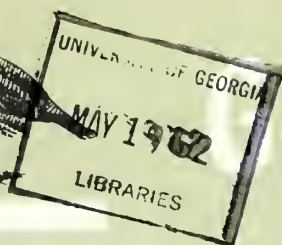


GA  
75  
PI  
Ga  
ol. 11  
no. 1



# GEORGIA GAME *and* FISH



## IN THIS ISSUE

**Fishin' in Southwest Georgia**  
**Let's Stop Poisoning Our Water**  
**Facts About Georgia Trout**

FISHING EDITION

# GEORGIA GAME AND FISH

Published twice annually by the Georgia Game and Fish Commission in the interest of wildlife and for fishermen, hunters, nature lovers, and conservationists.

## STATE OF GEORGIA



**ERNEST VANDIVER, Governor**

### COMMISSIONERS

William E. Smith, Americus— <i>Chairman, Third District</i>	
J. T. Trapnell, Metter <i>First District</i>	Flannery Pope, Dublin <i>Sixth District</i>
Richard Tift, Albany <i>Second District</i>	J. B. Langford, Jr., Calhoun <i>Seventh District</i>
William Z. Camp, Newnan <i>Fourth District</i>	Harley Langdale, Valdosta <i>Eighth District</i>
C. L. Davidson, Jr., Avondale Estates <i>Fifth District</i>	Billy Wikle, Clarkesville <i>Ninth District</i>
	Leonard Bassford, Augusta <i>Tenth District</i>
Jimmie Williamson, Darien. <i>Coastal Area</i>	

**FULTON LOVELL, Director**

### DIVISION CHIEFS

Clifford P. Palmer	Enforcement
Jack Crockford	Game Management
Bob Short	Education and Information
Fred J. Dickson	Fish Management
Robert Busby	License
David Gould	Executive Assistant
Vennie M. Jones	Bookkeeping
George Creal	Personnel

### FEDERAL AID DIVISION

Jack Crockford	Pittman-Robertson
Howard Zeller	Dingell-Johnson

## IN THIS ISSUE

	Page
Fulton Lovell	3
Fishing in Southwest Georgia	4
Facts About Georgia's Trout	6
Stocking	8
All About Fish	10
Catfishin'	12
Let's Stop Poisoning Our Water	14
Fly Tying	16
Chattahoochee Trout	18
It's How You Fish That Counts	20
Snakes	22
Boating With David Gould	24
Fish Tags	25
Short Casts & Pot Shots	26
Sound Management	28
Trout Schedule	31

**EDITORIAL OFFICES**—401 State Capital, Atlanta 3, Georgia

**BOB SHORT**  
*Editor*

**TONY MIDDLETON**  
*Assistant Editor*

**NANCY BELK**  
*Circulation*

### FISHING EDITION

Vol. 11, No. 1

Published by the Georgia Game and Fish Commission, 401 State Capital, Atlanta 3, Georgia, in the interest of Georgia wildlife and for fishermen, hunters, nature lovers, and conservation of natural resources. There is no subscription fee; this publication is free and is paid for by the purchase of fishing and hunting license. Please notify us at once of any change of address. Contents of this magazine may be reprinted with proper credit. This publication welcomes pictures, drawings, stories and articles dealing with out door subjects for consideration. No contributions will be returned unless solicited by authorized party representing Game & Fish Commission and accompanied by sufficient postage. Entered as third class postage.



# POLLUTION CONTROL

Editorial

## ...key to the future



FULTON LOVELL

Georgia rivers, lakes and streams function as a vital life-line in the economy of the state.

Without water supplies for cities recreation, and industry, the entire face of Georgia as we know it now would be drastically changed.

Water has many uses; one factor alone—Pollution—could destroy all of them.

Polluted water is nearly as bad as no water at all.

Sometimes it is worse.

What is pollution?

It is unwanted waste from cities, industries and silt washed from the land.

It threatens us with disease, it threatens job opportunity by causing a shortage of water, and it causes a daily shrinkage of water area for hunting, fishing and allied recreation.

Pollution inroads must be curbed and existing sources of contamination cleared up.

Failure to do so will unquestionably limit the future development and advancement in all areas of our economy.

Without clean, usable water for multiple use, we cannot expect progress.

Pollution in Georgia stems from a variety of sources.

Heading the list is industrial wastes from mills, plants, factories and untreated sewage from cities and towns.

All of the major rivers in Georgia are polluted to varying degrees, and some streams are virtually "wiped out" as far as additional water use is concerned.

Unless this meance is curbed, additional water areas will be lost.

Our water supply will always be essentially the same,

now or a hundred years hence.

Population increases and industrial expansion are increasing every year and consistently claiming more and more water for use, and returning polluted water to streams.

This is where our serious thinking and effort should be directed.

Surveys have indicated that hunting, fishing and boating in Georgia accounts for an annual expenditure of about 150 million dollars.

The most imminent threat of pollution is in this area.

Fish kills and die-offs from pollution are far too common an occurrence.

Besides the actual kills of fish, vast areas are rendered biologically unproductive through changes brought about by continual waste dumping.

This waste dumping which destroys recreational use, also keeps out industry which relies on clean water for its use.

What is the answer?

Simply to clean up the problem spots and exert strong controls on new sources.

Surely industrial, municipal, and recreational uses of water can exist together.

Unwarranted use and contamination of water at the expense of hunters and fishermen cannot and should not be tolerated.

The problem can be solved with all water use agencies working toward a common goal for unpolluted streams.

This is the key to the future of fishing, hunting and continued economic advancement in Georgia.



Charles Tyson's 15-pound largemouth set a Seminole record.



# ishin'

## in Southwest Georgia

Lake Seminole has just about ruined farming in Southwest Georgia. When bass are hittin'—and that's about ninety percent of the time—farm folks trade their hoe handles for cane poles and spinning tackle and head for the water.

Results?

Poor crops but a heap of fish.

Lake Seminole, located where the Flint and Chattahoochee join to make the Apalachicola, is one of Georgia's newest and best, especially for year-round fishing.

Much of its 37,500 acres is in standing timber, shallow flats and wooded islands. Its average depth is around 15 feet—just right for bass—and natural lime sink ponds flooded by Jim Woodruff dam leave plenty of cool, clear water for bass to feed in.

Seminole is principally a bass lake, but bream and crappie fishing gets to be excellent during certain periods of the year and striped bass, locally called rockfish, show up in anglers' creels once in awhile.

The key to Seminole's popularity with fishermen is the fact that bass start hitting earlier than they do in most Georgia lakes. Bass fishing is usually best during April and May, but this doesn't rule out large strings of lunkers during the remainder of the year.

Trolling in deep water pays off in midsummer and topwater lures, fished with patience and skill, will probably get a big one early of a summer morning or late in the afternoon.

Seminole bass school in late summer and fall in all areas of the lake and anglers who are lucky enough to find them cash in on plenty of action.

Although bass seem to be Seminole's top asset, bream hardly must take a back seat when it comes to angling action. During April, May and June—spawning time—a worm or a cricket fished on the bottom of the lake is

likely to lure some hand-sized bream and shellcrackers.

Seminole's crappie usually bite early compared to other Georgia lakes. February and March are best months with some good fall fishing coming in October and November. More often than not, fishermen catch them in 15-30 feet of water in the cyprus trees along the old river channels.

Most of the striped bass taken in Seminole have come from the Spring Creek arm of the lake. (See map.)

Just north of Lake Seminole on the Flint River is another hot fishing spot where anglers usually find a goodly number of bass, bream and crappie. Although heavy use by pleasure boaters restricts fishing to shallow coves and feeder streams, Lake Worth is perhaps better known for its bream and big shellcracker fishing.

Late April and early May is the time to go bream bed hunting on Lake Worth. Crickets and worms, and sometimes poppin' bugs, work wonders with Lake Worth bream. Sometimes the bugs attract a bass or two, particularly around the islands and at the mouths of Kinchafoonee and Muckalee creeks.

Bass hit best during April and May around the many grass islands and up Kinchafoonee and Muckalee. Shiners, minnows, artificial worms and topwaters are best baits during peak bass periods and, occasionally, "jig" fishing turns up a healthy bass.

Lake Blackshear is also on the Flint River and, unlike its sister Lake Worth, is widely known for its fast growing bass and large bream and crappie. Blackshear is barely over 30 years old, having been constructed by the Crisp County Power Commission in 1930, but its reputation as a fishing lake has grown each year until about a decade ago when it suffered a bad case of overbalance.

An unprecedented fish eradication, however, restored its fish population—and its reputation—during the sum-



mer of 1958. The Georgia Game and Fish Commission, with the help of several tanks of rotenone, completely wiped out the lake's population of gizzard shad and gave the water back to game fish.

Fishery biologists estimated that over 700,000 pounds of shad were eliminated during the eradication program. By the following spring, biologists reports showed a heavy spawn and, coupled with introductions of white bass and threadfin shad (forage fish), fishing immediately improved.

Blackshear is an excellent crappie lake and these finny fighters begin striking rather early. February and March are the hottest months, with encores in October and November. Bass anglers get their best licks in April and May and sometimes October with fair to good fishing in-between. The tailwaters of Blackshear is a good spot for white bass when they begin their spring run.

These three lakes are far from all the fishing in Southwest Georgia. The Chattahoochee and Flint Rivers, "mammies" of Lake Seminole, have plenty to offer anglers.

Between Blackshear and Seminole on the Chattahoochee, white and striped bass, largemouths, channel catfish and bluegills are abundant and rarin' to bite.

Between Lake Worth and Seminole is found the fabulous coastal plains version of the redeye bass, locally called smallmouths. These bass grow to lunker size and are tremendous fighters on light tackle. Fishing is best from October through January when the river is low and clear. There isn't much excitement after the spring rains for redeyes but where these spirited fighters leave off the largemouth takes up.

It's no wonder Southwest Georgia farmers find it hard to stay with the soil. With all the good fishing around, even Eli Whitney would have left his cotton gin.



An afternoon's catch of Lake Worth panfish.

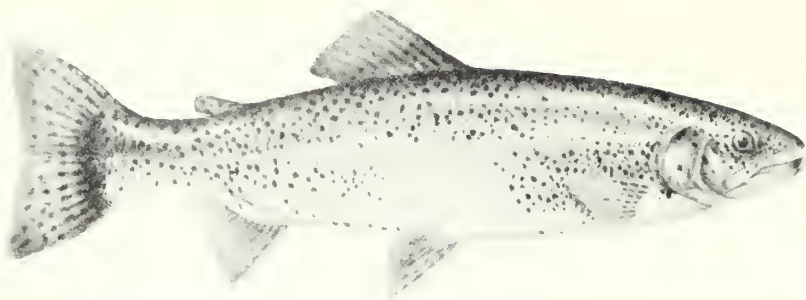
## LAKE BLACKSHEAR



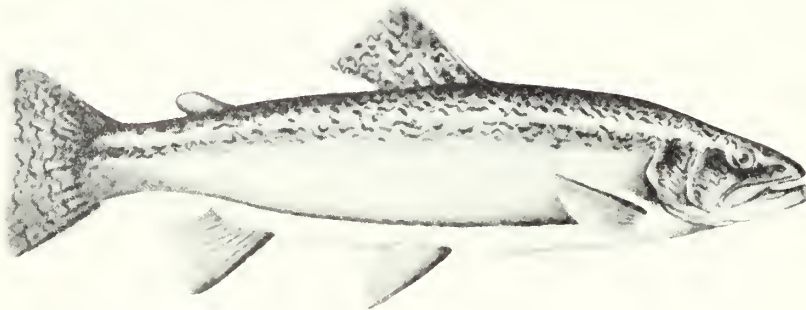
Lake Seminole offers a variety of species — bass, bream, crappie, catfish and striped bass.

## LAKE WORTH





Rainbow Trout



Brook Trout



Brown Trout

# FACTS ABOUT GEORGIA'S TROUT

Georgia has over 800 miles in the cool, invigorating mountains in the northeast section of the state.

With a few exceptions, this is the only area where water is suitable for trout. A coldwater fish, trout require cool, clear water with plenty of oxygen.

Brook trout require the coldest water—a temperature over 78 degrees proves fatal. Rainbow trout are more tolerant, succumbing in temperatures exceeding 85 degrees and brown trout have a fatal temperature of 83 degrees.

Three species of trout are found in north Georgia streams—brook, rainbow and brown.

## BROOK

The brook trout, native "speck" or "speckled trout," was the only species present when white man first settled Georgia. It has been supplanted by rainbow and brook trout in most streams but is still very popular among mountain fishermen.

The brookie apparently has difficulty competing with rainbows and browns in Georgia streams. Reason for this is that the temperature of these streams has been warmed considerably by logging, pollution and silt caused by both logging and farming.

Brooks are confined now principally to small head-

water streams, particularly those isolated by high falls which rainbows and browns cannot ascent.

In streams where rainbows and browns have been stocked above such falls, brooks disappeared. Only in the very coldest streams, where the rainbow has difficulty surviving does the brookie hold its own.

## RAINBOW

Rainbow trout is the species that dominates north Georgia streams. It occurs in more streams than either other species. Pound for pound, rainbows are considered the toughest fighters. They seem to thrive best in rapid cascading streams, often called "white water."

## BROWN

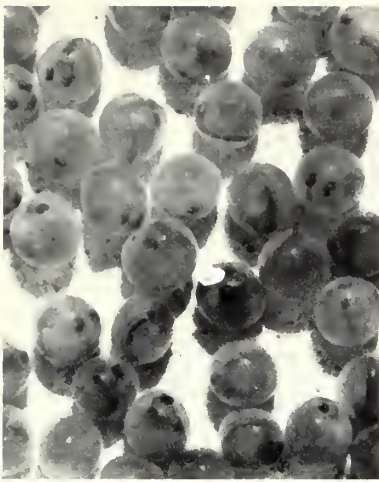
Brown trout, known as German brown or Loch Leven, attains the largest size of any species found in Georgia.

Each year many individual 16-25 inches are caught in the heavily fished streams on the state's cooperative management areas.

Brown trout are able to withstand the heaviest fishing pressure of all three, the brookie is least able to withstand heavy fishing pressure.

As many anglers have found, brown trout are the hardest of all to catch. Creel census records based on recovery of marked fish bears this out.





Water temperature determines length of time for eggs to hatch.



Trout fry have yolk sacs attached to their undersides.



Here's what anglers are seeking—a full grown brook trout.

### SPAWNING SEASONS

Brook and brown trout are fall spawners, spawning on a falling temperature, while the rainbow trout is a spring spawner—spawning on a rising temperature after a long cold winter.

As spawning season approaches the mature trout seek out gravel riffles.

The female makes the nest by excavating, with movement of her tail and fins, a hollow in the gravel and there she lays her eggs and the male fertilizes them. After completion of the spawning act the eggs are covered with bottom material, and from there on left unattended.

The length of time it takes for the eggs to hatch depends on the water temperature. As a general rule it

takes 50 days for the eggs to hatch if the temperature is 50 degrees. The fry, newly-hatched young, have a yolk sac attached to their underside at first, later this is absorbed by the body and then the young fish work their way up through the gravel and into the stream. The young emerge from the gravel beds in winter or spring, depending on local conditions and species of trout.

Growth rate varies with species of fish and environmental conditions.

Yearling trout could be expected to vary from about five to seven inches. Three-year-old fish should be about a foot in length. A seventeen inch brown trout would be about five years old. Trout older than six years are rare in the heavily fished streams of north Georgia.

Georgia's legion of trout anglers find peace—and fish—in the northeast Georgia mountain streams.





Fish Stocking is successful only in new waters, reintroduction programs or in waters where existing populations have been removed.

# Fundamentals of

## FISH MANAGEMENT

### ...the truth

There's one basic fact that needs to be understood if we are to properly determine the role of stocking in today's fish management programs.

Fish are prolific—much more prolific, in fact, than most animals in field and stream.

There are no accurate figures on egg production because a big female lays far more eggs than a small female of the same species. However, in general, a trout may lay 1,000 eggs, a bass 10,000 a bluegill 20,000, a walleye 50,000 and a big carp might lay a million.

Under suitable conditions, a big percentage of these eggs hatch. One study on a 14-acre lake showed that the number of fry produced naturally by four species (large-mouth bass, bluegill, common sunfish, rock bass) was slightly over 50,000 per acre. The water would support only a few hundred adult fish per acre.

There have been instances where the limited brood stock present in the original river was more than adequate to provide all the young fish needed to stock big impoundments. A good example of this is Georgia's lake Lanier, where fish from the Chattahoochee River populated the lake with enough brood stock to start an excellent population.

A big female bass in a one-acre pond could produce enough progeny so that, if all eggs hatched and all fish survived for three generations, there would be enough fish, at one pound each, to replace the water in the pond, and to make a heap, one acre in area, extending over 700 feet above the pond!

Obviously, fish are prolific. This is easily understood if we will think of cows each having thousands of calves each year. If each cow had only 10,000 calves, adding a truckload of calves wouldn't increase the cattle population of a pasture very appreciably.

There's an added item. Fish need food—and plenty of it. Their food chains tend to be long. The average acre of water in Georgia supports only about one hundred

fifty pounds of fish. This may range from a very few pounds per acre in some waters to a thousand pounds or more in some small, heavily fertilized waters.

It's easy to see why, during the days of the hatchery "craze," many of our hopes were unrealized. We can understand, now, why much of the stocking was ineffective or even harmful. During those days the public was quite willing to accept the belief that stocking was the panacea to all our fishing ills. Fishery workers believed it, too. The job of selling the stocking idea was an effective one. It was later that we learned more about fishing being prolific and about the food needs.

The job of "unselling" has not been an easy one. For instance, a year or two ago the owner of a farm pond had decided to start fishing it but he observed an immense crop of bluegill fry—"millions of 'em."

"We decided to let them grow up before we started the fishing," said the farmer.

The man had a well-managed farm. He had only a limited number of cows in his pasture. He understood about carrying capacity and overgrazing on the land. But to him his pond was quite different.

There's the case, too, of sportsmen being delighted when a state truck delivered bass fry for distribution in a rather extensive section of bass waters in one county. The supply consisted of 5,000 fry, less than half of the potential output of one female.

Though there are still exceptions, more and more sportsmen recognize the fact that stocking has limitations. In general, the public still looks on stocking as a cure-all only in states where the top fishery people have been disinterested in public enlightenment for obvious reasons.

Stocking does have major limitations. But, it's one of our most important fish conservation tools. Properly used, stocking plays an important role in improving our fishing.

For warm waters we must rely on planting small fish. Raising game fish to adult size in hatcheries costs a for-



Hatchery reared trout from  
Lake Burton Begin Grading Process.



# about **STOCKING**

tune. Rearing a bass to twelve inches would cost an estimated two to four dollars. Not over half the planted fish can be expected to be recought. This raises the average price of each bass creel from four to eight dollars—almost eight times the price of a Georgia fishing license.

Planting warmwater fingerlings serves a good purpose in a number of instances:

1. To stock new waters, especially farm ponds and new public fishing lakes.
2. Reintroduction of fish in lakes depleted by fish kills.
3. Introduction of species not already present, where such introduction is desirable.
4. Restocking of waters from which existing fish populations were removed through use of chemicals or draining.

The stocking picture for warmwater and coldwater fish differs rather decidedly. Trout can be raised to catchable size at a much lower cost than would be needed to raise bass or other game fish to a size where they would be attractive to anglers.

In numerous waters we can now have good trout fishing only by planting catchable-sized fish. In most Georgia trout streams, it is a case of having put-and-take stocking or having no trout fishing at all. Of course, such stocking is justified only on heavily fished waters where a big percentage of stocked fish will be retaken by anglers.

In general, stocking with coldwater species may be expected to benefit fishing under these circumstances:

1. Stocking suitable lakes where trout have no spawning areas.
2. Restocking lakes or streams with fingerlings after removal of existing fish populations by use of rotenone or other methods.
3. Stocking with catchable sized trout. This is the only method of providing good trout fishing in waters that

are heavily fished because usually they are not capable of raising enough fish naturally to supply the demand.

Introductions have been both beneficial and harmful. For example, trout fishing has been created in many waters by introducing trout; fishing in some waters has been destroyed by introducing carp.

Often sportsmen tend to want those species introduced which are not already present. If these succeed, they must generally do so at the expense of native species. Carrying capacity is limited. If we add horses, sheep and mules to a pasture, the pasture will necessarily support fewer cows than it could support before the other species were added.

*(continued on page 29)*

Game and Fish Commission aides grade trout before releasing them into north Georgia Streams.



# All about

# FISH

By HOWARD ZELLER  
*Dingell-Johnson Coordinator*

The behavior and seemingly irresponsible actions of fish are a constant topic of conversation among fishermen. Why do fish react as they do under certain conditions? What are the best lures? Best times to go fishing?

These are a small sample of the questions passed around when fishermen meet. Chances are you will hear about as many answers as there are fishermen.

Professional fishery biologists will be the first to admit they don't know all the answers. On the other hand, basic scientific knowledge of fish as an animal group may help out on your next fishing trip.

## COLD BLOODED VERTEBRATES

All fish, reptiles and amphibians are classified as cold blooded animals. This simply means these animals are more primitive than the mammals and do not possess special regulatory mechanisms to keep their body temperature constant. Their body temperature will be the same as the environment in which they live.

If the water is cold, body temperature is low and the activity of fish is greatly reduced. This lowered body temperature principally affects feeding, since less activity means that less food is required. The same phenomena is found when water temperature is too high. Aquarium experiments have shown, for example, that food consumption of largemouth bass is several times greater at water temperatures of 65° compared to a low temperature of 35° or a high temperature of 90°.

This helps explain why bass fishing is best in the spring and fall, and slowest in mid-summer and winter. When fish are more active they require more food and consequently bite better.

## VISION OF FISH

All fish are notoriously near sighted. Vision is probably restricted to several feet even in very clear water. They have moveable eyeballs and the ability to move

their eyes independently so that one eye may be looking up and the other down. They also have good vision above the surface of the water, good enough to nab a flying insect by leaping out of the water.

Color vision in fishes is a highly controversial issue. Aquarium studies using color combinations have yielded some interesting information.

Most biologists agree that fish are virtually color blind and that most bright colors as viewed by fishes appear as shades of gray, brown, or green. Some species can determine shades of color. The color most easily singled out by fishes are green and yellow, according to a recent investigation.

## SENSE OF SMELL

The sense of smell is quite highly developed in all fishes. The nostril has no function in breathing, but leads to a small sac where the sensory tissue is located. Certain substances in very small amounts in the water may either attract or repel fishes. Pollution wastes may be readily detected and repel fish, whereas sharks and other species can smell an infinitesimal amount of blood in the water at great distances.

## SENSE OF TOUCH

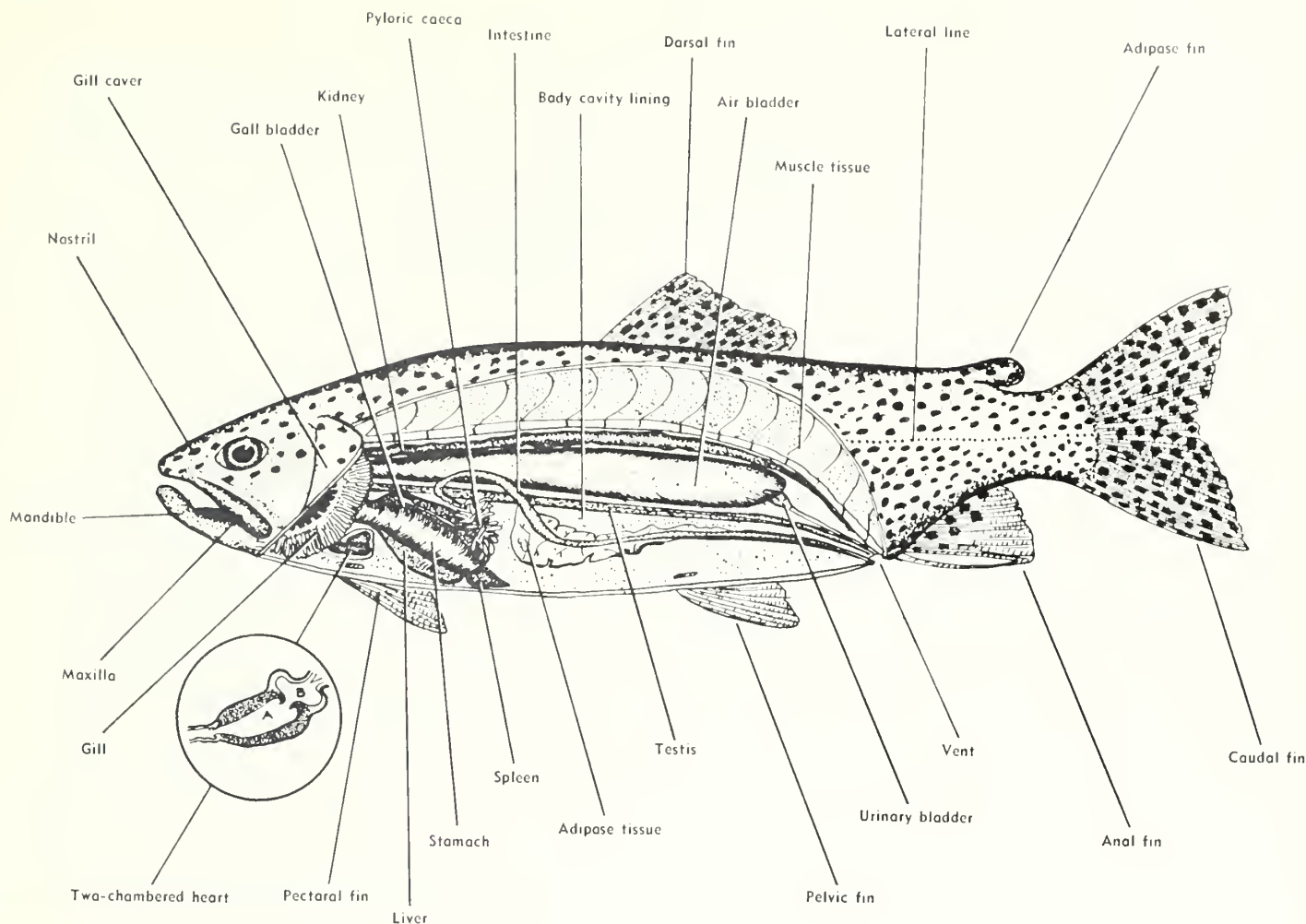
Fish have a highly developed sense of touch, similar to man. Sensory cells are located all over the body. The barbels or "whiskers" on catfish are highly developed and assist these fish in finding their way in muddy water.

## HEARING IN FISH

Basically, hearing in fish is the same as land animals. Sound travels much faster in the water than on land and fish are quite sensitive to sounds of low frequency.

Fish have no outer ear, and sound reaches the sensitive inner ear as vibrations picked up in the water by the lateral line. This lateral line is readily seen along the sides of the fish extending from head to tail as a tube like





ted directly to the

heard by fish, but  
r stirs vibrations  
line.

## IY

l organs of fishes,  
d well developed,  
cies and especially  
e and pike, which  
t intestines, while  
suckers that feed  
d intestines.

e, ce behavior are  
few basic fishing

ie most important  
tly. If you are a  
rmometer in your  
proper depth and

best times to fish. As a rule of thumb, fish shallower in the spring and fall than during mid summer. Fish will pick out the temperature they like best. Experiment with different depths if you don't have a depth recording thermometer.

2. Select your artificial lures on the basis of their action in the water and resemblance to natural food. Try to duplicate natural movements of food organisms in the water. Fish all artificial lures slowly. Color of artificial lures, although it may be significant in some waters, is overall probably not the most important factor in catching fish.

3. Be careful with sounds, especially splashing the water or thumping the sides of your boat. Normal conversation is probably not detected by fish.

1. When fishing surface plugs, wait a short interval after the plug hits the water before the retrieve. Chances are that near sighted bass didn't see the lure hit the water, but with his sensitivity to water vibrations he heard it and needs a little time to swim up closer and look it over.

All true fishermen know that even the best advice and conditions will not guarantee a catch of fish. The ideas discussed here may help to form a basis for a bigger catch and a better trip next outing.

# Catfishin'

"I'll tell you what I don't like about catfishing," the man said. "It's those foul-smelling concoctions that catfishermen dream up to catch fish. They're awful."

Awful or not, catfishing is becoming a very popular sport in southern states. Only time will tell if it surpasses fishing for bass, the real prize of southern anglers, but it is currently well on the way.

This sudden surge in popularity of the once-lowlly catfish can perhaps be explained best by examining the typical catfisherman.

He's a man who enjoys catching fish . . . a man who tried dragging lures across the bottom of a lake or tediously working a topwater plug for bass. He's a fellow who has drowned many worms in a spot that looks like a place for a big bream bed.

Some anglers believe that catfish offer little challenge. They say they're easily caught and never put up the battle of a lively bass or a tail-walkin' trout. Be this as it may, the catfish appeals to a growing legion of fishermen.

Catfishermen are a lot like trappers—always dreaming up new preparations designed to attract their quarry. It may be spoiled chicken livers, frozen shrimp that have thawed, plain, raw meat or chicken innards.

These "baits" catch fish and what angler can argue with success?

In addition to these, cheese (particularly the smelly kind), blood-flavored doughballs, soap, beef, worms, cut fish and crawfish make mighty good baits.

On the more appetizing side, there are several preparations on the market for catfishermen. These vary in size and content, but all are effective when it comes to catching fish.



Earthworms make good catfish bait.

The catfish himself is often as unpredictable as the man who fishes for him.

One never knows what to expect when he performs an autopsy on Old Mr. Whiskers. Such things as bottle caps, small rocks, beer openers, aspirin bottles and grasshoppers have been found in their innards.

To fishermen, this simply means that catfish will eat almost anything. But this isn't exactly true. Catfish won't eat just anything. Sometimes, it seems they won't eat at all but if a fisherman comes along at the right time with the right bait, he can usually be assured of some good fishing.

High Falls Lake is one of Georgia's better catfishin' areas.







Catfishermen prefer the swirling deep water behind power dams to search their quarry.

Just like in any type of angling, there are about as many methods to catch cats as there are fishermen. But one thing's for sure—the fisherman who consistently catches cats knows how, when and where to fish.

Most big catfish are taken on or near the bottom with a rig known as a "tight line." This apparatus is comprised of a bell-shaped sinker and two hooks, preferably No. 2s. One hook is placed on a dropper line about a foot or so above the weight. The other is joined to the line about eighteen inches above the first hook.

When the weight is on the bottom and the line is drawn tight, the lower hook rides several inches off the bottom, the higher hook about a foot shallower.

Some anglers just bait their single hooks, weight them properly and cast them into the water. The weight pulls the hooks to the bottom and this often works just as effectively as double hooks.

Catfish, particularly channel cats, are products of swift water. They like to travel around in the deep and here's where the larger ones can be taken. The shallower the water, the smaller the catfish is a rule that seldom fails to hold true.

Most Georgia streams have good populations of catfish, and they are found in abundance in all principal lakes. Channel cats have no boundaries, but white catfish, often called blue cats, are products of south Georgia. Flatheads (speckled, flat and others) prefer north Georgia habitat and are commonly caught in northern lakes and streams.

Catfish feed vociferously in water temperatures from 70 to 75 degrees. Over 75 degrees, they do little or no feeding and under 40 degrees their appetites also seem to slack off.

Channel cats are the most preferred species of Georgia catfish. A recent ruling by the Game and Fish Commission gave them game fish status.

The channel catfish may also become a good fish for farm fish ponds. Biologists have learned that, when stocked in the proper ratio with bream and bass, they show phenomenal growth—sometimes as much as three and three-quarters pounds a year.

The Commission will use its facilities at Walton County fish hatchery to propagate channel catfish for use in public waters and farm ponds.

This should add even more popularity to Old Mr. Whiskers, the rascal of the deep water.

Tam Hardin of Appling displays a cat taken from Clark Hill Lake.





# Let's stop

# POISONING

Radiation, Viral diseases and invasion of chemicals threaten Georgia's pure, fresh water supply that is used by over 4 million inhabitants, including children.

By LUTHER TERRY, M.D.

*Surgeon General, U.S. Public Health Service*

When I entered the Public Health Service some 20 years ago, I was taught by the senior physicians of our Corps that whatever else in our environment was dangerous to health, our water supplies were safe. One could go anywhere in our country, turn on the tap, and drink a glass of water without worry. Some of the water might taste like medicine and some of it might be strangely colored, but it couldn't harm you.

Medical evidence, in those days, seemed to bear us out. Typhoid fever, cholera, and the waterborn dysenteries were diseases one read about in medical books or encountered on trips abroad; they were not diseases one expected to treat in private practice. This is still true, incidentally. There probably is not one practicing physician in 50 who has ever treated typhoid or cholera within the continental U. S.

But three dangers—one potential and two actual—are causing us to re-examine our water's spotless reputation.

The potential danger is radiation. So far, we know of no water in the United States which approaches a level of radiation immediately dangerous to health. We are keeping very close watch, and must continue to do so as the uses of nuclear energy increases in the years ahead.

A second danger has to do with the viral diseases. We are by no means sure that at least some viruses are not slipping through our present water purification and disinfection processes and entering our water mains. Hepa-







Here's an example of pollution's serious effects on water. Left, o polluted stream. Right, the same stream before pollution.

# OUR WATER

titis may be an example. A count of 59,573 cases of hepatitis in the United States through October 14 this year—the highest in history and four times the usual average—is extremely disturbing.

The third danger is something else—something new.

Modern man is living in a new kind of environment which has been largely created in the incredibly short time of 20 years. In this brief period at least a half million new chemical compounds have come into existence. We manufacture these substances, we use them, and when we are done with them, in a good many cases, we discharge them into our rivers and streams or dump them on the ground and let them seep into our underground water supplies. And then, days or months or years later (in minute quantities, it is true), we drink them.

Some of these substances come from your home. In 1917, the housewives of the nation used 375 million pounds of detergents. Last year they used more than 3.2 billion pounds. They also used more bleaches, powders and other household cleansers, much of which went down the drain and into the nearest waterway.

Others of the new substances come from farmlands. Every rainfall washes fertilizers, herbicides and pesticides off the crops and fields and into the streams and rivers. Unlike most other forms of pollution, these cannot be traced to a single source.

Still others come from factories. All industrial production has increased 65 per cent since 1917, and the chemical industry's production has increased 176 per cent.

Use of plastics, one of the major types of chemical products, has increased from 277 million pounds in 1940 to over six billion pounds last year.

The most disturbing thing about these new substances is that nature cannot handle them as efficiently as she handles other impurities of natural origin. Fish, plants, moulds, bacteria and other living organisms in water can, in time, break down any natural impurity and use it as food. But for many of the man-made compounds, there seems to be no organism that can give us a helping hand. Once these substances get into the water, they are diluted, but they persist for long periods of time.

*(continued on page 30)*

New Research programs by state and federal health officials will find facts, keep water pure and useable.



# Tying Winged Flies

Patterns and tying instructions on several  
Flys for Georgia fishing...



Fly fishing challenged anglers for many years as the wily, underwater inhabitant continues to try to outsmart those who are "after his hide."

There are approximately 1,000 various fly patterns, most of which are only slight variations of some 100 types. These can be broken down and grouped into 12 or 15 basic patterns.

Here are 20 patterns of common flies which have proved to be good bait for Georgia trout, bass and bream.

Three such patterns, the Georgia May, Baggs and Abernathy, are variations from old models designed to meet local needs. They have proved to be excellent baits.

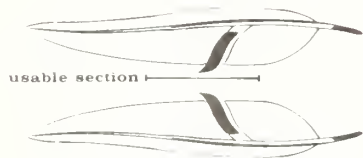


Dry Fly



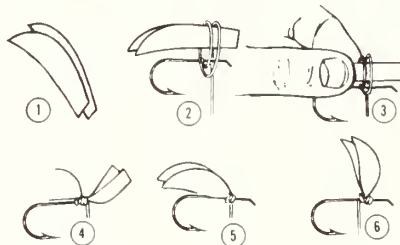
Wet Fly

In dry flies, the wings are parted and turned out, but the wet fly's wings are tied as they press against each other. The hackle of dry flies radiates from the hook, but it is confined to the under side of wet flies and used as a cover for the barb of the hook. Old rooster necks are used in making dry flies while softer, more absorbent hen necks are used for wet flies. Also, wools and porous hair which are water absorbent are employed in making wet flies as well as heavy hooks and soft copper or lead wire.



Above is a pair of duck pointer quills which were taken from the left and right wings. In obtaining these quills, the complete dried wing should be procured so that the quills can be matched. This is the reason why whole skins of ducks are sold for better matching of the feathers.

## Tying the Dry Fly



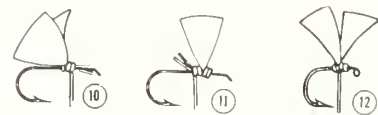
Toward the point of the quill fibers are very stiff, yet they become softer at the base. When they are put together (Fig. 1) they form the wing of the fly. In Fig. 2 the tying thread is wound around the wing, and Fig. 3 illustrates the most important step in giving a proper shape to the wing. Enough pressure must be exerted to keep the wing from collapsing but loose enough to let it pull into shape.

After pinching the barbs, the wings should look like Fig. 4. Several more turns of the thread should be made and excess thread cut off. The fly wing is then picked up and several turns of the tying thread are taken behind it (see Fig. 5). Figure 6 illustrates the fly wing.



Another type of wing can be made from the tip of the neck hackle. It is tied down as in Fig. 7, with the excess material trimmed off. Tying thread is then wound on each side of the wing.

In Fig. 9 the wing is parted slightly giving the appearance of an insect. Hair from squirrels, monkeys or deer can be tied in the same manner providing for a floating wing.



In Fig. 10 another version of the wing is shown. This fly can easily be seen by the fish because of its bulk, and for that reason makes a good early season dry fly.

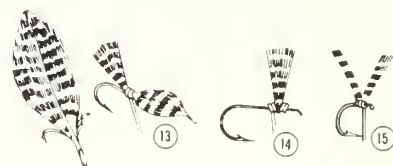
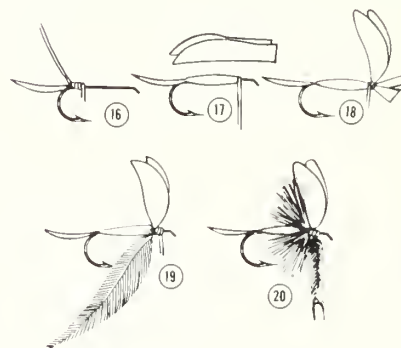


Fig. 13 shows how a feather taken from the flank of a duck can be made into a serviceable fly wing. This is a good method for quickly barbed winged flies. In Fig. 14 the mass of barbs are separated and cross wound to form Fig. 15.



Tying the dry fly is demonstrated starting with Fig. 16. The first step is to tie down the tail pieces, and in Fig. 17 where the body is complete, wing pieces are cut from identical paired duck feathers. In Fig. 18 the wing pieces are tied down as were done in figures 1-6. Figure 19 shows a rooster hackle being tied into the base of a wing, and in Fig. 20 the hackle is wound behind the wing. After several turns the hackle is then secured with the tying thread and coated with a lacquer for the finished fly.

In tying floating flies materials used play an important role. Flies that are tied in a bulky manner will float well at first, but when they become saturated, it is most difficult to whip them dry while fishing. A fly dressing, which is an oil covering that aids the fly in floating, is advisable. The dressing is a lubricant designed to keep down resistance between the line and guide. Also, it keeps the line floating.

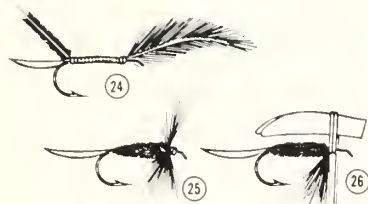


Figures 21-23 illustrate a more complicated form of tying the dry fly wing. This



makes for a more graceful wing, but does not stand up well during fishing. It is mentioned here for the purpose of making display flies to be used for decorative purposes.

## Tying the Wet Fly



Tying wet flies is illustrated starting with Fig. 24. The first step is tying the tail on a hook shank after which the body material is added. Lead or copper wire is wound around the hook to help weight it down. Georgia trout do not seem to take well to the wet fly unless it is fished close to the bottom.

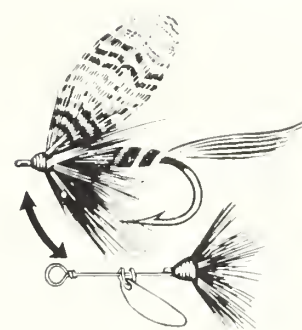
Figure 25 shows the hen hackle being tied as only a few turns of the hackle are required. In Fig. 26 the hackle is either bunched or trimmed. The wing is then tied after which a lacquer is added to form a bond. Wings of wet flies are reversed so that each wing presses against each other. This is an aid used in sinking flies as it prevents the catching of air.

In general, wet flies are tied on larger hooks than dry ones, and are used earlier in the season before the real fly starts to hatch.



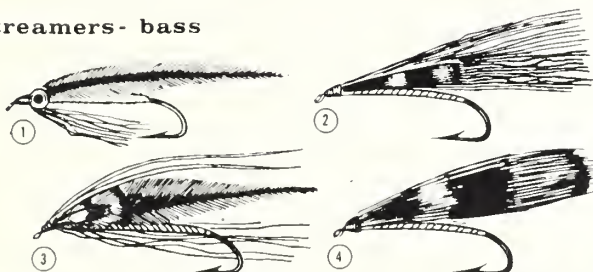
The streamer fly is a favorite one for all bass fishermen. Kip tail, polar bear and

squirrel tail all make good streamers. Buck tail is good but has a tendency to float, so should be used on flies fished just under the surface.



Bass flies can be tied with or without spinners. A long narrow spinner seems to work best as it is more easily controlled.

## Streamers - bass



## Dry Fly - trout



## Wet Fly - trout



## Wet Fly - bass



## Salmon Fly bass & trout



### GHOST SQUIRREL TAIL

Hook Limerick long shank

NO.	WING	BODY	HACKLE	THREAD
1	Badger Rooster Hackle	White Wool		White
2	Yellow & Red Hair	White Wool Tinsel		Black
3	Badger Rooster Hackle	Yellow Wool Tinsel		Black
4	Fox Squirrel	Yellow Wool Tinsel		Black

### BAGGS GEORGIA MAY

Hook round bent light wire

NO.	WING	BODY	HACKLE	THREAD
5	Mollord	Blue Dunn Hackle stripped	Blue Dunn	Wood Duck
6	Blue Dunn Quill or white	Peacock	Dork Brown	Gold Phcs
7	Blue Dunn Quill	Cream hair	Light Brown	Blue Dunn
8	Blue Dunn Quill	Yellow Gold Tinsel	Yellow & Grizzly (Borred Rock)	Wood Duck
9	Blue Dunn Quill	Groy Gold Tinsel	Blue Dunn	Wood Duck
10	Mollord	Peacock Stripped Fibers	Grizzly	Wood Duck

### Wet Fly BLUE DUNN JOCK SCOTT

Hook round bend extra heavy wire

NO.	WING	BODY	HACKLE	THREAD
11	Blue Dunn	Blue Dunn Silk G. Tinsel	Blue Dunn	Blue Dunn
12	Turkey Brown	Groy Wool G. Tinsel	Grouse	Wood Duck
13	Mollord	Yellow Wool G. Tinsel	Red	Wood Duck
14	Turkey Yellow Duck	Yellow Black G. Tinsel	Grouse	Wood Duck
15	Blue Dunn	Blue Dunn Hackle Stripped Y. Ostrich	Blue Dunn	Wood Duck
16	Blue Dunn	Cream Hair	Blue Dunn	Blue Dunn

### BALTIMORE SPOAT or Round Ben Hook

NO.	WING	BODY	HACKLE	THREAD
17	Swon Black	Yellow G. Tinsel	Block	Groy
18	Yellow & Red Swon	Yellow G. Tinsel	Yellow	Red
19	Mollord	Red & G. Tinsel	Grizzly	Red

### Salmon Fly SALMON HOOK

NO.	WING	BODY	HACKLE	THREAD
20	Boli-Duck Jungle Cock English Joy	G. Tinsel Block Chinnel Red Floss Red Hackle	Eng. Blue Joy Guinea	Grouse Wood Duck

### ABBREVIATIONS

Gold Tinsel G.—G. Tin  
Blue Dunn—B.D.  
Grizzly (Dominecker or Borred Rock Rooster)  
Boli Duck—Duck from Asia or India  
Bodger—(Trade Name Block Base White Borcles Hackle)

# Chattahoochee TROUT

When the U. S. Army Corps of Engineers constructed its huge power dam on the Chattahoochee River to form Lake Lanier, downriver fishermen expected their success to die a quick death.

The dam meant, among other things, colder water that is not compatible with warmwater fish such as bass, bream and crappie.

But the new dam may actually be a fisherman's dream in disguise.

Game and Fish Commission biologists think the old Chattahoochee from the dam to Roswell will support trout.

Extensive experimenting with rainbow and brook trout in the Chattahoochee has been encouraging.

The fabulous Chattahoochee story was born soon after Buford dam began operation. It was then that fishery biologists thought of the White River in Arkansas where

a similar situation was the birth-place of a tremendous trout fishery.

Armed with their thermometers, a crew of biologists began the task of keeping year around records of the water temperature.

Finding the river cold enough to sustain trout life, they recommend a trail stocking of a few thousand trout to either confirm or deny their suspicions.

Fortunately, they were right, Trout **COULD** survive in the Chattahoochee—even as far downstream as Roswell.

Knowing this, they set out to answer a multitude of other questions that could be the undoing of the project before it actually began.

Is there enough food? What about the critical months when the water temperature is warm and the oxygen

Fishery Biologists examine Chattahoochee Trout during growth rate study.



Biologist Leon Kirkland Releases Brook and Rainbow Trout below Lanier Dam.







content is low in some spots? Is adequate spawning area available?

They found that there is enough trout food in the Chattahoochee to adequately feed the fish. Main food items include aquatic insects, threadfin shad which have come from Lake Lanier and a wide variety of land insects which are washed into the river as the water rises and falls.

As for water temperature, it was found that it is relatively constant fluctuating between 55 and 60 degrees. This is good temperature for the growth rate of trout.

The major problem with which biologists are concerned is lack of oxygen in the water during certain times—the critical months. Water flowing into the river comes from deep portions of Lake Lanier which measure about 110 feet.

Pollution presents an added problem, and technicians are constantly at work to find the best solutions.

Indications are that trout may spawn in this legendary old river, but a question arises as to whether natural reproduction will maintain the fishery. This means that regular and continued stocking of fingerling fishes which will grow to catchable size within a years time must be carried out. Only time can answer this question since many factors other than actual spawning area are involved.

The Commission has stocked rainbow, brown and brook trout in the river, and is far enough along with the test program to reach several conclusions.

Commission biologist Howard Zeller reports that the rainbow shows more promise of surviving in the Chattahoochee than the other species.

"The brown trout, a wary rascal who is difficult to catch, offers a real challenge to anglers, and makes an excellent trophy for fishermen," he said.

Zeller pointed out that brook trout apparently haven't done as well as the other two, but said that more time was needed to test their durability.

Other species of game fish such as bass, crappie and bream die-out in this section of the river as the water is too cold for their survival, but the red horse sucker, another cold water fish, thrives abundantly along with the trout.

The Commission is looking into the possibility of releasing smelt, a saltwater fish that is adaptable to fresh water, into the river as a forage fish for trout to eat.

Although biologists feel smelt will add to the growth

*(continued on page 25)*

Angler Ted Hall lands a brook trout from the Chattahoochee. Grand Old River will be open for fishing during state trout season.



# It's HOW

# you fish

---

# that counts

By TONY MIDDLETON

It was late afternoon in early spring, and Blue Ridge Lake was glassy calm as evening shadows crept over the water.

Fishing was nothing to brag about, for dad and I had been out every afternoon for at least a couple of weeks without too much success, except for an occasional “keeper” bass.

We had gleefully added these few small bass to our stringer, but we were waiting for the time when the big boys would hit our top water lures.

It would be any day now—that we knew for sure—and we were determined to be there when they finally changed their minds.

Dad was fishing with a Spook, and I was trying my luck with a Dalton Special.

He is a great believer in surface plugs, and I have learned that the thrill of catching a fish on the top cannot be equaled.

But I had failed to master the most important facet of fishing—knowing how to “fish” a plug in a manner that would fool the sly and wily fish.

Enticing a fish to strike an artificial lure is difficult if the angler doesn't know what he's doing.

As we were rounding Morgantown Point, a shallow spot which jets out about 200 feet before dropping off, dad cut the motor, and we started casting.

We had only been there a few minutes when wham! We both hooked one at the same time. This was a thrill which we hadn't encountered before, and we both were as excited as a brand new father!

I watched dad work his lure in the water, and I had tried to mock him, so to speak. Sure enough it paid off!

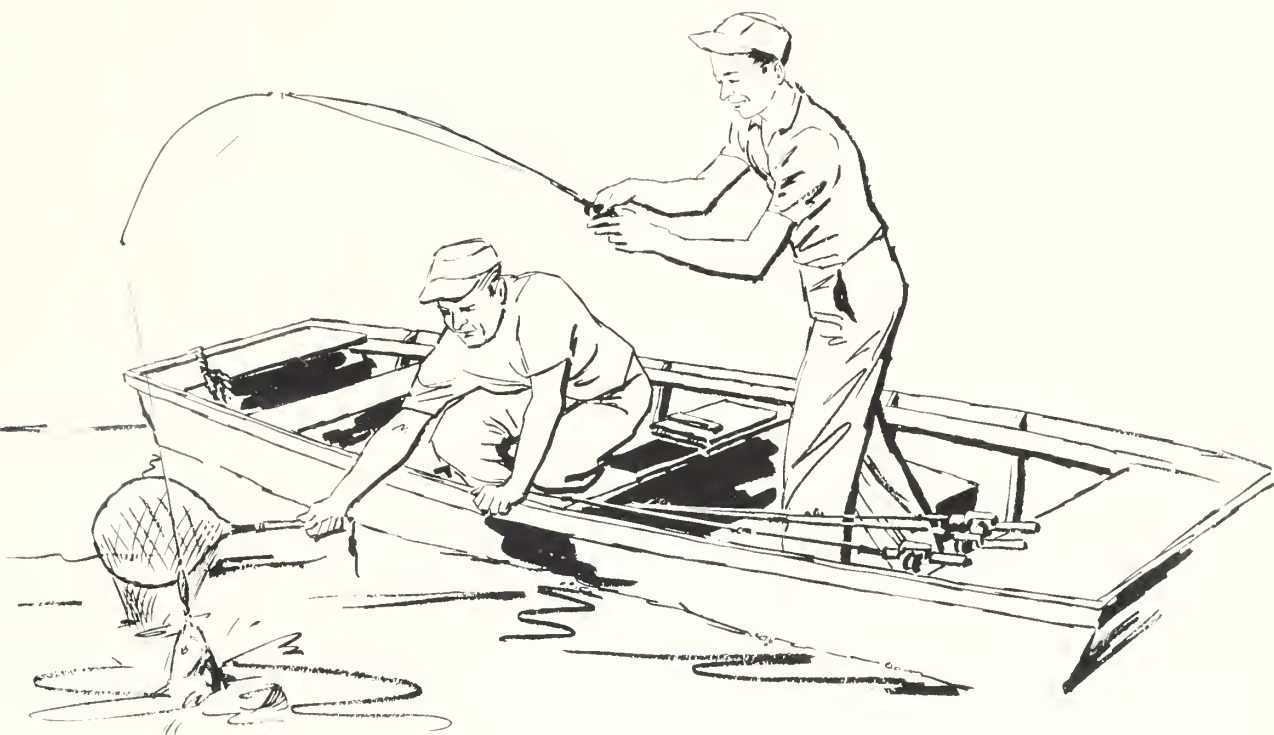
He would fish the bait very slowly, allowing the lure to remain motionless for a moment when he first cast.

I did likewise, and then I reeled in my slack line without moving the bait. As I began retrieving my plug, I started twitching the rod tip gently, causing the bait to start a quivering motion. Then, the big one hit.

As I turned to tell dad to get the net, I saw that he had hooked one, too. I was hoping that we wouldn't both get our catches to the boat at the same time, for someone needed to net the fish. As it turned out, dad landed his first and was able to net mine.

“Son, it looks like the time has come when the big ones are ready,” dad said after we had landed our catches. They were beauties, and it looked like we were in for a good afternoon.





Later, a friend, Haines Hill, invited me to go with him and try some new angling techniques.

He was a great believer in using "go deeper" plugs, and was quite an artist when it came to working the large lipped lure in the water.

We had decided to try our luck early in the morning, and picked a place where there were some deep channels and good weed beds.

It was a warm morning. We felt sure that our plugs, river runt spoons, would be ideal for the water we had selected.

Being somewhat of a novice insofar as fishing with a "go deeper" was concerned, I watched Haines work the little plug hoping to pick up a few pointers myself. And believe me that I did!

We had only been fishing a short while when Haines hooked a three and one half pound smallmouth bass.

I continued to watch his style. He cast out from the boat, gave the lure time enough to sink, and retrieved slowly allowing it to skim across the lake bottom.

As the day wore on, our luck grew progressively worse.

We had three nice sized bass on our stringer—all caught in the early part of the morning.

We decided to use a slow-sinking lure, the tiny runt, and found our results proved to be very favorable.

The water here was shallow and somewhat weedy. As soon as our plugs hit the surface, we would start reeling them back to the boat.

We had anchored our boat in a bed of crappie, and our afternoon turned out to be a real field day.

In the past I have found that if regular trolling or casting fails, good results are attainable by attaching a keel sinker ahead of a floating-diving lure which is one to be used when fishing shallow or weedy waters where the undergrowth is close to the surface.

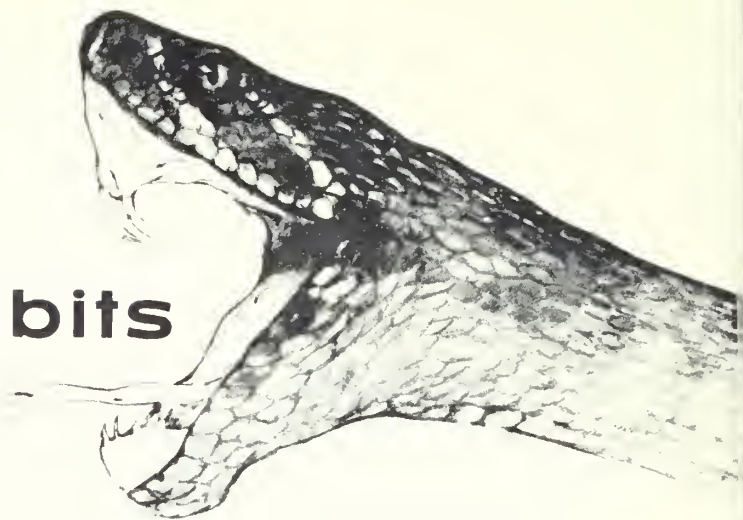
If you do this, make sure the sinker is heavy enough to sink the lure, and then try trolling slowly through deep water. I have found this will often bring good luck both in fresh and salt water.

It has been my experience to find that fishing with artificial bait is an art that requires a little more than merely pulling a plug through the water.

As my dad once told me, it is a skill which can be perfected only through practice and a knowledge of plugs combined with good angling techniques.

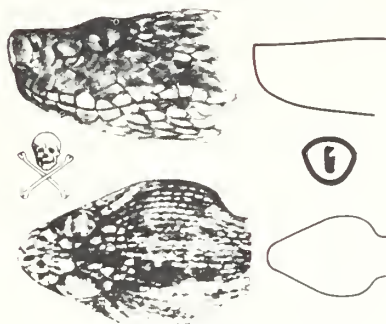
# Georgia SNAKES

## and their habits



In Georgia there are two families of poisonous snakes, the Cobras (Coral Snake) and the Vipers (Copperheads, Rattlers and Water Moccasins). The Coral snake, a secretive, mild mannered fellow, is our most beautiful and poisonous snake. It is encountered so seldom that it is a rarity to hear of one biting a person.

The American Viper differs from his Old World cousins because it possesses heat sensitive pits between its eyes and nostrils. With this appendage it can detect, strike and hit its victim in complete darkness. Remember this when you crawl around in caves, dark ledges or even a walk in the woods in the dark. The pits are used in procuring food. Defense is secondary.



POISONOUS

Vipers have fangs — elongated hollow front teeth through which poison is bitten into the victim. When not in use, these fold back into grooves in the top of the mouth. The Coral snake has non-moving fangs — similar to the non-poisonous snakes.



NON POISONOUS

The best protection from snakes is alertness. Always use a large stick for poking about when walking on back trails. Know what is in front of you! Rattlers and Copperheads wait along small game trails for a rabbit, mouse or squirrel to come along. The snake strikes these animals and lets them run their courses. The animal dies and the snake follows its scent to the meal in store at the end.

Vipers have characteristics that are common in all three family groups. The line drawing above shows the turned-up nose and enlarged neck holding the poison gland. The eyes of a Viper have elongated pupils much like those of a cat, owl or other night predators. All have fangs. Sometimes four fangs are present during molting.

Most non-poisonous snakes have an elongated round face. The burrowing snakes such as the Adder and Scarlet Snake have an exceptional digging modification on the nose. The lack of poison sacks give most non-poisonous snakes a streamlined look. Several of the non-poisonous water snakes and the puff adder are exceptions to this rule. Their head attachment is quite large and gives the appearance of a viper head. The eyes of most non-poisonous snakes are round.

The Coral snake is an exception since it has none of the features of the poison vipers.

The Copperhead or upland Moccasin is Georgia's most common poisonous snake. It is extremely abundant in the mountain areas, preferring rocky slag areas.

The Pigmy Rattler extends to Florida and the coast. The Diamond and Canebrake Rattler are confined to the southern part of the state.

The Coral snake lives in the southern part of the state and prefers its sandy soil and warm climate.

Timber Rattlers or Banded Rattlesnakes are generally a north Georgia snake. It is most active in the fall.

The Cottonmouth is our only poison water snake. Seldom seen above the 800 ft. elevation level, it extends into the lower Piedmont Plateau.

The Coral snake is one of the most beautiful poisonous snakes. They are not aggressive snakes but secretive, mild-tempered fellows measuring from 30 to 39 inches. Being a member of the cobra family, they are kin to the deadly Mamba, Kraits and Indian cobras. The Coral snake is the only fixed fanged poisonous snake in the Americas.



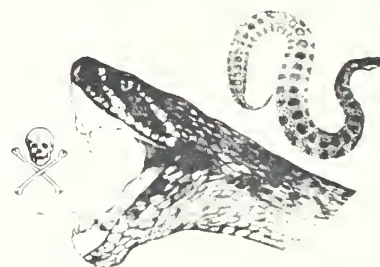
CORAL SNAKE



SCARLET SNAKE

A black head is the most noticeable distinction between the Coral snake and the non-poisonous Scarlet and Striped King snake. All of these snakes are native of the same area.

The Rattlesnakes are Georgia's largest and smallest poisonous snakes. The Pigmy Rattler seldom exceeds 20 inches while his cousin, the eastern Diamondback, is our largest snake, reaching nearly 9 feet. The Pigmy and Diamondback are just plain ornery, seemingly out looking for trouble.



PIGMY RATTLER



PUFF ADDER (Hognose)



The Timber is non-aggressive and of a peaceable nature, but is a savage fighter when cornered. The Hognosed (or Puff Adder), is often confused with Rattlers. This gentle non-poisonous snake when molested goes through a routine of spreading its head and issuing loud hisses. If further annoyed it will strike or go into a death routine by rolling over on its back and playing dead.

The Copperhead or upland moccasin is one of our most common poisonous snakes. In Georgia, we have two sub-species. In the Tennessee drainage is found the Northern variety; south of the mountains, the southern variety. The Northern snake tends to be of a darker color. In the mountain area they have mixed so that the true colors of neither



COPPERHEAD



SOUTHERN BANDED WATER SNAKE

are distinctive. The Copperhead will try to escape if discovered but will fight savagely if molested, often vibrating its tail much like the rattler. In the mountains during the dry, hot season the copperhead often comes to water for coolness. During this time he is often confused with the Southern Banded water snake a non-poisonous water snake.

The Water Moccasin is our only poisonous water snake. It is seldom found far from water, except in the fall when it hi-



WATER MOCCASIN



BROWN WATER SNAKE

bernates to higher ground. They are more sluggish than water snakes but are fierce fighters when molested. Their habit of

opening their mouths in defense, a trait common to vipers, earned them the name of cotton mouth because of the white interior of the mouth lining. Mature specimens take on a nondescript black color, but the young have a color pattern similar to the copperhead.

The moccasin feeds on aquatic life, small mammals, birds and lizards. They are often confused with the Brown water snake, a non-poisonous snake with a pouched head similar to the viper.



## Snake bite first aid

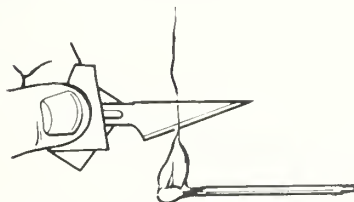
Giving first aid to a snake bite victim is dangerous if performed by an inexperienced person. If it is possible to get the victim to a doctor within one-half hour do so without administering first aid.

Several things must be done at the time of the accident. First, determine if it is a poisonous snake bite. Vipers have fangs. These usually leave two large predominant puncture marks. In rare instances when the snake is shedding its fangs, there will be two immature fangs behind the larger ones, which leaves four large holes. Also present will be scratches from the smaller teeth. A Coral snake does not have large movable fangs so its bite will be similar to any non-poisonous snake bite, a series of small scratches.

The second thing to do is to determine the type of snake for antivenom shots. Each type of snake must have a special antivenom shot prepared for it. A shot prepared for a Diamondback will not work for the bites of a Timber Rattler, Copperhead or Moccasin.

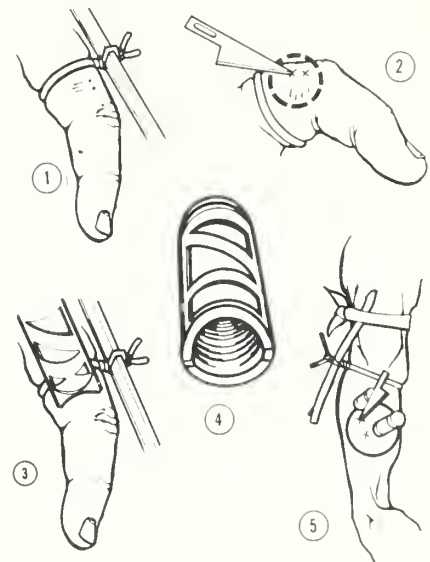
The third thing to remember is not to let the victim take any kind of stimulant or exercise that will speed up the circulation of the blood. Keep him warm with wraps since shock usually occurs.

Apply a tourniquet above the stricken area. DO NOT tie it too tight. It should be possible to insert a finger under it. The tourniquet should be opened for a few seconds every five minutes.



Sterilize the cutting instrument with a flame or drinking whiskey. The wound can be cleaned with iodine, mercurochrome or whiskey. (2) Cut crosses over the fang marks. These should be one quarter ( $\frac{1}{4}$ ) inch deep. WARNING: LARGE VEINS, LIGAMENTS and TENDONS must be avoided. A SEVERED TENDON COULD MEAN LOSS OF USE OF A FINGER OR OTHER COMPLICATIONS. THEY ARE CLOSE TO THE SURFACE AT MOST JOINTS. (3) Apply suction to the

cut. (4) If a snake bite kit cup is not available, suck at the cut with the mouth IF there are no cuts or sores on the mouth or lip. A thin sheet of rubber makes a fine simple first aid kit. Suck at the wound through the rubber. Keep moving



the tourniquet just above the swelling. The object is to retard, not stop the flow of blood to the heart.

The tourniquet must never be too tight. (5) Other incisions should be made around the wound area and more suction cups applied if available. As much of the bad blood as possible should be removed before it has time to reach the heart. GET THE VICTIM TO A HOSPITAL OR A DOCTOR AS SOON AS POSSIBLE.

The effect of a poisonous snake bite is most startling. One should be prepared for a black discoloration of parts near the bite area. The venom affects the capillary walls, dissolving them and letting the blood escape into the surrounding tissues. The exact effect of snake venom on the body is not understood. At present it is too complex for analysis. The victim will experience difficulty with respiration and will have shooting pains through the stricken area. A poisonous snake bite is very dangerous to people with heart or blood conditions.



# BOATING

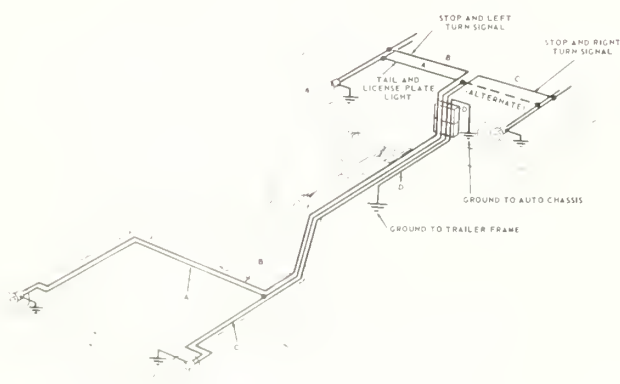
with  
**David Gould**

## How to BUILD A TRAILER



Most States require stop and directional lights on trailers.

Diagram for Wiring Boat Trailer.



Every state in the Union, except Wisconsin, requires that at least one tail light be placed on the rear of a trailer. Most states, including Wisconsin, stipulate the use of trailer stop lights and directional lights. In all but 10 states, the law even requires that a license plate light must appear on a boat trailer.

To obey state laws and to insure personal safety, an outboarder with a boat trailer should make certain that the most practical and best functional electrical system is installed between his trailer and his towing automobile.

Georgia law requires that trailers under 1500 pounds gross weight be equipped with brake lights, directional lights, tail lights and a license plate light.

The Georgia Department of Public Safety specifies that every new motor vehicle, trailer and semi-trailer sold and operated in Georgia be equipped with service brakes on all wheels of the vehicle with the exception of any motor cycle or motor driven cycle.

Opposite is a diagram of a trailer electrical system with circuits lettered according to recommendations by the Boat Trailer Engineering Committee of OBC. For ease of tracing, repair and hookup with the towing vehicle, certain colors for wired circuits based on the standards of the American Trucking Association are also recommended by OBC. The colors and letters are:

- A—Brown—Tail and license plate light circuit
- B—Red—Stop and left turn signal circuit
- C—Green—Stop and right turn signal circuit
- D—White—Ground to frame.

As an example, the B circuit on the diagram is shown appropriately in red. An optional means of circuit identification, in lieu of colored or lettered wires, uses lettered or colored sleeves at the terminal ends of the wire.

Use automotive wiring conforming to standards of the

(continued on page 29)



# WANTED... fish tags

Have you ever caught a bass with a small, white tag protruding from its back?

If you have and if you returned the tag to the Georgia Game and Fish Commission—you have helped fishery biologists in their search for information on the habits of fish.

Several years ago, the Game and Fish Commission started a fish-tagging program to find out more about the habits of fish, their growth rate in certain lakes and streams, when and where they migrate and many other things heretofore unknown.

The program cannot be a success unless the tags are recovered, because all the information that has been recorded will never be useable.

Here's how the program operates:

With the aid of electric shocking machines, which stun fish but does not harm them, biologists gather bass, bream and crappie from Georgia lakes and streams and tag them.

A record is kept of the size and age of the fish, when it was tagged and where. When the fish is caught and the tag returned, biologists can look up the number in their files and tell you immediately where the fish was released, how much it weighed and how old it was.



Fish are caught with the aid of electric shock machines and tagged for future examinations.

Next time you latch onto and creel a bass, bream, crappie or catfish—regardless of the size—bearing a tag, be a sportsman. Return the tag, the weight of the fish and a scale, if possible, to the Game and Fish Commission in the State Capitol.

Lake Allatoona bass, tagged several years ago, tells an important story about the lake.



A new type of tag adorns this Lake Burton trout.



## Chattahoochee Trout *(continued from page 19)*

rate of trout, they admit that the actual introduction of the fish depends on their success of begging, borrowing or stealing a supply from another state.

If the smelt are introduced and thrive in the Chattahoochee, the Commission feels that it may answer yet another potential problem as far as trout are concerned.

Other future plans of the Commission include the evaluation of trout species stocking combinations in order to find out the best fish to stock, when and where to stock them.

Additional food sources for trout are being studied, and biologists are considering the possibility of transplanting the crayfish which survive in the cold, north Georgia mountain streams to the river.

The Commission has been able to draw several conclusions since the experimenting program began, and it is felt the Chattahoochee will soon offer a tremendous challenge to trout anglers.

Fishery biologists remove trout from Chattahoochee for examination.





# SHORT CASTS and POT SHOTS



## DEPARTMENT OF CONSERVATION ITEMS AND FIELD NOTES

Compiled by Bob Short

### It's Hard to Second Guess Nature

Stocking is an effort of man to increase a game supply on a range by releasing game on it. This principle of game management was most prevalent in this country between 1930 and 1950, when many state game farms poured pen-raised game into areas where existing game supplies could not meet the hunting demand.

Impressive stocking statistics—compiled by state game and fish departments—gave “numerical evidence” of stocking as an effective game management tool.

But many of these stocking programs were unsuccessful and great numbers of birds and animals were stocked with no visible evidence of an increase in game supplies.

Man is no good at second-guessing nature. It's impossible to beat her at her own game.

Nature herself often “overstocks” the fields and streams; large numbers of animals are born into an

area each breeding season but natural factors reduce them to the carrying capacity of the land.

A game habitat is capable of supporting only so much game and no more. Good habitat can usually support a large game population; poor range supports only a small crop, if any.

It's like growing cattle in good and bad pastures. To the cattleman, good pasture means good healthy stock. On the other hand, a poor pasture will grow poor cattle. Indiscriminate stocking in inadequate habitat is often a waste of time and money. Releasing game animals or birds in unsuitable areas diverts money from valuable management programs.

But game stocking pays off under certain conditions: (1) when a good game area has been depopulated by severe conditions; (2) when areas are suitable for game species but none exist and, (3) when an area is overhunted and the breeding stock eliminated.

### Hard Labor Creek Renovated; Better Fishing In Store

Visitors to Hard Labor Creek State Park near Rutledge can expect better fishing in the future.

That's the word from the State Game and Fish Commission, whose fishery biologists recently completed a renovation program on the park's Lake Rutledge.

Included in the program was a complete stocking of the lake with several species of fish following eradication of the unbalanced population. Bass, bream, channel catfish and threadfin shad were new additions.

Fishery biologists Leon Kirkland of Madison explained that shad, a forage fish, were added to the lake's population to provide additional food for hungry bass.

White bass, a fish that has thrived in Lake Allatoona and other impoundments, were also planted. These finny fighters are known throughout the state for their annual spring spawning runs, during which anglers have little trouble in catching daily limits of 30 fish.

Trotlines, set hooks and basket fishing have been outlawed in all Parks Department lakes, according to Director Charles Collier.





## Game and Fish Department Stocks Deer in Fifty Georgia Counties

The State Game and Fish Commission has announced the completion of the most ambitious deer stocking program in history.

Commission Director Fulton Lovell said his agency released 800 Virginia Whitetails in 50 Georgia counties and four state management areas.

The deer were purchased by the state from Wisconsin and Texas and transported here by Game and Fish Department personnel.

"Within the next 10 years, we expect to find deer in every Georgia county capable of providing them with adequate food and other requirements," Lovell said.

The stockings resulted from a wide examination of suitable deer habitat in the state and animals were released only in areas where biologists felt they would survive and reproduce.

All of the counties included in the program will be closed for deer hunting for at least five years. This, Lovell pointed out, is a requirement of the federal government, which financially assisted with the program.

Georgia's best hunting areas will remain open, the Commission said, and will not be affected by regulations passed to protect the newly released deer.

Lovell pledged strict enforcement to prevent poachers and night hunters from shooting the deer before they become acclimated to Georgia.

Wildlife rangers will constantly patrol the release areas, Lovell said, to insure the deer of an opportunity to populate the chosen areas.

The Director requested citizens to report to the Commission any of the deer found dead, crippled or struck by autos.

The problem of free-running dogs is also one of great concern to the Commission, Lovell said.

One of eight hundred whitetail deer released by Game and Fish Commission takes off to find a new home.



## Dogs Take More Deer Than Hunters, Commission Says

More deer are killed in Georgia by free-running dogs than are killed by hunters.

The State Game and Fish Commission says that the problem of dogs is the biggest faced by its deer herd managers.

"We are constantly faced with the problem of dealing with loose dogs," said Commission director Fulton Lovell. "In some areas of the state, packs of wild dogs seriously damage deer populations."

"It appears that these loose dogs multiply as fast as deer, even though our management program includes protection of deer both in and out of the season," Lovell said.

The director said February, March and April are especially dangerous months for deer, since does are carrying fawns that will be born in late May.

Georgia has no law requiring dogs to be penned or leashed.

The Game and Fish Commission feels that this contributes to the number of dogs roaming free in the forests.

Since it lacks authority except on its game management areas, the Commission is powerless to combat roaming dogs.

The Commission feels the problem must be eliminated, but suggests that a person who is not a law enforcement officer should not take the matter in his own hands.

Chief Enforcement officer Clifford Palmer (R) and rangers George Robinson, J. H. Hawkins and Elbert Solomon donate illegal deer to Aidmore Children's Hospital in Decatur.





# Sound Management Means . . .



## BETTER FISHING

It's as easy to have a good farm fish pond as a poor one.

This word comes from State Game and Fish Department biologists who have found, after several years of research on Georgia ponds, that good management makes the difference.

Such things as proper construction, fertilization and correct stocking mean the difference between poor fishing and full stringers.

Biologists strongly recommend that every pond owner fertilize his water as often as necessary to insure proper nutrients for fish life.

Sometimes, this may mean as many as 12 applications per year.

Two grades of commercial fertilizer are recommended but the amount used per acre varies with the analysis. Both 8-8-2 and 20-20-5 are acceptable. With 8-8-2, 100

pounds per acre per application gets best results. Only 10 pounds per acre per application are used with 20-20-5.

In fertilized ponds, biologists recommend 100 bass and 1000 bream or shellcrackers per acre. For unfertilized ponds, only about one-half of that number is required since the food supply is limited.

It's a good idea, biologists agree, to eliminate all other fish in impoundment before stocking. This helps insure fish population balance.

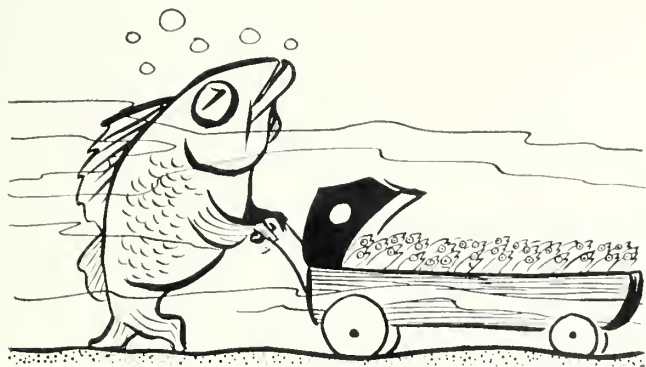
One word of caution: The pond should not be fished until the bass have spawned, which is usually about one year after stocking.

It's a bit more expensive to manage a pond properly, but biologists feel the extra effort is worth the cost and trouble particularly if a fellow wants to enjoy excellent fishing instead of wasted hours on his pond.

Farm Pond Weeds, particularly in unfertile water, help destroy fish habitat and contribute to pond's inability to produce large populations.







Prolific fish—such as carp—often deposit as many as 150,000 eggs annually.

Stocking isn't a cure-all. For a while its value was greatly overemphasized. It's only one of the various fish management tools. However, it is still a very important tool. Its value will depend on how intelligently the tool is used. The need for stocking should be definitely established before any stocking is done. It should be established not by the man who raises fish, or by the sportsmen, but by competent trained fishery biologists through a study of the habitat and the fish population already present.

The American Fisheries Society's Committee on hydrobiology and fish culture gave a comprehensive report on advances in these two fields at a recent meeting of the Society in Seattle. Here is one of the many important observations given in the report:

"Much improvement in the use of hatcheries and hatchery products is still urgently needed. All too frequently a hatchery program is operated as a distinct and

separate function of a game and fish agency rather than as a branch or tool of a Fisheries Management Division. Hatchery superintendents, sportsmen, forest rangers and many others who have no knowledge of ecology or fish populations are given full charge of fish plantings. Fish released by such individuals frequently have less chance for survival than a palm tree in Chicago. Productive and consequently successful hatchery programs can be expected only where trained fishery biologists are handling planting programs and are judiciously using hatcheries as only one phase of a fisheries management program."



Carp, a product of Europe, crowds native fish population.

## **Boating** (continued from page 24)

Society of Automotive Engineers. In installation, all wiring and related devices should be mechanically and electrically secure. Devices, lamps and so forth requiring periodic service should be readily servicable and accessible.

The edges of all metal members through which cable is passed should be deburred and rolled, or bushed with suitable grommets (rubber eyelets). Tubing over the cables may be substituted for grommets if properly secured. Cleats for retaining cables and harness should be rigidly attached to the body or frame member and the specific cable or harness.

All parts of the electrical system should be adequately protected against corrosion. Wiring should be so located as to afford protection from road splash, stones, abrasion, grease, oil and fuel. Wiring exposed to such conditions should be further protected by use of heavy-wall thermoplastic insulation cable.

Wiring should be secured with cleats at intervals not greater than 18 inches to stop sidewise movement and prevent rubbing.

It is recommended that the connector be located inside the trunk of the automobile because the trunk lid will shut over the cable leading to the trailer without causing damage. If it is desired to locate the connector in an exposed location outside of the automobile, connectors with appropriate mounting flanges and a cap to protect the contacts from dirt and road splash should be used.

A cautionary note: Many flashers for automobile turn signals will not stand the additional load of trailer turn signals. The flasher unit which is generally located behind the dashboard should be replaced with a "heavy duty" type if normal operation of turn signals does not occur with the trailer lights connected. "Heavy duty" flashers are available for all makes of automobiles through auto parts outlets.

The Public Health Service maintains a constant watch on the interstate rivers and streams in our country. Health workers row out in boats, go to the end of city piers, or walk along beaches and shores and collect water samples; the water is then tested for different impurities and poisons and for radiation. The individual states supplement these tests in their own waters and a number of city health departments and other agencies also test water.

The durability of some of today's new substances was dramatically demonstrated by one incident not long ago. Headquarters for our national water-quality network is at the Robert A. Taft Sanitary Engineering Center in Cincinnati. One day a water sample from St. Louis produced a peculiar mark in a routine infra-red test procedure. A week later the same mark appeared in a test made from water sent in from New Orleans.

This put our Taft Laboratory water "detectives" into action. They tracked the substance to a factory in St. Louis—it existed in no other place. The chemical had traveled hundreds of miles in the Mississippi River without undergoing any change, and showed up in one liter of water taken from the billions of gallons of water which pass New Orleans every day.

The equipment that has worked efficiently to purify drinking water does not always remove today's new contaminants. You yourself may have noticed that sometimes the water you draw from the tap foams in your drinking glass, almost like beer. The foam sometimes results from detergents that have passed through upstream sewage treatment plants and your city's water purification equipment. No one knows how many other chemicals pass through, since most of them are not obliging enough to foam, taste, smell or add color.

We have also found that when different substances are poured into the same stream they sometimes get together and form weird new compounds which defy analysis. Chemists refer to them by the unappetizing term, "gunk."

A town in Alabama a few years ago had an especially bad problem with "gunk." A textile mill had been operating there for years and, although it discharged some waste into the river, the town's water supply had not been affected. Later, a plant that manufactured pesticides opened. It too used the river, also in a way that did not affect the water quality. Still later, a bleachery was established. This industry was equally careful about disposing of waste.

As far as any scientist could tell, the waste disposal practices of all three industries were entirely safe. But soon after the bleachery opened, people began to complain about taste and odor in their water. Moreover, the physicians of the town noted an increase in patients suffering from nausea and digestive disorders.

When water samples were studied more intensively, it was found that discharges from the three industries had combined to form a new, and harmful, chemical. Once the cause was found, the industries changed their disposal practices and the water in this town is now apparently safe and palatable.

Any program which provides adequate protection for our water supply must be based on three things.

First, we must put to greater use what we already know about water pollution control. How can we hope to control new impurities unless we first do a better job of treating city sewage and controlling those kinds of industrial pollution which we already know how to handle? We have a vast amount of practical knowledge about pollution control. Yet 5,100 U. S. towns and cities and an estimated 6,000 industries today lack adequate sewage and waste treatment facilities. Many have none at all.

During the past summer, the Congress enacted new legislation which will strengthen our hand in pollution-control enforcement and also provides individual cities more financial aid in building sewage-treatment plants. This is the Federal program, it can work well only if the state, local communities and industries fulfill their responsibilities.

Second, we must continue and increase our surveillance of water. Unless we know what is going into our rivers, streams and lakes, we cannot do an adequate job of keeping them clean. This means establishing water-quality criteria and measuring the usability of water against them.

Third, we must increase our research activities. The new Federal Water Pollution Control Act provides more funds for research, and every cent of these new funds is needed. We must be able to identify the wastes going into our streams. We must know what they are doing to the public health, to the country's industrial growth, to agriculture, and to our precious fish and wildlife environment.

Some of this research will take strange forms. Already our scientists are working on new and strikingly different ways of cleansing waste waters. Under trial are some methods such as distilling and freezing, similar to those being used for taking the salt out of sea water. Other experiments are quite different. One fascinating possibility—under serious study and working very effectively in the laboratory—is electrolyzing of sewage. It breaks water into hydrogen and oxygen, leaving everything else behind, and then puts these two elements together again as new—and clean—water.

I see no reason, scientific or economic, why we cannot protect our water supplies and our air, as we now protect our food. I cannot believe, as a physician and as a government administrator, that the water supplies of this country cannot be kept safe, clean and suitable—not only for health and economic growth but for important recreation and conservation values as well.

It will cost money, it will require a great deal of research, will call for the support of every citizen and every local and State government. But it is a job which can be done and I am sure will be done. Our civilization, which has worked so many miracles, can surely protect itself against its own poisons.

*(Editor's Note: This story is reprinted from This Week magazine with special permission from Dr. Terry, Surgeon General, U. S. Public Health Service.)*



# 1962 TROUT SCHEDULE

## BLUE RIDGE MANAGEMENT AREA

### ROCK CREEK (EXCEPT MILL CREEK)

Directions from Atlanta: Go to Dahlonega, travel 3 miles on U.S. Highway #19, turn left on Camp Wahsega Road, go 7½ miles to Three-Notch Gap, turn right and go 3½ miles to Cooper's Gap, turn left and go 4 miles to Hightower Gap.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Wednesdays, Thursdays, Saturday—6-7, 13-14, 20-21, 27-28, 30  
July ..... Saturdays, Sundays—1, 4, 7-8, 14-15, 21-22, 28-29  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16, 22-23, 29-30  
September ..... Saturday, Sunday, Monday—1, 2, 3

### MOONTOTLEY CREEK

Directions from Atlanta: Go to Dahlonega, travel 3 miles north on U.S. #19, turn left on Camp Wahsega Road, go 7½ miles to Three-Notch Gap, turn right and go 3½ miles to Cooper's Gap, turn left and go 8 miles to Winding Stair Gap, turn right and go 3 miles to checking station.

May ..... Wednesdays, Thursdays—2-3, 9-10, 16-17, 23-24  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24  
July ..... Wednesdays, Thursdays—4-5, 11-12, 18-19, 25-26  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26

## JONES CREEK REFUGE OR LOWER BLUE RIDGE AREA

### NIMBLEWILL CREEK

Directions from Atlanta: Go about 9 miles west of Dahlonega on Highway #52, turn right at Grizzle's store, go 3 miles to Nimblewill Church, turn right at church, and go 2 miles to Jones Creek Checking Station.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24-30  
July ..... Saturdays, Sundays—1, 4, 14-15, 21-22, 28-29  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16, 22-23

### JONES CREEK

Directions from Atlanta: Go about 9 miles west of Dahlonega on Highway #52, turn right at Grizzle's Store, go 3 miles to Nimblewill Church, turn right and go 2 miles to Jones Creek Checking Station.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24  
July ..... Wednesdays, Thursdays—4-5, 11-12, 18-19, 25-26  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16, 22-23, 29-30  
September ..... Saturday, Sunday, Monday—1, 2, 3

### MONTGOMERY CREEK

Directions from Atlanta: Go about 9 miles west of Dahlonega on Highway #52, turn right at Grizzle's Store, go 3 miles to Nimblewill Church, turn right and go 2 miles to Jones Creek Checking Station.

May ..... Wednesdays, Thursdays—2-3, 9-10, 16-17, 23-24  
June ..... Wednesdays, Thursdays, Saturday—6-7, 13-14, 20-21, 27-28, 30  
July ..... Saturdays, Sundays—1, 7-8, 14-15, 21-22, 28-29  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26

## CHATTAHOOCHEE AREA

### CHATTAHOOCHEE AND SPOIL CANE CREEK

Directions from Atlanta: Travel 3 10 of a mile north from Robertstown on Highway #75, then cross the river bridge, turn right and travel ½ mile north to Chattahoochee River Checking Station.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Wednesdays, Thursdays, Saturday—6-7, 13-14, 20-21, 27-28, 30  
July ..... Saturdays, Sundays—1, 7-8, 14-15, 21-22, 28-29  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16, 22-23, 29-30  
September ..... Saturday, Sunday, Monday—1, 2, 3

### DUKES CREEK

Directions from Atlanta: Travel 3 10 of a mile north from Robertstown on Highway #75, then cross river bridge, turn left, travel 3.2 miles west to Dukes Creek Checking Station.

May ..... Wednesdays, Thursdays—2-3, 9-10, 16-17, 23-24  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24  
July ..... Wednesdays, Thursdays—4, 5, 6, 11-12, 18-19, 25-26  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26  
September ..... Saturday, Sunday, Monday—1, 2, 3

### SMITH CREEK AND McCLURE CREEK

Directions from Atlanta: Turn right in Robertstown on Unicoi Park Road, travel 3.1 miles east to head of Unicoi State Park Lake to Smith Creek Checking Station.

May ..... Wednesdays, Thursdays—2-3, 9-10, 16-17, 23-24  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24  
July ..... Wednesdays, Thursdays—4-5, 11-12, 18-19, 25-26  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26

## CHESTATEE AREA

### DICKS AND WATERS CREEKS

Directions from Atlanta: From Dahlonega, travel north 15 miles on Highway #19, turn left and go 2½ miles to Checking Station.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Wednesdays, Thursdays, Saturday—6-7, 13-14, 20-21, 27-28, 30  
July ..... Saturdays, Sundays—1, 7-8, 14-15, 21-22, 28-29  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16, 22-23, 29-30  
September ..... Saturday, Sunday, Monday—1, 2, 3

### BOGGS CREEK AND CHESTATEE RIVER

Directions from Atlanta: From Dahlonega travel north 15½ miles on Highway #19 to Turner's Corner Checking Station.

May ..... Wednesdays, Thursdays—2-3, 9-10, 16-17, 23-24  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24  
July ..... Wednesdays, Thursdays—4-5, 11-12, 18-19, 25-26  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26  
September ..... Saturday, Sunday, Monday—1, 2, 3

## LAKE BURTON MANAGEMENT AREA

### WILDCAT CREEK

Directions: Go to Clarkesville take Highway #197 past LaPrade's Camp and pass the first creek, go to the top of the first hill, turn left, travel to checking station where permits may be secured for Wildcat Creek.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Wednesdays, Thursdays, Saturday—6-7, 13-14, 20-21, 27-28, 30  
July ..... Saturdays, Sundays—1-4, 7-8, 14-15, 21-22, 28-29  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16, 22-23, 29-30  
September ..... Saturday, Sunday, Monday—1, 2, 3

### MOCCASIN CREEK

Directions: Go to Clarkesville take Highway #197 past LaPrade's Camp and pass the first creek, go to the top of the first hill, turn left, travel to checking station where permits may be secured for Moccasin Creek.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Saturdays, Sundays—2-3, 9-10, 16-17, 23-24  
July ..... Wednesdays, Thursdays—4-5, 11-12, 18-19, 25-26  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26  
September ..... Saturday, Sunday, Monday—1, 2, 3

### DICKS CREEK

Directions: Go to Clarkesville take Highway #197, travel past the Lake Burton Fish Hatchery to the first creek where permits may be secured from the State Wildlife Ranger.

May ..... Wednesday, Thursdays—2-3, 9-10, 16-17, 23-24

## WARWOMAN AREA

### TUCKALUGE CREEK AND FINNY CREEK

Directions from Atlanta: Go to Clayton on Highway #23, turn right on Highway #76 and go only one block, then turn left on Warwoman Road and go to 3½ miles to Checking Station which is located at Finny Creek.

May ..... Wednesdays, Thursdays—2-3, 9-10, 16-17, 23-24  
June ..... Saturdays, Sundays—2-3, 9-10, 30  
July ..... Saturdays, Sundays—1-4, 7-8, 14-15, 21-22, 28-29  
August ..... Wednesdays, Thursdays—22-23, 29-30

### WALNUT FORK AND HOOD CREEKS

Directions from Atlanta: Go to Clayton on Highway #23, turn right on Highway #76 and go only one block, then turn left on Warwoman Road and go 3½ miles to Checking Station at Finny Creek.

May ..... Saturdays, Sundays—5-6, 12-13  
June ..... Saturdays, Sundays—16-17, 23-24  
July ..... Wednesdays, Thursdays—4-5, 11-12  
August ..... Wednesdays, Thursdays—1-2, 8-9, 15-16  
September ..... Saturday, Sunday, Monday—1, 2, 3

### SARAH'S CREEK

Directions from Atlanta: Go to Clayton on Highway #23, turn right on Highway #76 and go only one block, then turn left on Warwoman Road and go 3½ miles to Checking Station located at Finny Creek.

May ..... Saturdays, Sundays—5-6, 12-13, 19-20, 26-27  
June ..... Wednesdays, Thursdays—6-7, 13-14, 20-21, 27-28  
July ..... Wednesdays, Thursdays—4-5, 11-12, 18-19, 25-26  
August ..... Saturdays, Sundays—4-5, 11-12, 18-19, 25-26  
September ..... Saturday, Sunday, Monday—1, 2, 3

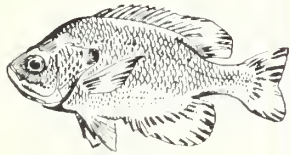
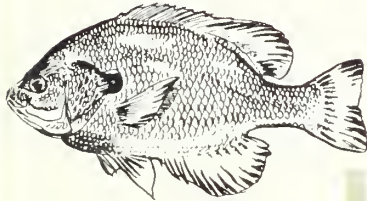


GROWTH RATES OF FISH VARY—THE BETTER THE FOOD SUPPLY, THE BETTER THE GROWTH.

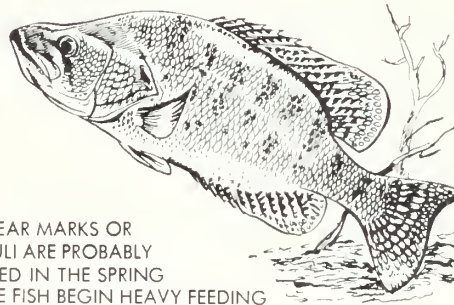
# AGE of FISH







CATFISH CAN BE AGED BY TAKING SECTIONS OF THE FIN SPINES OR BACK-BONE AND MICROSCOPICALLY EXAMINING THEM.



THESE BLUEGILLS ARE THE SAME AGE. THE TOP ONE WAS TAKEN FROM A WELL-MANAGED POPULATION, THE LOWER ONE FROM AN OVER-CROWDED FARM POND.



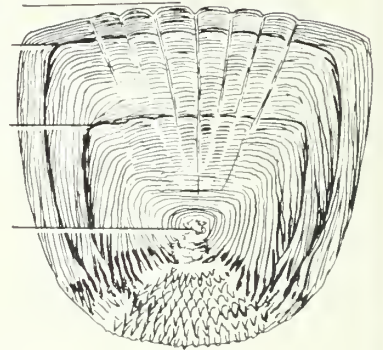
THE YEAR MARKS OR ANNULI ARE PROBABLY FORMED IN THE SPRING AS THE FISH BEGIN HEAVY FEEDING

"LIFE EXPECTANCY"		
CARP		15 YEARS
BLACK BASS		8 YEARS
SUNFISH		6 YEARS
WHITE BASS		4 YEARS

OUTER EDGE  
2nd ANNULUS  
OR YEAR  
MARK

1st ANNULUS

FOCUS OR  
CENTER



THIS SCALE WAS TAKEN FROM A BASS IN ITS THIRD YEAR. THE FISH WAS 16 INCHES LONG AND GREW ABOUT 8 INCHES ITS FIRST YEAR AND 6 INCHES DURING THE SECOND YEAR.

## GEORGIA GAME AND FISH COMMISSION

412 STATE CAPITOL BUILDING  
ATLANTA, GEORGIA

SEC. 34.66, P. L. & R.  
U. S. POSTAGE

PAID

ATLANTA, GA.  
PERMIT NO. 155

Acquisitions Division  
The University Libraries  
The University of Georgia  
Athens, Ga.  
2 Copies