The plant also is found in adjoining parts of Mexico, and as far west as Arizona.

It prefers neutral-to-alkaline soils, which is the primary reason it is so common in the Trans-Pecos region and on the Edwards Plateau. Like all xerophytic plants, it prefers a dry climate, but its eastward range seems to be limited more by the acidity of East Texas soils than by the wetter climate there. Lower temperatures to the north

keep agarita from spreading far into the Panhandle.

Throughout its native range, however, the shrub is unbelievably hardy. No herbicide presently in use will kill it. Although a number are capable of causing defoliation, loss of leaves proves to be only a temporary roadblock in the agarita's path.

Agarita also has few natural enemies. Diseases generally are little threat to its well-being. Insects attack it *en masse* only in late spring when the fruit is ripe, but even then present little danger to the plant itself.

The larvae of a type of moth, which form webs among the branches and eat a few of the young leaves each spring, pose a similarly minor threat. These caterpillars inhabit the shrub for only a few weeks before forming cocoons and entering their dormant stage.

As with all evergreens, agarita lacks a true growing season and, consequently, has no specific timetable for the replacement of its leaves. Nevertheless, the greatest number of new leaves emerges in late spring. At this time the plant is of its greatest value as food for game animals and livestock.

Its tender, green shoots are nutritious, with a protein content of about 20 percent. This high-protein boost to the diet is especially beneficial in areas where food is scarce or low in food value.

Except in situations of extreme forage shortage, the leaves are forsaken as food once they begin to toughen. However, the plant's usefulness to wildlife does not end, as many birds and small animals, including quail and rabbits, utilize it as cover.

Other plants also take advantage of the thorny guard it provides. Since it is not a dense shrub, sunlight readily filters through its branches to plants growing beneath. Therefore, overgrazed native grasses and weeds often find refuge there. Large animals rarely brave the shrub's sharp leaves in their quest for food, which helps to prevent the elimination of all desirable forage plants from a heavily used range.

Agarita blossoms in February or March, producing clusters of tiny, fra-

When the pea-sized agarita berries ripen in April and May, they provide food for birds which are able to reach the tart fruit. The plant is spread as the seeds pass through the digestive tract unharmed and fall to the ground in the bird's droppings. Agarita berries also are prized as a base for jelly and wine. If you are among those who flock to the countryside to gather the fruit, be sure to secure the landowner's permission.

Photographs by Martin T. Fulfer



Clusters of tiny, fragrant, yellow flowers, located at the base of the leaves, appear in February or March. Considered a good honey plant, agarita is pollinated by various nectar-seeking insects. When the time of blossoms and berries is past, the agarita is adorned only with its leathery, blue-green leaves, armed with needle-sharp spines. Their appearance explains why agarita also is known as the desert holly.

grant, light-yellow flowers at the base of its leaves.

Regarded as a good honey plant, it has the unusual pollination mechanism common to all barberries. Each flower has six stamens, which are very sensitive to the touch. When a bee or other nectar-seeking insect enters the flower and touches these stamens, they spring out and scatter pollen on the intruder's head. This pollen is then transferred to the pistil of the next flower visited by the insect, completing the male-to-female fertilization process.

The result of a successful fertilization is the formation of a light-green berry. In a couple of months the berry reaches pea size, and ripens to a dark red. Birds love the ripe fruit, and during April and May congregated around agarita thickets. Again, the spiny leaves force larger animals to keep their distance, while birds encounter

less difficulty in reaching the tart fruit.

Birds are, in fact, one of the primary means by which agarita spreads. The tiny seeds pass through the digestive tract unharmed and back to the ground in the bird's droppings. Evidence of this is the concentration of desert holly along fencerows and under tree branches where birds perch.

The berries also are prized by many Texans as a base for jelly and wine, and each year many people flock to the countryside in search of the colorful fruit. If you happen to be one of them, be sure to secure the landowner's permission before attempting to gather berries from private property.

Heavy gloves are a must for the berry collector, and long sleeves, the thicker the better, also are a good idea. Even with this added protection, care should be taken to avoid injury from the plant's spiny leaves.

Handpicking the fruit is a time-

consuming job, since they grow at the base of those sharp leaves. The quickest and easiest method to collect them is to spread an old bedsheet or tarpaulin on the ground beneath the plant (after checking for snakes), and then use an oak branch or something similar to jar the fruit from the branches. The ripe berries drop onto the sheet, along with some leaves, twigs, insects and green fruit.

Sim Oefinger



The entire collection then should be funneled into a spill-proof container and rinsed at the first opportunity. Running water into the container and allowing the debris to float away is perhaps the easiest way to clean them.

Details regarding the early use of agarita as a medicine and a dye are rather limited; however, it seems the Texas practice of boiling barberry wood and roots can be traced back to colonial America and, even earlier, to Europe. Vernon Quinn, in his 1940 book, *Shrubs in the Garden and Their Legends*, wrote: "From the wood or root-bark of the barberry the country people have for centuries been extracting a yellow dye. Commercial barberry dye is rendered brown by alkalis and used to color morocco leather."

Quinn also reported that barberry wood and roots were boiled in ale and other drinks to make a medicine for yellow jaundice. The barberry dye was

used also to turn hair blonde.

In Texas, pioneers used agarita-root potions as a medicine for toothache, dye for light-colored cloth and to give Easter eggs a bright yellow hue that could not be achieved in any other way, including commercial dyes. Some modern-day Texans also use agarita dye, particularly in the coloring of wool.

Using the root of the plant to dye Easter eggs is both simple and fun. Little equipment is needed, and knowing you are doing something the way people did it years ago adds to the personal enjoyment.

The roots can be found where roads are being built or widened and on rangeland which is being cleared with heavy equipment such as bulldozers. Roads usually are your best bets.

The main roots of two or three clumps of agarita are sufficient. Wash them thoroughly and use a knife to cut away the dark, outer bark. This will keep the dye solution cleaner. Wash the roots again and then use pruning shears or a hatchet to chop them into very small pieces. Three or four cups of these chips, cut as small as possible, will provide enough dye for several egg-coloring sessions.

Put the chips into a large saucepan, and add water to within about two inches of the top. Bring to a rapid boil and then lower the heat to maintain a low boil. Skim the foam off with a spoon, taking care not to get it on your clothing. Allow most of the water to boil away and skim off any more foam or debris that accumulates on top. When the liquid reaches a dark yellow-brown color, allow it to cool. It should then be strained and the wood chips put in a plastic bag. These chips can be used several times before all of their coloring is removed.

Eggs can be boiled right in the dye solution. The main thing to is to keep the egg fully submerged for the full 15 minutes needed to hard-boil it, adding a little water if necessary. A couple of tablespoons of vinegar added to the water will make the dye "set" better on the egg.

The egg will not come out perfectly uniform in color, but it should be bright yellow. If your first try produces a lightly colored egg, try a stronger dye and more vinegar. Trial and error was an integral part of life in early Texas.

Agarita is also useful as a lawn shrub. It makes a beautiful addition to the yard, especially when used along with other native plants. Transplanting often proves difficult and finding agarita at a nursery can be a chore.

Once it is established, however, it will thrive in any light condition, from deep shade to glaring sunlight. Used around windows, agarita is a living "Keep Out" sign to prowlers.

Whether cultivated or left on its native range, this plant is indeed much more valuable than one might at first think. People have benefited from it for at least 100 years, and other plants and animals for much longer. Like so many other things in the Texas outdoors, agarita can be enjoyed as much today as it was years ago.

AGARITA WINE

Crush five gallons of clean, ripe berries in a five-gallon stoneware crock. Add one cup of sugar and cover crock with two or three layers of cheesecloth. Place in cellar or anywhere temperature is uniform. Let stand for five or six days, then strain contents through cheesecloth. You should get about 1½ gallons of juice.

Add six pounds of sugar and dissolve. Pour into five-gallon distilled water bottle and fill to top with distilled water. Wrap bottle with foil to keep out light. Do not cover mouth of bottle.

Set bottle in a place of uniform temperature, where it can "boil over" from fermentation, and *keep it perfectly still*. Fermentation will begin in two or three days and will remove impurities.

Each day, add enough sugar solution to fill the bottle to the brim. The solution is made of one cup of sugar to two cups of distilled water. Continue adding sugar solution for two weeks, then cover mouth of bottle with several layers of cheesecloth. Secure with twine.

Wait two months, then cork the bottle and cover cork with melted paraffin. Siphon wine into smaller bottles as needed, taking great care not to move the main "supply" bottle at any time.

AGARITA JELLY

Place 3½ quarts of ripe berries in a large kettle, add enough water to cover and cook until fruit begins to burst. Place berries in a jelly bag and use slight pressure to remove juice.

Combine 6½ cups of juice (add a little water if you do not get this much) with one package of Sure-Jell. Pour this mixture into a kettle large enough to allow strong boiling.

Bring to a hard boil, and add seven cups of sugar. Bring to a second hard boil, maintain it for one minute and remove mixture from heat. Pour into jars, seal and allow to cool.

This recipe yields about four pints of jelly. **

Another Dimension to Fishing

by Tommy Henderson, Fisheries Technician



Photographs by C. J. Simmons

Ultralight fishing equipment has been around for a long time, but only recently has it gained widespread popularity in Texas. It's a way to catch more fish and give them a sporting chance while having a super time for a relatively inexpensive price tag.

The word "ultralight," when broken down, explains this method of fishing — ultra (extreme) and light (having little weight). Therefore, ultralight fishing is done with equipment that is very light and small. This equipment is now available at most sporting goods stores. The rod is a very light-action type, usually five to 5½ feet long. Most ultralight reels are miniature, open-face spinning reels available in left- or right-handed models, but closed-face reels also are available.

Monofilament line is a critical factor, and to eliminate problems, don't use cheap line. Any good-quality monofilament line will do. Although ultralight line is considered to be in the one- to four-pound range, the most popular sizes in Texas are four- to eight-pound test. Four-pound test, although very sporting, can be very expensive if it causes you to lose three or four spinner baits in one outing. Six- to eight-pound test

enables you to retrieve many lures that would be lost using four-pound test or smaller.

Any lures about one-eighth ounce or smaller are great for the ultralight tackle, but spinners are recommended as the best overall bait for most fishermen. Ultralight spinners come in a great variety of styles and colors. Some favorites are the Mepps, Rooster Tail and Panther Martin. Color is not really critical, as most will catch fish, but some popular colors are black, yellow, brown and white. One of the most productive is the Mepps #1 spinner with a brown bucktail and a gold spinner blade. This lure pays off time and time again. Other popular lures for ultralight fishing are the artificial worm, minnow imitations and small topwater lures.

Where should ultralight equipment be used? Try it anywhere — farm ponds, lakes, rivers and streams. You should catch more fish and a greater variety of ultralight tackle than with conventional fishing equipment.

Ultralight fishing is great when floating streams and rivers. The short rod enables you to maneuver your lure into nooks and crannies that can't be reached with



Ultralight equipment tests the fisherman's skill to play and land his catch while giving the fish a sporting chance. Both fish and lures may be lost with regularity until this skill is acquired. A comparison of ultralight (top two), conventional freshwater (middle two) and saltwater (bottom two) reels is shown in the photo to the left.

ter luck on ultralight gear than on conventional equipment.

If you have the opportunity to visit the trout fishery below Canyon or Possum Kingdom Reservoirs, you will find that ultralight lends itself to this type of fishing. Small spinners or whole kernel corn are the most productive baits. Trout can be caught more successfully on ultralight than any other equipment, except possibly the fly rod with which many Texas fishermen are not experienced. The advantage of ultralight for trout fishing is that trout prefer small lures which can be presented to them more effectively with this type of rig.

Recently bass fishermen have taken an interest in ultralight equipment. They have found it to be very productive, sometimes more so than the "hawg sticks" they generally use. The old problem of casting small lures is solved. Bass fishermen have found that bass, at times, will not hit a six-inch plastic worm, but will take a four-inch worm regularly. Ultralight is ideal for fishing these four-inch worms. The smaller worms are easier to cast and easier to "feel" with the ultralight gear.

For years the trend in bass fishing has been towards heavier rods, reels and lines, especially in plastic worm fishing which does have its place when fishing deep in structure for lunker bass. However, many fishermen enjoy catching more fish of average size and giving them the sporting chance ultralight offers. This is not to say that large fish aren't caught on ultralight. They are, but the fish has a greater chance of achieving freedom than it has on heavier equipment.

Beginning fishermen and children usually find the ultralight more their size, and they have less difficulty casting with it than they usually experience with the heavier rigs.

Years ago fishing was a relatively simple sport. If a man walked into a sporting goods store to buy a rod and reel, he generally had only one choice — a level-wind baitcasting reel, a steel rod and braided fishing line. Today, the fishing equipment available to a prospective buyer is astonishing. If all these changes in fishing gear have you perplexed, and you simply want a good, all-around fishing rig for freshwater, give ultralight a try. It may be just what you need. **

a long, bulky rod. Your partner's ears aren't nearly as vulnerable as they were with the longer rods, either. Also, many fish that would be missed with the larger artificial lures are caught on ultralight. For example, sunfish take the small spinner baits whereas they generally shy away from larger artificial lures.

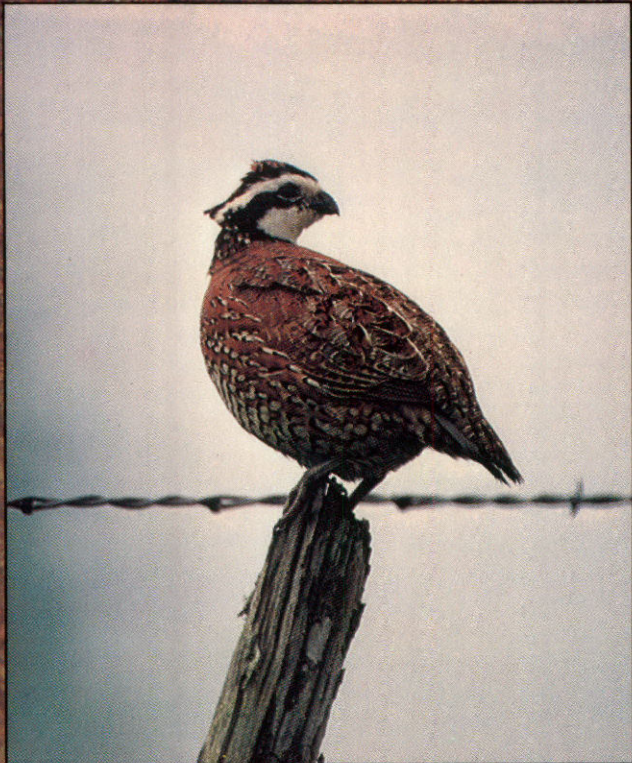
Many farm ponds have trees and bushes around the banks making casting difficult with conventional equipment. However, with the short, flexible, ultralight rod you can cast between trees and bushes easily. Sunfish and farm-pond bass respond to the small lures.

Don't leave your ultralight rig at home when you fish the big reservoirs. Whether you bank fish or use a boat, ultralight is excellent. It is especially ideal for deep, clear lakes because the smaller line is more difficult for the fish to detect than larger lines generally used on conventional equipment.

Ultralight also is great for live bait fishermen using earthworms and minnows. In fact, in some instances ultralight is superior to other kinds of equipment. The light line and sensitive rod enable the fisherman to "feel" the fish bite. Crappie fishermen often have bet-

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man, the bobwhite will continue to thrive.

by Horace Gore,
Wildlife Biologist

Bobwhite! The word alone is enough to liven the spirits of quail hunters and wildlife enthusiasts alike.

Texans boast of having the best quail hunting to be offered anywhere, and there are probably more quail hunters per capita in north-central Texas than in any comparable area west of the Mississippi. Surveys by the Texas Parks and Wildlife Department indicate an annual supply of bobwhites which far surpasses most areas of the species' range in the United States. Yes, quail hunting is a big sport in Texas.

But hunting does not take all of the values the bobwhite has to offer. Its cheery whistle welcomes the first days of spring, and invites one and all to pause and reflect on the beauty and serenity of nature's wildlife.

The nesting pair of birds seen scurrying across the gravel road, or the covey that flushes in a wild display of seeming panic that scares the daylights out of us, are sights and sounds seen and heard much too seldom by the rank and file of today's citizens. But to those who are fortunate enough to be a part of the outdoor scene, they are proof of man and nature living together in harmony. The bobwhite helps in its small way by eating harmful insects that are constant pests to farmers and ranchers. We in turn use the bobwhite for recreation and protect it from illegal hunting practices.

It is seemingly miraculous that the bobwhite so ably thrives in our time. It is subjected to all of the

Quail studies have shown that about 80 percent of the quail population, whether hunted or not, will fall to the perils of nature each year. However, the surviving birds will replenish this loss if quality habitat is provided. Quail hunting provides recreation and harvests this otherwise wasted resource for food.



John Jefferson



Man and dog team up for the sport of bobwhite hunting in Texas. This combination provides a rewarding recreational experience and helps to ensure the retrieval of harvested quail. With proper land management and sound hunting methods, this sport can be passed on to future generations.

technical whims of our agricultural genius. Its livelihood is in constant fight with the forces of nature. It must also outwit the ever-present and ever-hungry predator. But miracle or not, bobwhites manage to do quite well if food and cover are in ample supply.

Why does Texas support such a large population of bobwhites? The answer is simple. The basic needs of bobwhites are provided by the land. Creek bottoms, rough draws, shaded fence rows and the like provide places to live. Grapevines, briars, bluebrush, cactus and other low-level plants provide protection and shelter. Weeds and grasses such as broomweed, ragweed, sunflower, Johnson grass, doveweed and bun-

dleflower, to name a few, provide both food and cover.

Rangelands and farmlands can produce livestock, crops and quail if the land is managed properly. But, there are two sides to every coin, and the reverse of good land management is detrimental to quail as well as to other forms of wildlife.

Looking again at the credit side of the ledger, more surface water is available today than ever before to help bobwhites through periods of drought and to produce that ever-present stand of food-producing weeds below the tank dam.

The bobwhite's welfare is not taken lightly by game officials or sportsmen, either. Biologists have studied the many facets of the bobwhite's needs for survival and production, and have discounted many old wives' tales and traditional beliefs which often hamper an adequate harvest of the birds. Through quail studies, biologists have found that about 80 of every 100 quail, whether hunted or not, will fall to the perils of nature each

year. However, this loss is replenished by the surviving birds according to the quality of quail habitat for the coming year. The 80 percent annual turnover of quail should be harvested for food and recreation, since they will be lost anyway.

As the annual supply of food and cover for quail varies, so does the bobwhite's ability to replenish the population. During periods of prolonged drought, bobwhites may seemingly disappear from the land as the result of poor production and survival. The occasional "bumper crop" of bobs is simply a reaction to favorable habitat and weather conditions.

In Texas, man and dog team up for the sport of bobwhite hunting — a combination that guarantees rewarding experiences. Quail hunters will see to it that the sport is passed on to future generations. Through the practice of proper land management and sound hunting methods, we can all help to ensure a bright future for bobwhites. **

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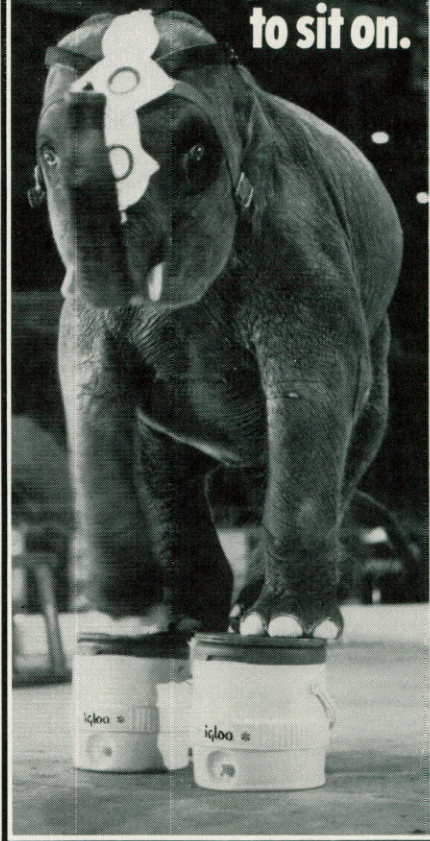
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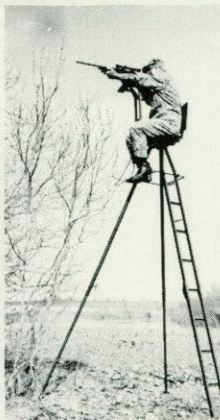


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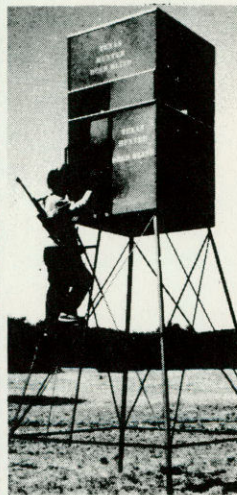
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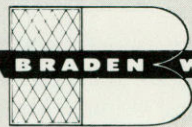


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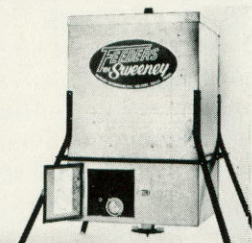
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Mac 'n Me

by Ernest G. Simmons,
Coastal Fisheries Biologist

Once in the bygone days beyond recall — well, almost beyond recall — there was a river and some boys and all was right with the world. Wars were just part of history, poverty belonged to everybody and the call heard most often around my house was, “Mac 'n me are going fishing.”

This year I revisited that river. Gone are the trails that meandered below the bluffs to small boats tied loosely to willow trees. Weeds and poison oak long ago obliterated the trails, and the occasional skiff is now factory made and securely locked with a big chain. Gone are the sandbars where campfires gleamed and coffee boiled in an old tin bucket. Willow trees, some of which started as green trotline stakes, now cover these campsites.

Everything is smaller. The vast distance between my home and the river bridge, which seemingly took hours to cover in a small boat propelled with a paddle, is really only a short run with an outboard motor. The mighty rock cliff that seemed to soar high into the sky is just a short bluff of crumbling shale, not very high at

all. Even the houses have, by the magical processes of time, been reduced from substantial, safe havens to small weatherbeaten buildings somewhat in need of paint. Everything has shrunk; everything, that is, but the waistlines of my former fishing mates, and my memories.

It was wonderful to grow up on a river even if that river isn't as big as I remember it. Maybe it was muddy then, but it was good clean mud. Maybe it did flood houses sometimes, but I don't remember that it ever poisoned fish. It was a good river.

I strongly suspect that it wasn't really as full of fish as I thought. Some big ones were caught, but there were many, many water hauls. One thing I do know; it was full of people fishing, yet there was plenty of quiet solitude. Old people like Jenno Hansen, who seemed ageless to me and who in his seventies was still going strong, fished the river. Adults spent hours on it, and kids fished by themselves, in groups and occasionally with an adult.

I remember many of the kids. Some came, fished and then moved, or got interested in football, basketball, girls or other sports. Mac, however, was true to the river. He and I fished in good weather and bad,

and we succeeded in catching our share of channel cat, yellow cat and gaspergou. We used to envy Tom Sawyer and wish we had lived in his time, not realizing we were having our own adventures. Like the time we decided to fill a can with hot coals and put it in the boat to keep our hands warm in the winter. It did keep us warm, but it burned a hole in the bottom of the boat exactly the size of the five-gallon lard can holding the coals. Needless to say, we didn't try that again.

We were always fishing in winter, but I don't remember catching anything but colds. One early March day just before a norther (we never read weather reports), we set out our lines just below Seth Jones' house and prepared to stay the night. I do believe it froze, but we didn't have sense enough to go home. We ran the lines once and then hunted firewood. By midnight, there wasn't a dead limb within hauling distance and the fire was mighty low. It was then that we remembered seeing the pigpen up on the bluff; a pen with no pigs, but built of nice, dry, hot-burning cedar slabs. Well, we did manage to stay warm the rest of the night, probably from the exertion of climbing the bluff to gather that pigpen wood.

Mac was a sleepwalker and a sleeptalker, and it's a wonder he didn't kill us both. One night we camped on some cement slabs at the railroad bridge below town. The fish bit good until about 1:00 a.m. and then quit, so we went to sleep. I kept dreaming I was in an avalanche and people were yelling at me to run. When I woke up, I discovered there really was an avalanche with real rocks. Mac was at the top of the bluff, sound asleep, yelling, "Watch out, here they come," and hurling boulders as big as his head down toward our camp. I yelled right back, although it was probably more a scream, and finally he woke up and came back to camp. For some reason I couldn't sleep any more that night.

I wonder if that railroad bridge is still as spooky as it was then. Some sounds I still can't explain. Yes, I know that iron rails contracting at night creak, pop and moan, and that timbers under stress make strange noises. But how about those buckets falling and splashing into the river. There wasn't anybody there; I know, because I looked. Is it still spooky, or is it now too civilized?

When I mentioned camps, I may have given the wrong impression. To most people, a camp means tents and cots and barbeque pits. To us, a camp was any place to build a fire with some semblance of flat ground. It was good to have wood nearby. As for cooking, we didn't do much. Didn't have anything to cook except coffee, which we boiled in a can using a green willow stick to keep it from boiling over. Our usual equipment was an old quilt apiece, bummed from our mothers; a little jar of coffee; and 15 cents worth of summer sausage. Occasionally we did bake a fish or a chicken, and sometimes we "found" potatoes or corn. Once we picked a dozen roasting ears from the last row of a field near the river. To make sure they were cooked enough, we boiled them three hours. For some reason they were a little tough.

Our boats weren't much to brag about. We had no motors, of course, and we sneered at the infrequent ones we saw, claiming they were messing up the river. Who knows, we might have been right. Our first boat came floating down the Colorado River on one of the sudden rises that characterized that stream after heavy rains. Rightly or wrongly, we held a firm belief that what came down the river was subject to salvage, and salvage it we did, swimming into the brown flood and hauling it in. We dipped it out, tied it to a tree and solemnly swore that no one could take it from us. Fortunately, no one tried, and from that time on the boat belonged to Mac 'n me.

It was custom built or, as we said then, "homemade." It was 14 feet long and three feet across the middle seat, tapering to 18 inches at each end. I suppose it could be considered sturdy since four strong men were needed to lift it. When it started to leak we simply dried it out and poured in some more tar. Without hesitation we would get in that thing and paddle through rapids, over rocks and to any part of the river we wanted to go. If my kids did that now, I'd have nervous convulsions. Our parents were more understanding. Mac's mother even rode in the boat. Now there's nothing unusual about a mother riding in a boat, but her method of getting in is not seen every day. She was a rather large person weighing nearly 300 pounds and could not step down the six inches from our small dock. She was determined, however, and solved the problem by lying down and rolling off the dock into the boat. Not every mother would do that.

Our fishing wasn't expensive. Since a roll of hard-twist cotton line only cost 10 cents and 15 cents bought three dozen English Limerick hooks, a complete trotline or long dropline could be bought for a quarter. Sinkers were free and consisted of rocks, bricks or hunks of scrap iron. Somehow or other we got bells — little brass bells, big iron bells, wide bells, narrow bells — each with a different tone. If we couldn't buy one, we made a substitute out of an old tin can to tie on the line. What! You never heard of using bells? Well how else could you tell when you had a fish on your line?

Bells played an important part in our fishing. To this day, whenever I hear one at night, I feel a surge of excitement. We baited our lines about dark (to avoid turtles), then went up on the first high land to build our fire. On went the coffee bucket, and we settled back to wait for a bell to ring. If one rang more than once, we went out and took off the fish. If nothing rang in an hour or so, we rebaited and griped about turtles, gars, eels and "screw-tails." The latter was a small catfish which, if caught, twisted up the staging and got away.

Just as each bell had a different tone, so each type fish had a different ring. A gaspergou rang quick and hard for a little while, then quit. A channel cat rang hard for a while, then rang hard at intervals for a long time. A medium-sized yellow cat rang somewhat like a channel cat, but slower. A big yellow cat, however,

might barely ring since it surged instead of jerking. A gar rang, then splashed a while before it drowned.

We left lines, bells and all, out day and night for a week or two. We were always sure when we left that they would be there when we returned, but that is something else gone forever.

For bait we used minnows, perch, grasshoppers, hellgrammites, crayfish, freshwater shrimp, small suckers and other fish. We had never heard of blood bait, soap or factory-made gunk. Still, we learned at a very early age that channel cat liked mussels; that dead minnows dried in the sun were better than fresh dead minnows; and that a yellow cat was a sucker for a sucker.

People who have never been grasshopper hunting at night have missed some excitement and an easy way to get bait. Starting in early June each year, when the minnows got scarce and the spring yellow cat run was about over, we started seeking grasshoppers because we knew the channel cats were just waiting for us to bait our lines. Our method was simple. One boy held a light, usually a lantern or a carbide lamp, while the other picked grasshoppers off weeds. These were stuffed into a quart jar with a hole cut in the center of the lid. There are other collecting methods, but that was the one we used. On dark nights the insects were easily blinded and could be picked like grapes. On moonlight nights the chore was more difficult. Adventure was added to this activity by the fact that yellow jacket nests often were found in the same weeds as the grasshoppers. Sometimes these little stingers did not make nests, but simply clustered around the stem of a weed. Since we normally clutched our prey firmly, we occasionally seized something we didn't really want. An occasional snake also added spice to our hunt.

Hellgrammites were easy to obtain in season and made excellent baits. For those who don't know, hellgrammites, the larvae of the dobsonfly, are flat, grayish-brown or blackish creatures found under rocks. Size ranges up to three inches, and each is equipped with numerous "legs" and a pair of powerful pinchers. We always said the creature had "chinese writing" on its head and collar.

We caught these strange insects at low water by turning over recently exposed rocks. Flat rocks were better. Our standard method when turning over a rock was to quickly grab the hellgrammite, then yell and try to shake it loose from our pinched fingers. A good-sized hellgrammite could draw blood. At higher water we could still turn over rocks in the shallows, but we often used a screen wire to help catch the creatures. By placing the screen against our legs and then turning over rocks in the swift water just upstream, the current washed small rocks, trash, snakes and even hellgrammites against the wire and held them there. The snakes were usually quickly released — together with the rocks, the trash, the hellgrammites and the wire.

An improved screen could be made by tacking the wire to a Y-shaped branch. This was easy to handle. We often worked in pairs, one holding the screen and the other turning over rocks in front of it. A seine could be used with three men, and a short-handled hoe would be a big help in turning over rocks.

Hellgrammites are tough and can be used in various ways. Some people wormed them on the hooks, but I usually hooked them through the middle or through the collar and they stayed alive for hours. Quite often a fish would strike at one, knock it up on the hook and get caught while the hellgrammite was still alive and kicking. I've caught as many as five fish on one hellgrammite.

We used minnows — redhorse and silversides — which we caught in seines and dip nets. Top-water minnows were no good; nothing would touch them. We also used sunfish or perch. Those from the river were excellent; those from creeks were all right; but, for some reason, river fish wouldn't bite on perch from stock ponds.

Our catch was kept in a fish box or in a tow sack as a rule. It wasn't safe to keep them on a stringer; big water snakes would eat them.

Early the next morning after a night on the river, we headed for town with our catch. If it wasn't much, we went down back alleys; if it was good, we went right down main street. What a thrill to walk down that sidewalk carrying a nice yellow catfish and followed by an admiring crowd. We sometimes got 20 cents a pound for a good one.

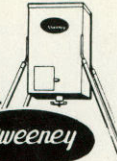
I've mentioned snakes. We had a bunch of them which we divided into two groups, "moccasins" and "cottonmouths." All would bite, but only the cottonmouths were poisonous. They were the dark ones. We were lucky that real moccasins were scarce, because we had enough trouble with the others. Many's the time I reached into a bait bucket and came out not with some minnows, but with a handful of diamond-backed water snake. That was exhilarating.

One night the fish bit so fast we had to seine bait four times. Minnows were thick in the first rapids below town so we went there. On the fourth trip, I kicked over a rock while seining and out came a big snake — mad as a wet snake. Well, maybe he was only scared, but he looked mad. That snake would swim upstream toward me and I would chunk rocks at him until he dropped back. He kept that up until suddenly my carbide light went out. Naturally, I had no matches and the flint hadn't worked in years. The only thing I could think to do was dump the carbide on him. For a long time I thought that saved my life; today I suspect the snake was glad to get away in the dark.

Others fishing on other rivers have their memories, and I'm sure kids today will have their memories, too, in spite of posted land and lack of free access. But I doubt if they can compare to those of ringing fish bells, boiling coffee and mist rising from the river at dawn — as known to people like Mac 'n me. **

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Illegal traps, baited with "commercial cheese," were used to catch this boatload of catfish from Mathis Lake. These catfish, ranging in size from three inches to four pounds, represent one night's work by three illegal fishermen, and led to their arrest. How can the catfish population of any lake withstand this kind of fishing pressure and still provide recreational enjoyment for legal fishermen?



Catfish Bandits

These thieves are stealing your fish.

by Dexter C. Harris,
Director of Law Enforcement Field Operations



Photograph from law enforcement files

Concerned Texans have long recognized the need to report illegal hunting activities to their local game wardens. They realize that by so doing, they are helping to protect the state's wildlife resources and ensure that future generations will have the opportunity to enjoy them. However, these individuals may not be aware that wardens also are faced with the growing problem of illegal commercial fishing.

Illegal fishermen are removing thousands of pounds of fish from our public streams and lakes with illegal nets and traps. They work mostly at night, but some shrewd operators are busy during the daylight hours as well. They also operate to good advantage in the winter months when our game wardens are busiest with hunting violations. These thieves are stealing from every legal fisherman in Texas and should be handed sure and swift punishment through large fines or, in some cases, even jail sentences.

While I was working in 1969 as a game warden on a northeast Texas lake, one of those concerned citizens called a game warden in my area and said he wanted to show the warden some catfish heads. The gentleman guided the warden down a lonely logging road near a large lake, and the sight he found so amazed the warden that he called me by radio. When I arrived on the scene, I could understand the man's concern. There must have been 2,000 pounds of catfish heads and small catfish three to five inches in length lying on the ground. The stench of the "commercial cheese" (by-product of commercially manufactured cheese) used by illegal fishermen as bait was so intense that it would close off your sinuses. At first I could not, or would not, believe the fish had come from public waters. I tried to convince myself that they came from a catfish farm, but what really nailed it down to an illegal fishing operation was a pile of worn-out, one-inch mesh, nylon fish traps lying near the fish remains.

A few months later, we received information from a reliable source that an illegal commercial fisherman in the area was responsible for the fish remains and was handling illegal fish on a large scale. After many long hours of hard work by six game wardens and one district supervisor, we finally located the man and some of his equipment.

On Saturday morning, June 29, 1970, we were ready to drop our own net. At 5:00 a.m. that morning, Game Warden Lawton Peacock and I concealed ourselves in a willow thicket along Lake Wright Patman at a good observation point and watched the area where the traps were located. At 9:15 a.m. we observed the suspect unloading his boat, accompanied by an unknown female. They left the launching area and traveled to a point of old rotten timber near the river channel. The suspect then dropped his net hook over the side and



Whenever someone is arrested for selling illegally caught fish, the wardens know there is a good chance that lakes in the vicinity contain nets and traps that must be removed. Lake Livingston, which is closed to netting, produced several hundred feet of gill and trammel nets (right) as a result of one of these searches. Illegal nets and traps (extreme right) were also removed from Lake Tawakoni following arrests.

picked up the first trap. He ran and rebaited the traps at the rate of two every five minutes. There was no doubt about his being a professional, as he seldom missed a trap with his net hook. He finished around noon, returned to the launching area and loaded his boat. At this point, Warden Peacock and I approached him and placed both him and his female accomplice under arrest. The man had in his possession 372 channel catfish (daily limit 25) that ranged in size from three inches to three pounds. Several partially filled bait

sacks were in the boat, along with a five-gallon bucket of commercial cheese. The man and his companion, later identified as his wife, were arraigned before local Justice of the Peace P.A. Demarce and charged with two counts of over-creel limit and 10 counts of illegal nets. The subjects pled guilty and were fined \$2,400, the largest fine ever assessed for this type of activity at the time.

This was the beginning of my attempt to slow down illegal fishing activities throughout the state. That one

Photograph from law enforcement files



case took more than a year to culminate in the apprehension of the lawbreaker because a game warden, as you know, cannot work full time on one individual or one type of violation. He has too many other responsibilities that consume his time. He must enforce more than 1,200 game, fish and water safety laws concurrently. In addition, he is a certified peace officer and issues citations for all types of violations he may encounter.

Since 1969, I have been involved in several illegal fishing apprehensions, all of which have required much hard work on everyone's part.

Last year we commenced surveillance of several known illegal fishermen throughout the state, and gathered a large amount of data on some of the larger illegal operations in Texas. As a result of this compiled information, several arrests were subsequently made and large fines levied.

Citizens can help detect these violators and aid our enforcement officers by reporting any nets or traps accidentally found or any suspicious activities observed while fishing or hunting on our waterways. There are many things to look for: unusually large

catches of catfish; no hook marks on the fish; nylon collapsible traps, usually one-inch mesh; and the smell of commercial cheese — you cannot miss that if you get close to one of these outlaws.

Don't make the mistake of thinking these are penny ante operations. We have reliable information that one man made as much as \$5,000 per week. Cases are now pending in court against him that could result in fines of \$24,000. Another one of these catfish bandits was prosecuted for offering a game warden a bribe of \$50,000 to let him operate on just one lake for one year. In that time, he claimed he could remove one-half million pounds of catfish.

How long could our lakes stand this kind of pressure? If you are a trotliner, wouldn't you hate to know that the place you set your lines had been visited and cleaned out by these outlaws the night before?

We are concerned about the illegal fisherman and we believe the true sportsmen of Texas also will be concerned when they become aware of the existing problem. We solicit your assistance in the protection of our state's wildlife resources, both in the water and on the land.

**

Young Naturalist

Photo Contest

Article by Ilo Hiller,
Photographs by
John Jefferson

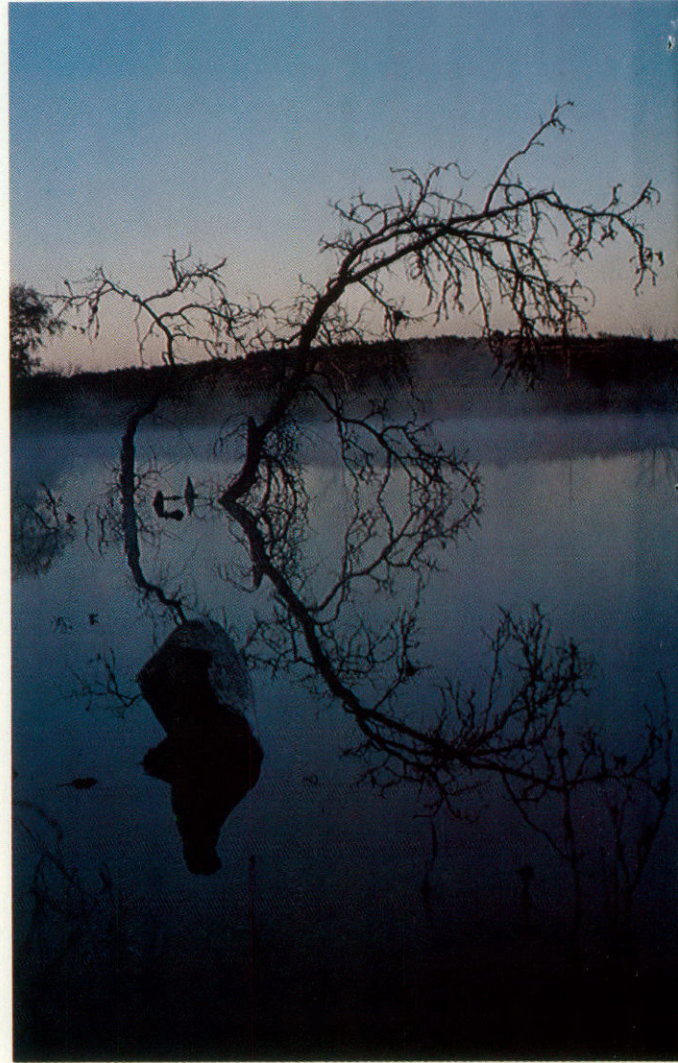
Photography is a way to show others the world as you see it. It also helps you keep your memories of the outdoors forever fresh.

When you look through the viewfinder and snap that picture, you may be recording a memory that never again can be captured in exactly the same way. You may not get that close to a fawn again; the next deer you see may not have as large a rack; or you may catch a six-pound bass only once in your lifetime. That plant may not grow so many blooms next year; you may never again find a nest of

newborn cottontails; or it may never again snow quite so much in your area. The list of one-time-only shots could go on and on.

Interest in nature photography is steadily growing as more and more people discover the pleasure of this outdoor activity. Both young and old can enjoy taking pictures with today's modern cameras and expect to get good results.

If your interest in nature photography is serious and you are able to acquire a camera that can become more versatile as your skill grows, consider one of the 35mm single-





lens reflex cameras that use interchangeable lenses. Later on you may be able to get some of these special lenses (close-up, telephoto, wide-angle) but, until you do, the basic camera will enable you to capture your outdoor experiences on film.

If you cannot afford a good camera, don't let the lack of this more expensive equipment stop you from trying your hand at nature photography. Excellent photographs also can be taken with less expensive cameras. In fact, a creative photographer can get good re-

sults with a pocket-type, snapshot camera. Learn to get the best possible pictures out of whatever type of camera equipment you have.

The most expensive camera made will not produce a clear picture if the hands holding it are not steady. Brace yourself against a tree, building or some other such object whenever possible, or tuck your elbows firmly against your body to prevent movement. Hold your breath while you smoothly press the trigger.

Some other suggestions that might help are:

Scenic shots are easiest for the beginner to take because the subject cannot run or fly away. To vary the results, try taking your scenics at different times of the day. The early morning shot captured the mist rising off the water; midday lighting penetrated the water to show the muddy bottom; and a pink glow was produced by the sunset lighting.

1. When photographing animals, get as close as you can, but take a picture as soon as possible. With each forward step, you increase the chances that the animal will be frightened away, and a distant shot is better than no picture at all. Get that one first, then move up. Be quiet and approach slowly.

2. Try baiting an open, sunny area to attract birds or other wildlife and use a blind or some other type of concealment.

3. Be sure you have enough light. Unless there is snow on the ground, pictures taken in the shade seldom turn out well. A flash may scare away your subject, but one well-lighted picture is better than a dozen dark ones in which the animal cannot be seen.

4. Make sure the background does not hide your subject. Water and sky are always good backgrounds.

Another important thing to keep in mind while in the outdoors is not to destroy nature for the sake of a picture. Watch where you put your feet down. Don't trample delicate ferns and wildflowers along a stream in your attempt to get closer to the water. Some of those creek-bottom wildflowers in East Texas are quite rare, and you can usually find a clearer spot if you look for it.

Don't frighten birds away from their nests and expose their eggs or newly hatched young to the hot sun for more than a few minutes.

This exposure can quickly kill the young, both in and out of the shell. Don't remove the natural camouflage from a nest site or break away any protective branches that might be in the way of your camera lens. This destruction will expose the nest to predators as well as the weather, and the young may not survive. If a branch is in your way, use a string to tie it back and then return it to its proper place once your picture has been taken.

A scenic or landscape shot is probably the easiest for the beginning photographer to take because the subject cannot run or fly away. Just standing there and pushing the button on the camera can give you a pretty picture when the scenery is nice but, with a little thought and planning, you may be able to get some really good shots. Distance or depth can be emphasized by having an object, such as a bush, tree or person, in the foreground (front of the picture), or by using a tree branch to frame the top or side of the picture. Taking a low-angle shot from a sitting or lying position instead of a straight-on, standing shot can show height or add variety to your pictures. Midday shots are usually a little flat looking because the overhead sun produces no shadows or contrast. Using early-morning or late-afternoon lighting produces some interesting shadows and color tones in the pic-

ture. Morning mists, storm clouds and silhouettes can be used effectively to create atmosphere or set moods.

In an attempt to discover just how many of our young naturalists are also nature photographers, we are holding a photography contest. There are three age categories — eight through 10, 11 through 13 and 14 through 16. There will be both color and black-and-white divisions in each age group. First prize in each division for each age group will be a two-year subscription to *Texas Parks & Wildlife* magazine. Second prize will be a one-year subscription.

The contest closes on June 15, 1977, so get your entries — color prints, black-and-white prints or transparencies (slides) — mailed to us as soon as possible. Along with your entry include information on the camera, lens, film and conditions under which the photograph was taken. Also be sure to indicate your age so we will know in which category to place your entry.

Try for a photograph like those seen in this magazine — wildlife, plants or scenics. Address all entries to *Texas Parks & Wildlife* magazine, Young Naturalist Photography Contest, 4200 Smith School Road, Austin, Texas 78744. *Be sure to enclose a stamped, self-addressed envelope or your entry will not be returned when the contest is over.* **

This interesting shot is a slightly different angle of the small trees in the previous photo. As you can see, it was taken directly into the late-afternoon sun to produce the sparkling reflections in the water. The yellowish-orange hexagon shapes, called lens flare, are caused by the sun striking the lens, but they do not necessarily spoil the effect created by this type of shot.



LETTERS TO THE EDITOR

Applause for Checklists

Congratulations on the very fine article on birding by David Riskind and Christopher Caran. In my many years of reading literature in this field, this is the best I've seen.

Also, Hurray! At last there is a central place for bird checklists to be noted, something that has been tried a number of times without success.

Keep up the good work for our ever-increasing tribe of birders.

Marjorie Adams
Austin

Deer in Parks

A serious problem occurring at several Texas state parks is an overpopulation of white-tailed deer. Most state parks throughout Texas provide an excellent environment for reproduction of the whitetail; however, this species of deer has been known to totally destroy an entire habitat when overpopulation exists for a prolonged period of time. To sit back and ignore this problem on the grounds that all overpopulated species eventually return to a normal popula-

tion level is senseless. During the waiting process, more natural habitat is destroyed that will require years to grow back. A solution must be found and applied. One such solution is controlled hunting.

Controlled hunting is regulating the number and type of animals to be killed in an attempt to maintain a "normal" population. This method is already used on wildlife management areas, and there is no reason why it shouldn't also be used on state parklands. The application of controlled hunting would entail the following:

(1) A study of the area to determine sex and number of deer which need to be harvested.

(2) A study to determine the time of year and the number of hunters.

(3) A permit drawing to determine who gets to hunt.

(4) Closing the park to the public during the time chosen for the hunt.

Such a procedure is neither time consuming nor expensive, and can be administered easily. It is a small price to pay for maintaining a healthier deer

population and preventing the destruction of our natural wildlife habitat in state parks.

Robert A. Scheel
Brenham

■ When the population of white-tailed deer in our state parks approaches the point where they jeopardize their existence through overuse of the habitat, we take steps to control them. Normally this is done by trapping the surplus deer and transplanting them in other areas of the state where there is suitable habitat but insufficient whitetail broodstock. We have, in the past, had a managed hunt at one state park to remove the surplus deer by this means; however, current state laws prohibit the hunting of deer in those parks established for the primary purpose of recreation.

Please be assured that our personnel are monitoring all wildlife populations in our state parks to ensure that they are managed properly and maintained at levels compatible with the primary purpose of the park in question.

Armadillos

It was unfortunate that the armadillo article in the November 1976 magazine emphasized its use as a specialty food. The armadillo is quite a unique creature. It has the capability to reproduce its young as multiple identical individuals, very useful in genetic research. The medical field also is interested in the armadillo as it is the only other animal besides man which harbors the disease of leprosy.

The inference that armadillos upset man's habitat, followed by a recipe, might have serious repercussions. Let's not go too far and upset nature's equilibrium senselessly again.

Marc A. Busch
Houston

■ It was not our intention with the article to advocate the slaughter of armadillos. However, it was meant to convey the thought that those destructive individuals that are killed can provide a tasty meal and should not be wasted.

INSIDE BACK COVER

Little boys, fishing gear, a calm lake and a sunshiny day combined to produce this enjoyable outing at Bastrop State Park. You can tell these young visitors are having a good time whether they take any fish back to their campsite or not. Since fishing opportunities for all ages are available at many parks around the state, be sure to take your fishing gear and license along the next time you visit one of the water-oriented parks. Photo by Neal Cook.

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