This Florida Wildlife Magazine Digital Preservation Project is developed with financial assistance provided by the: William H. Flowers, Jr. Foundation and the Fish & Wildlife Foundation of Florida, Inc. through the Conserve Wildlife Tag grant program.
MORE THAN DEER AND BASS

A QUARTER OF A CENTURY AGO, THE GAME AND FRESH WATER FISH COMMISSION CHIEFLY CONCERNED ITSELF WITH THE PROTECTION OF WILDLIFE AND ENFORCEMENT OF RESTRICTIONS UPON THE HUNTER OR FISHERMAN.

TODAY, WHILE THE PRIMARY RESPONSIBILITY IS STILL TO THE HUNTER AND THE FISHERMAN, THE COMMISSION IS COMMITTED TO CONSERVING AND MANAGING ALL THE WILDLIFE RESOURCES OF FLORIDA FOR THE ENJOYMENT AND USE OF EVERYONE INCLUDING THE CAMPER, BIRD-WATCHER, BOATER AND NATURE LOVER. NATURAL RESOURCES NOW SERVE A MULTIPLE USE BENEFITING ALL OF OUR CITIZENS.

WE ARE DEEPLY CONCERNED ABOUT THE ENVIRONMENT. FOR WE KNOW HABITAT IS CRITICAL TO THE SURVIVAL OF FISH AND WILDLIFE. OUR OFFICE OF ENVIRONMENTAL SERVICES REVIEWS DEVELOPMENT PLANS, ASSESS THE POSSIBLE IMPACTS ON FISH AND WILDLIFE RESOURCES AND MAKES RECOMMENDATIONS ON THEIR INFLUENCE.

FLORIDA'S RAPID DEVELOPMENT HAS PLACED A DANGEROUS STRAIN ON ALL WILDLIFE, ESPECIALLY RARE AND ENDANGERED SPECIES. THE DIVISION OF WILDLIFE WORKS TO PROTECT AND PRESERVE THESE RARE FLORIDANS ALONG WITH TRADITIONAL GAME SPECIES.

DIVISION OF FISHERIES PERSONNEL SEEK WAYS TO BEST IMPROVE THE STATE'S FISHERIES RESOURCES. TO USE AND PERPETUATE OUR FISHERY RESOURCE, THESE BIOLOGISTS STRIVE TO KNOW THE LIFE HISTORY, NEEDS AND INTER-RELATIONSHIPS OF FISH TO THEIR ENVIRONMENT.

THE DIVISION OF LAW ENFORCEMENT IS PRIMARILY CHARGED WITH THE RESPONSIBILITY OF ENFORCING THE WILDLIFE CODE. IT PLAYS A MAJOR ROLE IN THE MODERN AND PROGRESSIVE CONSERVATION OPERATIONS OF THE COMMISSION.

EACH EMPLOYEE WEARING THE COMMISSION'S DEER AND BASS PATCH PICTURED ABOVE IS DEDICATED TO THE BEST MANAGEMENT AND WISEST CONSUMPTION OF FLORIDA'S WILDLIFE AND FRESHWATER FISH RESOURCES. WITH THE CONTINUED SUPPORT OF STAUNCH CONSERVATIONISTS SUCH AS YOU, OUR MISSION WILL BE ACCOMPLISHED.

ROBERT M. BRAINTLY, Executive Director

WE ARE DEEPLY CONCERNED ABOUT THE ENVIRONMENT, AND THE RESPONSIBILITY OF PROTECTING WILDLIFE WORKS TO PRESERVE THE STATE'S FISHERIES RESOURCES. TO USE OF EVERYONE INCLUDING THE CAMPER, AND ENFORCEMENT OF RESTRICTIONS UP TO 1975. TODAY, WHILE THE PRIMARY RESPONSIBILITY IS TO THE FISHERMAN, THE COMMISSION IS COMMITTED TO MANAGING ALL THE WILDLIFE RESOURCES OF FLORIDA, AND USE OF EVERYONE INCLUDING THE CAMPER, AND THE NATURE LOVER. NATURAL RESOURCES NOW BENEFIT ALL OF OUR CITIZENS.

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No other instrument is better for looking at small bumps and pores than a scanning electron microscope (SEM), as the photographs on these pages attest. Despite its being limited to viewing surface features, an SEM’s great depth of field and resolution results in photographs that are strikingly three-dimensional. These attributes, along with the SEM’s ability to magnify objects more than 200,000 times, allow even the most minute of surface structures to be observed in detail.

Dinoflagellates are single-celled, microscopic organisms found in both marine and fresh waters, although the great majority of species are marine. The name “dinoflagellate” was applied because they normally possess two flagella, long, whip-like outgrowths which, when vibrated rapidly, propel the cells through the water.

The all-too-familiar “red tides”, which have caused widespread fish kills along Florida’s Gulf Coast in the past, are caused by “blooms” of certain dinoflagellates. Although destructive when their numbers grow too large, too fast, they greatly add to the productivity of aquatic systems by trapping and storing the radiant energy of sunlight through the process of photosynthesis. Dinoflagellates, along with other microscopic planktonic plants (phytoplankton), therefore help form the base of the aquatic food web. Microscopic dinoflagellates show an incredible complexity of structure and diversity of form. A most conspicuous feature of dinoflagellates contributing to their shape is the theca or envelope of plates covering the cell. While a great many dinoflagellates do not have a theca, those that do are often bizarre in shape and ornamentation and may resemble anything from spaceships to Viking helmets. Long, curving spines, surface ridges and reticulations, and assorted bumps and pores may not be understood for their functions, but they certainly add to our aesthetic appreciation.
HUNTING

By CHARLES DICKEY

With doves, know-how may tilt the odds a bit in your favor.

The mourning dove is not an especially cooperative bird. It seldom occupies the same space as the shotgun pellets you have just discharged. It also has a great many advantages during the hunting season. There is readily available a tremendous amount of space near the dove. If you’re an average shooter, the odds on your shot string intersecting its flight path and colliding with feathers is about five or six to one.

With the price of shells inflating, the typical hunter has an investment of a dollar or more in each dove he takes home. I’ve seen some doves fly the shotgun gauntlet of a long mile field and watch its value escalate to $5 by the time it left the other end of the field unscathed.

There are a number of things that we can do to improve our shooting score. The most important is to take shots only within the clean killing range of the shotgun choke and load being used.

Dove hunting comes in several forms. Most is done in and around fields the doves fly to for feeding. After feeding, the birds usually fly to water. Hunters set up at water holes, or along flight lines leading to watering places. The final flight of the day is to a roosting area, often live oak and pine trees. Hunters along flight lines leading to roosts usually get 10 or 15 minutes of fast shooting before closing time at sunset.

When doves are shot as they fly from one area to another, it is called “pass shooting.” The doves are simply “passing” over and have no intention of landing or circling back. The other type of gunning is “jump shooting.” The hunter goes to the bird. He flushes doves from feeding fields or loafing areas and tries to hit them before they fly out of range.

In all kinds of shooting except jump shooting or flushing, the hunter selects a spot and hopes the doves fly to him, or within range. He may frequently change locations or stands as afternoon flight patterns develop but essentially he waits for the birds to come to him.

So that he will get a reasonable number of shots, the gunner or his buddies scout a field to make sure doves are feeding in it. They set up at a water hole they know doves are using late in the afternoon. They locate on a flight line to a roost that someone has spotted.

On opening day of the first phase of the season, the doves are not wary. Roughly 80 percent of them are juveniles and have never heard guns fired. It is surprising how quickly they become educated.

So that the doves will fly in range, all hunters wear drab or camouflage clothing. Few wear face masks or dab on camouflage grease paint to cover up flashing skin. In hot weather, sleeves are rolled up, bare arms flash, and wristwatches twinkle in the sun. That’s alright if there are plenty of doves flying within shooting distance.

Most hunters stand behind or in the middle of cover.

Decoys may sometimes make the difference between a successful shoot and one that’s something less.
They also use shadows to help hide their movements. Some take machetes to the field and build blinds of weeds and branches or corn stalks.

That’s all to the good. The better we stay hidden, the more likely doves are to fly within range.

Most hunters know these things and practice them to a degree. Few of us do as good a job of camouflage and hiding our movements as we could. It’s usually movement which spoons or flares an incoming dove.

But whatever our camouflage and hiding efforts, the most common mistake is to stand up to shoot before the doves are in range. There is considerable gun waw­

ing and the birds flare wide.

Under most field conditions, approaching doves are silhouetted against the sky and can be seen for a long distance. There is a compelling temptation for the gun­

er to stand up, mount his gun and begin tracking the bird when it is 60 or 100 yards away. There’s a good chance the dove will spot such movement and spook during the hunter’s juggling and semaphoreing. The bird flares at 50 yards and the hunter goes on and takes a long shot. Naturally he misses.

On the other hand, if the hunter remains absolutely still until the bird is within 40 yards, when he stands to shoot he may get off a quick shot before the dove sees him. Even if the bird flares, he is still in range for one to three shots.

The safest way to hit a flying dove is to shoot before the dove knows you are there. If he is unaware, he is more likely to be flying a straight path at a constant speed. Once you are spotted, the dove goes into its aerobatic repertoire and your target is much more difficult.

It’s advantage.

The unit is made so that the cards are not loose, but packaged cards about the size of a deck of playing cards. It’s an easy reference for the beginning hunter. The unit is made so that the cards are not loose, but swivel out for reference without getting out of order.

Topics covered, plus illustrations, include reading tracks, how to field dress small game and birds, and cooking game at camp. There’s a handy reference on identifying waterfowl in hand.

Other subjects include first aid for the hunter or his dog, how to sharpen a knife, game-calling for pointers and identifying waterfowl in hand.

A similar pack is made for fishermen. If you don’t find the packs in your sporting goods store, you can get information on ordering from Essele Products, 600 Madison Avenue, New York, N.Y. 10022.

It’s easier.

If you are seated, you have plenty of time to mount your gun as you stand. Actually, as you check your gun you are already beginning to track the bird’s flight path with your muzzle. Then all you have to do is swing past the bird, pull the trigger and follow through with your swing.

The whole process can be done in less than a second. If it is, there’s a good chance that you can get off your first shot before the dove sees you. If you miss, the dove will flare, accelerate or make some sort of evasive turn. But he will still be in range and you will have time for a second or third shot.

It is difficult to wait for birds to fly in when the shooting is fast and all of your buddies are pounding away. There is a tendency to get in on the action even if you have to take lob shots at 60 yards. That’s when your shooting average really disintegrates.

On some shots, I put out dove decoys. In a field, I put them in the bare limbs of bushes as high as I can reach. At a water hole, I put decoys on bare ground near the water’s edge and try to silhouette them. I do not expect the decoys to pull in doves like decoys attract scap and other ducks. I have never found dove decoys that effective.

I use dove decoys with the hope that flying doves will focus on them and not me. I hope the decoys are just one more thing which helps me get off my first shot before the dove knows I’m around. That’s my best bet to kill one. It improves my shell-dove ratio and I need the help.

Glenn Supir, senior editor with FIELD & STREAM Magazine, recently came out with a “Hunter’s Shirt Pocket Guide,” a handy, waterproof series of neatly packaged cards about the size of a deck of playing cards. It’s an easy reference for the beginning hunter.

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**TURKEY TALK**

Between the 1700s and the early 1940s, the range of the wild turkey in America grew steadily smaller. Overhunting and pressures of civilization reduced the turkey from a common bird and important food resource to a rare hunting trophy and mysterious creature of southern swamps. Had the turkey remained mysterious, it would have become even more rare and would probably be on the endangered species list by now.

In the early 1900s, wildlife officials and conservationists were anxious to bring back the turkey. Unfortunately, they didn’t know how. Consequently, the things they tried were mostly wrong. Pre-reared turkeys, predator control, and artificial feeders topped the list. None of these things worked. Fortunately, however, in the late 1930s a different approach to wildlife management began to take hold.

The formation of the Wildlife Society in 1937 led to professionalism of wildlife management and increased emphasis on college training for wildlife workers. The Pittman-Robertson Act passed by Congress in the same year provided the incentive to state game departments, in the form of federal funds, to hire wildlife biologists and conduct studies.

One of the responsibilities of the Division of Wildlife through its Bureau of Wildlife Research is to obtain information on wild­life through research. Some information is found in books and other writings, but some things can be learned only by field research. Studies on the wild turkey in Florida have used both sources. Some of the old ideas are changing as our knowledge gains a more solid footing of facts. Here are a few of the most often asked questions, and the most plausible answers, about the wild turkey in Florida.

**WHERE DID THE WILD TURKEY COME FROM?**

The bird is a native American and Floridian. It is also found in other parts of the United States and Mexico, but only barely ranged into Canada even in the early days. It did not occur in the northeastern states originally, and it does not occur wild naturally outside of North America, and never got close to the country of Turkey.

The domestic turkey came from stock tamed by Indians in Mexico about the time of the birth of Christ. Quite a few pre­historic species of turkeys are known from fossils, but there ex­ists only one living wild turkey relative today — the ocellated turkey of Central America.

By Lovett E. Williams Jr.

Chief, Bureau of Wildlife Research, Ga­lemire
HOW MANY WILD TURKEYS ARE IN FLORIDA?
That depends on what time of year the estimate is made. Populations are highest immediately after the nesting season, which for turkeys is April and May. From that peak (counting all the young poults), the population declines until the next year when nesting takes place again. Between summer high numbers and late winter low numbers, we estimate about 90,000 at the beginning of the fall hunting season in November.

WHY ARE THERE NOT MORE TURKEYS IF THEY ARE UNDER PROPER MANAGEMENT?
Florida has never had fewer wild turkeys than it had in 1948 and will never have more than it did in 1964. Between those two dates, the Game and Fresh Water Fish Commission completed a statewide turkey restoration project that brought the turkey back in virtually all suitable habitat.

Florida was the first state to complete its turkey restoration program. We trapped and stocked more wild turkeys per year than any other state involved in a similar program. That program involved more than 3,500 transplanted wild turkeys. As long as suitable but unstocked turkey range remained in the state, the bird's populations were on the increase but when all that territory was finally stocked, the turkey could go nowhere but down, as increasingly large portions of its habitat were preyed upon. Unti1 radio tracking techniques were perfected, turkey nests were rarely found, except by accident. With radio tracking, 250 nests were located for study, and much valuable knowledge of turkey habits has been the result.

Studies show most hunters can't tell a hen from a gobbler. The breast feathers of gobblers are edged with shiny black, whereas those of the hen are brown. Gobblers weigh up to 22 pounds, but 15-17 pounds is average. Hen's weigh 7-8 pounds.

WHAT IS THE DIFFERENCE BETWEEN A DOMESTIC AND A WILD TURKEY?
Plenty. It is easy to tell the two apart. The wild turkey's tail feathers have brownish buff tips while the domestic turkey's tail feathers have white tips. The wild turkey has long red legs, the domestic bird has stubby brownish-gray legs, and the wild turkey's head, neck, and tail are slimmer. The main difference, however, is that you can get close enough to a domestic turkey to look at its head, neck, and tail are slimmer. The key's head, neck, and tail are slimmer.

WHAT ARE THE "PURE" WILD TURKEYS THAT ARE RAISED ON GAME FARMS?
There is no such thing, but don't expect the man with turkeys for sale to tell you he raises half-tame turkeys. All of the so-called wild turkeys in game farms have at least enough domestic turkey blood in their ancestry to make them tame enough to raise in commercially profitable numbers.

Pennsylvania has a game farm that has raised nearly "pure" wild turkeys by back-crossing the farm hens with wild gobblers in the natural habitat of the gobblers. Some of these hybrids have been used in several eastern and midwestern states to establish populations but they are not successful enough to sustain good hunting and will probably not last long enough except where they are given careful attention. There is no substitute for a wild turkey in the woods.

The wild turkeys used in Florida restocking programs are wild-living birds captured with nets or tranquilizers on refuges and moved quickly to their new homes. This works almost every time when turkeys are moved to suitable habitat.

HOW ARE THEY RAISED ON GAME FARMS?
In Florida each year, the Game and Fresh Water Fish Commission completes a statewide turkey restoration program, bringing the turkey back in virtually all suitable habitat. Such programs were completed in the 1960s.

There was a time when wildlife people thought that "pure" wild turkeys could be raised on game farms. But the essence of the wild turkey is its wildness and its "pure" ancestry. "Pure" turkeys are raised on game farms to keep the wild turkeys from becoming domesticated. In Florida each year, the Game and Fresh Water Fish Commission completes a statewide turkey restoration program, bringing the turkey back in virtually all suitable habitat. Such programs were completed in the 1960s.

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Many wild turkeys have occurred in Florida in recent years, and I believe that disease has been a greatly underestimated factor in wild turkey management. Pen-raised turkeys are introducing disease and parasitic organisms into the wild flocks, which have much less resistance to them. The turkey also has to contend with natural parasites and diseases of its own and of other wild birds.

Until radio tracking techniques were perfected, turkey nests were rarely found, except by accident. With radio tracking, 250 nests were located for study, and much valuable knowledge of turkey habits has been the result.

Studies show most hunters can't tell a hen from a gobbler. The breast feathers of gobblers are edged with shiny black, whereas those of the hen are brown. Gobblers weigh up to 22 pounds, but 15-17 pounds is average. Old hens weigh 7-8 pounds.

WHAT ARE THE "NATURAL ENEMIES" OF TURKEYS?
After man (whom some would not consider very natural), disease and predation are the most important. Unfortunately, we do not know enough about either of these to do anything about them, but we are working on it. We have found, for example, that 30% to 50% of the nests are destroyed by raccoons, opossums, or skunks before the eggs hatch. Fortunately this is offset by the tendency of most turkeys to try to nest again, with about the same success rate the second time around.

Serious outbreaks of disease in wild turkeys have occurred in Florida in recent years, and I believe that disease has been a greatly underestimated factor in wild turkey management. Pen-raised turkeys are introducing disease and parasitic organisms into the wild flocks, which have much less resistance to them. The turkey also has to contend with natural parasites and diseases of its own and of other wild birds.

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WHAT DO TURKEYS EAT?

Just about anything that is slow enough to catch and small enough to swallow. During spring and summer, flowers, grass seeds, green leaves, berries, and insects are the most important; during fall and early winter they eat more seeds from trees (corn and cabbage palm berries); in late winter and early spring they eat anything they can find, which usually means a greater variety of items including whatever source is left.

Year-round they eat hundreds of different kinds of insects, seeds, spiders, green leaves, berries, seeds, nuts, and even buds. They also eat sand and fine gravel to aid digestion. Water is supplied by green leaves, fruit, and probably morning dew, but they will drink water.

ARE FLOCKS OF TURKEYS MADE UP OF FAMILIES?

Yes, even the old gobbler flocks are made up mostly of groups of brothers. When broods hatch in the spring, they live in a flock with the mother hen, usually joined by another family or two like their own, until late fall. In about November or December, the brothers in the flock break off from their mothers and sisters but stay together as a flock. This is a lifelong attachment for the gobbler. Even when gobbles break up in the spring, they get back into the same groups later in the summer. Lone gobblers during winter may be the only surviving members of a larger flock of gobblers.

There are four types of turkey flocks during most of the year: adult gobblers, young gobblers, old hens, and young hens with their mothers. During summer, there are family flocks, adult gobbler flocks, and young gobbler flocks. Sometimes the old and young gobblers run together, but old gobblers do not associate with hens except during the mating season, in March through June.

HOW BIG ARE WILD TURKEYS?

A turkey egg weighs2 oz(681,799),(708,815) and produces a whole live poult that usually weighs about 2 ounces. Three years later, the poult may be a 20-pound gobbler, or roughly 150 times heavier. Weights are as follows during the fall hunting season: young gobbler, 9-11 pounds, old gobbler 15-17 pounds, young hen 6-7 pounds, old hen 7-8 pounds. Turkeys weigh roughly 15% more in early spring. That's why most hunting-size gobblers are taken during the spring gobbler hunting season, when weights over 18 pounds are common. You can occasionally believe a 25-pounder, but don't believe a 25-pounder, any time of year.

WHAT ARE SOME BAD TURKEY MANAGEMENT PRACTICES?

Any program that is not based on factual information is about as likely to be wrong as right, and this applies to turkey management as well as to most things. Virtually all the early turkey management practices that were not preceded by research proved to be wrong. They not only wasted money, but also tended to defeat public and political confidence in turkey restoration programs, and, in some cases (such as releasing domestic turkeys), were downright harmful to the remnant turkey populations that existed.

The single thing that nearly eradicated the turkey over much of its range in the early days was excessive shooting. This is effectively regulated now by state laws but can still occur in local situations. Where effective control is possible, the annual hunter harvest should not exceed 30% of the hens. More gobblers can be harvested safely. Some of Florida's public hunting areas have been closed to fall hunting recently because the killing of hens cannot be effectively controlled. Too many hunters either do not know hens from gobblers or do not care.

HOW MUCH RESEARCH HAS BEEN DONE ON WILD TURKEYS IN FLORIDA?

When the large turkey die-off occurred in the mid-1960s, we knew almost nothing about the biology of the wild turkey in Florida, or anywhere else. One-half of Florida's turkeys died in one year. We did not know why or how, or what could be done about it. We knew that unless we got busy, it would happen again. And, we would be in the same predicament as before—not knowing it had even happened until it was over.

A bird as wary as the wild turkey has kept many secrets. It was almost impossible to find a turkey nest except by accident, before radio tracking techniques were developed. In recent years, Florida's turkeys have been more closely studied through an intensive research program using radio tracking. These studies have provided valuable data on turkey nesting and population dynamics, habitat use, diet, and other aspects of turkey ecology.

WHAT IS BENEFICIAL MANAGEMENT PRACTICES FOR TURKEYS?

Proper turkey management cannot be prescribed by long distance or in generalities. I am perplexed by people who tend to oversimplify wildlife management and I will not do that myself.

Paradise (or at least a good place to observe and/or hunt. Predator control has more against it than for it. First, it is difficult to effectively reduce predator populations, and, should a predator control program be successful, it would eliminate animals such as raccoons, skunks, bobcats, and birds of prey, which are interesting and valuable in themselves, whether they catch on occasional turkey or not. Also, one must be prepared for anything when he tamper with the balance of nature.

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HOW MUCH RESEARCH HAS BEEN DONE ON WILD TURKEYS IN FLORIDA?

When the large turkey die-off occurred in the mid-1960s, we knew almost nothing about the biology of the wild turkey in Florida, or anywhere else. One-half of Florida's turkeys died in one year. We did not know why or how, or what could be done about it. We knew that unless we got busy, it would happen again. And, we would be in the same predicament as before—not knowing it had even happened until it was over.

A bird as wary as the wild turkey has kept many secrets. It was almost impossible to find a turkey nest except by accident, before radio tracking techniques were developed. In recent years, Florida's turkeys have been more closely studied through an intensive research program using radio tracking. These studies have provided valuable data on turkey nesting and population dynamics, habitat use, diet, and other aspects of turkey ecology.
Most turkeys experience an infection of pox, or "wane head," early in life, but most recover from it.

Blackhead, a well-known turkey disease in domestic and some wild flocks, is rare in Florida, probably because it is an intermediate host that is essential to its life cycle is very rare here.

Nearly 50% of the newly hatched pilgrims die of unknown causes before they are two weeks old. A parasite has been found in poultis of this age which may be causing this mortality.

FACTS LEARNED FROM TURKEY STUDIES

From other Florida turkey studies, other facts have been learned, some of which seem more amazing than useful.

Most successful hunters used repeating 12-gauge shotguns, during the 6-year fall hunting study at Lykes Fisheating Creek Wildlife Management Area in Glades County it was found that:

Most hunters cannot toll a hen from a gobbler in the fall hunting season.

A few expert hunters account for a large percentage of the total turkey kill in the fall.

Under unrestricted hunting pressure, more than 80% of the turkey population was killed during the full season, nearly all during the first week.

Under intensive hunting pressure (where more than 80% of the turkeys were killed in one year), the surviving turkeys continued to see the same range. They did not move into nearby un hunted refuges.

Most successful hunters used repeating 12-gauge shotguns, used No. 4 shot or larger, shot at any part of the turkey they could see, had to shoot several times to kill the birds, wore hats, and debris as a result of covering the eggs. Nesting material builds up because they don't remove the debris each time they lay another egg.

Most of the hens losing their nests to predators or to other things will nest again; so, in this respect, the wild turkey is more productive than most biologists have thought. Some other facts, unknown before are:

The effects of hunting on turkey populations

Unrestricted hunting eliminated the turkey from more than 80% of its original range in the United States. Even the Indians of Mexico overhunted turkeys, and killed them out in parts of Mexico near the great cities before the Spaniards arrived. Some writers like to say that agriculture and bagging wiped out the turkeys in early America, but it is simply not the case. The fact is that the gun came before the axe in regards to the turkeys, as it did for the bison and other game.

Studies are not complete, but in a study at Lykes Brothers Fisheating Creek Wildlife Management Area in Glades County it was found that:

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During the 6-year fall hunting study at Lykes Fisheating Creek, hen hunting was excessive and had to be curtailed through strict regulations. Too many hens were killed; as, fall turkey hunting had to be terminated and replaced with a trial spring gobbler season. In the first three years after fall hunting was discontinued, the population on the area (increased from 1 turkey per 100 acres to more than 1 per 15 acres, making it the best turkey population in Florida. Spring hunting is now limited to no more than 75 hunters per hunt on an advance quota permit obtained through the mail.

Hunter satisfaction with these hunts has been very good.

DISEASES AND PARASITES OF TURKEYS

Serious outbreaks of turkey diseases have occurred frequently in Florida, at least since about 1960. This is a seriously depressing factor on the population. Commission research biologists and a team of University of Florida scienists have studied the problem intensively in recent years. A few facts are evident:

A serious virus disease similar to "avian leukosis" exists in Florida turkeys and has caused the death of some.
FORMULA FOR TROPHY BREAM

The term “baiting” brings a negative reaction from most sportsmen, except, that is, from those familiar with supplemental feeding of panfish. There is nothing illegal about the practice and it can yield surprising results.

With some degree of skepticism, I explored a project supervised by R.H. Howell of Ocala, which involves feeding bream in an abandoned phosphate pit. It seems that Mr. Howell had developed quite a retirement setting with a little bungalow overlooking a 50-acre pit which reportedly produced, in quantity, bream in the 1/2 pound class. An offer to try my luck was too good to pass up, so one day in early June the trip was arranged.

My fishing partner and I pulled up to Howell’s house around 3:30 in the afternoon loaded with bream-buster fiberglass poles and 150 crickets.

After a brief tour of his place and a chance to get better acquainted, Howell started giving us a little history of the lake. The pit, as it is commonly called, had been stocked in 1971 with bass and bream. Several tons of fish pond fertilizer has been added every other year to produce the maximum food organisms which, in turn, means maximum fish production.

Fishing got into full swing in the summer of 1972 and was excellent up until 1977 when the bream started to diminish in size and increase in number.

“I had two choices. Either kill out the fish with chemicals and restock, losing a year of fishing, or begin a feeding program,” said Howell. A decision was made to go with electronically-controlled feeders mounted on floats. Each feeder, anchored a short distance from the bank in 12 feet of water, was set to come on for one 10-second period each day. The feeders were loaded with a special fish food pellet made basically of soybean meal.

“The fish were a little slow in taking the pellets at first,” Howell explained, “but after a couple of weeks, the water would boil with swirling fish when the feeder motor would spin.”

I was getting a little anxious by this time and suggested we make our way to the fishing area and resume the conversation while we fished. Our host suggested we rig our poles without a cork, and use three BB-sized splitshot to get the bait down in a hurry. “The bigger fish stay deep and the best place to fish is within two to three inches of the rocky bottom,” he stated. A cricket was threaded on a #6 hook and cropped alongside a feeder. The bait was allowed to sink hurriedly to the bottom, then raised up just a few inches. Two of us began fishing about the same time and after five minutes nothing had happened. Occasionally we would check our bait since it was a little difficult to feel a bite fishing at that depth.

All of a sudden the tip of my pole was pulled into the water and the battle was on. I’ve caught a lot of bream over the years but never had one pull like that. It actually took both hands to hold up the pole to keep the fish from tangling around the anchor to the feeder. After

Photos by Wallace Hughes
A 2½-lb. bluegill is a keeper in any league. In Howell’s pond the larger fish tend to gather near the bottom, with a screen of smaller fish above.

A struggle the fish was led to the net and hoisted ashore. It was without a doubt the biggest bream I had ever seen or caught. The fish weighed in at a whopping one pound seven and a half ounces.

Fishing was steady for the next 30 minutes with the two of us landing eight of these monstrous bluegills and a 3-pound bullhead catfish. Action tapered off after a while, so Howell picked up a handful of soybean pellets and tossed them in the water. Activity resumed and remained steady for an hour or so with 15 fish being added to the cooler.

I enjoy using ultra-light tackle and decided to see what I could do with one of these beauties on 4-pound test line. I rigged my little Diawa with a slip lead, baited up with a cricket and cast it beyond the feeder, letting it sink to the bottom. I tried sliding the lead along the bottom but the rocks caused the lead to hang up. On the next cast I let the cricket sink beneath the feeder but it didn’t reach bottom. A bream picked up the bait on its way down and headed for the middle of the lake. After reeling up the slack, I set the hook. There was a sudden lunge and the line snapped. Now any good fisherman knows you check the drag before you fish, not after the fish has been hooked. Sure enough, the reel’s drag adjustment screw had been turned to a strong position which was too much for the light line. Oh well, when fishing in a paradise like the pit there is no reason to get flustered—just rig up and have another try.

The next attempts were better, and six fish were landed in quick succession. By the end of the session the two of us had caught 74 bream and one catfish. They made a mighty impressive looking string more than eight feet long.

There are several commercial feeders on the market that do an excellent job. Most feed and seed stores have catalogs of various models and prices. The one in the photograph is made by Lehman Feeder and Plow, Inc., Route 3, Box 53, Corpus Christi, Texas 78415. Their 250-lb capacity feeder goes for about $280, just to give you an idea of the price range.

The same objective can be accomplished by putting feed in an onion sack and suspending the sack in the water. As the pellets soften, the soybean particles will filter through the sack to the fish. The old bucket method of throwing the feed out by hand is also used, but if you feed every day, this practice gets to be very confusing.

Pelleted fish food prices vary according to the ingredients. A 50-pound bag is currently around $8.00. The pelleted food designed to float is about $9.50 per bag. There is also a medicated pellet that runs slightly higher.

If you have a pond and the inclination to develop something special as did Howell, why not give the feeding program a try. Be sure you are working with a fish population in reasonable balance since it is impractical to try to grow large bluegill in a pond heavily over-stocked with intermediate sized bream. You can look for a boost in the catch rate around the feeders in from one to three weeks, and should be able to tell a significant difference in the growth rate after four months, assuming the feeding program takes place during the summer.

Larry Martin is an avid outdoorsman and wildlife biologist. He lives in Lake City and serves as manager of the Game & Fresh Water Fish Commission’s Northeast Region.

Lehman feeder is activated by a battery-operated timing device that broadcasts metered quantity of food pellets at preset time. The special float device was built at the site.
In nature's giant jigsaw puzzle, where each piece is designed to fit usefully into the whole, the butterfly seems to strike a note of sheer frivolity, of "art for art's sake." Not that this floating airborne flower, so lately a caterpillar, does not serve as food for some birds, lizards and insects. It does. And the butterfly also does its bit to distribute pollen. But there are other insects for birds to eat and the bee does a more efficient job of spreading pollen.

So can it be that the butterfly's chief purpose is to decorate the landscape, to prove that Mother Nature is artist as well as engineer?

Whatever nature's design is—be it plain or fancy—the fact remains that Florida has a rich share of the world's butterfly beauty.

There is, for instance, the swallowtail.

By Mary Ellen Smith

The swallowtail is the most spectacular of the Lepidoptera that decorate Florida's landscapes—summer, fall, and spring. Easily recognized by its long wing-tails, the swallowtail is big for a butterfly. It is a high-flyer, too; pairs cavort at 30 feet and higher. The swallowtail's coloring is dramatic, pure gold, red and blue spots on shimmering black or dark brown wings.

*Papilio thoas*, a tropical swallowtail found in central and southern Florida, has a lateral row of gold spots across its forewings as well as the typical gold spots edging the wings. It usually lives near citrus trees where, as a caterpillar, it nibbles leaves. But there are other *Papilio* in Florida, too, some tiger-striped, some with spots of bright blue or red as well as the characteristic yellow. Some are short-tailed, others are long-tailed. But all are big, beautifully formed and richly colored.
BUTTERFLIES

The swallowtails draw nectar from garden flowers as well as wild ones. They are attracted by bright colors, such as those displayed by zinnias.

The sulphur butterflies, much smaller, are as much a part of Florida as the palmetto. Ranging in color from pale lemon to deep salmon, they drift across country roads in summer like flakes of sunshine. They come to rest on flowers with their wings closed, looking like shavings of pure gold.

A Miami artist, friend of mine remembered vividly a striking sight: a cloud of yellow butterflies settling upon the rough back of an old alligator, sleeping on the bank of an Everglades stream amid the blue flowers of the pickerel weed.

Easily identified, too, is the zebra butterfly. Its long, narrow wings are black, striped with yellow-white. The zebra, Heliconius charitonius tuckeri, likes the green coolness of Florida hammocks, glades and orange groves, although it adjusts well to city life when necessary. The larvae feed upon the native passion flower.

Zebras, swallowtails and sulphurs are numerous in Florida, especially in summer.

The very names of the zebras, swallowtails, dagger wings and sulphurs suggest the shape and color of these butterflies, and make them easy for an amateur to identify. But the monarch, its relatives, mimics and look-alikes are quite another story.

The monarch is migratory. Like tourists and birds, it flies south in winter. Monarchs tagged in Toronto have turned up at Lighthouse Point in Florida. Banded monarchs have been clocked at 43 miles a day, which might be no great shakes for an eagle but is speed for a butterfly.

The larvae feed on poisonous milkweed and night-shades and this makes the body fluids of the butterfly bad medicine for birds. Thus this royal butterfly is protected.

Although some monarchs do winter in Florida, a close relative, the queen, is more commonly seen. Like the monarch, it is red-brown in color with black veins, and a glimmer of white spots sprinkled across the top of its wings. But it is darker in color than the monarch and the veins are not as showy.

The Gulf fritillary, no relation, looks something like the monarch, too, although it is smaller and the forewing lacks the black border. It appears unfinished.

The viceroy, the monarch's true mimic, closely resembles it and any bird with less than 20-20 vision might easily mistake one for the other. The viceroy, however, is not poisonous, although birds do not know this. Thus the viceroy is reasonably safe, if it stays out of spider's webs and away from lizards.

It would seem that nature, which apparently designs one species as food for another, always gives the individual of a species a sporting chance to escape and perpetuate its kind. Some butterflies look like leaves or twigs. Some blend into the background. Some are mimics. But the red-banded hair streak, which favors the wild flowers of central Florida, probably has nature's most ingenious protection. This small butterfly appears to have two heads, one at each end. If the fake head is snipped off by a bird, the hair streaks. Thus it has at least a 50/50 chance of survival.

The fascination of butterflies is universal and for all ages. It is not reserved for collectors, artists or photographers. Anyone can appreciate the butterfly as a living art form, a mobile of gorgeous color. There may even be a subconscious hope of immortality underlying our appreciation of the butterfly since this lovely winged creature was once a lowly worm. It seemed to die and lie buried in a cocoon. Then, behold, it emerges, an iridescent beauty, no longer earth-bound, to soar free among the flowers.

Can it be that nature is trying to tell us something?
When you went duck hunting last year, was it a race to get into your blind before someone else did? Or after spending a couple of days building a blind, did you discover that the ducks were feeding 300 feet away? And what did you do when you wanted to hunt on a different lake? Well—a portable blind could have solved all these problems.

Building a portable blind takes a little more time than a stationary one, but you do the work in your garage or driveway rather than having to do a balancing act in your boat. To make a blind to use with a 14-foot boat, for example, you will need these items: 39 feet of burlap (croaker sack) material. The blind will be in two pieces; the first measures 23 feet and the second measures 16 feet. The longest goes from the center of the bow, around the port, around the motor, and overlaps the stern on the starboard. The short piece goes from the center of the bow, along the starboard to stern.

First, you should measure and cut the burlap (croaker sack) material. The blind will be in two pieces; the first measures 23 feet and the second measures 16 feet. The longest goes from the center of the bow, around the port, around the motor, and overlaps the stern on the starboard. The short piece goes from the center of the bow, along the starboard to stern.

Next, take the buzzard grass, or other 8½ to 10-foot tall grass or weed found in your area, and lay it on the croakus material, flush to the bottom. The material should be lying on a flat surface; your driveway or garage floor makes an ideal surface. With hedge shears, cut the grass off at 52 inches. Now take the tops and lay them on the blind, giving you a double layer.

Having completed the first two steps, you are now ready to sew. Use a three-inch sailing needle and strong, brown synthetic cord to sew the blind in three, evenly spaced rows. Use an over-and-under stitch, that is, the stitch goes under the material for three inches, then comes up and over the material for three inches, then back under again. After sewing approximately three feet of the material, double back. When you finish sewing that section, pull the string tight before tying it off. Sew in this order: bottom row, the middle row and then a row about eight inches from the top. After you have done that row, you can fold the top of the material over to the inside of the blind. This forms a flap to hold the 1" x 2" struts that support the blind. Then, repeat steps two and three for the second side.

Next, attach the parachute strapping to your boat. You can purchase parachute strap from most surplus stores. Also you will need 20 nonrusting screws and washers. At five points along each side of the boat, use five to six inches of cord and two screws and washers to make a loop big enough to hold a 1" x 2" strut.

Now cut the 1" x 2" struts to support the blind. Take the boat off the trailer and stand the blind up around it. (The blind should stand on its own.) Sew the first two struts at the front of the boat. If you sew them to the front on each side of the blind, you can tie them together in order to close the front of the blind. While standing in the boat, go along the inside of the blind and mark the blind over every loop with a diaper pin. At the same time, measure the distance from the top of the flap to the top tier on the inside of the boat. Cut the 1" x 2" strut to the size you need and sew it under this flap. To sew in a strut, first make the notches on each side of the strut to keep the cord from slipping. Then sew the cord around the notches.

Finally store the blind in two rolled bundles. Carry it to and on the lake rolled upon inside the boat. When you reach the perfect hunting position, unroll the blind around the boat and place the struts in their loops. Tie the struts together and where the two sides overlap the starboard, pin together with diaper pins.

With the portable blind you are ready for a season of versatile hunting. On Saturday you can hunt on a lake and on Sunday, hunt on a river. You will never have to worry about whether you can get a blind or whether the blind is in the right place. Also if you handle the blind carefully, with a little re-bushing, you can use it for more than one season.

4. Pick your spot, and within a few minutes you're in business. 5. Ring-necks, one of our most common species on state's fresh waters.
The sound of hounds on the trail is music to the ears of

JIM MYRICK

Sometimes, in the quiet of night when he is roused from sleep by the faraway baying of foxhounds, Jim Myrick momentarily forgets where he is. The sound of the deep, mellow bass voices comes to him in the dark, and he awakens before grasping the awareness of time and place.

He then is in his bed in his childhood home in Mena, Arkansas. The hounds are not those of some hunter from Munson, roaming through the woods of Florida's Panhandle, but the pack of neighbor George Waters, reeling along the Old Dallas Valley of northwest Arkansas. They are a whirlwind of colors in Myrick's mind: grey and white of the fox; rust, black and brindle of the hounds and the ivory brown of the hunter's horn.

Myrick jerks himself up on his elbows to hear the chase and the fading echoes as the hounds and the fox sweep far down the Prairie Creek bottoms.

A chill wind from Alabama whips around the eaves and rustles the pine needles and awakens him. The seven-year-old boy becomes a 78-year-old man and the past again recedes to a distant corner of his mind.

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"You remember Travelin' This Lonesome Road?"

Jim Myrick leaned over the guitar and started picking the tune of the old country standard. His left foot tapped out the beat. He played at a brisk pace, his fingers recalling familiar chords.

"That last one I wrote myself. I wrote a lot of songs but never did anything with them—I mean recording."

Myrick laid the big auditorium guitar back in its black case. There was a noticeable crook in the instrument's neck. It was warped, and the sharp guitar tone was long gone. Myrick had it tuned like a banjo.

"I used that guitar when I had a band up at Brewton years ago. We had shows on the Brewton and Flomaton radio stations on a regular basis—'Jim Tyler and the Lone Star Ramblers.' Of course, the name was a take-off on my brother, David.

"He was better known as T. Texas Tyler and had songs like Old Slouch Hat and Deck of Cards. He died preaching in Springfield, Mo., several years ago. He drank a lot before he straightened up, but the liquor ate up his insides. I'm the oldest of three brothers and the only one left."

Myrick paused to spit snuff juice in a can that sat beside his rocking chair.

- LAST OF A BREED
chair. He's a leather-tough old man, 5-9 and 140 pounds, with a hawk-like nose and strong facial features that represent Cherokee ancestry of two generations ago. Intricate, swirling tattoos on the backs of both hands are souvenirs from a 12-year stint in the Navy. His long-sleeve shirt hides other tattoos that cover much of his torso. After the Navy, he was a painter—the house and building variety.

"I guess nobody ever died from fox hunting, and that's all I ever got in a bad habit of doing. That and smoking, but I gave up smoking."

But not fox hunting. Never. He's 78 and he still hunts whenever he can. He gets around once wrote a fox hunting magazine in the

Mclellan Thompson, titled "Campfire Memories."

He is one of the last of the men who have straddled two worlds and can authoritatively speak for both. Myrick was there at the beginning when American fox hunting, spurred on by first families of hound breeders like the Kentucky Walkers and Maupins, caught the attention of country people yearning for something to do besides sit and look into the fire after a day's work. And he was there to help guide the transition from fox hunting as a social activity to field-trailing as a sort of expensive art form for the wealthy.

"I suppose you could say that fox hunting was almost a religion after the turn of the century in Arkansas and all over the South when I was growing up. There was a lot of camaraderie involved," Myrick said. "We menfolk would saddle our horses on Saturday evening, blow our horns, gather our hounds—for they knew the sound of the master's horn and answered it—and met one another at a crossroads. We'd hunt all night while the women and children visited. We'd hunt three or four times a week, if we got the chance, and it usually presented itself."

Slowly, somewhere along the way, life changed. Rich oil people from Texas started buying up land and putting up fences in Arkansas. The same thing happened after Myrick went to Michigan and then to north Texas. Rural people moved to the cities; radio and television came along, and many of those left behind either lost interest in fox hunting for entertainment or else they got crowded out of the sport.

What remains includes the field-trialers and the wise old men like Myrick who had always thought of hounds and hunting more as a way of life than as a simple diversion.

"Everything's different now," says the author of a book on fox hunting and hound breeding: "Life Behind the Chase." "All the foxes have been trapped in other states and there's nothing left to hunt. Even the hounds are changing. People are breeding them for show rather than for the hunt. Hunters are going out in the evening, listening to their hounds for awhile and then going home, leaving them with dog boxes behind. That's bad. There's no dedication on the part of most breeders and hunters anymore.

"In my time, fox hunters were noted as a good clan of people. The new clan are good people at heart but they're too worldly and want things easier."

When Myrick speaks about the state of modern fox hunting, traces of bitterness come out. This is an opinionated old man, but he knows what he's talking about. Still, men can't be blamed for changing their minds about the things they like to do and their judgement about what is quality in a hound and what is not. If there's no place to hunt, the looks of a dog start counting for more than its nose and staying power.

And that leaves Myrick behind the times in most areas. There's a place for him, however—a last retreat. Florida's Panhandle is the home of the biggest group of crossroad fox hunters left in the country. That's one of the reasons he moved here for good, from Texas, four years ago. Anti-trapping laws have saved the fox population, and the Blackwater River State Forest has spared the land.

His position in the community is assured. Some of the best of the local fox-hunters like Glen Thompson and the Munson Cabin Nesses call him Mister Jim and hunters throughout the country still seek out and listen to his advice and relish his company on hunts. He can accurately evaluate all hound breeds and give their histories. He has stories about ghost Trails, bob-tailed fox, panthers carrying off babies and Bell Myrick—the best hound he ever owned.

And, after all the years, after all his travels and the things he's done, what he rendered down to was a fox hunter and a hound breeder of note—a good disposition for an old woodsman.
Environmental matters presented in poetry and music - the SONG-POEMS of DALE and LINDA CRIDER

They're a team, Dale and Linda Crider. Conservation is their theme, music their medium. With Dale on guitar and Linda on bass, they play and sing of what was, what is, and what may be in outdoor Florida.

Dale's style may be described as evangelistic, a blend of bluegrass, gospel, and traditional American mountain music, as Michael Miller put it in an earlier FLORIDA WILDLIFE report on the Criders. Dale throws himself into the spirit of the thing. He believes, and it shows.

Linda provides a suitable moderating influence, a melodious blend that smooths something of the raw edge off the cutting observations about what's wrong with man's treatment of the gifts nature has bestowed, with lavish hands, on Florida.

For more than 10 years Dale worked as a wildlife biologist with the Game & Fresh Water Fish Commission. He's now doing his thing as an information specialist with the agency. The programs he stages are part of his job of informing the public on wildlife matters. Linda, who recently became Mrs. Crider, is director of the Governor's Council on Physical Fitness.

In steady demand at a wide variety of gatherings throughout the state, they sometimes have scheduling problems. Whenever possible, they'll be on hand to entertain and at the same time, deliver an appeal to their audiences to observe, think, and act before it's too late to save what remains of natural Florida.

The Criders' is a well-paced program with musical selections written mainly by Dale, interspersed with short, informal, chatty commentary on various aspects of conservation. Occasionally, a color slide presentation is worked into the program for variety and to illustrate specific points.

They've performed in Key West, Pensacola, Fernandina and innumerable spots.

If you're interested in having the Criders put on a program for your organization, you may contact them as follows: Dale Crider, Rt. 2, Box 542T, Gainesville, Florida 32601.

Through the Anhinga Roost Music Company of Gainesville, they've produced a couple of stereo records covering some of their more popular songs. Even though devoid of the color and footstomping rhythm of a live performance, the message still jumps out loud and clear in a sampling of some Crider lyrics presented here.

Margins of reeds and rushes of weeds
Where the lakeshore intermixes organic debris
Recycles the elements to a natural degree
Free filters for minerals on marshes of green

White with the egret who's fishery's flight
Over lakeshore's diversity types
Under green plumes of cypress

Through all this natural systems machine
Marshes need water to filter and clean
Swamp land needs cypress for warblers to sing
Seasons to the seasons in the margins of green

Margins of reeds and rushes of weeds
Where the lakeshore intermixes organic debris
Recycles the elements to a natural degree
Free filters for minerals on marshes of green

SEPTEMBER-OCTOBER 1979
The swamp is a natural systems machine
Receiving the runoff after the rain
Filtering minerals for wilderness gain
Recycling the water after it’s clean
And filtering minerals for wilderness again.

The red-shouldered hawk in his feather bouquet
Visits the swamps for his meal of the day
Before his value to swampland is known
These fertile fortunes may be drained to the bone
Before the value of swampland is known.

It’s the home of the wood duck, the ibis and stork,
Bullfrogs, salamanders and the newts of all sort,
Water snakes and turtles and ‘gators, crocodilians
Otters, raccoons and human mammals.

Human mammalian?
Before their value to swampland is known
These fertile fortunes may be drained to the bone
Before the value of swampland is known.

With draglines of danger to technically drain
The wilderness swamplands are scorching for rain
With natural systems survival at stake
Man, there’s no time for drainage mistakes
Man, there’s no time for drainage mistakes,
The swamp is a natural systems machine
Receiving the runoff after the rain
Filtering minerals for wilderness gain
Recycling the water after it’s clean
And filtering minerals for wilderness again.
WILDLIFE SEASONS

It's the cycle of the sand in the question of man
The call of conservation in the Florida land use plan
It's a sensible delight, a right for coming generations
Who will praise the natural meaning of the call of conservation.

Softer in the seasons lies the wisdom of an owl
Morning beams upon a marsh where haunts the waterfowl
Research the wild kingdom, the rivers, swamps and land
And find a natural meaning in those cycles of the sand.

Fish in every lake and stream below the Georgia line
Handmade minnow buckets, tackle, baited pole and line
Codes of wildlife ethics is the Miccosukee way
From the generations of an ecological day.

The sounds of scattered seasons in the whistle of the quail
Lightered stumps and cabbage palms and Florida cracker tales
The falcon eyes of training or the William Bartram trails
Struck conservation balance on an ecological scale.

If a man stands for wilds like a stately Florida pine
We'll listen to the howls of hurricanes of time
And speak the wildlife reasons for uses of the land
And write the fishing future in the plan.

We'll buy some parts of Florida that others would have sold
Flatwoods, palmettos, cypress stands will turn to gold
And keep the sunshine story as a treasure to be told
A fish and wildlife ethic from the code of Leopold.
once shade tobacco was king in a fair chunk of farm country in upper panhandle Florida. But economic conditions changed as production costs began to overshadow returns. The result was predictable. The gauze, wire and pine post tobacco-shade castle collapsed, dealing a staggering blow to the economy of the region.

“I saw it coming,” recalled Henry B. Dover of Midway in Gadsden County. “I’d started thinking in terms of what kind of crop I could turn to.” It took time but he found an answer that fit admirably special features of his property.

A fuller’s earth mining operation during the ‘50s had left a sizeable pond on the Dover farm. Stocking with channel catfish and other species turned it into a productive fishing hole. That success, and possibly one or more of the numerous articles on aquaculture that appeared in the popular press of the period, turned Dover’s thoughts toward the possibilities of catfish as a crop. He had the land and an abundance of water. What he lacked was the detailed information on producing catfish in volume sufficient to make it worthwhile.

“During that time I visited all over this part of the country, trying to get information on catfish raising. The Game and Fresh Water Fish Commission (then still raising channel cats at the Richloom Hatchery) really opened the door, providing basic information and steering me to other sources.” He gives much credit to Auburn University’s Agricultural Experiment Station in Alabama, upon which he still calls when problems pop up.

Dover’s initial focus was on catch-out ponds where visitors hook and lined catfish and paid by weight for the fish caught. He phased out this operation after about four years, finding that producing fingerlings for stocking was a more satisfactory way to go. Currently his fish farming activities center around 27 ponds ranging in size from about ½ acre to 18 acres.

The crop year starts in late April or early May, when the water temperature in the ponds reaches about 75 degrees F. Brood fish—the source of the “seed” on which the whole operation depends—are held over from year to year, with an infusion of younger fish to the brood stock supply as needed to insure the continuing availability of good egg producers. Ideal size for brood fish is from three pounds to a maximum of 10.

“Fish of this size are the ones that consistently produce in terms of both quality and quantity of eggs,” Dover says.

A battery of spawning boxes—a series of rectangular metal munitions containers with one end partially removed—attracts the spawning fish. “They like to deposit their eggs in a dark, protected place that is easy to defend.

Henry Dover checks out a tankful of channel catfish fingerlings awaiting transport, left. Brood fish weighing from 3 to 10 pounds are ideal, consistently producing quantity and quality of eggs needed for successful operation. Dover, at left in above photo, gets some assistance from Ben Clemmons in handling brooders.
Catfish Farmer

During the two-month spawning season, the nests are checked every day, or at least every other day. Since channel catfish like plenty of room around the nest, the boxes are arranged in rows with space between. Once the eggs are deposited, the male mounts guard inside, aggressively resisting any intruder, including a groping human hand.

Rather than letting nature completely take its course, the clusters of eggs which adhere to the floor of the spawning chamber are gathered up periodically, transported to the hatchery building and placed in hardware cloth baskets suspended in a trough of running water. As the season advances and the water warms up, hatching time may drop to four or five days. As they break free from the egg, the young fish drop through the screen mesh and gather in clusters in the trough.

Each fish is provided with a built-in food supply, the yolk sac, that takes care of its nutritional needs for the first three days or so of its life. After that, a mixture formulated to provide optimum nutrition is given. For about 10 days the fry are held in a training trough where they are fed every hour or so. By the end of this period all are feeding avidly on the factory-produced rations. They are then transferred to rearing ponds where in about four weeks they will attain the 3-4 inch size at which most are sold.

Live fingerlings are transported in specially designed, well-aerated tanks to customers throughout the state. A good many of the fish go to private ponds to provide hook and line sport. Some will go into rearing ponds, troughs, or tanks to be fed for rapid growth to market size and end up on dining tables all about the state. As with any other crop, problems arise now and again. While the eggs are developing and also while the fry are in their early stages of growth, various disasters may threaten. Close watch over his charges and early treatment is the fish farmer’s defense against such threats. Wading birds, mergansers, anhingas, and others have inflicted some losses, as has the occasional otter. Beaver have also been something of a problem, damming off water supplies, burrowing in pond banks and clogging drains.

Henry checks progress of catfish eggs developing in a hatching trough. Paddle-wheel and aerator keep water well agitated to ensure abundant oxygen supply and to keep any silt from settling on the eggs.

Catfish farming has its periods of coasting along and other times when all the help he can get is none too much for the fish raiser. Dover feels fortunate in having his two sons, Henry B., Jr. and Walter, living on the place. Although working in town, they’ve been more than willing to lend a hand when there is a farm chore.

Son-in-law Ben Clemmons, retired from the state beverage department, and Henry’s wife, Rebecca, have also been a great help in getting the channel catfish established as a paying crop. But even with the family pitching in, it’s been necessary at times to go outside to get additional assistance during peak periods.

“You change with the times,” Dover comments, and sometimes you get the impression that he’s just as glad the tobacco slump pushed him into catfish farming.

"You change with the times," Dover comments, and sometimes you get the impression that he's just as glad the tobacco slump pushed him into catfish farming. Seems like he favors livestock over plants, even if the critters do have fins instead of legs.

Photo by Marion Naggar

First Aid Class

By Lt. Harley Evans

Outdoorsmen in the wilds on hunting or fishing trips or other outings, are without doctors, nurses, medical technicians or nearby medical facilities. For their protection they should have a basic knowledge of first aid.

In order to prepare outdoors-oriented folk for accidents, the Game Commission’s Hunter Education Section teaches basic first aid in its course. Important subjects such as cardio-pulmonary resuscitation (CPR) and treatment for shock are taught in the first aid segment.

Another area is treatment of poisonous snake bites. The most updated and accepted technique in treating snake bite is covered. And, as the method of treatment may change, so will the teaching.

Care of gunshot or puncture wounds is also included in the class. Treatment of a sucking chest wound which would require sealing, or an open wound in the arm or leg in need of a pressure dressing. is also taught. It is very important to know pressure points on the human body in order to control bleeding injuries.

The class also covers the treatment of fractures, identification of the kind of fracture and the proper method of treatment varies. A broken leg may only need splinting, or a pressure bandage to control bleeding first, then splinting. An injury to the spinal area, such as a ruptured disc, needs a special method of treatment. The use of a spine board and complete immobilization of the patient is necessary.

Instruction in what not to do is also given. Never use a tourniquet unless it is absolutely necessary to save a life. When it is necessary, always write TK on the patient’s forehead, so that the receiving medical personnel will know he or she has a tourniquet attached. A patient with head injuries should never have feet elevated higher than the heart—just the opposite of treatment for shock. An unconscious patient should never be given anything by mouth.

Nearly everyone, at some time or the other, will experience minor injuries such as burns from cooking over a campfire, bee stings, poison ivy, etc., and the class includes training on how to care for these.

To learn the basics of first aid, take a free hunter education course. Anyone venturing into the outdoors should do this whether they hunt or not. If you are the type of person who likes getting involved and would like to become a certified hunter safety instructor, call your nearest Hunter Education Officer. The toll-free numbers are: Lake-Land 1-800-282-8002; West Palm Beach 1-800-432-2046; Panama City 1-800-342-1676; Ocala 1-800-342-9620; Lake City 1-800-342-8105.

Lt. HARLEY EVANS is the Hunter Education Officer in the Central Region based in Ocala.
In what is being called a potential breakthrough in aquatic weed control, 225 hybrid grass carp are to be stocked in Palm Lake in Orange County this fall. The stocking of the hybrid weed-eaters by the Game and Fresh Water Fish Commission could mark a "new beginning" in the agency's use of the controversial fish.

Col. Robert M. Brantly, executive director of the Commission, said the agency's renewed interest in the carp as a possible weed-eater "could be removed."

"These fish are a cross between the bighead carp and the grass carp," Brantly said, "because they cannot reproduce, a major concern we have had with using grass carp in Florida waters could be removed."

Brantly cautioned that all the evidence is not available yet on the possibility of the hybrid on the aquatic ecosystems. The agency only learned about the sterile grass carp about 30 days ago. A fish hatchery in Arkansas made several crosses of the bighead carp and the grass carp and produced the hybrids. Initial research on the hybrid has been conducted in Hungary over the past five years.

"We are cautiously optimistic the fish can prove a useful tool in managing the aquatic weed problems of the state," he said. "But we will reserve any final judgment until all research is finished on this fish as well as on its grass carp parent."

Stocking of 225 hybrid grass carp in Palm Lake marks the first time the hybrids have been stocked anywhere in the United States. The Commission is able to stock the fingerlings (only one to three inches long) because the lake was recently renovated and all larger, predatory fish removed.

The stocked fish are only part of a shipment of 1,000 hybrids donated to the Commission by the Arkansas hatchery. The remainder are at the Commission's Richloom Hatchery, where they are being studied for food preference, growth and mortality rates and impact on everything from invertebrates to other fishes.

"We will be receiving an additional 6,500 hybrid fish within the next few weeks," Brantly said. "These fish are being purchased by residential homeowners around three central Florida lakes in a cooperative research program with the Commission."

Before these fish are stocked, they will be reared to slightly larger sizes (between eight and 16 inches) at the Richloom Hatchery to lessen the chances of loss to predators when they are placed in the lakes. It is anticipated the hybrid carp will be large enough to stock in late fall.

Commission research studies will be conducted on the fish to find out if they are effective in devouring noxious aquatic vegetation. Brantly cautioned that, at the moment, that is unknown.

In addition to the fish donated to the Commission, the Arkansas hatchery donated a similar number to the Department of Natural Resources for research purposes.

— Trisha Spillan

TISHRA SPILLAN is an information specialist with the GA-PWFC in Tallahassee. She is a former Big Fisherman and her large handles wildlife subjects with considerable ease.

new look in grass carp

"This is about fishing etiquette. It is not intended to improve anybody's manners because it is an obvious fact that people with really poor fishing manners aren't going to read it and care about anything else about fishing. I am writing it to make myself feel better and if it makes you feel better too, it has accomplished its purpose.

The other day my wife and I were fishing a narrow creek for bass, maybe a 60-foot-wide creek, with a little aluminum johnboat. We had an electric motor going, mounted in the bow, and it was Debbie's turn to operate it and cast at the right time. Both of us were using flyrods and the place was in what the Cajuns call a "dead still" until we heard the motor coming behind us.

The boat the motor was plowing with was about 18 or 20 feet long and what I disparagingly call a "Jolly Boat," which means it is intended for boat riding and is a handicap for anybody trying to fish from it. Now a real "jolly boat" is something entirely different, being a small craft used as a ship's boat. I put this explanation in here to show I'm not a real fish, but for 20 years I have been calling joyriding boats "Jolly Boats."

Anyway two guys were sitting in the driver's seat of this rig, one steering and the other acting as a navigator or first mate. The boat was plowing instead of planting and the big prop was sucking hyacinths and mud from both banks. The wake was a sort of impromptu tidal wave—a real gator shaker.

Another fellow was fishing. He was standing in the stern in a pair of shorts and using a big spinning rod suitable for marlin. He was slamming some kind of plug along the bank and as the boat passed us he threw the big plug past Debbie's ear so that it covered the bank just ahead of us. He had been trying to fish a popping bug. It splattered within three feet of where her popping bug was resting. Like me, she had stopped fishing to hang on.

Now the jerk with the spinning rod might keep his own place in line at the supermarket. He might even wait for you at a 4-way stop. Probably uses a knife and fork alike everybody else. But in fishing, everything went and I have nothing to say to him because he obviously doesn't know any better.

There have been times when bad manners interfered with my fishing, at least temporarily. I am not beating about water skiers or speedboat drivers because I consider them classes apart. To them, for the most part, the fisherman is a nuisance obstacle. Filled with the peculiar euphoria of traveling fast in proximity to water, they are concerned only with avoiding injury to the fisherman, and his success or frustration holds no interest for them. In other circumstances they, like the caster who tossed past Debbie's ear, may well be ladies and gentlemen and unless there's a special regulation they have the same rights to water that I have.

Ninety percent of the fishing bad manners is the result of ignorance although I have been along the other route too. A couple of years ago while fly fishing for trout in Yellowstone National Park I was walking from one pool to another on a small creek when I saw four young guys converging on me. Determined that I wasn't going to fish that pool, two of them hurried in from the left, with appropriate foreboding glares, and two hurried in from the right. They cut me off in what was obviously a triumph of their system of fishing. Funny part is that trout angling is supposed to be a sport of ladies and gentlemen whereas bass fishermen are supposed to be the boors.

Many impolite acts are result of frustration and in order to understand this you must consider the fact that all male adults are supposed to be champion class fishermen, even though they go only once a year. If you happen to catch fish while someone using another method doesn't, he's apt to cause you all of the inconvenience he can, a situation I've viewed a number of times.

And simply using another method, whether successful or not, can incense the license buyers. I have been cursed out by shad fishermen who trolled while I waded and cast. I wasn't in their way, I didn't cover the same water and I caught less fish than they did. But I was doing something different and people who do it differently are partly ostracized from our society to begin with.

Releasing fish can anger an observer who isn't catching anything. He considers it a taunt, no matter personally, but a friend of mine was roundly dressed down when he released fish in front of someone having less luck.

Aside from riding mountainous waves, the most common put-down I meet in Florida fresh water is when fishing shorelines. You're placidly combing the bonnets or the brush when somebody rides up, obviously intending to work the same area. Since you're in...
When water is colder and fish deeper the streamers are better news. If I had to choose one flyrod lure for panfish I'd take a nymph-like Woolly Worm on about a Number 10 hook. Our favorite is a green one although others have invariably proved superior. When you increase the size of the Woolly Worm, nymph, or whatever you call it, you'll take more small bass but it still won't stay in there with the bug most of the time. We fish the little worms very slowly and they are taken much of the time while sinking. Although bass are noted for taking many lures stationary or nearly so, they seem to prefer the little streamers moving more than the bluegills want.

Now please don't list me as a final authority. I'm simply stating my personal experiences. Most of the nymph fishing has been in Florida. The compromise bugs have been used over much of the country on both large and smallmouth bass.

Spinning or plugging lures that take both bream and bass on top can be larger if they have treble hooks to nail the panfish. Most weigh a quarter ounce or less and are suited to light spinning, preferably with line of 6-pound test or less, but I have used a freespooling reel and 12-pound line on them. You just don't get much distance. I believe a bug with rubber legs will nearly always beat it for bream, but not bass.

I'm convinced that really big bass are not likely to take very small bugs, plugs, jigs and spinners although they do it sometimes. There are, of course, times when they seem to demand kind-sized bugs—as witness 10-inch worm and tiny flies and streamer bugs, and shiners you have to play before landing each time.

But some years ago when we were fishing bass and bluegills at the same time we tried to compromise so that we could have both at once. On an evening when the bass were slow the day would be saved by bream. One compromise popping bug we settled on is about two inches long, including feather tail, has a medium-sized popping surface a little more than a quarter inch across, and uses a Number 6 hook. As a bug it looks too big for bass but not too big for bluegills and it may be a little that way. Very few of the really husky bream are unable to get it in their mouths, which open larger than you think. Hundreds of times I've wondered at what a close fit thing was but the bluegill would have it almost completely enclosed—sometimes all the way, legs nearly folded up under the body. It is a tough subject to discuss because there was a long period during which fishing pressure was insufficient to cause serious damage to spawning beds. No matter how hard the few active fishermen worked on them there were enough eggs for all the bass we could handle, regardless of our situation regarding the beds.

Now, with increased fishing pressure when spawning grounds, I'd say that many beds are fished more than a dozen times a day. Some are stirred by passing motors that many times and others are prodded repeatedly with pushpoles.

Except in the rare areas where bedding fish are protected, this is completely legal. Undoubtedly the biggest catches of the biggest bass come from the beds. This is an old theme of mine but I'm too uncertain to take a firm stand.

I'm convinced that any time a bed of eggs is scattered the survival rate is pretty low. Getting the eggs spread out where hungry panfish can fatten on them may be hard on the bass population if there's any shortage. Of course catching the fish guarding a nest leaves it open to anything that wants to raid it.

I can't say that I consider bed fishing an unmilled method. The average fisherman turned loose on a bass bed fishing flat might do very poorly indeed. Perhaps the best-known procedure is to attempt throwing a bait or lure right into a swirl or bulge a across a nest. In some cases the fish is supposed to be hooked as it tries to carry the intruder out of the bed. In other cases you get a "normal" strike.

I agree that a given lake are inclined to concentrate heavily in the areas suitable for spawning and there are many sectors where conditions are completely wrong and spawning is impossible. Thus, the bed fisherman gets a false concept of the situation. He fishes only a few acres and may say to himself that all of the rest of the lake is untouched. The truth is that he may be fishing the only area where there is spawning. It is a tough subject to discuss because there was a long period during which fishing pressure was insufficient to cause serious damage to spawning beds. No matter how hard the few active fishermen worked on them there were still enough hatched eggs to "have us up to the nutocks in bass if they all lived." We're not quite so sure now.

The dedicated bed fisherman shows up every spring. Until recently he might not be especially prepared for it. Now he generally comes with his polaroid glasses and his pushpole and he takes a position where he can spot those telltale light sand blotches that mean bass beds. Later in the day they are more visible over the same route, maybe five or six of them.

I'm not reaching for the panic button but I think we should keep this in mind.
Early Fall Run

Although it’s still plenty hot by midday, it is noticeably cooler in the early mornings, with a subtle hint of fall in the air. After the long hot summer, it’s enough to stir the blood of hound and hunter.

By KEN STIVERS
4. The cottontail, favorite prey of an impressive array of predators, is a master of escape tactics. In the grassy reaches of a forest clearing, the quarry has temporarily eluded Patten and Sam. 5. Ken and brother, Marshall, left, listen and wait as chase develops. Anticipating the rabbit's escape route, they've cut in ahead of dogs and quarry.

6. The persistence of the hounds and the patience of the hunters pay off. Scaled down though it may be, beagling for rabbit offers all the sounds and excitement of a deer chase. 7. The pack is caught up with and moved on to another briar patch.

KEN STIVERS is director of the Commission's Office of Informational Services. He's a beagle owner and handler of experience and enthusiasm.
CONSERVATION SCENE

Anhinga Research

The anhinga, one of Florida's most recognized wild creatures, discovered solar energy long before man thought of the idea, says zoology researcher Bill Hennenmann. The way the big bird spreads its wings while perched on a tree or stump after fishing is usually thought of as a method of drying them. But Hennenmann, who is making a study of the anhinga for a doctoral degree, said the purpose may be to regulate the bird's body temperature.

The anhinga, commonly called the water turkey or snake bird, doesn't possess the water repelling feather structure of most water birds. Although the feathers aren't devoid of oil, Hennenmann said, they absorb water so that the bird's buoyance and movement are reduced as it stalks prey under water.

He said the dark coloration also may help camouflage the bird and can contribute to its unusual efficiency in stalking and snaring fish.

In more than a year of observing anhingas in the wild and in the laboratory, Hennenmann has found that the birds will assume the spread-wing pose almost 90 percent of the time when the weather is cool and the sun is strong, but only about 14 percent of the time when it is warm.

When they are in their characteristic posture during cold weather, the birds are facing away from the sun nearly 100 percent of the time, thus exposing their broad dark wings and back to the sun. The dark body surface absorbs the heat and in effect becomes a solar heater.

The Florida anhinga is found in south Florida and along the Gulf coast of the United States and throughout Central America. It is typical of tropical creatures in that it has a low rate of metabolism and high rate of heat loss.

Hennenmann said the anhinga may be a case of evolving several physical characteristics-water absorbing features and dark coloration—to help it better cope with its predatory role, and then evolving certain kinds of behavior to overcome the limitations of its physical evolution.

Rewards Increase

The New Mexico Department of Game and Fish recently entered the second year of its Operation Game Thief program which authorizes rewards to callers whose tip-offs lead to arrests or citations. During the first year of the program, rewards totaled $7,200. Through May of this year, that figure had climbed to $11,000. New Mexico officials say that one in every four or five cases results in an arrest or citation. Most of the cases involve illegal possession of big game animals. Donations are the primary source of OGT rewards and have totaled more than $35,000.

Honeybees In Trouble

Honeybees are in trouble, according to a recent article in Michigan Natural Resources Magazine. If this doesn't seem especially alarming, consider the fact that one-third of the average American diet depends directly or indirectly upon honeybee-related crops. Six percent of the United States' agricultural production is at least indirectly dependent upon honeybee pollination, and the value of these crops comes to about $3.5 billion.

The problem with the bees is pesticides. Two percent more bees die from pesticide poisoning each year than can be replaced by reproduction. Bees, unlike some other insects, do not develop a high resistance to pesticides and die from doses of less than one-millionth of an ounce. They contract pesticide poisoning while collecting nectar and pollen from flowering plants, or while flying through pesticide clouds that can drift for miles.

1979 Turkey Stamp

Noted wildlife artist Ken Carlson's painting of two Merriam's wild turkeys bested a field of 127 entries, to win the 1979 Wild Turkey Stamp competition recently held at the National Wild Turkey Federation's annual contest in Augusta, Georgia.

The winning entry, entitled "Morning Roost," has been reproduced on the Federation's fourth Wild Turkey Stamp, purchased voluntarily by conservationists, philatelists, and private collectors. Revenues from the stamp are used for education, restoration and research.

In addition to the limited stamp issue (only 50,000 were printed) a signed and numbered edition of prints (6½" x 9") has been produced and is available through wildlife art dealers.

Priorities established for this year's funds include research grants totaling $5,000.00 to be presented to Auburn and Texas A&M universities, production of 2,000 trap transfer boxes, and the first phase building of the U. S.'s only Wild Turkey Research Center. A free stamp brochure is now available by writing to the National Wild Turkey Federation, Edgefield, South Carolina 29824.

FLORIDA WILDLIFE SEPTEMBER-OCTOBER 1979
Art Competition

The Florida Game and Fresh Water Fish Commission will conduct a contest to determine the design for the 1980-81 Florida Waterfowl Stamp.

Entries will be accepted January 1 thru December 15, 1979.

Three prizes will be awarded for the best contest entry: First prize of $500, second prize of $300, and third prize of $100.

Rules are posted at Division of Water Management offices and are available upon request.

This year's theme is "A Day at the Beach." Entries must be submitted on official entry forms, which will be distributed by mail.

Please use the entry form to submit your design.

Entry forms can be obtained from the Division of Water Management, 107 East State Road, Tallahassee, Florida 32301.

Piranhas Seized

During late August, wildlife inspector Bruce Cockcroft was making a routine check of foreign wildlife being moved through Miami International Airport. His attention was caught by a shipment of tropical fish in plastic bags. The containers had been labeled "metynnis." Upon closer inspection, the "silver dollars," as metynnis are called in the trade, proved to be piranhas.

An hour later, when two Miami-based tropical fish importers came to pick up the fish, Sgt. Cockcroft arrested them for possession of a prohibited species. If convicted, each could face a penalty of $500 and/or 60 days in jail.

The shipment of these potentially dangerous flesh eaters totaled 735 fish, the largest single piranha seizure ever made in Florida.

Bird Sounds

How do you identify a bird without even seeing it? By its voice, of course. Unless you've already heard an expert, a record put together by Dr. John Hardy, curator of Birds at the Florida State Museum, will be a step in the right direction in learning to identify many Florida species.

The songs and calls of more than 80 kinds of birds that regularly live here are included in the collection. The lineup ranges from the almost vanished dusky seaside sparrow, to a Florida exclusive, the mangrove cuckoo. Confused as to whether a call is that of the chuck-will's-widow or the whip-poor-will? The answer is on Hardy's record.

Ability to identify bird sounds makes any trip afield more enjoyable. Contact John Hardy, 1615 N.W. 14th Avenue, Gainesville, Fla. 32605, for further information.

PIRANHA

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FLORIDA WILDLIFE

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1004 WILDLIFE

Passion Plant

Photo by Gene Smith

Native called maracock and the Cherokee and others cultivated the plant.

The common name, passion flower, appears to have derived from Christian lore—passion referring to the suffering of Christ in the period following The Last Supper and including The Crucifixion. The purple color of the bloom recalls the purple in which religious pictures, crucifixes and images are veiled during Passiontide, the last two weeks of Lent. The crown of the blossom is said to resemble the crown of thorns, and other parts of the flower provide additional reminders to those who are properly attuned.

Fruit (Maypop)

Photo by Morrie Naggar

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PASSION PLANT
The Floridana

Maypop

The passion plant somehow seems out of place twined among the grasses and coarser vegetation of dry road banks and old field sites it favors. The large frilly purple and white flowers give it the appearance of something you'd expect from a greenhouse operation specializing in tropical plants. But, despite its exotic look, the passion vine is a native species.

The greenish oval fruit reminds one of a smooth-skinned lime. In late summer or fall, as it matures, the skin yellows. The inside, with its plump, fleshy seeds, is somewhat reminiscent of a pomegranate. Country-wise folks usually know it as the maypop and use it as the basis for a beverage, sherbert, jam or jelly, or to eat fresh. In colonial Virginia the natives called it maracock and the Cherokees and others cultivated the plant.

The common name, passion flower, appears to have derived from Christian lore—passion referring to the suffering of Christ in the period following The Last Supper and including The Crucifixion. The purplish color of the bloom recalls the purple in which religious pictures, crucifixes and images are veiled during Passiontide, the last two weeks of Lent. The corona of the blossom is said to resemble the crown of thorns, and other parts of the flower provide additional reminders to those who are properly attuned.
Flushed from the marsh, the sora rail usually rises with fluttery thrashings, flails its way just above the vegetation for a short distance, then plumps down again into the safety of its grassy hideaway. Its size and chicken-like yellow bill are identification marks of this, our smallest game bird.