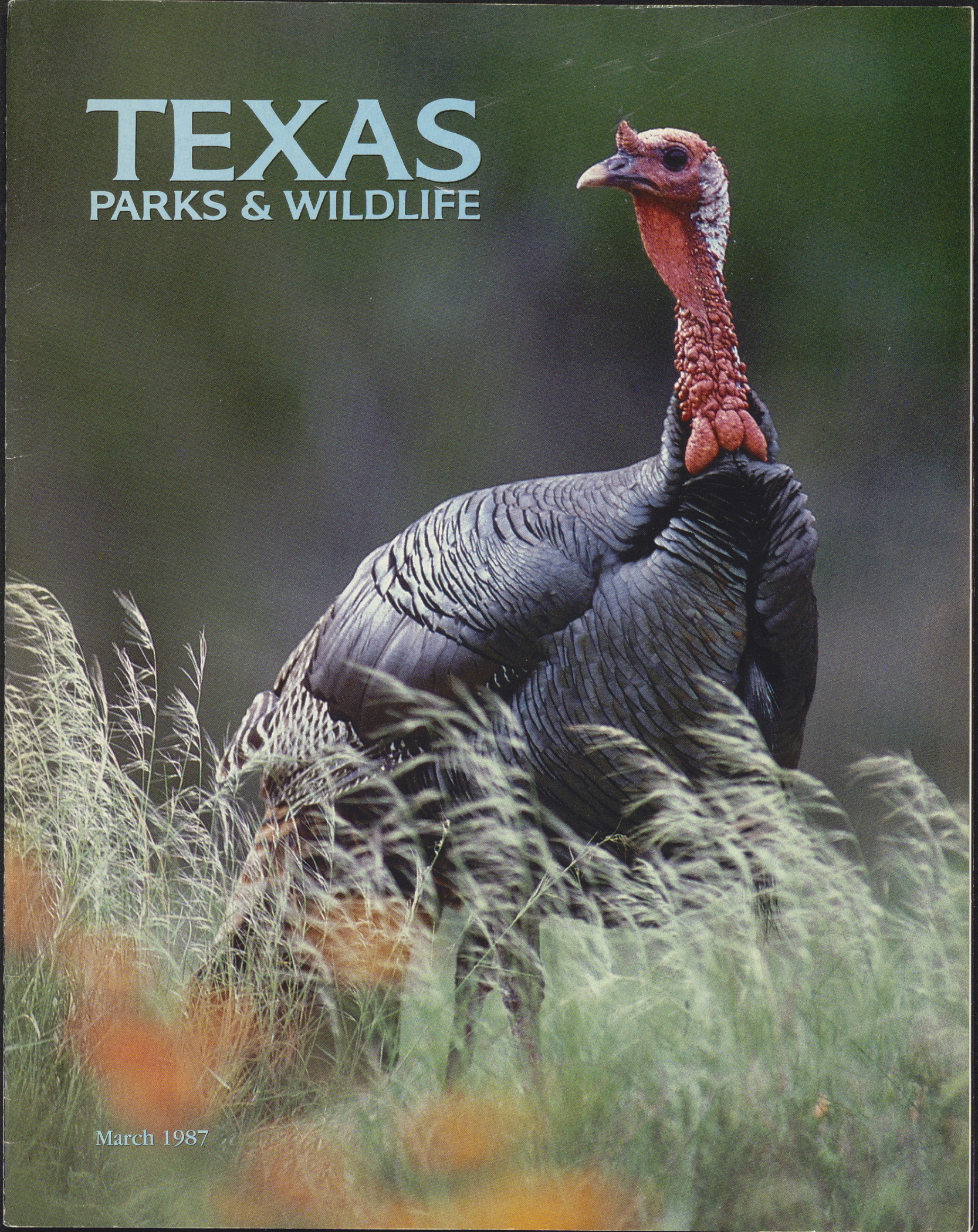
TEXAS
PARKS & WILDLIFE



March 1987

TEXAS
PARKS & WILDLIFE

March 1987, Vol. 45, No. 3

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Front: With the arrival of warmer weather in late March, male Rio Grande turkeys begin to strut and gobble their way into a spring courtship with the females. (See story on page 2.) Photo by Steve Bentsen. **Inside Front:** Common over most of the eastern two-thirds of the state, the eastern bluebird can be heard singing in Texas from mid-February to July. Photo by Vinyard Brothers.

Grady Allen

In the spring, a Rio Grande turkey struts his stuff.

Romancing the Turkey

Ray Sasser

As the days grow longer in late February and early March, things begin to happen around the winter roosts of Rio Grande turkeys. The birds grow restless and the males start gobbling intensely while still on roosts they have occupied since the fall.

This gobbling is the start of an elaborate courtship procedure brought on by longer days. Length of day is the single most important factor in stimulating turkeys to breed, as is the case with most birds. Light per se does not induce the birds to breed, but rather increased exercise as a result of long days induces breeding. In Texas, Rio Grande turkeys breed from mid March through mid April.

Gradually the winter flocks begin to break into smaller groups of males that move onto display grounds where they begin to strut and gobble to attract hens. Other birds, such as prairie chickens and pheasants, have much the same ritual. Prairie chicken males stake out territories on their "booming grounds" where they compete to attract hens, and cock pheasants crow to lure hens.

Turkey gobblers display as a part of a breeding group, that is, a group of birds reared together that may or may not be brothers from the same clutch of eggs.

Only the dominant male in this group will breed, and he will breed with many hens. The other males in the group are his seconds, much like seconds in a duel between rivals. They will protect their dominant male from dominant males of other groups that might attempt to prevent them from mating. But these seconds will not attempt to interfere with the breeding by the dominant male from their own sibling group. Usually the dominant gobblers are the older birds, ones about 2½ to 3½ years of age.

About 45 percent of the turkey population is male, but of this figure only 35 percent of the gobblers actually breed with hens, so there is a large surplus of gobblers each year that do not breed. However, these

by Don Wilson

Wyman P. Meinzer

non-breeding gobblers, the seconds, are necessary to the breeding process. It probably takes a large number of displaying males strutting about and gobbling to attract hens to the display grounds.

Once on the display ground, a hen will mate several times. After she has mated she will leave the area and head for nesting grounds. She usually will travel some four to six miles from the winter roost, and sometimes as far as 28 miles.

After she picks out a nest site the hen will lay one egg per day until her clutch of eggs is complete, although she occasionally skips a day. So, a clutch of 12 eggs may take 13 to 15 days to lay. When the clutch is complete, the hen will begin to incubate all of the eggs together. She does this so the young birds will hatch within a few hours of each other. It usually takes 28 days for the eggs to hatch once the hen starts incubating them.

If these eggs are lost before hatching, the hen will

Grady Allen

Wyman P. Meinzer

Wyman P. Meinzer

Ray Sasser

renest without returning to the gobbler to be bred again. The hen is capable of storing sperm for four weeks after mating. Eggs will be fertile from previous matings.

Research by the Parks and Wildlife Department has found that both juvenile and adult hens nest and lay eggs at about the same rate. However, the adult hens are more successful in rearing poults than juvenile hens.

The young turkeys hatch with their eyes open and their bodies covered with a soft, natal down. Within a few hours they are up and moving about, feeding themselves on insects, unlike young birds of other species that depend on their mothers delivering food to their mouths. The hen protects the poults from predators and shelters them at night to keep them warm.

The poults grow rapidly. Within three weeks from hatching the poults are big enough to roost in a tree with the hen, away from most predators. By the end of the summer it's hard to distinguish poults from hens.

As the poults grow, several hens will join to form a single flock that contains the offspring of those hens as well as adult hens who did not produce young, sort of a turkey day-care center. During the summer it's hard to tell which poults belong to which hen. This is the beginning of the sibling groups that later become important to breeding.

After breeding, the dominant males and their sibling seconds remain at the winter roost sites. They take no part in nest building, incubation or rearing the poults.

Gobblers are most susceptible to hunting after the hens have left the breeding grounds. Gobblers still hanging out on the display grounds remain in a breeding condition, and in this state they are most likely to respond to a hunter's call that imitates a hen.

The male expects the hen to come to him, so he will gobble in an effort to entice her to the display grounds. Failing this, he will make the often-fatal mistake of going to what he thinks is a hen and finding himself staring down the full-choked barrel of a 12 gauge. Trying to call gobblers is a reversal of roles and probably won't work if hens are still coming to the gobbler's display grounds.

Romance keeps the Texas flocks of Rio Grande turkeys at a nationwide high, but romance also can be the downfall of gobblers answering the siren call of a hunter in the spring. * *

Steve Bentsen

"Get out the camera, Martha... this or

by Jim Cox

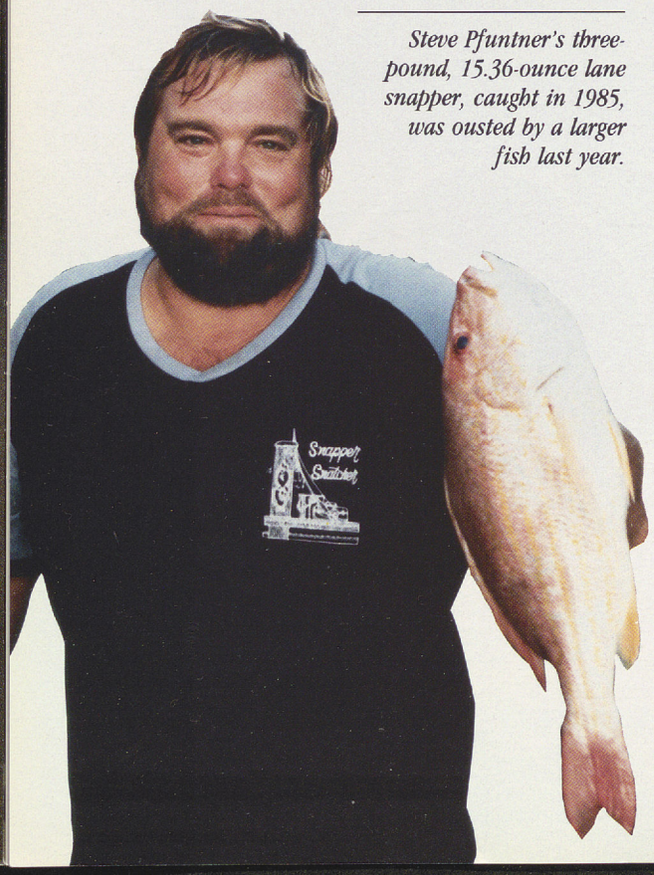
No one knows when or where Homo sapiens first fashioned a hook and caught a fish for supper. But you can bet a second Homo sapiens was out the next day, trying to catch a bigger one.

As fishing became more sophisticated, methods of keeping track of catches also became more advanced. Now governmental agencies and private organizations categorize and computerize data from around the world to maintain a "Who's Who" for big fish catchers.

The Parks and Wildlife Department performs this task for Texas. And in 1986, the task was considerable. More than 50 new records were certified during the year, which is a record in itself.

While the lion's share of the new records were for saltwater species, freshwater species also provided significant catches.

This 71-pound blue catfish earned a state record for Sammie Roberson of Coldspring in 1986. Roberson caught the fish below Lake Livingston dam.



Steve Pfuntner's three-pound, 15.36-ounce lane snapper, caught in 1985, was ousted by a larger fish last year.

Headlining the 1986 triumphs were two record largemouth bass that broke a five-year record drought for the species.

Another five-year quiet spell was shattered by the catch of a striped bass that erased the previous mark set in 1981.

Other impressive rod-and-reel catches which dented the freshwater record book in 1986 included brown trout, tarpon and blue and flathead catfish.

While 27 of the new state records certified during 1986 were saltwater fish, they consisted mainly of lesser-known species. Anglers failed to set new marks for the more sought-after saltwater fish such as spotted seatrout, flounder, king mackerel, red snapper, black drum or ling (cobia).

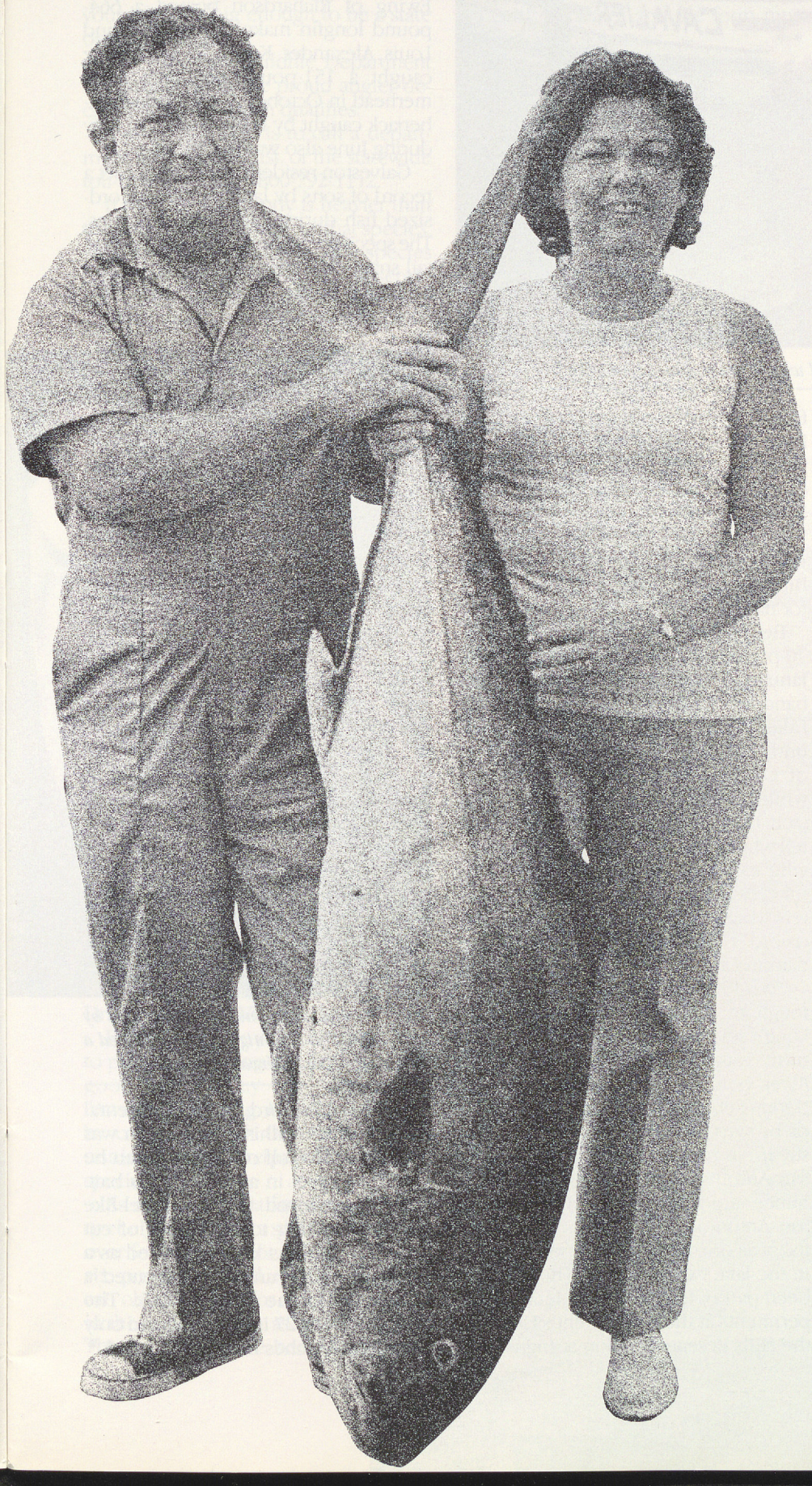
Bass fishermen took notice during February 1986 when Earl Crawford of Center boated a 16.9-pound largemouth at tiny Lake Pinkston in Shelby County. His trophy catch ended a five-year record held by John Alexander's 15-pound, eight-ounce bass caught from a private lake near Athens in February 1981.

As the summer of 1986 passed, it was assumed by most observers that Crawford's record was safe at least until spring 1987, since most super-lunkers are caught during the early spring period. But Plano fishing guide Mark Stevenson changed that theory by catching a 17.67-pound bass from Lake Fork on November 26.

When Stevenson cast a jig-and-worm combination into a Lake Fork brushpile that day, he not only garnered considerable publicity for his guiding business; he also gave a running start to a program operated by the Parks and Wildlife Department and three corporate sponsors.

Stevenson's fish, which was kept alive, became the first official entry in the "Share A Lone Star Lunker" program, which in effect rewards anglers who catch 13-pound-plus largemouths

s one's gonna make the record book!"



Billie Van Norman set a state record in 1973 with an 81-pound, 12-ounce amberjack.

and allow their fish to be used in the department's hatchery program.

Fish accepted into the program are expected to provide excellent broodstock for spawning, possibly passing their genetic qualities on to offspring that will be stocked in public waters. The fishermen will receive considerable publicity by having their fish in the "Lone Star Bass Hall of Fame" and be in contention for the "Lone Star Lunker of the Year" award. Also, after completion of hatchery work, the angler has the option of having the trophy fish mounted free of charge or accepting a fiberglass replica and returning

This record gray triggerfish was bested by an 8-pound, 14.88-ounce fish in 1986.

the fish alive to the lake of the angler's choice.

Fishermen have until April 30 to submit fish for the 1987 program period. Prospective participants may call toll-free 1-800-792-1112 between 8 a.m. and 5 p.m. weekdays, or 512-389-4848 after hours to report their catch. Many lakeside marinas or other businesses also will have information on the program to assist fishermen.

The state record striped bass caught by Wayne Savoie of Round Rock may

Tim Underwood broke the lane snapper record with this 4-pound, 14½-ounce fish.

have received less fanfare than the two largemouth records, but it was impressive in its own right. The 43-pound, 8.8-ounce fish broke the record set by the late Harry Lamb of Austin in March 1981. Both record fish were caught below the Mansfield (Lake Travis) Dam in the headwaters of Lake Austin, about 10 miles west of downtown Austin.

Savoie's fish ranks with some of the largest landlocked stripers caught in other parts of the nation, and compares favorably with the International Game Fish Association's current all-tackle world record of 59 pounds, 12 ounces caught in Arizona's Colorado River in 1977.

The year 1986 was an unusually good one for catfish, as the state record for blue catfish fell twice and a new record for flathead catfish also was set.

Becky Curtis of Pottsboro boated a 70-pound, four-ounce blue catfish on January 9 while fishing with her husband who is a professional guide at Lake Texoma. Her record was intact until March, when Sammie Roberson of Coldspring caught a 71-pounder while fishing below the Lake Livingston Dam. The flathead catfish record fell when William O. Stephens of Lewisville caught a 98-pounder below the Lake Lewisville Dam during June. Interestingly, Stephens' fish beats the record 91¼-pounder caught above the dam in Lake Lewisville proper in 1982.

Two 1986 freshwater records may be tough to beat in the future. Jeff DeLong's seven-pound, two-ounce brown trout was caught in the Guadalupe River below Canyon Reservoir Dam during February. Only limited numbers of browns have been stocked in the stream in recent years. Paul Willette of San Antonio caught a 10-pound, two-ounce tarpon from Lake Braunig near San Antonio during August. Willette's fish was one of only 34 tarpon stocked in the lake two years ago. The fish had been part of temperature tolerance experiments at the department's Heart O' the Hills Research Station at Ingram.

Adolf Schulz landed nine state records in 1986, including this 12.64-ounce margined flyingfish.

A host of saltwater records fell during 1986, but many of the species were so obscure as to be baffling to anyone but an ichthyologist. However, two shark catches were noteworthy. Donald Ewing of Richardson boated a 664-pound longfin mako during May, and Louis Alexander Kusey III of Schertz caught a 151-pound smalleye hammerhead in October. A 101-pound amberjack caught by Ed Roberson of Katy during June also was significant.

Galveston resident Adolf Schutz set a record of sorts by landing nine record-sized fish during his offshore sorties. The species were horse-eye jack, yellowtail snapper, cottonwick, black durgon, knobbed porgy, margined flyingfish, coney, yellow chub and puddingwife.

This 10-pound, two-ounce tarpon, caught by Paul Willette at Braunig Lake, established a new category in freshwater records.

Some state record fish are accidental catches. Mike Mathis of Harlingen was fishing in the Gulf of Mexico when he decided to reel in and check his bait. He was surprised to see an eel-like creature clinging to his chunk of cut bait. The fish was later identified as a snake mackerel, and it represented a new entry in the record book. The toothy fish was 27 inches long and only about three inches in girth. * *

How to Apply for State, World Records

So you've caught the biggest fish of your life. Is it big enough to be a state or world record?

The Parks and Wildlife Department can usually help the proud angler decide if his prize catch qualifies.

A good first step is to call a department fishery biologist, or the statewide toll-free number, 1-800-792-1112.

If the fish apparently is heavier than the current state record for that species, or if it would establish a new species category, the department will send the angler an official state record application form. They also are available at some department field offices.

The form's instructions include requirements such as weighing the fish on certified scales, signature of witness and photos. The completed form then must be sent to department headquarters in Austin, where the fish records committee votes on certification.

Oddly, a fish that is too small to qualify as a state record could possibly be a world record. World records are listed based on the weight of line used, as well as all-tackle listings.

Two private organizations maintain world records. They are the International Game Fish Association (IGFA) and the National Freshwater Fishing Hall of Fame (NFFHF). To qualify for a world record, the angler must complete a fairly extensive set of procedures, including sending a sample of the line used to catch the fish. For further information contact the IGFA at 3000 E. Las Olas Blvd., Fort Lauderdale, Florida 33316, or the NFFHF at Box 33, Hall of Fame Drive, Hayward, Wisconsin 54843.

Fishermen have yet another option to pursue in getting recognition for a good catch. They can receive an "Award of Fishing Merit" certificate by catching a fish that exceeds the minimum weight requirement for the species.

As an example, a largemouth bass over eight pounds, a smallmouth bass over four pounds, or a flounder over six pounds would qualify. Anglers can obtain a form for a big fish award in the same manner as a state record. The fish must have been caught on hook and line in Texas waters, weighed on certified scales and the form must be signed by a witness. * *

Anglers interested in catching a really big fish often go after the flathead catfish. This flathead was caught in 1973. The current record, a 98-pounder, was caught by William O. Stephens in June 1986.

TEXAS STATE FISH RECORDS

*Denotes new record +Denotes world record

Fish Caught in Freshwater

Bass, Guadalupe: 3 lbs., 11 oz.; length 18¼; girth 13½; Allen M. Christenson Jr., Austin; Lk. Travis; 9/25/83.
Bass, hybrid-white/striped: 19 lbs., 10.56 oz.; length 35.16; girth 22.63; John Haney, Dallas; Lk. Ray Hubbard; 6/20/84.
***Bass, largemouth:** 17 lbs., 10.72 oz.; length 27½; girth 24½; Mark Stevenson, Plano; Lk. Fork; 11/26/86.
Bass, smallmouth: 6 lbs., 7.36 oz.; length 22½; girth 17; Donald J. Edgar, Marble Falls; Lk. L.B.J.; 3/2/85.
Bass, spotted: 5 lbs., 9 oz.; length 21; girth 17; Turner Keith, Austin; Lk. O' the Pines; 3/13/66.
***Bass, striped:** 43 lbs., 8.80 oz.; length 43; girth 27.7; Wayne V. Savoie, Round Rock; Lk. Austin; 4/16/86.
+**Bass, white:** 5 lbs., 9 oz.; length 20¾; girth 17; David S. Cordill, Spicewood; below Longhorn Dam; 3/31/77.
Bowfin: 17 lbs., 3 oz.; length 32; girth 21¾; R.M. Speir, Ft. Worth; Toledo Bend; 8/15/72.
Buffalofish, largemouth: 58 lbs.; length 41; girth 32½; Bobby Thompson, Arlington; stock tank near Wilkerson; 4/6/69.
***Buffalofish, smallmouth:** 33 lbs., 12 oz.; length 33; girth 32; Ronald V. Prince, San Antonio; Lk. Conroe; 11/3/83.
Carp: 41 lbs.; length 37; girth 32½; Scott Helsley, Richardson; Pure Oil Lk.; 5/14/72.
***Catfish, black bullhead:** 4 lbs., 8.50 oz.; length 18½; girth 12¼; Charles E. Guinn of Graham; stock pond; 11/15/86.
***Catfish, blue:** 71 lbs.; length 48; girth 37½; Sammie Roberson, Coldspring; below Lk. Livingston Dam; 3/15/86.
Catfish, channel: 36 lbs., 8 oz.; length 38; Mrs. Joe L. Cockrell, Austin; Pedernales River; 3/7/65.
***Catfish, flathead:** 98 lbs.; length 54; girth 36; William O. Stephens, Lewisville; Lewisville Floodgates; 6/2/86.
Crappie, black: 3 lbs., 11 oz.; length 17¾; girth 16; Fritz Gowan, Poplar Bluff, MO; Toledo Bend; 1/17/85.
Crappie, white: 4 lbs., 9 oz.; G.G. Wooderson, Corsicana; Navarro Mills Lk.; 2/14/68.
Drum, freshwater: 31 lbs.; length 35½; girth 29½; Larry D. King, Wichita Falls; Lk. Arrowhead; 5/4/78.
Drum, red: 27 lbs.; length 40.5; girth 24; William Marion McNeil, San Antonio; Lk. Braunig; 6/26/84.
Flounder: 9 lbs.; length 24; Catherine Pond, Austin; Lk. Long; 11/18/78.
Gar, alligator: 279 lbs.; Bill Valverde, Mission; Rio Grande; 1951.
Gar, longnosed: 50 lbs., 5 oz.; Townsend Miller, Austin; Trinity River; 1954.
Muskie, tiger: 9 lbs., 1 oz.; length 32; girth 14; Michael R. Gaines, Wichita Falls; Lk. Nocona; 5/27/79.
Nile perch: 12 lbs., 1 oz.; length 30½; girth 18½; Mike Saldivar, San Antonio; Lk. Braunig; 2/1/80.
***Pickerel (chain or grass):** 4 lbs., 10 oz.; length 25; girth 11; Deborah Trousedale Morris, Woodlawn; Caddo Lk.; 6/12/86.
Pike, northern: 18 lbs., 4.5 oz.; length 41; girth 16½; Michael D. Sharpe, Austin; Town Lk.; 8/29/81.
Sunfish, bluegill: 3 lbs., 4 oz.; length 14; girth 16; Winfred Hoke, N. Zulch; farm pond; 4/25/66.
Sunfish, green: 2 lbs., 3.25 oz.; length 12; girth 14½; Alex Short, Texarkana; farm pond near Commerce; 5/18/69.
Sunfish, redear: 3 lbs., 4 oz.; length 14¼; girth 15; Vernon Roberts, Seguin; Guadalupe County farm pond; 4/23/78.
Sunfish, others: Open, to be considered as record species are proposed.
***Tarpon, freshwater:** 10 lbs., 1.92 oz.; length 37; girth 16; Paul Willette, San Antonio; Braunig Lk.; 8/8/86.
Trout, brook: 10.6 oz.; length 12; girth 6½; J. Bryan Hendricks, Lk. Jackson; Guadalupe River; 2/19/84.
***Trout, brown:** 7 lbs., 2 oz.; length 24; girth 15¼; Jeff DeLong, San Marcos; Guadalupe River; 2/7/86.
Trout, rainbow: 5 lbs., 12 oz.; length 23; girth 16; Patrick R. Barill, Waco; Lk. Meridian State Pk.; 1/5/85.
Walleye: 11 lbs., 5.75 oz.; length 31½; girth 19⅛; Ray Thrailkill, Amarillo; Lk. Meredith; 3/3/81.
Warmouth: 15 oz.; length 10; girth 9¾; Arthur E. Cruser, Austin; Lk. Austin; 8/16/85.

Unrestricted

Barracuda, great: 54 lbs.; length 57; Kenneth J. Richards, Houston; Buccaneer Rigs out of Galveston; 5/29/77; taken with speargun.
Bowfin: 19 lbs.; length 32½; girth 21; George E. Lord, Hemphill; Toledo Bend Lk.; 1/3/75; by trotline.
Buffalo, bigmouth: 75 lbs.; length 42; girth 39¾; Joe R. Walker, Brookeland; Toledo Bend Lk.; 8/7/85; trotline.
Buffalo, smallmouth: 81 lbs., 8 oz.; length 46⅞; girth 38½; Wayne Willoughby and Crook Parker, Center; Sabine River; 4/29/85; throwline.
Carp: 48 lbs.; length 42; girth 33; David Clayton Cook, Conroe; Scott Lk.; 8/14/80; bow & arrow.
Carp, grass: 37 lbs.; length 39; girth 30; Raymond Sutton, Copperas Cove; Colorado River; 5/10/85; trotline.
Catfish, blue: 116 lbs.; length 59; girth 39½; C. D. Martindale, Era; Lk. Texoma; 4/21/85; trotline.
Catfish, flathead: 114 lbs.; length 56½; Charles J. Booth, Houston; Lk. Livingston; 10/15/76; trotline.
***Dogfish, Cuban:** 1 lb., 1.12 oz.; length 21; girth 9½; Howard Horton, Galveston; 110 miles S. of Galveston; 9/6/86; reel with electric motor.
Drum, freshwater: 55 lbs.; Asa Short, Ft. Worth; White Rock Lk.; 1924; trotline.
Gar, alligator: 302 lbs; length 90; T.C. Pierce Jr., Montalba and Arthur Lee Wooley, Dallas; Nueces River above Cotulla; 1953; by trotline.
Gar, spotted: 15 lbs; length 49¾; girth 14½; David E. Smith, Buda; Lk. Travis; 8/3/83; by bow and arrow.
Grouper, Warsaw: 255 lbs; length 71; girth 62¼; William L. Thurber, Old Ocean; S. Freeport in 180' water; 1/21/82; by hand line.
Jewfish: 660 lbs.; length 96; girth 77½; James A. Frith, Corpus Christi; off Malaquite Beach; 7/4/75; taken with pneumatic speargun.
Shad, gizzard: 2 lbs., 15½ oz.; length 18¼; girth 13½; John H. Dix, Jr., Conroe; Lewis Creek Reservoir; 4/27/85; by speargun.
Snapper, cubera: 151 lbs.; length 60⅜; girth 46½; David Fotorny, Houston; off Freeport; 6/23/84; by hand line.
Snapper, dog: 134 lbs.; length 61; girth 49; Bryan Gulley, Corpus Christi; offshore Pt. Aransas; 8/5/78; taken with speargun.
Spadefish, Atlantic: 11 lbs, 5 oz.; length 21½; girth 25; Bryan Gulley, Corpus Christi; offshore oil rigs north, Bob Hall Pier; 5/4/74; taken with speargun.
Tilefish: 20 lbs., 12.48 oz.; length 36; girth 22; Joe Richard, Beaumont; 20 miles S. Flower Gardens; 7/28/83; by bicycle rig.

Fish Caught in Saltwater

***Amberjack:** 101 lbs.; length 60; girth 40; Ed Roberson, Katy; Gulf of Mexico; 6/4/86.
***Angelfish, French:** 6 lbs., 7.68 oz.; length 17; girth 22; Penelope Autry, Austin; Hospital Rock; 8/30/86.
***Barbier, red:** 1 lb., 13 oz.; length 16½; girth 11½; Capt. Ricky H. Preddy, Pt. Mansfield; off Pt. Mansfield; 7/8/86.
Barracuda, great: 46 lbs., 8 oz.; length 51; girth 21⅜; Henry Ed Foerster, Universal City; SE of Pt. Aransas; 7/24/76.
Bass, striped: 20 lbs., 13.44 oz.; length 36½; girth 23; Robert L. Walker, Houston; S. Jetty in Galveston; 1/28/84.
***Bigeye:** 1 lb., 12.96 oz.; length 15.9; girth 10¼; Michael Horton, Galveston; Clay Pile; 8/20/86.
***Bluefish:** 16 lbs., 9.92 oz.; length 36⅝; girth 19¼; Alex Koumonduros, Houston; 45 miles offshore Freeport; 1/11/87.
Bonefish: 3 lbs., 12 oz.; length 23¼; girth 11¼; C.W. Morris, Dallas; N. Jetty, Pt. Aransas; 11/19/77.
Bonito: 27 lbs.; Eddie Groth, Lk. Jackson; Freeport; 7/69.
***Bonito, Atlantic:** 4 lbs., 13.6 oz.; length 24¾; girth 12½; Patrick Maass, Katy; 85 miles SE of Galveston; 3/29/86.
***Bonnethead:** 2 lbs., 9.92 oz.; length 27; girth 14; Robert Curren Atkins, Temple; Bob Hall Fishing Pier; 6/14/86.
Brotula, bearded: 8 lbs., .5 oz.; length 27; girth 21; Bryan Gulley, Corpus Christi; 50 miles off Pt. Aransas; 9/19/82.
***Catfish, blue:** 7 lbs., 9 oz.; length 25½; girth 15⅛; Charles Evans, Pasadena; Trinity Bay; 11/10/86.
Catfish, gafftopsail: 13 lbs., 5.33 oz.; length 34; girth 18; Herman Frank Koehne Jr., Houston; Brazos River at mouth of Gulf of Mexico; 12/13/81.
***Catfish, hardhead:** 3 lbs., 1 oz.; length 18¼; girth 12⅛; Shawn David Huddleston, Pt. Bolivar; Galveston Ship Channel; 4/18/86.
Cero: Open (minimum, 10 lbs).
***Chub:** 6 lbs., .48 oz.; length 20¾; girth 17; Adolf Schulz, Galveston; Flower Garden; 6/21/86.
Cobia (ling): 101 lbs.; length 69¼; girth 33; Daniel Nickels, Hudson, FL; 20 miles SE Pt. Aransas; 7/17/84.
***Coney:** 3 lb., 6.72 oz.; length 17½; girth 14; Adolf Schulz, Galveston; W. Flower Garden; 7/17/86.
***Cottonwick:** 1 lb, 5.44 oz.; length 13¾; girth 9½; Adolf Schulz, Galv.; W. Flower Garden; 7/25/86.
Croaker, Atlantic: 5 lbs, 2 oz.; length 20¼; girth 16½; Earl Merendino, Pt. Arthur; E. Galveston Bay; 7/10/71.
***Cubbyu:** 9.12 oz.; length 9; girth 7¾; Floyd Victor Pansano Jr., Corpus Christi; off Pt. Aransas Jetties; 1/12/86.
***Cutlassfish, Atlantic:** 2 lbs., 10.24 oz., length 40⅛; girth 8⅝; H.J. (Jeff) Smith, South Houston;

Saltwater Fish, continued

Offatts Bayou; 1/1/87.
*__Dogfish:__ 21 lbs.; length 50¾; girth 15; Vickie Lyn Kusey, Schertz; 34 miles ESE Pt. Aran.; 10/26/86.
__Dolphin (Dorado):__ 62 lbs., 8 oz.; length 69; girth 33; Jeff Carey, Portland; off Pt. Aransas; 7/13/77.
__Dolphin, pompano:__ 3 lbs., 3 oz.; length 22⅝; girth 13⅞; Roland J. Castanie II, Texas City; 65 miles S. of Matagorda; 7/6/84.
__Drum, black:__ 78 lbs.; Marvin McEachern, Nederland; Sabine; 6/25/64.
__Drum, red:__ 51 lbs., 8 oz.; Johnny (Shorty) Cizmar; Padre Island surf; 1/67.
*__Durgon, black:__ 2 lbs., 6.08 oz.; length 14; girth 13½; Adolf Schulz, Galv.; Flower Garden; 6/20/86.
__Eel, banded shrimp:__ 29 lbs., 4 oz.; length 74½; girth 14½; Capt. Rick McGaffey, Houston; 23 miles S. of Pt. O'Connor; 3/10/85.
*__Filefish, scrawled:__ 1 lb., 12.64 oz.; length 20¼; girth 12; John Landeche, Angleton; West Tenneco Rigs off of Freeport; 8/11/86.
*__Filefish, unicorn:__ 2 lb., 11.84 oz.; length 19¼; girth 13¾; Stan Kruse, Arlington; 34 miles offshore Port Aransas Jetties; 5/26/86.
__Flounder:__ 13 lbs.; length 28; girth 24½; Hebert L. Endicott, Groves; Sabine Lk.; 2/18/76.
*__Flyingfish, margined:__ 12.64 oz.; length 14½; girth 6½; Adolf Schulz, Galveston; Flower Garden; 6/21/86.
*__Gag:__ 12 lbs., 1 oz.; length 28; girth 20½; Less Daughtry, Jr., Hitchcock; 45 miles SW of Galv.; 10/29/86.
__Grouper, black:__ 83 lbs., 4 oz.; length 52; girth 35¾; T.L. Gleason, Muleshoe; offshore Pt. Aransas; 9/11/83.
__Grouper, Warsaw:__ 197 lbs.; length 68; girth 58; Mike Gibbs, Robstown; Snapper Banks off Pt. Aransas; 4/27/82.
__Grouper, yellowfin:__ 32 lbs.; length 37⅜; Larry Williams, Pasadena; Gulf of Mexico 120 miles SE of Galveston near the Flower Gardens; 4/27/82.
__Grunt, barred:__ 1 lb., 1 oz.; length 12½; girth 9; Harry Hoffman, Corpus Christi; Pt. Aransas; 7/14/84.
*__Guaguanche:__ 1 lb., 5.28 oz.; length 19½; girth 6¾; Michael Horton, Houston; 28 miles south of Pt. Aransas; 12/31/85.
__Hammerhead, great:__ 871 lbs.; length 163¾; girth 68¾; Mark A. Johnson, LaMarque; 18 miles SE Galveston Jetties; 7/4/80.
*__Hammerhead, smalleye:__ 151 lbs.; length 95; girth 40; Louis Alexander Kusey III, Schertz; 40 miles SE of Pt. Aransas; 10/26/86.
*__Hind, rock:__ 2 lbs., 15.84 oz.; length 16; girth 14; Frank Zizmont, Nederland; 80 miles south of Sabine Pass, 2/26/86.
*__Jack, almaco:__ 4 lb., 3 oz.; length 21¼; girth 14; Rusty Schwartz, Houston; 25 miles offshore Freeport; 11/22/86.
__Jack, black:__ 17 lbs., 4 oz.; length 34; girth 21½; Dedra Anne Sheldon, McAllen; off Pt. Isabel; 8/78.
*__Jack, cottonmouth:__ 1 lb., 4 oz.; length 12½; girth 11⅜; Frank K. Fuller, Hitchcock; Heald Bank; 7/14/84.
__Jack, crevalle:__ 50 lbs., 4 oz.; length 52½; girth 30¼; Francis Lyon, Leander; Pt. Aransas; 6/26/76.
*__Jack, horse-eye:__ 18 lbs., 15.68 oz.; length 34; girth 23; Adolf Schulz, Galveston; West Flower Garden; 7/17/86.
__Jewfish:__ 551 lbs.; Gus Pangarakis, Magnolia; Galveston; 6/29/37.
__Killifish:__ 2 oz.; length 6⅛; girth 4; Wesley Lynn Hoke, Texas City; Blue Hole; 5/20/85.
__Kingfish, southern:__ 2 lbs., 12 oz.; length 17; girth 11¼; Mike J. Walker, Houston; Gulf Coast Fishing Pier; Galveston; 3/11/72.
__Ladyfish (skipjack):__ 4 lbs., 8 oz.; length 25; girth 10; Neely Johnson II, McAllen; Pt. Isabel; 7/22/78.
__Lizardfish:__ 15 oz.; length 15; girth 6½; Charles C. Bailey, Hitchcock; Galveston E. Bay; 10/12/1985.
*__Lookdown:__ 2 lbs., 3.04 oz.; length 16⅞; girth 17: Joe Fultner, Mesquite; Aransas Pass; 9/6/86.
__Mackerel, king:__ 71 lbs., 8 oz.; length 66½; girth 27½; L.F. Higdon, Spring; 3 miles S. of Buccaneer Oil Field; 5/27/77.
*__Mackerel, snake:__ 10 oz.; length 26⅞; girth 3¼; Mike Mathis, Harlingen; Gulf, Mexico; 8/9/86.
__Mackerel, Spanish:__ 8 lbs., 11.8 oz.; length 34½; girth 13⅛; Bobby Tarter, Bridge City; Sabine Pass; 8/15/76.
*__Mako, longfin:__ 664 lbs.; length 128½; girth 64; Donald Ewing, Richardson; Gulf of Mexico; 5/4/86.
*__Margate, black:__ 9 lbs., 13.6 oz.; length 23¾; girth 20½; Neal Asprea, S. Padre Island; Red Snapper Banks; 4/12/86.
__Marlin, blue:__ 824 lbs.; length 172; girth 69; John F. Etier, Weslaco; Gulf of Mexico; 9/1/84.
__Marlin, white:__ 111 lbs., 8 oz.; length 93; girth 33; Geo Taggart, Rockport; Hospital Rock; 8/5/79.
__Mojarra:__ 14 oz.; length 12¼; girth 10; Natalie Woods, Los Fresnos; Padre Island; 8/1/81.
__Mullet, striped:__ 13 lbs., 12.8 oz.; length 30½; girth 18½; Bill Fritch, La Marque; private pond near Swan Lake; 12/28/83.
__Perch, silver:__ 3 oz.; length 7¼; girth 5¼; Chris Cornett, Granbury; N. Jetty Galv. Channel; 7/2/85.
__Palometa:__ 8 oz.; length 10½; girth 9; Dr. Justo S. Avila, Corpus Christi; Padre Is. Surf; 10/16/82.
*__Pigfish:__ 10.50 oz.; length 10½; girth 7⅞; Jose M. Sotelo, Houston; Galveston Bay; 7/20/86.
__Pinfish:__ 1 lb., 14 oz.; length 14¾; girth 12¾; Ronald L. Neill, League City; Buccaneer Field; 5/22/81.
__Pompano, African:__ 34 lbs., 8 oz.; length 47; girth 32; Vernon L. Price, Athens; SE Freeport; 6/28/79.
__Pompano, Florida:__ 6 lbs., 1 oz.; length 19¼; girth 16; Mrs. Jerald Feldman, Dallas; Pt. Aransas; 4/23/71.
*__Porgy, knobbed:__ 4 lbs., 2.08 oz.; length 19; girth 16½; Adolf Schulz, Galv.; Flower Garden; 6/20/86.
__Porgy, whitebone:__ 2 lbs., 1.44 oz.; length 15; girth 13; Billy "Bubba" Cochrane, Galveston; Buccaneer Field; 4/13/85.
*__Puddingwife:__ 3 lbs., .64 oz.; length 16½; girth 12½; Adolf Schulz, Galv.; Flower Garden; 6/20/86.
*__Puffer, smooth:__ 5 lbs., ½ oz.; length 21½; girth 14; E.C. Anderson, Dallas; 15 miles N. of Pt. Mansfield, 7/19/86.
*__Ray, cow-nosed:__ 50 lbs., 8 oz.; length 52; girth 41; Freeman E. Gage, Jr., Jasper; Gilchrist Pier; 5/27/86.
*__Ray, smooth butterfly:__ 9 lbs.; length 21⅞; girth 28¾; Cameron Vere Wells, Pt. Isabel; South Padre Island; 8/2/86.
*__Runner, rainbow:__ 12 lbs., 12 oz.; length 37½; girth 16¾; Jim Harmon, Corpus Christi; 45-50 miles NE of Pt. Aransas; 7/8/86.
__Sailfish:__ 95 lbs.; length 97½; girth 32; Morton Cohn, Houston; E. Breaks off Pt. Aransas; 7/12/72.
__Sawfish:__ 736 lbs.; Gus Pangarakis, Magnolia; Galveston; 1939.
__Scamp:__ 23 lbs.; length 39; girth 24¾; Rudy Luna, Pt. Aransas; 34 miles off Pt. Aransas; 12/31/80.
__Seatrout, sand:__ 6 lbs., 4 oz.; length 23½; girth 16; Dennis C. Herrick, Houston; Texas City; 2/26/72.
__Seatrout, spotted:__ 13 lbs., 9 oz.; length 33¾; girth 19; P.M. (Mike) Blackwood, Corpus Christi; upper Laguna Madre; 3/16/75.
__Shark, blacktip:__ 166 lbs.; length 86; girth 41½; Richard S. Goldgar, Missouri City; 80° off Pt. Aransas jetties; 6/2/80.
__Shark, bull:__ 497 lbs.; length 110; girth 65; Dale Harper of Houston; Galveston; 7/3/71.
__Shark, dusky:__ 530 lbs.; length 129; girth 61; Raymond E. Hein of Corpus Christi; oil rig platform; 3/1/75.
__Shark, finetooth:__ 100 lbs., 8 oz.; length 80¼; girth 29½; Richard S. Hensley, Houston; 10 miles S. Buccaneer Field (Galveston); 6/3/79.
__Shark, lemon:__ 402 lbs.; length 113¼; girth 57; Larry Osteen, Dickinson; Heald Bank; 6/8/85.
__Shark, Oceanic whitetip:__ 106 lbs.; length 84; girth 28; Joe T. Surovik, Pt. Lavaca; 160 miles SSE Pt. O'Connor; 4/24/80.
__Shark, sandbar:__ 226 lbs.; length 92; girth 43; James S. Wilson, Corpus Christi; Padre Is.; 3/21/75.
__Shark, silky:__ 556 lbs.; length 140; girth 59; Wolfgang Buschang, Corpus Christi; oil platform off Island; 7/23/73.
__Shark, spinner:__ 165 lbs.; length 91; girth 39; O.E. Ballard, Ft. Worth; Pt. Aransas; 9/3/73.
__Shark, thresher:__ 133 lbs.; length 104; girth 36; Bruce N. Hansen, Grand Island, NB; 8 miles off Pt. Aransas; 4/16/81.
__Shark, tiger:__ 1,010 lbs.; length 152; girth 86; Ira Loveday, Lampasas; offshore Pt. Aransas; 8/26/83.
__Shark, others:__ Open, to be considered as species are proposed.
__Sheepshead:__ 12 lbs., 14.72 oz.; length 25¼; girth 22½; Gary R. Davis, Galv.; Galv. W. Bay; 12/4/83.
__Snapper, cubera:__ 131 lbs.; length 56; girth 46; Capt. Ricky H. Preddy, Pt. Mansfield; 15 miles N. of Pt. Mansfield; 8/8/83.
__Snapper, dog:__ 128 lbs.; Chris Page, Pt. Aransas; Pt. Aransas; 1962.
*__Snapper, lane:__ 4 lbs., 14½ oz.; length 20½; girth 14¾; Tim Underwood, Galveston; Heald Bank; 9/18/86.
__Snapper, red:__ 35 lbs.; length 38⅜; girth 30⅜; Randy G. Bellamy, Galveston; Claypiles off Galveston; 3/13/85.
*__Snapper, vermilion:__ 3 lbs., 1 ounce; length 20¼; girth 16; Louis A. Kusey III, Schertz; 65 miles S. of Pt. Aransas; 9/22/86.
*__Snapper, yellowtail:__ 7 lbs., 9.28 oz.; length 30; girth 16½; Adolf Schulz, Galveston; West Flower Garden; 7/25/86.
__Snook:__ 57 lbs., 8 oz.; Louis Rawalt, Corpus Christi; Padre Island; 1937.
__Spadefish, Atlantic:__ 8 lbs., 12 oz.; length 21; girth 23½; Ken Coufal, Galveston; Galveston north jetties; 8/11/78.
*__Squirrelfish:__ 15.2 oz.; length 13¼; girth 8; Nancy Horton, Houston; 28 miles South of Pt. Aransas; 12/31/85.
__Stingray, southern:__ 214 lbs., 4 oz.; length 91; girth 58; David Lee Anderson, Texas City; Bolivar Flats; 6/8/85.
__Swordfish:__ 317 lbs.; length 142; girth 47½; J.P. Bryan Jr., Houston; W. Flower Gardens; 7/21/79.
__Tarpon:__ 210 lbs.; length 86¼; girth 45¼; Thomas F. Gibson Jr., Houston; S. Padre Island; 11/13/73.
__Tiger, sand:__ 520 lbs.; length 119; girth 63; Joey Vermeulem, Corpus Christi; SE of Port Aransas; 4/4/76.
*__Toadfish, Gulf:__ 1 pound, 12.32 oz.; length 12.4; girth 10; Kyle Bodeker, Houston; Port Aransas Jetties; 7/4/86.
*__Triggerfish, gray:__ 8 lbs., 14.88 oz.; length 26; girth 19.5; Charles A. Harkness, Jr., Keller; 50 miles S. of Port Arthur; 8/1/86.
*__Triggerfish, queen:__ 7 lbs., 2½ oz.; length 29½; girth 21¾; Richard Stiers, S. Padre Island; Gulf of Mexico; 7/26/86.
__Tripletail:__ 33 lbs., 8 oz.; length 34; girth 30.5; Edie Porter, Spring; W. Matagorda Bay; 6/29/84.
__Tuna, blackfin:__ 36 lbs.; John E. Walker, Galveston; Port Isabel; 8/68.
__Tuna, bluefin:__ 808 lbs.; length 103; girth 82; Trina Isaacs, Port Isabel; Southern Gulf of Mexico; 5/4/85.
__Tuna, skipjack:__ 28 lbs., 4 oz.; length 33⅞; girth 21½; Jimmy Welder, Corpus Christi; Port Aransas; 6/20/81.
__Tuna, yellowfin:__ 193 lbs., 8 oz.; length 74; girth 48; Jesse L. Johnson, Pettus; 135 miles SE of Port O'Connor; 7/19/85.
*__Wahoo:__ 114 lbs., 8 oz.; length 74½; girth 33¾; Ted Beaullieu, Jr., Lafayette, LA, Southwest Flower Gardens; 7/3/86.

Gwen Fidler

A Texas Favorite

INKS LAKE STATE PARK

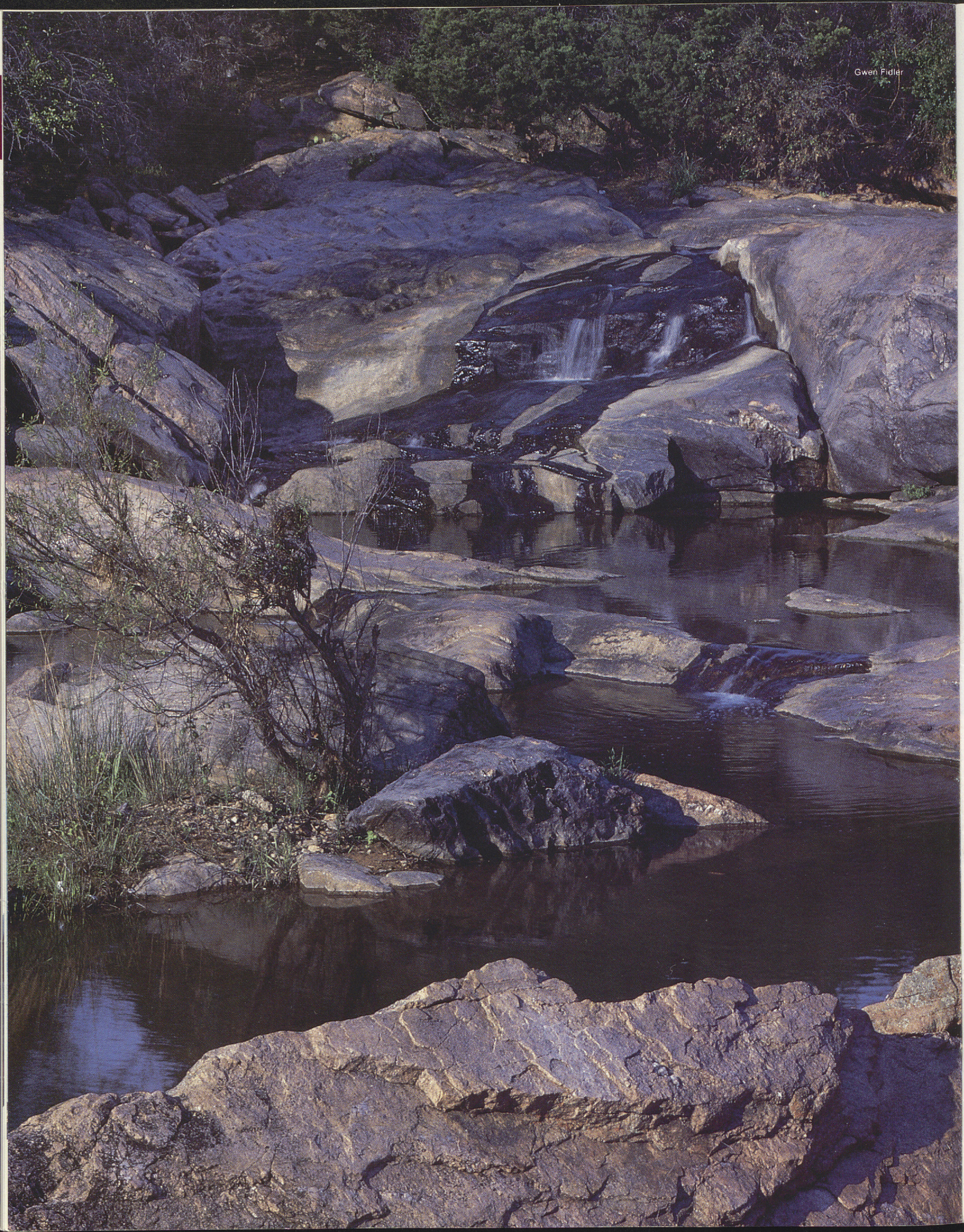
by A. Gayland Moore

Although the first day of spring does not officially arrive until March 20, it is the first day of March that officially begins the spring camping season in Texas' more than 120 state parks. And for employees at Inks Lake State Park in Burnet County, the beginning of March means a park full of excited campers and visitors because Inks Lake is one of Texas' most popular recreation areas.

The reasons for the popularity of Inks Lake are many. The 1,200 acres of cedar and oak woodlands, wildflowers, pink granite outcroppings and abundant wildlife, combined with clear blue water in a constant-level lake and excellent camping and recreational facilities, have made Inks Lake State Park a Texas favorite for years.

For visitors from the less rocky regions of the state, it's a treat to climb the rocks and look out over the beautiful hills surrounding them. And in the "Devil's Waterhole" end of the park, there are pools, a clear stream and small waterfalls after a spring or summer rain.

Inks Lake State Park offers visitors and campers a variety of water recreation including swimming, powerboating, canoeing, sailing, pedal-boating, waterskiing, scuba diving and fishing. Visitors also may enjoy hiking on one of the park's nature trails or playing golf on the nine-hole Highland Lake Golf Course.


Gwen Fidler

Located on Inks Lake, created by the Roy Inks Dam on the Colorado River, the park is just a one-hour drive from Austin through the scenic Central Texas Hill Country. Inks Lake is the second in a chain of five highland lakes that was created by a series of flood-control dams built on the Colorado River in the 1930s.

The natural setting of Inks Lake provides the park with a diversity and wealth of minerals, wildlife and water. The park lies within the Central Texas Mineral Region, also known as the Llano uplift. The predominant stone exposed in the park is pink gneiss and granite. Visitors also are likely to notice some of the colorful lichens (primitive plants) which are abundant on the boulders. Growing on the park's sandy soils derived from the gneiss are an assortment of trees and shrubs along with some colorful Texas wildflowers.

Wildlife in the park is equally abundant. Deer, turkey, quail, roadrunners, numerous songbirds and many other wildlife species make Inks Lake their home. This allows park visitors the opportunity of seeing many animals in their natural surroundings.

Inks Lake also provides anglers a variety of fish—black bass, white bass, crappie, catfish, perch, carp and buffalo. And for the boatless fishermen, there are two T-shaped, lighted fishing piers complete with fish attractor lights. The larger of the two extends about 110 feet into the water. The smaller pier, located at the extreme southern end of the park, extends 50 feet into the lake and has a 48-foot T-head. A fish-cleaning shelter is located at both pier sites.

For water skiers and anglers with their own boats, the park has two side-by-side concrete boat launching ramps that provide easy access to the water. There is a gasoline pump at the dock near the ramps, but it would be wise to check for gasoline availability beforehand, especially during the summer months.

Aluminum boats without motors, pedal boats and canoes can be rented at the park concession. Campers and park visitors also can purchase groceries, ice and other limited items at the park store, which is open daily during the summer and on weekends in the fall and spring.

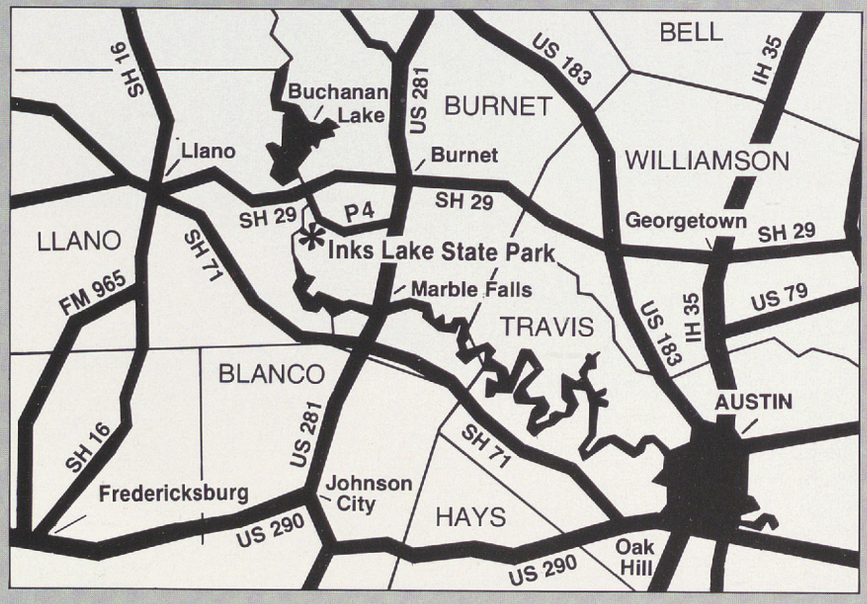
Golfers wishing to sharpen their skills will enjoy the scenic Highland Lake Golf Course.The clear blue water of Inks Lake serves as a convenient water hazard to correct a hook or slice. The nine-hole golf course, operated by the Highland Lakes Golf Club, Inc., is located at the north end of Park Road 4 about three miles from the park entrance. The course is available to the general public with payment of green fees. Golf carts, pull carts and clubs also may be rented.

Gwen Fidler

Picnic tables and grills are part of each campsite, with electrical hookups and primitive backpack camping in designated areas. Inks Lake also offers 23 screened shelters to make the visitor's stay more comfortable. Restrooms equipped with shower facilities also are available and a trailer sanitary dump station is located near the camping areas.

Nearby points of interest are also numerous. A short drive to the north are

Leroy Williamson



Inks Lake State Park

Location: Burnet County, 13 miles west of Burnet and 60 miles northwest of Austin. Burnet is 34 miles west of Georgetown on State Highway 29. From Burnet, go 10 miles west on State Highway 29 to Park Road 4. Then three miles south to the park entrance.

For information and reservations: Call 512-793-2223 or write Park Superintendent, Inks Lake State Park, Box 117, Buchanan Dam, Texas, 78609.

For information on other parks: Call 1-800-792-1112 or write Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, Texas, 78744.

Leroy Williamson

Lake Buchanan and Buchanan Dam, the largest multiple-arch dam in the United States. To the south, Inks Dam Federal Fish Hatchery welcomes visitors as does its neighbor, Longhorn Cavern State Park (on Park Road 4 about six miles from Inks Lake). Guided, two-mile tours of the historic cave are provided hourly (on the hour) daily from June 1 through Labor Day. Until June 1, tours are given on weekdays at 10 a.m., 1 p.m. and 3 p.m. and hourly on weekends.

To the southwest, Enchanted Rock State Park (20 miles south of Llano) is a Texas natural phenomenon with its huge dome of granite rising 500 feet and covering 640 acres. Indians believed ghost fires flickered atop the dome's crest on moonlit nights and were awed by creaking and groaning sounds which geologists say result from the rock's cooling and contracting after a day's heat.

At Marble Falls, 20 miles southeast of Inks Lake, interested visitors can see the largest surface granite quarry in the world. It was here that granite was quarried for the State Capitol building in Austin and the jetties along the coast of Galveston.

In Burnet, just 13 miles east of Inks Lake State Park, there is a free exhibit of Indian artifacts and other items of historical interest at the Pioneer Museum. Also in Burnet, campers are encouraged to visit Old Fort Croghan, one of eight army outposts established in 1849 to guard against Indian raids.

Leroy Williamson

In short, Inks Lake State Park makes for a perfect headquarters for the vacationer who wants to enjoy the highland lakes and tour the Texas Hill Country. But, the scenic and recreational treasures of Inks Lake are no longer a secret to thousands of Texans and out-of-state visitors since it's one of the more heavily visited parks in the state.

So, in order to ensure a campsite or screened shelter for your vacation or weekend, it is wise to make reservations as soon as possible. Then plan on enjoying the Texas outdoors at its best. There's a good chance that you will want to return to Inks Lake State Park again and again. * *

Leroy Williamson


Gilbert Palmer

FISH HAWK

by Mary-Love Bigony

The graceful ease with which the osprey sailed over the lake belied its intense scrutiny of the water 100 feet below. As its keen yellow eyes fixed upon a fish swimming near the surface, the bird stopped gliding and began to hover on beating wings. Abruptly it plunged head-first toward the lake on half-closed wings, swinging backward at the last second to enter the water feet-first. Moments later the big bird emerged, shook the water from its feathers and headed off clutching a perch in its talons.

This dramatic dive of the osprey, also known as the fish hawk, is a rare sight in Texas. Despite their extensive distribution—they can be found near seacoasts and bodies of fresh water in almost every part of the world—ospreys are not believed to be numerous in any part of their range. In Texas, they are seen most often in the spring and fall, passing through as they migrate between their breeding grounds and their winter homes in Central America. Less often, they are seen during the winter on the coastal prairies and on lakes and reservoirs in East Texas. Five subspecies of ospreys can be found worldwide but only one, *Pandion haliaetus carolinensis*, inhabits North America.

Although it resembles both a hawk and an eagle, the osprey is neither. It is the sole member of the family Pandionidae, and is endowed with unique physical characteristics that allow the bird to fish for a living: long, sharply curved claws; hard, callous spines on the undersides of the feet; and reversible outer toes that allow the bird to get a firm grip on a slippery fish.

Feathers of the osprey are heavy and oily, providing something of a waterproof coating. American Indians believed the bird lured fish to the surface by releasing an oily substance onto the water. Unusually heavy feathers cover the bird's head, perhaps to soften the impact if it plunges headfirst into the water.

With a wingspread of up to six feet—almost equal to that of an eagle and larger than most hawks—the osprey is an impressive sight against the springtime skies. Even at a distance, its plumage distinguishes it from other birds of prey. The upper parts of its body and wings are dark brown; broad, dark streaks run down the sides of the head. White feathers cover the crown, neck and underparts, and the breast and crown are splotched with brown. Sometimes mistaken for a bald eagle, the osprey can be distinguished by the white feathers on its underside; the head and tail are the only white parts of the bald eagle. In flight, the osprey's long, narrow wings appear bowed or crooked at the wrist, whereas all other large raptors fly with straight wings.

Although ospreys occasionally eat frogs, water snakes or salamanders, live

fish are far and away the favorite food, and the birds have a fishing success rate the average human angler can envy: 80 to 90 percent of the osprey's dives net a fish, sometimes two in a single dive. The osprey carries the fish with the head facing into the wind for aerodynamic efficiency; if the fish is not caught in this position, the bird shifts it as it flies to its feeding perch, appearing to understand the principles of wind resistance. When the osprey latches on to a fish too heavy to lift, the bird will be pulled under the water and drown, since it is unable to release the fish from its hooked claws. Ospreys tend to concentrate on only one or two fish species in an area, regardless of the number available. Sunfish, perch and trout are favored freshwater species; menhaden, mullet, sea catfish, croakers, weakfish and drum are on the bird's saltwater menu.

Osprey populations began a gradual decline in the late 19th century, but beginning in the late 1950s, the gradual decline accelerated to a nosedive. The use of DDT and similar pesticides increased following World War II, and the chemicals that collected in the waterways were consumed by the fish that lived in those waters. As larger fish ate the smaller fish the pesticides accumulated, until the largest fish in a lake or river contained high concentrations of chemicals built up over time. These large, contaminated fish passed along the pesticide accumulations to predators at the top of the food chain, including the osprey.

DDT's effects were insidious. The birds that first ate the contaminated fish suffered little, but the pesticide disrupted the female birds' calcium metabolism; as a result, the eggs they produced had shells so thin they were crushed by the weight of the incubating parent. Osprey reproduction fell so low that the fate of the species was questionable; by the late 1960s, ospreys in most parts of the United States were not reproducing enough young to replenish the breeding stock. For example, a 1969 survey in Wisconsin showed an average of 0.61 young per nesting attempt in that state, as opposed to 1.6 young per nest in pre-DDT days. Only 33 percent of the osprey nests in Wisconsin produced young that year; in a normal year, chicks would have been hatched in at least 80 percent of the nests. Sale of DDT was banned nationwide in 1972, but its effects lingered and fish-eating predators such as ospreys have begun to rebound only in recent years.

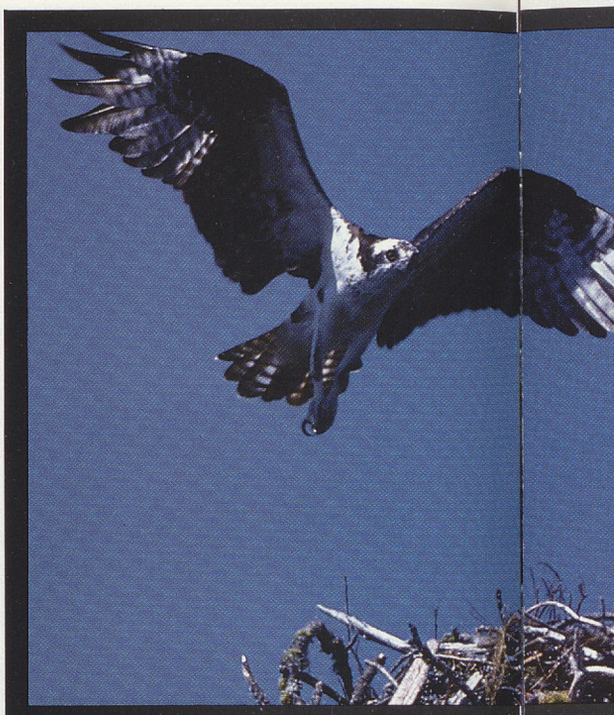
The osprey's chief breeding grounds in North America are the northern part of the continent, from Canada and Alaska and south along the Pacific coast and the Atlantic seaboard. Inland breeding populations exist in Idaho, Montana, Wyoming, California, Oregon and Wisconsin, with smaller breeding populations in a few southwestern states.

Osprey nesting historically has been sparse in Texas. Ornithologist Harry C. Oberholser's "The Bird Life of Texas," published in 1974, lists only five breeding reports in the past 100 years: Concho County, 1884-1886; Jefferson County, 1925; Cameron County, 1908-1910; Webb County, mid-1950s; and Hays County, 1967-1968. The Texas Parks and Wildlife Department received reports of nesting attempts in East Texas in 1977 and 1980, but these were not confirmed. A reported nest on an East Texas lake in 1986 remains to be substantiated, but may represent the first successful osprey nest in Texas in recent years.

Beginning in March of each year, an occasional osprey can be seen in Texas skies, heading north along a route that is never far from water. A survey by the Parks and Wildlife Department in the 1970s revealed that most osprey sightings are of a single bird, with three being the largest group reported.

Come September and October, the ospreys will appear over Texas again, this time headed south for the winter. Band recoveries in Texas have shown that some of these birds have come from California, New Jersey and Wisconsin. Most of these southbound birds will spend the winter in Central America, but a few travel on to Chile, Argentina, Paraguay or the Galapagos Islands. Nonbreeding birds may stay in the winter range all summer. Southward migrants are seen as early as September in some parts of Texas.

As springtime brings an infusion of migrating birds into Texas skies, be on the lookout for a large brown and white raptor scanning the water below, or perhaps flying overhead clutching a fish in its talons. And anyone lucky enough to be present when an osprey makes its impressive fishing dive has witnessed one of nature's finest wildlife dramas. * *



Gilbert Palmer

Gilbert Palmer

Tom J. Ulrich

Mexican buckeye

Spring is in the Air...

Article and Photos by Paul Montgomery

As Texans, we have long been accustomed to the beauty and extraordinary diversity of our wildflowers. Yet we often ignore another group of flowering plants common to our state. Of the more than than 5,000 plant species that occur naturally in Texas, more than 1,000 are species of trees and shrubs. Blooming trees and shrubs with showy flowers are imposing plants because of the variety in their overall shapes, their leaf structures and the changes they go through each year.

Our numerous blooming trees and shrubs reflect the physiographic and climatic diversity found in Texas. This diversity is the result of climate, vastly differing soil types, variable rainfall and topography. These factors determine what species of trees and shrubs will be found in any one part of Texas and how well they survive there.

In East Texas one finds the hilly Pineywoods mostly characterized by sandy, acidic soil, abundant precipitation and warm temperatures for most of the year. The average annual rainfall here varies from about 35 inches on its western edge to more than 60 inches along the Sabine River. Rainfall is sufficient to support magnificent forests which shelter dogwood, magnolia, crab apple and the spectacular wild azalea.

In contrast, the mountains and arid valleys of far West Texas receive less than 12 inches of rainfall annually, although some larger mountain slopes receive up to 25 inches of rain. In spring, such an environment would not support a moisture-loving magnolia or dogwood, but it is ideal for yellow bells, Texas silverleaf and the sturdy, orchidlike blossoms of the desert willow.

Between these two great physiographic regions, the vast semiarid, grass-covered plains spread northward from Brownsville to Amarillo, and comprise almost three-fifths of the land surface in Texas. Rainfall varies here from 15 to 30 inches annually and soils intergrade between porous sandy loam and heavy clays.

Central Texas has the bright rose pavonia, and it seems that the familiar sturdy yuccas bloom from Brownsville to Bonham. This vast section of our state has the greatest number of blooming trees and shrubs in the springtime.

Several species of small trees in the genus *Caesalpinia* (bird of paradise and Barbados pride) grow in South and West Texas and do very well in dry habitats. While native to Mexico and South America, they are widely cultivated in Texas and bloom for about seven months of the year. A weed tree known commonly as black locust is native to the southwestern United States, but makes its way into East and Central Texas. These trees multiply by root sprouts and are undesirable in Texas even though their white and yellow blooms would rival the beauty of any of our native species.

With their qualities of beauty and durability, our blooming trees and shrubs may be regarded as permanent parts of our natural landscape, no matter where we live in Texas. Unlike many of the herbaceous wildflowers that die back and disappear after the spring flowering period, trees and shrubs are perennial plants that return each year.

While many species such as pink redbud, huisache and buckeye are deciduous (they lose their leaves in winter or dry periods) others such as mountain laurel, agarito and yaupon are evergreen and may be enjoyed long after the blooming period has passed. Depending on where they grow, trees and shrubs are for the most part resistant to drought and disease and have adapted to our ever-changing Texas climate.

These important qualities in our native vegetation have caught the attention of nurserymen throughout the state and many species are now appearing as container-grown plants for home landscaping. At a time when the availability of water is an increasing problem to us all, native trees and shrubs (rather than costly, short-lived ornamentals) can reduce our consumption of water and our reliance on fertilizers and pesticides. Growing these hardy plants allows all of us the opportunity to do something good for the Texas environment as well as for our pocketbooks.

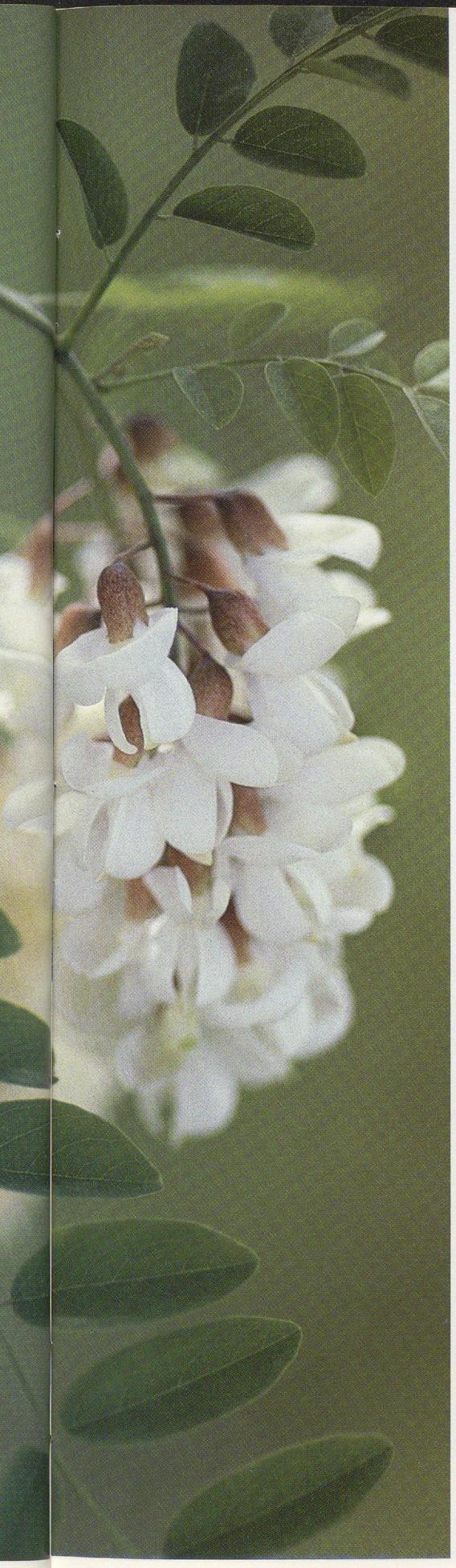
We live in an age where our technology lends a monotonous, predictable pattern to our lives, but nature provides us with great diversity to counter the sameness. The blooming trees and shrubs of Texas are a permanent part of that diversity. By learning to recognize and protect them, as well as by understanding their importance to a multitude of creatures, we do ourselves a favor, since these enduring plants enrich our lives as well.

* *

A sure sign of spring in the western part of the state is the dramatic Texas silverleaf or ceniza (left), widely cultivated for its beautiful blooms. The delicate wild pink rose (below), one of 14 wildrose species found in Texas, blooms in the east and northeast portions of the state.

A long-horned beetle creeps along the leaf of a button bush (right), a plant found from the Coastal Plains and East Texas west into Central Texas. The mountain sage (below) grows only in the mountains of Big Bend National Park and northern Mexico. The Panhandle is the only place in the state where the Texas lantana (below center) is absent, and the widely cultivated bird of paradise (below right) is found in the Rio Grande Plain.

A native of the eastern United States, the black locust (right) can be found in east and central Texas. The widespread agarito (below) grows from coastal South Texas through Central Texas to the Trans-Pecos. Impressive blooms of the wild azalea (opposite, top) are found in East Texas forests, as are the less-spectacular but richly colorful blooms of the red buckeye (opposite, bottom).



The Texas redbud (left) is widespread from Mexico to North Central Texas.Above, clockwise from top left: blackbrush acacia, found from the Rio Grande Plains to the Trans-Pecos; twisted-leaf yucca, native to the Edwards Plateau; bastardindigo and wild plum, both found in East Texas forests.

Texas mountain laurel (above) is prominent on the limestone soils in the southern Hill Country, and often is found in Central Texas, as well. Retama or Mexican paloverde (bottom left) is widespread from the Rio Grande Plains north to the central part of the state. The delicate pink blossoms of the fragrant mimosa (top left) can be seen in the Edwards Plateau and Trans-Pecos.

A queen butter fly provides contrast at the bloom of a button bush (right). Eastern dogwood (top) is common in East Texas. Above, left to right: honey mesquite, an excellent honey bee tree; desert willow of the Trans-Pecos; rattlebox, which grows from the Coastal Plains northward.

Outdoor Roundup

Unusual Incidents Spice Mule Deer Public Hunts

The region west of the Pecos River has produced its share of tall tales, some of them true.

The 1986 public hunts for mule deer at two Texas Parks and Wildlife Department wildlife management areas in the Trans-Pecos region produced some oddities.

Jack Kilpatric, manager of the Elephant Mountain WMA in Brewster County, said one of his hunters got a shock after shooting what he thought was a fine buck. As he approached the downed deer he saw the animal was totally without antlers, although the man could swear it had them before the shot was fired.

Sure enough, a well-developed antler was found lying a few feet away from the deer. Closer inspection of the buck's head revealed that it already had shed one antler and the other fell off when the deer went down.

Kilpatric said the antler loss was a natural occurrence, although it is highly unusual for a buck to lose its antlers that early in the season.

Another Elephant Mountain hunter's hunt ended almost before it began, Kilpatric said. The man was taken to his stand shortly after noon on the first day of the gun hunt. He downed a 152-pound buck 30 minutes later.

Kilpatric said he counted all points longer than one inch on the deer's rack and it had 17 points.

In all, 53 participating hunters took 24 mule deer bucks and 10 antlerless deer during the gun hunts at Elephant Mountain, while 24 deer were harvested at the Sierra Diablo Wildlife Management Area in Culberson County.

Catfish Stocked In Dallas, Fort Worth

The Texas Parks and Wildlife Department stocked approximately 1,500 catchable-sized channel catfish in the Clear Fork of the Trinity River at Fort Worth during November.

The fish were placed in the urban fishing area adjacent to downtown, where the Tarrant County Water Improvement District already has stocked catfish and rainbow trout.

The fishing area is along Trinity Park and between Nutt Dam and City Dam. Biologist Clell Guest reminds anglers that there is a special bag limit of five catfish per day and possession limit of 10.

White Rock Lake in Dallas also received between 1,500 and 2,000 channel cats ranging in length from nine to 13 inches. Guest said the daily bag limit at White Rock is 25, possession limit 50. Only channel catfish nine inches or longer may be retained anywhere in the state.

Frying Pan Claims Possible Record Walleye

A possible state record walleye was filleted and put in a Knox City fisherman's freezer because he got some poor advice from a bystander.

Texas Parks and Wildlife Department biologist David Terre of Abilene said Brian Williams caught a walleye that weighed more than 13 pounds, four ounces at Lake Stamford in Haskell County. However, Williams did not pursue the possibility of applying for a state record because a bystander at the dock told him someone caught a 15-pounder a few days before.

"After it was too late, Williams learned that his fish probably would have beaten the current walleye state record by about two pounds," Terre said. The record is an 11-pound, 6-ounce fish caught at Lake Meredith in 1981.

Terre said anyone catching a fish that might be a state record should contact a Parks and Wildlife Department office or call toll-free 1-800-792-1112 to find out what the current record is. If the fish might qualify, the department will send a state record application form.

Even if it fails to set a state record, a big fish might qualify the angler for an "Award of Fishing Merit" certificate. The fish must be heavier than the minimum weight assigned for the species. Application forms for this program also may be obtained by writing or calling the department.

Kickapoo Cave Site Purchase Okayed By Commission

The Texas Parks and Wildlife Commission in November 1986 approved purchase of the 6,400-acre Seargeant Ranch in Kinney and Edwards Counties, an area known for its caves and abundant wildlife. The Parks and Wildlife Department officially purchased the property for state park purposes from its longtime owners Tommy and Jean Seargeant on December 19, 1986.

There are 10 known caves on the property, the two largest being Kickapoo and Green Caves. Kickapoo Cave is considered one of the outstanding caverns in Texas, and 1,700-foot-long Green Cave features a large bat colony.

Another outstanding feature of the site is a large stand of pinyon pine, remainders of a once more widespread pinyon pine/juniper woodland.

The size and diversity of the site provide habitat for a variety of wildlife, including white-tailed deer, turkey, white-winged doves, Mearns' quail, golden-cheeked warblers and black-capped vireos. The park is closed until improvements can be provided for public use.

Antelope Trapping Project Completed In West Texas

A pronghorn antelope roundup has been completed at the Rocker B Ranch in Irion County.

Texas Parks and Wildlife Department trapping crews used a helicopter to herd 297 pronghorns into corral nets. Some 109 of the animals were shipped to Arizona in exchange for desert bighorn sheep brought to Texas in 1983, and the remaining 188 pronghorns were transported to release sites in Briscoe, Martin, Mitchell and Reagan Counties. "These sites all have good pronghorn habitat but no pronghorns," said Charles Winkler, big game program director.

Winkler added that 10 antelope were released at Caprock Canyons State Park near Quitaque in Briscoe County.

Pronghorns were almost eliminated from the state by the 1920s, and the estimated number in 1925 was slightly over 2,000 animals. Now about 25,000 are found in West Texas and the Panhandle, partially as a result of approximately 6,000 antelope stocked by the department since 1938, Winkler said.

April in . . .

TEXAS
PARKS & WILDLIFE

East meets west and north meets south, biologically speaking, in the Big Thicket National Preserve. This region contains an astounding diversity of plants and animals, and its history is as colorful as the wildflowers that bloom there in the spring. In the April issue, we'll visit the Thicket and trace its history through the exploitation of the early 20th century to its designation as a national preserve in 1974. We'll also take a look at some of the wildflowers of the Big Thicket. Also in April are stories on wildlife rehabilitation, the "Texas Wild" exhibit at San Antonio's Witte Museum, herbaria, and a Young Naturalist feature on leaf cutter ants.

Lone Star Lunker Gets Fourth Big Bass

The Texas Parks and Wildlife Department now has what is believed to be the largest collection of trophy-sized largemouth bass in the world at its Tyler Fish Hatchery.

"As far as we know, there never have been four 13-pound-plus bass under one roof anywhere," said Bill Rutledge, TPWD hatchery chief. "And the best part is that all of them are alive and healthy."

There now are four fish in the group, thanks to Dan Berg of Hilltop Lakes, who caught a 13-pound, eight-ounce largemouth at a private lake there February 1 and donated the fish to the "Operation Share A Lone Star Lunker" program. His fish joins two 13-pounders and Mark Stevenson's 17-pound, 11-ounce state record bass already at the hatchery.

Unlike the previous fish, Berg's lunker was not caught on a jig-and-worm combination, but rather on a live shiner.

The program is a joint effort by the TPWD and three corporate sponsors—Lone Star Brewery, Cajun Boats and Jungle Labs, Inc. Donors of 13-pound-plus bass receive publicity and the opportunity to eventually receive the fish mounted free, or they can elect to release the fish back into the lake and accept a fiberglass replica.

The department's payoff is promotion of the concept of catch and release as well as the opportunity to use the big fish in hatchery production, where the genetic potential for growth may be passed on to offspring to be stocked in public waters.

Rutledge said the state record fish and a 13-pounder, both caught from Lake Fork, were moved into a new 3,500-gallon tank purchased by the corporate sponsors.

Also, Rutledge said that Gimble Alarm Services Co. of Tyler has installed an alarm system at the hatchery which will alert hatchery personnel of any power equipment failures or attempted burglaries. United Telephone Systems of Texas donated a pager system as a further safeguard for the fish.

"The corporate sponsors are delighted that other individuals and companies are taking interest in the program," Rutledge said.

Persons catching bass that might qualify for the program may call toll-free 1-800-792-1112 from 8 a.m. to 5 p.m. weekdays. After hours, call 512-389-4848 in Austin, or the Tyler Hatchery at 214-592-7570.

Landowners Asked To Report Waterfowl Deaths

Landowners and others in the playa lakes region of the Texas Panhandle are asked to report any sightings of dead or dying waterfowl in that area.

The Interagency Playa Lakes Disease Council reports that the shallow playa lakes are important waterfowl habitat, but they can present a threat by supporting disease organisms deadly to ducks and geese.

The council, formed to coordinate waterfowl disease investigations, is made up of representatives from the U.S. Fish & Wildlife Service, Texas Parks and Wildlife Department, Texas Tech University and the Texas Waterfowlers Association.

Suspected waterfowl die-offs should be reported to local wildlife officials or the Muleshoe National Wildlife Refuge, Box 549, Muleshoe, Texas 79347, 806-946-3341.

PITTMAN-ROBERTSON PROGRAM

Cornerstone of Wildlife Conservation

by Bobby Alexander

Wyman P. Meinzer

On September 2, 1937, President Franklin D. Roosevelt signed legislation that was to have far-reaching consequences for American wildlife. Named for its sponsors, Senator Key Pittman of Nevada and Congressman A. Willis Robertson of Virginia, the Pittman-Robertson Federal Aid in Wildlife Restoration Program was launched in Texas on August 11, 1938, as Project W-1-R, Statewide Wildlife Investigations. In the nearly half century since the Texas Game, Fish and Oyster Program (forerunner of the Texas Parks and Wildlife Department) initiated the state's first P-R project, more than 100 additional projects involving several thousand wildlife investigations have been funded in Texas through the Pittman-Robertson Program.

Money for the P-R Program is derived from an 11 percent federal excise tax on sporting firearms, ammunition and archery equipment, and a 10 percent excise tax on handguns. Funds from these excise taxes are distributed to states, territories and commonwealths by the U.S. Fish and Wildlife Service on the basis of the number of licensed hunters in the state and the size of the state; however, no state may receive more than five percent of the total funds. Texas has always received the maximum allowable.

States such as Texas can be reimbursed through the P-R Program for up to 75 percent of the cost of approved wildlife programs. However, wildlife agencies such as the Texas Parks and Wildlife Department must first spend state funds on projects, and then are reimbursed by the federal government. Of course, if no initial state funding is available, projects cannot be carried out and reimbursed by P-R funds.

One early use of these funds in Texas was to support the wild game trapping and transplanting program which has successfully restored populations of white-tailed deer, turkey, pronghorn antelope and javelina. Since the beginning of this program, 28,497 white-tailed deer, 19,791 wild turkeys, 5,031 pronghorn antelope, and 473 javelina have been trapped in Texas and transplanted to areas where adequate brood-

stock was not available. Today, Texas is the leading producer of white-tailed deer and turkeys with populations of 3.5 million and 500,000 respectively. When the program was launched, there were only 225,000 deer and 100,000 turkeys in the state. Recent deer and turkey harvest surveys reveal an increase in the number of deer and turkey being harvested annually as compared to the years before the P-R Program was initiated.

Another major contribution of the P-R Program in Texas has been the preservation of wildlife habitat through the land acquisition and development program. A total of 180,127 acres has been acquired in fee title and some 201,446 acres leased or licensed under the P-R Program. These lands provide habitat for native Texas wildlife, outdoor laboratories for research, opportunities for wildlife observation and study, refuges for migratory species, broodstock for restocking and public hunting opportunities.

Under the P-R Program, research and survey investigations involving a myriad of birds and mammals have been conducted that now provide the baseline data from which current hunting and management regulations are based. As a result, Texas had developed one of the most complete and successful game management programs in the nation which supported 22 million man-days

Bill Reaves

Bill Reaves

The P-R Program has helped Texas become the leading producer of white-tailed deer (right). P-R funds also have been used to acquire refuges for migratory species (below).

of hunting for residents and nonresidents alike in 1980. These investigations have addressed the life requirements of major game species as well as nongame species including the peregrine falcon, southern bald eagle, red-cockaded woodpeckers, interior least terns, Mexican ducks, whooping cranes, Pecos River muskrats, river otters, golden cheeked warblers, golden eagles and bobcats.

Funds made available through the P-R Program have been used to map the various wildlife habitats throughout the state utilizing the remote sensing ability of the National Aeronautical and Space Administration satellite programs.

The P-R Program has provided for a portion of Federal funds to be used in support of hunter education programs

to reduce firearms accidents and teach outdoor ethics. This portion of the program was launched in Texas in 1971 and since that time 141,283 persons have completed the hunter education program and 3,883 have been certified as instructors.

In 1984, the hunter education program was expanded to include provisions for funding target ranges. Target range facilities made available through federal aid funding must be made available for training or live firing under the state hunter education program. Two ranges, one in Orange County and another in Harris County, have been funded under this program.

What began as a federal-state partnership to conserve game species has evolved into a science-based program benefiting wildlife resources of all kinds in a healthy balance. All Texans have benefited because many visitors to the state's wildlife lands which were purchased or operated with P-R funds are nonhunting; they are bird-watching, taking photographs, hiking or simply enjoying nature.

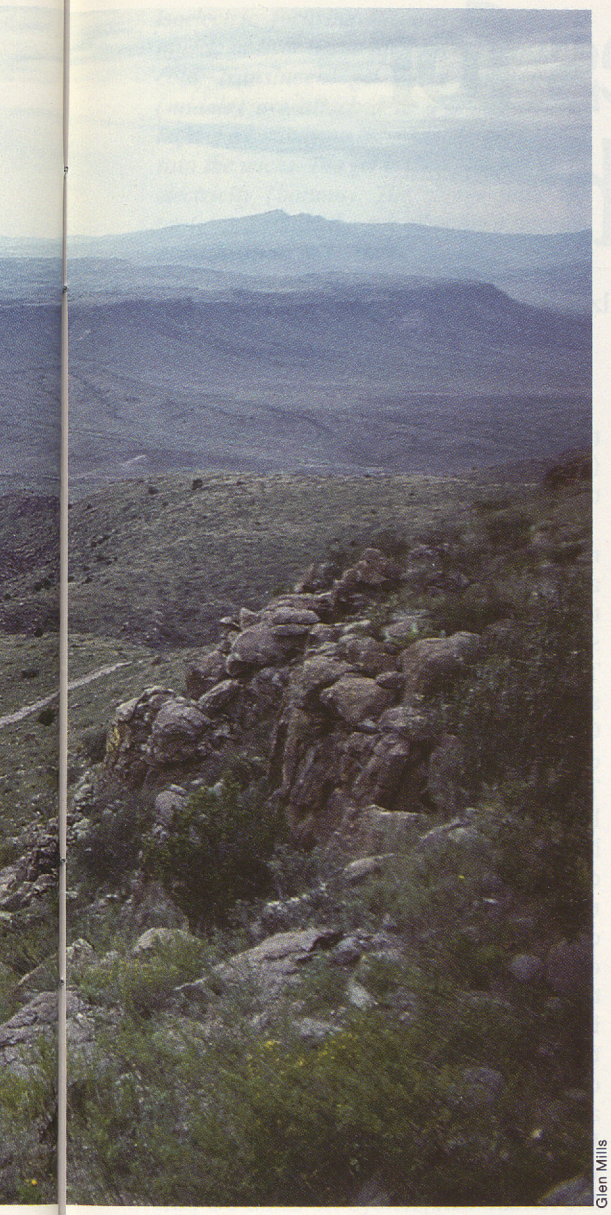
The wildlife resources of Texas also generate substantial economic benefits. According to the National Fishing and Hunting Survey conducted in 1980, Texas hunters spent an estimated 904 million dollars on equipment, access fees and travel. Other users who participate in bird-watching, photography, hiking or nature study spent even greater amounts for equipment and travel. A large portion of this spending—and those jobs associated with it—is a partial outgrowth of the P-R Program.

Despite the accomplishment of the program during the first 50 years of its life, a greater challenge lies ahead for this unique and most successful state-federal program ever implemented.

Wetlands, perhaps the most productive of all wildlife habitats, continue to be drained and developed at a rapid rate. Large reservoirs, required to provide fresh water to a rapidly expanding human population, gobble up valuable river bottom habitats while the change

A total of 180,127 acres has been acquired in fee title and some 201,446 acres leased or licensed under the P-R Program. These lands include the Las Palomas WMA in Presidio County (below) and the Elephant Mountain WMA in Brewster County (right).

Bill Reaves



Glen Mills

from the family farm to single-crop agribusiness has reduced habitat diversity for wildlife. Expansion of urban metropolitan areas and increases in rural population densities will destroy and/or degrade substantial quantities of wildlife habitat. These and other obstacles pose major problems for the future of wildlife resources in Texas.

The P-R Program has the potential to ensure that future generations of Texas citizens have an opportunity to enjoy the natural resources of this state in the same manner that earlier generations have.

Help preserve this heritage by supporting another 50 years of sound wildlife resource management through the Pittman-Robertson Federal Aid in Wildlife Restoration Program. * *

Pittman-Robertson Texas Wildlife Management Areas

The first land acquired by Texas Parks and Wildlife Department under the Pittman-Robertson Program between 1945 and 1958 was a 7,791-acre area in Culberson and Hudspeth Counties for use in restoring desert bighorn sheep to their native Texas range. This is the Sierra Diablo Wildlife Management Area, where efforts are continuing with bighorns. At the present time there are approximately 60 bighorns in captivity at the area and another 30 to 35 free-ranging sheep in the surrounding mountains.

- The largest single acquisition has been the Black Gap Wildlife Management Area in the Trans-Pecos region, comprising some 77,805 acres of primarily desert habitat. Water availablity is a limiting factor here and one of the area's primary activities is keeping wildlife watering facilities in operation. Special methods for catching, storing and distributing water have been developed to help conserve that water which is available.
- The Gus Engeling Wildlife Management Area in Anderson County near Palestine, a 10,941-acre area of primarily hardwood forest habitat, provides a research and public use area in East Texas and is popular with hunters due to its variety of game. The area receives considerable use as an outdoor classroom by school and youth groups and features two nature trails and a self-guided demonstration tour.
- The Kerr Wildlife Management Area, an area of 6,493 acres in Kerr County purchased in 1950, has evolved into one of the nation's leading white-tailed deer research facilities. Several hundred scientists and research personnel visit the facility each year to view the program currently in operation as well as the results of past research.
- The J.D. Murphree Wildlife Management Area, a 12,648-acre facility near Port Arthur in Jefferson County is the department's primary waterfowl management and research area and provides winter habitat for up to 170,000 ducks and geese each year.
- The Chaparral Wildlife Management Area in Dimmit and La Salle Counties of South Texas provides some of the best deer, quail and javelina habitat in the state and is one of the most popular public hunting areas. It comprises 15,200 acres of primarily brush habitat and was purchased in 1969.
- The Gene Howe Wildlife Management Area, a 28,000-acre area on the Peace River in Cottle County, is representative of the red rolling plains habitat type and supports mule deer and pronghorn antelope. It is also a popular quail hunting area.
- A total of 1,309 acres of habitat in the Rio Grande Valley has been purchased to provide nesting habitat for white-winged doves. Natural habitat in that region of the state has been almost totally destroyed by urban and agricultural requirements. A 1,820-acre facility in Presidio County was also purchased for this purpose and these lands collectively are known as the Las Palomas Wildlife Management Area.
- The Peach Point Wildlife Management Area in Brazoria County and the Guadalupe Delta Wildlife Management Area in Calhoun County are the latest acquisitions partially funded with P-R funds. These areas are coastal facilities which will be managed primarily for waterfowl and coastal marsh species. * *

Designer Genes for Better Fish

Article by Dr. Bill Harvey and Kathryn Kulzer
Photos by Glen Mills

If you catch a largemouth bass, what can you tell about it just from its appearance? You can identify it as a member of the largemouth bass family, but after that you have to start guessing.

Is it a native (northern) or a Florida-strain bass, or a hybrid cross? Was it stocked or wild-spawned in the lake? How old is it? Is it a male or female?

In the past, these questions would have been difficult or impossible to answer, even if you were a fishery biologist. But in the near future, some Texas bass won't be able to hide anything about their past.

Genetics is a field far too complicated for those of us who consider turning a crankbait enough of a challenge. Yet it is the branch of biology that deals with heredity and variation in similar or related animals and plants. Let's consider the vast potential that genetics technology may hold for fishery research, management and even law enforcement.

The work now being done by Texas Parks and Wildlife Department biologists will benefit the study of bass genetics in two ways: it will improve the genetics of fish produced for stocking as well as enable biologists to genetically "mark" fish for positive identification years later.

Department scientists now are trained and equipped to use two procedures that make all this possible. One of them, electrophoresis, has been used by the TPWD since 1981. Electrophoresis analyzes the biochemical characteristics of proteins which make up muscle or liver tissue taken from an animal. This analysis can identify species, subspecies and even hybrid crosses or intergrades (crosses between two subspecies). The TPWD currently has electrophoresis labs at the Heart O' the Hills Research Station in Ingram, the San Marcos Fish Hatchery in San Marcos and the Perry R. Bass Marine Fisheries Research Station at Palacios.

More recently an electrophoretic procedure called isoelectric focusing has added to the biologists' arsenal. It is faster and more economical than electrophoresis and can give better results when tissue samples are deteriorated by age or other factors. It has the added advantage of requiring only tiny amounts of tissue. In many cases, a fish's genetic makeup can be determined by using a tiny section of fin tissue, and the fish can be released alive and healthy.

Isoelectric focusing involves subjecting a tissue sample to an electric charge. The proteins move in proportion to both the voltage applied and how acid or basic the proteins are. This "protein profile" can be recorded on a computer which can compare the profile to known standards for various animal species for positive identification.

Since this process can be used on a variety of tissue types from any animal species, it has tremendous potential for law enforcement use. No longer can a game law violator avoid prosecution by skinning an animal or filleting a fish. A simple spot of dried blood in a truck bed, for example, would be sufficient for proving that the animal in question was a white-tailed deer instead of a domestic animal.

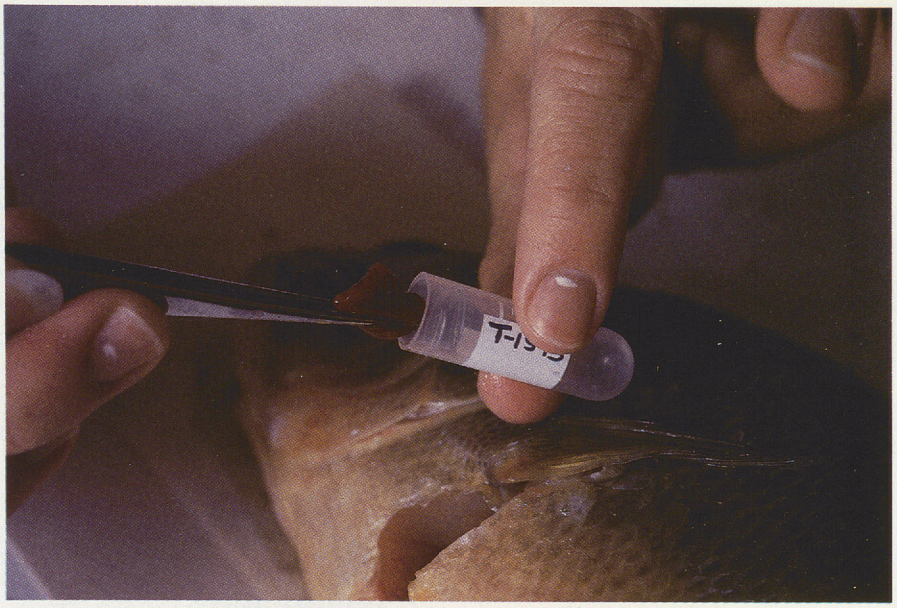
How might these technical advancements help the TPWD provide better fishing? Again, largemouth bass provide a good example of how genetic work can have positive benefits. The introduction of Florida-strain bass in the early 1970s already has borne fruit for Texas anglers because of the fish's inherent qualities of hardiness, fast growth and ability to attain large sizes. However, Florida bass, which are virtually identical in appearance to native (northern) bass, can interbreed with the native fish.

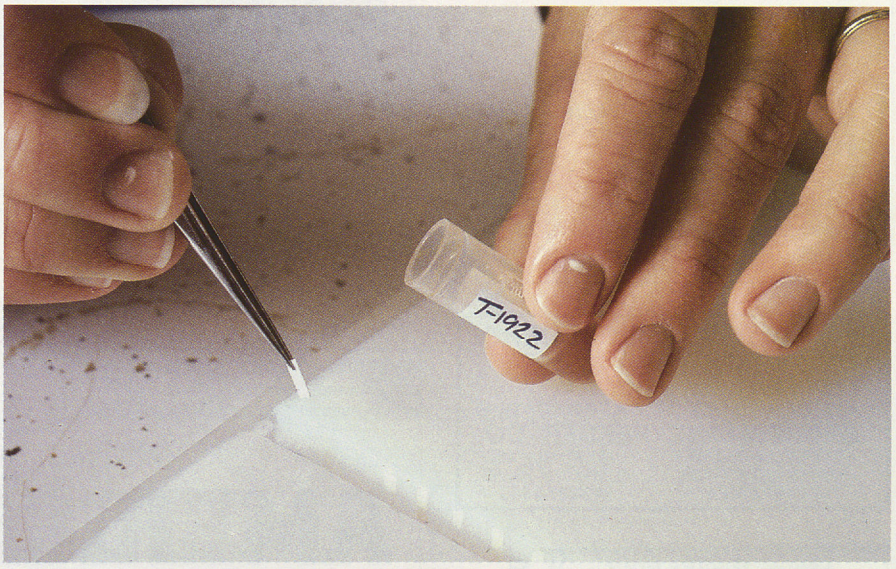
This mixture of two subspecies and resulting intergrades creates a need for accurate genetic information in order to adjust management strategies and stocking rates for Texas reservoirs. TPWD biologists are working with strains of largemouth bass from Cuba, California and elsewhere to find the one with the best characteristics for Texas waters. Also, genetic experiments have resulted in the ability to produce bass of one sex or the other, and future developments may include such innovative procedures as triploiding and cloning. All these developments hinge on biologists' ability to accurately identify a fish's genetic makeup. Triploiding is a technique which increases the number of chromosomes in a fish's cells, which can result in faster growth and larger sizes. Cloning involves treating eggs and sperm to create offspring which are exact genetic duplicates of the female fish.

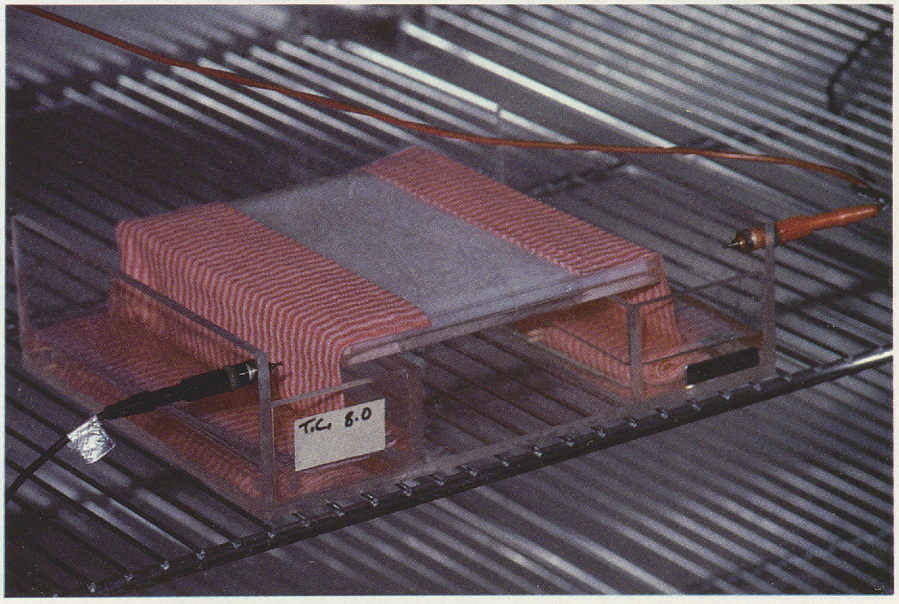
Bass produced in Texas hatcheries can be genetically marked for future identification. This is done by selective breeding, so that the offspring have unique gene combinations. These fish remain recognizable throughout their lifetime, allowing biologists to assess how well the stocked fish have survived and what impact they have on the overall population. This makes it unnecessary to physically attach tags on fish, a practice which is expensive, time-consuming and sometimes harmful to the fish.

Within four years, all largemouth bass produced in Texas hatcheries for stocking will be genetically marked for future identification. During the 1986 production season, some first-generation hybrid (Florida/native) bass were marked. Such genetic marking is under-

Isoelectric focusing involves subjecting a muscle or liver tissue sample (top right) to a cold, translucent gel. After small wicks (middle) are attached to a sliced square-mold of gel, numerous tissue samples are inserted into the wicks. The gel is then plugged up to electricity (bottom). The charge pulls the proteins through the gel, allowing a positive identification to be made.







way at the department's Jasper and Tyler Fish Hatcheries.

Electrophoresis was used in early 1986 to confirm that hybrid striped bass spawned naturally in Lake Palestine in East Texas. Hybrid stripers are created in hatcheries by fertilizing eggs from striped bass with milt from male white bass. Many hybrid animals are sterile, and studies on hybrid stripers in Tennessee and South Carolina indicated such was the case with hybrid stripers. However, analyses of small fish from the lake indicated they were indeed hybrids. The last stocking of that species at Palestine was in 1982.

Genetic marking has equal potential for saltwater fish, and studies are underway at the GCCA-John Wilson Marine Fish Hatchery at Flour Bluff and the Perry R. Bass Marine Fisheries Research Station to produce populations of red drum (redfish) and spotted seatrout that can tolerate lower temperatures than existing populations in Texas bays and the Gulf. Future genetic research may be done on oysters, as well.

The department's ability to use genetics information has increased dramatically during the past decade, but biologists believe they have hardly scratched the surface. They predict that someday wildlife and fish species will have genetic makeups that will enhance characteristics like growth, reproductive capabilities and survival. Genetic "fingerprints" of these animals will be on file in a computer data base that can instantly identify the species of origin of tissues from any of these animals.

Careful management of our fish and wildlife resources and regulation of their harvest continue to be the primary focus of management biologists. However, increasing use of new genetic technologies will allow greater precision in achieving these goals. * *

Dirt

John Anthony Adams
Illustrated by Jean Adams

To children it's a toy, but to adults it can be a formidable foe. If the foundation of the house cracks, or if heavy rains flood streets, cars, and homes, the soil often gets the blame. The fact is, most people know no more about dirt than the knowledge they gained in a sandbox or playground. John Anthony Adams has gathered a treasury of myth-exploding facts about this oft-misunderstood element of nature. What did the Civil War have to do with soil science? What is a pingo and why does it cause "drunken trees"? Other topics include mankind's effects on soil and the environment. Beautifully illustrated, this volume will interest and entertain everyone from weekend gardeners to builders to collectors of trivia. 176 pp. Illus. $19.95 cloth; $11.95 paper

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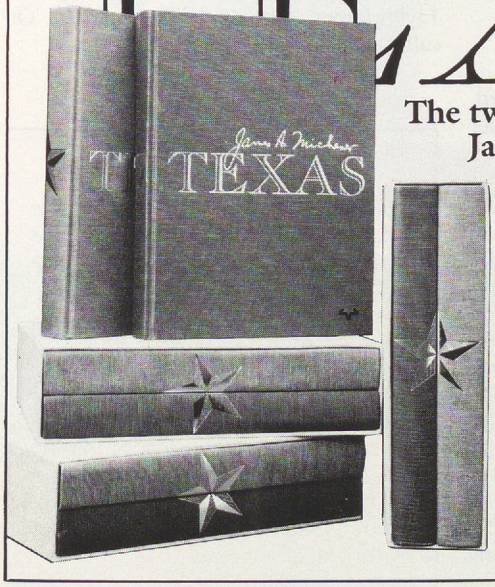

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Letters

December Excellence

My compliments to you for the *Texas Parks & Wildlife* magazine in general, and the December issue in particular.

The excellent article on Sam Cobb brought back fond memories of many hunts and fishing trips with Sam. Cactus Pryor so accurately captured the spirit of this wonderful man and friend.

My hat also is off to John Henry Faulk for his delightful article on goose hunting. Those of us who have lived the experience know the truth and humor he describes so well.

With articles such as these, the excellence of your publication continues and increases.

Purvis J. Thrash
Dallas

More Retriever Clubs

Your article "Retriever Fever" in the December 1986 issue was a pleasure to see. However, your listing of Texas retriever clubs was incomplete.

The Texas Panhandle Club, based in Amarillo, was not included in the list of clubs in Texas.

Those fine folks have been active in retrievers for many years. Even after leaving West Texas, I have maintained my membership there because of the many friends I have made through their activities.

They produce some of the most popular field trials in the state, and overcome probably the most severe weather conditions in the state to keep their dogs in top form.

Please see that they get due credit along with the other fine clubs you listed.

Al T. Davis
Marshall

Hunting From Vehicles

Our entire family reads *Texas Parks & Wildlife* magazine and we try to save each issue that our 18-month old doesn't destroy. (He is more partial to the colorful pictures than the printed word.)

Wyman P. Meinzer's great article on "A Different Style of Hunting" in the December 1986 issue ended with an afterthought about poachers night hunting from vehicles.

For *all* of Texas, urban, suburban and rural, could you please suggest to the 1987 legislature to adopt the following:

" . . . any discharge of a firearm from a public roadway (city, county, state or federal) will be grounds for confiscation of the vehicle from which the violation occurs."

This is 1987, *not* 1887! And the losses inflicted from road hunters on wildlife, road signs, highway signs, etc. demand fines exceeding our current common fines of $150.

Let's put some teeth into our existing laws and make Texas a safer place!

Dr. John S. Baen
Jacksboro

Cooling Their Tonsils

We love your magazine, and want to add something to the article in the December issue on our beautiful mockingbird.

Here in South Texas, everyone has a wild Mexican pepper bush called the "Chili Pipin." Mockingbirds eat this extremely hot, small pepper when it turns red-ripe.

Then, naturally the mockingbirds are forced to sing to cool their tonsils. Thought you might be interested.

Frances Golleher
Mission

Outstanding January

The January 1987 issue is outstanding. Grand quality in both photography and articles. What a way to start the year!

J.L. Gambrell
Kerrville

Rockland Reservoir

Regarding the article, "Bottomland Hardwoods: Every Acre Counts" in the October 1986 issue of *Texas Parks & Wildlife* magazine, I was petrified by the mention of a possible Rockland Reservoir covering 164,000 acres. That would be larger than the largest reservoir entirely within the state, Lake Sam Rayburn. I also was surprised that very little publicity was generated by such a huge, "environmental-impact" project that could destroy so much wildlife habitat.

Therefore, I would like to know just how much bottomland and river mileage of the Neches River would be lost by the reservoir. I also would like to know the geographical boundaries of Rockland Reservoir as the length from town to town, and how many miles wide the reservoir would be at its greatest width.

As this reservoir represents a major loss what land would be used and how much land would it take to compensate for such a loss?

James Wierzbicki
Houston

■ We were incorrect in stating that plans had been approved for the construction of the Rockland Reservoir. The U.S. Fish and Wildlife Service informed us that the U.S. Army Corps of Engineers is currently preparing an "Initial Re-evaluation Study" on the proposed reservoir.

If approved and built at a later date, the Rockland Reservoir would be impounded by the building of a dam approximately two to three river miles west of State Highway 69 and the Neches River in Tyler County near Rockland, Texas.

The article was correct in stating that more than 80 miles of the Neches River would be consumed in the filling of the reservoir. But, the normal amount of acreage covered with water would be approximately 101,000 acres with a flood pool or maximum level covering approximately 126,500 acres of land, rather than the 164,000 acres that was printed in the article.

As to the geographic boundaries and widest points in the proposed reservoir, no more specific details are available at present. We apologize for the discrepancies in the article.

If you desire more information on the Rockland Reservoir, may we suggest writing to: U.S. Fish and Wildlife Service, Regional Office, 9A33 Fritz Lanham Building, 819 Taylor Street, Fort Worth, Texas, 76102. Or call 817-334-2961.

BACK COVERS

Inside: Usually seen in trees, the Texas spiny lizard is inconspicuous against the bark and is usually discovered when it moves or by the noise it makes in climbing. This Texas native ranges from the Red River counties of north Texas to northeast Mexico. Photo by Wyman P. Meinzer. **Outside:** In the spring, the pink redbud tree or "Texas redbud" is one of many blooming trees and shrubs that color the Texas landscape from Brownsville to the Panhandle. (See story on page 24.) Photo by Paul M. Montgomery.