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AUGUST

1963

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Florida Fish and Wildlife Conservation Commission
STRIPED SKUNK

A SMELLY LIQUID KNOWN TO CHEMISTS AS N-BUTYL MERCADETHYL - PRODUCED IN AND CAPABLE OF BEING SPRAYED FROM TWO GLANDS UNDER THE TAIL - MAKES THE SKUNK THE OWNER OF ONE OF THE MOST RESPECTED DEFENSE MECHANISMS IN THE ANIMAL WORLD. IF HIS REPELLING GID IS SO STRONG YOU DONT HAVE TO SEE HIM TO KNOW HE IS IN THE VICINITY. FOUND THROUGHOUT PENNSYLVANIA  FLORIDA OVER 50% OF ITS FOOD CONSISTS OF INSECTS.

OPOSSUM

COMMON THROUGH ALL PARTS OF FLORIDA IN TOWNS AS WELL AS IN THE WILDS. SECRETS OF THE GEOLOGY DEEP SEEN BECAUSE IT SLEEPS IN THE DRYTIME AND ROAMS ABOUT IN SEARCH OF FOOD AT NIGHT. A STRONG DIGESTIVE SYSTEM PERMITS IT TO EAT ALMOST ANYTHING. LIKE KIN OF ANIMAL FOOD, AS WELL AS FRUIT, BERRIES, AND PARCHED GRAIN. THE ONLY MARAGANG MAMMAL OF NORTHERN AMERICA. NEAR EMBRYO'S EMBRYO'S ARE BORN IN 18 DAYS OR LIVE IN THE MOTHER'S POUCH UNTIL ABOUT 2 MONTHS OLD OR OUR ONLY NATIVE MARSUPIAL MAMMAL THAT CAN HANG BY ITS TAIL.

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Published monthly by the

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Conservation, Restoration, and Protection of our Game and Fish

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Florida Game and Fresh Water Fish Commission
CONSERVATION SCENE

First annual Professional Archers
Tournament scheduled for Daytona Beach

Florida fishermen will find a one dollar increase on the new 1963-64 fresh water fishing license which went into effect as of all County Fish and Game Judges and their authorized sub-agents throughout the State. The one dollar increase on all resident fresh water fishing licenses will be set aside in a special fund to be used for improvement of Florida's fresh water fishing.

License fees are: Resident, statewide, annual $3.00; non-resident, statewide, annual $8.00; non-resident, statewide, 14-day continuous fishing $3.25; non-resident, statewide, five-day continuous fishing $2.25.

Public Lands Booklet
"The Public's Land, Our Heritage and Opportunity" is the title of a new, 16-page educational booklet just published by the National Wildlife Federation and available free of charge to interested citizens.

Including an interesting and easily-read summary of the evolution of public lands administration in the United States which places today's public land management controversies in perspective, the illustrated booklet was written for the Federation by its conservation advisor and former executive director, Ernest Swift. Mr. Swift, also a former director of the Wisconsin Conservation Department and an assistant director of the U. S. Fish and Wildlife Service, is well known for his editorial expressions of conservation philosophy in CONSERVATION NEWS and NATIONAL WILDLIFE, the National Wildlife Federation's newsletter and magazine. Other booklets by Mr. Swift which have been published by the Federation include "By Which We Live," "Count Down to Survival," and "The Glory Trail."

Points out the author of "The Public's Land": "Today the people of the United States collectively own in fee simple about 750 million acres of land. They represent a wealth of basic resources which cannot be computed, and are a guarantee of the nation's economic future."

Single free copies, and quantity orders at 10 cents per copy, may be obtained from the Federation at 1412 Sixteenth Street, N. W., Washington, D. C.

Archery Tournament
Breakdown of prizes, schedule of events and registration information all have been announced for the first annual $18,000 Professional Archers Association National Championship Tournament August 22-25 at Daytona Beach.

Top prize in both the men's and women's events have been set at $1,000 cash each. The top 50 men professionals and top 12 women professionals will shoot for that and other prizes the final afternoon, Sunday, August 25, after a cutoff at the fifth of the morning round. The final round will be of 20 PAA targets.

The national tournament will be open to all archers, and will be divided into two sections—professional and non-professional.

The non-pros will shoot Thursday and Friday, August 22 and 23, and there will be $8,000 worth of merchandise prizes for these archers. There will also be Amateur Divisions during these two days.

The PAA championship play will begin at 9:00 a.m., Saturday, August 24, and continue at 1:30 p.m., Saturday, and again at 9:00 a.m., and the finals at 1:30 p.m., Sunday.

Practice rounds may be shot on Wednesday, August 21. Entry fee for the first two days of open competition will be $10, and PAA members aren't permitted in this tourney. Entry fee for the professionals will be $25, and only PAA members are permitted to enter.

Advance registrations may be made to Community Promotions, Inc., P. O. Box 586, Daytona Beach, Florida.

Registration closes August 20.

The tournament courses will be on the beautiful Daytona Beach Golf and Country Club grounds.

THE COVER
The Armadillo, most primitive of placental mammals, became a Florida inhabitant in 1922. An oddity of this creature is that the young are always identical quadruplets of the same sex. See page 12.

From A Painting By Wallace Hughes.

AUGUST, 1963

Going Unadvertised
Recreational Opportunities

By ERNEST SWIFT
National Wildlife Federation

Let no one doubt the fact that the United States is on a dole toward the European system of ultimate ownership of game by landowners and the establishment of hunting and fishing fees on all lands, public and private, will be a gradual, trudging process, but it is coming as sure as death and taxes. Present Federal legislation is pointing that way, and Federal bureaus are softening the blow by telling the story in public speeches and giving encouragement by way of subsidies.

The full realization is going to be quite a wrench for the old-time guard as they look over their shoulders at some of the passing traditions that America once had to offer by way of hunting and fishing. Some state agencies are wondering what effect this will have on their state rights authorities and on their license structure. Possibly to the younger generation it is a part of a new era, and an appendage of the space age. When one has only known synthetic hunting and fishing it, no doubt, is easier to accept.

One group attempting to keep pace with present recreational trends are the owners of industrial forest lands. To that end the American Forest Products Industries made a survey—the latest in 1960—of the policies of 518 companies owning 88.2 per cent of all commercial forest lands: from Maine to the Great Lakes, to Washington and California, the Gulf States and the Piedmont.

Company policies may change if fees are going to be required on public domain, but one of the time of the survey only two companies were charging entrance fees for recreational facilities, and relatively few for hunting and fishing.

Ninety-six per cent of all industrial lands were open to hunting and fishing, which so far have proved to be the dominant recreational uses. An increasing number of timberland owners are beginning to look upon the big game hunter as an adjunct to good forest management. Some companies are now employing bulldozers and forstsmen as game fishermen and game managers, and also establishing refuges and managed game areas.

Over 6,000,000 recreational visits were made to industrial forest lands in 1960.

The AFFI also made a public opinion survey in 1956 which indicated that the public was poorly informed as to the recreational use of industrial lands. Twenty-four per cent of those questioned thought they were open to recreation, while 41 per cent thought they were closed; 16 per cent thought they varied and 20 per cent didn't know.

Quoting James McClellan, Chief Forester of AFFI, "...two out of five people thought that forest industries lands were open to hunting, fishing, hiking and the simpler forms of outdoor recreation not requiring special facilities, and in most cases always have been open. We also knew that prior to 1950 only a very few companies had developed know that prior to 1950 only a very few companies had developed..."
FISHING

Tackle Topics

Knot failures are responsible for many lost fish. Properly tied monofilament is tricky and important.

CHARLES WATERMAN

I SAW Rev. House's cheek the other day. I was fishing with a big bass streamer on a flyrod and Ike, an Exeterblades guide, was rowing the skiff. I decided to change over and fish the other side of the creek, made a sloppy switch-over and heard a nasty "whap!" as the big line crossed the boat. I looked around a little fearfully and there was Ike with one hand gingerly caressing a bloody streak where the hook had raked across his cheekbone. With the polite aplomb of a professional guide he refrained from throwing me overboard. Ike's probably been hooked before.

Just sneak up and say "wham!" and an experienced guide will duck automatically.

I'm sorry and embarrassed about carving up Ike but the worst of it is that it's the end of my safety record. I'd never hooked anyone before—came close but had never done it. Ike was wearing sun glasses. An inch to the left and he would have needed them. I don't believe in fishing without some kind of eye covering. There are lots of funny stories about accidental hookings and some not so funny.

One of the best I've heard concerns a highly hankered and world-famous fishermen who furtively entered a Florida doctor's office and sat down gingerly in the waiting room with a big bass bug stuck in his countenance. As he sneakily raised his eyes to learn just who was viewing his disgrace he saw a barefoot youngster sitting forlornly across the room from him. The urchin had a hook, complete with singleworm, stuck in his upper lip just below his nose. They both squirmed uncomfortably and then the famous fishermen asked: "Where'd you get your friend?"

If there is a careful fisherman in this world it is Wimpy Steerman but a couple of years ago I watched him yank a big Hawaiian wiggler from a shoreline bush. It sailed toward the boat as the limb let go and I heard a funny "thwack" from where Wimpy was fishing behind me.

When I looked, there was a disgusted Wimpy with a big hook through the lobe of his right ear and the gaudy Wiggler dangling like some sort of barbaric decoration. No strain; The hook was clear through and all we needed was a pair of pliers.

Fishing Knots

I am going to break a resolution of long standing and run a couple of pictures of fishing knots. If they are a lot of trouble for you to look at, think of the trouble it was for me to photograph them and be charitable.

I don't want to start a seminar on knots and I'll be the first to admit that they are mysterious things to me, that I have learned to tie a bowline eleven times and forgotten it ten and that I still couldn't manage my shoestrings when other kids my age were halfway through the Boy Scout manual.

I am showing these two knots because they are used in important fishing situations and because knot failure is responsible for many lost fish.

There are two kinds of knot failures—the pull-through in which the knot simply comes untied—and the breaks in which the knot weakens the line so much that it breaks easily. All knots weaken line to a certain extent but there is a great deal of difference in them.

When your line comes off in a bag or a stump and you reel up the line to find a little curvature at the end, you're apt to simply conclude that it came untied. Remember though that if it breaks in the knot there will be a little curvature anyway in most cases.

The two knots shown herewith are modifications of knots that were perfectly good with braided line but won't hold well for me with monofilament. In one case the mono pulls through and in the other it breaks too easily without the modification. In the latter case I can't even see why the modified knot is better but repeated tests show it is and I have the floor covered with line scraps by way of proof.

My illustrations are made with dark and light-colored cord for clearer viewing. An artist could do it better.

The one showing line attached to a hook eye is called a Pendre knot or simply an improved clinch knot. I show it because the regular clinch knot comes untied easily when monofilament is used. The slippery stuff simply pulls through. The last phase of tying the Pendre is simply tucking the line end through back one more loop as shown—then it holds. Without the No. 2 loop your mono is apt to let you down.

Now there are many other ways of attaching line to hook eyes but this one is hard to beat IF you make that last pass with the line.

The other knot, shown in three stages, is for attaching a piece of heavy "shock" monofilament to a light piece as when heavy mono is used as a short trace on spinning or fly tackle. The white cord represents the light material and the dark cord represents the heavy stuff. The final pass through greatly strengthens the knot. A more scientific soul may tell you why but I suggest you test it without taking my word for it.

My actual tests were with 10-pound test mono attached to 50-pound mono. Such a combination was worked down carefully until it's snug and it will pull through badly if you are careless in snugging it up.

I have here a quotation from some material put out by the manufacturers of Stren. It goes: "The jam, half hitch, single overhand and similar knots should not be used (with monofilament) because they reduce the strength of the line far below its rated strength."

Suitcase rods are nothing new and combination rods aren't either but the Shakespeare people have come up with one that suits me better than anything I've tried along that line.

This rod is No. 828 and is seven feet long with a grip that can be used for either a conventional handicap spinning reel, a behind-the-grip closed-face reel or a fly reel.

There are four sections and the round plastic case that it comes in is just 23 1/4 inches long.

Now the baitcasting handle doesn't come with it but if you'll buy one to fit you can use only three sections plus the handle and have a plug-casting or spin-casting rod approximately six feet long.

As a spinning rod it is about right for quarter-ounce lures; for fly fishing it will take a GBI line although most fishermen would prefer something lighter; as a plug rod it will handle up to 3/8 ounce lures very well. It has spinning guides but not extremely long ones.

Although a whole parade of ferrules is not expected to improve action, the Shakespeare folks have turned this one out in such balance you'd pull through badly if you are careless in snugging it up.

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Although a whole parade of ferrules is not expected to improve action, the Shakespeare folks have turned this one out in such balance you’d (Continued on page 34)
Some dog handlers maintain that dogs do not possess the mental faculties of reasoning such as normally associated with humans. These handlers, many of whom are proficient and qualified dog trainers, theorize that a dog's performance reflects that which it has learned from past experiences or from training and not from a power of reasoning. While I might personally disagree with this theory, this month's column is not so much for purpose of debate as for training retrievers.

For the sake of training your retriever, let us assume that this opinion is correct and for the time being forget about the superior intelligence of your particular dog and, for training purposes, rely on his superior memory.

As a youngster I was forced to read an assigned poem a number of times before I could recite it from memory. For your dog to perform a perfect job of retrieving, it is just as necessary that he repeat each performance until letter perfect. Dog training is a repetitious routine. However, if you love dogs, this routine will never enter the realm of being a chore, but rather a pleasant experience each time you pick up the whistle and leash and release your dog from the kennel.

To help insure that each training session is a pleasant experience, you should always consider a few elementary factors. First, your dog is anxious to please you, and if you make it clear what you want him to do, he will in most instances do it or die trying.

When your dog exhibits confusion over a command that you know he should understand, it is a good indication that you have been pushing his training a bit too fast. When this happens, stop and take the dog back to basic training. Then slowly, over a period of days and weeks, bring him back to the stage where he exhibited confusion. You should praise him. You can punish him, but you should never push him beyond his capabilities. It is difficult to look at a calendar and say that a dog at a certain age should be able to accomplish certain jobs. Some dogs simply catch on faster than others. However, do not become overly concerned if your pup is not one of the "child prodigies" as many of the nation's greatest retrievers did not really develop until their later years. Take it easy, you have plenty of time.

Each time I take my dog from the kennel, I always spend a few minutes going through the basic commands of sit, stay, heel, and come. These few minutes serve to keep him in tune with retrieving essentials; for a small investment you will find that such a practice will pay big dividends.

There are several simple rules you should follow in training your retriever. 1. Repeat previous lessons. 2. Never let your dog break or retrieve without your signal. 3. Never give him a command that he cannot do. 4. Never let him lose interest. 5. Never lose your temper.

If your training has progressed as it should, your dog is by now walking at heel, sitting on command, retrieving only on command and showing interest in the gun, water and feathers. He should be completing sixty and seventy yard retrieves in fairly heavy cover with little difficulty. He should be hunting the area of a downed bird with style and determination, using his nose to help locate a bird or dummy and delivering to hand.

If your dog is working to your satisfaction, it is time to move ahead to a more advanced stage of training. If he is not as sharp as you think he should be, stop reading and continue with previous training.

DOUBLES: There will come a day when your shooting reflexes are sharp and you will knock down more than one dove or duck from a passing flock. Your dog will be required to mark and remember the location of the falls if he is to retrieve both birds. In preparation for this day, it is well to train for the occasion.

To introduce your dog to doubles, go back to your lawn or a close cropped field. Bring your dog to sit position, then you would for a single retrieve, with a command of stay, signal your bird boy to throw a bird which should land not more than twenty yards from the dog and in open cover where it can be seen. Now throw the second bird to land not more than ten yards.

These falls should be where the dog can see them, but they should be wide spread in order to prevent confusion. Now with the dog in the sit position, use your hand to signify which bird you want and send him to retrieve. Without exception, most young dogs will prefer the last and nearest bird. By all means, allow him to take the bird of his preference by sending him to that particular one.

When he returns with the first bird, make him deliver to hand much as you would on a single retrieve. Now send him for the other fall. To send him for the second fall, bring the dog back to heel and in a sit position, use your hand to line the dog to the second fall.

If your dog does not remember the second bird, walk him back to heel in the direction of the fall until he sees the bird. Once the dog sees the bird, send him to retrieve. Now, do the whole thing over again. Before you know it your dog will be anticipating a second fall. Once this happens and your dog is marking doubles with accuracy, it is time to increase the distance and cover.

As a general rule, it is a good practice to send your dog for the last and nearest bird first. Always respect his desire as to the preference bird during this early stage of training.

Once your dog is snapping up the more advanced doubles in heavy cover, you can try him with a triple retrieve. This is nothing more than three birds. While it sounds simple, it may prove to be somewhat difficult. Once again, we fall into the rule of practice and repetition. During the early stages you should keep the falls widespread to prevent confusion.

As training progresses, you should include a double marked fall in line. In field trial terminology, this is known as an over and under and is a very practical lesson for any retriever. Throw one bird to land sixty yards from the dog. Now throw the second to land directly in line between the dog and the first fall. Send your dog for the near bird which he should retrieve without difficulty. Now send him for the far bird.

If he displays any indication of wanting to hunt for the second bird in the vicinity of the first fall, you should again walk him at heel toward the far fall much as you would on a basic double. Now once again it is a matter of practice making perfect.

SWITCHING: When you send your dog for a downed bird, nothing should distract him until he has completed the retrieve. In some instances a dog might experience difficulty in locating a bird and leave the vicinity of a fall to retrieve a second bird.

Should this happen, you will be required to use a bit of leg power and hustle out to the dog, stop him from going to the second fall, send him back to the area of the first fall or walk him at heel until he sees the bird. Allow him to complete this retrieve and then send him for the second fall.

You should be on guard during early training sessions to prevent the possibility of confusing birds. This is a major fault in field trials, however, it is easily corrected if checked during the early stages. It's a simple case of not allowing this type of sloppy work at the very beginning.

The maximum test in switching will come when...
Almost everyone who conducts technical experiments, or writes in strict or semi-technical vein, maintains a notebook. In it is jotted down or catalogued all sorts of commentary, thoughts too valuable to risk forgetting, yet not always ready for full expansion into embrace subjects.

Mine is sectioned alphabetically. Flipping it open at what I judge to be the middle of the notebook, I find myself reviewing various notes under "M."

Three such—Magnus, mounts (for scope sights) and maps, closely related only in the sense that they are filed in the notebook’s "M."—are selected as column subject material for this issue.

Like public interest in automobiles, certain gun models or calibers enjoy ephemeral popularity that, for a time, seems to border on the nature of a fad. At the moment there is widespread interest in the Magnus—rifle, pistol and shotgun.

Development by Roy Weatherby of the name sake line of high velocity big game rifles, and development by Bill Ruger of the 357 Magnum "Blackhawk" revolver (now also available in .44 Magnum caliber) and the "Deerstalker" .44 Magnum carbine undoubtedly had a lot to do with the rapid growth of interest in Magnums of the metallic cartridge class.

The Ruger .44 Magnum "Deerstalker" autoloading carbine was designed primarily for the deer hunter whose hunting takes him into thick cover. But the little rifle is being put to other field uses—Wild hog hunters find the carbine fast and deadly, and only recently Frank Delano, specimen collector on safari in Gabon, Africa, for the Los Angeles Museum, used a Ruger .44 Magnum carbine to kill a rare lowland gorilla estimated to be 50-50 years old and weighing close to 500 pounds. This particular specie of gorilla is considered very intelligent and very dangerous to hunt.

Other applications can be expected; however, as stated, its primary use is for deer hunting in thick brush country. For more dangerous use—say, on bear, I much prefer other, more powerful calibers.

Mounting a scope sight on a Ruger .44 Magnum carbine so that the scope gives desirable eye relief has been something of a problem ever since the rifle model first appeared on the consumer market.

Now, it looks as if the problem has been licked.

Both Maynard Buehler and Bill Weaver, long famous for their telescopic rifle sight developments, have each designed mounters for the "Deerstalker" that puts the end of the scope's ocular, or eye-viewing lens, desirably at a distance of about 1½ inches back of the rifle's trigger guard. Using either of the new mounts, installation of a hunting scope, like the Weaver K2.5, is now easily accomplished.

In mounting a scope sight on any high power hunting rifle, care should be taken to leave a bit of clearance between the scope's turrets and the scope tube's mounting rings; the edges of the turrets should not butt against an edge of the tube's clamping rings. Otherwise, recoil shock of repeated firing may result in eventual displacement of the scope tube and reticule mis-alignment—no matter how tightly clamped. Leaving a little space between scope turrets and mounting rings keeps recoil shock from being heavily transmitted.

Another idea is to slip a kitchen mixing faucet nozzle over the scope tube so that it is positioned between scope turret and tube holding rings. The installed cushion absorbers are considerable of the harshly imparted recoil, neutralizing its scope-pounding force.

Two of the most popular center fire rifles of our age have been the Winchester Model 94, made in 30-30 and 32 Winchester Special calibers, and the World War II mod. 30 cal. M1 carbine. The first earned its popularity as a deer rifle—although there are other calibers than the 30-30 and 32 Win.

Spec. that do a much better, surer job of anchoring a buck in his tracks. The last achieved popularity because thousands of GI's found the M1 carbine so light and handy in combat, not because it subse­quently has proven any great shakes as a deer killer.

Quite naturally, present owners of these rifle models, fascinated by the .44 Magnum cartridge, aren't anxious to rush out and buy a new rifle if their guns can possibly be converted to handle the .44 Magnum cartridge... For them, there is good news!

At West Palm Beach, Florida, gunsmith Leo Bustani, a Life Member of the National Rifle Association (which status has become a symbol of distinction), is converting Winchester 94's to take the .44 Magnum cartridge. The conversion work involves shortening and rebuilding of the 94's action, installation of a new barrel and new ramp front sight and re-bluing by the Blu-Blak process. Owners of the earlier Winchester Model 92 are offered the same deal.

Bustani's address is Florida Gun Clinic, P.O. Box 8125, West Palm Beach, Florida. He issues a folder describing his conversion of Winchester lever actions and his custom built big game rifles on F.N., Sako, HVA and Mauser 98 actions.

As for the conversion of the M1 carbine from 30 caliber to .44 Magnum caliber, Millville Ordnance Corporation, 2126 Stanley Terr., Box 1275, Union, New Jersey, can do the job. This is the only source known of for this particular type of conversion work, on individual job basis.

In the general category of currently available Magnum firearms, the shooter has a variety from which to choose.

For the big game hunter, there are the Weatherby fire-formed Magnums in 257, 270, 300, 375 and 460 calibers. The peripheral Weatherby Model 70 can be had in hunter's choice of such potent packages as both the .300 H&H Magnum and the new .300 Win. Magnum calibers, and in 2 64Win. Mag­num, 338 Win. Magnum, .375 H&H Magnum and, in the African hunter's version, .458 Win. Magnum. The Remington 308 Norma Magnum is made in several Magnum calibers. Browning's Mauser-style bolt actions include Magnum chambers and, of course, there is the already mentioned Ruger .44 Magnum "Deerstalker" carbine. There are other brand names that feature Magnum chambers. I'm simply mentioning those from which I would probably make selection if I were in the market for a Magnum class rifle.

Among shotguns of the Magnum family there are the Winchester Model 12 duck gun, Remington 870 AP Magnum, Remington "Sportman" Model 58 autoloaders, Brownning Automatic Magnum, Hi-Standard Supernit Turf, Stevens 77 and Brownning "Superposed" Magnum 12—to name a few.

Practically all the large firearm manufacturers are making some of their 22 caliber models to take the .22 Magnum cartridge, for those who have need for a slightly hotter cartridge than the high velocity grade .22 long rifle.

In handguns, Colt, Smith & Wesson and Ruger catalog various revolver models in Magnum calibers.

A Magnum cartridge of promise is the new 30-8 Norma Magnum. For owners of 30-06 caliber rifles, conversion to 308 Norma Magnum calibers is easy. Both cartridges are 30 caliber; both fit standard .30-06 caliber loading magazines. All that is necessary is that the 30-06 be shortened to 30-8. Norma Magnum is to rechamber the smooth throat of the barrel and open up the bolt face slightly. Any competent gunsmith can do the job—the shortest, easiest way to a Magnum rifle if you are a 30-06 caliber owner and want to change.

For those who wish to compare the ballistics of the 30-30 and 308 Norma Magnum with the 30-06 of same bullet weight, the 308 Norma Magnum develops 3100 feet per second muzzle velocity and...
**The Armadillo**

By Marjorie Yarbrough

The Toba and Pilaga Indians of Gran Chaco, South America, believe that the first women fell from the sky and were buried in the ground. Armadillos unearthed them. Because of this noble deed, two bright stars under Orion are identified as a celestial armadillo who is master of all living armadillos. So, should you happen to note an armored, pig-looking creature rooting around in your flower beds, or digging gaping holes in your lawn—don’t dismay, he may dig up a choice young woman.

The armadillos found in the United States are also common throughout Central and South America. They are of the phylum Chordata, subphylum Vertebrata, class Mammalia, order Xenarthra; family Dasypodidae, genus Dasypus, species novemcinctus, subspecies tezazus. And that’s a mouthful! Of all placental mammals living today the armadillo is regarded as among the most primitive, the closest to its ancestral stock.

The first armadillos were brought to Florida from Texas in 1937. They were given to a zoo in Brevard County and escaped during the first night there. Since, they have spread outward in all directions and now occupy a large area of Florida.

The armadillos are easily recognized by its shell-like covering over the shoulder and pelvic areas including nine flexible bands for maneuverability. The shell, and bands, are merely modified skin—just as our fingernails are modified skin—and must not be mistaken for an exoskeleton. The armadillo has a long snout particularly suited to rooting and a tongue very similar to the anteater’s. The front feet have four toes and the hind feet have five, all equipped with strong claws. The tail is covered with bands of scales and usually drags the ground. The underparts are sparsely covered with hair. Although the shell does offer some protection, the 9-banded armadillo found in Florida, unlike some of its relatives in South America, does not generally roll itself into a ball in the face of danger except under conditions of extreme fatigue or sickness. Its adversary would only have to turn it over and rip open the soft underparts.

His usual form of escape is to run at an amazing rate of speed into tangled and often thorny undergrowth so frequent in his preferred habitat. The armadillo is forced to swim. If the area of water to be crossed is not too wide, the armadillo will simply employ unprintable language when the subject of armadillos is brought up. The mild natured, IID-aggressive armadillo is blamed by farmers for the destruction of crops and by hunters for the destruction of quail and turkey eggs.

In analyses conducted by E. R. Kalmbach, FLORIDA WILDLIFE Service, no less than 188 specific dietary items and preferences of the armadillo have been known to use the abandoned burrows as homes or as temporary shelter.

An oddity of the armadillo is that its young are always identical quadruplets of the same sex even though the gender may vary from one litter to the next. Because of this, psychologists find them particularly suitable for testing purposes when identical twins are required. Along with this unique embryology is the fact that there is a fourteen week delay between fertilization and implantation. A normal pregnancy is about 129 days which, except excluding the 14 weeks, is longer than that of most mammals of similar size.

Armadillos have an exceptionally fine sense of smell and employ it to detect underground insects and the presence of enemies. Their hearing is poor and they are extremely unsighted. So unsighted that they have been known to root all around a man without ever being aware of his presence if he remains still. A particularly objectionable odor is present, to a degree, at all times. This odor is produced from two glands situated on either side of the anus and becomes pronounced under conditions of stress or excitement.

The armadillo has few natural enemies. He is probably eaten at times by bobcats or other carnivorous animals but is not commonly a favorite food. Man is perhaps his greatest predator. Some people consider the armadillo meat as fine victuals comparing it to pork, and hunt them regularly for food. Possibly more are killed by automobiles while crossing highways than by other means.

Farmers and sportmen have been known to employ unprintable language when the subject of armadillos is brought up. The mild natured, IID-aggressive armadillo is blamed by farmers for the destruction of crops and by hunters for the destruction of quail and turkey eggs. The best way to prove or disprove these accusations is through stomach analyses which give the best picture of food items and preferences of an animal. They show the general tendencies toward the good or harm that is done by the food habits. In analyses conducted by E. R. Kalmbach, Fish and Wildlife Service, no less than 188 specifically

(Continued on page 36)
A Natural History Photo Quiz

By WILFRED T. NEILL

SOME FLORIDA ODDITIES

During the years that I directed a biological research program at Florida's Silver Springs, I was often called upon to identify wild animals, birds, reptiles, fishes, flowers, trees, rocks, fossils, Indian relics, minerals, and the like. Many of the specimens were found along the highways by tourists, while others were brought in by local residents. Most identifications were easy; for the biologist, like the hunter and fisherman, gets to know plants and animals that are unfamiliar to most people. But some real puzzlers turned up, too; and at times it was necessary to seek the advice of specialists at various museums and universities.

Here are photographs of 10 specimens that were brought in over the years, along with some clues to the identity of each. A few of these Florida oddities may be easy to name, but several of them definitely are not—at least, for me they were not!

1. Found all over eastern North America; may be gray or reddish. Its common name is not really very appropriate.

2. No doubt this is a turtle—but whoever heard of a turtle that was humped like a camel.

3. This one was caught in a swamp on the east coast of central Florida.

4. An ancient fossil, embedded in limestone, found in a quarry near Ocala.

5. It's a guess—but what kind of grass grows taller than a boy's head?

6. Unpopular with homemen.

7. Its correct name is often applied to a completely different animal, and the correct name of the latter animal is often applied to a turtle.

8. Found at the edge of the St. Johns River, in a heap of clam and snail shells.

9. This was cast up on a beach near Key West.

10. Occasionally found by shedlockers on river bottoms and in larger springs.

Answers on page 32.
Native Rats and Mice of Florida

By James L. Wolfe

People who consider a mouse a mouse and a rat a rat usually are quite surprised to learn that there are some ten distinct species of rats and mice native to Florida. Admittedly, the difference between a rat and a mouse is somewhat arbitrary. The basis for calling an animal either a rat or a mouse is generally size.

The maximum size for Florida’s smallest rat is twelve inches, while nine inches is the maximum size for the state’s largest mouse. The fact that most people are not familiar with our native species is not surprising since most of these animals are nocturnal and do not frequent human habitats.

The three rodents which are most closely associated with humans, and with which we are most familiar, are not native animals at all, but immigrants from the Old World. These are the House Mouse, Mus musculus, the Black Rat, Rattus rattus, and the Norway Rat, Rattus norvegicus. The latter two grow quite large (Norway Rat up to a total length of 18 inches, Black Rat slightly smaller) and are difficult to tell apart except for the fact that the tail of the Black Rat is longer than his body, while in the Norway Rat this is not the case.

These three pests should not be confused with our native rats and mice which are truly wild in the sense that they, as a rule, exist entirely apart from human populations.

The two Old World rats are distinguished from the native species by the uniform coloration of their tails. The tails of the native species are distinctly bicolor, the underside being lighter.

Cotton Rat

The adult Cotton Rat, Sigmodon hispidus, is from nine to thirteen inches long, including the tail, and weighs up to half a pound. This is a large size rat with coarse, grizzled fur. Black hairs intermingled with the basic gray or brown cause the grizzled appearance. The underparts are slightly lighter in color than the back and sides. Its ears are small and inconspicuous. The tail, which is shorter than the body, is scaly and sprinkled with fine hair. Its scientific name comes from the sigmoid (S) shaped enamel patterns on the upper molar teeth.

While the Cotton Rat occurs in a variety of habitats throughout the state, areas of tall grass surrounding cultivated fields or bordering marshes seem to support the heaviest populations. However, sizable populations may occur locally in almost any situation from Florida’s sandy beaches to the pine flatwoods.

This island was formed largely from rocks used for ballast which were discarded by ships nearing Pensacola harbor. Crevices in the piled-up rocks provide good homesites and much of the island is grass, which is used for food. At night, swarms of Cotton Rats can often be seen grazing on the grassy areas. Rats trapped on the island often have part of their tails missing and chewed-up ears. The aggressive behavior of the animals is increased by overcrowding.

Breeding may occur during any season of the year. Litters of from two to ten are produced after a gestation period of 27 days.

The Cotton Rat is primarily a herbivore, and probably does some damage to crops in agricultural areas. It has been reported to eat quail eggs on occasion. This is not surprising since Sigmodon has been shown to eat everything from crabs to carrion. The question of whether this rat is a serious pest to agriculture or wildlife conservation in the state is present unresolved. It is quite likely the most abundant mammal in the state.

Rice Rat

Another rat, which though smaller (3 ounces) may be confused with the Cotton Rat is, Oryzomys palustris, the Rice Rat. It can be distinguished from the former by the length of its tail, which is about equal to the length of its body. The tail of the Cotton Rat is only about three-fifths as long as its body. The grayish-brown fur of the Rice Rat has a smoother, more uniform appearance than that of the Cotton Rat.

The Rice Rat seems largely restricted to grassy areas (Continued on page 18)
OLD FIELD MOUSE

The Cotton Mouse, *Peromyscus gossypinus*, which most certainly does not grow into a Cotton Rat is an average size mouse, usually between six and eight inches in total length. The coloration varies from reddish brown to dark gray above with white underparts. As in many other species, the dorsal color varies considerably with age. A light gray juvenile which becomes grayish-brown when he reaches adulthood may grow into a deep reddish-brown old individual.

The litter size averages four and the gestation period is 23 days. It seems that the Cotton Mouse enjoys perhaps an even wider variety of habitats than any native mouse. Its range extends into almost any type of wooded region, such as pine-turkey oak communities, hammocks, pine flatwoods, and grasslands. While it inhabits almost any area affording dense ground cover, this little creature is probably most abundant in and around cultivated areas and moist grasslands. It too, is found throughout the state.

COTTON RAT

HARVEST MOUSE

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(continued from preceding page)

areas near some sort of marsh. Occasionally, however, it is taken in wooded areas.

Its food is largely vegetable matter, but small invertebrates such as snails may be eaten.

The gestation period of this animal is 33 to 39 days, with litters of two to six being born throughout the year.

In Florida, this creature rarely comes into contact with human populations and seems to have little economic importance.

Eastern Wood Rat

Slightly larger than the above two, the adult Wood Rat, *Neotoma*, are from 14 to 17 inches in total length and weigh three-fourths of a pound. Cotton and Rice Rats rarely exceed a foot in total length. The color is in gray-brown above with white underparts. The east and tail are well-haired. The litter size is two to six, and the gestation period is 33 to 39 days. Breeding takes place all year.

This animal is most often found in swamps or other moist, heavily wooded areas. Wood Rats also occur in caves and are often referred to as cave rats by spelunkers.

A western species of Wood Rat is the animal with the reputation for stealing objects and leaving something in their place. Pack Rat is another common name for Wood Rats.

In Florida, the Wood Rat is a relatively rare animal. Due to this, the fact that they are nocturnal, and to their habitat preference, Neotoma is rarely encountered by humans.

Round-Tailed Muskrat

Except for its smaller size and round tail, one might easily mistake our Round-Tailed Muskrat, *Ochrotomys*, for the common Muskrat, Ondatra, which is not native to Florida. Also called the Florida Water Rat, Neotiber, with its silky fur, tiny ears, and partly webbed hind feet is not likely to be mistaken for any other rodent.

Several litters are produced during the year inside a small dome-shaped house made from cut grass and mud. Flat feeding platforms are also constructed from the same materials. Feeding platforms and houses are seen in boggy, marshy areas and the fringes of shallow lakes and on Florida’s wetter portions. Neotiber is rarely encountered by humans.

Isolated populations are scattered throughout the state east of the Apalachicola River where suitable habitat is found.

Florida Mouse

This is Florida’s largest mouse, *Peromyscus floridanus*, the adults almost reaching a total length of nine inches. The coloration is grayish to buffy-brown above with an orange-buff wash along the sides and white underparts. It can be distinguished from all other Florida species of the genus *Peromyscus* by the fact that it has only five plantar tubercles on each hind foot. All the others have six. The closely related Goldfield Mouse (formerly placed in the genus *Peromyscus*) also has six. The three species of the genus *Peromyscus* which will be discussed in this article are Florida’s representatives of the group usually referred to as Deer Mice or White-Footed Mice.

The range of the Florida Mouse is restricted to peninsular Florida where it typically occupies the Florida scrub. It also occurs less frequently in wooded regions of its range such as pine-turkey oak areas. Burrows of the Gopher Tortoise are often used for homesites. The two habitats mentioned above are relatively dry, especially the scrub which grows on old sand dunes and thus is well drained. This mouse seems not to be able to tolerate more moist areas such as pine flatwoods and marshes.

Cotton Mouse

The Cotton Mouse, *Peromyscus gossypinus*, which most certainly does not grow into a Cotton Rat is an average size mouse, usually between six and eight inches in total length. The coloration varies from reddish brown to dark gray above with white underparts. As in many other species, the dorsal color varies considerably with age. A light gray juvenile which becomes grayish-brown when he reaches adulthood may grow into a deep reddish-brown old individual.

The litter size averages four and the gestation period is 23 days. It seems that the Cotton Mouse enjoys perhaps an even wider variety of habitats than any native mouse. Its range extends into almost any type of wooded region, such as pine-turkey oak communities, hammocks, pine flatwoods, and undoubtedly others through the state.

Oldfield Mouse

These small mice, *Peromyscus polionotus*, rarely exceeding six inches in total length, vary a great deal in dorsal coloration. Of some of the state’s beaches, Anastasia Island on the east coast and Santa Rosa Island on the west coast, they are almost pure gray. Inland forms vary from gray to reddish brown. All have white underparts. The color of the animal seems to be correlated to a questionable extent with the soil color where it occurs. This may be an effective means of reducing predation, especially from birds.

The homesites of these animals consist of underground chambers from which two tunnels lead to the surface. The depth of the nest chamber varies greatly depending upon the local topography and upon the consistency of the soil. Abandoned burrows often provide homesites for other animals. Various makes and the Florida Gopher Frog, *Rana capito*, are often found there.

Beaches, scrub, old fields, road shoulders, or other areas of loose, sandy soil are places where one might expect to find populations of these creatures. They occur throughout the state north of Lake Okeechobee.

Golden Mouse

The Golden Mouse, *Ochrotomys nutalli*, is closely related to the *Peromyscus* group, and superficially resembles them a great deal. It is intermediate in size between the Cotton Mouse and the Old Field Mouse, ranging from six and one-third to just over seven and one-half inches in total length.

A beautiful little mouse with golden-brown fur above white underparts, it can be distinguished from a reddish-brown Cotton Mouse by its golden colored ears. The Cotton Mouse always has gray ears.

This is the most arboreal of our native mice, with its nests almost always occurring above the ground. When an adult captured animal is released, it will usually climb a tree if one is available.

*Ochrotomys* preferred habitat seems to be thick hammocks, but it also occurs in more open areas if dense brush is available. Its range covers the entire state.

Harvest Mouse

A tiny mouse, having a total length of only five and one-half inches, the Harvest Mouse, *Reithrodontomys hudsonius*, has a brownish-gray fur for fading to lighter and grayer beneath. It is readily identified by its tiny ears, short tail (under one inch), and brownish cinnamon color. The coloration is somewhat lighter on the sides, and the underparts are usually grayish.

**Identification Key**

This key is used for Florida species only, and since size is used as a key character, only for adult animals. Old World rats can be distinguished from native species by their uniformly colored tails (see text) and are not included in this key.

1. Nine inches or more in total length

2. Tail length about 60% body length

3. Tail length about same as body length

4. Tail longer than one inch in length

5. Tail less than one inch in length

6. Groove on upper incisor teeth

7. Eight incisor teeth in each upper jaw

8. Five incisor pads on each hind foot

9. Color buffy-orange; ears orange

10. Total length 5.5 to 6.5 inches (white individuals have ears red).

**Definitions**

Total length, Measurement taken, with the animal on its back, from the tip of the tail to the tip of the nose.

Tail length, Length of tail with the tail held perpendicular to the body axis.

Body length, Total length minus tail length.
Fishing and Boating Facts

The St. Johns River

PART 2

Two non-game, or rough, freshwater fishes are abundantly distributed throughout the St. Johns River; gizzard shad and threadfin shad. Adult gizzard shad represented 28 percent of the total weight of the adult fishes taken from Lake George during the period of intensive seining.

Although valuable forage species, gizzard and threadfin shad present problems to the fishery manager due to a tendency to over-populate fresh water fishing areas. Shad appear to be greatly increasing in numbers in many areas of the river.

The following rough fishes are commonly distributed throughout the St. Johns River system: Bowfin (mudfish), longnose and spotted gar, and lake chubsucker. They may be extremely abundant in localized areas where they find suitable habitat conditions. In Lake George each of these species represented 2 percent, or less, of the adult fish population during the netting period.

Freshwater foodfishes distributed through the river include white catfish, channel catfish, brown (speckled) bullhead, yellow bullhead and flat bullhead. The first three are abundant; representing 13, 13, and 1.6 percent, respectively of the total adult fish population taken in Lake George during the years 1948 to 1953. The yellow bullhead was less abundant, but common in the drainage system. The flat bullhead was occasionally found.

Abundant, smaller, freshwater fishes and minnows are seminole killifish, mosquito fish and scalyhead darter. The seminole killifish, commonly known as “bullhead minnow,” and the golden shiner are used as live bait by sportfishermen.

Marine-Type Fishes

Approximately 50 species of anadromous, catadromous, euryhaline, estuarine and other marine-type species are on record from the St. Johns River. If a study were made of the fish population near the river mouth this list no doubt could be enlarged.

Food and game fishes of marine type, occasionally in the river include tarpon, snook, striped bass, crevalle jack, Atlantic and shimpnose sturgeon, ladyfish, red drum, gray snapper, spot, American eel, white mullet, Irish parramora, and southern flounder.

Food and game fishes abundant or common seasonally are American shad, blueback herring, yellowfin shad, hickory shad, Atlantic croaker and striped mullet.

Estuarine, anadromous, catadromous, euryhaline and marine species represented approximately 4 percent by weight of the total catch of the nets (Continued on next page).
of Lake George. Relatively speaking, freshwater fishes therefore form the great bulk of the fish populations present in the St. Johns.

Non-Game Salt-Water Types

Among fishes of the estuarine or marine categories are the bay anchovy, mummichog, sa1lfin molly, and striped killifish, which are present in abundant numbers. The Atlantic stingray, gafftopsail and sea catfishes, Atlantic needlefish, Gulf pipefish and naked goby are common. The sea lamprey, whip stingeray, striped anchovy, chain pipefish, opossum pipefish, marsh killifish, Atlantic silverside, rough silverside, spotfin mojarra, pigfish, silver perch, sheepshead, pinfish, freshwater goby, clown goby, bay whiff and hogchoker are occasionally encountered.

The Importance of Natural Environment to Fishes

Although sport fishermen prefer to fish for largemouth bass, bluegill, and redear in waters adjacent to the shoreline, the seining studies show that they are distributed quite uniformly in both deep and shallow waters. Gizzard shad and black crappie are more abundant in deeper areas. Channel catfish, sunfishes, with the exception of largemouth bass, are inclined to travel. The younger fish (11 to 16 inches in length) showed a greater tendency for movement away from Lake George into other areas of the river, than the older (16.5 to 25 inches) largemouth bass. Greater numbers moved out of Lake George in the fall of the year than during other seasons.

Growing more popular each year is sport fishing for American shad during the spring spawning run.

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Although more than half the St. Johns River anglers are seeking bass fishing action, bream and crappie angling is often as popular. In order that fishermen may better fish the more remote areas, the Game and Fresh Water Fish Commission has constructed 10 public boat ramps or slips from Sanford to Jacksonville.

Photo By Wallace Hughes

More than 120 public fishing camps are available along the river offering excellent services for the fishermen.

Florida State News Bureau

Although the principal spawning ground and sportfishery for American shad is in the section of the river between Lakes Monroe and Harney, eggs and adults of this species have been found recently in Lake Winder and even upstream from it.

Some striped bass have also been reported from these areas.

It is believed that the increasing salinities in the river earlier mentioned, are responsible at least in part for the current increase in marine-type fishes and for the apparent extension of their range farther upstream in the St. Johns.

The St. Johns is an important nursery ground for the edible commercial shrimp caught on the east coast of Florida. They enter the river and are found as far south as Lake George during the summer months.

The river also supports an important commercial fishery for the blue crab. Hundreds of thousands of pounds are taken annually. They range at least as far south as Lake Harney. The area from Lake George to the St. Johns' mouth is, however, the principal region of commercial activity. In recent years recreational fishermen have found much enjoyment in catching crabs for food and fun at Salt Springs, whose run empties into Lake George.

Sportfishermen and Angling Opportunity

The overwhelming attraction which the St. Johns River holds for sportfishermen is confirmed by answers the Lake and Stream team received to a questionnaire handed to fishermen encountered on the river last year.

Although 54 percent of the fishermen answering had never been on the river before, 92 percent had enthusiastic plans for future fishing trips to it. Seventy-six percent of those interviewed stated that their fishing trips had been satisfactory.

During 1952 and 1953 approximately 1,900 anglers were interviewed while fishing along the central part of the river. About 60 percent of these persons were fishing for bass, 35 percent for bream, and 5 percent for crappie. In recent years the proportion of fishermen seeking bream and crappie has greatly increased.

During 1952-53 the average catch per man-hour of effort while fishing for bass fluctuated, depending on the season of the year, between .3 and .7, for bream between .9 and 2.9; and for crappie between 0 and 1.6 fish. There is reason to believe that fishing success for largemouth bass has been declining in recent years in some areas of the river.

Fishing pressure, in terms of numbers of sportfishermen observed daily per acre, is however light. An estimate was made by means of aerial observation of the numbers of sportfishermen using the river during 1962. It was found that the region most heavily fished was the section of the river between Lake Monroe and Lake Beresford. This region has an area of approximately 800 acres. Yet the average number of fishermen observed during the daily flights here was only 47, or one fisherman for each 18 acres of water.

Generally speaking, higher fishing pressure exists in central river regions than in other parts, and narrow channels contain more fishermen per acre than wide lake areas.

Accessibility by Fishermen and Boaters

Accessibility by boaters and fishermen to all areas of the river is fairly good. There are more than 120 public fishing camps with boats for hire, scattered along the length of the river, from Jacksonville nearly to Lake Helen Blazes. These camps also provide overnight lodging, meals, guides, and additional services.

Water distances are in general fairly long from one inhabited spot to the next, but to the nature lover this is an asset rather than an inconvenience.

The Florida Game and Fresh Water Fish Commission, in cooperation with county commissioners, and in some instances with the help of Federal-Aid to Fisheries funds, through the Dingell-Johnson Act has constructed some 20 public boat ramps at various points on the river from the vicinity of Sanford to Jacksonville.

An experienced fishermen will have little trouble catching gamefish in almost any part of the river. Guides are available at most of the camps for the convenience of fishermen desiring their services.

Some Good Fishing Spots

No attempt can be made to list all the known good fishing spots on the river, but a few of the more popular ones will be discussed.

The upper river area from Lake Helen Blazes to Lake Harney provides excellent opportunities for the freshwater sportfisherman, except during periods (Continued on next page)
Man-made alterations in fish habitats are the most serious threat to our fish populations. For this reason the Commission carefully studies all plans involving constructions which would produce changes in fish habitat. It makes recommendations which are designed to preserve from damage, as far as possible, valuable breeding grounds for fish.

There is a very real danger, for instance, that navigational and flood control work, if not carefully planned, may result in total destruction of the St. Johns River fishery as we now know it.

Most who know it now take it for granted. But someday, if it were irredeemably ruined by man, how much would we, and our children, regret the loss?

In an effort to preserve in its natural condition of wilderness certain small areas of the river, and protect spawning of largemouth bass and other fishes, the Commission established in April 1963, through cooperation with the St. Johns River Valley Advisory Committee, and the Florida Board of Conservation, four fish refuges in the river.

These areas which have been closed, for an indefinite time, to all types of fishing, shrimping and erabling. Largemouth bass and other gamefishes are known to spawn there each year. The purpose of the refuges is to protect from molestation, not only the spawning of gamefishes, but all other aquatic life as well.

One such refuge is located on the lower river in Hallow's Cove, another in Lake Crescent, and two are in Lake George.

Rough fish control work to improve sportfishing conditions was carried out during the late summer of 1962. It consisted of the destruction of large quantities of gizzard shad in places where they were found in large concentrations. Populations of gamefishes present in the treated areas were not harmed by the work.

On the contrary, it was generally agreed that sportfishing success was greatly improved in all the treated areas.

Additional activities of this nature, on an expanded scale, are being planned for late summer and early fall of 1963.

About the Report

This article is in part a result of the wish of the St. Johns River Valley Advisory Committee, appointed by Florida's Governor Farrra Bryant, to have published information made available concerning the river which will be of practical value to sportfishermen and other interested persons. The 1963 members of the Governor's Advisory Committee are: E. M. Pickens, Crescent City; Zack Halland; Bunnell; Sid Porter, Deland; E. Burch Hart, Orlando; Al Lee, Sanford; Ken Friedman, Jacksonville; Felix Salvador, St. Augustine, Morgan DeKalb, Melbourne.

Publication was made possible through cooperation of the Game and Fresh Water Fish Commission's Lake and Stream Project, F-4-R, a Federal Aid-State study financed under provisions of the Dingell-Johnson Act; the Game and Fresh Water Fish Commission's St. Johns River Fishery Project, which works closely with the Advisory Committee; and the staff of Florida Wildlife Magazine.

Lake and Stream Survey Team, Federal Aid Project F-4-R: Phil Keenan, Project Leader; Gene Smith. Fisheries Technicians: maps and charts by Leon Brinkman.

When to Fish

The time of the year to fish for largemouth bass with the greatest chance of success is during the months of December, January, February, March and April.

Black crappie are caught in greatest numbers in January, February, March and April.

Very often bluegills will be caught in large numbers in March and April, slack off in May, but become extremely vulnerable again in June and continue so into September.

Shelucker fishing is usually best in August. A characteristic of this fish is to spawn when the water is at its warmest temperature. Its habits are similar to those of the bluegill in that the fish congregate in large groups to spawn. Fishermen are often seen gathering in astonishing numbers on such shellercker and bluegill beds.

The American shad is extremely popular with sportfishermen during the months of December, January, February, and March when ascending the river on their spawning run. At this time of the year shad are caught in high numbers by sportfishermen in the stretch of the river between Lakes Monroe and Harney.

Efforts to Preserve and Improve

For many years the Game and Fresh Water Fish Commission has been trying to cope with the complicated problems of improving fishing conditions on the St. Johns River.
THE NATURAL WONDER
OF BIRTH

By ROSS PHARES

Birth is the magical link in life’s eternal chain. Wherever creatures live—whether in the deepest crevices of the ocean bed or atop the bleakest mountain—nature’s first rule to them is to multiply. And nature, in turn, has devised astonishing ways in unbelievable circumstances for her diverse creatures to keep the earth replenished.

Birth at the bear’s house is little short of miraculous. Nature has provided not only anesthetized obstetrics for Mamma Bear, she also sleeps through the first 40 days of motherhood. A baby bear, one of the tiniest in comparison to its mother, and apparently one of the most helpless of infants, must often shift for itself while mamma dozes comfortably on until spring. And Papa Bear is no help. Contrary to the nursery tale he is never around to serve any porridge.

So childbirth is a snap for a bear. This four-pound mother snores blandly while her 10-ounce, blind, hairless and toothless babies arrive and set up housekeeping in the soft fur of her underbelly. She furnishes milk without knowing anything about it. And by the time she wakes up, the children have opened their eyes, begun to cut their teeth, and are ready well able to take care of themselves except for training and some feeding.

Look at a half-hour old porcupine, covered with hundreds of bristling needle-sharp quills, and you’ll say it’s completely unbelievable that it could have been born—unless you know nature’s marvelous obstetrical secret for porcupine mothers. Even so, you’d probably say the youngster couldn’t have been born rump first, that the mother surely could not survive. But it is of no concern whether the plump fellow arrives head or rump first. He’s delivered in a membranous sac, his quills moist and soft and harmless. The mother rips open the sack after birth, and releases him. And within minutes he’s so formidable nothing in the woods would dare touch him.

Birth in the bat family also seems impossible. These mammals live an upside down life—when not on the wing. And mothers make no change of position to bring forth their young.

To observe a female bat hanging upside down by her feet high above the ground, it appears hardly believable that in this seemingly awkward and hazardous position she could give birth to her infants without at least the terrible risk of them crashing down to their death below.

But the mother, at the proper moment, bends her tail and body into an arch, and the emerging youngster is received safely into a swinging fur-lined cradle. From then on it’s rock-a-bye-baby in the cave-top.

Nature’s most astonishing marvels are wrought at life’s beginning.
Papa and Mamma armadillo may not know whether it will be boys or girls until arrival. But two things are certain: there will be four, always quads; and they will always be of one sex, all boys or all girls. So far as we know, the armadillo is the only animal that reproduces in this fashion. Research has revealed that the four are identical litter mates; one fertilized egg splits four ways.

The sex ratio of some breeds seems always tremendously unbalanced. Among gall flies it’s definitely a woman’s world. Males frequently number less than 2 per cent.

One of the most familiar examples of arrested development occurs in birds’ eggs. The egg is made up basically of fertilized ovum, surrounded by stored food encased in a shell. The egg has been fertilized before it is laid. No development occurs until temperature changes are made. Without this control of the birth date by the mother through temperature control applied by setting, the species probably would perish. Should the hatching date be determined by the laying date the young birds would hatch in the same nest over a continuing period. Thus the mother would be faced with the fatal decision of either abandoning the unhatched chicks to care for the first-born, or of neglecting the first-born, to incubate the remaining eggs.

Experience in birth and child care appears to register on the birth mechanism, and thus influence birth rate. Among some animals, such as the moose, the first-born is a single calf. Thereafter twins are the rule.

A feeling of security also appears to influence the birth process among some animals. Mountain goats of Southern India, for example, have single kids when roaming wild. But when domesticated they bear triplets, as a rule. Do comforts and luxury of security trigger the birth tabulator for these goats? Possibly. But the example does not prove anything in the argument on security versus freedom. For many animals, deprived of their natural freedom, will not give birth to young at all.

Will it be a boy or girl? Many of the wild creatures not only know, they are able to call their shot, and determine both sex and the ratio of boys and girls. Ants and aphids, for instance, can arrange their families at will. The queen ant carries fertilizing cells in a small sac in her body. Muscles control their passage. If these cells are held, the offspring is a male. Thus by muscle control, sex of the offspring is determined.

Just how the queen mother concludes what the balance between the sexes should be for the best advantage for her descendants seems a mystery known only to her. But the result is one of nature’s marvels—the organization of one of these insect colonies is mystifying in its apparent social and economic harmony.

Papa and Mamma armadillo may not know whether it will be boys or girls until arrival. But two things are certain: there will be four, always quads; and they will always be of one sex, all boys or all girls. So far as we know, the armadillo is the only animal that reproduces in this fashion. Research has revealed that the four are identical litter mates; one fertilized egg splits four ways.

The sex ratio of some breeds seems always tremendously unbalanced. Among gall flies it’s definitely a woman’s world. Males frequently number less than 2 per cent.

Actually, sex among some species is of little apparent importance. If you have a grudge against termites, you cannot lay the blame directly on either the males or females. In a nest of millions of individuals only two have any sex life at all. One secret of the amazing parenthood of these creatures may lie in the fact that a termite may live for thirty years. Among insects that affords a long period for child-bearing.

If life in general is more hazardous for animals than people, nature has provided compensation in the birth process. No wild animal is known to have an established menopause. Whereas child-bearing ability among human mothers may last on an average of less than thirty years, some animals bear offspring for 75 years or more. A 75-year-old elephant mother is not unusual.

Nature does not delay her wonders for her creatures. Her most astonishing marvels are wrought at life’s beginnings.
even though he has not seen a bird fall. He is learning confidence and when the boss man says go, there will be a bird in that direction.

Keep up this training method until you are dropping the dummy in an area and at a distance the dog cannot see from his position of sitting at your heel and depends on you to send him in the direction of the bird.

One word of caution, don’t continue this method too long or any retriever worth the salt in his dog food, will soon discover that by backtracking you, he will find the bird. Have your bird boy plant a few short simple blinds or walk in a large circle and then send your dog across the circle.

Chances are you are real proud of yourself as a trainer and the dog as a retriever. This feeling is justified for you have made considerable progress in teaching your dog blind retrieves. But what happens when your dog misses the bird, when he goes too far, not far enough, or to the side. It’s simple, all you have to do is stop him when he is out in the field and by use of arm signals, direct him to the vicinity of the fall. Anyway, it’s not quite as simple as it sounds and will require considerable practice and lots of patience.

HANDLING: To quote from an article on dog trainers which appeared in “The Field,” an English publication for gentlemen sportsmen, “To train a retriever one has got to learn to hup his dog at the ‘alt’ to ‘hup him on the march,’ to ‘hup him at the double,’ and finally to ‘hup him on the unt,’ with a shrill blast of the whistle.”

In England, and in spaniel training, the term ‘hup’ is the equivalent of your command ‘sit.’ A translation means that you must learn to make your dog sit at any place or situation with a single blast of the whistle.

If you have been using the whistle during your earlier training, your dog knows that one signal means he should sit. Chances are he responds quite readily to this signal while at heel, getting him to do the same while fifty yards away is quite different.

To train your dog to stop on a whistle command, it is time to acquaint the command with the fact that he is to sit regardless of conditions. Now for the second step, place your dog in a sit position, command him to stay and walk away. After twenty or so yards, stop, turn and call your dog to you.

When you are about half-way, give a single sharp blast on the whistle. Your dog will probably stop and sit on the command but should he show other indications, you should run out to the dog and make him sit. Continue this until such time the dog stops and sits without hesitation whenever you command, regardless of conditions or situations.

Once your dog is obeying the whistle command, it is time to start directing him to the area of a blind with hand signals. Master the whistle command before you venture into the field of trying to signal him. The simple purpose of stopping the dog is to gain his attention so that he might see your signal. It is both useless and senseless to wave your arms about trying to direct your dog to a fall if he does not see your signal.

In essence, there are three basic hand signals that you will use to direct your dog to a fall that has not seen. There are many varieties of these basic three, but if you and your dog master these three, no bird will escape this combination of man and dog. Over-right, means that the dog should move to the right. Over-left, means that he should move left. Back, means that he should move back.

If he accepts these signals could be compared to those used by a surveyor signaling to his rodman. You should perhaps exaggerate the signals to your dog to prevent any possible misunderstanding.

To teach your dog to take hand signals will again require much practice until your dog will by memory and habit obey certain signals. To start, you should place your dog in a sit position, command him to stay and then take a position about thirty feet in front of and facing him. Now, toss a dummy so it lands in a position opposite the dog. Think of a cross with you at the bottom, the dog at the center, and the dummy tossed at one end of the cross arm.

Now use your arm in the parallel direction of the dummy and command your dog to get OVER. When he retrieves the dummy praise him and then do it over again.

Now try it with the dummy at the other end of the cross arm. Continue the practice until the dog is thoroughly familiar with the meaning of the arm signal. Once your dog is getting OVER with enthusiasm, try placing him again at the center of the cross and this time toss the dummy over his head and in back of the dog. Now, with the signal of an up-raised arm, command your dog to get BACK. Practice these three signals and commands until there remains no flaw in performance. It’s easy because your dog knows the location of the dummy. The real test will arrive on the day you hide the dummy.

One day when you are feeling chipper and you are sure your dog comprehends all of your hand signals, you should try it again. You can hide the dummy and then send your dog for it. Stop him with a whistle and then by use of arm signals, send him back or over. He will do it every time, until he has located the dummy. If he does not respond promptly to your handling and hand signals, take him back a grade and slowly repeat your training sessions. Sooner than you think, you will associate that signal with your desire for him to move in the indicated direction and if he obeys this signal, he will find the bird.

When your dog arrives at this point, you might consider his education complete. All that is left are extension courses which consist of training and more difficult blinds and marked falls. These will come with time as you continue the training sessions. It all pays off in the end. Your dog is now finished and is ready for the hunting field.
FISHING

(Continued from page 7)

hardly know they were there. Total weight runs about six ounces, which isn't bad considering all those guides, ferules, and dual-purpose handle.

In a spinning rod I figure seven feet is about right for fly fishing; it is slower than I like but many prefer 7-footers; with a plug casting handle attached, the resultant rod is good for that.

I guess if I could have only one fishing rod to my name this one would have to be it. The necessary complications: compromises are quite painless.

When a spinner, rubber bug and tiny sinker combination proved deadly for spinning outfits used on panfish last spring, I was reminded of my youth when we fished spinners, and other tiny lures on fly rods. It is done so much any more because spinners are usually an abomination to cast with fly tackle and the adroit use of swing gear has made it unnecessary.

If you have to do it with a fly rod you need a really tiny and easy handling and the writer Jack GoodVy catch a mess of bluegills with spinner and fly the other evening. He fished slowly and simply twirled the line in with his left hand.

An almost forgotten and (for me) unmentioned fishing method is fly rod strip-casting of natural baits. They used to hook, on a small shiner or frog, coil a lot of line in the boat and then let it run through the guides as they soaked out the bait.

Spinning outfits pretty well closed that chapter but it afforded good equipment for ban fishing when there was nothing better around.

I broke a valued rod the other day. Using a spinning outfit I've often preached against.

At the end of a day's fishing, all ferrules should be unjointed to avoid sticking. The other evening I didn't really need to take my rod down as I was leaving from the same dock the next morning so I simply loosened the female intending to stick it back -- only part way together -- and then resot the next morning before casting.

So, without unstrapping the rod, I simply loosened the line in the guides and pulled it apart.

A leader knot -- or something-caught and I snapped a tip that 'sump-hunting bugs and big toads never have been able to stretch.

I, personally, see few fishermen using spinning reels with a manual pickup arrangement and a look through current tackle catalogs would indicate the do-it-yourself pick-upers are not exactly improving the tackle shop.

Using your finger to pick up the line brings about a great simplification of the conventional open spinning reel and those who couldn't be caught dead with a bailed reel. An enthusiastic salesman who uses the manual pickup type can give you an encyclopaedia full of reasons why it's the best.

His biggest selling point is the admitted fact that the bail and pickup assembly is most frequent cause of spinning reel trouble and is apt to be a bit fragile on an age size. I once converted a salt water reel with a bailed reel. An enthusiastic salesman who uses the manual pickup reel renovation on small and medium reels.

The manual pickup reel requires a little more attention to keep the line from peeling off when you put it up in a boat or car.

I would recommend that buyers of new spinning reels at least look into the manual pickup models and I wouldn't knock that until I'd tried it.

Tournament fly casters have long used monofilament running line for distance casting. That is, they fasten some proper length monofilament back of a heavy "shooting head" of line and the mono slides through the guides so easily that the line does not move, and the line is hooked in manually.

The hand holds a Fix manual pickup spinning reel with which you pick up the line with the hook, hook it over the roller and start your retrieve. On the bench one, left, the hub-lift Orvis, and a Centaur salt water reel with finger bail. A fourth type not shown has a recessed metal finger which does not move, and the line is hooked in manually.

I find them a nuisance on the best. My hands are about average size. I once converted a salt water reel with flne9er bcdl. A fourth type of "fishing" reel I, personally, see few fishermen trying the casting distances are great. My first efforts at such a method were not too successful as the "monofilament was kinky, wiry and a general nuisance. Lately the "mono-press" lines are a big improvement.

More recently, some fly fishermen have been using a modified rig of this sort for fishing where the casting distances are great. My first efforts at such a method were not too successful as the "monofilament was kinky, wiry and a general nuisance. Lately the "mono-press" lines are a big improvement. I have been feeling again with a shooting head, using 25-pound-test monofilament and it didn't tangle much more than regular fly line. So if you're a fly caster who gave up on the system years ago because of tangling, you ought check again.

A tackle dealer was displaying a card of Pflueger fluted spoons there -- and I passed for a while. Actually, most fishermen would call the old Pflueger, "spoon" a "spinner" as it turns around a shaft. The dealer told me he was selling them for bass trolling, something they've been good for in the past. At least, I'd guess. I was trying to catch a bass on one about 1920 if I remember rightly. As I recall I had it tied to the end of a calapa pole.

A reel repairman of my acquaintance was lecturing to a frequent customer the other day.

"You don't bust these reels fishing," he said. "You're smashing them up in the boat. Going overboard in a fast boat can hurt a reel like a jackhammer if it's left lying in the wrong place."

Preserved baits used to be a last resort but new methods of dehydrating and packaging have changed that tune. I have here a plastic package of "freeze-dried" shrimp piecems. They've been put out by the West Indies Oceanographic Products Corporation of Port Everglades, have lost most of their weight and are dry to the touch.

Put one on a hook and drop it into the water and, as nearly as I can tell, it looks, feels and smells like a shrimp instead. There are lots of advantages. They're easy to transport, don't require refrigeration, last indefinitely and aren't messy. If you put one on a hook and drop it into the water and, as nearly as I can tell, it looks, feels and smells like a shrimp instead. There are lots of advantages. They're easy to transport, don't require refrigeration, last indefinitely and aren't messy.

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In reality, the percent of destruction of underground insects.

The good they do in construction of crop damaging insects and their value as food for humans and pets. The shells also are utilized as souvenirs, though they are used more as a liability. Many species shown in this series, such as skunks, opossums, snakes, and Acom Woodpeckers. Of the species shown in this series, Lichtenstein's Oriole, is the one that reaches the United States in Texas. The Red-legged Honeycreeper is found from Mexico through Central America and Cuba into South America. It is shown on book covers, place cards, greeting cards, party decorations, let-
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Included on this year's songbird stamps include the Yellow Grosbeak, Puerto Rican Woodpecker, Lichtenstein's Oriole, Red-legged Honeycreeper, and Blue-hooded Euphonia. The stamps, which may be used to be purchased in exchange for $1.00.

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In addition, there is the ever-present threat of forest fire, and much recreational use causes when the fire potential is the greatest. One antidote for fires is to make those responsible help fight them and pay for the cost and damage; but that does not bring back the forest, or its game cover, nor stop the erosion which often follows.

More and more, the recreational use of forest lands in relation to industrial forests is being given cogitation. An article in the Journal of Forestry by a member of the Society of American Foresters evaluates the problem in Michigan. A few conclusions are that:

1. Increasing pressures on forest lands and efforts to place large additional acreages in a single-use recreational status is a problem now facing foresters working for the public and for private industry.

2. Management of both public and larger private industrial forests indicates a high degree of interest in fostering public understanding and goodwill.

3. Liability for injuries is a factor whereby companies hesitate to post notices of public use; and the greatest encouragement for more public use of industrial forests would be sound liability laws.

4. There is an ever-present possibility of forest fires.

5. Apparently little interest exists at this time in possible future leasing of large tracts of industrial forest land for hunting and fishing rights. Only four respondents in Michigan indicated such interest.

A factor that bothers some companies in the matter of "use" fees is the idea that the public may feel they have some priority rights, and that game comes ahead of growing trees.

With some 58 million acres of private forest land having a recreational potential and with the increasing pressures of people looking for open space, the future is going to be interesting.

Forest industries, instead of taking a negative attitude, have a secret hope that with the increasing pressures, the public and for private industry.

The people who recreate on industrial forests also buy the products which those lands produce. Cut off their paper and wood supply, and the public will also howl in anguish.

Education is the answer, and the American public can use a lot of that regarding natural resources and their uses. There are too many who are now landless people, with little knowledge of the fact that it is the resources that give them their good life and makes the world go 'round.
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