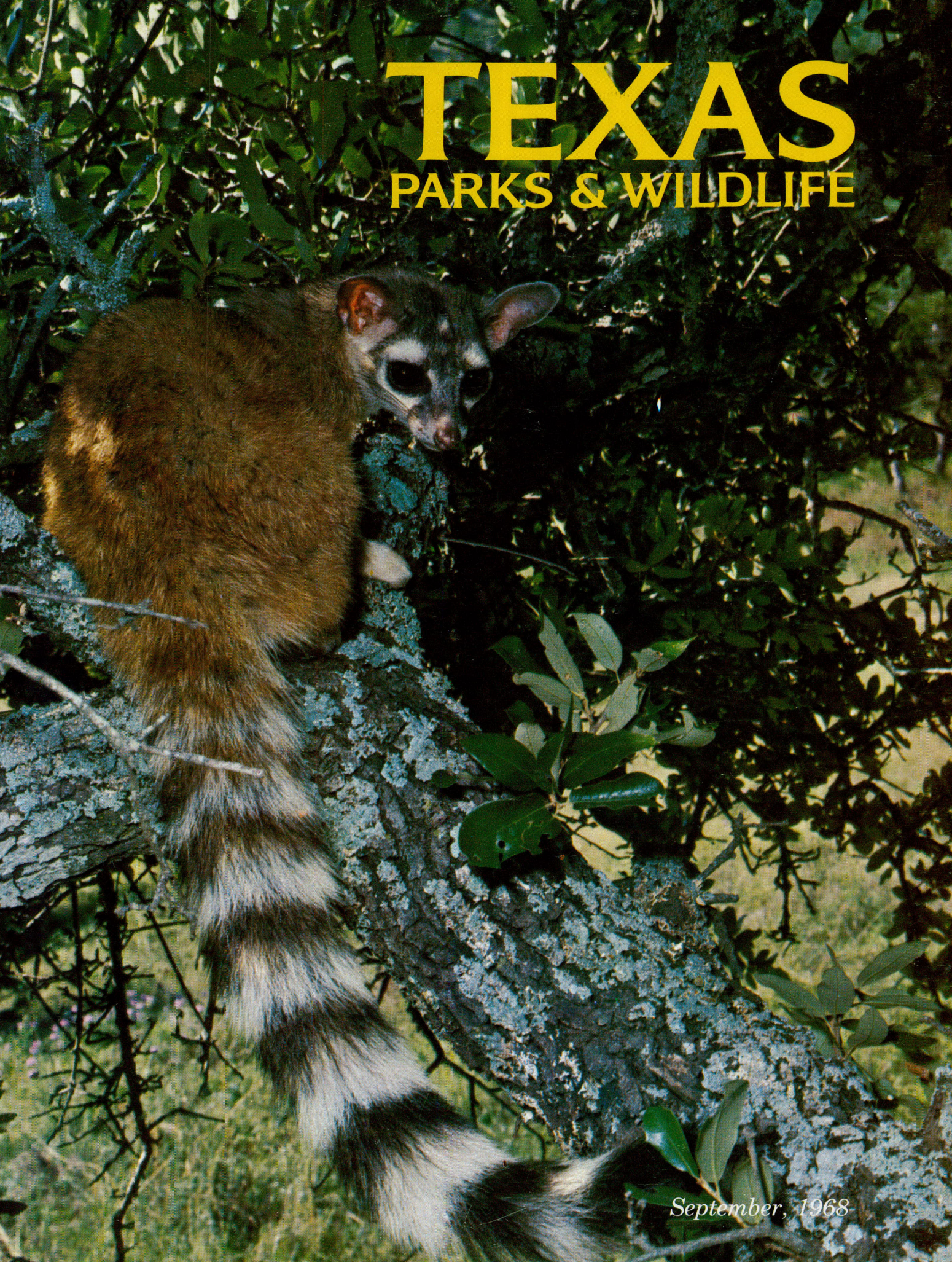
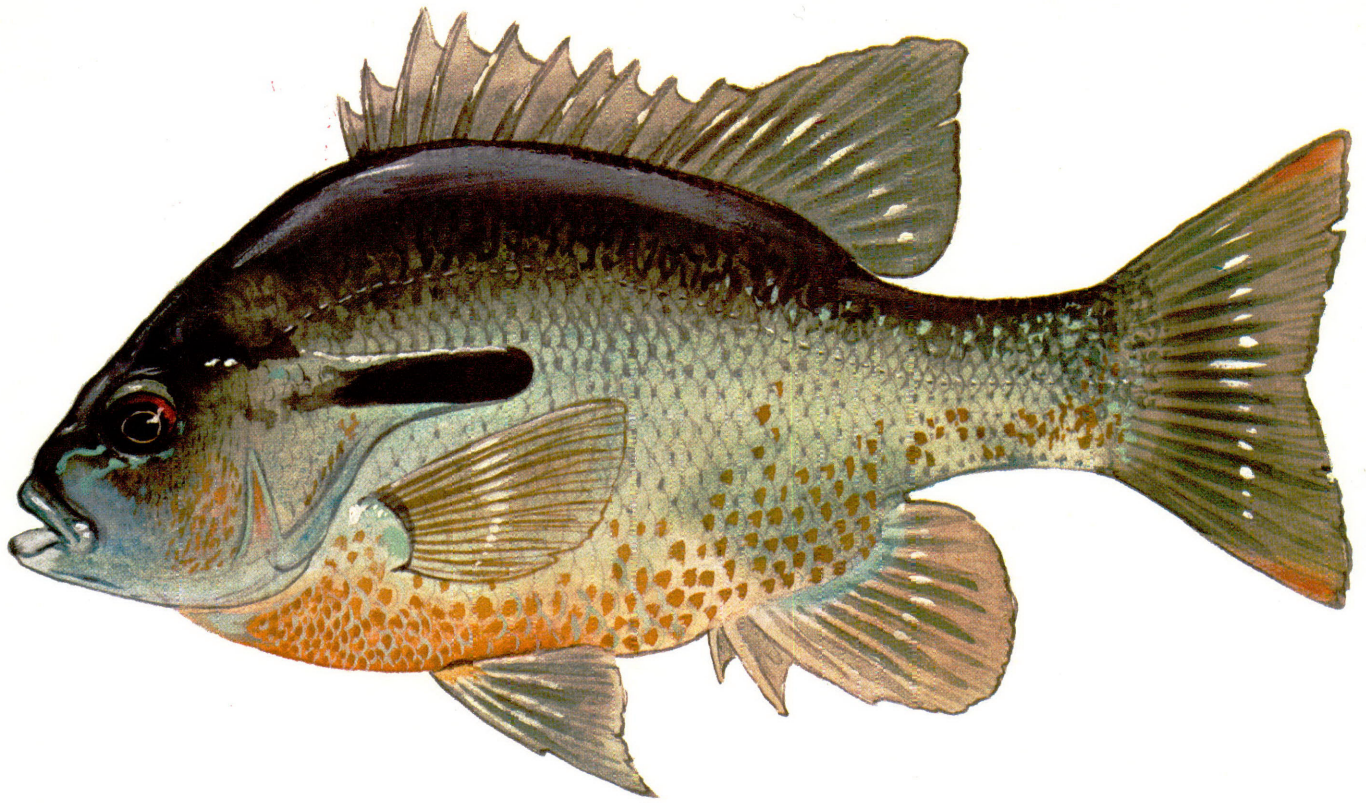


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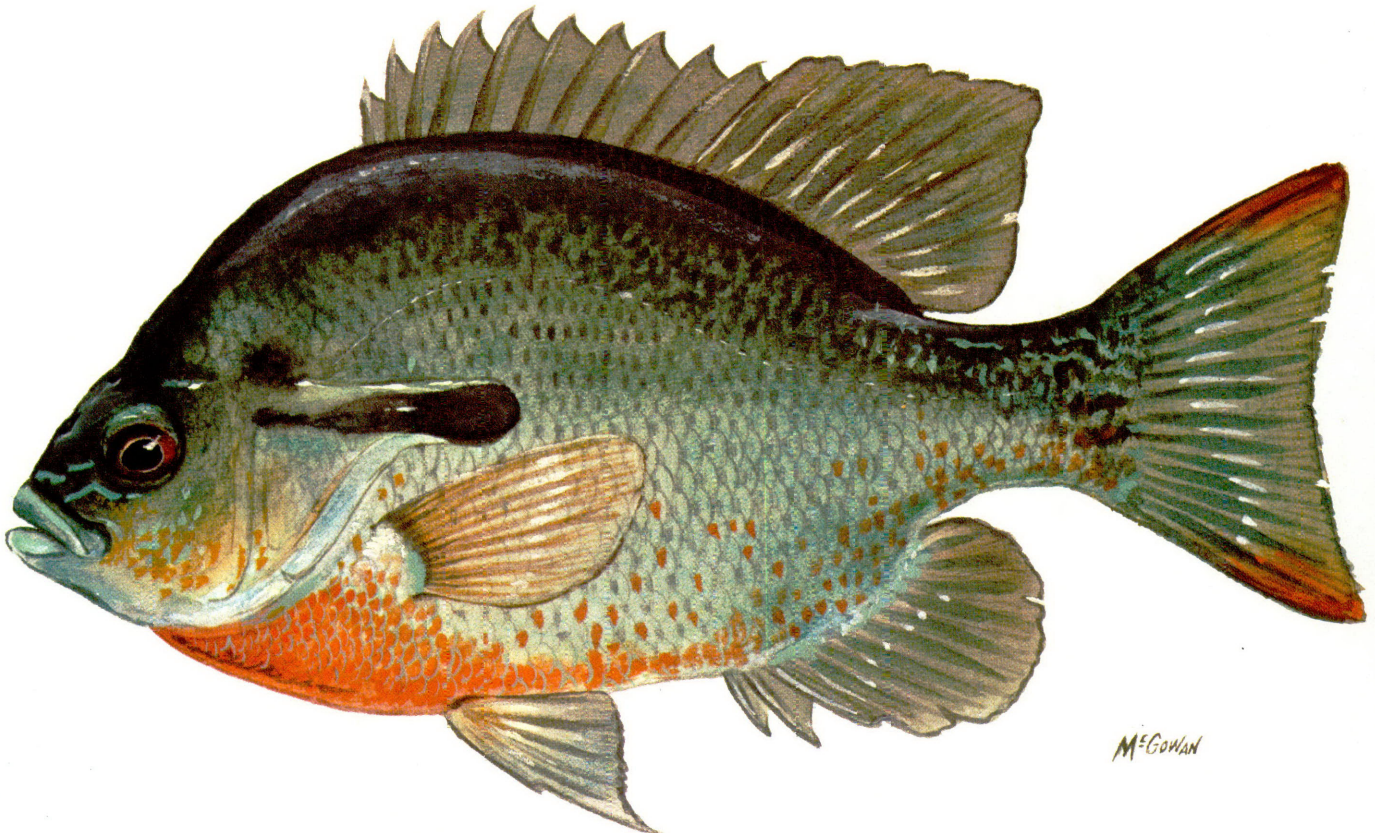


September, 1968



The Fishes of Texas

The yellowbelly sunfish, *Lepomis auritus*, often called redbreast or longear, is found in the south and south-central counties. The female, above, and male, below, show their breeding colors. After spawning the male resembles the female in color. Averaging eight inches long, old fish may be hump-backed.—Nancy McGowan



McGowan

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Features

Take a Stand *by Neal Cook*

For the novice or experienced hunter one of the most successful and safest methods of deer hunting is from a stand.

Detour: Fishing Ahead *by L. D. Nuckles*

A fisherman's dream come true—a State park primarily for anglers with a lighted causeway and a fabulous catch record.

Fatal Grit *by C. D. Stutzenbaker* 12

Shotgun pellets from past hunting years continue to kill ducks in Texas's major waterfowl areas.

Wildlife Gets Rooted Out *by Bob D. Weber* 16

Land can be managed for both wildlife and livestock by leaving adequate "strips" of brush in cleared areas.

Woodland Sprite *by W. R. Long* 20

Vivid markings make the shy tiger salamander one of the more colorful animals found in Texas' woodlands.

On the Ringtail Trail *by Joe T. Stevens* 24

Surprisingly unknown to be so common, the wide-eyed ringtail roams statewide as one of our most charming mammals.

I Need a Name *by Jeanette Hunt* 28

A contest has been launched to name the Parks and Wildlife Department's new conservation spokesman.

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TEXAS PARKS & WILDLIFE magazine

Dedicated to the conservation and enjoyment of Texas fish, game, parks, waters, and all outdoors.

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Published monthly by the Texas Parks and Wildlife Department, John H. Reagan Bldg., Austin, Texas 78701. Republication of material is not permitted except by special written permission. The inclusion of advertising is considered a service to subscribers and is not endorsement of products nor concurrence with advertising claims. Rate schedule available upon request. Information for free-lance contributors is available upon request. Subscription rates: \$2 for one year, \$3 for two years, \$5 for five years. Single copies, 20¢.

Postmaster: If undeliverable, please send notices by form 3579 to Reagan Building, Austin, Texas 78701. Second class postage paid at Austin, Texas, with additional entry at Houston, Texas.

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TEXAS PARKS & WILDLIFE

... first place winner of the 1967 international award for magazine excellence given by the American Association for Conservation Information.

Cover: With cat-like curiosity, the ringtail hunts energetically throughout the night, sniffing for berries and wide-eyed for the movements of small rodents and insects. See story page 24. Photo by John Suhrstedt.

FROM
KIKI DE LA GARZA
MEMBER OF CONGRESS
15th DISTRICT OF TEXAS



**Early planning leads
to a better deer hunt.**

Now is the time to...

take a stand

by Neal Cook

WHITE-TAILED DEER are one of the most popular game species in the State and although there are several basic techniques used in hunting these animals probably the most popular, the safest, and the most successful method is hunting from a stand.

Stand-hunting can best be described as picking a good hunting area, finding a vantage point, sitting extremely still, and waiting for deer to come into rifle range.

The picking of a place to sit and wait, either in a tree or on the ground, is probably the easiest part of the hunt, *if* the hunter knows what to look for. The hunter who lives close to the area in which he is going to hunt, or hunts in the same place every year, should spend several days learning the characteristics of deer in that area. Deer are creatures of habit and once these habits are learned, hunting becomes easier.

Some of the most important signs that can be found are deer "scrapes" or "rubs." Scrapes are places where a buck paws the ground and leaves his odor. One scrape may be used by one or several bucks and sometimes the same one is used for several years.

The main purpose of a scrape is to show does that bucks are near. When the doe is looking for a buck, she also leaves her odor. A buck will then





take a stand

detect her scent and trail her down. The importance of scrapes to hunters is that a buck on a doe's trail is an easy target.

"Rubs" are trees on which a buck rubs his antlers to remove the velvet. They are easy to recognize because all the bark and small limbs are knocked off. Rubs don't always mean the buck will return to the same tree, but they are a good sign that bucks are in the area.

For the hunter who can't find a scrape or a rub, there are other signs that indicate where deer gather and travel. Some signs are deer trails with many tracks, water holes with deer tracks around them, fence crossings that show heavy usage by deer either jumping over or sliding under the fence, and many groups of droppings in one area.

After finding these signs of deer presence, the hunter can then choose the type of stand he wants to use. The easiest way is to just find a stump, tree, bush, or mound of dirt and sit on the ground. This type of hunting is best for the hunter who will not be hunting in the same place more than once or twice in a season or where the brush is very thick.

These hunting spots should be chosen where they give the hunter a good view of a scrape, rub, trail, or other area of deer concentration, and they should also give him enough covering to hide his outline from the game. If the hunter is in a clearing, he may have a wide range of vision, but the deer can also see him easier and the object of the hunt may be lost.

While ground stands are ideal in many instances, they do not allow the wide range of vision and comfort that can be gained from hunting above the ground. Whether he simply climbs a tree and sits on a limb or climbs a ladder into a windproof, sunproof, heated blind, the hunter who goes up-and-over the low-lying brush has a better view of the area around him.

The hunter who chooses to climb a tree and wait for his deer should pick a tree that is large enough to bear his weight without shaking with every

movement and alerting the game. It should also have a limb upon which he can sit to allow some freedom of movement for himself and his rifle.

From this simple stand on the limb of a tree, a few added improvements can make the hunter more comfortable and perhaps even increase his chances of a good shot. Clearing some of the branches from the tree trunk will make the climb safer, quieter, and easier. Heavy spikes driven into the trunk, or boards nailed along hard-to-climb places will also help. These changes and all other stand construction should be done in the summer or early fall to allow the deer to get used to having something new in their territory.

After making these improvements, the hunter can add a couple of boards across a fork in the limbs of his stand to make a comfortable seat. Another couple of boards can act as rifle rests for those long shots. Some hunters simply nail a wooden chair in a tree for a more comfortable hunt.

These improvements can be made when the hunter chooses to "rough it" or just doesn't like more elaborate blinds. When the hunter doesn't want to rough it, he can go to a little more time and expense to purchase or build a blind.

These fancier blinds may have a wooden floor, sides and a roof, chairs, a small heater, and other luxuries that will keep the hunter out of the wind and rain. Other than the added comfort, the best thing about this type of blind is that it hides some of the hunter's movements. It should be built to allow a wide range of vision because the hunter can shift his position to look around without scaring the game.

Whether you choose to hunt from the ground or high above the ground, there are some basic safety tips to remember this season. Wear bright red clothing and double check every target before releasing the rifle's safety. The tree stand hunter should also remember that human reflexes don't make you hold on to a limb when you go to sleep. Along with the many bruises and broken bones



Select a site that allows the most comfort and best view of the area. The comfortable hunter is less likely to move and while deer don't see colors very well, they are extremely sensitive to unnatural movements in their feeding area. Look for signs of deer presence such as rubs or scrapes. If these cannot be found, look for areas with many deer tracks. For a more successful hunt concentrate on these areas.



suffered by sleeping hunters falling out of blinds, there are occasional deaths from this avoidable accident. If you find that it is impossible to sit still and stay awake, go home or sit on the ground.

Another safety and convenience feature that can easily be carried by the hunter or attached to every stand is a sturdy length of rope or twine to raise and lower the rifle to the stand. The rifle should be raised and lowered with the stock facing the hunter, without a shell in the chamber, and with the action open.

The most important part of stand-hunting is *not moving*. Although it is reported that deer have difficulty in distinguishing color, they can readily detect the slightest movement in their feeding area. If such a movement is unnatural, the deer are "spooked" and subsequently are lost as possible targets.

If the hunter must move, the movement should be slow and steady since fast, jerky movements are very easily seen by deer. It has been said that when the hunter is scanning the countryside from side-to-side, a 180-degree movement of his head should take more than 10 seconds. This is one way of remembering how fast to move, but the important thing to remember is that if a deer sees movement while he is standing still, he may start running.

Although many confirmed deer hunters will say there are better methods of bagging the elusive whitetail, and there may be, stand-hunting is recommended as the safest for inexperienced hunters, and the preferred method of many old pros. **



DETOUR: *FISHING*

Copano Bay Causeway State Recreation Park



AHEAD

Mercury-vapor lamps light a fisherman's dream—a park two lanes wide and almost two miles long crossing prime fishing spots in the waters of Copano Bay.



PHOTOS BY REAGAN BRADSHAW

by L. D. Nuckles Information Officer, Rockport

FISHERMEN now have access to fishing waters that they couldn't reach before except in a boat. They fish under lights where no lights existed before, and they catch fabulous strings of fish. They have this in the State's newest park designed exclusively for the fisherman—Copano Bay Causeway State Recreation Park.

In 1962, the Game and Fish Commission, forerunner to the Parks and Wildlife Department, began exchanging letters with the Texas Highway Department concerning disposition of the old Copano Causeway across Copano Bay after construction of a new bridge. The new bridge would parallel the old one where State Highway 35 crosses Copano Bay, five miles north of Rockport.

Employees of the Commission thought that when it was no longer to be used for a highway, the old bridge would make a good public fishing pier. Highway Department personnel agreed, and conservation-minded senators and representatives introduced bills in the Senate and House to make this possible. On March 3, 1963, the legislation was approved and sent to the Governor for his signature. A \$10,000 fund was then set up to do the work.

As time went by and the Highway Department worked on the new bridge, the Legislature met again. Since the old causeway had never been turned over to the Parks and Wildlife Department,



Fishing enthusiasts can use park facilities around the clock. In addition to mercury-vapor lamps, the 2,390-foot south pier has twelve 1,000-watt bulbs to draw bait fish which, in turn lure game fish.

the \$10,000 had not been spent. The Legislature reappropriated the \$10,000, plus another \$10,000.

The Parks and Wildlife Department then applied to the United States Bureau of Outdoor Recreation for matching funds, and as a result \$40,000 was made available to convert the old bridge into two fishing piers. Two piers were necessary because 500 feet had to be removed from the old causeway for navigational purposes.

On February 1, 1967, all work by the Highway Department on the old causeway was completed and the actual transfer to the Parks and Wildlife Department was made. The Copano Bay Causeway State Recreation Park was now to form. Plans were drawn, materials procured, and work schedules for Parks and Wildlife employees were revised.

All construction, plumbing, and electrical work was done by Parks and Wildlife workers. One man stayed suspended under the bridge so long stringing wires for the fishing lights that he claimed he had gotten to think like a monkey.

Fishing from the pier continued all this time, but on Saturday, May 18, 1968, the concession stand on the south pier officially opened for business. This pier is 2,390 feet long and reaches out into some of

the prime fishing areas of Copano Bay. Twelve 1,000-watt light bulbs attract bait fish which, in turn, lure game fish to the area. Twelve 100-watt mercury-vapor lamps light the pier itself.

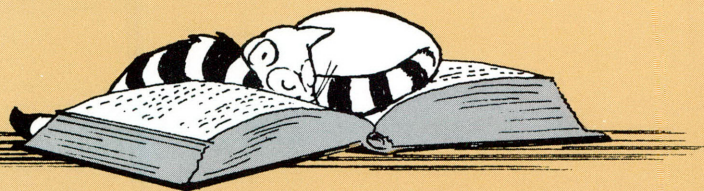
The concession stand at the end of the pier is run by one of the best known fishing guides in the Rockport area. The Parks and Wildlife Department issues the contract after receiving sealed bids from all interested parties. Under the terms of the law creating the park, the concessionaire is allowed to charge for fishing from the pier, the amount charged to be approved by the Department. Currently, adults pay 50 cents, persons 13 to 19 years of age pay 25 cents, and children 12 and under are admitted free. No charge is made for sightseers, photographers, or bird watchers.

Available at the concession stand are live, dead, and frozen bait, snacks, and cold drinks, and a complete line of fishing tackle and accessories.

Now that the south pier is open and operating, work is beginning on the 6,000-foot north end. When this is completed and has all the facilities now available on the south side, a dream will have become a reality—a recreation park designed with fishermen in mind. **



Outdoor Books



THE SIERRA CLUB WILDERNESS HANDBOOK, edited by David Brower, Ballantine Books, New York, 1967, 272 pages, 75c.

Lots of books on camping are available. In fact, there may even be many "good" references. But, few are as humorously written or as "down to brass tacks" as this one. The Sierra Club is not only interested in its members having extensive supply lists, it also wants to insure campers a good time on their outings. Satisfied campers and people who have learned to love the out-of-doors are probably the best way to preserve our natural resources, a cause the Sierra Club is dedicated to.

The special sections "Women," "Especially for Men," and "Children," give advice on how the whole family can enjoy a week in the mountains. They give advice for those rugged adventurers who want to take their spouse along on how not to: let her

get tired, scared, or bored. They also point out that children, who have often been considered taboo on wilderness trips, can enjoy the trip as much as parents when the right arrangements are made.

This volume seems to be aimed at mountain camping and it explores a variety of travel ways: knapsacking, burros, mules, and canoeing. Special consideration is given to the subject of burro trips and burro management. These little beasts of burden can make a trip more enjoyable for everyone or they can be an absolute pain in the neck. It all depends on how they are handled.

Extensive space is also given to camping equipment; telling what and where to buy. The novice would find helpful information on the brands to buy. The book gives the pros and cons of various kinds of equipment and tips on how to care for it best.

The variety of authors and contributors may be what makes this book so

charming to read. Its humorous, casual style is more interesting than the usual step-by-step camping manuals with listings for everything. The authors' presentation of an often trite subject is as fresh as the great outdoors.

—Jeanette Hunt

NEVER PET A PORCUPINE, by George Laycock, W. W. Norton & Co., Inc., New York, 167 pages, \$3.50.

Some of the everyday animals we take for granted can be some of the funniest, and most interesting animals anywhere. George Laycock proves that they are both in his clever, easy-to-read book that is packed with amusing anecdotes and interesting bits of information.

For instance, how many of us know that the common earthworm's Australian cousin may grow to be 11 feet long and weigh 1½ pounds? And, how many of us know that cricket fights in China sometimes bring bets up to \$100,000; that English sparrows make excellent pot pie; or, that the queen honeybee produces drone bees by laying eggs that aren't fertilized, thus giving the drone a grandfather but no father.

The author grew up on a farm and so is probably well qualified to explore antics of the animal world. Some of his subjects include the porcupine, the grey squirrel, the English sparrow, and the crow.

Twenty-two animals are explored in this volume, commonly found on farms and in American woodland areas. Each sketch of the animals contains factual information about offspring, nesting habits, and food, but is written simply enough for a child. Photographs of every animal illustrate the funny animal world as seen by a true animal lover.

—Jeanette Hunt

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FLASHING WINGS, by John Terres, Doubleday and Co., Inc., New York, 1968, illustrated, 177 pages, \$4.95.

The ornithopter, man's first flying machine that flopped, was based on the principle of wing movements observed in bird flight. But flapping is not all that makes a bird fly.

After many centuries of men dying when trying to fly, in 1680 it was realized that a 150-pound person would need a breastbone projecting six feet to accommodate enough muscle to flap wings capable of getting him off the ground. Slowly, man began to appreciate and understand the many instinctive aspects of bird flight. Discovered was a bird's use of thermal drafts, unique takeoff, and landing procedures, effective gliding techniques, and sustaining energy and fuel.

Filling this book are interesting

facts, figures, and comparisons of birds, their habits, environments, and astonishing flight capabilities. All the celebrities of the bird world, from the albatross to the hummingbird, are represented as the author relates unique characteristics of each.

More than a textbook on ornithology, *Flashing Wings* is also a personal account of the author's experiences with The Princess, his peregrine falcon.

Hawk Mountain, the great glider highway, serves as a backdrop when the author explains the use of air currents in migratory flight. Near Reading, Pennsylvania, this highway is formed by horizontal currents of air that bounce off the solid mountain ridge and move upward, providing an energy-saving ride for migrating hawks, eagles, and osprey.

Long distance ocean flights, underwater flight, and hovering are also covered in the book. It is an excellent primer for introducing the beginning bird enthusiast to the marvelous maneuvers of birds. —*Suzanne Winckler*

THE CAMPING MANUAL, by Fred Sturges, Stackpole Co., Harrisburg, Pa., 1967, illustrated, 160 pages, \$3.95.

Camping is often a learn-the-hard-way experience. This book warns the would-be camper of mistakes he's apt to make before he has a chance to make them.

Specifics of camp comfort and safety are summarized from selecting proper backpacker boots, to utilizing specialized camp containers and interpreting local weather signs. The camper is reminded to cover toilet paper with a can before a rain.

Modern equipment and methods have made the wilderness accessible year around for the hardy and imaginative camper. Catalytic heaters that burn without flames, electric blankets, and thermal underwear take the bite out of winter and open new experiences in camping previously limited to the warmer months.

Ten geographic regions from Oregon to Maine, each offering a unique camp environment, are described with Big Bend National Park included in the desert trek.

Myth versus fact in camp lore is interjected throughout the book. The author discounts the tale that poisonous mushrooms cooking in a skillet will turn a silver coin black. Yet he warns campers to take seriously the meteorological rhyme, "Rainbow at night, sailor's delight; rainbow at morning, sailor take warning."

In addition, campsite cuisine is carefully discussed with advice given in living off the land. Recipes range from morel mushroom sauce to wild cherry liqueur. —*Suzanne Winckler*

Long Shots, Short Casts

compiled by Neal Cook

Double Action: An Oklahoma outdoorsman has found a way to liven up his duck hunting trips when the weather and ducks are not cooperating. Tying all of his decoys to one main line, the man then attaches short drop lines to the main line and turns his decoys into trotline floats. The bobbing decoys signal a catch and the action is enough to convince ducks flying overhead that some lively friends wait below.

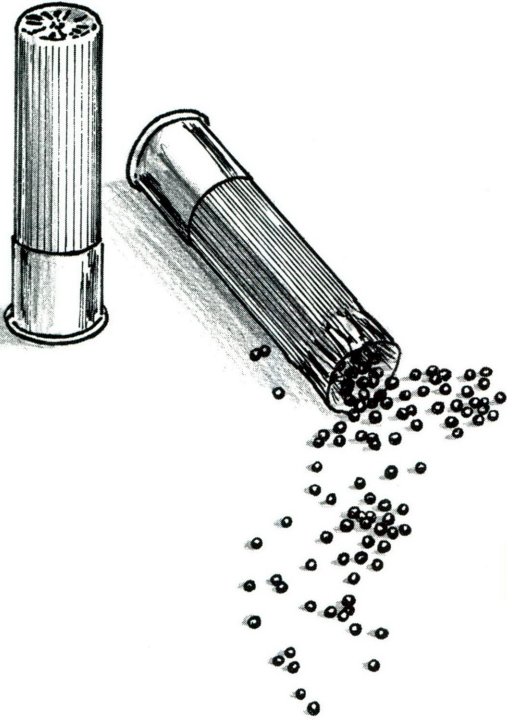
One Million Dollars: That is how much will be spent in Canada for construction and rehabilitation of prime waterfowl breeding grounds in 1968 by Ducks Unlimited, Inc. The conservation organization devotes this money to the maintaining of "duck factories" in the wetland nesting areas of Canada where four of every five ducks and geese on the North American continent are hatched. In 1968 it will be improving and conserving over 520,000 acres of wetlands.

Help the Polar Bear: To help preserve the world's dwindling supply of polar bear, the National Rifle Association has stopped its yearly award for this magnificent animal. The action is expected to remove some of the hunting competition for this white bear and follows the Boone & Crockett Club's elimination of the bear from its list of big game trophies.

Protected Turtles: The Florida Game and Fresh Water Commission has passed a regulation that prohibits the shooting of fresh water turtles. The regulation was passed to prevent the unnecessary killing of that harmless and interesting species. Most turtles were being shot for target practice, not for turtle stew. They can still be caught on hook and line, in turtle traps, or with spears during the daylight hours.

High Priced Water: A report submitted to Congress by Secretary of the Interior Stewart L. Udall said that the cost of collecting and treating municipal and industrial wastes for the next five years will be from \$26 to \$29 billion.

Russian Pollution: The news is that Russia is having its problems with water pollution. A huge wood-pulp plant is pouring chemical wastes into Lake Baikál, the largest body of fresh water in the world, in such quantities that plant and animal life is being threatened. The lake's fauna is some of the most unusual anywhere, having evolved for many millions of years in an extremely cold and mineral-free environment.



the case of the

fatal grit

PHOTO BY C. D. STUTZENBAKER



by C. D. Stutzenbaker Waterfowl Biologist

THE SILENT KILLER, lead poisoning, confronts conservationists and hunters as a growing problem in the annual loss of waterfowl. The destruction of birds due to lead poisoning occurs on almost a year-round basis—a fact unknown to many hunters and outdoor enthusiasts. This loss is responsible for the waste of approximately one to two percent of the total waterfowl population each year.

Shotgun shells necessarily use lead shot, due to the density of lead, which allows the pellets to travel maximum distances and retain sufficient velocity to strike and kill the target. However, lead is undesirable because it is extremely toxic when ingested by birds.

Shotgun pellets are potential death traps for feeding waterfowl because lead does not deteriorate and remains for indefinite periods in its original state. The lead pellets freed by the firing of an individual shell fall to the field or marsh and remain sprinkled among the aquatic food and field crops. While feeding, birds accidentally pick up the tiny lead pellets with the hard coated seeds that form a staple in their diets. In many cases, the feeding birds may choose the lead pellets thinking that

they are choice bits of grit necessary to complete the grinding action of the gizzard.

Ingested lead pellets pass through a bird's crop to the gizzard along with food. The gizzard of a duck or goose is a highly specialized organ capable of grinding hard objects which may include small mollusks and various nuts. The lead pellets remain in the gizzard where they are eroded by the grinding action. The resulting toxic soluble lead salts obtained from the pellets are absorbed by the digestive system and paralysis of the gizzard develops.

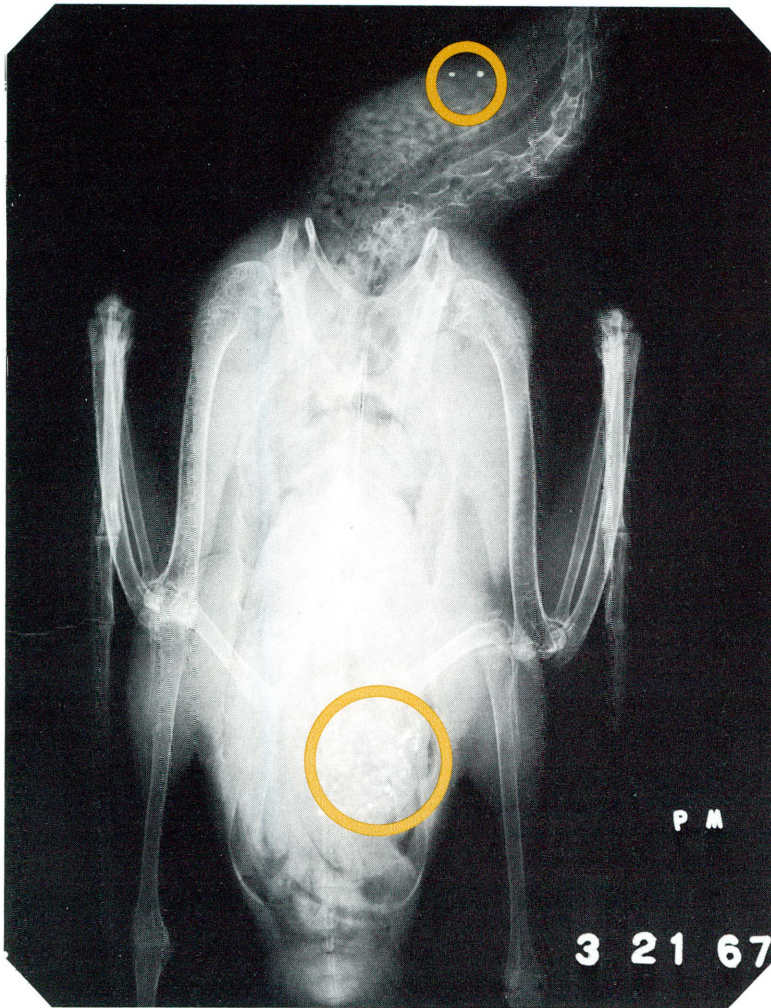
As a result of gizzard paralysis, the bird slowly starves. Many birds continue to feed until death. The ingested food is of no value because it becomes impacted in the crop as a result of the inoperative gizzard.

Birds affected by lead poisoning lose weight and suffer rapid degeneration of their flight capabilities. Affected birds remain generally inactive and seek isolation in heavy cover.

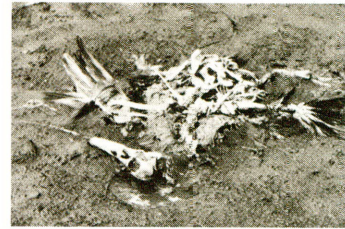
Lead poisoning symptoms include extreme emaciation causing the keel bone to protrude sharply from the shrunken breast. Massive fat deposits, indicative of healthy birds, are sharply reduced or



Toxic lead pellets sink into silty soils to depths beyond where waterfowl feed, but the fatal grit is retained on hard bottoms for extensive periods. In 1962 about 2,000 ducks died near Port Arthur from lead poisoning.



fatal grit



X-ray of pintail shows two lead pellets in the crop and about two dozen more lodged in the gizzard resulting in paralysis.

absent and the gizzard lining becomes discolored with occasional dark, ulcerated spots.

Limited losses of waterfowl by lead poisoning generally go unnoticed. Predators and scavengers quickly remove all evidence of dead and weakened birds. Numerous deaths resulting from lead poisoning usually occur in Texas after the hunting season is concluded. Choice shooting sites are most generally ideal feeding sites and as soon as hunting pressures subside, the birds move in and are susceptible to the newly deposited lead shot. The most recent massive lead poisoning outbreak in Texas occurred in Jefferson County near Port Arthur in 1962 when approximately 2,000 mallards and pintails died.

Records show that hunters average six shots per duck killed. A standard 12-gauge shotgun shell with number six shot contains approximately 260 pellets. For every bird bagged, a total of approximately 1,560 pellets are deposited in prime waterfowl areas.

The pellets tend to sink into silty soils to a depth beyond the normal feeding activities of waterfowl. However, sites with hard, compacted bottoms will

retain lead pellets for extensive periods where they remain potential death traps for feeding birds.

Mallards, pintails, canvasbacks, redheads, and scaup are most susceptible because of their characteristic feeding habits. Baldpates, gadwalls, and geese are less prone to suffer lead poisoning because of their affinity for leafy green material which is readily available well above the lead deposition level in the soil.

Fortunately, lead poisoning in birds constitutes no hazard to human consumption due to the low level of lead salts contained by stricken birds. Starvation as a result of improperly functioning gizzards is the cause of waterfowl mortality rather than a massive buildup of the toxic lead salts.

Cooperative studies are presently underway involving shot shell manufacturers and conservation agencies to find a suitable nontoxic substitute for lead. Additional work is being done relative to specific problems associated with death and survival characteristics of lead-poisoned birds. Conservationists are challenged to find a substitute for the silent killer that places additional stress on an already heavily utilized waterfowl resource **

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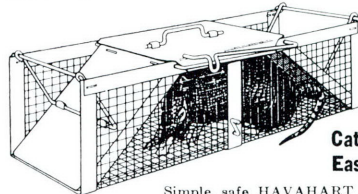
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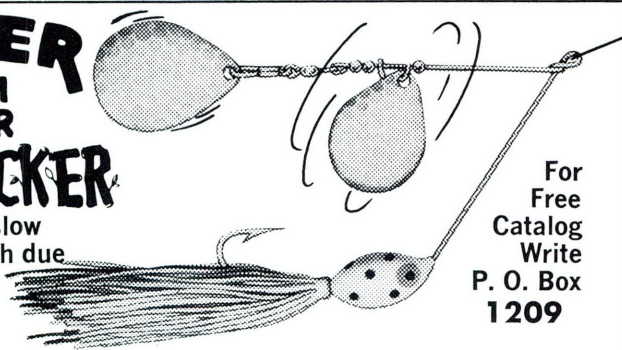
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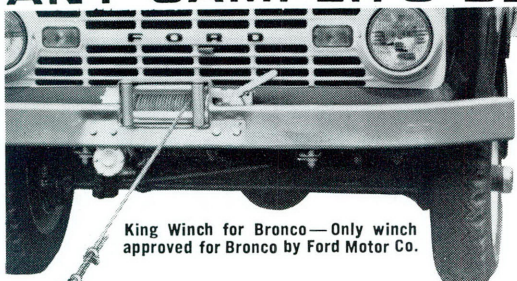
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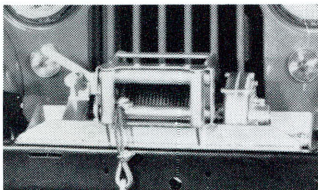
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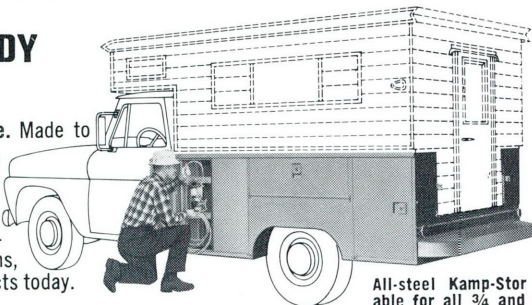


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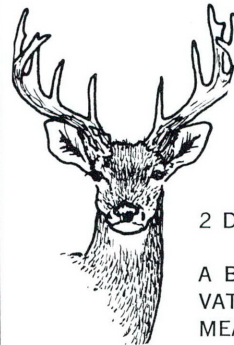
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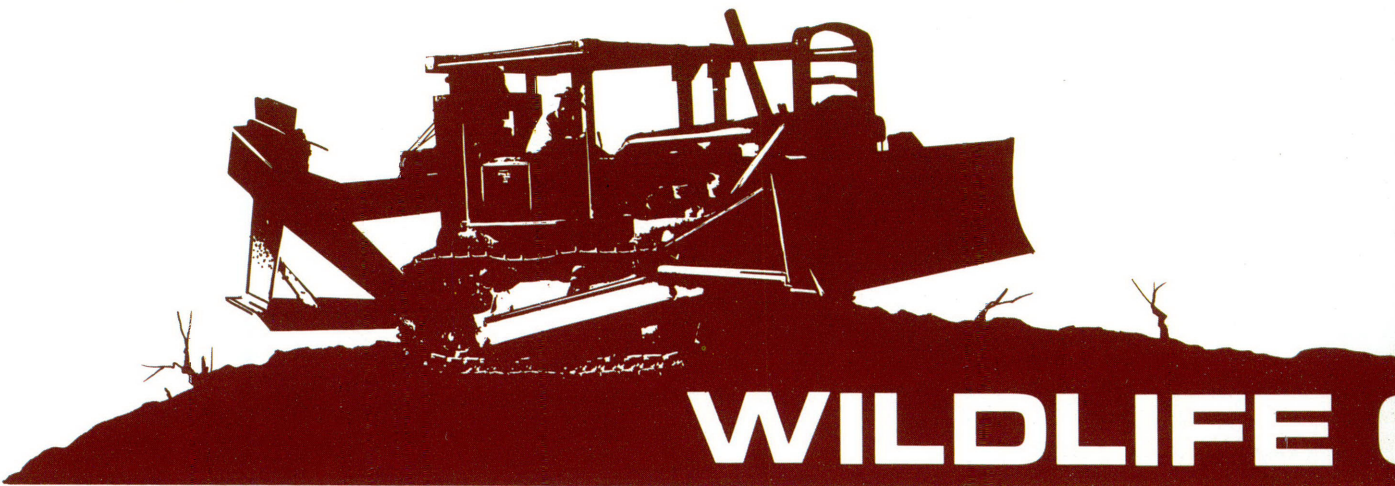
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WILDLIFE



PHOTOS BY JOHN SUHRSTEDT

Brush control practices erase valuable habitat

by Bob D. Weber Wildlife Biologist

ETS ROOTED OUT



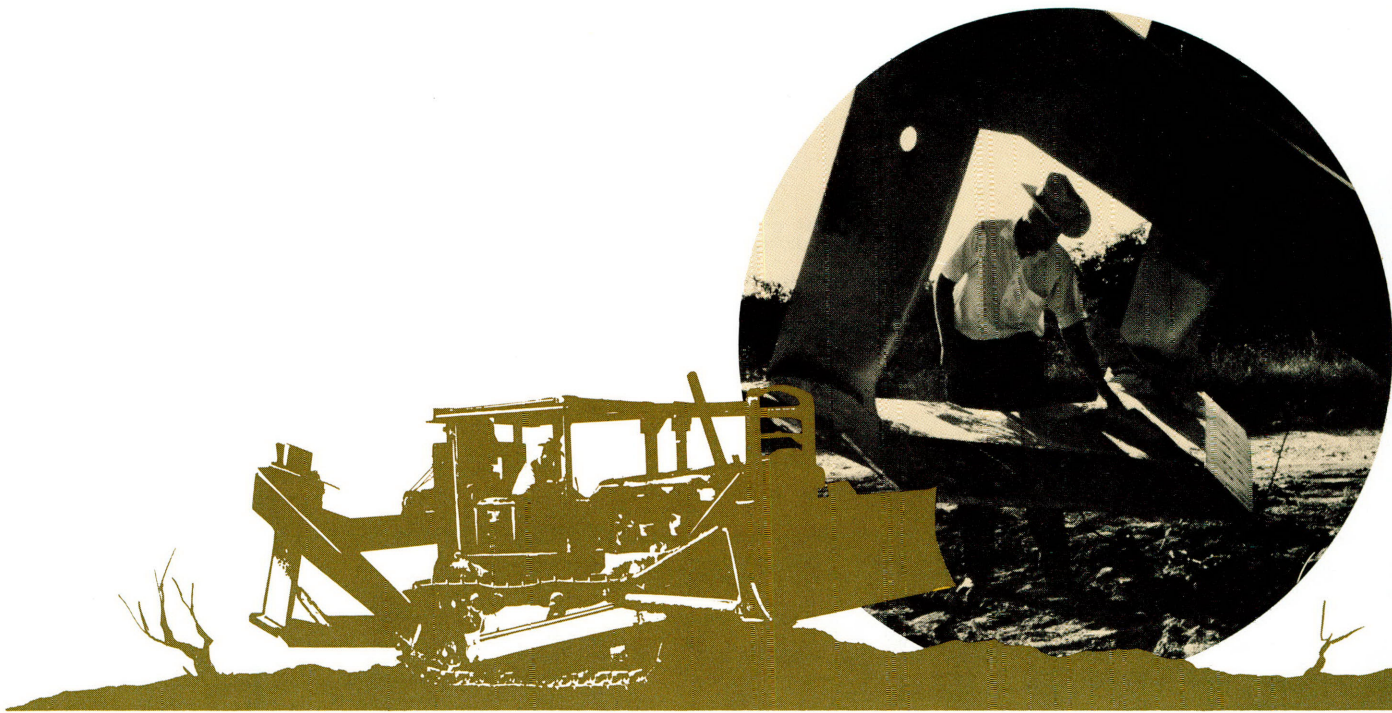
TRACTORS roar, men shout, the huge plow blade bites, and South Texas wildlife has, for all practical purposes, lost another round in the fight for prime food and living areas.

Since the early 1930's about 30 percent of the rangelands in South Texas have been subjected to various brush control practices in an effort to improve the range for livestock. The most widespread practice has been "chaining," where a logging chain is dragged between two bulldozers, uprooting and pulling down all the woody vegetation in its path.

Though in appearance, this technique is very destructive, its effects are not permanent on many brush species. After a couple of years, the brush often grows back thicker than it was before chaining. This, of course, can only benefit wildlife if enough brush was left when the control was performed to provide adequate habitat to sustain the population until regrowth occurs.

Since about 1950, rootplowing has replaced chaining as the most popular method of control. This method involves pulling a heavy plow behind a large heavy duty tractor or bulldozer. Brush is uprooted and the soil is broken to about a foot in depth. Grass seed will take root better in the broken soil and most of the uprooted brush will die; consequently, the results of rootplowing are evident for a much longer period than they are in chained areas.

If the rootplowed area is seeded to grass, if weather conditions are favorable, and if proper livestock management practices are observed, the grass will replace the weeds and browse plants that are so essential to wildlife. If rootplowing is followed by a period of drought or overgrazing,



the grass will not take hold and the area will look like a barren wasteland, incapable of supporting livestock or wildlife.

Due to the large size of most South Texas ranches, large blocks or tracts of land are usually rootplowed at a time. This causes a lack of suitable cover for game and the loss of many plants that are important as wildlife foods.

Soil conservationists say that the disturbance of the soil from rootplowing promotes the growth of forbs (weeds), which are preferred wildlife foods. This is true to a certain extent, but forbs are generally annual plants, highly susceptible to environmental changes. Once the soil weathers and packs, usually a year or two after rootplowing, forbs become more scarce than on uncleared ranges. Even though forbs may be abundant on a rootplowed area, few species of wildlife will venture far from cover to feed in these cleared areas and this is the main cause of the problem.

When an area is cleared, most of the wildlife must move to other areas where sufficient food and especially cover is available. Wildlife, and particularly deer, can quickly become overcrowded under these conditions, and competition for food and space becomes acute. Nature, of course, takes care of this situation through massive die-offs from starvation and disease, but not before the whole population suffers.

There is an alternative to this situation, and that is to leave adequate cover, or brush plots, within the rootplowed area. By leaving sufficient cover, all will benefit, including wildlife, livestock, and the landowner. Game will remain in the area because of suitable cover and available browse, and will utilize more of the cleared area if they don't

have to travel too far from cover. This will greatly benefit the hunter who wants a place that he can return to year-after-year.

Livestock will benefit from the brush plots by having cover and shade available and by having brush and cactus forage during periods of drouth. The landowner will benefit from increased livestock production and additional revenue from hunting leases. With proper management, hunting income can offset losses that might occur by not clearing all brush and applying all land and efforts to livestock production.

There are several ways to leave brush plots for wildlife. Stripping is one suitable method. It consists of alternating equal or nearly equal strips of brush and cleared areas. It allows adequate cover for game while it also provides areas of increased grass production for cattle.

Other methods vary from checkerboarding cleared and brushy tracts to leaving brushy draws untouched when the tract is cleared. Although the necessity for brushy cover will vary with the type of range, at least one-fourth of the brush should be retained. Several small tracts are, of course, more beneficial than one large tract.

Although wildlife biologists feel there is a gradual shift toward greater interest in wildlife management among ranchers and soil conservationists, it is late in coming. Already millions of acres of prime wildlife habitat in South Texas have been cleared, and not always to the benefit of livestock production. Unfortunately, everybody is the loser—the rancher, the hunter, and especially, the wildlife. It is up to us, through cooperation and mutual understanding, to balance the books unless we are prepared for the consequences

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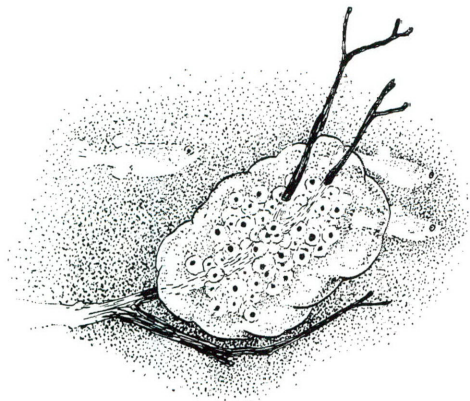
The rootplow does a very effective job of clearing brush, but wildlife is driven out as native habitat is destroyed. Strips of brush in cleared areas give livestock and wildlife needed protective shelter.





woodland sprite

by W. R. Long Information Officer, San Angelo and Suzanne Winckler



RECLUSE of Texas woodlands, the tiger salamander, *Ambystoma tigrinum*, is a shy, harmless night creature that spends much of its life underground. It is generally found minding its own business under rocks, logs, or damp leaves. In semiarid areas it will inhabit burrows of other animals such as squirrels and prairie dogs in order to reach depths where the soil is moist.

Named for its markings rather than disposition, the colorful amphibian has scaleless skin marbled with black and yellowish tiger splotches.

Salamanders, shaped like lizards, are often mistaken for members of that family. But lizards are reptiles while salamanders are classified with the amphibious frogs and toads. To further distinguish between the two, salamanders have no scales, are sometimes slimy, and have four toes on their front feet as compared with the lizard's five. Lizards also have claws, which salamanders lack.

Tiger salamanders inhabit a large area from lower Canada through central United States to northern Mexico. There are two subspecies in Texas, the eastern and barred tiger salamanders. The eastern tiger salamander has light spots, olive-brown or yellowish-brown, that form no definite pattern. Barred tiger Salamanders have markings that are more yellow and form bars or large blotches along their backs and tails. The eastern variety is found throughout the eastern half of the State, while the barred tiger is found in the western half.

Seldom seen during the day and always avoiding direct sunlight, this night-feeder eats insects, worms, snails, and several types of small invertebrates.

Looking for the tiger salamander is similar to looking for snakes, as both inhabit the same general haunts. They are found in wooded areas, especially in spring and fall, and usually near pools where they breed. After the first spring rains, they make nocturnal visits to temporary or permanent ponds of water.

Studies of this migration reveal a recurrent ceremonial pattern with groups of males going first to ponds and lakes followed by groups of females. It appears to be the only time that the adult tiger salamander is gregarious.

An early spring breeder, the tiger salamander usually deposits eggs under water on plant stems. The average egg is larger than that deposited by its frog and toad relatives. They are laid in gelatinous, oval-shaped clusters and the number varies greatly but 52 eggs per cluster is the average—considerably fewer than frogs and toads.

Before the eggs hatch, glands on the larval snout discharge a fluid to help dissolve the egg capsule, thus enabling the young to wriggle out. Each larva must then disengage itself from another jelly mass that surrounds it before it is truly "born."

Soon after hatching, the two finger-like claspers or balancers at each corner of the mouth begin to disappear and the tiny gills grow larger and bushier in order to filter oxygen out of the pond

water. The larva, like the adult salamander, is generally solitary, but not quite as wary and secretive.

Lateral-line organs are the larva's underwater warning device. These sense mechanisms are clusters of cells on the snout, forming shallow depressions in the skin's surface and arranged in rather definite rows. They detect low-frequency vibrations in water to warn the salamander larva of nearby movements. Lateral-line organs are readily lost when the amphibian becomes terrestrial.

Appendages also develop soon after hatching with forelegs growing first before hind legs begin. The body gradually becomes more streamlined conforming to the typical salamander form. Internally, lung development begins replacing external gills as the animal grows. Shedding of larval skin, protruding of eyes, and forming of eyelids are all part of the salamander's transformation. Conversion from aquatic to land habitat takes the tiger salamander two to four months.

Adults continue growing to attain an average length of 7 to 8 inches with some reaching a length of 13 inches—the largest size of all terrestrial salamanders in the world. Life span varies considerably but they have been known to live more than 10 years.

The tiger salamander has been used in experiments conducted to study larval growth and effects of groups of tissues on surrounding cells. In one case, the eye of a tiger salamander larva was



transplanted to a spotted salamander larva, a smaller animal that grows at a different rate than the tiger species. The tiger larva eye continued to grow at its own rate reaching its normal size which is double that of the spotted salamander's eye. These experiments demonstrate that such matters as size and growth during the larval stages may be determined by factors within tissues of separate larval organs.

Under certain conditions, the tiger salamander will reach sexual maturity in the larval stage and never lose gills or leave the water. This neotenic or undeveloped form is the axolotl (ax-solot-l) form found in Mexico and western United States. High altitude, very cold water, and lack of iodine in the soil are believed to restrict normal secretion of thyroid, thus preventing maturation. However, if an adult axolotl is moved to a more normal environment, complete transformation takes place.

The tiger salamander is of no

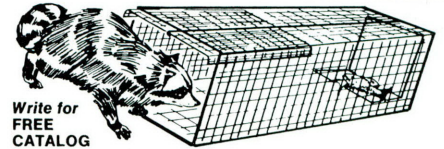
commercial value in the United States, although the axolotl is used for food in Mexico.

Tiger salamanders have no hearing as we know it. They have an inner and middle ear with no external outlet that aids equilibrium but has no hearing capabilities. Instead of picking up airborne sounds, it is believed they feel surface vibrations with their front feet or lower jaws. In addition, they have no vocal chords.

The tiger salamander is a member of an interesting and complex family offering a fascinating

study in uniquely adapted life processes. Hidden beneath rocks and logs and around ponds and streams, this elusive amphibian silently adds to the colorful world of Texas wildlife. * *

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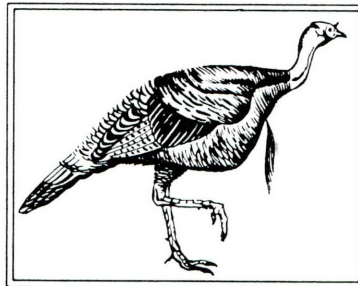
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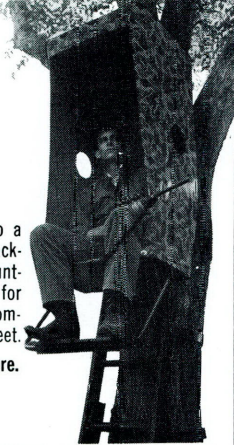
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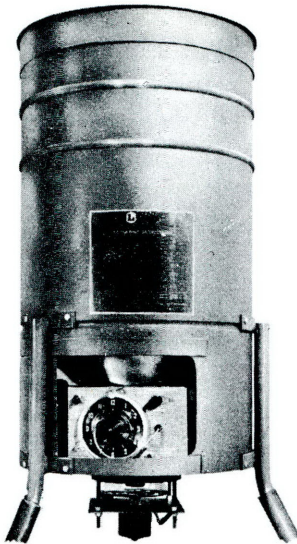
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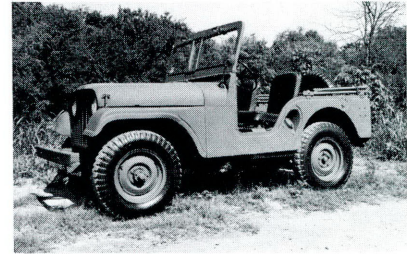
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ON THE RINGTAIL TRAIL

by
Joe T. Stevens
Wildlife Biologist

LARGE, BLACK EYES contrasted with a whitish mask and a long, furry, black and white ringed tail characterize the cat-like ringtail. Scientifically known as *Bassariscus astutus*, which means "clever little fox," the ringtail is sometimes confused with his relative, the stocky raccoon. The black rings of the ringtail are incomplete on the underside, while the raccoon sports a shorter tail with complete rings.

A splash of whitish cream fur appears at the base of each rounded, ringtail ear. He travels on strong, short legs, and each small, cat-like foot has five toes armed with sharp, semi-retractile claws. The typical animal is a light ochre color, overcast with blackish guard hairs on the back, with light cream fur underneath the legs and stomach. Color phases within the species vary from almost black to a light buff. His sharp teeth exhibit the same dental formula as the raccoon. Adult ringtails tip the scales between two and three pounds.

These mysterious mammals are common residents from Oregon in the Northwest to western Arkansas and Louisiana in the Southeast, over most of Texas, throughout Mexico and south to Costa Rica. The largest populations in Texas occur in the Edwards Plateau with the heaviest concentrations in the central mineral region.

Even with such a wide range, relatively few of these appealing furry animals are ever seen. A recent field guide to American wildlife failed to give him an entry. Most of his life is spent under cover of darkness and in secluded places, the chief reasons he is relatively unknown.

Rough, rocky canyons with their characteristic ledges, bluffs, crevices, and caves, abundantly supplied with water from seeping springs, potholes, and creeks are favorite homesites for ringtails. The elusive little climbers scale the formidable cliffs with the ease of an acrobat. Using their long graceful tails for balance, they satisfy their curiosity by creeping around edges of the rimrock to peer into vast canyon expanses.

Abandoned houses, barns, gristmills, sawmills, and mines offer the luxuries of spooky seclusion, cozy den sites, and easily obtainable food and water. They are also at home in woodland areas

where they sleep in hollow trees, race through the sprawling branches at the slightest provocation, and occasionally recline on a lofty perch to sun.

Apparently, when the occupants of a homesite are captured, it is soon reoccupied by either relatives or friendly associates. One trapper is known to have caught 16 ringtails at one homesite over a period of eight trapping seasons.

Little is known about the private family life of these shy creatures. They are usually found in pairs, although it is not uncommon to find a male alone in his den.

In Texas, the breeding season occurs in early spring. The young, generally two to four in number, are born approximately a month and a half later. The mother hides them away in a narrow rocky crevice, dark attic, or snug hollow tree. Unless the mother is present, few people would recognize these little shrill squeaking, pale-furred, blunt-nosed animals.

At birth, they are about the size of new-born kittens. The black rings are the most distinguishing feature, incomplete on the underside and faintly pigmented in the skin of their stubby tails. Their delicate eyes and ears are sealed, not to open until they are just past a month old. At first they are toothless, but within six weeks the needle-like teeth erupt from their soft gums, ready to tear into the flesh of a freshly killed mouse or bird.

Soon, the little ringtails begin to crawl around the den on shaky limbs. They experience an early, rapid growth, a normal protective measure for most species of small wild animals, and within 60 or 70 days, are allowed to accompany their parents on short hunting trips. At four months they fully resemble adults except in size. They are now weaned and sent out to provide for themselves.

The ringtail's curious disposition generates almost perpetual motion during his waking hours. Rich sugars found in such fruits as hackberries, juniper berries, persimmons, black and red haws, and grapes supply fuel for this abounding energy. Strong muscles are built and maintained with high protein obtained from eating rats, mice, cottontails, birds, snakes, lizards, insects, and crustaceans. Like other predators, they take an occasional quail,



Growing rapidly, young ringtails soon become agile cliff climbers, using their long, sweeping tail for balance.

squirrel, dove, or domestic fowl. Their normal feeding habits are beneficial rather than harmful to man.

When the twilight creeps into the eastern horizon and the familiar night sounds begin to be replaced by the shuffle of awakening song birds, the nocturnal hunter and explorer instinctively finds his way back home. He cautiously examines his homesite for possible enemies before squeezing into his snug den.

Though tired from the night-long prowl, he gently licks moisture and dirt from his fur and preens his tail before going to sleep. If a mate is present, this cleaning process may be shared. Finally, after a lazy yawn or two he tucks his head between his forelegs, curls into a furry ball, and drifts into a deep sleep.

The ringtail will readily take to a tree or hole when pursued by an experienced hunting dog. At bay, he will emit a succession of vicious screaming barks and when flushed, he will run to another place of safety. At the same time, two small musk glands at the base of his tail will secrete a clear amber liquid with a sweetish, musky odor. This odor often confuses the dog's sense of smell and allows the fleeing ringtail to escape. When caught, he bites and scratches furiously until he either breaks free or is killed. No doubt much of this same escape behavior is repeated when he is approached by a marauding wolf, coyote, or bobcat.

His keen sense of smell and ever-present curiosity causes him to fall easy prey to the trapper, but his alertness and mobility enable him to remain relatively free from the danger of many natural predators. The ringtail's worst enemies are the great horned owl and large snakes, especially rattlers, which can penetrate his den.

Although the quality of the ringtail's fur has prevented it from being a popular decoration for

modern clothing, he was sought by Indians for ceremonial displays, by pioneers for trade, and by early twentieth century trappers for the general fur market. His pelt is considered one of the simplest to prepare for market.

Since 1900, pelt values have ranged from 50 cents, a price not to be frowned on 60 years ago, to \$10 in 1946, a handsome price in any day. Even though the recent fur market in Texas has not favored the ringtail, fur buyers in Brown, Burnet, Coleman, Comanche, Erath, Lampasas, Llano, Mason, McCullough, Mills, and San Saba counties bought 16,877 ringtail pelts during the 1965-66 fur season. He is still an important fur bearer, attracting trappers and hunters according to the annual price of his pelt.

Indeed, this bright-eyed fur bearer with his prominent black and white ringed tail, fills an important ecological niche in our wild environment. He fulfills his duty in controlling rats, mice, birds, insects, lizards, crustacea, and snakes, and at the same time, helps propagate plants whose seeds and fruits he eats. Occasionally, he provides a tasty meal for one of his arch enemies. He graces the barn of any farmer or rancher who permits him a living place as he exterminates rodents more effectively than a domestic cat and is much safer than poison.

Since Texas has such a large population of ringtails, let us learn all we can about them and enjoy them to the utmost. In the face of oncoming civilization, let us encourage the management of the species and the preservation of all possible habitat. If his numbers ever begin to decline, it is imperative that we be in a position to recognize it before the species becomes endangered like so many others. This is our solemn duty as responsible citizens and it should be accepted with delightful anticipation.

**

Evening twilight brings the ringtail out to forage.



Home is a hole in a log—safe and secluded.





I NEED A NAME

by Jeanette Hunt

FURRY, PLAYFUL, and wide-eyed, the native ringtail has been chosen as the new conservation spokesman for the Texas Parks and Wildlife Department. The Department ringtail has no name as does Smokey the Bear, Ranger Rick, and other animated spokesmen and a "Name the Ringtail" contest is underway for Texas fifth-grade elementary school children to suggest an appropriate name.

This little mammal, when drawn in caricature by the talented pen of Nancy McGowan, will serve much the same purpose as Smokey the Bear does for the U. S. Forest Service. He will appear on pamphlets, placards, motion pictures, and will become a symbol for conservation campaigns throughout the State—especially to young people.

The best time for Texans to learn about conservation is while they are young. If we remain ignorant of conservation needs and practices, there soon may be little left of our State's natural resources to conserve. Since today's youngster is oriented toward cartoons and "talking animals," the animated ringtail is expected to be a good spokesman for conservation to young Texans.

Through the "Name the Ringtail" contest, Department officials hope to stimulate conservation interest in young Texans and encourage a more wide-spread teaching of natural resources conser-

vation in the schools. The contest will also publicize and encourage the use of State parks, call attention to the critical need for conservation practices and public support, and inform Texans of the activities of their Parks and Wildlife Department.

The contest is being limited to fifth-graders because they will be studying about wildlife and conservation. Also, by coincidence, 1968 marks the *fifth* year since parks and wildlife functions have been merged into one department.

The contest winner not only will be doing a great service for conservation in Texas, he will also receive prizes for submitting the winning name. Tops on the list is an all-expense-paid visit at Six Flags Over Texas for the winner and his family. A five-year subscription to *Texas Parks & Wildlife* magazine will be given as well as a tent from Sears, Roebuck & Company; a Plano fishing tackle box; Johnson and Garcia fishing rods and reels; a sleeping bag from Dillard's Department Stores; binoculars from Montgomery Ward; and Pico and Arbogast fishing lures.

The conservation slide show, "The Murder of Silence," also will be shown at the child's school in his honor.

Lots of surprises are in store for the lucky youngster who finds a name for the ringtail—the Texas' new "conservation critter."
**





NAME THE RINGTAIL CONTEST RULES

All fifth grade pupils attending accredited public, private, or parochial schools of Texas are eligible to submit one entry. Children of employees of the Texas Parks and Wildlife Department are not eligible. Each pupil may submit one entry on a white piece of paper five inches wide by three inches high. He should clearly print his entry name for the ringtail at the top with his name, the name and address of his school, and his teacher's name in that order in the lower portion of the entry. If possible, all entries should be mailed by the teacher in one envelope.

Judging will be based on ingenuity, appropriateness, and adaptability to the conservation theme. The winner will be notified by Wednesday, November 25, 1968, and will be requested to come to Austin with his parents and teacher to attend the award presentation.

Teachers will be provided complete contest rules and literature through their local principals and superintendents.

All entries must be postmarked no later than Friday, November 8, 1968. Entries should be addressed to:

NAME THE RINGTAIL CONTEST
Box 12424
Capitol Station
Austin, Texas 78711



Junior Sportsmen

by Nancy McGowan

Cool earth presses round him on every side, as the paddle-footed mole tunnels forward on a hunting foray. An insatiable appetite is a mole's constant companion so he must constantly search for food. The night and day of the upper world have no meaning to this near-blind animal in his dark burrows. Frequent short naps rather than an eight-hour slumber keep him refreshed, be-

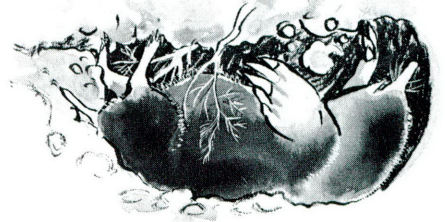
cause a few hours without nourishment would be fatal.

All 5½ inches of his compact body are marvelously fitted for life underground. No ears or eyes are visible to catch grit. Each hair of the short, powder-soft pelt is slightly tapered with the small end next to his skin. This allows his fur to be brushed in any direction without irritation. The absence of prominent ears does not

keep him from being alertly tuned to sounds and vibrations, of the underground, and his nose is one of the most sensitive—bar none.

Sandy soil melts away under the attack of stout claws and teeth. Squirming on his side or back or stomach, he swims through the earth as easily as some animals swim in water.

His pink, bare snout quivers as the mole halts to scan a tart odor filtering through the earth—ant bed aroma, of course, and where



is their nursery? His nose reveals to him, as clearly as sight, some aspects of the ant bed. Sharpest smells one way indicate the main worker complex. A moldy fragrance below locates storage rooms. Near that, mildly tart odors pinpoint the grub-filled nursery.

His remarkably sensitive ears are hidden under fur, but help to round out the picture. Steady scrabbling noises are workers marching in and out of the upper world. Lack of sounds from another area agree with his nose—food storage room. Slippery squirming sounds from the area near it combine with the mild smells to identify the nursery.

Only seconds have passed as the mole surveys the situation, then surges into the lightly guarded nursery and hastily gulps the tiny larvae. It has to be a speedy raid, for the mole's skin is fearfully tender. He hears the alarm clicks of warriors and workers, and the accelerated scuttling of feet as they converge on the stricken nursery.

Furiously paddling in reverse, the canny mole buries the irate ants. His diminutive pink tail aids greatly in these reverse tunnelings, providing a rear "view" of rocks or roots.

But the ant larvae are only a

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snack. He bores on, heading for his favorite hunting ground, a plot of earth far sweeter and moister than that encircling it. Here the root forest, pampered by continued watering and fertilizing, grows in orderly rows. It is a paradise for insects, for the roots are tender and tasty, unlike the hardy species in other areas.

Wireworms, grubs, maggots, and caterpillars browse on the tender root branches. June bugs and wood roaches slumber away the hot day of the upper world. Fierce beetles and centipedes stalk the root eaters even as the mole does.

The sandy earth crumbles away ahead and heaps up in back as the eager mole burrows, pausing now and then to snap up a beetle, a tiny grub, and two or three earthworms. At last he arrives and halts to sniff and listen alertly. Nose and ears instantly notify the mole that a fat grub lies just ahead, contentedly stretching. Its sour, musty odor spreads a pathway from its nest as obvious as footprints. Its soft dragging movements plainly outline the creature.

Built for a sedentary existence of rootgrazing, the grub is unable to flee as the mole tunnels into view. A quick bite behind its head dispatches the grub and the mole feasts.

It is a huge meal for a creature of mole-size. A human would have to eat over a dozen hamburgers all at once to equal such a feast.

However, the energy expended in eating the grub increases his appetite and he again plows off across the hunting ground, tracking down nimble wireworms, crunchy beetles, and savoring the bitter musky flavor of well-fed earthworms.

This rich plot of land is included in his territory and he permits no other mole to trespass. Although he allows many subsurface tunnels to cave in behind him, several permanent, shallow passageways crisscross his area. Deeper burrows lead off these for protection and napping places.

He needs these deep dens, for the hunting ground is also claimed, and violently defended by a human up above. The human's



heavy tread, like drumbeats, warns him to dive deep.

Later, when hunger drives the mole back up to the insect-filled shallow soil, he discovers his highway and short tunnels collapsed. Undaunted, he busily bull-

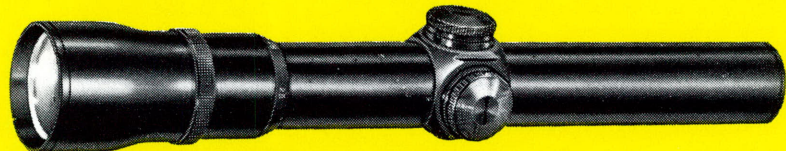
dozes new burrows. In the sunlight above, plants sag or wilt as their foundations become mole tunnels.

Luckily for the future of his kind, his belligerent nature softens as early spring warms the earth. The mole then deserts his beloved tunnels for the upper world to sniff out a "femole" in the neighboring lands.

His jerky gait and silvery fur may immediately attract the eyes of crows, owls, hawks, or foxes. Whims of weather and rigors of unfamiliar terrain add to the hazards. However, the object of his search will usually welcome him into her den, making all dangers worthwhile.

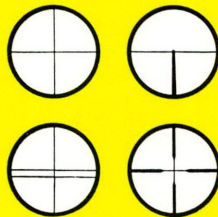
After a brief courtship, the female drives away her mate who returns to an uncomplicated life of solitude. Soon little ones are born, and grow, and disperse to claim their own territory. **

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Letters to the Editor



Misplaced Fangs

I would like to bring to your attention an error in the article "Cobra's Cousin," which appeared in the February issue of *Texas Parks & Wildlife*. On page 12 the statement was made that the coral snake has short fangs in the back of the mouth. While it is true that the fangs are permanently erect, they are located in the front of the mouth.

Ray D. Burkett
Department of Biology
Texas Woman's University
Denton

Triggerfish

While fishing 20 miles out in the Gulf of Mexico off Port Mansfield, I caught some fish identified as triggerfish. Each weighed about one and a half pounds, was thin, had a trigger-shaped dorsal fin, a moon-shaped head, and a very large gullet. Their grey skin was sandpaper rough and leathery, rather than scaly. I would like information on habits and proper name of these fish. They were very good to eat.

Aaron B. Springer
Harlingen

Triggerfish are so named for the peculiar locking mechanism of the three dorsal fin spines which allows the fish to compress its body and wedge itself into coral reef crevices to escape from larger fish.

However, the description of your fish sounds more like a filefish, closely related to the triggerfish. The filefish has a much narrower body with a prominent dorsal spine located forward, usually over the eyes. It derives its name from its sandpaper-like skin which when dried serves as an abrasive.

Between the mouth and anal fin on both fish is usually a well-developed, distensible pelvic flap resembling a dewlap. This could be the gullet you described. Though filefish are generally not eaten, triggerfish are considered quite good. The location of the dorsal spines, anterior on filefish and posterior on triggerfish, would be the quickest

way to identify your catch.—Terrance R. Leary, Coastal Fisheries Coordinator.

Javelina Questions

A few questions came to mind after reading the interesting article, "Slendered Brush Hog," by Fielding Harwell, June 1968. Are there any facts supporting the belief that peccary carry an intense hatred for snakes and will kill them on sight? Does the collared peccary, *Pecari tajaca*, range as far as South America or is there a subspecies which roams beyond the South Texas border? Might large numbers of hawks in South Texas be considered predators of young peccary, especially the Harris' hawk, noted for its size and strength?

Lawrence T. Cuny
San Antonio

No facts can be found which support the theory that javelina hate snakes and will attempt to kill them on sight.

The javelina found in Texas ranges from Texas to Patagonia in South America. Another species, the white-lipped peccary, is found in Mexico, ranging as far south as Paraguay. This animal is larger than the Texas variety, has no white collar, and is considered more aggressive.

Hawks may kill young javelina, however, there is not enough data to indicate that they are a major predator of this animal.—Fielding Harwell, Wildlife Biologist.

Fish Parasites

When I clean and fillet black bass, I sometimes find a small whitish-yellow sack about 1/16 inch in diameter that moves. It looks like some type of tapeworm cyst. In a bass I caught recently, I found several of these plus a red sack containing a thin red worm very much alive. These creatures were in the fish's flesh rather than in the entrails.

I would like to know what these are, where they come from, and if they are harmful to humans. Can the fish be eaten and are the parasites seasonal?

Thomas Schaal
Mineral Wells

Fish, like most animals are subject to harboring many types of parasites. Fortunately, most of the parasitic worms hosted by fish are not hosted by man.

The whitish-yellow object you found is the yellow grub, a parasitic trematode, *Clinostomum*, which is usually found imbedded in the muscle tissue along the base of the fish's dorsal fin.

Yellow grubs go through a very complicated life cycle beginning the adult stage in the great blue heron. It is next hosted by the aquatic snail which it leaves in search of a suitable fish as the second intermediate host. Here it becomes encysted in the fish's muscle tissue. When the great blue heron eats a fish so infested, the yellow grub develops into an adult and from this stage the cycle repeats itself.

As regarding the red worm, more description would be necessary before a definite classification. Perhaps it was a nematode often found in the body cavity of the fish surrounding the viscera. Tests reveal no difference in the condition factors of fish free of nematodes and those containing them.

Ordinary cleaning of the fish will remove practically all parasitic worms with the exception of the yellow and black grub. These are not hosted by man and not injurious if eaten, especially if the fish is well cooked.—Marion Toole, Inland Fisheries Coordinator.

BACK COVERS

Inside: The laughing gull, named for its *ha-ha-ha-ha-ha-ha-ha* cry, is a permanent resident on the grassy salt marshes of the Gulf coast. Photo by Reagan Bradshaw.
Outside: The Pecos River canyon near the Rio Grande will soon be covered by the waters of the new Amistad Reservoir. Photo by Bill Duncan.



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