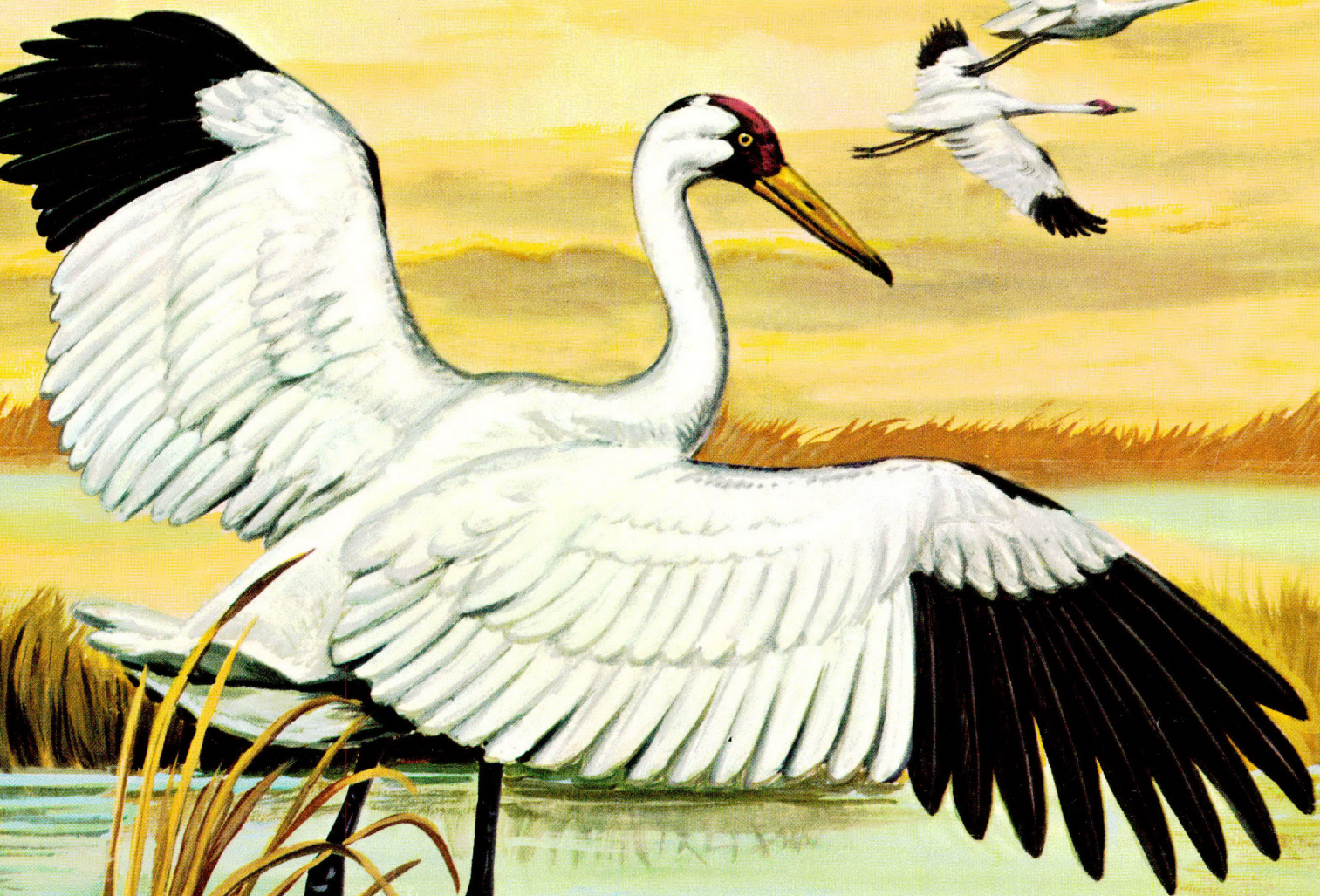


Texas Game and Fish

MARCH

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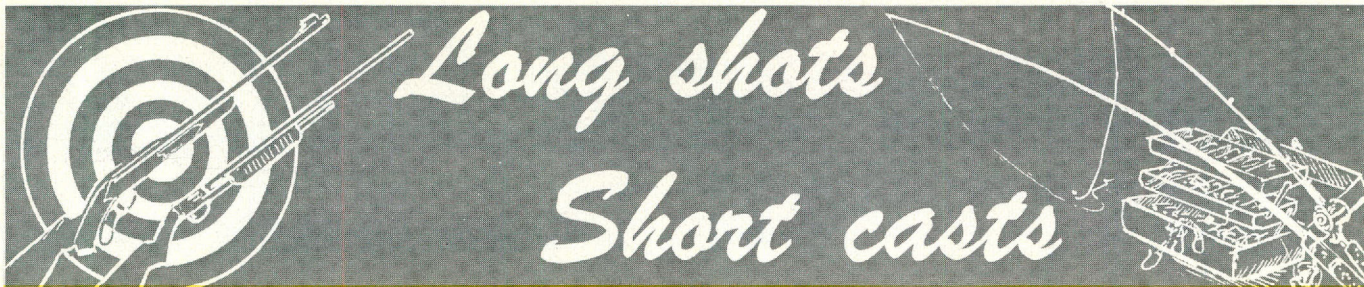
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Just come in for a landing, this scrub jay looks around as though defying any challengers for the perch. But the only watcher is photographer Dade Rayfield.



FORTUNATE FAUNA: One of the most beautifully illustrated and colorful conservation pamphlets ever to come from the Federal government was published recently by the Bureau of Land Management, U.S. Dept. of the Interior, entitled "Wildlife on the Public Lands." The booklet describes the various habitats included in the 465 million acres of public lands, shows how the land is related to the things living upon it, and discusses BLM's efforts to maintain nature's intended balance. Among subjects covered are the desert, grasslands, forest, tundra, and lakes and streams, and their inhabitants. The booklet illustrates distribution of the major public land mammals and methods of managing the habitat. This 33-page pamphlet can be obtained from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, for 35 cents.

SHRIMP IMPORTANCE: American appetite for shrimp is increasing, according to statistics compiled by the U.S. Fish and Wildlife Service, which show that consumers, on a per capita basis, ate 75 per cent more shrimp in 1964 than they did in the years immediately following World War II. Sale of the tasty crustaceans, both fresh and frozen, were up 22 per cent over the comparable period a year ago. The U.S. Bureau of Commercial Fisheries is conducting research into encouraging this trend, through increasing shrimp populations, finding new shrimping areas, and developing new and better harvest methods and equipment.

TO BREATHE EASIER: The Public Health Service has made first grants under the "clean air" act of 1964, which authorizes direct federal spending to help communities set up effective air pollution control activities. In these first grants, \$835,000 has been allotted to a dozen local and state agencies, including Birmingham, Ala.; Dade County, Fla.; Chicago, Ill.; Boston, Springfield and Worcester, Mass.; New Rochelle, N.Y.; Reno, Nev.; Greensboro, N.C.; Lorain, O.; Oklahoma City, Okla.; and Charleston, W. Va.

NEST TEST: The National Audubon Society is studying causes for the drastic cutback in bald eagle production. Five thousand bald eagles are estimated to be in the nation today. If nest locations are known, the birds can be studied to find out why their population is declining. Anyone locating a nest is asked to send the information to the National Audubon Society, P.O. Box 231, Tavernier, Fla., with a sketch of the nest location, showing the section, range and township. It should be noted whether or not the nest is in use.

NEW DEGREE OF AWARENESS: In response to changing times, Texas A&M has a new School of Natural Bio-Sciences, believed to be the first of its kind in the U.S. It will begin operation next fall with three departments--Range Science, Recreation and Parks, and Wildlife Science. Degrees to be offered are the bachelor of science degree in recreation and parks, the bachelor of science, master of science, and doctoral degrees in range science, wildlife science, and forestry science. This new school evolved in an effort to keep up with the demands and changes in land use.

UTILITY FISH: The fish most abundant along the Atlantic and Gulf coasts never graces the dinner table. The U.S. Bureau of Commercial Fisheries reports that menhaden, a boney fish too oily to eat, accounts for about 40 per cent of the total catch, and is the principal source in the U.S. for marine oils used as drying agents in paints and varnishes. The fish meal produced at the same time as the marine oils is widely used in livestock and poultry feeds, and as fertilizer.

MATCHLESS INGENUITY: If you're in need of a fire but have no matches, it's worth a try to kindle a fire by focusing the sun's rays through the crystal of your watch or eye glasses onto some fine lint, fuzz from a cotton garment or fine bits of inner bark.

-Compiled by Joan Pearsall

Texas Game and Fish

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The Cover



Any time now, the famed whooping cranes will be leaving Aransas for their long flight north, starting a whole new cycle of suspense about the numbers that will return. The outcome of the nesting period and hazardous journeys is vital to the near-extinct birds.

Painting by Joseph Maniscalco.

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MARCH, 1965

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Obligations of Spring

IN THE CYCLE of the seasons, spring is the period of new life. To most of our higher forms of animals, this is the time when those which survived the ordeals of winter bring forth their young to replenish their ranks.

How simple, yet how wonderful, is this plan of the Creator, designed to maintain and improve the species. Nature's planned parenthood fills the land with the offspring of the wariest, the most agile, the strongest, and those most able to adapt to a changing environment dominated by man.

Yet the promise of spring is no guarantee of survival for Nature's children. The quail, more wary than his ancestors, runs the danger of encountering a fox more cunning than any his parents knew, or a Coopers' hawk a bit more agile than his forebearers. Then there will be the misfits whose days are numbered, be they quail, fox, hawk, duck, or deer.

Man, who was given dominion over the wild creatures of the earth, inherited with this privilege the responsibility of stewardship. He holds the key to survival.

While man "does not live by bread alone," he can not ignore the physical requirements of the flesh. He must have food and shelter and, in most cases, his demands are far beyond his needs. Wildlife, whose needs are the same, demands much less.

The farmer, raising food and fibre for man, can help provide shelter and sustenance for quail if he leaves field corners unfurrowed and a weedy canopy along his fence rows. It takes so little, but to the bobwhite it means so much.

The rancher, improving his pasture, may see no utility or beauty in a briar patch, but it's the cottontail's castle, and the wild turkey hen might find its thorny limbs sanctuary for hatching her young.

Elimination of a cedar brake, whitebrush thicket, or mesquite studded flat, may doom the antlered whitetail who once sought safety there.

To do nothing to game habitat may sometimes help maintain the *status quo* for wildlife. But, doing nothing is not compatible with man and progress. Change is certain.

With the change, the land operator must decide if the pattern will be waste or wise management. He must not only decide if but where, when, and how the weed patches will be plowed, the pastures burned, the marshes drained, the thickets chained, or the forests cut clean.

Airport runways winter few ducks; deer find little browse on oil field derricks or Christmas trees; motels and shopping centers offer little accommodations for quail; and super-highways provide no protection for squirrels. But wildlife doesn't complain when man usurps its home: it just suffers, or disappears.

Spring brings its annual promise, a full supply of the best of its wild creatures entrusted to the stewardship of man. These are the seeds that must be nurtured and protected if the harvest is to be bountiful.

Man accepts the promise and anticipates the harvest of wildlife. But what will he do about its needs for survival?
TDC

Where's My Deer?

by WAYNE TILLER



SHIFTING HIS WEIGHT from one leg to the other, the aggravated hunter succeeds only in dropping his cigarettes and almost falling off his tree-top perch. Cursing the many branches that scratch his neck and make noises as they slide across his clothing, he mutters a solemn vow.

"This is ridiculous. Been here all day now and haven't seen a single deer. Soon as I get back home, I'll write the newspaper and give all the other hunters a hint to stay home."

How many times this scene was enacted during the 1964 season is not known, but from initial reports it was more common than in the past few seasons. Hunters and landowners alike have expressed concern over a shortage of deer.

Many believe the deer population has been hurt by antlerless harvests. Others are convinced we are killing too many deer, both bucks and antlerless. But, few are willing to concede that their abilities, hunting practices, or the weather affected their success even in the slightest way.

Weatherwise the season was dealt a hard blow from the beginning. The season opened in shirt-sleeve weather that prevailed for an unusually long time. With temperatures up in the 70's, deer are not normally going to rut, so they will not be moving around to give hunters a target.

Likewise, the weather during the 1964 summer provided ample rainfall and growing conditions over most of Texas to produce a good crop of acorns, green vegetation, and other items that make up the deer menu. This also tended to keep deer deep in the brush since they did not have to venture out to exposed areas for food.

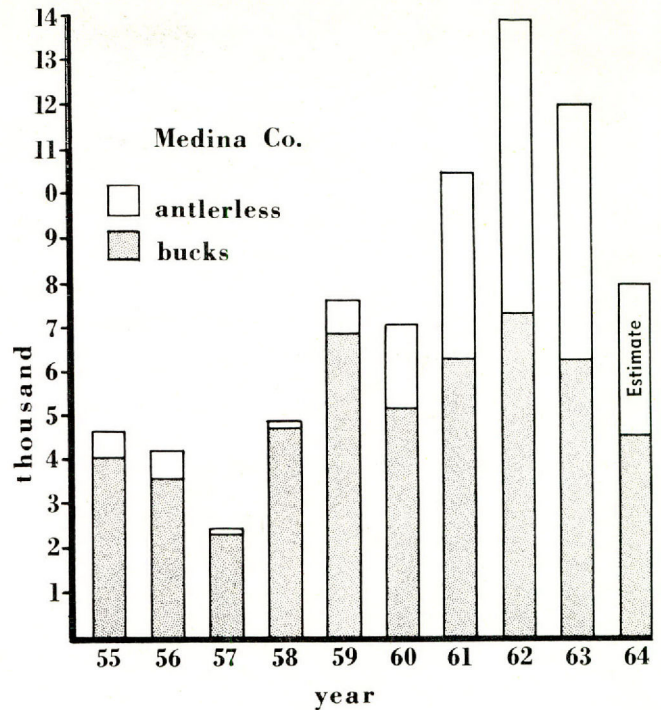
Connected with this abundance of deer food was the much heavier cover most hunters encountered during the season. Through all this additional "timber," hunters were lucky to see movement, much less recognize it as a buck, doe, goat, or what have you.

Also, connected with this line of thought is another joker dealt by the weatherman—no frost. In many sections of the major deer country, frost barely touched the vegetation before the Christmas season. Even when it did come, the leaves seemed to linger for a few more weeks before falling.

All of these weather-related occurrences acted against the hunter's best interest. Most true sportsmen were content to live with the fickle and unpredictable weather, but an early rut was completely unbelievable.

Unusual as it is, reliable indications point to the fact that an early rut did occur this past season, possibly as early as October or late September. Here Dame Nature threw hunters another curve because the rut is usually associated with cold weather—November through January in most years.

These are all good arguments that can logically account for the slight drop in hunter success that the state experienced during the past season. Actually the decline from 220,649 deer killed in 1963 to an estimated 202,777 in 1964, is a drop of only 8 per cent—an expected fluctuation in any deer herd.



However, there are still those that argue against the killing of antlerless deer, even when faced with the cold, hard fact that every county that has been in the program for over three years had more bucks killed during the past season than the year they entered the antlerless program, many harvesting several times more than a few years ago.

Discussing deer management in all the 150 counties in the antlerless hunting program is next to impossible and would offer some pretty dry statistics. Therefore, several representative counties will offer some insight into the effect of the antlerless deer hunting in the state.

Medina County, representing the southern hill country and South Texas area, entered the regulatory program in 1955. That first year, hunters killed 638 antlerless deer and 4,046 bucks for a total of 4,684 whitetails.

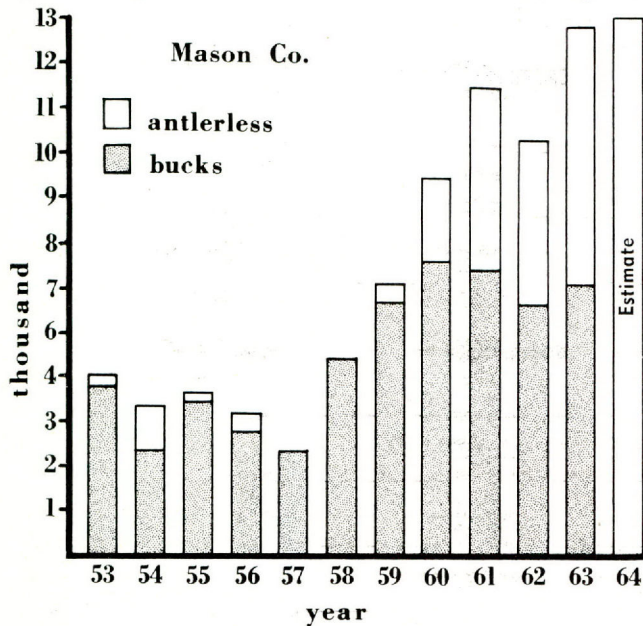
By 1957, the deer harvest had dropped to a drought-produced low of 2,347 bucks and only 120 antlerless

Lush vegetation provided deer food and hiding places.



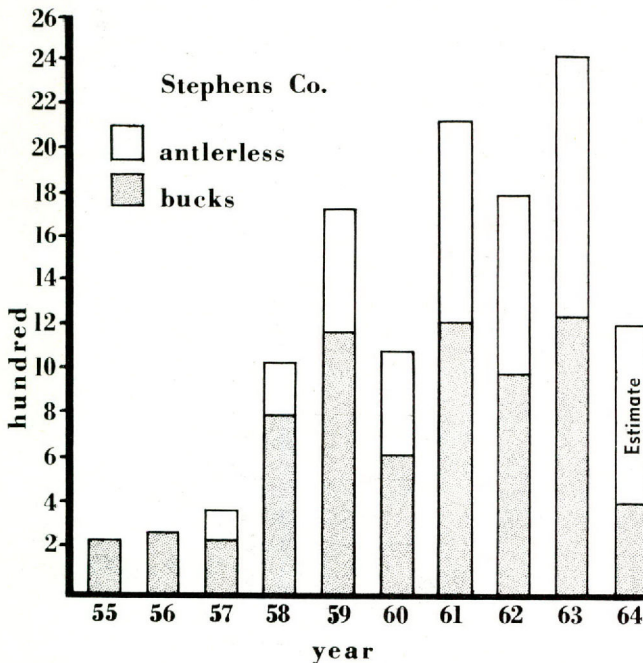
deer. As the drought broke, harvest figures started a steady climb that topped in 1962 at 7,294 bucks and 6,584 antlerless deer, almost three times the total kill seven years before and 80 per cent more bucks.

Fluctuations in the hunting success on any game species are not at all uncommon since it is determined by so many variable factors. The 1963 season proved



to be a recession year for success in Medina County with hunters bagging 6,247 bucks and 5,729 antlerless deer. The strange thing about this season was that the average number of deer per 100 acres jumped from 10.00 to 10.40.

Preliminary estimates of the 1964 kill figures reflect an even lower total of 7,997 deer, but, unlike the previous



year, the average number of deer per 100 acres dropped to 9.48.

Mason County has also experienced somewhat erratic but progressively improved hunting success. Starting

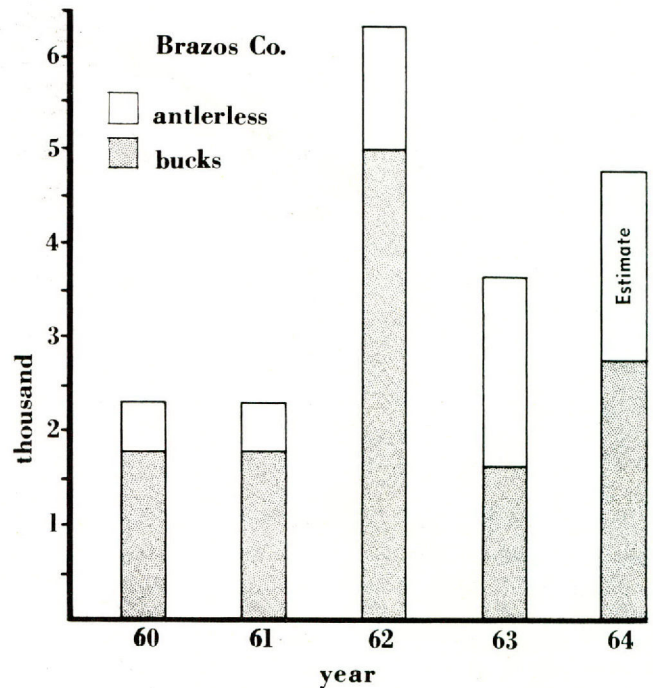
with 3,802 bucks and 285 antlerless deer in 1953, harvest figures dropped to 2,341 bucks and no antlerless deer in 1957. After the drought was overcome that year, hunter kills started a steady climb.

Buck hunting in this county hit a drought-produced rock bottom in 1957, then climbed to 6,385 in 1961. Likewise, antlerless kills stairstepped from 449 in 1959, to 4,070 in 1961. The 1961 season was the first time more than 10,000 deer had been killed in Mason County.

Then, a minor and localized drought caused success to drop slightly in 1962, only to stage a comeback the following wet year with 6,045 bucks and 5,748 antlerless deer—a total of 11,793 deer. Preliminary estimates indicate this past season may break all records in Mason County with a total kill of about 12,000 deer.

Stephens County tells another story of occasional fluctuations but a steady increase in hunting success. Starting with a harvest of 270 bucks in 1956, management of the deer herd resulted in a kill of 2,419 deer in 1963—1,245 bucks and 1,174 antlerless deer.

Setbacks in 1960 and 1962 provided fuel for some concern that the antlerless program would ruin the



Stephens County deer population, but a comeback in following years proved otherwise. A preliminary estimate indicates the 1964 harvest dropped to 1,200 deer, but that is still over three times the kill recorded when that county first entered the program.

Moving into the edge of East Texas, Brazos County has experienced similar ups and downs in their deer hunting success. Entering the antlerless program in 1961, the first season resulted in a harvest of 1,800 bucks and 528 antlerless deer. This was followed by a bumper kill in 1962 of 4,995 bucks and 1,319 antlerless deer.

After a decreased kill of 3,630 deer in 1963, hunters experienced better success this past season with an estimated county-wide harvest of 2,778 bucks and 2,000

antlerless deer. Clearing of brush to improve pastures in this county has eliminated prime deer habitat to such an extent that the 1962 record may never be topped.

There are no two ways about it. The 1964 deer harvest was not a record-breaker. Although a record high kill was not realized by hunters, neither was a record low—or even a significant decrease. This was simply a year when variable factors that affect hunting success compounded one another into producing an “off season.”

Proper deer management is a complicated and ever-changing science. The size of a population will fluctuate from year-to-year, seemingly without any reason even if it is balanced to the habitat and properly managed.

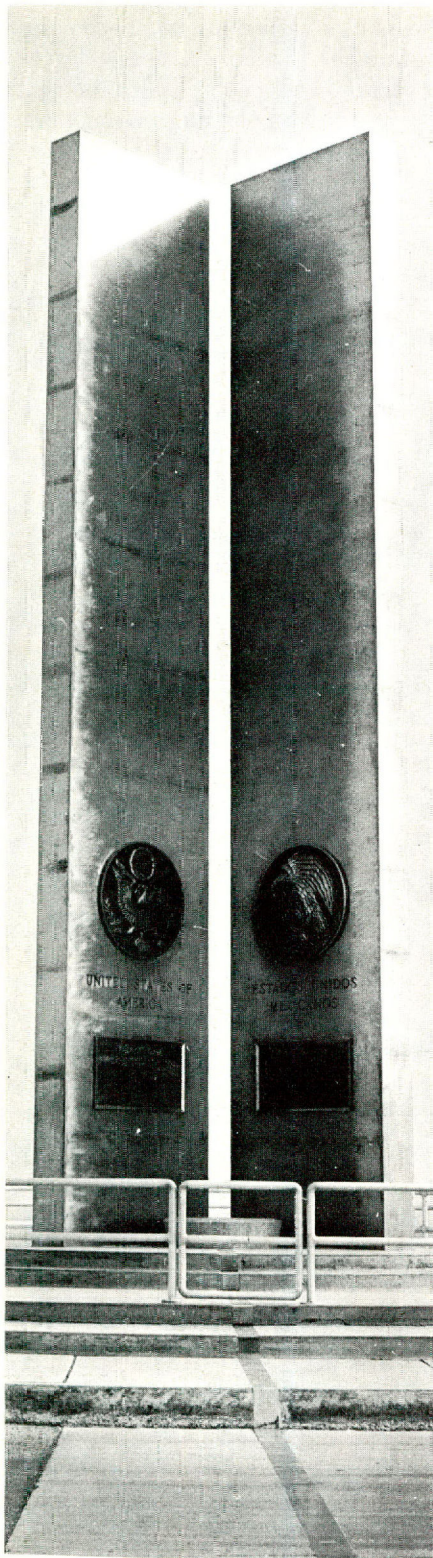
Likewise, hunter success also varies, but not necessarily in proportion to the number of deer. A heavy hunter kill one year does not mean success will be poor the next.

In the past, natural predators and other enemies like the screwworm kept deer numbers close to the carrying capacity on some lands. Without these natural barriers, man must act as predator on both sexes to protect deer from their own reproductive capacity just as a rancher removes both bulls and heifers from his herd.

Proper management of deer as a renewable resource is the key to good hunting in the future. Nature will continue to sow, but her efforts are wasted if man refuses to reap. **



Antlerless hunting has increased buck kills in many areas.



Fanfare for Falcon

by ELAINE BOSTIC

OASIS, defined as "A green spot in an arid land," is the perfect description of Falcon Reservoir—a sapphire-hued lake in dry southwest Texas. One of our newer state recreational areas, Falcon State Park is

located on the breeze-caressed shores of this gigantic man-made lake.

The 58th Legislature, being recreation minded, selected Falcon as one of three state parks for major development and budgeted \$279,416 to be used for improvements over a two-year period.

This two-year period was shortened to 18 months by hard-working park planners determined to prove the value of such recreational ventures. Every consideration was given to what the public wanted, and results of their efforts promise to promote record visitation figures.

Located within a four-hour drive of San Antonio and a three-hour run of Corpus Christi, the attractive park entrance is located just off U. S. 83 south of Zapata on F. M. 2098.

Paved roads throughout the park make every area available for the visitor's enjoyment. Enhancing the drawing power of the park is a turf landing strip complete with aircraft parking spaces for those who prefer to literally "drop in".

Tops on the list of visitor wants is comfortable overnight facilities with

"all the conveniences". This need has been liberally met with 24 screened shelters. Lights, electrical outlets, tables, and benches inside, running water at the doorstep, sanitary garbage disposal units, and modern outdoor cooking grills provide the proverbial comforts of home.

Centrally located in the sequestered shelter area is a modern tile restroom with hot showers and laundry tubs that are handy for rinsing out soiled clothes.

Trailer vagabonds also have been remembered in this park paradise. In a special area set aside for the camper-on-wheels, 33 trailer hook-ups are available complete with electricity and running water. For those who don't care to heat up their trailers, cooking grills are handily located at each site. This area also has a modern restroom with hot showers and laundry tubs. Adjacent is a trailer sanitary station.

But what about individuals who like to rough it by tent camping? Their wants have also been anticipated in the form of developed campsites with running water, waist-high

charcoal cooking grills, area lighting at night, and shaded concrete picnic tables.

Falcon Reservoir is nicknamed the Black Bass Kingdom, and year-round the limit is the rule rather than the exception. You need to use the "buddy system" when you go fishing—one to bait the hooks and the other to fight off the hungry lunkers. With fishing like that it won't take long for the word to spread.

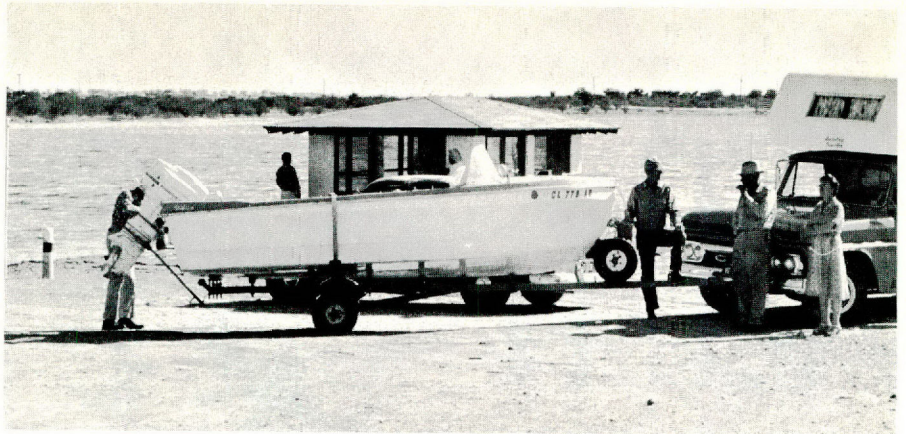
Again, the wishes and needs of the expected droves of fishermen have been foreseen. The results appear as a boat ramp second to none, with the extra bonus of a spacious fish-cleaning shelter nearby.

The boat ramp is typical of Texas. It is 460 feet long, and covers a 35-foot elevation drop. This way, the irrigation fluctuation of the lake level doesn't interfere with boat launching. The fish-cleaning shelter has a concrete table with running water to help make the task of cleaning fish easier.

One important point anglers need to remember when going after the big ones is to have a Texas license for fishing on the American side and a Mexican license when crossing the boundary buoys. Also, the Mexican laws and limits on that side of the lake must be observed.

With such tremendous fishing, other activities take a back seat but still share the limelight. Birdwatching is a favorite of the winter visitors. The semi-tropical climate in winter makes boating, swimming, and water skiing year-round favorites. The lake's clear waters promise to make this park a routine rendezvous for fans of the newest water sport craze, skindiving. For the sightseer, there are trips into the nearby Rio Grande Valley, famous for its citrus groves and across the Rio Grande River into romantic, enchanting Mexico.

All this, coupled with a cooperative climate of mild sunshine-filled winters and breezy tropical summers, is destined to make Falcon one of the most popular vacation spots in Texas. For a spot where you can go with high hopes and come away with your ice chest packed, your worries and cares forgotten, and your daydreams fulfilled, remember Falcon State Park. **



Anglers enjoy new 460-foot boat ramp and fish cleaning house.

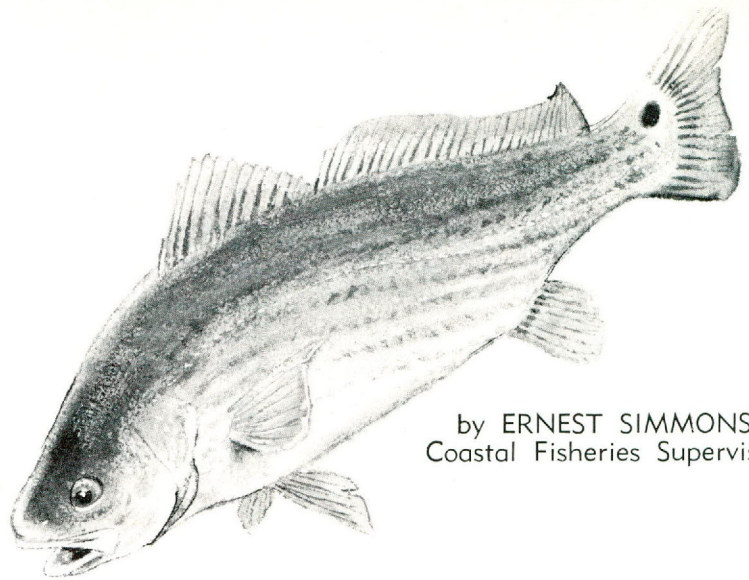


Lake waters now cover buildings and brush that offer favorite lairs for lunker bass.

Year-round bass action is bonus of new lakeside state park.



RED ALERT



by ERNEST SIMMONS
Coastal Fisheries Supervisor

HOARDS OF REDFISH once swarmed the shallows of Laguna Madre tearing up trotlines and ripping holes in nets—but not in recent years. Many people, in fact, feel that redfish are becoming less abundant as the years pass and wonder about the causes.

Redfish apparently depend heavily on rainfall and are especially abundant during wet years. Their numbers normally drop during prolonged droughts, and weights of commercial catches are closely correlated with annual rainfall. Landings of trout and drum also vary in the same manner, although their fluctuations cannot be credited to climatic conditions. Major fish kills, caused by freezes, can upset these trends, but normally they hold true.

Although all major marine fish species are affected by weather conditions, it appears some are affected more than others by combinations of

adverse conditions and heavy fishing pressure. A classic example of this can be found in the commercial landings records from the Laguna Madre of Mexico. This region was open to fishing pressures of all types and was subjected to an extremely destructive drought for many years.

During this dry period, commercial landings of trout fluctuated, but maintained a good, steady average. But redfish landings declined—and declined—and declined. Thus, when two closely related species living in the same bay were subjected to heavy fishing pressure, the trout population remained high while the redfish decreased.

The amount of time needed to recover from adverse conditions was also vividly illustrated in the same area. When the drought finally broke, redfish landings rapidly increased.

The reasons behind the rapid depletion of redfish during droughts

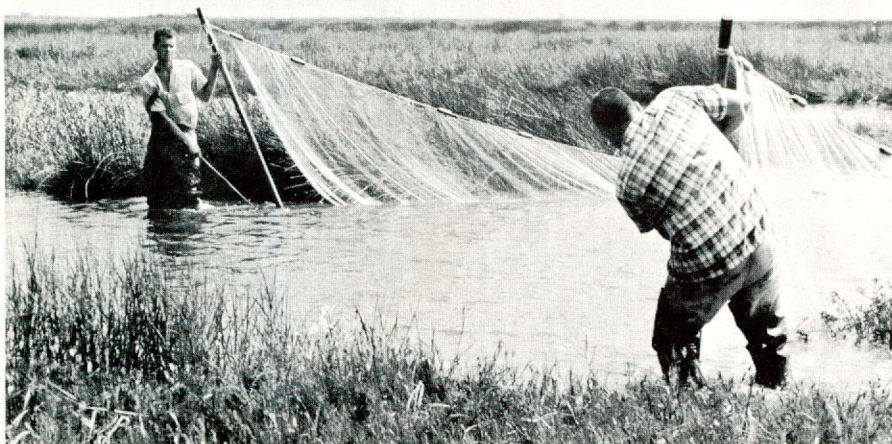
can be more easily understood when growth rates are considered. Trout and drum grow fairly slowly and the population consists of many age groups. A poor spawn for one or two years is not normally too drastic since several groups are still available.

Redfish, however, grow rapidly and the young produced one year constitute most of the sports catch and much of the commercial catch the following year. Normally only three age groups make up the bulk of the fishery at any one time, and the absence or scarcity of one group is easily observed. Thus the number of redfish in a bay is strongly dependent on the number of young entering the bay and surviving.

A successful spawn in the fall of 1961 along the lower Texas Coast resulted in a good crop of 14-inch reds by the fall of 1962. A very poor spawn in the fall of 1962 resulted in a poor crop of 14-inch redfish in the fall of 1963. A highly successful spawn in the fall of 1963 resulted in another good crop in 1964. It is possible that poor spawns in several consecutive years could be disastrous to a population although, as previously mentioned, they can rebound quickly.

“Rat reds,” (generally under 14 inches) are thick at the present time, although there are some indications that all is not well with the overall population. Surveys of juveniles on the nursery grounds indicate there should be a scarcity of two-year-old fish and a relative abundance of three-year-olds. Biological samples

Marine biologists keep check on young reds in coastal bays.



indicate a shortage of both age groups, and very few large redfish have been noted during random inspections of fish houses near the Upper Laguna Madre.

This apparent lack of larger redfish could be due to several factors. It could be caused by fish simply moving out of the area (emigration) or it may be due to natural mortality. Fish tag return data, however, indicate that the annual loss to natural deaths and emigration combined is about 24-28 per cent, which would not account for all the missing fish. There remains at least one other probable cause—fishing.

The fishing mortality rate for redfish larger than 14 inches as determined by tag returns for two years along the lower coast was approximately 30 per cent per year. Limited data indicate that approximately the same rate applies to fish 8 to 14 inches long. The total loss to all causes was about 51 per cent per year.

Tagging data also indicate that 70-85 per cent of the population of redfish over 8 inches is lost between the lengths of 8 and 27 inches, a period of 2½ years. An even larger percentage is probably lost by the time most of the fish reach full spawning size of about 31 inches. However, it is not known at the present time how much this reduces spawning stock below critical levels.

It is known, however, that biological samples of almost 40 years ago which took thousands of larval redfish in a single sweep have not been duplicated in recent years, and reported sighting of large schools of "bull reds" in the Gulf have become less frequent. At the same time, some evidence is available to indicate that large redfish are present in waters 5 to 14 fathoms deep just offshore.

The harvest rate, as indicated by tag returns, has been increasing in recent years. This may be due to better tagging and recovery methods and to the offer of fishing lures as rewards for returned tags. However, returns of tags from trout, drum, and flounder did not increase appreciably after rewards were offered. The increase in returned redfish tags may be due to an actual increase in harvest.

For years returns from Aransas Bay and the Upper Laguna Madre

remained fairly steady at 10 to 12 per cent per year. In 1959 and 1960 the rate in the Upper Laguna Madre increased to 20.5 per cent. In 1961 the rate in Aransas Bay was 30.8 per cent, and in 1962 it climbed to 31.4 per cent.

These may well be low estimates since some tags are not returned and every such non-reported tag results in an underestimation of fishing pressure. This means that the calculated redfish return rate of 30 per cent could actually be much higher, even as high as 50 to 60 per cent.

The non-return tag problem is as serious with trout and drum since the calculated harvest rates of 5 to 10 per cent per year would not constitute overharvest, even if it were doubled. For redfish the situation could be critical.

A decrease in the percentage of tag returns such as was experienced in late 1963 and 1964, would normally indicate a decreased rate of harvest and an increase in population size. Recent drag seine data for Aransas Bay show that the catch of redfish did increase in late 1964 when juveniles from the successful 1963 spawn reached catchable size.

Another reason for a decline in tag return percentage is because taggable size redfish were scarce in late 1963 and early 1964 and there were not many tagged ones to recover. Some fishermen failed to realize just how valuable tag information could be and would not or did not turn in tags. This also reduced the recovery rate.

Another factor compounding the problem is that recovery rates of tagged fish often vary widely between different schools of the same

species. In the Laguna Madre and Aransas Bay areas, small bunches of closely-watched tagged redfish provided recovery rates of 16.6 to 71.4 per cent. This could mean that some schools of fish left the area or were captured by persons unwilling to turn in the tags.

Another indication of the scarcity of redfish in some areas is the relative number that were killed during the severe freeze in 1962. Large numbers of old, big trout were killed and washed up on the shorelines, but few redfish were found although many were killed in the somewhat more severe freeze of 1951. There is a possibility that redfish moved to the Gulf before the freeze hit but, if so, few returned to the bay later. It is more probable that few redfish were present to be killed by the cold. Large numbers of trout killed by the freeze indicate that this species is not being overfished.

The redfish is a prolific spawner and during favorable conditions the stock easily can be replenished. It is equally apparent that at the present time it is one of the least abundant game fish on the lower Texas coast and that much of the stock is being harvested as soon as it reaches catchable size. This heavy harvest leaves little, if any, surplus.

Numerous attempts have been made to regulate the harvest of fish when people were of the opinion that overfishing existed. Most of the bays of Texas have been closed to the use of nets. In some cases this measure has been followed by an increase in "outlaw" fishing or by the development of a trotline fishery. Unfortunately, these lines are more

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Young redfish grow to 14-inch length during first year.





Twelve-year-old Bill Hughes of Carrizo Springs bagged his 13-point trophy in Maverick County.



Beeville residents, Mrs. Inez Stuart, left, and B. W. Seger, display 11 and 15-point antlers with 25½-inch and 20-inch spreads, from South Texas.



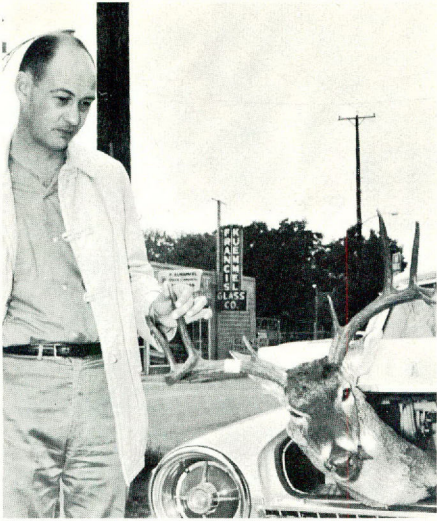
McMullen County hunt gave Walton Krizov of Austin a 127-pounder with 25¾-inch spread.

R. L. Sherrad, Sr. of San Antonio is proud to display 155-pound trophy with 10-point spread of 26 inches.

Highpoints of



This 10-pointer with a 27½-inch spread racks up the honors for Mrs. Jean Lansford, of Catarina.



Nine-pointer killed by Kenneth Kordzik, San Antonio, had a 24-inch antler spread.



Batesville hunter, Andy Brown, bagged this Dimmit County buck that weighed 168 pounds.



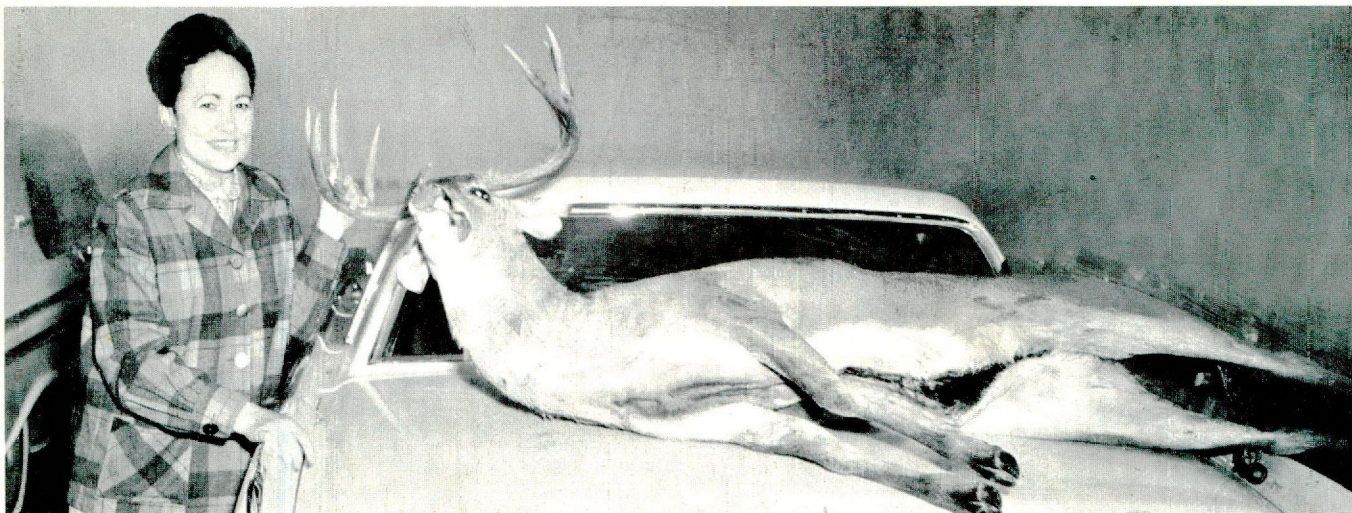
Maverick County 17-point antlers will soon be adorning Mrs. Ben Causey's wall in El Indio.

64

Big Burnet County 11-pointer downed by Austinite Jess Cain weighed 130 pounds.

Big 12-point buck with 29½-inch spread fell to Ray Lindsey, Pearsall, hunting in Frio County.





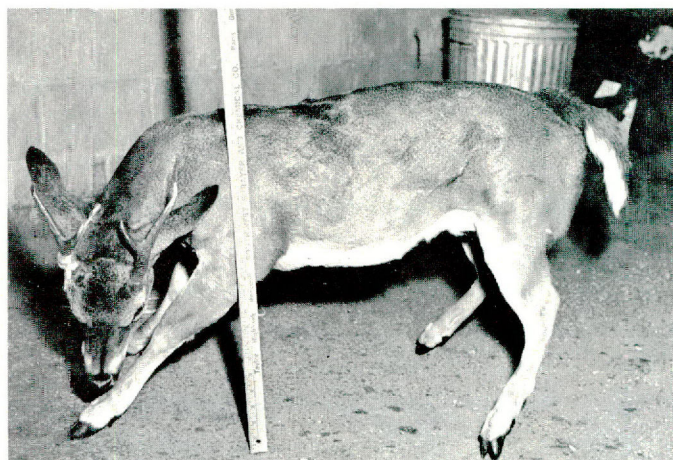
Mrs. Erskine Holcombe surprised her Houston neighbors with a South Texas deer that field dressed at 194 pounds. Rattled horns lured this buck to gun range.

Ed Byrum's "buck" turned into a doe masquerading under a five-point rack.

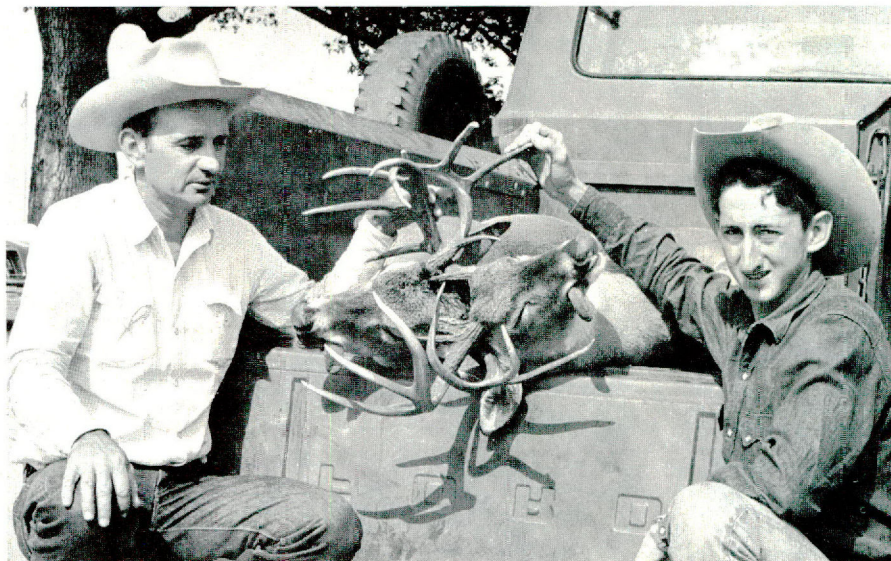


(Photo by Dick Nalley)

Max Ladusch, Austin, bagged this dog-like freak near Llano. It weighed 63 pounds, stood 21 inches tall.



Nature disgraced M. A. Leazar's buck.



In this tangled twosome found near Charlotte by Jack Ryan, left, and Robert Bryan, both animals had 10-point, 18-inch spreads.

A Plug for Fresh Water

by NORRELL WALLACE
I & E Officer, San Angelo

POROUS underground salt formations 15-40 miles wide and several hundred feet thick underlie much of the lower plains from Sweetwater to the Red River north of

Childress. These formations are responsible for polluting one of Texas' most powerful underground aquifers.

Billions of gallons of water filter underground from the high plains and emerge as gushing springs throughout this porous salt strip. Once clear, clean water is now useless for livestock, humans, industry or agriculture.

One outlet of naturally polluted water bursts forth near the little town of Estelline, 16 miles west of Childress, and is known locally as the Estelline salt hole. From this one salt spring 2,600,000 gallons of polluted water a day rush into the Prairie Dog Fork of the Red River. As it rolls on down river it adds 308 tons of salt a day to the Red River and accounts for 20 per cent of the salt accumulating in Texas' largest reservoir—Lake Texoma.

Several other large salt springs near Paducah, Guthrie, Brice and Truscott contribute substantially to

the salt content of the Red and Wichita rivers, but none can compare to Estelline Springs.

The need for clean water for recreational, industrial, municipal, and agricultural use in Texas is an acute problem. In the Red River drainage area, for instance, individuals found guilty of polluting a stream face stiff penalties.

As more stringent pollution laws deterred man's befouling of his own water supplies, local authorities asked the U. S. Corps of Engineers to help with a program to control natural pollution. The Estelline salt hole was their first target.

Stopping the 2,600,000-gallon-a-day flow of saltwater was no simple undertaking, and skeptics said it simply couldn't be done. However, the U. S. Corps of Engineers proved them wrong in 1963.

Located on the south bank of the Prairie Dog Fork of the Red River, the spring has claimed an old outwash that was once part of the riverbed. Water gushes from a gaping

A few salt-tolerant minnows are only life escaping spring's pollution.

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When buying lures, try to duplicate the food preferred by your prey.

is greatly reduced. As the activity declines less food is required, so fishing is generally slow in cold water.

A similar activity slow-down has been observed when the water temperature is too high. Aquarium experiments, for example, have revealed that food consumption of largemouth bass is several times greater at a water temperature of 65° compared to a low of 35° or a high of 90°.

So, utilizing this information, the angler can assume that fishing in a static lake or bay would be best around warm water inlets during cold weather. Also, this points out the value of knowing the depth of the thermocline in a lake in mid-summer. Fish are more active above the cold water, yet they do not prefer the hot upper levels, so they stay around the median layer we call the thermocline.

This information also helps explain why bass fishing in shallow areas of

Think Like a Fish

by WAYNE TILLER

BEHAVIOR and unpredictable actions of fish never cease to baffle fishermen. Why do fish react so quickly to some baits, yet ignore others? What makes them bite like mad one day, and leave all stringers

Fish pay more attention to action than color.



bare the next? And, how can you predict the success of a new lure?

These are a few of the questions anglers think a fisheries biologist should be able to answer. But even in this day of missiles and space travel the world's educational centers have not produced a single piscatorial psychiatrist.

On the other hand, basic scientific knowledge of our aquatic prey can shed some insights into their habits and reasons behind their actions. Although modern fisheries research has not been able to fathom the mind of a fish, it has uncovered many facts that may help you catch more of them.

For instance, fish are classified as cold blooded animals because they do not have the ability to regulate their body temperature. Their temperature is directly dependent upon the temperature of the water around them.

If the water is cold, the temperature of a fish is low and the activity

lakes is best in the spring and fall. Water in these areas is just too cold during the winter and too hot in mid-summer.

Operating as a predator, most game fish rely heavily on sight for getting food into their mouths. Yet fish have been found to be notoriously nearsighted. Vision in most fish is probably limited to just a few feet even in very clear water. Turbid or cloudy water further restricts underwater vision.

Fish have movable eyeballs that move independently so that one eye may be looking up and the other down. They also have good vision above the surface of the water—good enough, in fact, to spot an insect just above the water or an angler walking along a river bank.

Most biologists agree that fish are virtually color blind, although some species can determine shades of colors. The hues most easily singled out by fishes are green and yellow, which is logical since most of their



Throwing an anchor is not only against boat rules, it also scares fish.

food items are some shades of these colors. Silver or white also ranks high since this resembles the flash and white sides of a minnow or other food fish.

A sense of smell does not seem too important to fish, yet it is highly developed in all fishes. The nostril has no function in breathing, but leads to a small sac where the sensory nerve endings are located.

Substances in very small amounts may attract or repel fish. Some

chemicals and other pollution may be readily detected and frighten off many fish, while sharks, catfish, and other species are attracted by an infinitesimal amount of blood in the water at considerable distances.

The sense of touch is also highly developed in fish. Sensory cells are located all over the body to detect the slightest contact with another object. The "whiskers" on a catfish are highly developed "feelers" that help these fish navigate and feed in muddy waters.

Hearing in fish is another important area anglers should consider. Basically, our piscatorial prey hear in much the same way as do land animals. But they get the message faster since sound travels much more rapidly through water than it does through air.

Fish have no outer ear, only an inner ear. Sound reaches the sensitive ear as vibrations that are picked up in the water by the lateral line or transmitted through the fish's body. This tube-like modification of the scales is readily seen along the sides of a fish extending from head to tail.

The ears of a fish are especially sensitive to low frequency vibrations that would include footsteps along a stream bank or any movement in

the water. Voices from above are probably not heard by fish, but movements in a boat would be transmitted directly to the water through the hull. An estimate of what noise a fish would associate with danger would be based heavily on speculation.

When all these sensory factors that influence behavior are lumped together, the scientific angler can find support for some common beliefs. These would include one well-known principle that shallow water fishing is best in the spring and fall. During the winter, try the warmer areas of a lake or bay and experiment with fishing different depths during mid-summer until you find the thermocline.

Select artificial lures on the basis of their action in the water and their resemblance to natural foods. Try to duplicate the natural action of food organisms in the water. Although color is significantly important in some waters, it is not considered the most important factor in catching fish.

Be careful with sounds, especially splashing the water or hitting any part of your boat. Try to avoid any unnecessary noise that may be transmitted into the water.

Wait a short interval after an artificial surface lure hits the water before starting the retrieve. Chances are the nearsighted bass didn't see the lure hit the water but he may come to investigate the sound. Other

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Noise carries through hull and water to fish.



Cold weather means more time between bites.



Lovable Loudmouth

"KILL-DEEAH, KILL-DEEAH." The continuous, shrill call of this Texas resident immediately tags him to the observer. Other less common names for *Charadrius vociferus* include killdeer plover, noisy plover, chattering plover, and killdee.

A true plover and a member of the Charadriidae family of shore birds, the killdeer is one of the easiest of Texas birdlife to identify. Four horizontal black bands on its front—two on the head and two on the chest—separated by three white bands, present a natty appearance. The remaining part of the bird is olive-brown above and pure white below.

In flight the killdeer's wings exhibit a white "V" stripe above, and are pure white below. Its tail is rounded with a golden-red rump patch that flashes in flight. The bill is slender and shaped much like a

pigeon's and its spindly legs are lead-gray.

The killdeer is migratory and limits its winter distribution to an area bordered by California, Arizona, Texas, Indiana, New Jersey, and Bermuda, then south to central Mexico and the West Indies. It is a year-round resident in all of Texas with the possible exception of the frigid Panhandle during winter.

After the final cold thrusts of winter subside, the killdeer ranges north to central Canada. In this summer breeding range and throughout Texas, it settles on mud flats, open fields, airports, and riverbanks, exhibiting a special fondness for moist or muddy areas.

Freshly turned soil, pastures, fields, and vacant lots in towns and villages are often alive with these plovers. Several individuals may feed with robins and flickers on open grassy

stretches of a golf course or city park. While feeding they may be in a loosely associated group of a dozen or more, but they do not form compact flocks that characterize other plover and wader species.

Classified by many naturalists as a bird of great economic value, the killdeer proves its worth by destroying great quantities of insect pests. Included in its diet are mosquitoes, cattle fever ticks, crane flies destructive to wheat and grasses, grasshoppers, caterpillars, horseflies, and various weevils that attack stored grain.

One study of killdeer food habits was based on stomach contents collected from May to September. The nine birds represented in the study had voraciously consumed 258 locusts and 190 other insects, and only one had taken a few wasted kernels of grain.

As spring spreads its magic over the land, killdeer pair off to search for a suitable nesting spot. The ideal nest site is near water in a pasture, garden, woodland clearing, or on a gravel bar.

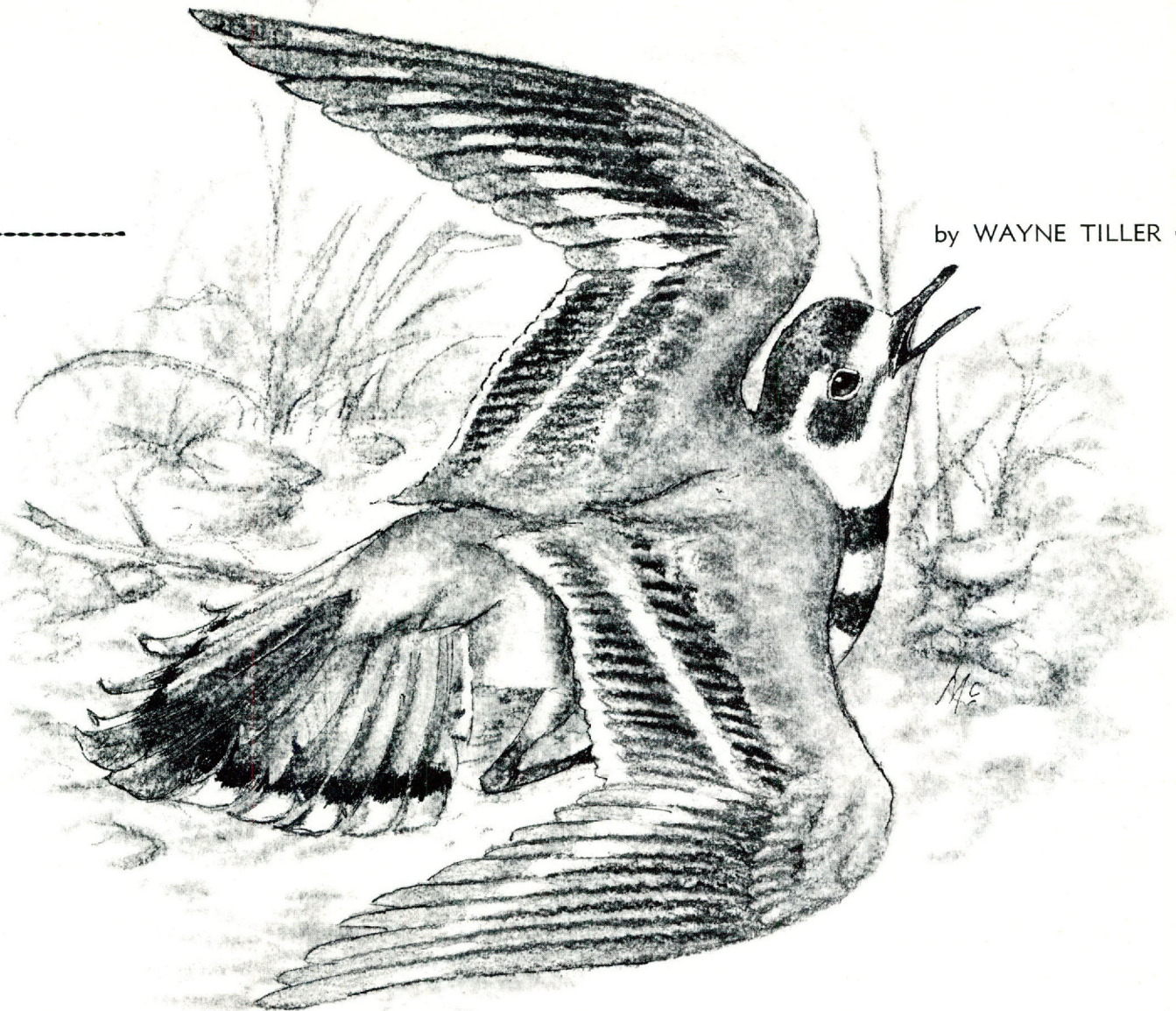
When the proper nesting environment meets their standards, they select a shallow depression which may be lined with bits of grass, weed stems, bark, shells, and stones. Nest construction is cunningly designed to blend into the surroundings for concealment.

Into such a crude nest, the female lays four light buff or chocolate-colored eggs that are blotched with black and dark brown. The heaviest concentration of spots is consistently at the larger end of the egg.

Although the nest is safely concealed and the coloration pattern of the eggs blends remarkably well into the surroundings, the nest is fearlessly guarded by both parents



by WAYNE TILLER



throughout the 26 to 28-day incubation period. No bird can display a more persuasive imitation of severe injury when its nest is threatened than a mother killdeer.

Flushed from her nest, she will flutter a few feet from the nest, fall flat on the ground, spread out in a grotesque manner as though hopelessly crushed, and cry piteously. If approached, she revives sufficiently to limp away with one or both wings dragging as though broken, sometimes almost rolling over, pausing to gasp and pant as if totally exhausted.

All through this display she wails incessantly, spreads her tail feathers, and throws her body from side to side. This action flashes the golden-red rump patch that could pass for make-believe blood.

In the meantime, if he is present,

the male whirls around and around the intruder at a safe distance screaming protests and denunciations. They continue this feint until the enemy is lured away.

Similar parental concern is displayed when a brood of young birds accompanied by their parents is approached unexpectedly. Such trickery is necessary since the flightless young leave their crudely constructed birthplace soon after emerging from the shell. Clothed in mottled down, these helpless puffs scamper about on two slender, ridiculously long legs.

At the first cry of alarm, all chicks freeze flat on the ground with the neck outstretched — immediately blending into the surroundings. Even at this tender age they know instinctively that in this position they are

safe. The slightest movement now may result in death.

Obediently lying still they remain like this until their brave parents have successfully distracted the enemy, and often until the adults return to the area and voice the all-clear signal.

Another diverting trick practiced by this species is the use of the false nest, often associated with the feeding pair of birds. When approached, one will run silently ahead, completely ignoring the invader, and settle into a small depression with all the little motions of covering a set of eggs.

When the intruder is drawn near by these motions, the bird will glide off to expose the empty depression, usually piercing the air with cries

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Fishing Lines and Lores

by PAUL HOPE

ASKING FISHERMEN what they consider to be the best time for fishing is like asking the man on the street the best way to eliminate the national debt. You'll always get a definite answer, but no two offer any similarity.

Every angler, especially the avid follower of the sport, claims to have



a scientific inside track to fish psychology, the weather, and right baits, while others rely on the old-fashioned "hex."

One fisherman says the best time to fish is about an hour after dark when the moon has passed full. He says, "Bass really strike when you see a moon with about an hour left before dipping behind the horizon."

Many dedicated salt water anglers won't go near the water until they check the tidal charts. And what influences tidal rise and fall more than the moon? Most coastal fishermen agree that fishing is better when there is some tidal action—either coming in or going out.

Another group of anglers swears by the barometer—never have so many depended so heavily on such a small and simple gadget. Some say fishing is best when barometric pressure is rising. Others say just the opposite is true.

Another breed will not wet a line until the barometer begins to move—the direction doesn't matter. The old pressure gauge must be of some use because barometer-watching fishermen always seem to bring home their share of fish.

"Fishing by the barometer is for the birds," disagrees one fishing expert. He goes on to say that the small rise or fall in barometric pressure is nothing in comparison to the pressure of a six-inch rise or drop in the depth of the fish in water.

Still another group, the punishment gluttons, believe the absolute best fishing is during the worst possible weather. Their ideal is a 30-degree, overcast day in February with a fine misting rain. One fervent fisherman says the best luck he ever had in salt water was during wind so high that he had to keep low in the boat so wind and waves wouldn't knock him overboard.

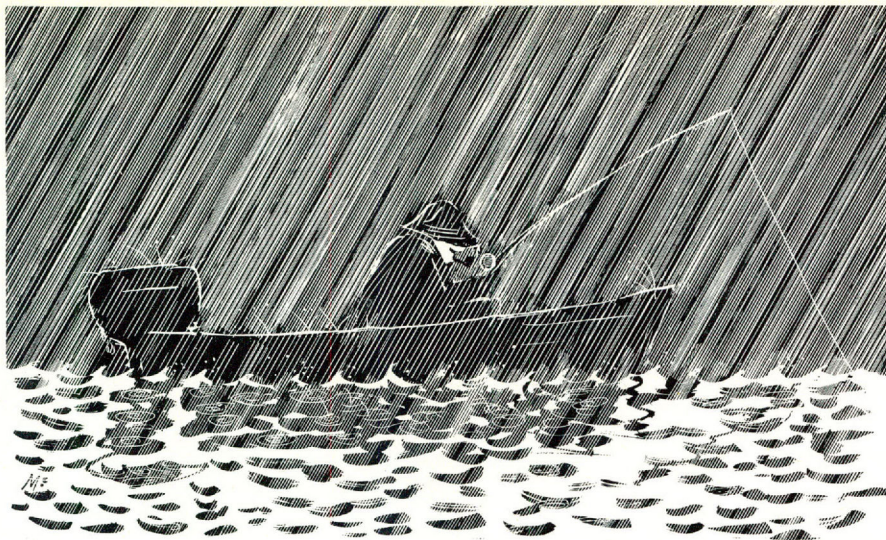
Frontal systems do have a bearing on fishing, most outdoorsmen will

agree. Fishermen who haven't wet a hook all summer check weather reports religiously and select their time either before, during, or after a cold front. Salt water hook-dunkers congregate around deep holes, canals, and deeper boat basins in near-freezing weather since marine fish are known to head for the deep water when it gets cold.

Another sportsman likes to fish when the water is churning with large raindrops, explaining that "fish just go crazy, and all you have to do is drag them in." This expert's explanation is that rain cools the warm mid-summer water and adds oxygen, both of which are a delight to freshwater fish.

Some anglers, who laugh at their foul weather friends, prefer to slosh around on muddy banks following the rains. They will tell you that fishing is best if you find a flooding stream running into a lake. According to them, fish seek the cooler water with more oxygen, and also





the rushing water stirs up food that has settled to the bottom.

You won't meet many fishermen who will admit checking their daily horoscope, signs from Zodiac, or their local astrological reader before wetting a line. But, just because you don't hear about them doesn't mean they don't exist.

Each year, a reputable pharmaceutical company publishes a calendar which gives good fishing times for morning and afternoon by astrology or signs of the Zodiac. Our forefathers used similar calendars to determine the best time to plow, plant potatoes, and even wean calves.

You've got to admire anyone who will predict fishing a day in advance, but you've got to respect any man who gets far enough out on a limb to predict fishing a whole year ahead.

When listening to fishing secrets, you can never burst out laughing—to do so would be a grave breach of etiquette and could even run up a medical bill. Never express any disbelief until you've gone fishing with the confidant and have seen for yourself if his theory really works.

Each system must work to some extent, otherwise anglers wouldn't continue to follow old wives' tales and questionable logic to bring home full stringers of fish. When checking on the subtle mysteries of the best time to go fishing, all this advice will be available, most of it sincere.

Although any fisherman will tell you that he caught and still catches fish under certain conditions, the true reason why he catches fish may be one completely ignored or unknown. This real "fishing secret" may be anything from a wider variety of

lures or baits to the knowledge of an above-average fishing spot.

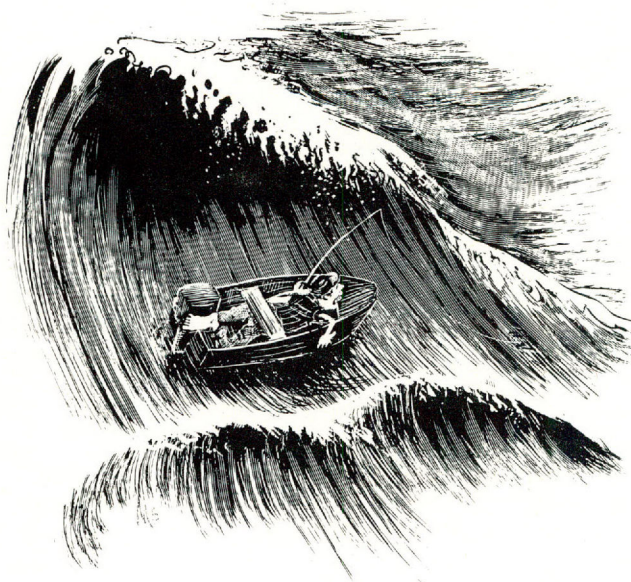
Most anglers are not averse to fibbing a little or maybe telling an outright lie when pressed to divulge secrets of success. Workers may

have to resort to hypnosis, truth serum, or even psychoanalysis if this question is to come under the scrutiny of a research project.

Most persistent fishermen have preferred systems for selecting the time for trips. They admit wistfully that they can't always get away at the best time indicated by their particular guidelines, so have to settle for a time when they can.

There is a certain dedicated group to whom the correct time for fishing means little. One man, whose boss claims he fishes more than his share, insists that if you fish avidly for three days in one spot, you will have good luck on at least one day. Fishing just two days would not prove a thing.

Maybe this illustrates the best method. To coin an adage: He who keeps his line wet the longest, catches the most fish. **





Marine Review

Second of a three-part series
pinpoints coastal problems and potentials.

by ERNEST SIMMONS
Coastal Fisheries Supervisor

SPORT AND COMMERCIAL fishermen often fish the same waters searching for recreation or the feature attraction on the Fisherman's Platter at the seafood restaurant. These two types of fishermen may use different fishing gear, may operate at different times, and may even catch different fish. But the fact that they both fish in the same area often leads to a feeling of competition.

The angler may believe that the commercial fisherman employing more efficient gear takes more fish and thereby impairs the chances of the angler. The commercial fisherman on the other hand may feel he has

necessity and a historic, traditional right to earn his living from the sea and supply the nonfishing public with seafood.

Actually, two types of competition exist. The first results from conflict of interest when there is an actual scarcity of fish. The second may be termed "apparent competition" and results from encroachment by one group upon fishing grounds used by the other. It may be caused by even the sight of the other group catching, landing, or handling fish. In "apparent competition" there is no real shortage of fish, but activities of either group may disturb the fishing areas to the extent that

catches of the competing group are reduced, or, more likely, are believed to be reduced.

Preliminary findings in studies of closely connected bays, one of which was open to nets and the other closed, yielded data indicating that each bay contained about equal numbers of game fish. However, larger fish were found in the closed bay.

Similar data collected by workers in freshwater lakes indicated that intensive netting over a long period failed to reduce the pounds of fish per acre, but did reduce the average size of the fish caught. This possible reduction in the number of larger fish, combined with the fact that intensive fishing can reduce populations in small areas for short periods of time has contributed to the difference of opinion between fishing groups.

Where there is an actual shortage of fish, economical and sociological factors should be weighed to determine proper harvest regulations.

The arrival of a fisherman with commercial equipment into an area where rod and reel fishermen are operating can result in consternation, anger, and bitter memories. Likewise, an unsuccessful sports fisherman returning from a hard day at sea is disturbed by the sight of commercial fishermen unloading fish at a dock. On the other hand, commercial fishermen are often unhappy when good fishing spots used by their family for generations are invaded by sportfishermen, racing around in noisy outboard rigs.

This unnecessary antagonism could be reduced by simple courtesy and employment of some tact. Commercial fishermen might defer the fishing grounds to the sportsmen on summer weekends and holidays. They might also avoid unnecessary contact by unloading their catches away from the public docks and launching ramps utilized by sportsmen.

Sportsmen for their part could better respect the rights of the commercial fishermen.

The basic fact which must be established in determining if fishing should be restricted is whether or not there is an actual shortage of fish.

One method of determining the availability of fish is by releasing marked fish and keeping records of the number recaptured. Approximately 23,000 fish have been tagged on the Texas coast in the past 10 years. Recoveries have ranged from poor on drum, to fair on trout, to excellent on redfish.

The number of trout being caught each year by all methods has never exceeded ten per cent, and this allows for half the caught tagged fish not being reported. This is definitely underfishing rather than depletion.

Comparable work in Florida, where fishing pressure is heavier than in Texas, yielded a return of 22.8 per cent on trout. In one program where rewards for returned tagged fish ranged from \$25.00 to \$10,000.00, the rate of return was 33 per cent. Thus, it is apparent that even under the most severe fishing pressure only about one-third of the available trout are harvested each year.

Tag returns from redfish remained remarkably constant at about 12 per cent for several years, but have

now risen to 20-35 per cent. Limited data indicate that 20 per cent of all redfish are harvested before they are one year old, about 25 per cent the next year, and another 20 per cent the third year. After that, they move to the Gulf and are less subject to capture.

From the time of hatching to the time of first spawning, 65-85 per cent are caught. It is not known at the present time if the remaining percentage is adequate to maintain stocks, but it is probable that this species could be overfished under certain conditions.

Drum populations apparently suffer little from fishing. The tag recovery rate normally is 2-3 per cent per year. Even allowing for non-returned tags it does not exceed 5-6 per cent.

Flounder recovery rates are also low, 5-6 per cent per year, and an over-harvest problem is not indicated. It should be noted, however, that a given spot can be almost fished-out over a period of several weeks and may remain almost devoid of flounder until replacements move in from surrounding areas.

Another method of determining if too large a portion of the available fish is being caught is to compare the percentage caught with the percentage lost to natural causes. If natural mortality exceeds fishing mortality, a curtailment in catch is virtually valueless.

This is the case for trout at the present time. By every criterion (tag returns, population structure, sex-ratio) the total annual loss is about 50 per cent. Less than 10 per cent of this is due to fishing. This is easily understood when it is realized that almost all male trout die before reaching a weight of one pound. There is some evidence that many are eaten by the larger females.

Flounder also exhibit sharp sexual dimorphism or the female gets much larger and lives much longer than the luckless male. Out of 2,000 flounder examined near Rockport only one male was larger than 14 inches. Average sizes of males ran 9-11 inches long while females were 12-30 inches.

Drum and redfish apparently do not show sexual dimorphism in this manner although not enough large

Proven facts should be basis for fishing regulations.



redfish have been sampled to be certain. Drum have fairly high natural mortality at smaller sizes, while natural mortality for redfish is less than fishing mortality.

These data indicate that on an overall basis, over-harvest is not a problem at the present time, except possibly for redfish. They also reflect again the fact that each species should be considered separately.



Although scientific knowledge has been broadened in recent years to help man properly utilize marine resources, many other factors are involved. This points up the established fact that management of marine fisheries is nine-tenths people management.

As human populations increase and our society becomes more complex, the need for rules and regulations becomes increasingly apparent. Soon volumes are filled with laws pertaining to almost any situation. Sometimes these laws are burdensome; more often they are necessary. The field of marine fisheries is no exception.

Most fishing regulations aim at curtailment of the harvest by eliminating certain fishing gear or by imposing seasons, size limits, or catch limits. Commercial fishermen are most often influenced by restrictions on gear, and the value of such restrictions is sometimes questionable. If a particular type of gear (for instance a particular net) is prohibited the individual will normally react by going out of business, going "outlaw" and disregarding the law, or turning to another method of fishing.

The first alternative poses few problems except for the fisherman and the consumer. This choice is probably taken by the minority, although the coast is full of ex-fishermen serving as guides and bait stand operators.

The second alternative is more serious since it changes a readily observed operation into one executed under cover of darkness. Modern law enforcement is efficient and effective, but the Texas coast is long and each enforcement agent must cover vast areas. It is difficult for a game warden to lie on a spoil bank night after night watching for illegal netters and still carry out routine duties during the day. Better equipment and more personnel can be of value, but it should be remembered that each restriction increases the need for supervision and enforcement.

The third alternative, that of switching to different and legal fishing gear, has been followed by many, but the results have not always been good from a biological or sociological viewpoint.

A classic example can be found in the Laguna Madre where a large trotline fishery developed after net fishing was outlawed. Trotlines appear more selective toward redfish and trout than netting does.

In addition, a trotline operator using several thousand hooks often has time only to take off fish of legal size and may leave numbers of undersize redfish and trout hanging on the hooks. Abandoned lines may continue to catch fish and often interfere with boating and sport fishing.

Restrictions on sport fishermen usually take the form of size limits or creel limits. For size limits to be effective the species involved must grow rapidly, experience a low natural mortality rate, survive capture and release, be caught primarily in smaller sizes, and exhibit a scarcity of juveniles or spawners.

Few marine species meet these requirements. The spotted sea trout, for instance, requires 3 years to reach 13 inches, has an annual natural mortality rate of about 50 per cent, dies easily after being captured, is subject to fishing mortality of only about 5 to 10 per



Coastal fishing regulations outlaw many types of gear.

cent per year, and spawns prolifically through many year classes.

In addition, male trout grow slowly and suffer greater natural mortality. A size limit would be wasteful, but measures to prevent destruction of spawning grounds would be of much greater value.

Black drum are captured in such small numbers that a size limit would serve little purpose. Flounder in-

formation is limited, but research indicates that few males ever reach a length of over 12 inches; therefore, a size limit would be of dubious value.

Redfish have a rapid growth rate, a fairly low natural mortality rate, a high fishing mortality, and the ability to withstand capture and release. Based on this information, a minimum size limit would serve a practical purpose. The extent of the spawning population is unknown, but it is probably adequate in most years. This is the only major saltwater species in Texas which might benefit from a minimum size limit under present fishing conditions.

Another restriction frequently proposed is a daily catch or possession limit. For species in short supply or with limited spawning potential the idea has merit. Most fish, however, do not fall into this category. Unless a substantial percentage of the population is being harvested, this measure simply results in an increase in the number of fish dying from natural causes rather than being caught.

The very human habit of discarding previously captured small fish in order to string larger ones also enters into the picture. If, for instance, an angler catches 15 small trout out of an allowable 20 and suddenly starts catching large trout, he will be quite reluctant to stop fishing after catching five more. The average angler will discard some of the small, probably dead fish, to make room for the larger ones.

A bag limit has one psychological advantage since it offers an incentive to the fishermen to fish harder to "get his limit". This factor is sometimes used to *increase* the harvest of freshwater fish from lakes.

Other restrictions often mentioned include prohibiting night fishing and the use of treble hooks. Again, these restrictions are of little value as long as natural mortality exceeds fishing mortality. **

Tan Your Hide

WANT TO MAKE your own leather? Anyone who has some extra hours on his hands and wants to take a crack at it will find an old-time Farmers' Bulletin (No. 1334) very useful.

The process goes something like this. Salt is cleaned from the hide and ragged edges are trimmed. The hide is placed, flesh side out, over sticks and hung in 50 gallons of cool water. Soaking and stirring frequently for three hours loosens coagulated filth. The hide, hair side up, is scrubbed with a stiff brush. Loose flesh is scraped away. The hide is resoaked for 24 hours, then is placed hair side out in a covered barrel in a solution made of water and hydrated lime. In about two weeks the hair will *rub off* (not pull out). The

hide is properly limed if a layer of skin (more like curdled cheese) scrapes off with the hair. This is repeated on the flesh side. After soaking in clean water for 8 hours, the hide is placed for 24 hours in a solution made of lactic acid and 40 gallons of water. It is then hung in a "tanning liquor" for about 38 days. The liquor is made from finely ground oak or hemlock bark that is scalded with boiling water and left to soak for about two weeks. Oiling and finishing follow.

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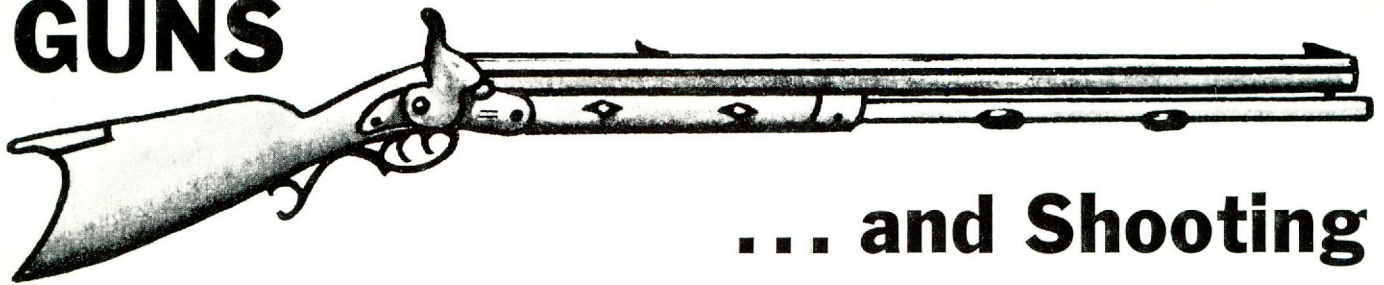
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GUNS



... and Shooting

by L. A. WILKE

EARLY LAST YEAR Winchester startled shooters by announcing a new model 1200, to replace its long-time favorite, the model 12. Actually it was a dressed up version of the old favorite, but it carried new lines and new prices.

Also it came out first in the 12 and 16 gauges. This came as a blow to many of us who like the 20 gauge for most of our shooting, particularly on upland game.

Now Winchester has announced it is returning the 20 gauge to production, in this new model 1200. Shooters will have their choice of either the 1200 slide action, or the 1400 semi-automatic. Their lines are almost identical, and it is only in a second look at the forearm that you can tell the difference.

Thus the 1200 and the 1400 are now available in 12, 16, and 20

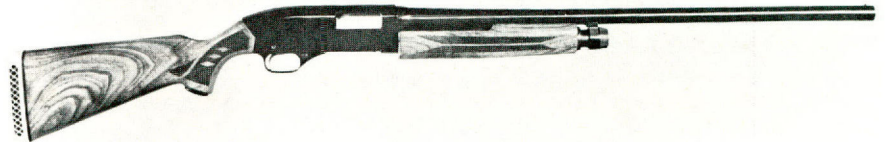
gauges. Ventilated ribs, adding four ounces to the weight, are available at a slight additional charge.

The new guns, however, have a dressier appearance than the old standard Model 12. Basically, however, the line is just about the same, and any user of the model 12, will

This Month: The 20 is back.

inches long, weighs 5-10, with a 10 shot magazine. It gives target accuracy, and can be equipped with a scope. The price is just under \$30.

Savage also has made an improvement in its famous old 99. It now can be obtained either as a standard model, or with a removable clip



immediately recognize the new one as an adaptation of the old favorite.

Barrels of the new guns are interchangeable. They weigh just slightly over 6 pounds, and the prices range from slightly under \$100 up. And the woodwork is beautiful.

Crosman also has announced a new pellgun with a big gun weight. It is the model 99, just on the market. It is a lever action .22 caliber CO₂, with size and weight appearance of a big gun.

The picture indicates it to be a cross in appearance between the model 99 Savage and the 94 Winchester, or Marlin. The gun is 40

magazine. In this respect it is somewhat like the old Model 40, bolt action which is no longer made. This clip is handy for fast reloading. A shooter can carry an extra clip or two and reload hurriedly if need be.

And Weaver has come up with a new sight, the model C, for .22 caliber rifles. It replaces the B scopes, but the price has not been increased.

It comes either as a 4 or 6 power, with the tip-off mounts making it readily adaptable to all .22 rifles with the dovetail receiver. The objective lens is enlarged and the optics improved, to make it just about the best scope ever offered to smallbore shooters in either power. Incidentally, Weaver, with its plant at El Paso, has just announced its new free catalog. It contains information for sighting in all rifles with a minimum of shooting, and it is something every gun owner should have. **

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Lovable Loudmouth

From Page 19

that faintly resemble a jokester's chuckle. If followed for any distance, this game of makebelieve will be performed repeatedly so long as the stranger wants to look at empty depressions.

If an inquisitive animal is unfortunate enough to stumble into a group of these fun-loving birds, the first of the group to notice the new arrival may startle the intruder by flying almost into its face with an outburst of loud, shrill, scolding cries. When excited in this manner, the cry is usually shortened to a rather high pitched "dee, dee, dee, dee."

The continuous scolding and chatter of the first bird attracts additional others of the same and similar species—all equally noisy. This "gang-ing-up" usually occurs when the animal does not offer any formidable threat. The resulting pandemonium usually ends with the whole neighborhood being thoroughly aroused and the outsider retreating fully disgusted and embarrassed by the whole affair.

Another antic that never ceases to intrigue observers is the head bobbing associated with feeding. The

killdeer will run four or five steps, stop and bob—take a few more steps, stop and bob. Some believe that this vertical movement of the head flashes the black and white throat bands and causes insects to move, thus betraying their presence to the waiting bird.

This vociferous bird should be protected at all times by Texans, not only because this is decreed by state law, but because it is most beneficial as a control of insect pests. Truly it is one of the state's most useful and attractive birds. **

Think Like a Fish

From Page 17

lures should be worked slowly most of the time. Vary the retrieve when this doesn't prove productive.

Any angler knows even the best advice must be taken as such, but possibly the fish facts presented here will help on your next trip. At least they will help until that piscatorial psychologist comes along. **

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HUNTERS

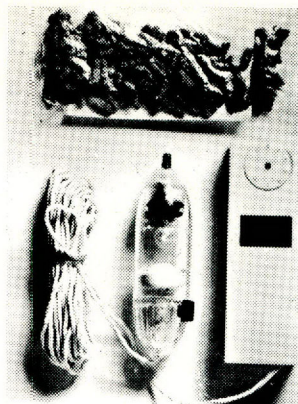
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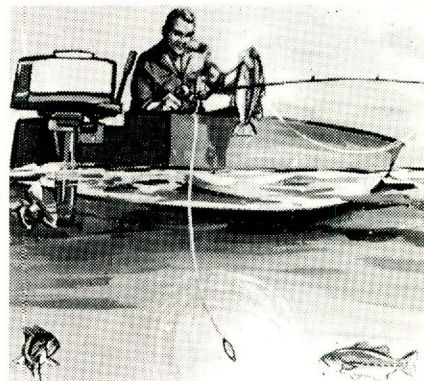
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What Others Are Doing

by JOAN PEARSALL

GOOD ISSUE TO RAISE: In the general election last fall, California authorized \$150 million in recreation bonds, \$40 million of which are for park and recreation grants to cities and counties for acquisition and development; \$85 million for state park, beach, recreation and historic site purchase, plus \$20 million for development; and \$5 million for acquisition and development of wildlife areas. Rhode Island voted \$5 million in bonds, to provide for acquisition of state recreation areas and for grants to local governments. Washington passed a \$10 million bond issue plus other recreation legislation. Several other states have passed similar bond issues in recent years.

LETTER HELPS LEOPARDS: Recently a letter was written from the zoo at Frankfurt, Germany, to Gina Lollobrigida, asking her not to wear her leopard coat in public because too much demand for such coats might lead to the extinction of "these noble and beautiful creatures." The letter added, "Jacqueline Kennedy, Queen Elizabeth, members of the Dutch royal family, and numerous other celebrities have agreed not to wear leopard coats this season. May we ask you to follow their example?"

BOOKS BELOW THE BORDER: The Mexico Department of Wildlife has started a library for the use of all people interested in wildlife and hunting. It hopes to assemble a large collection of popular and technical articles, reprints, journals, books, catalogs, and magazines about wildlife, hunting, firearms, and related topics. Federal, state and provincial wildlife agencies in the U.S. and Canada, university research stations, and

others having materials suitable for the library project are being asked to send them to: Dr. Hernandez Corzo, Director General, Dept. of Wildlife, Silvestre Aquiles, Serdan 28, 70 Piso, Mexico City 3, D.F., Mexico. The library also may be placed on mailing lists to receive regularly published materials.

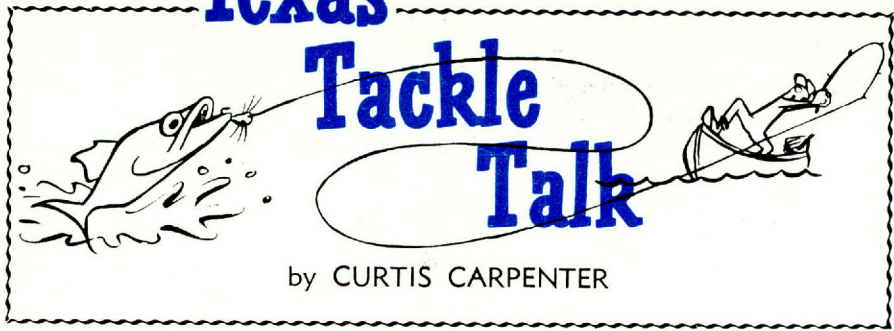
REFUGE TRAIN: As well as being of benefit to animals, a wildlife refuge can create recreational opportunity and expand community income. An example of this is the Horicon Marsh in Wisconsin, where a state wildlife area and the Horicon National Wildlife Refuge provide bed and board for thousands of Canada geese during their migratory flights. Nearly 120,000 persons visited the areas in 1960 and 1961 merely to watch the geese. They drove 4.2 million round-trip miles to do it. Another 85,000 persons hunted geese, and nearly \$125,000 was paid for blinds on surrounding private property. In addition, merchants in nearby communities took in at least \$500,000 from wildlife refuge associated recreation each year.

IN THE DEER LEAGUE: Kansas is making plans to hold its first deer hunting seasons in modern times. The deer population in Kansas has been increasing at the rate of 30 per cent per year in recent years, and the population is currently estimated to be between 25,000 and 30,000 deer. Increased deer crop damage to farmers and deer-car accidents have brought about the decision to hold Kansas' first seasons this year. A six-week archery season will come first this fall, followed by a five-day limited permit firearms season.

Texas

Tackle Talk

by CURTIS CARPENTER



BAD HABITS don't belong in a boat. I'm speaking of bad fishing habits, especially. Some habits are very effective in driving away perfect fishing pals. A few will put them in the hospital, and several could stir up business for the funeral parlor. Many simple habits keep fishermen from catching fish.

Some anglers forget another person is even in the boat with them. This I know by the way some consistently try to snag me with their multihooked lures. With this type of fisherman, a person will spend most of his time concentrating on how to stay puncture-free. It's rude, thoughtless, and downright unforgivable for a person to fish without showing others in the boat due respect.

Everything one person does when in a boat should be done only after the other passengers have been considered. Each cast should be made so as not to endanger another or interfere with his fishing. When you move, make certain it won't upset the boat or cause someone else to lose his balance. Show your friend good boat manners and he'll be ready to go again. Stagger him with a few blows or close shaves and he'll be so shellshocked he will have an excuse for not going every time after that.

One bad habit that will keep fish off your hook is the constant changing of lures. I know one fisherman who tries to fish every lure in his tackle box (and it's jammed full) before the day is up. While he's changing lures, I'm catching fish. Give a

lure an honest try before changing it. First find out from others who have fished the lake recently what the fish are going after. If you don't have a lure exactly like the one they mention, take one with a similar action, of a similar design and color, and give it a fair test. If it doesn't work after numerous tries, tie on another of your choice and give it a fisherman's round. You could be taking the right lure off just as the fish begin to hit. An overworked lure-changing habit can keep your stringer light.

* * *

WITH THE fishing season comes the time for planning those trips to the coast and to the inland waters. Here are some tips that may help you enjoy the outing.

REMEMBER THE LITTLE THINGS—Many a fine fishing trip is ruined because something small but important was left behind. A few items often overlooked are mantles for the lantern, white gas (which is often hard to find at the water's edge), nails, hammer, a good knife, lubricating oil, soap, and enough

tools to take care of minor repairs. When you check your list, don't forget these and other little things.

TANGLE TRICKS—Something soft and sharp, like a toothpick, ball point pen, or sharpened match certainly can be a valuable tool when trying to take the kinks out of a bird-nest. By locating a cross-over or tangle in a line bungled up on the reel and then working it free with something soft and sharp, you could save much time, line and loss of temper. Toss some toothpicks in the tackle box right now.

TAKE ENOUGH ROPE SO YOU WON'T BE HANGED—I have yet to see a camp where another piece of line wouldn't come in handy. Nothing is more frustrating than to be just a few feet short of reaching something just right for tying. Rope doesn't take up much space. In a storm it may mean the difference between keeping the tent up, or watching it collapse. Don't say nope to rope.

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Plug for Fresh Water

From Page 15

hole 100 feet in diameter and turns the surrounding acreage into a salt-encrusted area devoid of life, except for a few pupfish, plains killfish, and other highly salt-tolerant minnows.

Engineers began an extensive survey of the spring and sent skin divers

into the deep blue waterhole to determine its depth and structure. After descending 125 feet they reported a myriad of giant caverns on all sides. Finally they gave up hope of ever finding the bottom in such a maze of caves deep below the surface.

Since the 2,600,000-gallon-a-day flow of the spring created 'X' amount of force, engineers planned to oppose this 'X' force with an equal amount of weight in the form of water. Such an arrangement is appropriately called a hydrostatic cap by the Corps engineers.

Detailed core drillings and stream flow measurements were tabulated to determine the height necessary to stop the spring's flow. To prevent seepage beneath the proposed dike, a trench 17 feet deep was dug around the spring and filled with nonporous clay. Then a 6-foot high 340-foot circular bank was piled on the clay base, and the job was complete.

As the final closure was made in

the dike, the salt spring quickly filled the enclosure, and to the amazement of onlookers, the spring flow stopped! Everyone was pleased with the results, especially the engineers who planned the job. A major source of natural pollution was abated.

So far the spring has not broken out at new locations in the sponge-like salt substrata as skeptics predicted. If no new problems arise, the hydrostatic cap will forever seal the Estelline salt hole.

Red Alert

From Page 11

selective toward redfish than nets.

Where the Parks and Wildlife Department has regulatory responsibility in areas of good redfish habitat, a 14-inch minimum size limit has been established. This measure allows those redfish previously captured at a size of 6 to 10 inches to be harvested at a more equitable size. During the last half of a juvenile redfish's first year, an increase in length from about 6 inches to 14 inches and an increase in weight from about one-fourth pound to about one pound is normal.

The size limit also protects juvenile redfish during an extremely vulnerable period when they are grouped in basins, channels, and other heavily fished areas. Available data indicate that the redfish is the only marine species suitable for size limits since it is the only one with a fairly low natural mortality rate, a fairly high fishing mortality rate, and the durability to withstand capture and release.

One basic requirement for an adequate redfish population is suitable nursery grounds within the bays. A flow of fresh water into such nursery grounds is necessary to prevent a buildup of the salt content beyond a tolerable level. Also, engineering and development projects within the bays must be regulated to prevent permanent damage to the habitat.

The future of the redfish along the southern Texas coast depends on man. If he accepts his responsibility, to regulate his harvest using the proper methods, anglers will continue to enjoy the "bull red" runs in the future. But if not—only time will tell. **

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Outdoor Books



DOLPHINS—SEA PEOPLE by Esse Forrester O'Brien, published by The Naylor Company, San Antonio, 84 pages, illustrated, \$3.95.

"The dolphin is the only creature who loves man for his own sake," wrote Plutarch some 1800 years ago. Other mammals associate with man for what they can get out of it, the quotation continues.

When primeval man first ventured out beyond the reef on fishing and trading trips, he encountered and told tales about the affable dolphin. Since then, many factual and fanciful tales about dolphins have etched themselves into the niche of seafaring folklore.

The author's work covers these ancient tales as well as the recent experiments on dolphin language and I.Q. tests. "What other animal," she observes, "looks like a fool, lives like a king, swims like a fish, and thinks like a man?"

Lockheed Aircraft Company wants to know more about the dolphin's breathing and navigation systems in order to improve their missile systems. The air-breathing mammal has to surface for air every five to ten minutes or drown. Lockheed would like to know how the dolphin makes one breath last 10 minutes and what it does for air while sleeping under water.

The dolphin can swim 30 miles an hour with ease. Its peculiar shape allows the big animal to go through water with less friction than the usual drag that plagues boat builders. Aero-space engineers would like to duplicate this feat.

Tales about dolphins seem as strained as those of Paul Bunyan and his giant ox, Blue. But after reading this lively book these tales take on a more realistic aspect. For instance, the dolphin's language is

more complicated than at least three primitive Indian tribes living today.

The dolphin is very close to man in learning ability, curiosity, and playfulness. Trainers have taught these amazing creatures to play basketball and even to count or mouth the English words of "one, two, three, etc." One trainer had a pronounced Southern accent, and you might well guess the dolphin picked up the accent much to the delight of everyone.

Dolphins—Sea People makes worthwhile reading for the general public from the junior high school student up. Anyone picking up the book will have a hard time putting it aside and will find the scant 84 pages of anecdotes all too brief.—*Paul Hope*

THE GREAT ARC OF THE WILD SHEEP by James L. Clark, published by the University of Oklahoma Press, Norman, 247 pages, \$6.95. Illust.

The thrill of putting your scope's crosshairs on a massy-horned wild ram is enough to last any hunter a lifetime. But hunting wild sheep is in itself a limited sport and becoming more so.

Each time the hinterlands are opened up to agriculture, the wild sheep, who ask

nothing more than to be left alone, are forced another step up the mountainside. More than half the wild sheep ranges lie behind the Iron and Bamboo curtains where highpowered hunting rifles and border politics do not favorably mix.

It takes a special breed of hunter to seek the beauties on "the rooftop of the world:" to bear the numbling cold, the dizzying altitude and the days of diligent stalking just to get a single shot. This book, appropriately enough, is dedicated to such a hunter.

Wild sheep only are found north of the equator in the nearly inaccessible mountain ranges. Their territorial range, when laid out on a map, looks similar to a gigantic set of trophy horns. On the map, one horn tip begins in Sonora, Mexico, and continues up the Western U.S. and Canada, Alaska, across the Aleutian Straits and down through Eastern Siberia, Central Asia, Russia, China and Europe. The other tip of the great arc is found on the isles of Corsica and Sardinia in the Mediterranean.

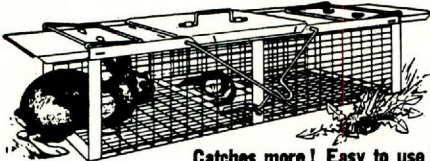
The author discusses every classification of wild sheep and illustrates the book with photographs and line drawings. Numerous hunting tales and a minimum of biological terminology make the book highly readable.

Such a book should be high on the reading list of any hunter or conservationist, and any armchair sportsman who gets a thrill from reading about exotic subject material and far away places.—*Paul Hope*

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to the Editor

Lions Dont Rore

Dear Mr. Editor:

You dont know me but my name is Buck—Buck Shakestail. Most people writes to you to tell you how good your magazine is but I wants to registure a complant . .

My younguns are all hunters. I have hunted for nigh on to fifty five years and I have listened to and told tails about hunting for almost that long. My paw tole us kids about killin that mountain lion when he was fourteen and how he was jest redy to spring on him and lettin out a furisious ror when he unloded both barrels of his ole muzzel loder akillin him dead in his tracs.

Then there was the time my unkle Rufe, he got hisself surrounded by them havalenas. He backed hisself up in a bush and shot till the barrel of his thurty thurty got so hot them leves wilted on that thar bush he was in. Unk was a good shot and he finnely kilt all of them krittters. Us yunguns lived for them storys.

Now, take ole Lum Bourban. He an fore of us sidewindres went down in Web Conty and did a littel huntin and a littel poker playin. We got to havin such a good time we got to home to days late. Lums ole lady, Matildy, she was turibuly inhappy and was afixin to blast ole Lum plum back to Web Conty. Ole Lum had to spin his thinkin whels fast like. He turned round, xposed what wuz onst a sete of his pants fore he went threw that bob war fense an said: Matildy, look how clost that lion almost got me. We staid too extry days atryin to get that beast so as he woulnt get any of them chilluns down in that there brush kuntry. Matildy she was so happy Lum didnt get et she kooked him korn pones and collard greens three days strate.

Gettin to the pint, now. You are printin things in your magazine that is aruinin everythin for all good story tellers: "Lions dont ror, havalenas runs like rabbits, wile cats and wolfs dont come in camp as soon as the fire dyes down—" Why not jest let them krittters all be furisous an let the ole man come home to the ole lady thats happy that he got back in one piece and able to tell of one more hareraisin xperience.

Yourn,

Buck Shakestail (as told to
Dr. R. G. Carlton)
Freeport

Fowl Experiments

Editor:

The grey jungle fowl of India is somewhat rare and expensive and often hard to raise. So I have been experimenting with crosses. After trial and error I have come up with a promising bird with all of the

wild heredity of the greys, plus being very hardy. They seem to take care of themselves among predators, laying or setting all summer. It's amusing to flush these little

and plan to get back to Goose Island as soon as time will permit.

Robert C. Oswald
Creve Coeur, Missouri



bobwhite-colored hens off the nest and see them play crippled, much like a dove.

I hope to perpetuate this breed so they may have a place in the future for those who love to raise rare birds, and possibly for stocking in the wild as a game bird.

C. W. Valentine
Three Rivers

(We commend you for this project, and wish you success.—Editor)

Park Compliment

Editor:

During the Christmas holidays my wife and I camped at Goose Island State Park. We wish to take this opportunity to tell you that in all our years of camping we cannot remember a more hospitable ranger than Mr. Norton. We noticed that he seems to take a personal interest in each camper's comfort and extends his valuable time to assist in any way possible. It is obvious that Mrs. Norton realizes the importance of their job and cooperates immeasurably. Mr. Norton not only believes in and loves Goose Island, but all of Texas, which is wonderful public relations.

The Park Service is certainly privileged to have a man of his caliber. Not only is the service privileged but the Goose Island campers will never forget him.

We had visited the camp three years ago and were disappointed at the clutter and lack of maintenance. This time it was like going to a completely new park. Knowing how diligently Mr. Norton works, I'm sure he had a great deal to do with the improvements.

We thoroughly enjoyed our stay in Texas

Public Hunt

Editor:

I would like to take a minute of your time to tell you how much we enjoyed the deer hunt at Sierra Diablo, where we got our four deer, and to compliment the department on the way it was handled.

Your agent, Sam Maddox, and his fellow officer, whose name I didn't catch, treated us very well and were helpful in every way. We were in good hands the two days we were in the area, and it was made possible for us to have a safe, successful hunt.

Even the road was well marked. As we were going to arrive after sundown the day before the hunt, I had taken your road map and plotted it on a survey map with all the mileages and compass coordinates, so we could navigate our way in after dark. But we underestimated the department. The route was so well marked we could have found it without lights.

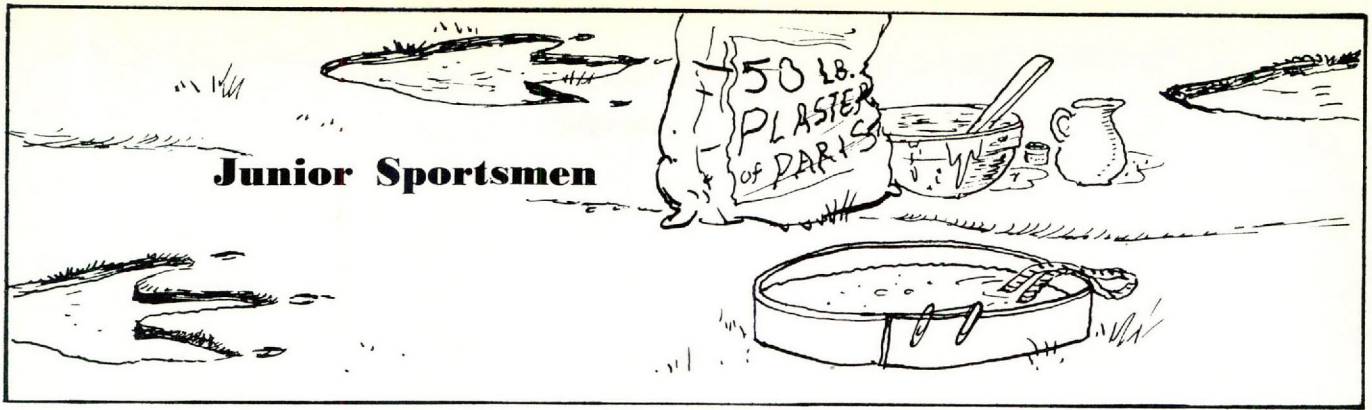
There are several reasons why this trip meant so much to us, and I would like to mention them before I close.

Our party was made up of my son, Sam House, my lifelong friend and hunting pardner, George Goodall and his son, Fred Goodall, and myself. George and I have lived in El Paso 42 years and have worked and raised our families here. We have enjoyed the bird hunting through the years but never were able to make a successful deer hunt. This was because the cost of a good lease is pretty high when you are raising kids, etc. Once we tried out one of the cheap leases and found they had sold double and there were more drunk hunters than deer. We didn't even unpack. There are no state-owned lands open to the public in this area that we know of, and the landowners are depending on the deer crop for additional income each year. We can't hold that against them; they have kids and bills to pay, too. But it sure makes it hard to come up with a decent place to hunt, without paying more than common sense tells you it's worth.

So that's why we enjoyed the hunt at Sierra Diablo so much. There was a fair drawing, our name was picked and we got to go. Not because we were important people or because we knew someone, as is usually the case with the landowners.

This adds a little different flavor to the hunt. It was up to us to get the deer, and there was no bought and paid-for arrangement. This is the way people used to hunt, and thanks to your efforts it is still possible today.

Paul House
El Paso



Junior Sportsmen

Track Up Your Room

by JOAN PEARSALL

WOULD YOU LIKE to have a wild animal or bird trophy of your own, one that you can have as much pride in as an older member of your family may have for a handsome mount on the den wall? You can have as much fun getting this one, and you don't even have to be a hunter, or need to spend a lot of money.

Your unique trophy is a wildlife track, preserved in plaster. In learning how to find the tracks and make casts, you can launch a fine hobby and have a collection your friends will envy. Or, if you prefer to keep trying until you have just one very good one, that could make what the grown-ups call a good "conversation piece" among your possessions.

Let's see what you will need.

The main thing is a few pounds of plaster of paris. This should be fresh, from the drug, hardware, or paint store. (Dental

plaster may also be used, for finer detail).

A small wooden paddle or stick, for mixing.

A bottle of water.

An old coffee can, to mix the water and plaster.

Some strips of cardboard, about three inches wide and one foot long.

A few paper clips.

A few feet of cord.

Paint, shellac, petroleum jelly (optional).

First of all, you might practice mixing the plaster until you get the feel of it. The right consistency would be about that of heavy syrup; too thick or too thin would not get the right impressions. The plaster should be stirred with the wooden paddle or stick, to remove lumps and to burst air bubbles.

Now to find the tracks. You might like to start off with ones that are close at hand, such as those made by your dog or cat—and have a nice memento of your pet. Going further afield, most of you already have a good idea where to find the wild creatures' footprints. They can be just about anywhere—muddy banks of streams, woods and fields and parks, a country road after a rain. This can be quite a treasure hunt.

When you have settled on your track, clean it carefully of twigs and stones, and, if it is damp, dust some dry plaster over it thinly. Bend a strip of cardboard into a

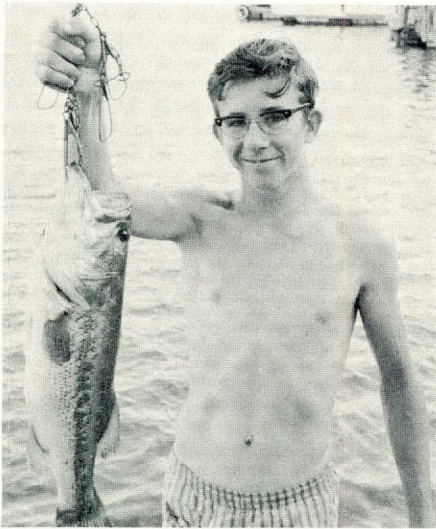
circle at least an inch larger than the track. Fasten it with paper clips, and press it into the ground around the track. Bank some dirt around it on the outside. Now you mix the plaster and fill the form with it. If the print is small, pour the plaster about ½ inch deep; for larger ones, it should be about an inch deep. If you want the finished cast as a wall ornament, put some cord, looped and knotted, into the wet mold, to serve as a hanger.

The plaster will take from ¼ to ½ an hour to set, then you can lift it from the ground, and brush off loose dirt. Let it "cure" for another hour, impression side up, then strip away the cardboard, and wash the cast carefully in running water. Two or three days later, wash the cast with a thin solution of plaster, or you can coat it with shellac or paint.

If you would like a duplicate of the track as it was originally, it can easily be re-cast. If not already shellacked, give it a coat and let dry a few hours. Brush with lard or petroleum jelly. Place a cardboard form around it and pour half an inch or so of plaster. Add coloring to the water before mixing with the plaster, if you wish to have a colored track. When it is set, remove from the mold.

As well as something you'll be proud to own, these wildlife "autographs" can also make unusual gifts in the form of paperweights or ashtrays. So get on the track for a pastime with profit, knowledge, and fun.

Capital Souvenir



Editor:

This is a picture of my nephew, Wayne Heffington, from Littlefield. He caught this 4½ lb. black bass in Lake Travis. He and his mother were visiting my husband and myself while his brother was here going to Boys State. We enjoyed them very

much and they caught lots of white bass and crappie while they were here. I hope to catch many more. Lake Travis has them.

Mrs. Millie Maxwell
Austin

(Mrs. Maxwell's nephew, Wayne, has posed quite a challenge for her, while taking home a nice memento of our capital city.—Editor)

Crossbows Illegal

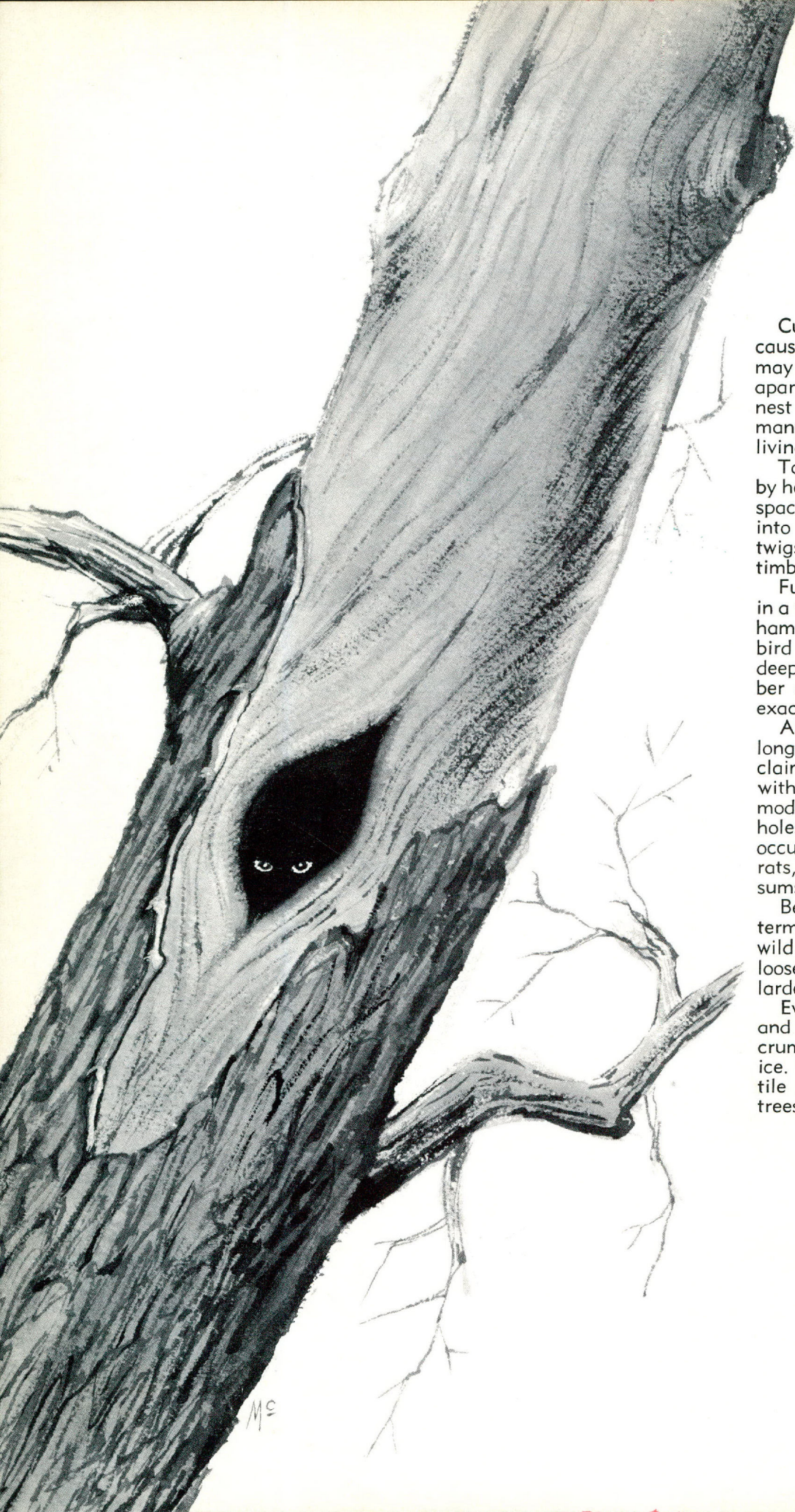
Editor:

I am eleven years old and take your magazine. I am interested in hunting and fishing but I don't have much of a chance

to go. I have a crossbow and would like to see something on hunting with them.

Mike Beck
Kermit

(We are always pleased to hear of boys interested in hunting and fishing, and the outdoors in general. On hunting, however, we like to offer a word of caution, especially to people under twelve. We strongly recommend that they not go out with a gun without adequate training in its safe use. As to crossbows, although it is all right to have one, it is strictly illegal to hunt with it in this State. Read and learn all you can, Mike, then when you do have a chance to go out in the field you'll enjoy it all the more.—Editor)



Woodland Penthouse

Cutting down dead timber because of its unsightly appearance may deprive wildlife of a veritable apartment house. Competition for nest and den sites is fierce. For many, a home in a dead tree is living high on the log.

Top branches are usually claimed by hawks. Devotees of freedom and space, their nest sites project as far into the sky as possible. Brittle twigs from this tree or other dead timber provide the nest material.

Further down the trunk, shrouded in a fog of wood dust, a woodpecker hammers away. Taking turns, the bird and his mate can reach out a deep hole in a few hours. The number of excavations attest to their exacting tastes.

Abandoned holes are not vacant long. An upper berth might be claimed by an owl who remodels it with beak and claw to accommodate the new owner's size. Other holes and crevices in the tree are occupied by generations of mice, rats, bats, squirrels, ringtails, possums, and raccoons.

Beetles, spiders, centipedes, ants, termites, and possibly a colony of wild bees are sheltered under the loose bark, providing a convenient larder for the lodgers upstairs.

Even after the ravages of weather and occupants cause the tree to crumble, it continues to be of service. Its rotting remains provide fertile soil for new growth and new trees.

—Nancy McGowan