

# TEXAS

PARKS & WILDLIFE



*April 1980 • 50¢*



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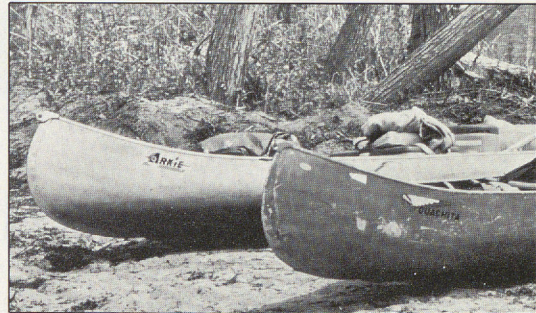
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**Front Cover:** Most familiar of the five Texas bluebonnet species is *Lupinus texensis*, often found in fields interspersed with Indian paintbrushes. (See story on page 2.) Photo by Leroy Williamson.

**Inside Front:** This immature caracara already has the dark crest characteristic of these large birds, also called Mexican eagles. Photo by Gilbert Palmer.

# Bluebonnet Legends

## As Abundant As the Flower

by Janet Gelpman

**Texans love tall tales.** Because of this, many of them enjoy the enchanting legends surrounding their most famous flower, the bluebonnet. However, most legend enthusiasts don't realize that many Indian myths about the bluebonnet actually contain a foundation of truth upon which the story is built.

Many of these legends follow a surprisingly similar pattern. Unknowingly, they expose the bluebonnet's strange relationship with the land, as revealed in the most widely circulated Comanche legend.

A raging flood encompassed the land, so the story goes, and a long drought and extremely icy winter followed. Wildlife fled or died and the plains became barren. The starving Indians fervently prayed to the Great Spirit for forgiveness. Finally, the Great Spirit relented, but to exorcise the evil spirit the tribe would have to burn its most precious possession and fling the ashes in all directions.

A young maiden secretly overheard the tribal incantations. In her heart she knew that she must burn her most valuable possession, a beloved fawnskin doll with an exquisite headdress of blue jay feathers.

Late that night she crept out of her tent, started a small fire on the arid hilltop and thrust the doll into the fire. After every spark was spent, she scooped up the ashes and scattered them to the north, south, east and west.

The next morning, she went back to the hilltop and found the once-barren land blanketed with beautiful blue flowers the exact color



*Lupinus texensis*, P&W File Photo



of the doll's headdress. The Great Spirit had accepted her sacrifice and rid the tribe of the evil spirit.

Good fortune returned. The plains were alive with flowers, grasses and wildlife and the land brought forth an abundant harvest. The shaggy-haired bison also returned and voraciously gobbled the blue flowers (although in actuality bluebonnets are not palatable). Hence, the Indians named the mysterious flower buffalo clover.

It may seem incredible that this fantasy has any factual basis, but the growing habits of the Leguminosae or legume family, of which the bluebonnet is a member, parallel the legend. The bluebonnet loves barren, disturbed ground. It grows very well on land that has been overgrazed or ravaged by flood,

drought or fire. Once its vegetative competitors have been eliminated, its blue bloom dominates the area.

Another ancient legend gives the flower its generic name, *Lupinus*, meaning wolf flower, because of its supposed greed for nutrients in the soil. But the bluebonnet actually rejuvenates the soil. Every member of the legume family grows a small nodule on its roots that houses beneficial bacteria. These microscopic organisms fuse nitrogen from the air with the plant's carbohydrates to produce a nitrogenous compound that becomes part of the legume's internal structure. When the plant decays, the nitrogen is absorbed into the starved soil, acting as nature's own quick-release compost heap. The land is revitalized and other vegetation speedily utilizes

the nitrogenous compound.

There are five species of bluebonnets in Texas, all considered the state flower. Most familiar is *Lupinus texensis* which is indigenous to the limestone soils of Central Texas. *Lupinus subcarneus* grows from Leon County in Central Texas southwest to LaSalle County in South Texas, and until 1971 was the only bluebonnet recognized as the state flower. *Lupinus havardii*, found in

*Best known and most frequently cultivated Texas bluebonnet is the Lupinus texensis. Seeds of this hardy, cool-season wild flower germinate during the late fall, and the seedling overwinters in a rosette stage. Soil moisture permitting, rapid growth begins in late February and flowering starts the middle of March. April usually is the month of most prolific blooming.*



the Trans-Pecos and adjacent Mexico, can grow to a height of three feet. Also found in the Trans-Pecos is *Lupinus concinnus*, known as the annual lupine. Rarest bluebonnet in Texas is *Lupinus plattensis*, known as the Nebraska lupine and common in the West-Central Plains states.

During a normal bluebonnet life cycle, an abundance of hard-coated seeds is dropped. Because of this tough covering, only a small portion of the seeds weather enough to bloom the following season. The remaining seeds act as safeguards, insuring future generations. If a fire or drought desecrates the ground, the bluebonnet always reappears and heals the soil. When torrential rains precede the spring, the seed coat is washed away faster, producing a bountiful crop.

The Comanche legend has all the

special conditions to insure a bumper crop. The land is desiccated by a long drought that wipes out or reduces many of the bluebonnet's competitors. Then an icy winter soaks the ground, wearing away the hard seed coat. Consequently, the bluebonnets appear in record numbers, replenishing the soil. Vegetation grows and wildlife, including the important buffalo, return to the prairie.

Aztec storytellers have a different version of the bluebonnet myth. A deadly pestilence enveloped the land, but priestly prayers and incantations went unanswered. After much suffering, the gods decreed that a pure and sinless worshiper must be sacrificed to atone for the tribe's evilness. A beautiful Aztec maiden offered her life and was accepted by the gods. The priests

dressed the young woman and placed a bonnet of blue upon her head. At the hillside altar, the bonnet slipped and fell to the ground unnoticed. The next morning the ground was covered with blue flowers and a red spot of her blood marked each one. The pestilence left the Aztec people.

The red blotch of the Aztec legend is indeed a distinguishing mark on every bluebonnet. The crimson spot is not only a reminder to the Indians, but it is also a quick visual signal to birds, butterflies and bees that a previous visitor already has snatched the pollen and nectar from the flower.

The origin of the bluebonnet in Texas sparks hot debate between scientists and legend lovers. According to one myth, Spanish missionaries brought the blue flowers

Found in the Trans-Pecos and adjacent Mexico is the giant bluebonnet, *Lupinus havardii*. Blooms of this species (left) top stems that may grow to a height of three feet. All five Texas species are now designated as the state flower, but until 1971, only the *Lupinus subcarnosus* (right) was so honored. This species grows on neutral to slightly acidic soils and is primarily restricted to East Texas. It has inflated petals and its leaves are blunt or slightly indented. Colors for all species range from dark blue to reddish-purple, but albino and pink blooms do occur.

from the hillsides of Jerusalem and sprouted the seed within the mission walls. The hearty plant quickly took to the foreign soil and the deep azure buds spread across the brushy plains.

Scientific evidence does not support this legend's account of the bluebonnet's first appearance. The five distinct lupine species evolved here long before the Spanish missionaries arrived. Of the two most common Lone Star lupines, one type, *Lupinus texensis*, grows only within Texas and adjacent Mexico. The other species, *Lupinus subcarnosus*, grows mostly in East Texas and the surrounding area.

But the tale may be partially factual. More than 200 species of lupines grow in the various temperate regions of the world. The blue-flowered legume, *Lupinus pilosus*, grows on the hillsides of Jerusalem, blooms in March and April as do the Texas lupines, and favors sandy soil like its other Texas relative, *Lupinus subcarnosus*. Although they didn't, the Spanish could have brought *Lupinus pilosus* seeds from Jerusalem and planted them in the Texas sandy soil. By confusing the plant with its Texas look-alikes, the origin of the legend becomes apparent.

The simple beauty of the bluebonnet is deceptive; it is a flower with a complicated and intriguing history. \*\*

*Lupinus subcarnosus*, photo by Janet Gelpman



# Bag a Gobbler This Spring

## 1980 season could be the best in years.

by Jim Cox

**Challenges** abound for the hunter in Texas, thanks to a wide variety of game animals and birds. One of the greatest challenges is calling up a turkey gobbler in the springtime—a feat accomplished by relatively few Texans.

However, this handful of skilled hunters is growing steadily as more counties are opened to spring hunting and hunters learn more about this most difficult of upland game bird hunting.

The first spring gobbler season was held in Kerr County in 1970. Since then the season has grown steadily and now includes 62 counties for the 1980 spring hunt, set for April 21–29. Hunters in the 1970 season killed only 17 gobblers during a public hunt at the Kerr Wildlife Management Area, and the total county-wide harvest probably did not exceed 100 birds. By contrast, hunters took home more than 3,000 gobblers during the 1979 spring season. Each hunter is allowed one gobbler during the spring season.

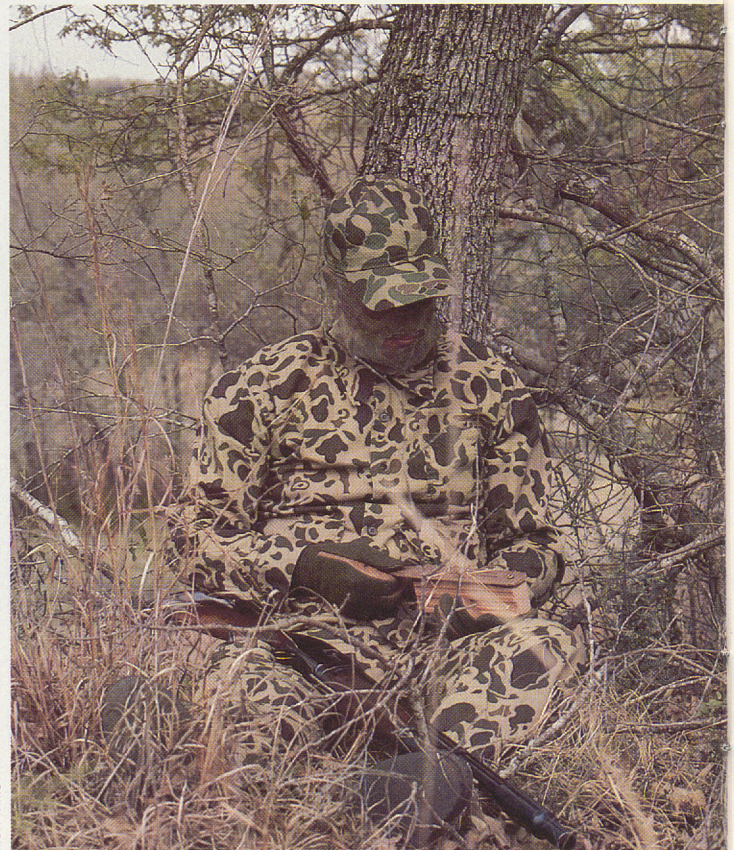
This year's spring hunt may be one of the best in terms of quality as well as quantity. In addition to the spring season being offered in more counties, the hunting should be better in most areas due to high turkey populations. An outstanding hatch in spring 1979, followed by excellent survival of the poults, put plenty of young gobblers into the field by the fall hunting season. Although turkey populations suffered the usual winter mortalities, there should be plenty of adult gobblers to provide a fine spring hunt this month.

The spring season is timed to coincide with the period when gobblers have established territorial rights and hens are bred and preparing to nest. This allows the harvest of surplus gobblers without harming the population's reproductive potential.

Why is bagging a gobbler more difficult in the spring? Wild turkeys are extremely wary, whether they are the Rio Grande strain found in the western half of the state

or the eastern turkeys which are making a comeback in many sections of East Texas. In autumn the birds congregate into flocks and frequently are harvested by hunters from deer blinds, particularly if some supplemental feed has been distributed in the vicinity.

During the spring, turkeys are more scattered and cautious. It's practically impossible to stalk the sharp-eyed birds, and sitting in a blind can be equally unproductive. The only feasible method for catching a spring gobbler unawares is by using a call simulating the lonesome yelp of a hen turkey. The skillful use of a call combined with extreme patience and use of camouflage can reward the hunter with an outdoor experience he will long remember.



Glen Mills

*Using a call that simulates the sound of a hen turkey is the best way to attract a gobbler's attention in the spring. For best results from the call, the hunter should use camouflage clothing—including face cover and gloves—and conceal himself as well as possible about 200 yards from the gobbling activity. But don't go overboard in using the call, as this will put the gobbler on guard.*





Leroy Williamson



Spring turkey calling, although relatively new to Texans, has been highly developed by hunters in the southeastern United States. Generations of turkey hunters have used a variety of calling devices ranging from hand-operated boxes to mouth-operated calls made from turkey wing bones. Any number of commercial calls will work, but most veteran turkey hunters say that how a call is used is probably more important than the type.

The best way to learn the art of turkey calling is to accompany an experienced caller on an actual hunt. If that is not possible, there are books on the subject and turkey calling records which can help. Finding a good place to hunt and thoroughly scouting the area before the hunt are just as important as the equipment, if not more so. Once arrangements are made to hunt in an area populated by turkeys, an early-morning scouting trip is advisable. Gobblers often can be located by walking or driving through the area at dawn, stopping frequently to listen for gobbling activity. Starting your hunt reasonably near a roosting gobbler is an advantage for the hunter, and careful, early-morning listening may help pinpoint a gobbling tom before the actual hunt begins.

On the day of the hunt, try to find a spot within 200 yards of the gobbling activity and conceal yourself as well as possible. Camouflaged clothing, including face cover and gloves, should be used for best results. Select a hiding place where you can sit with a rock or tree behind you to avoid being silhouetted. The hiding

*Counties holding a spring gobbler season have increased from one in 1970 to 62 this year. Biologists believe there should be plenty of turkeys to challenge hunters, due to an excellent hatch last spring and good survival of the poults. The spring season is set after the hens are bred and preparing to nest, so that harvesting surplus gobblers will not interfere with the population's reproduction potential.*

place also should have a clear view of the area in the direction of the gobbler. Lay your shotgun or rifle beside you, pointing in the general direction you expect to shoot.

After waiting a few minutes, make three low yelps with the call. A gobbler within earshot usually will answer immediately. Remain as still as possible and wait for the bird to appear. Gobblers may answer the call but fail to come, or they may come unannounced. In any case, remain hidden for at least 30 minutes after you first hear the gobbler. If the gobbler sounds as if it is moving away, quietly move to another area nearer the bird and continue calling. If a gobbler answers, call again immediately, but use the call sparingly as gobblers are easily put on guard by overzealous calling.

If the gobbler disappears, select another area of concealment and call at five-minute intervals. When a gobbler appears, try to remain motionless until the bird's view is restricted by trees or brush, then raise your gun. If he is too far or too close, remain still and don't raise your gun. Wait for the bird to move into a

more favorable position. Quick movements almost invariably catch the gobbler's eye, and chances for a clean shot are practically nil.

The best gun for spring turkey hunting is a 12-gauge shotgun with a full-choke barrel. Number four or six shot in a high-velocity shell is preferred by most turkey hunters. Prior to hunting, the gun should be patterned by firing test shots at 30- and 40-yard ranges at a three-inch circle target, about the size of a turkey's head.

Once you have collected the gobbler with a skillful head shot, immediately fielddress the carcass by removing the internal organs and crop. If the body is to be left intact, hang it up by the neck and allow it to drain. The bird may be picked or skinned for cooking. It is fairly easy to pick a freshly killed turkey. The job is more difficult after the carcass has cooled, but dipping it in boiling water can facilitate removal of the feathers.

Turkey hunting is nothing new in the Edwards Plateau, South Texas and other areas in roughly the western half of the state. But in East Texas, turkey hunting is a bonus made possible by conservation and restocking efforts by the Parks and Wildlife Department. For all practical purposes, the eastern turkey was elimi-

nated from its East Texas range by 1920. Restocking efforts were complicated by the fact that the Rio Grande strains of turkey found in other parts of Texas were not able to survive in the damp East Texas Pineywoods. Eastern turkeys from Florida were stocked in portions of Polk and Tyler Counties in 1964, and the birds adapted well to their surroundings. This colony of birds has been used as a source of brood stock for subsequent stocking programs in other parts of East Texas. The Polk and Tyler Counties' population progressed to a point that a nine-day spring turkey hunting season was authorized for portions of the counties in spring 1977—the first such season there in 36 years.

Biologists, hunters and wildlife enthusiasts are encouraged by the eastern turkey's comeback as the birds continue to expand their range. Rio Grande turkeys are more numerous in Texas than in any other state, and even they have expanded their range somewhat in the last decade, particularly in the Permian Basin of West Texas.

With proper management these wary birds should continue to provide spring hunting opportunities for Texas hunters in the years to come. \*\*



P&W File Photo

## SPRING TURKEY SEASON

1980

62 Counties

### POSSUM KINGDOM

Archer  
Baylor  
Bosque  
Brown  
Callahan  
Clay  
Coleman  
Comanche  
Eastland  
Erath  
Hamilton  
Hood  
Jack  
Mills  
Montague  
Palo Pinto  
Parker  
Somervell  
Stephens  
Shackelford  
Throckmorton  
Wichita  
Wilbarger  
Wise  
Young

### EAST TEXAS

Anderson (Part)  
Newton (Part)  
Polk (Part)  
Tyler (Part)  
Trinity (Part)  
Houston (Part)  
Henderson (Part)

### SOUTH TEXAS

Bexar  
Bee  
Goliad  
Jim Wells  
San Patricio  
Uvalde  
Zavala

### EDWARDS PLATEAU

Bell  
Blanco  
Burnet  
Comal  
Coryell  
Crockett  
Hays  
Lampasas  
Llano  
Menard  
McCulloch  
San Saba  
Schleicher  
Sutton  
Travis  
Val Verde  
Williamson

### LOWER PLAINS

Concho  
Irion  
Nolan  
Runnels  
Tom Green  
Taylor

Bill Reeves



# JUNIOR RANGERS TACKLE PARK LITTER

by Mary-Love Bigony

**A child's** first experiences in the outdoors usually are touched by wonder and excitement. But one of the first and most important things a youngster must learn about being outdoors is to respect the land and keep it clean.

State parks provide ample opportunities for children to have fun, as well as to learn about the variety of plants and animals in Texas. A number of parks also are making youngsters aware of the problem of littering. Now entering its third year, the Junior Ranger Litter Program in 17 state parks was designed to reduce the amount of litter in parks with a possible savings in labor, while making children sensitive to the importance of a clean environment. Considering the energy with which youngsters tackle such a project, the benefit to the parks is obvious.

Begun in 1978 as a pilot program in five state parks, the Junior Ranger Program is for young people six through 12 years of age. A youngster who picks up litter for four hours is



awarded a helmet certifying him a junior ranger. The helmets are not for sale, but must be earned. The work need not be done for four continuous hours, nor all at the same park. Children traveling with families which plan to camp at a number of parks may divide their work time between the parks they visit which participate in the program.

Many parks supplement the basic four hours of litter pick-up with varied activities to enrich the learning experience. Often youngsters attend an interpretive program, and park personnel sometimes explain the historical significance of the area or plants and animals found in the park.

To participate, the child must have permission from a parent or guardian, and parent enthusiasm for the program seems to affect the youngster's attitude. But some parks report

that many children who have been reluctant at first have completed the four hours with a feeling of accomplishment and excitement about what they have seen and learned. Some youngsters have written letters to the park expressing their thanks and others have even returned to do more work after receiving their award.

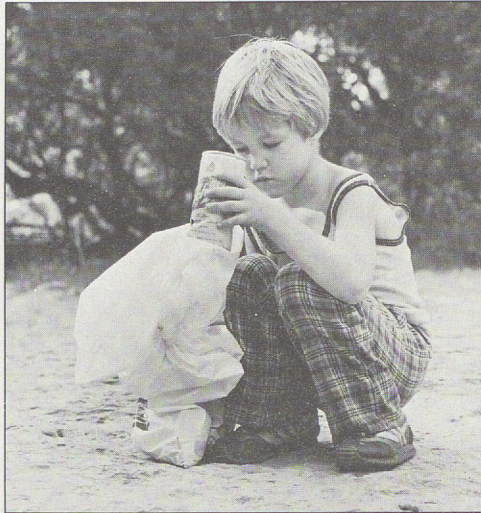
San Jose Mission State Historic Site in San Antonio has had especially good success with the Junior Ranger Program. Although it was designed for children on vacation with their families, San Jose recruited local youngsters through Boy Scout and Girl Scout troops and established a "Junior Ranger Day" especially for these activities. Participants at San Jose also were involved in other activities, such as raking leaves, sweeping pathways, pulling weeds and painting trash cans.

*To earn a Junior Ranger helmet, a child must pick up litter for four hours in one of the 17 state parks taking part in the program. By participating in the Junior Ranger Program, youngsters learn the importance of keeping the outdoors clean, besides saving the parks a considerable amount of labor. Children in the program also have the opportunity to learn about the plants and animals in the park, and sometimes about the history of the area. Young people six through 12 years of age are eligible to become Junior Rangers.*

*Park rangers assign areas in which youngsters are to collect litter, and these may include campgrounds, picnic areas, playgrounds or hiking trails. The ranger also makes sure the children do not go near any potentially dangerous areas. The four hours of litter pick-up may be done in more than one park. Just make sure each park is participating in the program. The four hours of work also may be done on different days. Coca Cola Bottlers Association donated 15,000 plastic bags to the Junior Ranger Program for use in collecting park litter.*



Glen Mills



Glen Mills



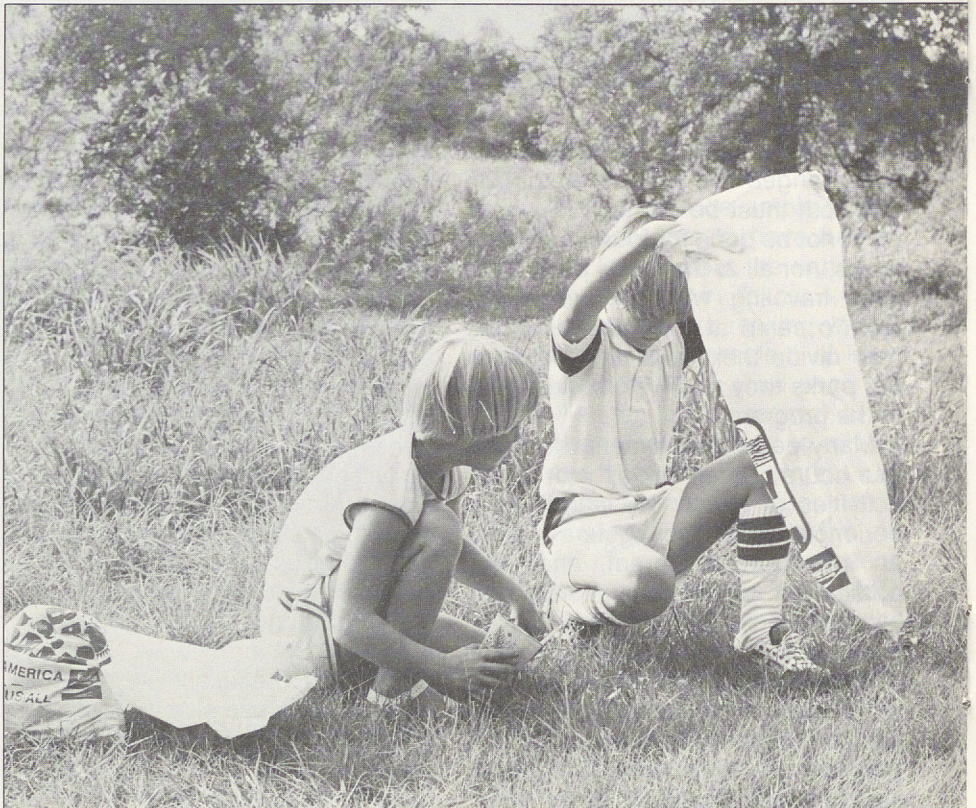
Glen Mills

Administration of the program in each park is under the direction of that park's superintendent, who determines the days and hours of operation and the number of children who may participate at one time. A park ranger assigns a section in which to collect litter and makes sure the youngsters do not go near any potentially dangerous areas.

Coca Cola Bottlers Association enthusiastically supports the Junior Ranger Program and has donated 15,000 plastic bags to use for collecting litter.

During 1979, 2,569 children were certified as Junior Rangers, and 13,500 pounds of litter were collected at the 26 participating parks. One park employee noted an additional benefit of the litter pick-up program—adults might think twice about throwing trash on the ground when they see children picking it up.

Children who wish to become Junior Rangers should check with the park headquarters to find out about rules in the park they are visiting. \*\*



Glen Mills



Glen Mills

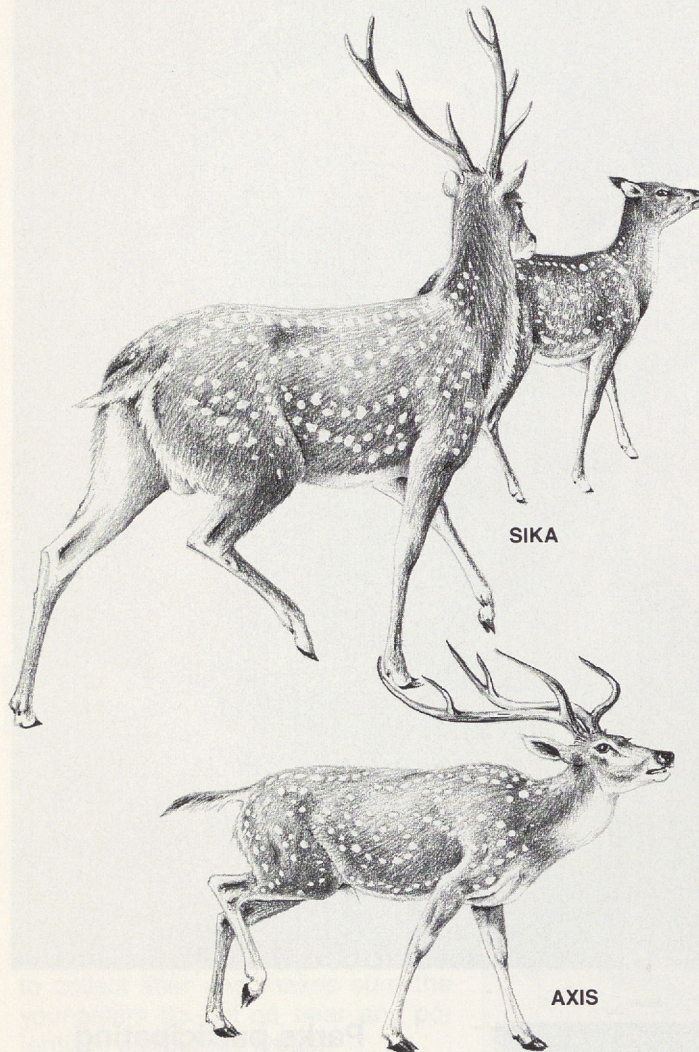


**Parks participating  
in Junior Ranger Program**

- Abilene State Recreation Area
- Eisenhower State Recreation Area
- Fairfield Lake State Recreation Area
- Fort Parker State Recreation Area
- Garner State Park
- Hueco Tanks State Historical Park
- Huntsville State Park
- Inks Lake State Park
- Kerrville State Recreation Area
- Lake Colorado City State Recreation Area
- Lake Livingston State Recreation Area
- Lake Somerville State Recreation Area
- McKinney Falls State Park
- Mission Tejas State Historical Park
- Palo Duro Canyon State Park
- San Jose Mission State Historic Site
- Tyler State Park

# AROUND the STATE

NEWS OF THE TEXAS OUTDOORS FROM THE PARKS & WILDLIFE DEPARTMENT'S NEWS SERVICE



## AXIS, SIKA DEER HURT WHITETAIL PRODUCTION

The negative impact of introduction of exotic sika and axis deer on Texas white-tailed deer has been demonstrated by a recent Texas Parks and Wildlife Department study.

During the past 20 years, large numbers of the Asiatic imports have been stocked on Texas ranches, especially in the Edwards Plateau region. Heretofore little has been known about their possible detrimental effects on native species such as whitetails.

The study, conducted at the department's Kerr Wildlife Management Area in Kerr County, showed that axis and sika deer dominated the habitat within their respective 96-acre enclosures and caused whitetail populations to decline drastically.

Of the two species, sika deer appeared to be the most competitive. Biologist Bill Armstrong said in 1971 six whitetails and six sika deer were placed in a fenced pasture with adequate habitat. There were four does and two bucks of each species.

As of January 1, 1980, 62 sika deer and three whitetails were counted in the enclosure, Armstrong said.

The sika deer showed a steady increase in population virtually throughout the nine years, Anderson said. The whitetails increased to a peak of 18 in 1975, then gradually died off.

The sikas apparently compete directly with whitetails for preferred food such as forbs and woody plants, but when food becomes scarce the sikas switch to grasses.

The demise of whitetails in the other enclosure was just as dramatic, although the axis population failed to climb as high as the sikas.

As with the sika study, the pen was stocked with six whitetails and six axis deer.

Axis deer increased to 19 animals in 1975 and remained fairly stable until January 1980, when 22 were counted. Whitetails, on the other hand, increased to 15 in 1975, then crashed to a population of five by January of this year.

No other livestock was in either pasture during the study.

Armstrong said sika deer may be more competitive with whitetails than axis deer because they have fawns in the spring and summer. Axis deer tend to fawn during the winter when natural mortality is higher.

Armstrong said even though the Kerr study involved relatively small acreages, landowners considering introductions of sika or axis deer should be aware of their potential harm to native deer populations.

## DEER, TURKEY HARVEST UP

As predicted, deer and turkey harvest rates were up significantly in Texas during the 1979-80 hunting seasons.

Hunters took an estimated 326,000 white-tailed deer, which is a 20-percent increase over the 1978-79 season. The turkey harvest reached an all-time high of 38,365 birds, an increase of 60 percent over the previous year.

The harvest of mule deer and javelina remained at approximately the same levels as hunters took 7,555 mule deer and 23,967 javelina.

The increased harvest of whitetails was encouraging to Texas Parks and Wildlife Department biologists who have documented a decline since 1973-74. Also encouraging was a rise in the harvest of antlerless deer, estimated at 89,225, or approximately 35 percent over the previous hunting season. Antlerless deer comprised 27 percent of the total.

Glenn Boydston, technical programs coordinator, said there were approximately four percent more hunters in the field, and their success ratio climbed from 45 percent in 1978-79 to 50 percent in 1979-80.

Deer and turkey both benefited from favorable weather con-

ditions early in 1979, with ample spring and summer rainfall over most of the major habitat areas during the fawning and hatching seasons.

A fair year for turkey nesting in 1978 was followed by a very good year in 1979, resulting in high turkey populations and the highest statewide harvest figure since the department began its statewide survey in 1972-73.

Hunters killed 7,555 mule deer, compared to 7,511 the previous year. Hunter numbers were down slightly, but the success rate of 51 percent was up slightly.

The javelina harvest rose six percent, and hunter success rate was 38 percent.

## SAN JOSE HISTORIC SITE SUMMER HOURS ANNOUNCED

Effective June 1, 1980, Mission San Jose State and National Historic Site will be open one hour later each day for its summer schedule. The summer hours will be 9 a.m. to 6 p.m. Currently the hours are 9 a.m. to 5 p.m.

The site, located at 6539 San Jose Drive in San Antonio, is open to the public daily throughout the year. Admission is 50 cents for adults and 25 cents for children ages six to 12. For further information contact the park at 512-922-2731.



## LAKE WELSH OVERLOOKED AS BASS HOTSPOT

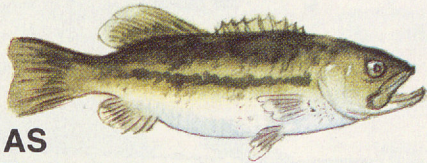
With a new state record large-mouth bass and a continuing list of 10-pound-plus bass to its credit, Lake Monticello near Mount Pleasant has been hogging the headlines in recent times.

However, Texas Parks and Wildlife Department biologists point out that there is another excellent fishing lake just down the road from Monticello.

Lake Welsh, like Monticello, is a power plant-heated reservoir and home for a rapidly growing population of Florida large-mouth bass stocked there by the department.

Although probably not yet capable of producing a monster like the 14-pound, 1½-ounce record fish caught during February at Monticello by Jim Kimbell of Pittsburg, biologists estimate that Lake Welsh probably has at least some bass in the 10-pound-plus category.

Lake Welsh is in Titus County



just east of Pittsburg on State Highway 11, less than 30 miles from the sometimes-crowded Lake Monticello.

The lake definitely could stand more pressure from bass anglers, said Alan Forshage, P&WD regional fisheries director of Tyler. "Our 1979 survey indicated an excellent bass population in all size groups up to 19 inches," he said.

Southwestern Electric Power Company improved their facilities in 1979 for the convenience of anglers. A new light was installed at the boat ramp for night fishermen, and the parking lot was expanded to accommodate more vehicles.

Fishermen should follow the main road off of Highway 11 marked "Lake Welsh" and go past the entrance gates of SWEPCO power plant for about one mile. Then take the first blacktop road to the right and follow the signs marked Swauano Grocery and Marina.

## DROWNING INCREASE WITH BOATING POPULARITY

Texas has more than its share of water, with about 1.2 million surface acres in lakes, 2.1 million acres of saltwater bays and 80,000 miles of rivers. Unfortunately, Texas also has more than its share of drownings.

In the past four years, 403 persons lost their lives in boating-related accidents. Of that total, 202 were fishing, 13 were skiing, 10 canoeing, 12 whitewater boating and seven sailing.

And the problem may worsen, as the Texas Parks and Wildlife Department said the 1980 Texas Outdoor Recreation Plan indicates Texans will spend approximately 196,096 recreation days on the water this year.

The state's water traffic includes more than 500,000 registered motorboats and an untold number of canoes, kayaks, rafts, sailboats and the like.

Most accidents, of course, are preventable. Many fatalities on the water result from boat operators violating rules of boating safety and common sense. The U.S. Coast Guard found that nearly half these Texas fatalities could have been prevented by either action or inaction on the part of the boat operator.

For more information on boating safety, contact the Water Safety Section, Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744, or call toll-free 1-800-252-9327.

**Texas Parks & Wildlife Magazine  
Makes a Great Gift.  
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## 1979 HUNTING SEASON SAFEST IN 15 YEARS

The 1979 hunting season was the safest for Texas hunters since 1965, according to the Texas Parks and Wildlife Department.

Only 50 recorded hunting accidents were reported through the Uniform Hunter Casualty Reports filed by game wardens.

Of these accidents, nine were fatal. Shotguns lead the list of firearms involved in the accidents, with rifles a close second.

Eighty persons were involved in the accidents; 26 were 16 years of age or younger.

Sixteen of the accidents were caused by hunter judgment. In other words, the victims either

moved into the line of fire, were hit when another shooter swung on game, were hit while out of sight of the shooter or were mistaken for game.

Among shooters hunting game animals and birds, deer hunting accounted for 12 accidents, while quail and dove hunting accounted for eight accidents each.

Shooters in four of the accidents were reported to be graduates of formal hunter safety training courses. Two were graduates of the Texas Volunteer Hunter Safety Training program.

Even with the reduced number of hunting accidents reported for 1979, the P&WD hopes 1980 will be even safer for sportsmen enjoying the Texas outdoors.

## SHARK RESOURCE STILL UNDERUTILIZED

For most western cultures, sharks are not a popular protein source, but Texas Parks and Wildlife Department surveys in the Gulf of Mexico indicate a considerable shark resource is available.

Bottom longline sampling during December 1979 yielded good catches of Atlantic sharpnose sharks which averaged approximately three feet long and weighed about 10 pounds.

Biologists Terry J. Cody and Billy Fuls reported catching sharks at 15 to 27 fathoms, with catch rates from 25 to 46 fish per 100 hooks. The line yielded 272 to 435 pounds of fish per hour.

Shark meat is not readily available on the market, but when it can be obtained it is said to be highly palatable. For a variety of shark recipes, write Annette Reddell, Texas A&M University Marine Advisory Service, 442 Kleberg Center, College Station, Texas 77843.

## TP&WD FINDS REDFISH IN LAKE BRAUNIG



Big redbass still are appearing at Lake Braunig near San Antonio after an experimental stocking there in 1976, according to the Texas Parks and Wildlife Department.

Electroshocking crews caught redds of 19 pounds, eight ounces; 20 pounds, four ounces; and 21 pounds, seven ounces during a routine survey in February.

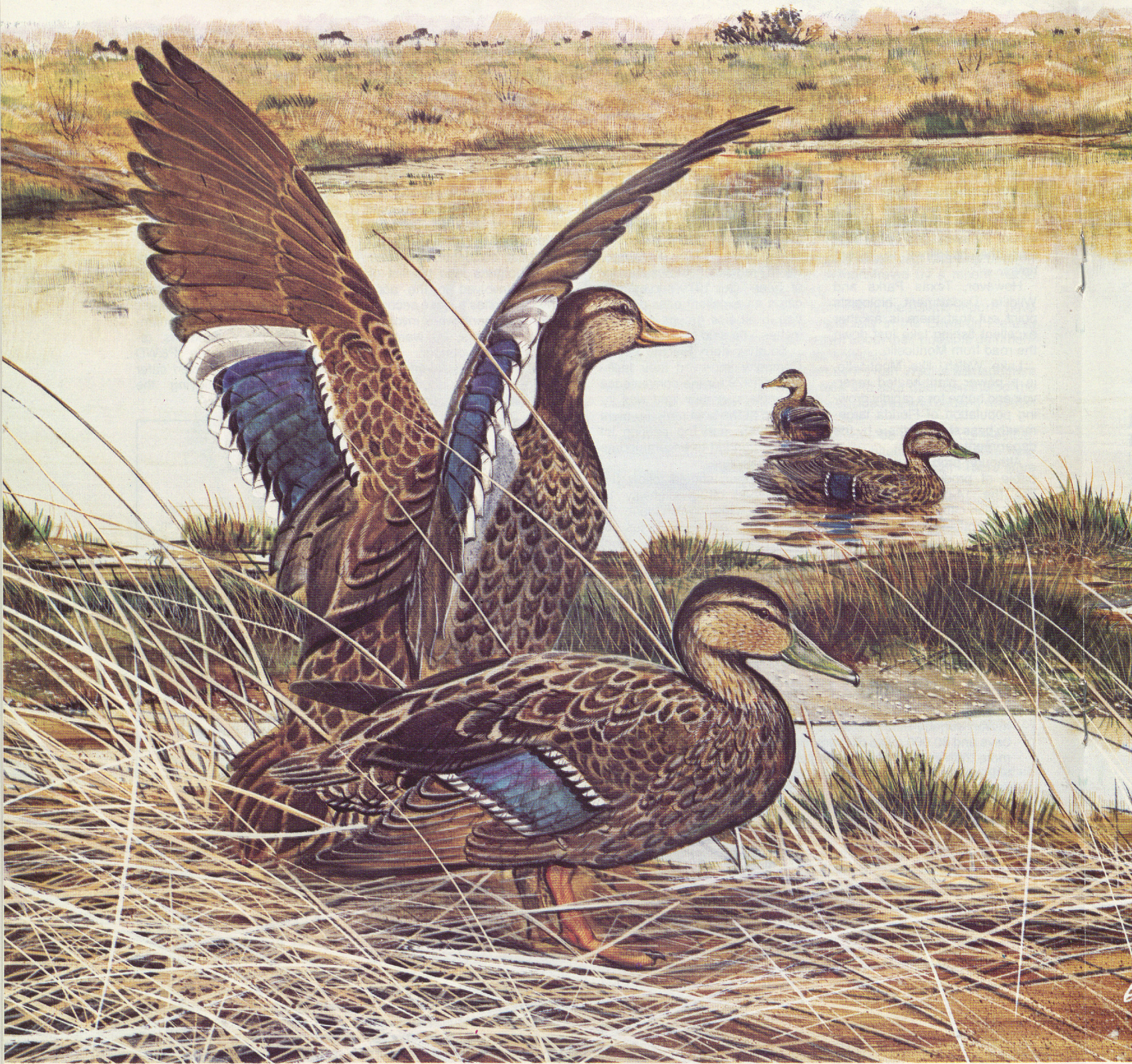
About 2,000 of the saltwater game fish were released experimentally to determine survival rates in the power plant-heated reservoir. The fish were 5½ inches long when released.

Inland Fisheries Director Ernest Simmons said the Braunig redbass were five to six pounds

heavier than fish of the same age in salt water. The warm water, combined with ample forage in the reservoir, apparently causes faster growth rates than saltwater habitat, Simmons said.

A number of fishermen have caught redbass in the 10- to 20-pound class at Braunig.

Simmons said the department has temporarily shelved plans for further freshwater stocking of redbass, since the decline of redds in the saltwater bays in recent years has caused the department to give those areas priority for stocking of hatchery-reared fingerlings. The program could be resumed in selected public reservoirs at some future date.



*Pure Mexican ducks resemble mallard hens in plumage. Both the male and female have orange legs, but the male's bill is olive green and the female's bill is orange. Mexican/mallard hybrids in the Trans-Pecos may exhibit different combinations of the two species' characteristics. Research indicates that Mexican ducks in the United States and northern Mexico actually are Mexican/mallard hybrids, with the pure Mexican ducks found in the central highlands of Mexico.*



# Mixed-up Mallards

## Mexican / Mallard Hybrids

### Settle in the Trans-Pecos

Article by Danny A. Swepston

Artwork by Terry Burlison

**Scattered** throughout the southern portion of the Trans-Pecos is this state's westernmost breeding population of ducks, composed of 300 to 500 Mexican/mallard hybrids, *Anas diazi/platyrhynchos*.

The Mexican duck first was described by Ridgway in 1886 from southern Mexico. The population later was divided into the Mexican and New Mexican ducks. Currently, the birds in southeastern Arizona, southern New Mexico, West Texas and northern Mexico are listed as Mexican/mallard hybrids while the Mexican ducks in central Mexico are considered a subspecies of the mallard.

Plumage of pure Mexican ducks, although darker, closely resembles that of a mallard hen. Their legs are orange, but the male's bill is olive green. The female has an orange bill, sometimes with a few black spots. Ducks in the Trans-Pecos may have any combination of mallard and Mexican duck characteristics. Some hybrid females resemble mallard hens to the point that it is almost impossible to tell them apart, while others are distinctly different. Hybrid drakes often can be distinguished by a partial to full curl in the top tail feathers, yellowish-

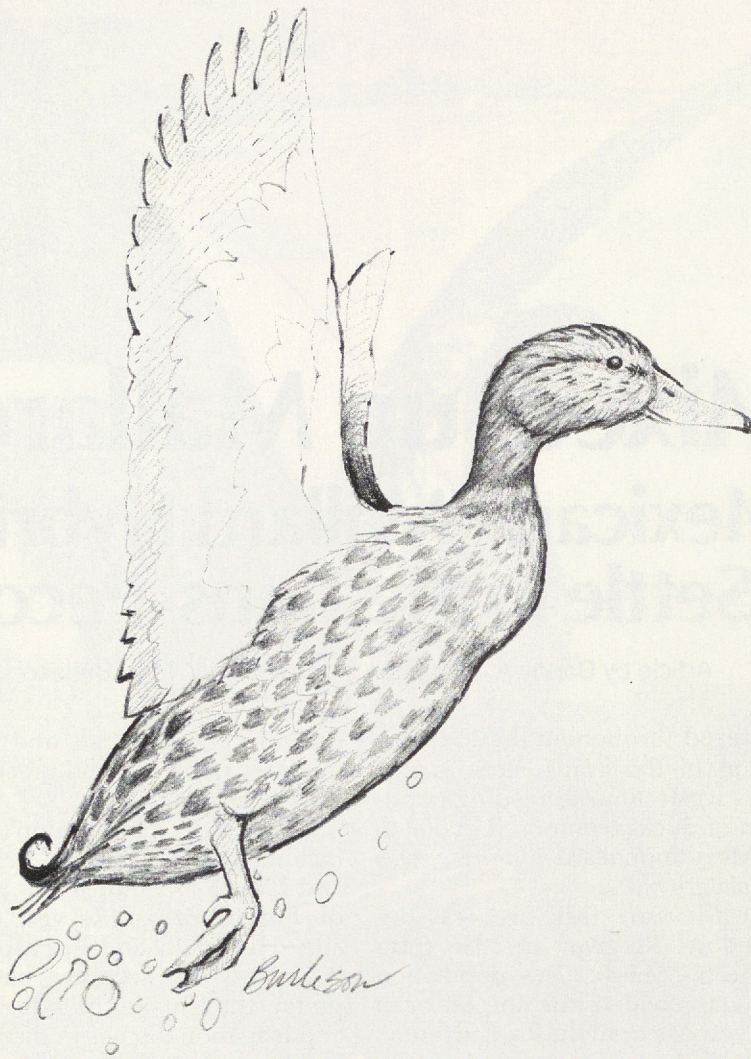
green to greenish bills and varying mixtures of brown and green feathers on the head.

The ducks' distribution in Texas includes all of Brewster, Jeff Davis and Presidio Counties and portions of Terrell, Pecos, Reeves, Culberson, Hudspeth and El Paso Counties. They are secretive birds that prefer the smaller ponds, streams and irrigation ditches in their range.

Pairing activities in Texas have been observed in early January and increase steadily as spring approaches. Pairs are sighted throughout the summer, since nesting in some portions of the Trans-Pecos appears to be keyed to the later summer rains. Where there is permanent water, nesting may occur from mid-April through May.

Broods located during the current research project ranged in size from one to nine young, with an average of 4.6 for 23 broods. The earliest brood was located on May 3 and the latest on October 5. Hens usually raise the young, but on occasions the drake may be seen with a family group. When threatened, the hen goes into a broken wing act while the young swim for the nearest cover. If pressed too close, they will dive and swim for some distance

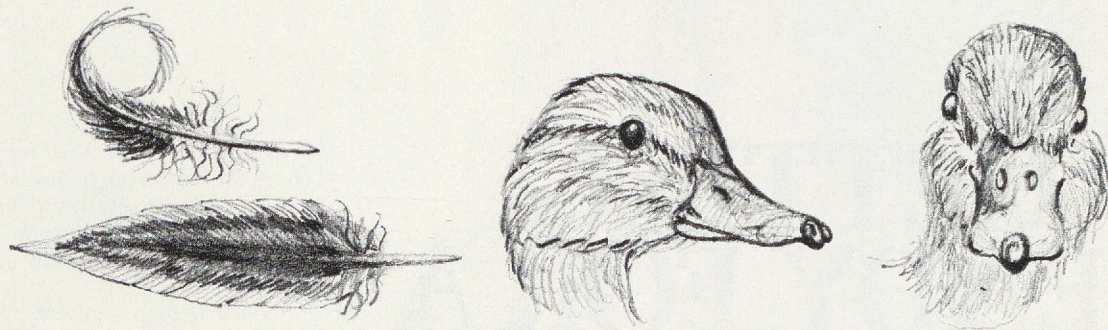
HYBRIDS



underwater. Mortality is high and in some broods only one or two of the young birds reach maturity.

It is not known when Mexican and mallard ducks began to hybridize. One of the earliest records is a specimen collected in 1893 near El Paso. Originally identified as an immature Mexican duck drake, it now is considered a hybrid. This early record, plus the extent of hybridization throughout the northern portion of the Mexican duck's range, suggests this process has taken a long time. In Texas, mallards and Mexican/mallard hybrids mix freely during the winter and pairs of mallard drakes and hybrid hens are sighted during the spring and early summer. It is unknown whether the mallard drakes leave the area during nesting season or go into molt, which would make them indistinguishable from some hybrid drakes. They have been sighted in the Trans-Pecos as late as mid-June and as early as mid-September, but it is unknown whether they are resident birds or just early and late migrants.

The Mexican duck was declared an endangered species in 1967 by the U.S. Fish and Wildlife Service due to evidence that its population and habitat were declining. Subsequent research on the duck indicated the population in the United States and northern Mexico was composed of approximately 5,000 hybrids, and the pure population in the central highlands of Mexico consisted of 50,000 or more birds.



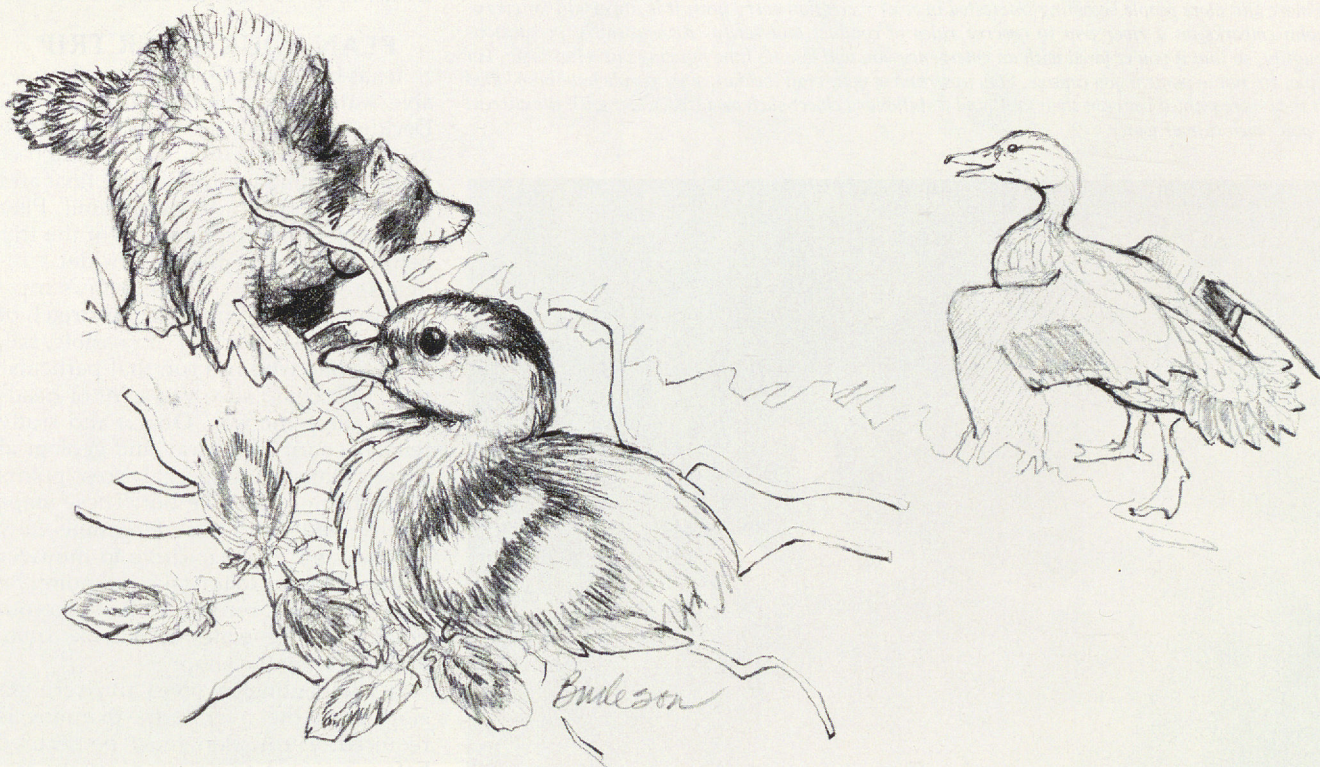
The duck has adapted to many of man's activities, particularly farming, in both Mexico and the United States, and currently there is no serious threat to the continued existence of either the hybrid or pure populations. The Mexican hybrid was removed from both the federal and state endangered species lists in 1978 and listed as a 70-point duck

along with the mallard hen during the 1978-79 waterfowl season. Surveys of hunters in its range show it composes a small percentage of the total bag.

This bird's secretive nature and adaptability, as well as proper management of the species, should ensure that it remains within our borders for some time to come. \*\*

Hybrid females resemble mallard hens so closely that it is hard to tell the two apart, but hybrid drakes often have a partial to full curve in the top tail feathers (left and above). Heads of the hybrid male and female (above) look so much alike that the color of the bill is the only distinguishing characteristic. Hens usually raise the young alone, and when a predator threatens she may go into a broken wing act to give the brood a chance to swim for cover (below).

Contribution of Federal Aid Pittman-Robertson Program: Texas Project W-103-R



# GETTING READY FOR A RIVER TRIP

by Joel S. Seffel,  
Comprehensive Planning, Parks Division

**Interest in canoeing,** kayaking, rafting and tubing is growing rapidly as more people discover the beauty and fun Texas rivers have to offer. Between 1969 and 1976, canoe rentals in Texas increased nearly 7,000 percent.

Recreationists have a significant economic impact upon the communities and areas where river sports are popu-

lar. The total amount spent on recreation, gasoline, food, lodging, services, rentals and miscellaneous retail purchases is estimated to be well into the millions. One study found that in Comal County alone, a million dollars is spent annually on river recreation.

However, this boom in river recreation is not without its problems. Too often recreationists begin a river trip with little or no knowledge of the sport and sometimes with little regard for the

law, natural resources or for others who share an interest in Texas' scenic waterways. This sometimes results in conflicts, misunderstandings and hard feelings among recreationists, landowners and local residents.

Concerned about these problems, the River Recreation Association of Texas (a nonprofit organization chartered to promote the wise use and management of Texas waters and composed of members who share a dedication to the sport of canoeing) sought the advice of a number of individuals and groups in an effort to develop guidelines for safe and proper conduct on the state's waterways. Those contacted included landowners, recreationists, canoeing clubs, private citizens, citizen groups, state and federal agencies and professional planners. From the collective wisdom and experience of these individuals evolved the following guidelines for river recreation. If practiced, these guidelines should promote respect for the rights of both landowners and recreationists, as well as make any river trip more safe and enjoyable.

## PLAN YOUR RIVER TRIP

Texas has about 13,000 miles of canoeable waterways from which to choose. Decide how much time you can devote to a river trip and then pick a stretch of water close enough to drive to, float and return from within this time limit. Plan to complete the river portion of the trip before dark. Most people consider a 10-mile stretch of water as a full day's trip.

Learn all you can about the stretch of river you wish to travel. If possible, talk to someone who has run that particular stretch; it could save you a lot of headaches along the way. Obtain and study reliable county, highway and geological survey maps to locate legal access points for launching and take-out. These maps also should help you determine how much time it takes to drive to the river and shuttle cars to the take-out point. Be sure you can recognize the take-out point from the water as it looks quite different from the shore.

If your outing involves an overnight stop along the river, extra planning is required. Permission must be secured before camping on private property, res-

*With more and more people becoming interested in river recreation every year, it is important for everyone who embarks on a river trip to observe rules of conduct and safety. Review safety precautions thoroughly, so that if you're faced with an emergency you will lose no time figuring out what to do. For example, try not to panic if you capsize. Stay upstream of your craft (below), since people have been killed when they were pinned between their craft and a stationary object such as a tree. Float with the current until you reach calmer water.*

P&W File Photo





ervations may be required for public lands and, in some cases as in national parks, a written permit may be required. Don't trespass.

Get instructions on safety precautions and navigation of your craft if you are new to the sport. Practice your new skills on lakes or slow-moving rivers to build your confidence and level of proficiency before you attempt more difficult waters.

Don't attempt to run a river that is flowing too high or too fast. Newspapers and radio and television stations now are able to furnish a weekly stream flow forecast for 27 access points in 12 Texas river basins. This report, based on current stream flow rates in cubic feet per second, is obtained from U.S. Army Corps of Engineers offices at the various stream monitoring points. By using a "floatability guide" the stream flow is rated from one through five—one being the minimum water flow for floating and five indicating maximum flow for experts only. This information is released by the National Weather Service on Thursday afternoons in time for inclusion in Friday morning newspapers or Thursday evening and Friday morning radio and television news reports. Heavy rains, of course, can change this forecast.

Never run a river alone. There should be at least two boats for an outing, and three are preferable. In case one boat is damaged its occupants can split up and ride in the remaining two boats without overloading them. Avoid mixing faster crafts such as canoes and kayaks with the slower rafts and tubes, particularly on long runs. Boats on the water are like a convoy on the road. Don't straggle behind or tailgate.

Seek a balance of experienced and inexperienced recreationists on the same trip and, whenever possible, split up the beginners. Although small children may enjoy a river outing, give a lot of thought to the dangers involved when deciding whether or not to take them along. Amount of river flow, water and air temperatures, known hazards to be encountered and your skill and experience levels should be evaluated when making this decision. *Never tie or strap children to the craft.*

Unless you have complete control over your pets, leave them at home. Pets are prohibited when floating in a national park, and animals chasing livestock or causing general disruption and noise do not earn you the respect of local residents or fellow river recreationists.

Always plan on getting wet. Spills can happen to anyone and water usually has a way of coming over the sides of any

craft in rough water. Take along only those items which water won't damage. For one-day trips, leave dry clothes at your take-out point. On longer trips, store dry clothes in the boat in airtight containers along with food and other supplies. In cold weather, be aware of the danger of hypothermia, the loss of vital body warmth. Many recreationists choose to wear wet suits in cold weather for additional protection and warmth.

## RULES OF SAFETY

Running rivers can be dangerous. Your safety and the safety of those with you depend upon your skill, knowledge and common sense. Be sure you know the white water classification system and launch your boat only in waters you are capable of running. If you don't know how to swim, learn how before you head for the river. Make sure everyone, including yourself, wears a life jacket; they were not made to sit on and can be swept away in the first spill if not worn. Don't overexert yourself; rest when you are tired. Be careful of sunburn, heat exhaustion and heat stroke.

Don't overload your craft with people and gear or it will not respond well. Be sure the weight of both cargo and passengers is distributed properly for comfort, paddling ease and safety. Tie the gear in the canoe and secure bow and stern lines on the inside. Dangling ropes can be dangerous.

Leave car keys hidden at the launch or take-out point or firmly attach them to an article of clothing you are wearing with a strong safety pin. Keys are easy to lose, along with other personal effects such as wallets, jewelry, etc. Don't leave valuables unattended, even in apparently uninhabited areas.

Learn how to paddle your craft both forward and backward. You and your partner should paddle on opposite sides of the canoe. Paddling on the same side tends to shift the weight toward that side and makes the canoe unstable. It also forces the canoe toward the opposite bank. Frequent switching from side to side causes disunity in paddling for both partners and makes the canoe take an errant course down river rather than tracking straight.

Don't shove off canyon walls with your paddle or hold onto fixed objects such as limbs, rocks or vines while moving in swift water because these actions can capsize the canoe. Keep your craft parallel with the current, especially if you capsize. Don't panic when you find yourself in the water. Try to grab the stern, but forget the boat if your safety is threatened. Your life is more important

than any boat. Stay upstream of your craft to avoid being pinned against something. Float with the current until you reach calmer water.

Even a small amount of water can make a canoe unstable, so if you take some on, beach your craft at the first opportunity and get it out. If you must empty your canoe in a current, empty it downstream because it is impossible to roll the canoe and empty it into the current. Don't try to lift a swamped canoe. Roll it over and pour the water out as the canoe is raised from the water.

Inspect all water hazards before running them and avoid those you feel you cannot navigate.

Sheer drops, such as waterfalls and low-water dams, are particularly dangerous due to common undertow currents at the base which are not visible. These hazards can be recognized in advance by their loud sound and the appearance of an almost perfectly level water line across the river. In most cases, a portage is advisable.

Sharp bends in the river may include undercut banks and currents that tend to sweep canoes into the bank. Staying to the inside of these bends is advisable. Never underestimate currents; they always are stronger than they look.

It is common on Texas rivers to find the water funneled into narrow passages, called chutes, which should be checked before navigating them. Trees growing in the water are always a hazard, but particularly when they are encountered in one of these narrow chutes.

Boulders in the water and overhanging tree limbs should be given a wide berth. If your canoe somehow becomes lodged broadside on a rock, shift your weight downstream to prevent the canoe from filling with water from the upstream side. Log jams should be approached with extreme caution because they can cause a substantial undertow and also may house a few snakes. Fences placed across rivers present an additional hazard because they are hard to see and often collect debris which compounds the danger.

*Be alert to any hazards along your route such as waterfalls and low-water dams, since there may be undertow currents at the base which are not visible. Usually you can tell when you are approaching this type of situation from the noise and the appearance of an almost perfectly level water line across the river. When you come to a waterfall or low-water dam, a portage is advisable (right). Keep this in mind when you pack your canoe. The more gear in the craft, the more you'll have to carry when you move the canoe around an obstruction.*



White water and standing waves indicate the presence of submerged rocks. In combination, several may create long stretches of rapids. Inspect the rapids from shore and navigate them with care. When the water forms a white water "v" pointing downstream it indicates the deepest and probably safest passage route. However, if the "v" points upstream, it indicates a rock or obstruction that should be avoided.

### RULES OF CONDUCT

The way you conduct yourself while on the river can influence the way all river recreationists are treated. Don't let your actions give the sport a bad name.

Never start a trip when you are angry as it can cloud your judgment. Overindulging in liquors or other intoxicants or drugs also will impair your ability to meet the challenge of the river.

Park your cars only within road rights-of-way, not on the road surface or on private land. Be sure you are above flood-prone areas since flash floods can occur at any time of the year. Use only public property, such as road crossings, parks, etc., to access the river. Keep off private land unless you have permission

and then be sure to leave all gates as you find them. Leave fences and trotlines alone; they're just as much private property as your boat. It is also a good idea to leave firearms and other weapons at home.

All plants, wild and domestic animals and other elements of the natural river environment belong to someone, either an individual or all of us. Don't disturb, alter, deface or litter the natural environment. Preserve the area's tranquility by keeping noise to a minimum. Camp only in approved areas and use fires only where designated. In the case of an emergency involving a possible hypothermia victim, an exception to the fire rule is allowed.

Enjoy your river experience. Be courteous and friendly to all those you may meet. Isn't that the sort of treatment you expect? \*\*

**Editor's Note:** Copies of the pamphlet "Rules of the River" may be obtained by writing the Texas Agricultural Extension Service, Department of Agricultural Communications, Texas A&M University, College Station, Texas 77843.

### Floating Equipment:

- canoe, kayak, raft, etc.\*
- 3 paddles (2 for use and one extra)\*
- personal flotation devices (one for each person in the craft)\*
- 1 bow and 1 stern line (15 to 20 feet long, 1/4 to 3/8 inch in diameter)\*
- repair kit (duct tape, etc.)\*
- short ropes for securing equipment\*
- canteen\*
- bailer or sponge\*
- 1 throwline per group (75 to 100 feet long, 1/4 to 3/8 inch in diameter)\*
- eyeglasses holder or string\*
- waterproof bags and/or containers\*
- first aid kit, including snakebite treatment kit\*
- plastic garbage bags\*
- crash helmets
- spray decks
- extra flotation devices or cushions
- map or guide of the river and/or general area

### Clothing:

- tennis shoes or canvas shoes\*
- trousers, shirt, socks, underwear
- extra set of dry clothing
- swimsuit
- rain gear
- hat or cap
- extra shoes or hiking shoes
- wet suit
- cold weather clothing
- handkerchief or bandana

### Personal Items:

- money—change for phone calls\*
- toilet articles
- toilet paper
- suntan lotion
- aspirin
- chapstick
- insect repellent
- sunglasses
- knee pads
- towel

### Provisions:

- sufficient food and water\*
- ice chest and ice
- beverages
- paper towels
- stove and fuel
- cooking gear and eating utensils
- waterproof matches
- water purification tablets

### Camping Gear:

- tent
- sleeping bag(s)
- mattress or foam pad
- lantern
- flashlight and batteries
- tarp
- knife

### Optional:

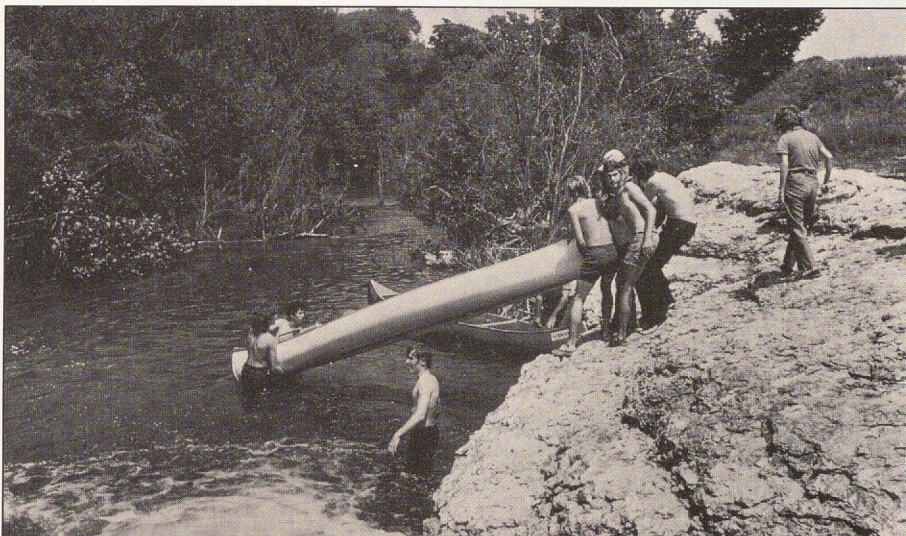
- camera and film
- writing material
- compass
- binoculars
- fishing gear
- pliers
- screwdriver
- whistle (for emergencies)

\*required or strongly recommended

P&W File Photo



P&W File Photo





# Big Charlie Was No Ordinary Deer

Article by Jim Cox   Photos by Donnie Harmel

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**When the handsome** white-tailed buck died of a bacterial infection and pneumonia shortly before Christmas at the Kerr Wildlife Management Area, the big fellow left behind perhaps a greater legacy in the field of deer research than has any other single animal.

In short, Big Charlie was the grandsire of many of the deer used in the Texas Parks and Wildlife Department's studies probing the mysteries of the spike buck.

During his 6½ years of life, Charlie fathered many of the animals which formed the nucleus of a genetic study which biologists believe will clear the air on the controversial issue of spike buck harvest.

Whether or not to harvest spike bucks in Texas is a question as old as deer management itself. A spike buck is one whose first set of antlers (produced at 1½ years of age) are single spikes without prongs or forks. In other words, a spike buck is a two-pointer under the traditional Texas system of counting antler points. In Colorado, a spike buck would be considered a one-pointer.

Through the years some hunters and landowners have persistently held to the belief that a spike buck is simply a young animal which needs only additional time to blossom into a trophy-sized buck. However, nutrition studies during the past decade and, more recently, genetic studies at the Kerr research facility

*For 6½ years, Big Charlie was an integral part of the Kerr Wildlife Management Area's spike buck study. The impressive white-tailed buck fathered a significantly higher number of fork-antlered offspring than did the bucks with spike antlers. From these studies, biologists have concluded that spike bucks are genetically inferior deer and will never achieve the same body weight and antler mass as deer that had forked antlers as yearlings.*

have shown this theory to be false.

The casual observer of the Texas deer scene might find it odd that a serious problem exists in the nation's number one white-tailed deer state, with a total herd in excess of three million animals. But biologists point out that high deer populations are an integral part of the problem. Deer have outstripped the ability of the habitat to sustain them in many areas. This has led to declines in body and antler size and, in some cases, massive die-offs.

Answers to the problem are not easily found. Biologists believe an adequate annual harvest of does

and spike bucks is one factor which could help. But Donnie Harmel, project leader for the Kerr studies, points out there are other factors. "Spike harvest, or doe harvest alone won't do the job unless you consider all the factors of deer production," he said. These include habitat, numbers of deer, numbers of domestic livestock competing with deer, deer herd composition (bucks, does, fawns, etc.), past hunting pressure and even the size of the tract to be managed.

Harvest of spike bucks still is illegal in many Texas counties. Most of these are general law counties



which are not under the Texas Parks and Wildlife Department's regulatory authority. Their game laws are set either partially or wholly by the Texas Legislature.

Why then, should spike bucks be harvested instead of protected?

The Kerr studies, in the opinion of the biologists involved, prove spike bucks are inferior animals due to nutrition and genetics. "Harvesting the best bucks and protecting spikes could be compared to a stockman slaughtering his best young bulls and saving the poorest animals for breeding stock," Harmel explained.

Poor nutrition is the primary cause for the appearance of spike bucks in a deer herd, but until recently, no proof had been found to indicate that genetics also played a role. That's where Big Charlie and his progeny entered the picture.

Charlie was a six-pointer at 1½ years of age and added points and bulk to his antlers in subsequent years. At the time of his death he had 15 points with an inside spread of 19 inches. His live weight was 216 pounds.

The big buck was born on the Kerr area. His father, from Milam County, weighed 176 pounds when field dressed after he died at age 3½. His mother, born in the Texas A&M University deer pens, was sired by a Maverick County buck which lived to age 15 and weighed 164 pounds live weight.

In the Kerr investigations, Charlie was bred to one group of does, while another group of does was bred with spike bucks. All deer were maintained on high-protein rations. Only one of Charlie's 16 male offspring was a spike buck, while the spike fathers produced five spikes among their 19 male offspring, or 26 percent. In all, of 36 bucks whose fathers were spike bucks, 42 percent had spike antlers at age 1½. Big Charlie's sons averaged 122 pounds in weight at age 1½, while the sons of spikes averaged 109 pounds at the same age.

Carrying the experiment further, female progeny of the spikes were backcrossed with their fathers. This produced 16 spikes out of 32 male offspring, or 50 percent.

The theory that a spike eventually will grow to have normal-sized antlers is refuted by the Kerr study. Three spikes were maintained on high-protein rations through 2½ years of age and they still grew only spike antlers. Also, 60 percent of the male offspring of one second-generation, high-protein spike were spike bucks at 1½ years.

Even before Big Charlie entered the scene, side-by-side growth studies on groups of spike and fork-antlered yearlings showed the differences in body and antler development between the two groups. The experiment started with nine bucks which were spikes at age 1½, and seven with forked antlers of the same age. Under equal nutrition, the fork-antlered bucks consistently produced twice as much antler mass (weight) through 5½ years. "One of the spike bucks in that group never produced more than four points during that time, and another had no more than six points," said Harmel.

Harmel added that the Kerr studies have convinced him that two other long-standing theories about spike bucks are not necessarily true. "Some people believe that a buck born late in the breeding season is more likely to be a spike, and others think a buck born to a yearling doe is more likely to be a spike," he said. "Our experiments have involved bucks born throughout the normal breeding season and to does of all ages, and we have found no correlation between these factors and the percentage of spikes produced.

"Nutrition is the number one cause of the spike buck phenomenon, but at some point along the line it is obvious that genetics play an important role as well." Harmel theorized that the probability of producing a spike buck is carried equally in the genes of both bucks and does. "It appears to me that production of spike or fork-antlered bucks is related to genetics, just as are other characteristics such as body conformation, hair color and perhaps the incidence of twins."

The Kerr studies already have provided ample proof that the incidence of spike bucks can be reduced through a combination of hunting

pressure and habitat management. After the installation of a deer-proof fence in 1968 and the subsequent removal of sheep and goats from the area, deer populations and body condition have been closely monitored. Populations have been maintained at one deer per 10 acres, while much of the Hill Country habitat surrounding the area carries a much higher density of deer. Public hunting on the area, which included an adequate harvest of does and spike bucks, has held the herd within the range's carrying capacity.

As a result, some 70 percent of the yearling bucks on the area have forked antlers, compared to only 30 percent before the herd was reduced. Yearling does with fawns, a rare occurrence in the past, became almost commonplace and the average body weight of fawns, does and bucks all climbed impressively. This dramatic improvement in the deer herd was accomplished while the area was grazed by cattle, dramatizing the fact that landowners can have two important cash crops on a single tract of land. While sheep, goats and exotics such as axis deer or sika deer compete directly with whitetails, moderate grazing by cattle actually has been found to be beneficial to deer habitat.

Biologists are quick to point out that a true genetic spike still has not been found. "But there is enough evidence to indicate that the probability of producing spike bucks can be carried through several generations even where nutrition is adequate," Harmel said. "This alone convinces me that a spike buck is an inferior animal which is not contributing to the overall quality of the herd. This buck should not be given more protection than other bucks in the herd.

Many landowners do not have the advantage of a deer-proof fence within which to upgrade the quality of their deer. However, a deer spends most of its life in a relatively small area. If enough landowners attempt to apply the principles of good deer management—including harvest of spike bucks—developed at Kerr Wildlife Management Area, the current decline in Texas deer quality could be reversed. \*\*



## Young Naturalist

# Eyeshine

by Ilo Hiller

**Until** primitive man discovered fire, making it possible for him to light up the night, he probably was unaware that certain animals have eyes that seem to glow in the dark. Imagine how frightened he must have been the first time he looked beyond the comforting circle of his campfire light to see a pair of shining eyes watching him from the darkness. And with his limited knowledge, he didn't know the glowing eyes were the result of reflected light—not the work of demons or supernatural creatures.

Perhaps you shared his twinge of fear the first time you saw glowing eyes in the woods, especially if you were sitting around a campfire telling ghost stories or listening to those strange night noises that stir the imag-

ination. Even though some of you may not have had the opportunity to see a wild animal's eyes shine, you probably have caught a glimpse of this reflected glow in the eyes of a pet dog or cat.

Eyeshine occurs when light enters the eye, passes through the rods (light receptors) and cones (color receptors) of the retina (image surface), strikes a special

*Those animals that display the brightest eyeshine, such as the bobcat above, have more rods (light receptors) and fewer cones (color receptors) in their retinas than animals with no eyeshine. As a result, they have excellent night vision, but usually are color-blind. The majority also are nocturnal animals.*

# LONG SHOTS SHORT CASTS

compiled by David Baxter

**American Attitudes About Wildlife Reported**—The first of four reports on American attitudes on wildlife has been published. It analyzed findings of a three-year study by the Yale School of Forestry and Environmental Studies and was financed by the U.S. Fish and Wildlife Service. Of eight selected issues, the public knew most about the plight of baby seals killed for fur, and effects of pesticides such as DDT on birds. The least recognized was use of steel shot versus lead shot by waterfowl hunters. On a variety of questions, a majority favored protecting wildlife even at the expense of jobs, housing and development projects. Public support for endangered species protection, when it would increase costs for an energy project, depended on the animal involved. Bald eagles, mountain lions and crocodiles won favor; plants, snakes and spiders did not.

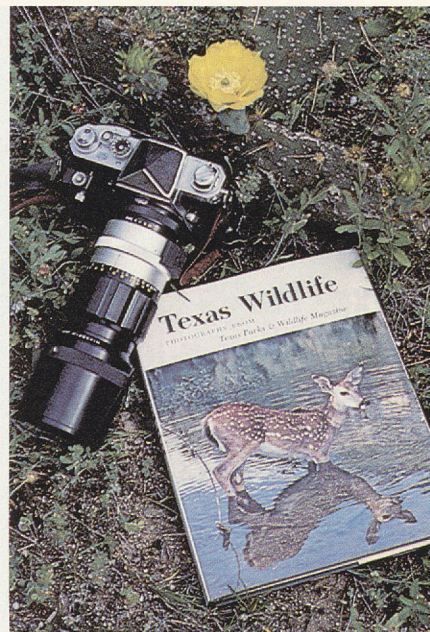
**Pennsylvania Trapper Education Program**—The Pennsylvania Game Commission has inaugurated a trapper training program for 1980 which will parallel its hunter education. Thrust of the new trapper education will be to instill proper attitudes on trapping methods and ethics, and to instruct on the nature of animals which are being sought and principles of trapline management. The agency says emphasis will be on selective setting of traps to prevent nontarget species from being caught. High fur prices have produced an all-time peak in trapping in Pennsylvania. They estimate the number of trappers in the state varies from 135,000 to 200,000. Initially the trapper training program will be on a voluntary basis.

**Commercial Catches of Stripers Vetoed**—The Arkansas Game and Fish Commission has rejected a proposal by that state's commercial fishermen to take and sell striped bass. There reportedly has been a black market for the fish in Arkansas for some time.

**Campsite Reservations For Some National Parks**—Campgrounds in seven national parks may be reserved by computer during the 1980 camping season. The reservations may be in person or by mail for Yosemite, Sequoia-Kings Canyon, Grand Canyon, Rocky Mountains, Shenandoah, Great Smoky and Cape Hatteras National Seashore. According to the Department of the Interior, the computerized reservation system was initiated last year at three western parks and it worked well, reducing congestion caused by last-minute searches for campsites. The department says reservations cannot be taken by telephone.

**Missouri Lifts Ban on Grass Carp**—The Missouri Department of Conservation has ended an eight-year ban on the importation and possession of the controversial grass carp. Despite the ban, the fish has been widely distributed in the Missouri, Mississippi and St. Francis Rivers. Grass carp, natives of the Amur River in Asia, feed primarily on vegetation and have been touted as controls for excessive aquatic vegetation. The department plans to have information on stock rates, plant preferences and commercial suppliers of grass carp.

**New Program for Penn. Wildlife**—The Pennsylvania Game Commission has started a program to raise funds and broaden and expand the agency's wildlife management activities. Called Working Together for Wildlife, the thrust of the program will be the enhancement of conditions for the many species of wildlife not hunted in the state. As is the case in many other states, Pennsylvania's hunters have objected to use of hunting license revenue for management of species other than game animals. And some nonhunters, who have been reluctant to buy licenses, have not had a readily available means through which they can contribute to wildlife management. No details on the program yet, but the game commission is accepting contributions.



Bill Reaves

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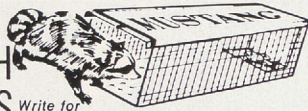
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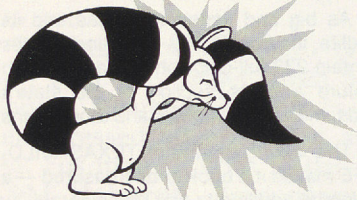
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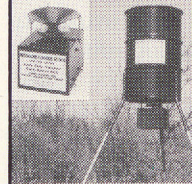
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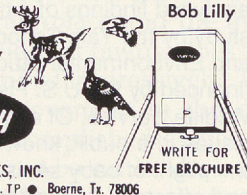
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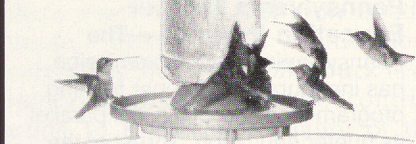
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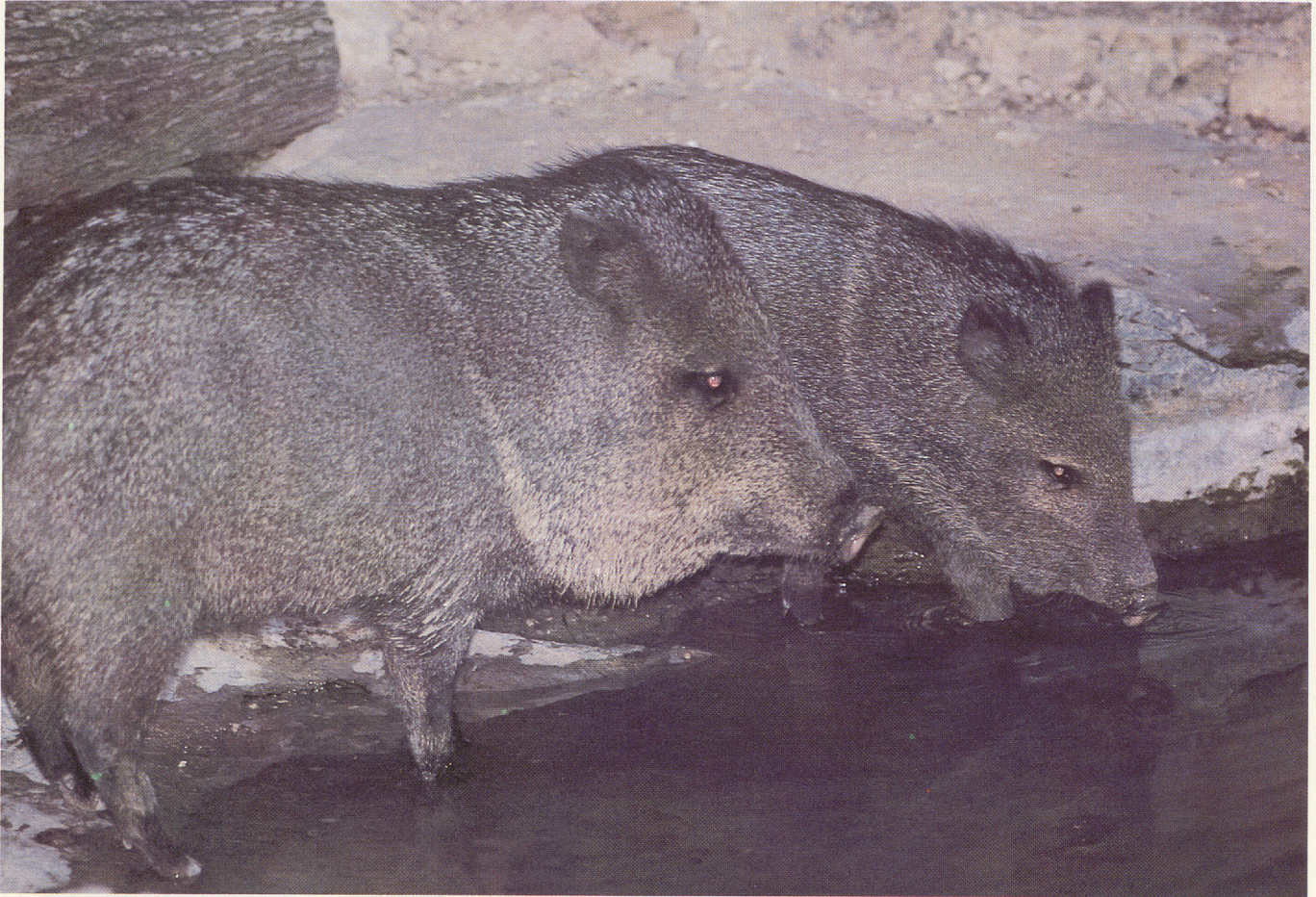
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Javelina, photo by Leroy Williamson



Alligator, photo by Leroy Williamson



membrane behind the retina and is reflected back through the eye to the light source. This special mirrorlike membrane, called the tapetum (ta-PEA-tum), is not present in the human eye. We have dark-colored cells behind our retinas which absorb light rather than reflect it.

Most of the animals with eyeshine are night hunters, and their ability to use the available light twice, once on the way in and again on the way out, gives these nocturnal animals additional light to see by. The majority of these glowing eyes belong to mammals, but spiders, alligators and bullfrogs are a few other creatures with reflecting eyes. Some night birds also have eyes that glow in the dark, but their eyes do not have a tapetum layer. Scientists still are trying to solve the mystery of their source of eyeshine.

An interesting sidelight is that animals with the brightest eyeshine generally have more rods and fewer cones in their retinas. As a result they have excellent night vision, but usually are color-blind.

Eyeshine coloration varies from the glowing reddish-orange of the alligator to the yellows and greens of the deer and cat families. Just what causes these color differences does not seem to be documented.

Because eyeshine is directed back to the light source, you must be in the right spot to be able to see it, usually directly behind the light. To increase your chances for seeing eyeshine, watch the roadsides carefully when



*Although eyes with eyeshine are said to glow in the dark, they actually do not glow—they reflect the available light. Light enters the eye, passes through the retina and strikes a mirrorlike membrane called the tapetum. The tapetum reflects the light back through the eye to the light source. Eyeshine coloration varies with the species, amount of light and direction the light strikes the eye. Alligator eyeshine may vary from a bright reddish-orange to an iridescent pink. Cat eyes vary from yellowish gold to bright green (see photo on page 29).*



Squirrel, P&W File Photo

riding in a car at night. The headlights often are reflected in the eyes of animals by the sides of the road. While walking at night with a flashlight, shine it in an arc around you and try to catch its reflection in the eyes of night creatures just beyond its circle of light. At times dozens of spiders' eyes will reflect from patches of tall grass. Notice the eyes of your pet dog or cat as it approaches a lighted patio area and you may be at the right angle to see its eyes reflect.

Those of you who have a cooperative cat might like to try this experiment. On the back of a small hand mirror draw a one-quarter inch circle. Remove the silver from the circle to form a peephole. Get as close to your cat's eye as possible while looking through the peephole. The

reflective side of the mirror should face the cat. Turn off all lights except for one small lamp located across the room from you or let a friend shine a small flashlight in your direction. Tilt and adjust the mirror until the light from the lamp or flashlight is reflected into the cat's eye. Since the light striking the eye comes from the mirror, rays from the tapetum will be reflected back to the mirror. Through your peephole you should be able to see the red blood vessels of the retina against the sparkling surface of the tapetum.

Information on eyeshine is very sketchy, but perhaps one day further research into the subject will reveal some of its secrets. In the meantime we can but wonder about eyeshine, another mystery of nature. \*\*

# LETTERS TO THE EDITOR

## Issuing Doe Tags

I am very concerned about the quality of the Texas deer herds, especially those in the central and south-central regions. I have hunted these areas for the past 15 years and have watched the quality steadily decline. I realize this is caused by several things, but believe the major reason is overpopulation.

From past experience I have found that many landowners do not let hunters have the doe permits issued by your department to keep the herd in balance. As a result, many leases are overpopulated with small, undernourished, poor-quality deer. In some cases the deer actually are starving. Some landowners seem to think that if they have a large number of deer, even though they are in poor condition, the hunters will keep coming back. They might be surprised to learn that a large percentage of those who lease would rather see one healthy buck with good antlers than 10 starving ones with small or deformed racks.

Doe permits are issued for a very good reason—to harvest the surplus does in an area. If landowners would issue them, many hunters could use them to obtain venison for the table. Harvesting the does should improve the quality of the herd and satisfy the hunter who would be more likely to return and provide a more reliable source of income for the landowner. The landowners, hunters and deer herd all would benefit if the doe permits were used as they were meant to be.

Allen E. Pickett  
Chandler

## Why Take Potshots?

I'm writing this letter in response to the item "Potshots Can be Costly" which appeared in *Around the State* in the December 1979 magazine.

I was shocked when I read this piece about the hunter who admitted shooting a mockingbird—the state bird—

while dove hunting. Hunters such as this one make it rough on the rest of us and they provide more fuel for the anti-hunter's fire.

When you go dove hunting, shoot dove—and only dove—and then go home. Don't be one of those people who think they have to shoot their guns just because they have them out.

I'm mad, real mad, about this and when my right to hunt game animals legally has been taken away because of such hunters, I'll be fighting mad!

G. S. Garrison  
Arlington

## Prairie Dog Megalopolis

In the February 1980 issue of your magazine in an article about prairie dogs, I read that "one Texas town covered an estimated 25,000 square miles and housed some 400 million animals. . . ." Is this true, and where is the town located?

Jim T. Cocke  
Longview

■ The prairie dog town referred to in the February magazine article is now a thing of the past, but it was located in the High Plains area of Texas. Mention of this giant prairie dog town is found in almost every reference source pertaining to the animal. One recent account in *Natural History* magazine credits biologist C. Hart Merriam with reporting this megalopolis in 1901. According to the book *The Mammals of Texas* by W. B. Davis, this famous Texas prairie dog town was approximately 100 miles wide and 250 miles long. Copies of the *The Mammals of Texas* are for sale through this department at a cost of \$2.63. To order one, send the exact amount by check or money order to the Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas 78744.

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## BACK COVERS

**Inside:** Porcupines are slow and methodical to the point of appearing awkward, but actually they are excellent climbers and are as comfortable in trees as on the ground. Contrary to popular belief, they are unable to throw their barbed quills. Photo by Glen Mills.

**Outside:** Although it has a fast, erratic flight, the pipe vine swallowtail butterfly, *Battus philenor*, can be caught easily on the flowers it visits regularly, such as this Indian paintbrush. Photo by Bill Reaves.

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