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PARKS & WILDLIFE



March 1975 • 50¢



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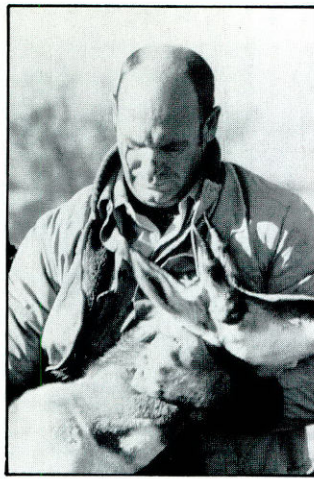
**TEXAS PARKS & WILDLIFE
magazine**

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

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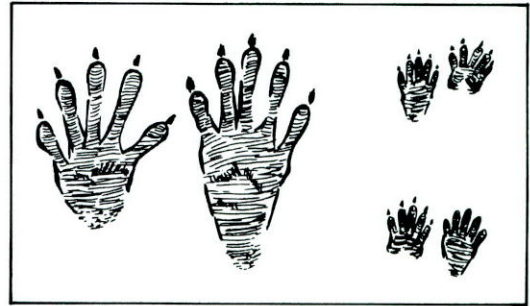
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Front Cover: Early March finds the whooping cranes in Texas on the Aransas National Wildlife Refuge, but by the end of April, the majestic birds have begun their return flight to nesting grounds in northwest Canada on Wood Buffalo National Park. Photo by Bill Reaves.

Inside Front: Three miles of primitively beautiful nature trails await the visitor at the Aline McAshan Botanical Hall and Arboretum in Houston. Photo by Frank Aguilar.

Wildlife Crisis

Bill Reaves

in America

by Jim Stingley
Reprinted from TRUE
Magazine, January, 1975

In Oregon, the State Wildlife Commission has put up a for-sale sign on a 2,500-acre game management tract.

Almost 3,000 miles away, the Vermont Fish and Game Department has closed down four of its six fish hatcheries—and eliminated 19 needed enforcement positions from the department.

Neighboring New Hampshire has shut down its pheasant farm.

The state of Washington has cut its entire fish hatchery program by 20 percent.

The number of fish planted in Idaho's public lakes and streams is about to be cut by a whopping 45 percent.

Current plans in Arkansas call for a total shutdown of all contemplated fish and game projects—even those projects that may have already been

approved. "This means that there will be no new public fishing lakes, no new wildlife management areas, no new boat ramps or public parking areas," says Fish and Game Commission Director Andrew H. Hulsey.

The dilemmas faced by those six states are a representative sampling of what inflation is doing to fish and game departments all across America. Of the 50 states interviewed by TRUE, 37 reported themselves in situations ranging from bad to critical. The costs of running these wildlife agencies have doubled—and are presently *doubling again*.

In addition, 34 states report significant to sharp increases in wild-game poaching that are directly related to the stumbling national economy. Americans are taking to the woods in record numbers to try to relieve some of their

own economic problems, the states report. The surge of illegal hunting has placed incredible strains on wildlife departments that already have, for the most part, been unable to cope with a "normal" bad situation.

What makes the situation worse for the fish and game departments than for other publicly funded state agencies during these hard-money times is the fact that with the exception of five states—Alaska, Florida, Georgia, Connecticut and Delaware—these departments depend primarily on the sale of hunting and fishing licenses to finance their operations, rather than general tax-revenue funding allocated by state legislatures. In the past, the license-fee route was preferred because the less these agencies had to ask the legislatures for, the more independence they enjoyed as sepa-

rate, self-supporting agencies. In that way, the agencies avoided the politics involved in the distribution of public monies.

But times have changed in America. While the number of people who hunt and fish has been declining (until this year), the population has soared. And the general population, particularly in the past 10 years, has put pressure on these agencies by seeking more space in the outdoors for non-hunting and non-fishing recreational purposes. Added to that have been semi-successful attempts by anti-hunting forces to limit the efforts of these departments in the area of wild-game harvest production.

All of this is forcing wildlife agencies to scratch for survival in several different directions. The more stubborn fish and game departments, still believing in total independence, are laying the burden back on the hunters and fishermen. Twelve states are asking their legislatures to approve increases in license fees. Eleven states last year were granted fee increases, as were five states the year before. In nearly all cases, the rate increases sought or received have been from 40 percent (in Oregon) to 150 percent (in Louisiana).

But it appears that license hikes will only be a temporary panacea, at best, and may work against the departments. Vermont, which is hiking its hunting-fishing license fees by nearly 40 percent this year, is playing a game of diminishing returns, according to its Fish and Game Commissioner Edward F. Kehoe. "Every price increase you add," he says, "you lose from 25,000 to 50,000 people. You are pricing the little fellow—and he's the one who has been supporting this program since day one—right out of the market!"

The fish and game agencies of some states are taking a less hard-headed stance by going to their legislatures and asking for general funding for non-game purposes. Texas, Nevada, New Jersey and Maryland have already taken that step this past year, with limited success. But states everywhere are under extreme pressure to hold down spending, and that, coupled with the fact that some legislatures just don't like the idea of having to put money into such an ethereal thing as protection of non-game species, has led to some legislatures turning down their outdoor agencies. Washington, Arizona and Oregon legislatures have turned down their fish and game departments flat.

There are a few state fish and game departments whose situation has

become so desperate that they have all but given up trying to remain independent.

But there's a bright side. Florida is one state in which the outdoor agency has been successful, while compromising, at least on paper, its independence. It is one of the 13 states that was able to report a stable situation—at least at this point. Two years ago, besieged by rising costs and shrinking finances—and aware that the situation was going to worsen—Florida Game and Freshwater Commission Director Earle Frye Jr. went to the legislature and came back with \$2 million. This past year he got another \$6 million.

"We're still hurting," he said. "We're still down 57 employees and we still have a bunch of worn-out vehicles from being so poor so long. But we're getting better."

Frye admits that "ten years ago we didn't want one cent of general fund money." But he has been forced to change his thinking.

"My position has become this," he said. "The time was when our primary concern was hunting and fishing. At that time we were supported solely by hunters and fishermen. But now, with all this environmental kick and the fact that our officers have full peace-officer authority, and the fact that we are taking care of endangered species and non-game species. . . well, it's just time that somebody besides the hunters and fishermen helped carry the load."

New York is another state in which the legislature has provided general funding, which this past year amounted to \$3 million. It didn't solve all the problems but it kept the Fish and Wildlife Division from drastic cutbacks. The division's director, Herbert Doig, echoed Frye's new philosophy when asked if he had hesitated to ask for general funds:

"No way. Not a bit. We now feel it's their obligation. After all, the things we are doing are related to a publicly owned resource. And while sportsmen have been more than willing to pay their share . . . and have paid much more than their share . . . we now feel that the general tax revenue ought to be used simply because all of the people of New York benefit from what we maintain."

Doig admitted opposition to such a move by some sportsmen, particularly opposition to his department's plans to provide more facilities for non-game oriented people. He also admitted many sportsmen there feel that anti-hunting factions in the legislature would have a stronger say on his department's

The Price of State-Grown Fish: 84 Cents a Pound!

How much does it cost to operate a fish and game department?

A lot, if California is a representative state. That state's Department of Fish and Game spends \$30 million a year to maintain all the fish and wildlife within its borders and provide the public with recreational use of these resources.

Each hatchery-bred trout pulled from California's lakes and streams costs the department about 84 cents a pound — 69 cents for production and 15 cents for the cost of planting it.

And each of the 12 hatcheries owned and operated by the department accounts for about \$240,000 annually.

California has 250 game wardens earning between \$840 and \$990 a month. There are a total of 1,390 employees of the department with an annual payroll of \$20 million. In addition, the department buys and operates 780 vehicles which clock more than 10 million miles each year.

Rising costs—everything from payroll, fuel, fish feed and other materials—have forced the department to tighten its purse strings. Increases in hunting and fishing license fees are expected to bring in about \$5 million in increased revenues. But, says an official, if the present rate of inflation continues, that increase will only allow the department to maintain its present scope of operations for two or three years. It leaves almost no room for expansion.

Current policy in California precludes the use of general tax funds for the fish and game department. "But unless we get some additional funding somewhere," says an official, "we're going to have to reduce our programs."

doings because of general funding. But Doig isn't afraid.

"We don't look at it with that much fear. We are a department here, rather than a commission. We have advisory boards to the commissioner but they are appointed at his pleasure and they're strictly advisory. So sure, the

non-hunting people might say they want a say . . . and I agree they should have . . .

"But I think we have adequate legislative support that precludes any push for totally outlawing hunting and fishing. We have had challenges in those directions . . . they came three or four years ago. But they found a very strong reaction both in my division and in the legislature. We met them squarely, even debated them on television and in public meetings. And we came out ahead. Now they have left us alone."

Doig's remarks represent a double turnaround in thinking. As stated, the first fear of fish and game departments about general funding has been a long-standing one based purely on the fact that most departments liked the luxury of being virtually independent. But the fact that Doig has no serious fears of anti-hunting factions (and New York is equalled only by California in people organized to offer vigorous opposition to game harvesting) is an indication that perhaps that particular piece of paranoia may at least be dying down.

Deputy Commissioner Theodore Bampton of Connecticut's Department of Environmental Protection says he thinks all fish and game departments in all states will be forced to go to general funding—simply to stay alive. He says—and he speaks with the experience of being totally financed by general funds since 1959—that while the other states blanch at such a thought, he has had nothing but good come from it.

"They (other fish and game directors) turn pale when I get up and say such a thing. But I grew up with a special fund agency too, and I know the difference.

"Now a lot of the directors think they have independence. But when they tell me they must submit a budget to the legislature for approval before they can expend their funds . . . and that they are subject to all of the laws and regulations governing state personnel, well, they're not any more independent than I am.

"We haven't experienced any increased political maneuvering because we're a general fund agency *and* we are covered by the federal aid programs because the law says they must appropriate to us an amount equal to license sales . . . so that takes care of the so-called Dingle-Johnson-Pittman-Robinson program monies they receive.

"But my best argument," said Bampton, "is simply this: We haven't

had to cut back any of our programs. We're not wealthy and fat. But the legislature has been reasonable in dealing with us and we are better off because of that."

Of course, going to the state legislature for general funding may be a moot point for all the game departments concerned—if the nation's sagging economy continues its downward trend and inflation maintains its upward spiral.

But right now—at this point in time, as someone once said—the nation's fish and game departments seem to have no other tightrope to walk if they are to maintain the operations they already have.

Logically, most state legislatures should, if they are able, be more than willing to come to the aid of the fish and game departments if for no other reason than it's a debt owed by the general public to hunters and fishermen in this country.

It has been well documented that the hunters and fishermen were the ones who, long before the word ecology

became fashionable, stepped in and taxed themselves, their firearms and ammunition, in order to establish permanent systems of maintaining the wildlife crop.

Total protectionists—dare we call them anti-hunting forces—cannot successfully argue that point. Neither can the rest of Americans who enjoy picnics in the forests, bird-watching, exploring tide pools and generally being able to step out into the country and see wildlife.

And the argument that hunters are crazed, blood-lusting idiots set upon wiping out wildlife just doesn't hold water. Some of them might be. But the vast majority are prudent, moderate men. This is best reflected in the fact that in 1974 there was a bumper crop of deer and other wildlife across America . . . more than has ever been seen before in the recorded history of this country. And whether you enjoy being able to shoot a deer, or simply watch it, the fact remains that it is there for either purpose . . . thanks to the fish and game departments. **



Martin T. Fulfer

"... whether you enjoy being able to shoot a deer, or simply watch it, the fact remains that it is there for either purpose, thanks to the fish and game departments."



State-by-State It's All Bad News

ALABAMA

Charles Kelly, director of the Alabama Fish and Game Commission: "We will be forced into a considerable amount of reduction of forces within the next year if we don't get added monies . . . looks like a 25 percent reduction in budget . . . we've already cut back in travel, hiring, equipment, supplies and materials."

ALASKA

James W. Brooks, commissioner of Alaska Board of Fish and Game: "We are suffering perhaps more than any other part of the country. Haven't cut back on personnel yet but we're using older equipment, running it a year longer than we should. Have not been able to construct needed salmon hatcheries and rearing facilities."

ARIZONA

Robert A. Jantzen, director of Arizona Fish and Game Department: "We've just staggered out of a real bad period . . . we've frozen positions, not bought

needed equipment, put people for one year on a mandatory allocation in travel subsistence. We have eliminated any capital outlay . . . any acquisition projects, development or construction projects. We've stopped needed hatchery renovation work . . . we changed our vehicle replacement from 70,000 in three years to 90,000 in four years. We are not filling any vacancies left by attrition. We've been set back three years. We hit a real slump two years ago . . . we tightened our belts and changed the timing on our license applications . . . so we're ok right now . . . for the moment . . . except license sales just dropped again . . . so . . ."

ARKANSAS

Andrew H. Hulsey, director of Arkansas Fish and Game Commission: "We've run out of money. All new projects are going to come to a standstill unless inflation reverses itself. This year we have already cut in half such projects as new public fishing lakes, new wildlife management areas, boat ramps and

public parking areas. Every state game and fish commission has been caught in this thing and most of them I know are almost broke."

CALIFORNIA

G. Ray Arnett, director of California Fish and Game Department: "We've been forced to cut back all our capital outlay . . . cut off all maintenance for fish hatcheries . . . cut off all purchase of capital equipment like tractors, vehicles . . . We cut out all hiring and weren't able to fill 40 positions we need. We're going to need supplemental funds from somewhere fast."

COLORADO

Bob Elliot, director of Colorado Division of Wildlife Department: "We have cut back in fish production . . . hiring. Our trainee program has nine in it . . . normally we try to have 20 to 25. Have not filled some positions . . . cut back in travel."

CONNECTICUT

Theodore Bampton, commissioner of Connecticut Department of Environmental Protection: "Because we're a general fund agency, we're in good shape. No cutbacks yet. We're not wealthy and fat . . . but we have been able to document our needs and the legislature has been reasonable in dealing with us. And we're a lot better off right now than anybody else because of that."

DELAWARE

Darrell Louder, director of Delaware Division of Fish and Game: "We're in pretty good shape . . . mainly because we get general funds . . ."

FLORIDA

O. Earle Frye Jr., director of Florida Fish and Game Commission: "We are hurting a little bit . . . still below complement for employees . . . but we got two million last year and six million this year in general funds . . . so we are a hell of a lot better off than we were."

GEORGIA

Jack Crockford, director of Georgia Game and Fish Commission: "We've had to tighten our belts . . . have not been able to pursue normal growth pattern with personnel."

HAWAII

Michio Takata, acting director of Hawaii Department of Land and Natural Resources: "We had to cut back in all of our programs. We have frozen hiring. We haven't had to lay off any people . . . yet."

IDAHO

Joseph C. Greenley, director of Idaho Department of Fish and Game: "We've had a two-year freeze on hiring . . . cut fish production back by 45 percent . . . had to cut back on mileage, replacement of equipment . . . We've thought about asking for general funds . . . but we're afraid they would get too involved with us. However, it might just come to that."

ILLINOIS

Illinois Department of Conservation spokesman: "Shift of workloads to take on more services . . . department being tightened before inflation with introduction of new governor."

INDIANA

Frank Lockhart, assistant director of Indiana Division of Fish and Wildlife:

"We haven't cut any programs but we may have to in the very near future. We have been put in a position of having to evaluate our whole program and set priorities . . . in that we might not be able to plant quite as much for game cover or food."

IOWA

Fred Prierwert, director of Iowa State Conservation Commission: "We're cutting here and there . . . biggest cuts in mileage . . . gasoline restrictions . . . at this point we're above water . . . but if we keep proceeding this way we will run out of gas pretty soon."

KANSAS

Fred Water, assistant director Kansas Fish and Game Commission: "We haven't made cutbacks . . . yet. Had a surplus which is disappearing quite rapidly. But no difficulties so far."

KENTUCKY

Arnold L. Mitchell, commissioner Kentucky Department of Fish and Wildlife: "No cutbacks yet . . ."

LOUISIANA

J. B. Angelle, director Louisiana Wildlife and Fisheries Commission: "No cutbacks . . . actually increasing services and personnel."

MAINE

Bill Peppard, Maine Department of Inland Fisheries and Game spokesman: "We have not yet had to make cutbacks but we are in the process of putting together biannual budgets and we can see a deficit two years hence. We haven't decided how to try and handle it."

MARYLAND

Ralph A. Bitely, Maryland Fish and Game administrator: "It's hit us like everyone else. We've had to cut back by not purchasing as much . . . like supplies for land management programs."

MASSACHUSETTS

Colton Bridges, assistant director of Massachusetts Division of Fisheries and Game: "We haven't had to cut back our programs but we have had our problems . . . have had to reduce field personnel in management studies . . ."

MICHIGAN

Dr. David Jenkins, director of Michigan Department of Natural Resources: "We've had to let people go . . . ship people around in different funds . . . generally we have reduced all services . . . trying to keep a little bit of everything going."

MINNESOTA

Milo Casey, director Minnesota Division of Game and Fish: "I don't think we have as much a problem as some other states because we don't have a very big population but we do have a very big state."

MISSISSIPPI

Avery Wood, director of conservation Mississippi Game and Fish Commission: "A license increase in 1972 was wiped out by inflation . . . we've had to tighten our belts but haven't had to cut back on anything. But the rising costs will catch us. If we can't afford new equipment now we'll just have to go with what we've got."

MISSOURI

Carl R. Noren, director Missouri

States May Boost Fees

Thirty states have either increased their license fees in the last two years or plan to. The states that have neither asked for, nor effected hikes, are either reluctant to for a number of reasons, or are trying to avoid this action by pleading to their legislatures for general funds. The wildlife departments of the following states have raised their licenses or plan to do so:

Alabama: Will ask in January for 100 percent increase.

Arizona: Hiked two years ago. Asked again in 1973 but was turned down.

Arkansas: Will ask January legislature to double fees.

California: Hike increase set for January.

Colorado: May seek increase in January.

Delaware: Wants increase but undecided.

Idaho: Hike increase set for January, the first since 1963.

Indiana: Hiked non-residents in 1973.

Iowa: Will ask in January for hikes.

Louisiana: Hiked fees last legislature by 150 percent.

Minnesota: Seriously thinking of asking January legislature for a hike.

Mississippi: Hiked two years ago.

Missouri: Hiked in 1974.

Nebraska: Increased big game and non-resident licenses two years ago. They want to hike the resident licenses but are afraid to.

Nevada: Going to ask legislature this month for license hike.

New Hampshire: Doubled non-resident fees, raised others two years ago.

New Jersey: Hiked two years ago and will hike again in 1976.

New Mexico: Increased in 1974.

North Dakota: Thinking seriously of asking the legislature for a hike.

Oklahoma: Will be asking the legislature for a license hike. The last hike was in 1968.

Pennsylvania: Hiked two years ago.

Oregon: Asking January legislature for a 40 percent increase.

Rhode Island: Will be asking legislature this month to double fees.

Tennessee: Asking legislature for hike this month.

Texas: Fees increased in last legislature for the first time since 1957.

Vermont: Substantial hike set for January.

Virginia: 35 percent hike in 1974.

Washington: Hiked in 1971 and will hike again in 1976.

Wisconsin: Licenses hiked in 1973.

Wyoming: Licenses hiked in 1973.

Department of Conservation: "Our operating costs have doubled . . . expansion has ceased."

MONTANA

Wesley R. Woodgerd, director Montana Fish and Game Department: "We are maintaining our programs at this time but our cash flow projections show we are going to be faced with real problems in two years."

NEBRASKA

Willard R. Barbee, director Nebraska Game and Parks Commission: "We had to cut back on services in our park and fish and game areas . . . we are hiring no new people and are not replacing those who leave by attrition."

NEVADA

Glen K. Griffith, director Nevada Department of Fish and Game: "Inflation is killing us. Our utility rates have gone up 45 percent in two years. Fish food is up 104 percent in eight months. The basic cost of one officer in the field has risen 71 percent. We have slowed every program we have and are trying to maintain a top level of service . . . but we are in a situation now that if it doesn't ease, we're going to lose personnel."

NEW HAMPSHIRE

Bernard W. Corson, director New Hampshire Fish and Game Department: "The budget I am submitting in January will have a total deficit of a half-million dollars. We are in a desperate situation. All of our positions are more or less frozen. If a man retires, we don't fill his space. Travel has been cut back from 24,000 miles per officer to 15,000 miles. We had to close our pheasant farm. We've cut back on trout production. This is just what inflation has done to us. It is further compounded by a soaring amount of public pressure on outdoor resources, including my officers being charged with all search and rescue operations in the woods."

NEW JERSEY

Russell Cookingham, director New Jersey Department of Environmental Protection: "We are cutting back now and we will continue to . . . not filling vacant jobs, etc. Hoping for a relief by license hikes."

NEW MEXICO

New Mexico Department of Fish and Game spokesman: "We've had to decrease our capital outlay budget by about 30 percent this past year . . . had to cut back on equipment replacement . . ."

NEW YORK

Herbert Doig, director New York Department of Environmental Conservation: "We've had to cut back on a lot of our direct capital involvement, a lot of the habitat management practices, planning services to private landowners, planned expansion of public use programs, surveys of environmental impact statements. We are unable to expand in new areas we need such as non-game and urban wildlife and fisheries. General tax monies are building us a new Great Lakes hatchery . . . to go on line in 1978. We face the dilemma of how to staff it."

NORTH CAROLINA

North Carolina Wildlife Resources Commission spokesman: "Just able to get by . . . going to legislature for additional funds."

NORTH DAKOTA

Wilbur Boldt, director North Dakota Game and Fish Department: "We're doubling up in cars; cut back drastically on expanding any programs. We were working on a surplus but it's all gone."

OHIO

Ohio Division of Wildlife spokesman: "We haven't had to cut back existing programs but it is affecting us in the availability of capital funds for improvement projects."

OKLAHOMA

I. H. Standefer, director Oklahoma Department of Wildlife Conservation: "We haven't had to cut back on our programs yet . . . but it's staring us in the face. We haven't had a salary increase in two years. We're watching the corners . . . but we're in trouble. Look at it this way. 1975 vehicles cost us \$693 more than '74s. Fish food in 1968 was \$100 a ton . . . now it's \$400. Barbed wire was \$8 a roll four years ago, now it's \$30."

OREGON

Les Zumwalt, director Oregon State Wildlife Commission: "We've had to put a 2,500-acre game management tract up for sale . . . we're closing down one fish hatchery . . . we have put a 25 percent reduction in amount of miles we will allow our people to run . . . we've cut back in every phase except law enforcement . . . we leave some positions vacant . . ."

PENNSYLVANIA

Pennsylvania Game Commission spokesman: "We got hit hard two years ago . . . had to cut back on much of

our land management programs, educational information. But we are actually increasing services a little now, because of belt tightening. But it's just a matter of time until we start curtailing again. We are going to have to find some kind of increase in income. We are a totally self-supporting agency at the moment."

RHODE ISLAND

John Cronan, chief Rhode Island Division of Fish and Wildlife: "No real retrenching . . . but no real expansion either. But if we didn't get general fund money we'd be in bad trouble."

SOUTH CAROLINA

James W. Webb, director South Carolina Wildlife Resources: "We haven't had to really cut back yet, but we haven't been able to expand the programs that need it. Inflation has affected our total program, particularly the area of law enforcement."

SOUTH DAKOTA

Warren Jackson, director South Dakota Department of Game, Fish and Parks: "Haven't had to cut back on any present programs but have not been able to enter any new programs. Inflation has caused us to ignore important expansion areas such as a stream improvement and protection program in the Black Hills . . . a new warm water fish hatchery and rearing pond . . . and a non-game management program."

TENNESSEE

Tennessee Game and Fish Commission spokesman: "Have not had to cut men back but have not been able to expand . . . have had to cut back on wildlife development, equipment . . . wildlife foods . . ."

TEXAS

Clayton T. Garrison, director Texas Parks and Wildlife Department: "It's having a drastic effect. The dramatic cost increase in gas, equipment, paper, clothing and utilities has really hit hard. We've cut back on training programs, mileage and law enforcement."

UTAH

Utah Division of Wildlife Resources spokesman: "We've had to reduce our game habitat . . . reduce fish by 10 percent . . . cutting back on purchase of equipment, land and building . . . not hiring like we need to."

VERMONT

Edward F. Kehoe, commissioner Vermont Fish and Game Department: "We have had to cut back 19 positions

in our small department. That means we have also cut back the equipment that goes with the positions . . . cars, uniforms, weapons. We're really in a big bind. We've had to stop almost completely the purchase of access to streams and lakes. We've shut down two of our six fish hatcheries."

VIRGINIA

James F. McInteer, director of Virginia Commission of Game and Inland Fisheries: "Inflation forced us to raise our fees. The increase has more than adequately taken care of inflation that's taken place. But had we not done that, we would be hurting . . . really hurting. And if inflation keeps going, we will have to retrench on our capital outlay."

WASHINGTON

Ralph Larson, director Washington Department of Game: "We are curtailing many of our programs. We had cut our hatchery program from 2.2 million pounds of fish to 1.7 million. We have cut our bird production, particularly pheasants, because feed went from \$90 a ton to \$220. Fish feed went from 11 cents a pound to 22. Salary increases voted by the legislature have been implemented only by half. Now they want to implement the other half plus what it takes to keep state employees up to date for the next biennium . . . and if we don't get additional revenue to do that there will be a substantial decrease in programs or a laying off of people."

WEST VIRGINIA

Dan Cantner, assistant director West Virginia Department of Natural Resources: "We've frozen hiring, cut back on vehicle usage. We no longer have funds to staff any new land areas we might acquire as gifts. But the increase of license sales has kept us from curtailing present services."

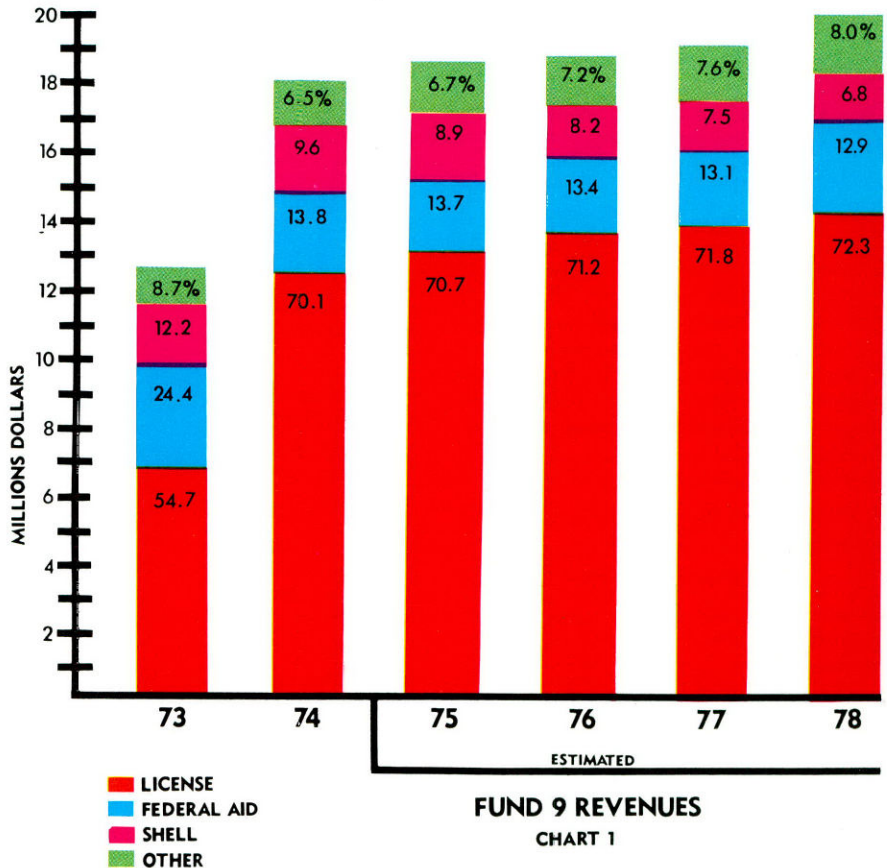
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Kent Klepinger, assistant director Wisconsin Department of Natural Resources Division of Forestry, Wildlife and Recreation: "We anticipated and haven't had to retrench . . . but only because we got an increase in fees."

WYOMING

Earl Thomas, assistant director Wyoming Game and Fish Department: "We haven't cut direct personnel but we're not hiring a lot of new people. We have felt inflation principally in the areas of construction and capital outlay . . . such as hatcheries, warden stations, district offices, patrol cabins, elk fences." **

The Texas Situation



by Tim Leifeste

The preceding article, "Wildlife Crisis in America," raises many questions concerning the future status of game and fish programs in Texas. This will attempt to answer those questions and shed some light on what has been termed "a very critical situation facing this department in the years ahead."

How are game and fish programs of the Texas Parks and Wildlife Department funded?

All of the game and fish programs are financed by Special Game and Fish Fund Number Nine, commonly and simply referred to as Fund Nine, which was created by the State Legislature in 1947 to link together all of the revenue resources previously established by

statute. This law states in part that "no funds accruing to the State of Texas from hunting license fees, fishing license fees, commercial fishing boat license fees, oyster license fees, net license fees, trawl license fees, seine license fees, or from any other fees collected by the former Texas Game and Fish Commission, or from any other funds received by the former Texas Game and Fish Commission including fines as a result of action taken by any court for a violation of any game or fish law; or receipts from the sale of shell, sand or gravel shall be diverted for any other purposes than for making necessary studies and management of the fish and game resources of this State and for the expansion and development of addi-

tional opportunities of hunting and fishing in State-owned land and waters for the benefit of the public wherever practicable and to embrace wherever feasible the principle of multiple use of our land and waters for better hunting and fishing opportunities. The special Game and Fish Fund shall be used for the purposes provided herein and for the purposes as now described by law and nothing shall be done to jeopardize or divert this Fund or any portion thereof including Federal aid..."

Thus, ONLY game and fish programs are supported by Fund Nine; not a cent goes into other department projects. Under existing statutes, funds, from other sources have not been and cannot be used for game and fish projects.

Fund Nine also includes federal aid monies in the form of this state's share of the federal excise tax on firearms and ammunition. See Chart 1.

What are the other department funds, their sources and statutory purposes?

General Revenue Fund No. 1—From Legislative appropriation, for park purposes and for non-game and endangered species program.

Park Fund 31—By allocation of cigarette tax, for planning, acquisition and development of state parks and historic sites.

Park Fund No. 59—From fees for boat registrations and by allocation of unclaimed motorboat fuel tax, for cost of registration, purchase of access ways to public waters, construction of boat ramps and maintenance of same and for acquiring land for recreational purposes and enforcement of the Texas Water Safety Act.

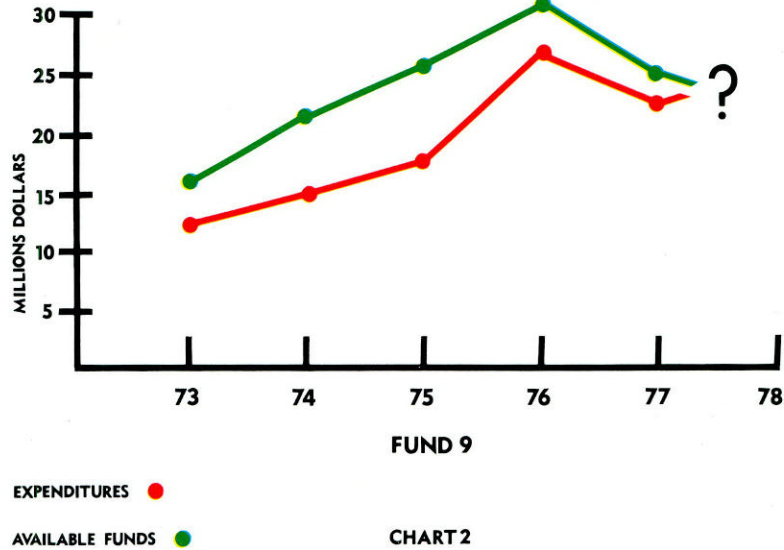
State Parks Fund No. 64—From operation of concessions, for state park operations, maintenance and improvements.

Conservation Fund No. 223—From federal participation contracts and grants, for planning, acquisition and development of outdoor recreation areas.

Park Mineral Fund 267—From leases, rentals, royalties, prospecting, mining, oil, gas and minerals, for the administration, maintenance and operation of state parks.

Park Development Fund 408—From sale of Texas Park Development Bonds, for acquiring and developing sites as state parks.

Interest and Sinking Fund No. 409—To receive transfer receipts from funds provided by statute, to receive net receipts from entrance and gate fees and investment receipts, to pay prin-



cipal and interest on Texas Park Development Bonds, exchange and collection charges.

Park Account No. 941—From gifts, personal property, cash and dividends, for maintaining granted premises at Varner Hogg State Park.

Trust Account No. 965—From entrance and gate fees and depository interest earned, for administrative and operation cost of collecting entrance and gate fees, and to transfer net receipts to Park Development Fund No. 409.

What is the outlook for Fund Nine in the years ahead?

Unless other sources of funding are provided, projections indicate that at the end of the 1976-77 biennium projected expenditures will reach anticipated available funds. See Chart 2.

What then?

All of our programs have been and will continue to be designed to stay within the framework of existing revenues or projected revenues. Therefore, once we have reached that expenditure—available funds meeting point sometime in 1977 or 1978 there are only three choices: cut back on existing programs, find some other source of revenues, or a combination of the first two.

Partially in anticipation of this situation, each current and future program will be evaluated to determine its value to the people of Texas. A program evaluation section has already been set up for this purpose with internal auditing to improve efficiency and operation.

Consolidation of programs and functions within the department will certainly be considered.

Has the department already started cutting back and in what areas?

Training programs, mileage and law enforcement, as well as our planned fish hatchery expansion program have been cut back already. The first three were cut back due to the cost increases in gas, equipment, paper, clothing and utilities.

Would cutbacks necessitate a cutback in personnel?

Only through normal attrition, that is, not replacing those who may leave for retirement or other reasons. Normal expansion of programs and personnel, however, would certainly be affected.

Other states have turned, or will be turning to general revenue funding for their fish and wildlife programs. Has Texas contemplated such a move?

Texas House Bill 260 allocated \$120,000 in general revenue funds in 1973-74 and 1974-75 to studies related to the preservation and management of non-game and endangered fish and wildlife species. A small portion of our environmental program is also funded by General Revenue Fund No. 1.

Will hunting and fishing license fees be increased to meet the situation?

This has been virtually ruled out in the foreseeable future. License fees were increased in 1973, the first such increase since 1957 and only the second since 1919. **

OUTDOOR BOOKS

COUNTRY WISDOM by Jerry Mack Johnson; Doubleday & Company, Inc., 245 Park Avenue, New York, N.Y. 10017, 1974; 153 pages, \$6.95.

Everyone has probably heard the adage that a cold winter follows a fall when animals have thicker coats than usual. It's hard to discredit these omens when they happen, even though they can't be scientifically documented as truth. That's why books like the *Farmer's Almanac* have been written.

A native of San Angelo has written his version of an almanac containing rural lore and facts about nature. However, his term for the book's contents is "country wisdom."

This book differs from the *Farmer's Almanac* because it is not written for a calendar year. Instead the book is divided into chapters and lists generalities for making predictions.

Even for the non-superstitious, the book is interesting to say the least. One chapter entitled Country Cooking contains some old family recipes for cooking and preparing wild game. Another chapter on rural remedies relates some practical and humorous concoctions used by people before doctors were common. Still another fascinating chapter on fishing and hunting discusses animal ways and hunting by signs and weather.

Most of the adages, omens, rhymes and old wives' tales contained in this book were handed down through several generations. Many you will have heard before while others will be new—and some may make you chuckle out loud.—Terrie Whitehead

MARINE AQUARIUM GUIDE by Frank de Graaf, photographs by A. van den Nieuwenhuizen; Doubleday & Co., Inc., 245 Park Avenue, New York, N.Y. 10017, 1973; 283 pages, \$4.98.

Anyone can successfully manage a few goldfish in a bowl, and some even do well with tropical fish in an aquarium. But have you ever considered the possibility of starting your own marine aquarium, with saltwater fish?

After reading this book, you will no

doubt be surprised at how easy it can be. Many people have misconceptions about this sort of hobby and think it is only for the experts.

However, the author is quick to emphasize important points and to anticipate potential trouble spots for the beginner. His attitude is candid as he readily admits that operating such an aquarium is not without responsibility.

The author begins with the ocean, explaining properties of salt water and the conditions necessary for fish to survive in the saltwater environment. Then he discusses aquariums and recommends several non-corrosive types in various price ranges.

Finally, the author discusses setting up the aquarium and feeding and caring for the fish. To tempt the reader into sharing his unusual hobby, the author inserts color photos of brightly colored fish which can be stocked in a marine aquarium.

It would probably be impossible to obtain all the information contained in this book from a fish dealer. With the knowledge this book contains you could probably start your own marine aquarium with little difficulty. —Terrie Whitehead

FIELDBOOK OF NATURE PHOTOGRAPHY by Patricia Maye; Sierra Club, 1050 Mills Tower, 220 Bush St., San Francisco, Calif. 94104, 1974; 209 pages, \$6.95.

Knowledge and skills required of a hunter are almost the same for a nature photographer. That's why photography is such an appealing and compatible hobby for many sportsmen.

This small, pocket-sized manual was designed for the outdoorsman's convenience, and is directed at those with a specific area of interest within the field of photography.

Fieldbook of Nature Photography was not written for those persons using a small snapshot camera. Although the book does contain some information that may be applied to them, it is primarily aimed at the next bracket of cameras, those with focusing lenses.

The author does not assume the

reader understands photography rudiments, and takes the process in sequence from the mechanics of cameras to techniques for various types of pictures using whatever equipment you have. Probably the most fascinating tidbits included are secrets used by professionals to play with nature and manipulate mediocre weather conditions to an advantage.

For the beginner with a new 35mm camera, the text may contain too many concepts to comprehend at once. It might be better to first skim it and then go through the book slowly as an experimental workbook.

Experienced outdoorsmen may find the chapter on locating photographic subjects and dressing for the occasion a little dull. However, it may include a few new ideas and give a good review for precautions.


As the author stresses, the most important chapter is on camera controls. Maye continually refers to this chapter when introducing new concepts that hinge on mechanics.

Although the bulk of this book is text with occasional diagrams and charts, the author does include some photographs. The most simple examples are two identical landscape scenics, one with a filter and one without. This visual example illustrates the difference of a single camera accessory.

To show the reader what can be done with a camera and to spark interest, the author begins with eight color photographs with commentaries by each of the photographers. As professionals, they express interesting views and techniques.

One of them inadvertently summarizes an underlying theme of the book when he says, "The world is full of 'photographers' whose chief activity seems to be fondling or discussing their cameras. And that's too bad, because cameras don't make pictures. People do."—Terrie Whitehead

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LONG SHOTS SHORT CASTS

compiled by Neal Cook

Smokey the Bear Overruled: After campaigning against forest fires for 60 years, the National Parks Service within the past 10 years has found that fires play an integral part in nature's scheme for creating unique environments. Because research has shown that man's control of fires is a contributing factor in vegetative changes in national parks, both naturally-occurring and prescribed man-made fires are now being allowed to burn in 12 parks. In the Florida Everglades it was found that fires kept tropical hardwoods from invading stands of soft pine and were necessary in maintaining sawgrass glades and wet prairies. In the sequoia forests where the world's largest trees grow, forest fires: (1) prepare a seedbed for the sequoias; (2) efficiently recycle nutrients into the soil; (3) set back succession of shade-tolerant fir trees; (4) provide conditions which favor wildlife; (5) establish a mosaic of age classes and types of vegetation; (6) reduce the numbers of trees susceptible to attack by insects and disease; and (7) reduce the hazard of "crown fires" which result when the underbrush gets too dense and then catches on fire, thus allowing the flames to reach the leaves of the giant sequoias.

Be a Safe Hunter: This department administers a voluntary hunter safety training program that every person who uses a firearm should take. This program involves a minimum of six hours of instruction in firearm handling, game laws, conservation principles, field dressing of game and other subjects of interest to outdoorsmen. There is a one dollar registration fee, but each pupil receives a handbook, and upon successful completion of the course, a shoulder patch, identification card and certificate. This is a voluntary course in Texas, but 22 other states require some hunters or all hunters to have passed such a course. Hunters certified in Texas are qualified to hunt in these other states. For information about instructors in your area, contact the game warden in your community.

Sahara Expanding: Since 1966 northern Africa has had below average rainfall which has caused the tragic drought in that country. Now scientists have realized that this drought, plus over-grazing by livestock, is creating conditions which are making the Sahara Desert move southward at the rate of 30 miles per year in some areas. Whether this is reversible or not, is unknown.

New Bird: A "new" bird has been discovered inhabiting a 10-square-mile area of a Hawaiian rain forest. The unnamed discovery is a member of the Hawaiian Honeycreeper family and there are only about 100 to 200 of the 5½-inch-long birds in existence. The area in which the birds were found receives 400 inches of rain annually; therefore, it is not widely populated with scientists studying the bird life.



There is something within all of us that yearns for intimate contact with nature—the quiet solitude of a walk along a forest path, the soothing coolness of a grove of green trees, the refreshing smell of wildflowers, the song of birds or the sight of a squirrel as it scurries about looking for food.

Our everyday stresses and strains seem to melt away at the sight of small birds winging from treetop to treetop or flashes of color from the flowers that inhabit a forest floor.

All of us need these moments of rest and relaxation to escape from the noisy crowds and the press of office and factory. Unfortunately, places to experience these moments have diminished.

Urban sprawl devoured primeval habitats in the name of progress, encasing ponds and streams in concrete, turning meadows into manicured lawns and woodlands into tree-lined streets. Communion with nature is no longer just a short walk from the back door.

As the outward march of the city continued, man's overlooked need for contact with nature also grew. Now this

need has grown to such an extent that it can no longer be ignored. Efforts are finally being made to save what unexploited natural areas we have left. Cities are beginning to look for sites within their boundaries or, failing that, to save what is left of those areas nearby. One admirable example of what can be done can be found in Houston where urban pressures are greater perhaps than in any other city in our state.

Nestled among the concrete and steel of this giant metropolis are over 200 municipal parks and playgrounds including Hermann Park which has everything one could imagine a large city park to have. There's a 42-acre zoo, concessions, nature trails, picnic areas, duck ponds, a train, a golf course and other such amusements. And four miles to the northwest is the 1,000-acre Memorial Park which contains something that one ordinarily wouldn't expect in a city of this size—a 265-acre natural forest with approximately three miles of primitively beautiful nature trails.

Officially known as the Aline McAshan Botanical Hall and Arboretum,

the site and building located there were donated by the McAshan Foundation to provide a children's center for the study of conservation, field botany and elementary ecology.

Acting director of the arboretum and botanical hall is Dr. Robert A. Vines, well-known to any student of botany and horticulture. He and his staff conducted educational programs at the site for more than 17,000 Houston school students last year.

Surrounding the hall is the arboretum, a natural area where native trees, shrubs and herbaceous plants grow in forested, primeval profusion.

Although the educational programs are primarily for children, the trails of the arboretum are open to anyone seven days a week, 8 a.m. to 6 p.m. Monday-Saturday and 1 p.m. to 6 p.m. on Sunday.

Maps are available free at the botanical hall and for just 25 cents, which covers the cost of printing, the visitor can get a guide to the more than 100 plants found there.

You can spend hours walking the trails and discovering the wonders of

Take a Nature Break!

by Tim Leifeste



nature. There is no litter because there are no concessions. Since it is a wildlife sanctuary as well, no picnicking, collecting of specimens or motorized vehicles are allowed on the trails.

Trails lead through ravines, past an armadillo's home, a bee hive and other works of nature. There is a pond surrounded by towering trees and filled with turtles, frogs and an abundance of minute aquatic life. It's peaceful and relaxing.

Texans need more quiet places like this for retreat; but there is still much work to be done in meeting the present and future needs of our citizens for wild park areas, before it's too late.

What our children will inherit is our responsibility just as it was our forefathers' responsibility. But our responsibility is even greater, to save what is left from the shortcomings of our inheritance.

Perhaps Dr. Vines summed it up best as we sat talking in his office at the arboretum last spring:

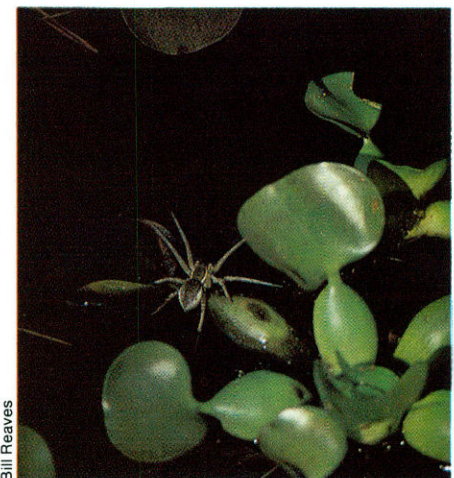
"If a tree falls out there, we leave it. That's part of nature's plan and we try not to interfere. That's what we try to teach the children who come here. Ecology is many things together; and what happens in the woods, happens to us personally." **



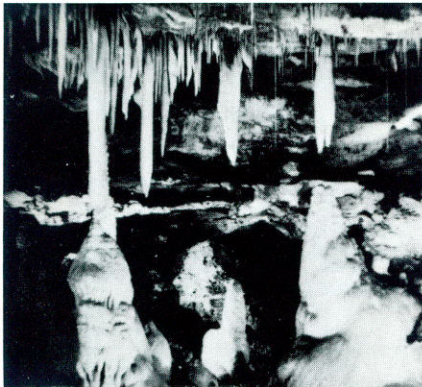
Bill Reaves



Many discoveries await those who take time out to commune with nature and escape the stresses and strains of modern-day living. Nature's wonders abound at the Houston arboretum, a 265-acre forested retreat in Texas' largest city. One visitor (left) seems taken with the beauty of the delicately petaled coneflower which can be found growing alongside the many trails winding through the arboretum's primeval environment. At the pond, one can observe a bronze frog surveying his domain from atop a log while nearby a fishing spider takes a needed rest among the water hyacinths.



Bill Reaves

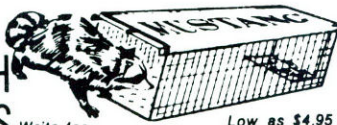


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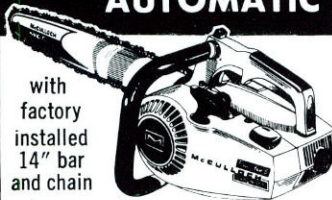


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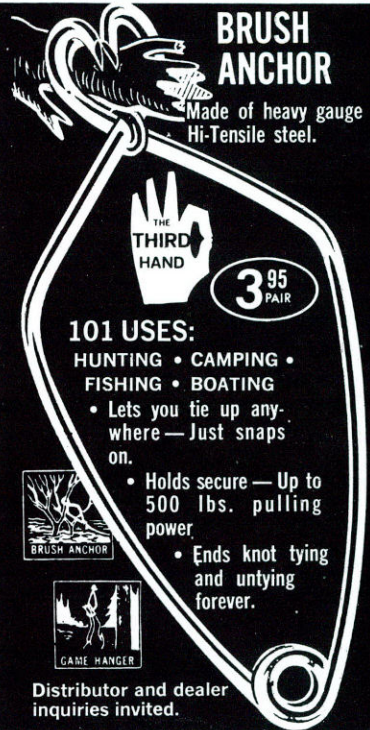
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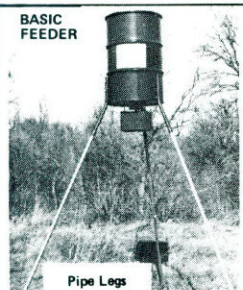
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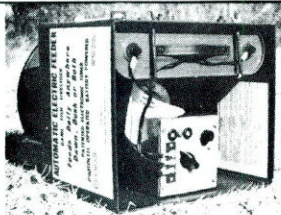
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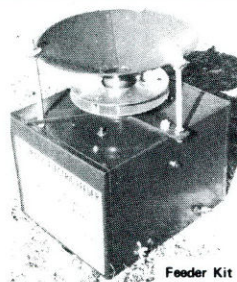


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Pronghorn Progress

by George Litton, Regional Director for Wildlife, Waco

In the past 100 years the numbers of pronghorn antelope in Texas have fluctuated greatly. Recent efforts by this department are aimed at increasing this number and returning these fascinating animals to part of the lands where they historically ranged.

Records indicate the pronghorn was numerous in Texas prior to 1880. One observer, Baird (1859), reported that west of the Pecos River "droves are observed dotting the most open and naked prairies." Reports established the former eastern edge of the pronghorn range in Texas at about the 97th meridian, a line which intersects Texas between Fort Worth and Dallas, passes through Waco and extends to the Rockport and Aransas Pass area.

Following the building of the railroad to the West came the increase in human populations and subsequent settling of the western part of the state. Between 1880 and 1900, excessive hunting pressures by meat and market hunters, coupled with the marked change in land-use practices, brought about dramatic decreases in pronghorn antelope numbers.

In 1903 a closed season was established on the

species but illegal hunting and other detrimental factors prevented an immediate increase. Not until 1924, through preservation efforts by individual landowners and intensified protection by state game wardens, did pronghorn numbers begin to increase.

Since these early days, pronghorn numbers have fluctuated according to rainfall, range conditions, urbanization and land-use practices. Today, pronghorn antelope in Texas are estimated to number approximately 12,000.

Through the years, vast acreages of Texas rangeland, which at one time were considered to be historic pronghorn range, have been fenced with net wire, grazed by domestic sheep and cultivated. Although pronghorns have the ability to jump, they either choose not to or simply have not learned to jump fences. Net wire fences were established to retain domestic sheep, but they also effectively prevented pronghorn antelope movement. Pronghorns must have large acreages on which to forage for food. Sheep-wire fencing forced them to remain in pastures with domestic sheep, and they were unable to compete for





Keen eyesight and the ability to run at speeds of 50 miles an hour protect the pronghorn from predators, but its real enemy is the confining net-wire fence.



Jim Whitcomb

food when range conditions became poor. Because of these various factors, large numbers of pronghorn died, and fencing prevented a natural restocking of the species in these areas.

To overcome these barriers, restocking efforts were conducted as early as 1939 and continued intermittently until 1956. During this time some 4,069 pronghorns were trapped and released in other areas of the state.

Since that time only small restocking efforts were attempted until 1972 when the Texas Parks and Wildlife Department once again embarked upon a restocking program.

Changes in land-use practices during the last decade returned large tracts of land to what was considered good pronghorn range. Many large ranches stopped running sheep or drastically reduced sheep numbers. In many instances, net wire fences were no longer maintained or were replaced with barbed wire fences which pronghorn can go through or crawl under. Even more important, a large West Texas ranch allowed this department to trap and transplant pronghorn antelope from it to other areas of the state, (a source of broodstock had not been available for quite some time).

During early-day trapping operations, men on horseback were used to round up the animals. Later, small, fixed-wing aircraft were used. Both of these methods worked with varying degrees of success, but the lack of instant maneuverability often resulted in losing a herd which was almost in the trap.

Once a trapping attempt failed, the pronghorns became "trap-shy." Frequently, new herds had to be located, and often it was necessary to move the trap to a new area.

During 1972-73 this department used a two-place helicopter as the "cutting horse" for herding and driving the animals. It was found that an experienced pilot, accompanied by an observer who assisted in maintaining direction and locating small bands of pronghorn, could quickly gather the desired number of animals and begin the drive towards the trapping site. Trapping success, using the chopper, was very good.

The pronghorns were often found in small groups which were herded together until approximately 75 to 100 animals had been rounded up. Once the desired number of animals suitable for stocking was gathered, the helicopter moved them towards the trap. It was often necessary to move the herd for distances of three to four miles. On these long drives the pronghorns were moved in short-interval stretches. After each move, the helicopter would back off and set down to allow the animals time to rest and relocate themselves. If driven for too long, they became disorganized and almost impossible to keep together.

After a short rest, they were again driven towards the trap. Once the animals neared the wing of the trap, constant pressure was maintained to keep them moving forward.

The trap was constructed of cotton-cord net



Jim Whitcomb

suspended by cables attached to steel posts which were positioned outside of the trap to prevent injury to the pronghorns. A funnel or wing constructed of net wire fencing led into the trap which was positioned over a rise of ground so as to be concealed from the approaching animals. Once the helicopter herded them into the funnel, the concealed trapping crew rushed across the end of the funnel and trapped the animals inside. A long piece of white muslin cloth was carried by the drivers and served as a barrier to prevent the pronghorns from running between the drivers and escaping. Once the funnel was sealed off, the drivers walked towards the trap, holding the muslin at waist-level, and forced the pronghorns into the trap pen.

They were allowed to rest for a short period. Then the trappers entered the pen and began to herd eight or 10 animals at a time into the smaller catch pen at the end of the trap. At this point things became rather "western." All available hands rushed into the pen to catch the pronghorns. This resulted in considerable physical contact between man and animal. Men received torn clothing, hoof-print bruises, occasional abrasions and black eyes. The pronghorns only suffered a considerable loss of their easily shed hair. Once the dust cleared, they were carried out of the

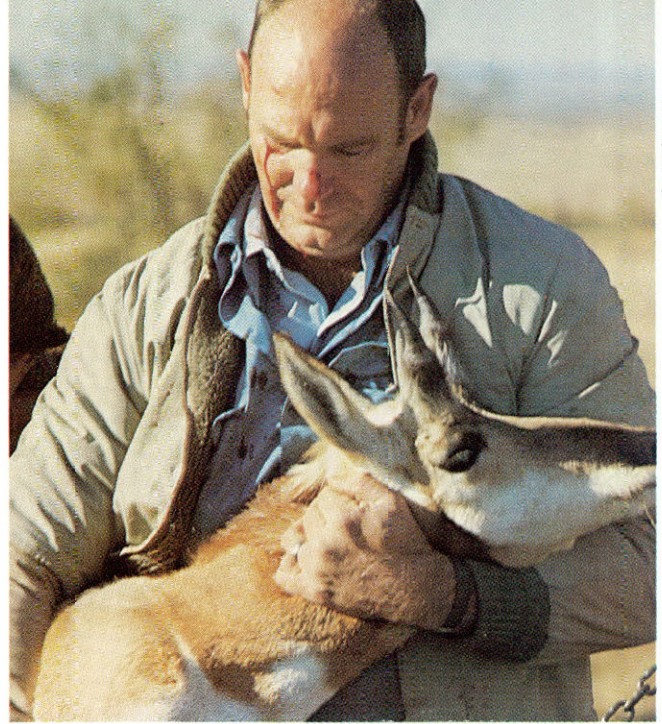


pen and loaded into covered trucks and trailers.

In past trapping operations, death losses in transporting had been relatively high. During these last two years, however, each animal was given two injections before being loaded for transport. Antibiotics were injected to reduce any chances of infection which might have resulted from injuries received during trapping, and a mild tranquilizer was administered to calm the animal during transportation to reduce the chances of any further injury. Death loss during both years amounted to less than three percent. This is considered an exceptionally low loss rate when trapping and moving any wild, big game animal or even domestic livestock in large numbers.

Trapping operations both years were conducted during November because biologists felt the fall breeding season would be completed by that time and all the doe antelope that would normally be bred would have already conceived, but still be in the very early stages of pregnancy. This reduced possible loss to premature birth. Also, male pronghorns, unlike true antelope, shed their horns around mid-October and are less dangerous to handle at this particular time of the year. Cool weather was also deemed necessary to prevent losses brought about by the animals becoming overheated.

During the two-year trapping operation which consisted of 18 trapping days, 1,117 pronghorns were captured and moved to transplant areas. Sixty-four



Jim Whitcomb

To prevent the pronghorns from running between the drivers and escaping, a white muslin cloth barrier was used (extreme left top). The smaller pen (extreme left bottom) made catching the animals easier, but an occasional injury resulted (top) during this period of physical contact. Antibiotics and a mild tranquilizer were injected (below) to reduce pronghorn death losses due to infections and transportation stresses.



Jim Whitcomb


release sites were restocked, and approximately 20 animals, depending upon number and sex composition of the herd when trapped, were released at each site. When possible, eight bucks and 12 does were released together.

Inspections of the 1972 pronghorn release areas indicated that adult survival on these areas after a year was exceptionally good. Biologists could account for 90 percent of the animals released. Fawn production was somewhat lower than normal, but this was expected due to the stress encountered during capture and transportation and the adjustment to being placed into a completely new and different habitat. Production after the first year of transplant is expected to

be much better if weather and range conditions are favorable.

Should these releases be successful, the pronghorn antelope may be restored to approximately 1,500,000 acres of historic pronghorn range on which herd numbers had declined to the point of being nonexistent prior to these releases. No hunting will be allowed on these areas for three years and possibly for a period of six years, depending upon reproductive capacities of the individual releases.

The goal or end result of this program is to restore the pronghorn to at least a portion of its historic habitat and to provide additional hunting opportunities for tomorrow's Texas hunter. **




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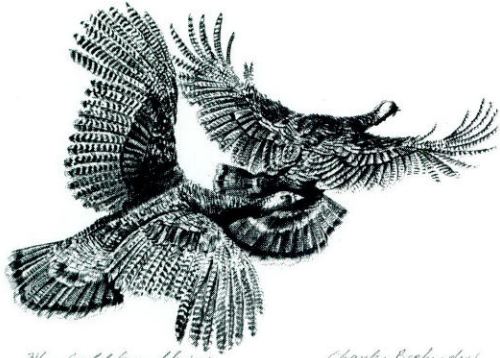
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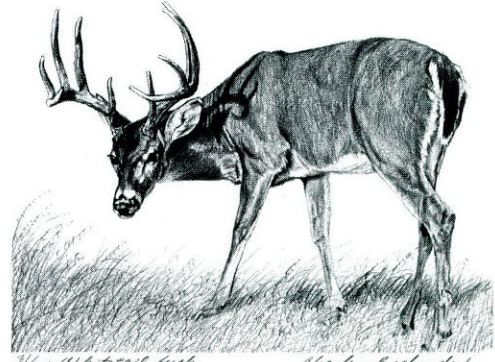
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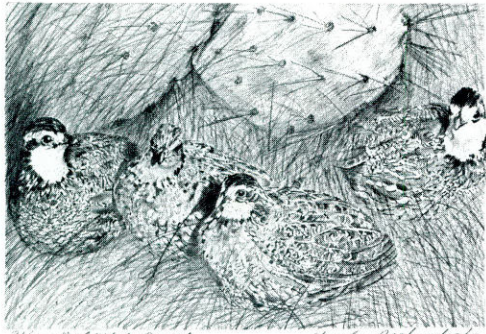
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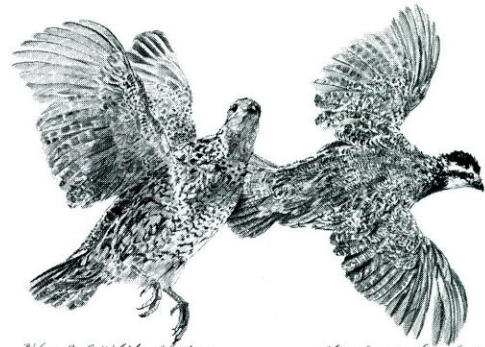
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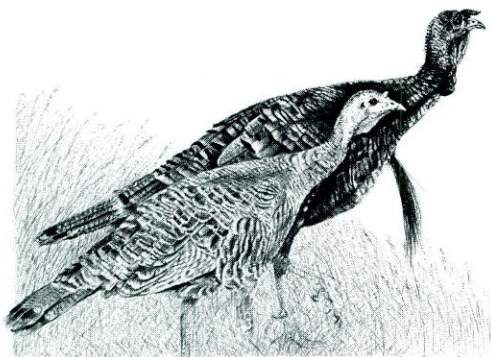
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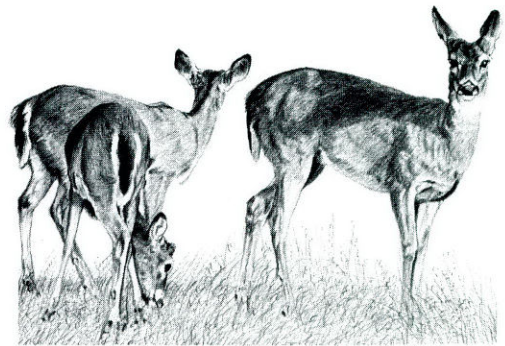
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MISSION CATTLE RUSTLING

by Wilson E. Dolman, Historian,
Interpretation and Exhibits Branch

Cattle rustling has long been a popular topic with writers of 19th-century western history. In Texas, however, disputes over stock and range ownership go back even earlier—to the Spanish mission period.

In 1778 San Fernando de Bejar, a small, sleepy civil settlement near the presidio of San Antonio, was suddenly rocked by a major scandal. Sixteen citizens, including several prominent men, were accused of stealing cattle belonging to the Mission Espíritu Santo, now a part of Goliad State Park.

All denied any wrongdoing, but admitted they had rounded up and branded cattle. Most of the accused claimed the cattle were their own; two petitioned the governor that they were running the cattle at the command of their fathers; and one imaginatively declared he was searching for his lost horses when he met with the cattle thieves. The defendants' claims that they were simply rounding up strays had some validity, however, and illustrated a major problem in Spanish Texas—the lack of regulation in the cattle industry.

Spanish Texas offered few ways to earn a living, but raising cattle was one of the most important for all segments of the population—civil, military and mission. Espíritu Santo Mission, with

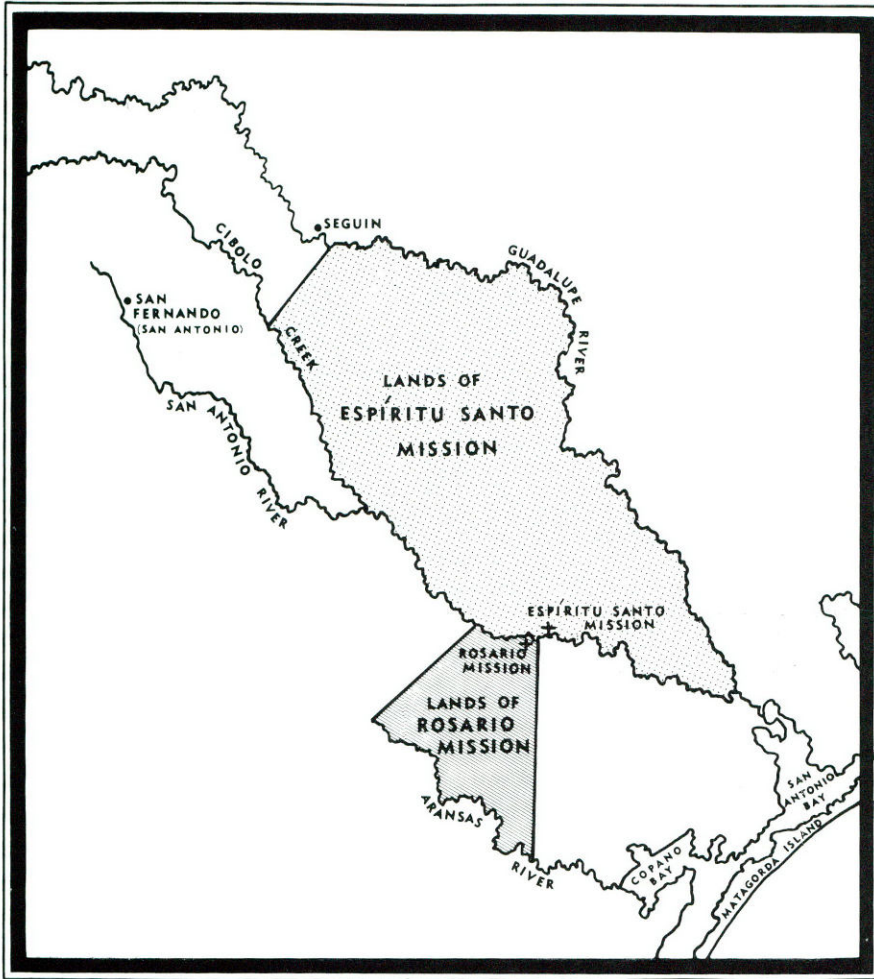
the largest cattle ranch in the province, owned more than 15,000 head of branded cattle and an unknown number which were unbranded. Except for the land between the San Antonio River and Cibolo Creek, the mission owned the entire area between the Guadalupe and the San Antonio rivers north of the point where these two rivers merge (see map). The northern boundary was undetermined in 1778, but the mission made no claim to lands above present-day Seguin.

Rosario Mission, located across the San Antonio River four miles from Espíritu Santo, was the second largest owner of land and cattle. It possessed around 10,000 branded cattle and a large expanse of territory between the San Antonio and Aransas rivers. The lands of the San Antonio missions, while less extensive, were still large enough to cramp the civilian stock owners of San Fernando since they encompassed most of the area between the San Antonio and Guadalupe rivers not claimed by the Espíritu Santo Mission. Several of the most prominent families of San Fernando owned ranches on the San Antonio River near Cibolo Creek where there was the possibility of conflict over ownership rights with both the missions of San Antonio and Espíritu Santo.

But land was not the immediate source of the problem in 1778. The actual disagreement was over the unbranded stock. If the residents of Spanish Texas had rounded up and branded their cattle regularly, there would have been few disputes over ownership, but such was not the case. Spanish cattle were scattered from Nacogdoches to the Rio Grande, and systematic roundups required planning, cooperation and manpower. The missions in particular lacked the labor force for regular, large-scale roundups because their Indian populations were neither large nor dependable. Settlers of San Fernando did not round up their stock for years because of the constant threat of raids by the Lipan Apache and Comanche Indians. These raids







reached a peak of ferocity during the 1770s. Consequently, it was easier and far safer to gather the cattle immediately accessible to satisfy current needs and leave the rest to roam wild. This situation had virtually paralyzed the ranching industry until 1778, when the residents of San Fernando made an effort to round up their scattered stock.

The roundup might not have taken place that year had it not been for a decree issued by Teodoro de Croix, Commandant-General of the Provincias Internas de Mexico. During 1777 and 1778, Croix made an inspection tour of the northern provinces of New Spain, including Texas. Always on the lookout for new sources of tax revenue and aware of the limited amount of taxable property in Texas, Croix noted that the wild herds of cattle were the principal wealth of the province and that, contrary to custom and to law, they were unbranded. Since Spanish law provided that ownerless stock, known as *mesteñas*, belonged to the King, Croix's decree explicitly extended the law to Texas and claimed the unbranded cattle for the King. Croix gave the ranchers of Texas six months to round up and brand their stock. After that time the decree would go into effect, and the ranchers could claim wild or unbranded stock and put their brand on it only after paying a tax of



four *reales* (equivalent to one-half peso) per head into the *mesteñas* fund. In that way, the wild cattle would yield a revenue to the King without the government having to exercise any ownership responsibilities.

Knowing that it would be impossible to round up all of their cattle, the ranchers and mission priests protested vigorously. The priests could do little else since using the few mission Indians available to round up cattle would be regarded as an invitation for the Indians to take to the woods. The ranchers of San Fernando, however, organized a roundup to gather what cattle they could. The temptation to cross Cibolo Creek onto the lands of Mission Espíritu Santo was especially strong since the ranchers were certain that **some** of their stock had strayed in that direction. Thus, one of the accused later admitted that he had stolen cattle from the mission, but he sought exoneration because **some** of the cattle were certainly his.

Because of the size and importance of the roundup, it was impossible to prevent the Governor of Texas, Juan Maria Vicencio de Ripperdá, from learning of the transgression against the mission. For their part, the Franciscan fathers of the mission were adamant about protecting mission property, both from the ravages of cattle-thieving ranchers and from the grasp

of the King's representatives.

A full-scale investigation of the roundup ensued. All of the accused were required to make a deposition, from which the governor determined that a trial was warranted. The governor, acting as judge and jury, confirmed Mission Espíritu Santo's title to the lands between the Cibolo and the Guadalupe. It followed, therefore, that because the defendants had penetrated 12 or more leagues (30 miles or more) into the mission's pasture, they were guilty of stealing mission cattle.

The weight of the law and the authority of the church and state forced the defendants to admit their technical guilt and ask for pardon from the governor. Nonetheless, they all denied they had committed any heinous crime and requested that, in light of the confused circumstance of the cattle industry at the time, consideration be given to their property rights to the cattle they had branded. As one petitioner explained, he was a cattle breeder and therefore innocent of stealing cattle since it was a time-honored custom for ranchers to put their marks on unbranded stock. Upon requesting pardons, all of the convicted were released from custody within a year.

The events of 1778, however, did not end the problem of cattle ownership in Spanish Texas. Indian depredations continued to impede systematic

roundups; settlers either failed to report or underreported brandings of ownerless stock to avoid paying the *mesteña* tax; conflicts between the missions and the ranchers flared up from time to time; and charges of theft of mission cattle regularly appeared in the records. Essentially, the arrests of 1778 marked the beginning of widespread disputes over cattle, disputes that portended some aspects of the future Anglo cattle industry as well. Thus, the famous 19th-century struggles over range and the ownership of unbranded or maverick cattle were preceded by similar incidents which occurred under Spanish rule in 1778.

The ranching activities of Mission Espíritu Santo are among the subjects covered in exhibits to be placed in the restored mission for visitors to Goliad State Park (one mile South of Goliad on US 183) by the Parks and Wildlife Department.

Other state-owned attractions in the vicinity for visitors include the ruins of Rosario Mission, General Zaragoza's birthplace, Fannin Battleground and Fannin Monument. In addition, there is the restored, privately-owned La Bahia presidio which is operated by the Kathryn Stoner O'Connor Foundation.

These historic sites, clustered conveniently together, provide the visitor with a fascinating look into Texas' historical heritage. **





Parasites and Squirrels

by W. T. Wright and Bob K. Barsch, Wildlife Biologists
Contribution of Federal Aid Project W-77-R

While monitoring the status of gray squirrels, *Sciurus carolinensis*, in Southeast Texas, wildlife biologists noted over 50 percent were infected with internal parasites.

Five species of internal parasites were identified, however, biologists concluded that if squirrels have adequate food sources, these parasites have very little effect on their body condition.

Most hunters are repulsed by the more showy internal parasites, such as the tapeworm, and may discard heavily-infected animals. However, parasites do not affect the eating qualities of the meat, nor do they pose any threat to humans who handle or eat squirrels.

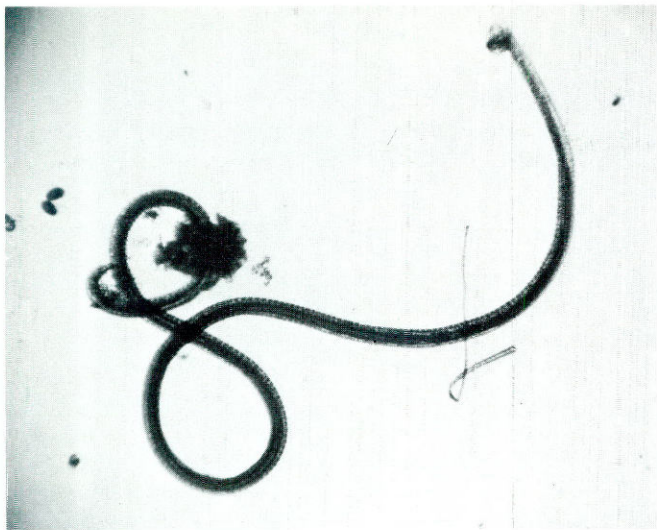
Those species identified in the digestive tracts of wild squirrels during this study included the *Gonylonema* sp., a small, uncommon, relatively harmless worm found in the esophagus; *Strongyloides robustus*, a large stomach worm; two blood-sucking worms, *Heligmodendrium hassalli* and *Citellinema bifurcatum*; and a tapeworm, *Raillietina bakeri*, found in the small intestine. The last three account for the majority of infestations and are the most widely distributed of the five internal parasites noted.

To test for a probable correlation between the body condition of squirrels and the extent of internal parasitism, whole body weights, dressed weights and oven-dried weights of hearts, livers and spleens were collected from 132 gray squirrels. Statistical analysis showed internal parasitism was having a significant effect upon body weight and weights of vital organs. These data suggested that internal parasites are as prevalent and do as much damage to some wild squirrel populations as they do to domestic livestock. Additionally, it appeared the squirrels' general health and productivity were affected by the presence of these parasites.

A study was set up to measure the effects of internal parasites on the body condition of gray squirrels. The idea was to trap and then hold two groups of squirrels in separate pens. Both groups were to be wormed with parasiticides. One group would be reinfected while the other group of squirrels, the control group, remained parasite free. Total body weight of each squirrel would be recorded every four days in order to establish a weight curve for each group. At the end of each 90-day period, two squirrels from each group would be sacrificed and vital organ weights and blood test taken. The body weight curves, blood test data and vital organ weights would be used as criteria to measure the effects of internal parasites.

Holding pens, six feet square, were built and 20 squirrels were live trapped and acclimated in the open-air pens for three months. Each pen was equipped with specially designed segregating-protective boxes, box-type gravity self-feeders and inverted-gravity bottle waterers.

The segregating-protective boxes were provided with sliding doors, enabling personnel to segregate

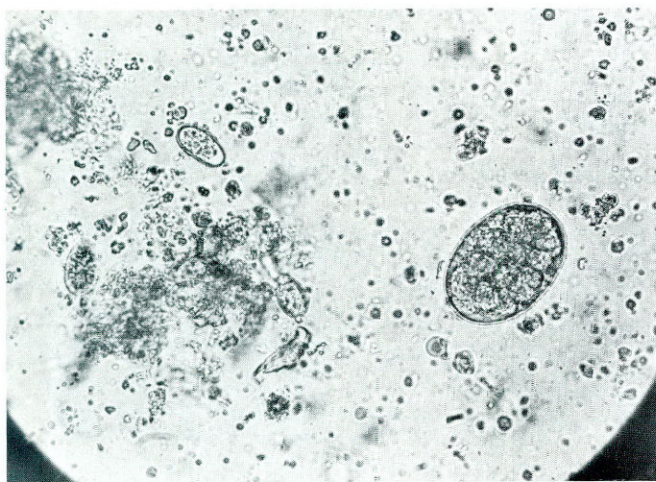


Tapeworm found in small intestine of gray squirrel.

and shuttle individual squirrels from protective boxes to weighing cage or squeeze cone. These devices greatly facilitated the handling of the animals, which had to be ear-tagged and dyed with Nayanol A on different parts of their bodies for fast and accurate identification. Several hundred handlings were accomplished easily and effectively with little stress on the 20 squirrels and no danger to the handler.

After noting that the gravity feeders absorbed moisture which soured large quantities of feed and that the squirrels persisted in pulling out the copper tubing from watering devices, open water bowls and hollow logs were substituted and proved to be better watering and feeding receptacles than the gravity devices.

A number of squirrels were given to the Wildlife Disease Laboratory at Texas A&M University for testing the effectiveness and correct dosage of various parasiticides and for the collection and culture of parasite larvae. Dr. R. M. Robinson, pathologist at the university's school of veterinary medicine, determined that an intramuscular injection with one cc of a 1/20 solution of ripercol would eliminate all internal para-



Microscopic view of eggs of a large stomach worm identified in digestive tracts of wild squirrels.

sites except tapeworm. He was never successful in safely eliminating tapeworms from squirrels.

Attempts were made to induce parasites in squirrels by mixing infective fecal matter with the food of the experimental animals. However, this technique was not successful because several of the parasites require an intermediate host. Dr. Antonio Betancourt, A&M parasitologist, repeatedly tried to culture the various larvae in known quantities and was able to produce modest numbers of two species, *S. robustus* and *H. hassalli*, under laboratory conditions. The number of larvae produced, however, proved inadequate to achieve significant infestations in squirrels by stomach tube or other means.

The tapeworm parasite, *R. bakeri*, and the esophageal parasite, *Gongylonema* sp., require an intermediate host for development, so a colony of roaches was established and fed the feces of squirrels infected by these two parasites. After two months of exposure to the infected feces, six of the roaches were dissected, but no parasitic cysts were found in their tissue.

A colony of dung beetles was also established and fed infected squirrel feces. However, the mouthparts of the adult beetles were not large enough to ingest tapeworm eggs, and the beetles would not produce larvae in captivity.

One further effort to develop tapeworm cysts in the tissues of an intermediate host was attempted. A pair of African dung beetles was isolated and exposed to the feces of infected squirrels. The beetles refused to eat the fecal materials and died of starvation within a few days. At this point efforts to work with the tapeworm and esophageal parasites were abandoned.

Squirrels in the control and test groups were weighed at four-day intervals to establish a mean weight for each animal. At this time, both groups of squirrels had not been inoculated with the parasiticide as planned since no means of artificially reinfesting the test group of squirrels was available. It was hypothesized that removal of internal parasites from the control group of squirrels would alleviate stress produced by these parasites, and the results would be measurable.

Each squirrel of the control group was injected, twice intramuscularly, with a one cc solution of 1/20 ripercol at two-week intervals. Weekly fecal analyses showed these squirrels were still infected with *S. robustus* one week after the initial inoculations and for six weeks thereafter. They were apparently reinfesting themselves under conditions more septic than those under which successful ripercol treatments had been developed. Biologists found they had neither the means for artificially increasing parasitic loads nor for maintaining a parasite-free group of squirrels under the septic conditions of the open-air pens. An analysis of weights taken before and after the injections showed the injections had produced no measurable effect on the squirrels.

Since the squirrels were reinfesting themselves in the open-air pens, it was reasoned that maintaining a contaminated pen and an "aseptic" pen would pro-

duce measurable differences between two rates of reinfestation. It was determined that all squirrels would be inoculated with an increased dosage of ripercol and sacrificed at the end of a six-week period to obtain total counts of internal parasites infecting each squirrel. Environmental stress was to be accredited for any significant differences between the number of internal parasites reinfesting the two groups.

Each squirrel in both groups was inoculated twice with one cc of a 10 percent solution of ripercol, at two-week intervals. At the end of the six-week period, all squirrels were sacrificed and necropsied. Examination of digestive tracts and fecal analyses revealed all squirrels were free of all internal parasites except the tapeworm.

Dr. Robinson offered a plausible explanation for the absence of blood-sucking parasites. He theorized that after the repeated injections, quantities of ripercol

were absorbed into the fatty tissues of the inoculated animals and later retrieved by the squirrels from the body fat in quantities lethal to most species of internal parasites.

An analysis of the body weights, vital organ weights and white-cell differentials from blood smears showed there was no significant difference between the two groups. Under the conditions of the study, it was not possible to correlate internal parasites and body condition. The study did establish that ripercol is a safe agent to use in eliminating blood-sucking parasites from squirrels, but that it has no measurable effects on the tapeworm.

Again, it should be noted, these parasites present no threat to humans who handle or eat these internally infected squirrels and that adequate habitat and food sources continue to be important factors in limiting the effects of parasitism on squirrels found in the wild. **

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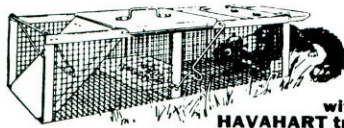
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Additionally, TSRA encourages and sponsors junior training programs, hunter safety programs, home firearms safety, competitive marksmanship, state championships, and selects teams to represent the State of Texas at the annual National Championships. Annual dues are \$4.00, and memberships run from Jan. through the following Dec. 31st each year. We urge you to join your fellow Texans and become a member of this honorable Association. You'll be glad you did!

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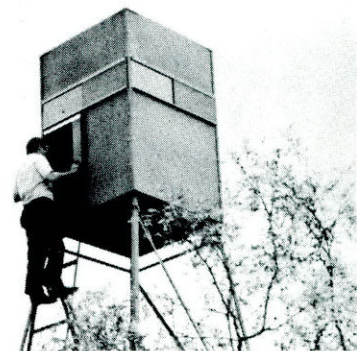
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Young Naturalist

Animal Tracks

by Ilo Hiller

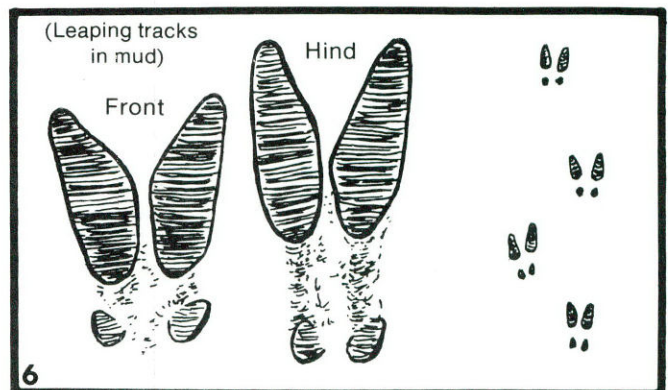
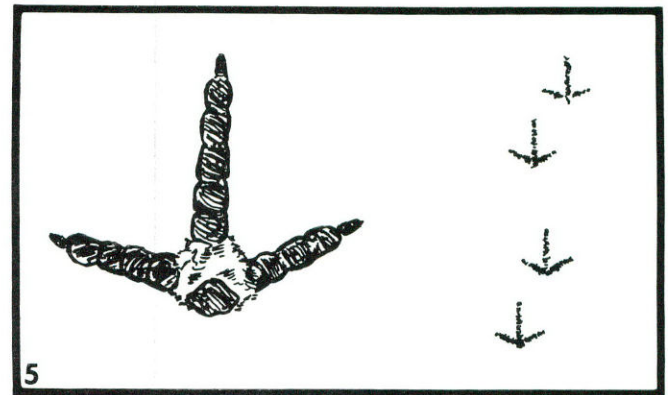
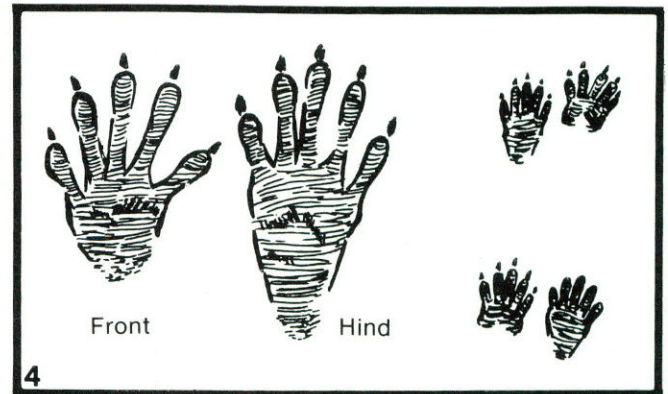
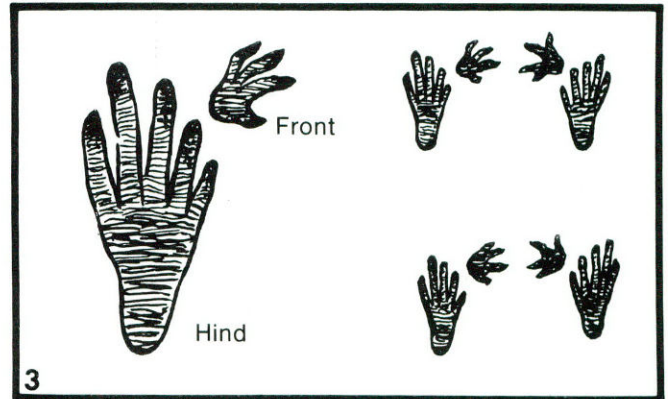
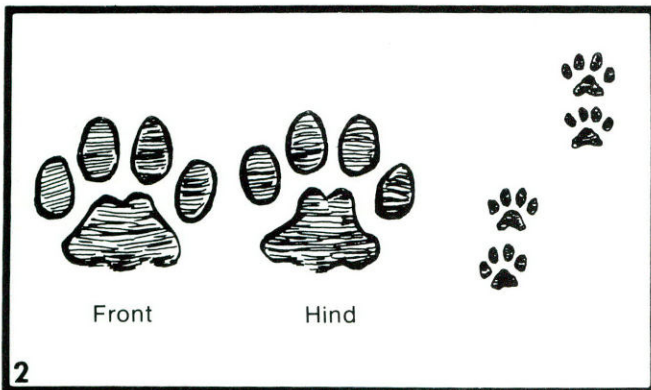
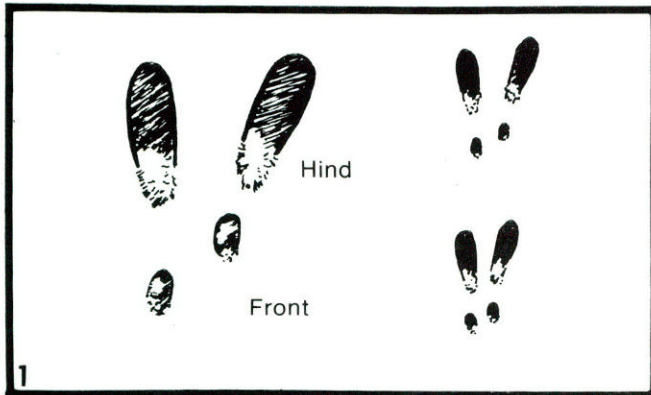
Wild animals do not always show themselves in the daytime when we are outdoors looking for them.

One reason, of course, is that our noisy walking and talking warn them we are near and they hide. Another reason is that the nocturnal or night creatures sleep and rest during the day and only begin to prowl in search of food and water when night falls and we are back home.

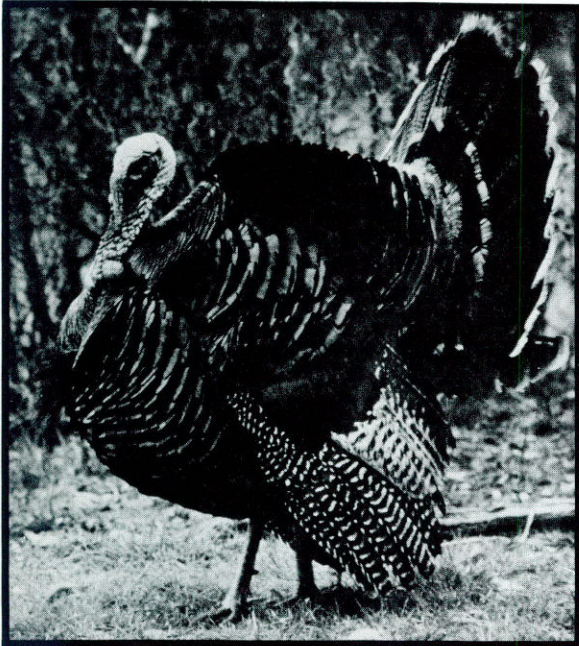
However, there is still a way to enjoy these animals you can't see. Learn to read the record they leave behind—their tracks. Examine the size and shape of tracks and before long you should be able to tell which wild creatures made them.

As you spend more time with tracks, you may also be able to read a story from them. You will see where the animal stopped to nibble at some food. Or you may see where a predator picked up its trail and carefully stalked it. The chase may also be written on the ground, along with the escape or catch.

To test your skill at reading tracks, match up these common Texas animals with their footprints.



Answers on page 32.



LETTERS TO THE EDITOR

Fading Pictures

For years I have framed the beautiful wildlife pictures from your magazine and have them in my home and office. Is there anything I can do to keep the pictures from losing their color? After a few months the color is almost gone. I know that light causes this, but is there any way to stop this fade out?

Bob Long
Houston

As you are probably aware, the color pictures in our magazine are produced by using the four basic colors—red, yellow, blue and black. There is no protective coating which can be applied since light, not air, causes the colors to fade. The yellows are the first to be affected and then the reds. Decoupageing the pictures may prolong their life since the layers of shellac often yellow slightly. This additional yellow tint in the shellac will offset the fading yellow ink for a period of time.

Our printer informs us that the only way to prevent fading of color is to use a special fade-proof ink such as is used

on billboards and political signs. Since the yellow is 30 to 50 percent higher in cost than regular ink and red is 50 to 100 percent higher, the additional cost prohibits our using this special ink at this time.

Scent Glands

I have been told that deer have "earlike" things between their rear hooves and hock bones, and that some deer have extra ears between their front toenails. I have also been told that if you stand at a distance and stomp your foot on the ground, the deer will hear it through these special earlike things. Is this true? If not, what purpose do these earlike things serve.

T. L. Blake
Pasadena

Deer have only two ears, but they are extremely sensitive to sounds. The earlike things located on the hind legs and between the toes are actually scent glands. The pear-shaped glands on the hind legs at the hocks are called tarsals, and are surrounded with white hair tufts. When excited by fear or hostility,

the animal elevates the hairs so they stand out at right angles to the leg. The glands emit a penetrating odor of musk. Does often discharge the scent to call or warn fawns, bucks when in rut and all deer when frightened.

Deer also urinate on these tarsal glands. The reason for this action is not known, but this peculiar habit seems to play an important part in the deer's life and well being. Unsuccessful attempts to urinate on the glands seem to upset the animal and repeated attempts are made every few minutes until the feat is successfully accomplished.

The oblong scent sac found between the toes on all feet is called an interdigital gland. This gland, about one inch long in adult white-tailed deer, contains a few scattering hairs and pellets of a yellow waxy material with an extremely strong and offensive odor. It is impossible for the deer to take a single step without leaving some of this scent on the ground since the gland opening lies along the inner edges of both toes. Deer use this scent to locate themselves or other members of their species. A deer chased from its home territory will trail its own scent to return.

Answers to Young Naturalist

- | | |
|----------|-----------|
| 1—Rabbit | 4—Raccoon |
| 2—Bobcat | 5—Turkey |
| 3—Frog | 6—Deer |

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BACK COVERS

Outside: Cottontails are probably the most popular of all small game animals in the United States. Although their potential life span is 10 years, life is so full of hazards that 85 percent do not live through their first year. Photo by Jim Whitcomb.

Inside: In addition to fruits, seeds and prickly pear, roadrunners will eat anything from insects to reptiles and small mammals. This handsome bird perched for a moment on a prickly pear pad with its insect prize before racing off again. Photo by Bill Reaves.



