Recent statistics reveal an alarming fact: The Commonwealth has serious drinking water problems that are attended by a lack of regulatory authority and the resources that deal with them. Although most people tend to trust their drinking water supply, those who depend on public water supply are really captives and have little recourse but to accept what comes out of the taps. Water supplies which depend on limestone springs, the result of interconnected massive aquifers, are really subject to the possibility of dangerous conditions, because pollutants entering any part of the aquifer can be quickly transferred throughout a vast area, and thus can be made available to the public.

The Commonwealth has not accepted primacy for the Federal Safe Drinking Water Act. By accepting such primacy, Pennsylvania could minimize federal intervention, avoid costly duplications, and ensure adequate protection of Pennsylvania’s citizens, which the federal government cannot. By not receiving primacy in 1982, the Commonwealth lost over $1.2 million available from the Environmental Protection Agency to administer the program. By not seeking primacy, the applicability of the federal act’s provisions on drinking water suppliers in Pennsylvania is still in effect, but this raises serious questions about the effective application in Pennsylvania, and that should be our primary concern. Failure to accept primacy will result in the EPA’s maintaining enforcement responsibility, and clearly the EPA cannot carry out an adequate drinking water supply regulatory program in Pennsylvania with its limited staff.

Senate Bill 201, introduced by Senator Jeanette Reibman and co-sponsored by Senators Fisher, Lloyd, Singel, O’Pake, Andryeski, Lincoln and Lewis, would provide for such primacy. Certainly, no one can deny that an adequate supply of safe, pure drinking water is essential to the public health, safety and welfare, and that such a supply is an important natural resource in the economic development of the Commonwealth. SB 201 declares that it is in the public interest for the Department of Environmental Resources to assume primary enforcement responsibility under the Federal Safe Drinking Water Act; grants to the Environmental Quality Board, of which we are a member, powers and duties to establish standards, rules and regulations; and says that the Department “shall adopt and implement those program elements necessary to assume state primary enforcement responsibility under the federal act, including, but not limited to, safe drinking water regulations, surveillance, technical assistance, plan review, laboratory certification, laboratory capability, training, enforcement, cross-connection control, data management, disease surveillance, and public participation.” The regulations, standards and rules to be so promulgated “shall be no less stringent than the national primary drinking water regulations and the national secondary drinking water regulations.”

When the Pennsylvania Fish Commission gets tough on polluters, we are not doing these things just to take care of our primary interest—fish. What is good for fish is good for people. We cannot live without water, and we need safe, pure, clean drinking water.

We urge enactment of Senate Bill 201 as a first step, and then commitment of sufficient funds by the General Assembly and DER for an effective compliance monitoring program, the collection of adequate data on both the quantity and quality of groundwater, and additional measures to ensure the safety of private water supplies.

[Signature]
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This month's cover illustrates what's waiting for you in the Mon River (see page 4) and in other Pennsylvania waterways. This walleye, though, greatly exceeds the 15-inch minimum keeper size for Keystone State walleye. The photograph comes from the book, *The Art of Freshwater Fishing*, courtesy of The Hunting & Fishing Library, Inc.
Improved water quality in the Mon River has set the stage for an exciting fishery. Here's how to get in on the action.

**Mon River**

**WALLEYE**

by Gary E. Deiger

photos by the author

WALLEYE! That term is pure magic to a certain hardcore group of anglers in Pennsylvania. These fellows fish anywhere or anytime if their quarry is biting. While not noted for fighting ability, walleye put up a determined struggle especially if hooked in deep, fast-moving river currents, and they certainly live up to their title, "king of the table." In addition, these fish are as unpredictable and ornery as any gamefish. This great table fare and intense fishing challenge has been denied to the resident anglers of Greene Pennsylvania Angler
Quarter-ounce yellow and white jigs and quarter-ounce and three-eighths-ounce diving crankbaits are top takers of walleye. These offerings work best during spring and summer with live bait—nightcrawlers—also accounting for many walleye. As water temperatures go down, fish your baits slower.

County and the surrounding areas of the southwestern part of the Keystone State, but all that has changed with the rebirth of the Monongahela River.

In the past, walleye fishermen from this part of the state had to travel to the Allegheny River, Lake Erie, or the Youghiogheny Reservoir in pursuit of their quarry. This area had previously been sadly lacking in walleye fishing opportunities, but the comeback and subsequent fisheries boom in the Mon River has changed that situation. Good walleye fishing is now found the entire length of the river, and it's becoming very good below the locks and dams at certain times of the year.

Where to find walleye

The Monongahela River, flowing north out of West Virginia into Pennsylvania near Point Marion in Fayette County, is actually more a series of long, slow-moving lakes than it is a river, because the locks and dams were constructed by the U.S. Army Corps of Engineers for the primary purpose of commercial river travel. The river is fairly deep and relatively slow-moving, and the only fast-moving or white-water stretches occur immediately below the dams. These are the areas where the greatest numbers of walleye congregate, particularly from late winter through May or early June. During the warmer months they seem to spread out in the river, and while they are caught then, the fishing peaks below the dams during the colder months and early spring.

The birth and continued growth of the Mon River walleye fishery can be attributed to two major factors. First, the improved quality of the water and habitat, and secondly, stocking efforts by the Fish Commission. During the last 10 years the quality of the water has improved greatly because conservation efforts and pollution control by the Fish Commission, Department of Environmental Resources, and other state and federal agencies were successful. Vigilance and assistance by local concerned anglers and sportsmen's clubs also played a major role. As a result of this improvement in water quality, the Fish Commission commenced walleye stocking in April 1975 with one million fry in the Greene-Fayette County section of the river. Fry stockings continued until 1978, when the first fingerlings were introduced. Since the late 1970s, walleye have been caught in ever-increasing numbers and size.

Hotspots

The best areas for walleye in the upper Mon River are at Lock 8 near Point Marion and at Lock 7 near Greensboro. Fishing is usually very good from opening day through June; then it tapers off during the summer and picks up again in fall and winter. In the spring, live bait such as nightcrawlers and minnows are good, and many fish are taken on jigs and imitation minnow plugs. Live bait, particularly crawlers, seems to produce best during summer and early fall, and during the cold months minnows and jigs fished slowly are tops. Yellow and white colors are good selections for jigs; creek chubs and small suckers are the better minnow baits. Through early and mid-season, early morning and evening hours are the best times, and during the fall and winter, late morning and midday angling produces the best results.

Shoreline action

Shore fishermen generally catch as many walleye as do those fishing from boats, although when the fish are scattered in the river, more expansive areas can be fished with the aid of a boat. Anglers should keep in mind that the areas immediately below the dams are rocky with many snags, and quite literally eat hooks and lures, so be sure to have sufficient quantities of terminal tackle. Boat anglers should stay away from the dangerous currents created below the dams, and caution should be exercised while afloat on these waters. Heed the warning buoys placed by the Corps of Engineers.

Like any other form of angling, Mon River walleye fishing is certainly no sure thing. Just like their kinfolk in other rivers and lakes, Mon River walleye have their good days and their bad, and patience is the word when fishing for them. If the walleye are off the feed or can't be found, the river also holds good populations of both largemouth and smallmouth bass, muskellunge, and channel catfish. So a day of fishing on the upper Mon River should not be a lost cause. Give it a try!

Gary E. Deiger has been a Waterways Patrolman in Greene County for nine years. In 1973 he earned a bachelor's degree in biology at Edinboro State College.
Finding feeding stations and then approaching and casting correctly can help you catch more trout.

by Harry W. Murray
photos by the author

The most valuable asset a mountain trout stream angler can accrue is a thorough knowledge of reading the water. The first and most obvious part of this skill requires accurate identification of just where the trout are located when they are feeding—the feeding station. The second step is deciding where you must position yourself to present a fly.

Feeding stations
Identifying the feeding stations is fairly easy once you look at the feeding habits of mountain trout.
Above, the feeding stations you may encounter in the pools of trout streams are identified as follows: 1) pool lip, 2) tail, 3) mid-pool, 4) back eddy, 5) head, and 6) corner. At right, a careful approach is often required, and accurate evaluation of how to present the fly best ensures action.

If the largest fish in the pool is not in the lip, he will be in the pool’s corner.
Mountain streams have only a fraction of the food that is contained in the rich limestone streams of the valley floor. Over the ages, nature has taught mountain trout how to survive in their particular environment with the food at hand. That is, the fish feed all the time.

If water levels and temperatures are reasonable, the trout can be found on feeding stations most of the time. They must feed constantly to take advantage of the small amount of food available. I often park at the same spot when fishing one of these little streams close to my home. The standard procedure before rigging up is to check exactly where old scar-back is located in his home pool beside the parking spot. It is so unusual not to see him out on a feeding station that when I can’t see him I start looking around to see if someone beat me to that part of the stream and spooked him.

In identifying these areas, you must keep in mind what fisheries biologists refer to as a bioenergetic factor. That is, the trout must feed in a manner that lets them gain more food value from what they eat than the energy used up to get it. Simply stated, most of the food coming down a stream is located in the heaviest current. If the trout positioned themselves dead center in this main flow, they could not survive. Trout lurk very close to this good current, but they always find something that provides some protection from it. This protection may be a rock, log, ledge, or just a large body of slower water in the pool, which causes reversed currents.

With these two ideas in mind, what you should look for in a feeding station is an area of protection adjacent to a good current flow.

Current
The second step in successful stream reading is much more difficult than the first. To select the best area from which to make your presentation, you must consider many factors. First, you must be able to get there without spoiking the trout. An accurate evaluation of the current across which you will be placing the line and leader is required if you are to achieve a drag-free drift. You must get close enough to cast comfortably and accurately to the selected hotspot. Lastly, your casting position should allow one last closeup look at all of these factors, from selection of feeding stations to making the presentation, to see if you have evaluated things properly. At this point, you could still relocate, but once you spook this fish, you’ll have to move to the next pool to try again.

The pool lip
As you move up the typical mountain stream, the first feeding station in the pool above you is the lip. The lip is the easiest feeding station in the pool to identify and fish. Fortunately, it often holds the best fish in the pool. The lip is formed by a log, large rock, or ledge, acting as a miniature dam over which the water flows as it leaves the pool. The ledge that forms the miniature dam also provides the protection from the current for the trout. He usually lies just in front of this spot, and takes advantage of all the food this full current brings him. By approaching this lip closely from below and dropping a dry fly about two feet above it, you can often take this fish on the first cast. You must get close here to control the drag, but if you get too close, you will spook the trout.

The tail
The second area to consider is the tail of the pool. This area is immediately above the lip and is usually wider, presenting a slightly slower current. Cover here is often a slight depression in the stream bottom where the trout rest. From this area he can move laterally to take advantage of his broader feeding area. This area may be four or five times larger than the lip, and pinpoint reading is often not possible. For this reason, I usually fish this spot from the same casting position I use for the lip. I simply make a longer cast and keep my rod tip high to prevent the fast water on the lip from grabbing my line and causing the fly to drag. This area can usually be covered with three or four casts.

Mid-pool
Immediately above the tail of the pool and continuing on up to the lower part of the white water coming from the riffle is the mid-pool. This area varies more in makeup than other parts of the pool. Cover here is usually provided by a large boulder or the edge of a ledge. As you stand at the lower end of the pool and look for this mid-pool cover, notice that it is often darker than the area around it. Trout usually hold just above, below, or to the side of this cover.

Once I spot the mid-pool cover, I move forward to a casting position from which I can cover the entire area without relocating. I do not like to take a chance on spoiking these fish with any extra movement. Often, my casting position here is from the side of the pool straight out from the tail I just fished. Sometimes I am on dry land and sometimes I’m just in the edge of the pool. I am almost always on my knees when fishing this area. I carefully cast to the areas of cover closest to me and gradually lengthen my cast to cover the feeding stations farther up in the mid-pool area. In this way, I often take several trout from this area.

Back eddy
The fourth area to consider is the back eddy. It is easy to identify by
The pool lip is the easiest feeding station to identify and fish, and it often holds the pool's best fish.
An Ultralight Spinning Stick

by Art Michaels

With my homemade ultralight spinning rod I've horsed eight-pound carp from tangles of shallow-water stick-ups; I've caught wild brown trout that took tiny spinners presented ever so delicately in low, clear water; and from the depths of large lakes I've dredged up hefty walleyes while trolling.

If you want to build an ultralight spinning stick that responds well in such varied conditions, consider putting together one like mine. This rod is a pleasure to make, and buying the unassembled components lets you create a rod that's worth far more than the cost of the separate pieces.

The rod blank is a two-piece Fenwick graphite GSP-661, but other blanks that will provide similar action include the Fenwick boron XSP-661, the Loomis graphite GS562, and the Lamiglas graphite GUL-662.

I selected four single-foot Fuji aluminum oxide guides, and their spacing on your rod should be just like the spacing on mine if you want to get all the performance out of the rod that you can (see figure 1). The Fuji tip top is aluminum oxide in size 4½. The first guide below the tip is a size 6, the second guide is a size 10, the third is a size 16, and the fourth is a size 25.

The rod handle consists of 18 glued and shaped specie cork rings with spinning rod rings.

My reel choice for this rod is a Mitchell 308—the fast-retrieve version of the company's 408—spooled with four-pound-test monofilament. With eighth-ounce hardware, the booming casts I coax from the rod are hard to beat. Occasionally I put on a spool of six-pound-test line and throw quarter-ounce lures.

Other reels you may want to consider for use with this rod are the Daiwa BG10, Mitchell 4410Z, Shimano M1X100, Garcia Cardinal 752, and the Penn 420SS. You may want to investigate other reels, but with this rod I like a reel that weighs seven ounces or less and that has a fast gear ratio, such as 5:1.

The combination of these materials provides me with an ultralight spinning rod that performs magically on the waterways.

Art Michaels is editor of Pennsylvania Angler.

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**Figure 1.**

The numbers below indicate the distance in inches between the guides.

- 6 inches
- 8½ inches
- 10½ inches
- 14½ inches

rod length: 5½ feet
Here are some ideas on how to fish surface lures more effectively.

Seminar on

by Rhume Streeter
Top-water fishing lures have evolved tremendously, but in the last few years, the techniques and know-how for their uses have mysteriously passed by the wayside. Today, meeting a plugcaster using a surface lure on a fishing trip is rare, and that's not the fish's fault. There are hours, days, times of year, weather and surface conditions, and feeding patterns of fish that blend perfectly to make catching fish on the surface a probable occurrence.

If you concentrate on fishing only with surface plugs for each species of gamefish, you would eventually take each one. Here in Pennsylvania that might be a long, drawn-out process.

Avid surface feeders
The four gamefish that are readily taken on surface plugs are muskellunge, northern pike, largemouth bass, and smallmouth bass. Walleye, pickerel, trout, salmon, and big panfish are all occasionally caught on surface plugs, but to cast for them specifically with surface plugs is just a case of practicing plug casting. The big four previously named are your main quarry.

Fooling muskies
Muskies are huge; they want big plugs. Northers are tigerish; they want substantial plugs. Largemouths are finicky; they want plugs that resemble their prey, especially when it acts crippled. Smallmouths are selective; they want docile plugs.

You can hook the biggest musky you've ever seen on a fidgety, bottle-cap-sized lure that you are fishing for smallmouths; or you can have a trophy bronzeback crush a large jerkbait that you're casting for musky. But for consistent catching, stick to known producing sizes for each species.

Good types of plugs for muskies are the oversized jerkbaits like the Teddy Baits and Bobby Baits. Good crankbaits are the king-sized Cedar Plugs, injured minnows, Jitterbugs, Globe lures, or the Le Boeuf Creeper.

Picks for pike and bass
For northern pike, your best bets are the regulation-sized Jitterbugs, injured minnows, Crazy Crawlers, Lucky 13s, and Bass-Oreno.

Largemouth bass go for the same lure types that deceive the northern pike, but add a few called, "pencil lures." These have a propeller on the end and stand straight up in the water while at rest. These can be deadly for largemouths at certain times.

Identify your catch
The Fish Commission offers two useful booklets to help anglers identify Pennsylvania fishes:
- Pennsylvania Fishes is a 32-page booklet with color pictures and brief descriptions of the state's gamefish, panfish, and unusual species. This publication costs $1.75 postpaid.
- Identifying the Common Fishes of Pennsylvania is an 18-page booklet with black-and-white drawings and short profiles of the Commonwealth's fishes. The drawings emphasize characteristics of each species that let anglers identify them easily. This publication is available free of charge.

To order these materials, write to: Publications Section, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.
Muskies are huge; they want big plugs. Largemouths are finicky; they want plugs that resemble prey.

Smallmouths are partial to miniature plugs. Tiny Torpedoes, Phillips Midget Killers, Dying Flutters, pint-sized Jitterbugs, and some of the smaller pencil lures take their share of bronzebacks.

Timing
Fishing for surface feeding fish is a matter not only of the best time of the day, but the best time of year for each of the targeted species.

Check the musky first. The "lunge and glassy." months, stick to underwater baits and another. May and September offer dark. sunny periods when the surface is flat have a special dislike for bright, feeders. Before and after those some slight chance for taking surface the surface. They fall onto it. they getting musky to hit on the surface is for muskies. That's the time when the top, especially early in the their share of bronzebacks.

Muskies also strike surface lures after dark.

June, July, and August are the best months for plugging on the surface for muskies. That's the time when the plugger's dream. Many potbelled patriarchs fall victim to hunks of floating, white pine fakes each and every season in the Keystone State. In June and July, the largemouth spends a lot of time in water that is shallow enough to coax him up with a surface plug. Morning and evening hours are best, especially when the surface has just enough ripples or waves to disguise the line and the outline of the angler.

Treat smallmouths in both rivers and impoundments in a similar manner. These are reluctant surface feeders. The best times are early in the season when the little food they do take from the top is most prevalent. After dark is great for bronzebacks because they are so light-shy. A choppy, broken surface is another plus for better surface fishing for smallmouths.

Where to fish
You may go wrong on some of the other basics and still catch fish, but if you foul up on where to fish, many of your fishing trips will end up with empty stringers.

A musky is a lot like the lioness. When her belly is full, she rests in shade and cover. The musky also lies secluded and well-hidden in a favorite haunt. Balanced gently on flickering fins, she sifts the life-giving oxygen from the still waters. When the pangs of hunger begin to burn within her, she hunts.

The musky diet is diverse, and only for limited periods is that available from the top of the water. When these choice morsels are available, they're usually in specific locations. That's where the musky hunts, and that's where you fish.

In June, July, and August, look for areas with exceptional cover close to the shoreline with depths of five to 10 feet. Muskies are big, shy fish and they need something they can hide behind or beneath. Just because you can't see a musky, don't assume there are no muskies around. Cast to each pocket as if there were a giant fish behind every submerged log.

Muskies are mostly shallow water inhabitants during the summer, and if you're not having any luck along the shore, concentrate on the weed beds. Seek out the beds that have dense growths where depths don't exceed 15 feet. These are resting places as well as hunting territories for muskies in all of our waters.

When locating your fishing territories, consider the baits you're imitating. Make sure that the baits are present in sufficient numbers. Baitfish, panfish, unwary young-of-the-year gamefish, aquatic mammals, frogs, mice, waterfowl, and some of the bigger insects make up portions of the shallow-water feeder's diet. The lioness doesn't hunt in the middle of the Sahara Desert; she hunts the oases. For greater success, you should, too.

Northern pike
The northern pike is a lurker, not a hunter. He prefers to lie well-hidden and wait for his prey to pass within striking range. Fish for them around heavy weed beds or any other protection. The half-light hours, when visibility is restricted, are best for northerns in the early months when the bait is close to the shoreline.

Largemouth bass are the surface plugger's dream. Many potbelled patriarchs fall victim to hunks of floating, white pine fakes each and every season in the Keystone State.
A choppy, broken surface is a plus for better smallmouth bass surface fishing.

during a feeding spree, providing the depth whenever they search out their food. They can be lured to the surface from depths of nine to 10 feet during a feeding spree, providing the habitat is right for them. Smallmouths like jungles of rocks and boulders that they can hide under, behind, or alongside. Make sure that any place you fish for smallmouths has this kind of bottom, and you're in business.

Smallmouths like the protection of habitat is right for them. When retrieving, smallmouths have an altogether different fancy for taking food from the surface. They have a passion for glaring at an immobilized object on the surface for minutes on end. At the first movement, bang! They take it. Remember when that super cast wound up in an equally magnificent “bird's nest”? Backlash! By the time it was unraveled the Injured Minnow had been sitting there for what seemed like hours. Yet the first flick of the props had the biggest northern in the lake chomping it to pieces.

When retrieving, northerns like an intermittent pattern. Don’t be afraid to pause and hesitate with the lure immobile at times. These fish are the worst for following a lure and attacking it just when you’re lifting it out of the water. It happens so often!

**Bass tricks**

Largemouth bass behavior with surface plugs is a lot like the northerns, and in waters that have both species, you should not be shocked at hooking either of them. There are several things that largemouths prefer.

Largemouths don’t have the patience that northerns have, and it’s not necessary to wait as long when the plug lands until you give it that first twitch. Accuracy is mandatory. You must be on the money with your plug, or the bass ignore it.

When the plug lands, let it sit until the rings radiate out 10 or 12 feet. Then tug it gently. That’s prime time! Most strikes come at that moment. When you don’t get a hit, repeat the process two or three times, then reel it in slowly and recast. Old bucketmouth will generally favor you with a little action if you just remember to give your plug’s time to be working in the water.

Smallmouth bass like the lure presentation to be almost snail-like. Cast your lure to the deadwater areas next to likely bass hideaways, and let it sit. After a wait of 20 to 30 seconds, give it an easy pull. If nothing happens, let it sit some more. Repeat this until the lure is near you, and recast it. Each cast takes a couple of minutes if you’re fishing properly. Smallmouths in lakes and in rivers or large streams behave just about the same and require plenty of patience to take them effectively on the surface.

If you’re using plugs that spin, use a ball bearing snap swivel. They’re expensive, but they prevent lines from twisting. If you’re not using plugs that spin, just plain snaps are best. These can be bought in a variety of sizes to fit any lure you use. They make changing lures simple, and they hold the lure so that it works most efficiently.

For the angler who uses baitcasting gear, monofilament lines should be stretched out each day before use. They have a tendency to coil when they sit on the reel for a while. Today’s braided lines are great for the angler who doesn’t get out very often. They come off the spool in limp loops even after a prolonged stay on the rack. The diameters and tensile strengths of braided lines make casting simple, even with 25-pound-test line.

Finally, before your next plugging trip make sure that you take some time to run a stone over the hooks of your favorite plug. Get them needle-sharp. The strength of these gamefish is amazing, and it takes hooks with points like hypodermic needles to sink into the bone and gristle. You realize how powerful these fish are when you see a 5/0 treble hook on a giant musky plug mashed flat by one of those mean-eyed monsters.
In 1813 Simeon Pfoutz paddled his canoe up the West Branch of the Susquehanna River until he came to Kettle Creek, where he decided to establish a home for his family. He was said to have been the first white settler in this area, now a part of Clinton County. He found ample wild game, including deer, elk, and wild fowl as well as a stream teeming with native brook trout. The following year he returned to his former home in Perry County and brought his wife and young son to Kettle Creek. This took place only 159 years ago.

I have always had a keen interest in this beautiful area, and especially the changes that have taken place regarding the fishing. During my 60-some years of trout fishing, I have been fortunate to hear many tales of the old-timers and to study the available printed history of Kettle Creek.

Don Stevenson, now of Lock Haven, is a great-great-grandson of Simeon Pfoutz, and because his people lived along Kettle Creek since the early days, he has many tales of the pioneer settlers. He has in his possession Simeon’s flintlock rifle that killed many deer, elk, and panthers. Most interesting to me, however, are the stories concerning the native brook trout.

Typical among the many stories about fishing is the incident described by Don’s grandmother. She asked her husband to catch some trout for supper and agreed to clean the fish. He went fishing for an hour or so, returned home and dumped some 70 trout in a washtub, stating, “Now you clean ‘em.” She did so, but stated she would never make such a bargain again. It apparently was not a difficult task in those days to catch as many fish as one desired. G. A. Botsford, an early resident, is quoted in D. S. Maynard’s *Historical View of Clinton County* as having caught over 200 brook trout in one day.

I am old enough to have talked with old-timers who began fishing in the 1870s and 1880s. In my younger days when I fished up the stream and found old Hub McCoy sitting on his porch, I would often stop for a chat, hoping to get him to tell about the “olden days.”

“By God,” he would state, “when I wanted a mess of trout, I’d get me a bucket of minnies and in no time I’d ketch all I wanted—sometimes more. I didn’t have to fish very far—about halfway up to Henry Olson’s and I’d have about 50. ‘Course in them days I kept most everything I ketch—some were dandies up to 18 or more inches. There wasn’t no limit then.”

Then he would sit back, light his pipe, and sadly say, “That was before they lumbered off our woods and the brookies started to disappear. Oh, I can still catch ‘em, but there ain’t so many brookies. Them brownies they put in eat up what brookies is left. They ain’t the good eating like the brookies.”
Hub wasn't too far off from the truth; the real culprit, however, was the warming of the stream following the great lumbering era.

Charles Lose, noted educator, naturalist, and trout fisherman, wrote a book entitled, *The Vanishing Trout*. He vividly described the era when the great hemlock and pine forests of Central Pennsylvania were recklessly timbered off, leaving only bare hills of scrub trees and brush. He prophesied that the larger trout waters would become too warm to sustain the native brook trout; furthermore, he described the beginning of pollution from the mines and tannic acid.

Fishing equipment in those early days differed greatly from that of today. Rods called “poles” were often homemade from hickory. They were long and cumbersome, but because bait fishing was not common, they were adequate. Few old timers used rubber boots. Leaders were woven from horsehair. The early trout fishermen were mainly interested in food for the table instead of sport. There were few fishermen—roads were scarce, necessitating the use of horses and buckboards if they wanted to get to a stream any distance from home.

Recent years have brought many changes to Kettle Creek. Fishing continues to be good, mainly because the stocked brown trout have adapted well, much better than the hatchery rainbows and brookies. Bush Dam has inundated old Simeon's homestead; its waters presently are heavily stocked and provide year-round fishing. Kettle Creek State Park below the dam and Ole Bull State Park above Cross Forks attract many summer campers. Then, too, many hunting camps and vacationers’ cottages have been built in the area. The permanent population, however, has not increased greatly.

There have been many changes since Simeon Pfoutz first paddled up the creek. The once great forests of hemlock and pine are gone. Fortunately, though, nature has a way of replacing itself, and today the mountains surrounding this lovely stream are once more verdant and beautiful because of second-growth timber.

I often wonder, though, what the early settlers would think if they could see the hundreds of fishermen standing almost shoulder-to-shoulder along the stream on opening day. The days of the elk, wolves, and panthers as well as thousands of native brook trout are gone, but I still find beauty and serenity along this creek: it is a quiet place where the din of the super highway cannot be heard. I suppose that's why the natives call the area God's Country.

Dick Parsons is a retired president of Lock Haven State College. He's been a Pennsylvania angler for more than 60 years.
Fiberglass Boat

Repeat after me: “Yes, I can make my own professional-quality fiberglass boat repairs.” Good—Here are the how-to details.

by Howard A. Bach

Lou’s voice was more excited than usual when he phoned. For a guy who is Mr. Cool on the water, he can work up a minor frenzy when he calls to set up a fishing trip. But fishing wasn’t on Lou’s mind.

“I dropped my new boat,” he wailed.

“I’m not surprised,” I chuckled. “You always were a lousy poker player.”

“No, you don’t understand,” he replied. “I dropped it off my roof racks, right on the corner. It’s all caved in. Looks like a total loss.”

“Well, bring it over,” I suggested, “and we’ll take a look at it.”

For a boat that was a total loss, it looked surprisingly healthy. It had a broken area on the right rear corner about the size of a heel print, hardly the serious damage Lou thought it to be.

Trouble lamp

To determine the full extent of the damage and the best means of repairing it, we placed a trouble lamp with a 150-watt bulb behind the broken area. It showed that the break was open at the corner with torn fibers of a few inches on the boat bottom. No further cracks were evident, so repair could be localized at the break.

“No problem, Lou: we can easily repair it in several evenings and it will be ready for our weekend fishing.” I reassured him.

He wasn’t entirely convinced, so I explained how fiberglass boats are built, the basis for understanding methods of repair.

Fiberglass construction

Whether the boat is built by hand layup as on larger craft or by mechanized layup as on smaller boats, the hull consists of layers of fiberglass bonded together with a catalyzed resin. The result is a molded boat of great strength with an exceptional ability to take the kind of punishment most boats encounter. Also, when damaged the fiberglass boat is quite easy and inexpensive to repair.

In hand layup, the hull is formed by placing successive layers of fiberglass cloth in a mold, and impregnating each layer with resin combined with a catalyst. As each layer is put in place, the resin is distributed with a squeegee.

In mechanized layup, chopped fiberglass and resin are sprayed onto a rigid wire mold, forming a “blanket” about an inch thick in the approximate shape of the finished boat. The blanket form is then placed on the lower mold, and extra matting is placed on the keel and other highly stressed areas. Addition of the gunwale assembly, hardwood for the transom, and coloring pigment completes preparation for molding the boat. It is then lowered, and the boat is molded for hydraulic pressure of 1,000 tons at 180° F.

In either type of boat, repair is simply a matter of replacing the damaged portion with new fiberglass cloth, or pieces, and impregnating it with catalyzed resin. Such a repair, properly made, is as strong, or stronger, than the original boat, and can be made nearly invisible with a little extra effort.

Damage to fiberglass boats falls into five categories: (1) scratches, (2) surface cracks, (3) separation of bond, (4) abrasive wear, and (5) fracture or hole.

Scratches

A minor scratch can be wiped out by rubbing with a mixture of 75% vinegar and 25% cooking oil. This “blends” the color to hide the scratch. Or rub it with a dab of outboard motor oil, which can also be used to hide the scratch.

If the scratch is deep, open it up and clean it out using a sharp blade, file, saw, or coarse sandpaper. Then fill the void with either polyester putty or a mixture of chopped fiberglass and catalyzed resin. The choice between the two is a matter of need. The chopped fiberglass gives greater strength, but the putty is easier and quicker when the void is small. After the material hardens, sand, buff, and finish with a light coat of pigmented resin or marine paint that matches the hull.

Many fiberglass boats have a smooth exterior coat called gelcoat. This gelcoat is about 0.15-inch thick. Where a gelcoat is involved, the repair finish coat should be color-matched gelcoat paste, catalyzed, and spread with a spatula.
Repair

achieve a smooth, glossy surface, cover the patch with cellophane and squeegee it with a tongue depressor or similar flat stick until smooth. Because gelcoat is basically air-inhibited, it’s a good idea to keep the cellophane cover on the patch to seal it while curing. Placing a heat lamp at a safe distance also aids the curing.

Gelcoat manufacturers use paraffin in the gelcoat, which comes to the surface while curing to seal out the air and speed the cure. If you have a tacky surface in spite of your precautions, it can be removed by washing it off with lacquer thinner or acetone. After the gelcoat patch has completely cured, finish the surface with fine, wet sandpaper and rubbing compound.

Cracks
These are readily apparent cracks, or crazing. They are the result of resin-rich areas, and the repair is the same as for deep scratches. If the crazing is over a wider area, about the size of your hand, sand the surface to the bottom of the cracks and refinish with fiberglass cloth as described under “Abrasive wear” below.

Separation of bond
This damage is most frequently a case of the seat coming loose from the hull in a smaller boat. The first step is to clean out the crevice with a putty knife, followed by sanding the mating surfaces. A double sanding disk does this job on both surfaces at the same time. Next, work in polyester putty to get a good coat of putty between the mating surfaces. In this operation, wedges should be used to maintain the separation while putty is worked in.

Next, compress the joint to permit the repair to set. This can be done with clamps, screws, or by lashing the boat to a post so its weight compresses the repaired parts. Whatever the means of compression, the proof of a good joint is the bead of putty that will be squeezed out along the entire joint. Finish with a coat of pigmented resin or marine paint.

Abrasive wear
This type of damage usually results from the boat being dragged excessively across concrete, rocks, or other surfaces and will most frequently show up as a split bow. If access to the inside of the split is available, repair this first. Support the bow in place (an inverted wheelbarrow makes a good cradle for a small boat) and caulk the split with polyester putty to a smooth one-inch fill. After this has hardened, cover the caulked area with strips of fiberglass cloth that has been impregnated with catalyzed resin, lapping the strips across the joint.

Next, repair the outside of the split section, first building up the worn area with polyester putty, or with chopped fiberglass and resin. File or sand the hardened putty to shape, then cover the area with strips of fiberglass cloth saturated with catalyzed resin, again lapping the strips to give added strength across the split and building up the bow against further wear. Finish the repair by sanding the hardened cloth enough to remove the cloth pattern, and give it a coat of pigmented resin or marine paint.

Fracture or hole
Back to Lou and his “dropped” rig. Our first step was to cut away all damaged fiber, keeping such removal to a minimum. If a hole results from such trimming, use an aluminum sheet or cellophane backed by cardboard to support the patch until it hardens. Use layers of fiberglass mat or cloth saturated with catalyzed resin to build up the patch to the original level.

In the case of Lou’s boat, all it required was a chopped fiberglass and resin mixture to build up the edge. After it hardened with the aid of a heat lamp, we filed and sanded the patch and applied a coat of pigmented resin to complete the repair.

The repair materials needed, from fiberglass cloth and resin to polyester putty, marine paint, and plenty of free advice, are available from marine dealers, boating supply stores, and chain stores that handle boats. In some cases the entire selection is available in a kit that includes the proper color resin.

Repair of fiberglass boats is not only easy and inexpensive, but is also a self-satisfying project. With a little care, common sense, and patience, any home craftsman can complete a professional-quality repair of his boat.
**ANGLERS CURRENTS**

The LAW and YOU

by Kerry Messerle

Q: My friend has a registered motorboat. If I borrow it, may I operate it?
A: Yes. As long as a motorboat is properly registered, it may be operated by anyone. The current motorboat certificate of registration must at all times be aboard and available for inspection.

Q: I never buy my fishing license until April. When does it expire?
A: Fishing licenses expire each year December 31.

Q: I had to pay a fine for driving my ATV in a stream. Why the big deal?
A: Vehicles using streambeds for roads destroy fragile fish habitat, so vehicles are prohibited from streams except for fording in the most direct manner.

Q: My fishing partner sinks his empty beverage cans over the side of his boat. I say this is littering, he says it isn’t. Who’s right?
A: You are. Discarding cans, trash, etc., along or into any Commonwealth waterway is a violation of the Fish and Boat Code. Over 1,400 persons were prosecuted by the Fish Commission for this offense last year.

Q: I’ve witnessed unsafe boating practices. How do I report them?
A: We appreciate citizen involvement. Anyone who observes a violation, boating or fishing, should contact his district waterways patrolman or regional law enforcement office. Be prepared to provide the date and time of the incident, and the boat registration or vehicle license number. A description of the violator would also be helpful, along with any other useful information.

Q: I vacationed in the Poconos last summer and fished in a private lake. They charged me a fee and said no license was required. Is this legal?
A: Certain private lakes meet requirements to secure a Class A Regulated Lake License. Holders of such licenses may then charge to fish, and licenses are not required of persons fishing in these lakes.

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**Attention: BUSINESSMEN AND EMPLOYERS**

Why not give your new clients and customers gift subscriptions to Pennsylvania Angler? You might want to advertise these gift subscriptions as bonuses, as enticements for choosing your company or organization over competitors in the sale of houses, appliances, insurance, furniture, cars, and various other services, and for opening new accounts.

Furthermore, let Pennsylvania Angler help you maintain goodwill with your present customers and provide year-round contact—your customers and clients will remember your products and services as each monthly issue arrives.

You could also let Pennsylvania Angler say, “Merry Christmas,” to your employees; and the magazine could also be part of awards to employees for service, job performance, safety, and other special recognition.

We’ll send gift announcements to those you name as gift subscription recipients. For complete details, contact Angler Editor Art Michaels at 717-787-2411.

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NEW LARGEMOUTH BASS STATE RECORD

Pictured above is Waynesboro angler Donald Shade, the newest largemouth bass state record holder, with the new monstrous state record 11-pound, 3-ounce bass. The hawg ambushed a No. 3 Mepps Comet in Birch Run Reservoir (Adams County), also known as Chambersburg Reservoir, on June 22. Shade won the battle with a Bass Pro Stick rod and a 714Z Penn reel spooled with Stren line. The record fish measured 28 inches long with a girth of 19 inches. This catch shatters the old largemouth bass state record of 9 pounds, 7 3/8 ounces, and 25 inches long, set only last August.

NEW SMALLMOUTH BASS STATE RECORD

Larry Ashbaugh, of Smithton, caught a new state record smallmouth bass in the Youghiogheny River last February 14. The giant bass weighed 7 pounds, 4 ounces, and was 23 3/4 inches long with a girth of 16 1/2 inches. Ashbaugh caught the fish on a live salamander using eight-pound-test line with his casting gear. The new record bests the old largemouth bass state record smallmouth bass by three ounces.
Dick Sternberg has written a remarkable book, in which he shows beginning fishermen as well as more experienced anglers how to catch more fish. The author first describes fish behavior, different waterways and habitat, and the great variety of angling gear. Then he details successful fishing techniques for catching bass, bluegills, crappies, catfish, northern pike, walleye, trout, salmon, and other gamefish.

More than 460 color photographs, many of which are stunning, highlight this book.

The book is part of a series that includes titles on cleaning, cooking, and preserving fish; fishing with live baits; largemouth bass fishing; and hunting.

The company offers a free 8-page sample of this book to anyone who writes to the address above.

All in all, this book is an excellent source of fishing information that is beautifully designed and illustrated.—Art Michaels
Measure your measure

Anglers use various means to measure their fish. Some use the rod on which certain points mark legal sizes, others use plastic tapes, and many rely on rules painted or stuck on creels and tackle boxes. Certainly any means of measure will do as long as it's correct.

But with the new 7-inch limit on trout in the Keystone State, Edward W. Manhart, Chief of Law Enforcement for the Pennsylvania Fish Commission, advises anglers to check their form of measure.

"We have found many affixed tapes on creels to be incorrect," Manhart said. "Some are affected by becoming wet and then drying in the sun, and others are simply manufactured incorrectly." Manhart went on to say that many people stopped for possessing sub-legal fish are not purposely breaking the law—They have no knowledge that their measuring devise is incorrect.

Anglers should routinely check their measuring devises with a tape rule or yardstick to ensure accuracy. This is especially important when using one of the cloth creels so common today. It might have been correct a year ago, but after becoming wet and drying a few times the measure can be greatly changed—something that could lead to the angler's arrest for possessing undersized fish.

Anglers Notebook By Richard F. Williamson

Large wet flies and dry flies are tops for night trout angling. Hungry large fish prowl their waterways at night, looking for a large meal. Flies tied on larger-sized hooks best suit this kind of fishing.

Deep water is the hangout for large bass during the hottest part of summer days, so fish your offerings on the bottom, or very near the bottom.

Spinners are available in a variety of finishes, such as copper, brass, gold, and silver. When you fish spinners, try to match the color of the waterway's baitfish with the color of the spinner.

River and stream fishing for smallmouth bass at this time of year is excellent with surface lures. Fly rodders can take bass with poppers retrieved quickly on the surface, and spinning enthusiasts can catch bass using surface plugs and crankbaits that move just under the surface.

Know your distance limit in fly casting. Short, accurate casts fool fish. Trying to cast into the next county usually results in sloppy, inaccurate lure placement. You're casting just fine if you can place your fly exactly where you want it at a distance of 30 feet.
MAIL

The students and faculty of our school wish to let you know that we very much enjoy reading Pennsylvania Angler. The articles are interesting and informative, and we look forward to receiving each monthly issue.

Lorraine Kesteron
Librarian
Rowan Elementary School
Mars, PA

We're delighted you're enjoying Pennsylvania Angler. In addition to the magazine, the Fish Commission's P.L.A.Y. (Pennsylvania League of Angling Youth) program may also interest your students. For complete details on P.L.A.Y., which is geared for fourth-grade, fifth-grade, and sixth-grade students, contact Mr. Steve Ulsh, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

I very much enjoy Chauncy K. Lively's fly tying articles. Pennsylvania Angler and its readers are lucky to have someone as creative as Mr. Lively writing for them. I also have the book, Chauncy Lively's Fly Box, and it is a treasure. Please continue publishing his fine work.

John Scarborough
Houston, TX

We do realize how lucky we are to have the opportunity to publish Chauncy K. Lively's works. Readers interested in Mr. Lively's book, Chauncy Lively's Fly Box, can get complete details from the publisher, Stackpole Books, at Cameron & Kelker Streets, Harrisburg, PA 17105. Watch for Mr. Lively's fly tying articles in Pennsylvania Angler's September 1983 through May 1984 issues.

George W. Witovich
Monroeville, PA

Try fishing the edges of weed beds. Lures rigged weedless won't often bring you weed hauls, but don't be disappointed if your offerings—weedless or not—catch many weeds. Remember that big fish lurk in or near weeds, so dragging in salad after salad and losing a few lures and some terminal tackle is part of the game of catching fish.

One strategy you may want to try is using a fly rod, and if you're not an accurate caster with a fly rod, practice and become one. Popping bugs, which land accurately in openings among lily pads and other weeds, often provoke big bass into striking. Another useful tactic is to cast your bug onto a lily pad, let it sit for a moment, and then slowly edge it into the water. Wham! Bass often strike lures presented this way as soon as they see them.

Spinnerbaits and plastic worms are other baits that fool fish, but working them correctly best ensures action. Look for detailed, thorough information on fishing this way in "Fall Bass Fishing Tips," by Nick Sisley, which will appear in the September issue of Pennsylvania Angler, and check out the pros' recommendations in "A Pennsylvania Bass Fishing Seminar," which appeared in the July issue.

Barry B. Beighley
Grove City, PA

I am a fisherman enthusiastic about Operation FUTURE. It's a good management policy for our waterways!

James Ahearn
Pittsburgh, PA

When I read the letter from Mr. Jerome E. Grehl (June Angler), I was furious. When we no longer have clean air or clean water and no more fishing, will he then say, "Where was our Fish Commission? They should have done more." I wish the Fish Commission the best; you do a great job.

Zelia Pratt
Mansfield, PA

Thank you for the delayed harvest area on Coolspring Creek in Mercer County. I have fished this stream extensively for the past few seasons, and I understand this stream is at best a "marginal" trout stream. The establishment of the delayed harvest idea as part of Operation FUTURE is a good solution to the problem, providing recreational fishing for those who wish it, and still permitting harvesting of stocked trout before water conditions become intolerably hot.

I sincerely hope the Fish Commission will continue the delayed harvest concept on Coolspring Creek, and expand it to other streams that meet the criteria.

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Barry B. Beighley
Grove City, PA

There are some huge fish in a certain area of thick cover in a lake I often fish, but every time I toss a lure out in the weeds it comes back engulfed in weeds. Even the "weedless" lures. What do you suggest I use?

George W. Witovich
Monroeville, PA

Try fishing the edges of weed beds. Lures rigged weedless won't often bring you weed hauls, but don't be disappointed if your offerings—weedless or not—catch many weeds. Remember that big fish lurk in or near weeds, so dragging in salad after salad and losing a few lures and some terminal tackle is part of the game of catching fish.

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Barry B. Beighley
Grove City, PA

If you have an opinion on Angler content, a question on fishing or boating, or a helpful idea, send correspondence to: The Editor, Pennsylvania Angler, P.O. Box 1673, Harrisburg, PA 17105-1673.
When the June issue of Pennsylvania Angler rolled off the presses at the end of May, the number of magazines printed was the highest in the publication's history—68,000. In the past seven months, Angler circulation has increased by more than 22,000.

According to Editor Art Michaels, circulation has soared because several promotional campaigns have succeeded, and because the magazine was redesigned a year ago to include full-color pictures and high-quality paper.

"Furthermore," says Michaels, "our editorial focus has sharpened to accommodate the increasing variety of fishing and boating opportunities in Pennsylvania, and to meet the needs more specifically of the state's anglers and boaters."

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Pollution Abatement Produces State Record

At the turn of the century, the sauger, a close relative of the walleye, inhabited the Allegheny River as far upstream as Warren County. But pollution problems in the big river hit the fish populations hard, and as late as 1970, surveys taken in the lower Allegheny were discouraging—fish populations were either poor or nonexistent.

Recent pollution abatement has changed that dismal condition. Today, spotted bass, white bass, freshwater drum, sauger, smallmouth and largemouth bass, channel catfish, walleye, panfish, and a variety of forage fish are found in good numbers in the river. In fact, the sauger has reappeared in such numbers that the Fish Commission has established a state record classification for the species.

The first state record sauger was caught by John Brady of Verona. The record fish weighed 2 pounds, 10 ounces and was taken in July 1982. That record stood until last March 14, when Don Wagner of Pittsburgh flipped a jig in the waters of the Allegheny River in Allegheny County. The record fish that struck tipped the scales at 3 pounds, 7-3/4 ounces, and it measured 21-1/4 inches long.

The new state record is one that Wagner can certainly be proud of, but it also signifies the rebirth of a great river—something we can all be proud of. For a complete listing of the current state records, information on the Commission's Angler Recognition Program, and a Sauger Identification Card, send a self-addressed stamped legal-sized envelope to: Angler Recognition Program, Dept. SAU, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.

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Publications List

For a free copy of the Fish Commission's publications list, send a stamped, self-addressed, legal-sized envelope with your request to: Office of Information, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.
Boating

Courtesy

by Virgil Chambers

Water means freedom to many boaters, but abusing that freedom prevents shoreline property owners and other boaters from enjoying the peacefulness of open water and beaches. It also creates a need for more restrictive laws. Here are some ideas on how to be a courteous boater.

Boaters must respect the rights of shoreline property owners. These rights vary depending on the water level. Generally, property rights extend to the water’s edge. The freedom to use waterways does not include the right to use private lands. Boaters must have prior permission from the owner to launch or moor a boat on private property.

Noise carries farther on water, especially at night. When anchoring off a waterfront home, keep voices down, play music softly, and leave with a minimum of noise. Be sure to consider winds, waves and tides. Don’t anchor where the boat might drift too close to shore or to other boats.

Water pollution laws prohibit throwing or discharging refuse into the water. Carry a litterbag on the boat. Don’t throw any garbage overboard for someone else to pick up.

High-speed boating is dangerous in restricted and congested areas. The boat operator is responsible for spotting and avoiding swimmers and slow-moving craft. This is also important when picking up or dropping off water skiers.

Because high speeds produce high wakes, boaters are responsible for damage caused by their wakes to other vessels and to shorelines. Slow down, and watch your wake when approaching congested areas and small boats with low transoms.

Passengers should respect the boat operator’s wishes. The skipper is responsible for everyone’s safety and must be alert at all times. Wear rubber-soled shoes when on board. This prevents falls and keeps the deck from being scratched.

The skipper should make sure at least one of the passengers knows how to handle the boat in case of an emergency.

Conscientious boaters know the rules of the water and make sure they are followed. They use caution and consideration when mixing noise, speed, and smoke with the gentle, refreshing, relaxing life on the water.

Virgil Chambers is a Boating Education Specialist with the Fish Commission’s Bureau of Waterways.

Pennsylvania Basic Boating

This is the Fish Commission’s 84-page book that provides all the important basic boating details. In six chapters you will find information on different kinds of boats, equipment, navigation, water safety, emergency measures, and skippers’ duties. Pennsylvania Basic Boating is available for $1 (to cover the costs of postage and handling) from: Boating, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673.
Here are some cool ideas for catching hot-weather trout.

Dog Day Trout

by Richard Tate

"You're just wasting your time, Rich. You can't catch trout now. It's just too darned hot. Heck, all you'll do is lose five pounds of sweat; the middle of the summer is no time to be trying to fish for trout!"

This is the kind of advice I received during my formative years as a trout fisherman, but even then I ignored it. I had decided that trout had to eat to survive and that I would learn their midsummer feeding routines. However, it was not until I was marooned on a second-shift summer job that I began to make visits to local trout streams at times other than in the evening. I found that most August mornings were comfortable times to be astream; and though my success was inconsistent at best, I fooled enough trout to realize that with careful study, morning trout fishing can be rewarding during the summer. I also ran into local fish hawks during these morning adventures, and meeting
them aroused my curiosity. Why would they be fishing? Not just for exercise, that was certain!

Summer temperatures
As I grew older and delved into the extensive literature about trout fishing, I often read that water temperature was the crucial factor in determining how the fish were going to behave, so I spent a couple of dollars on a thermometer. Its revelations were amazing; the temperatures of my favorite creeks often fluctuated 10 or more degrees in one day, from the low 60s to mid-60s in the early morning to the mid-70s in the evening! According to experts, the low 60s were optimum feeding temperatures for trout, but as the water surpassed the 70-degree mark, the trout became more and more lethargic, just as people do when the heat and humidity of midsummer become oppressive. I decided I was going to find out how to apply my knowledge.

Basic patterns
Accordingly, I began to make many summer visits to the local trout streams morning ones, and unlike my previous experiences I began to find the secrets for success. Though it was not usually the fast and furious fishing that one encounters during the major insect hatches in the spring, I discovered that averaging six to 12 trout caught and released per outing was fairly commonplace.

I settled on several basic fly patterns for consistent success—stonefly nymphs, Leadwing Coachmen, black ant wet flies, and caddis dry flies. Sometimes I opted for streamer flies, especially in the very early morning after rains, and these proved valuable, too. But normally I began with a duo of wet flies or nymphs and then changed to dry flies as the morning progressed. I nearly always quit fishing by 11 or 11:30 when the heat became stifling.

For example, one of my best mornings of last summer I was on stream by 7:30, and I decided to begin with the tandem Leadwing

Trout fishing in summer is often best when water temperatures are in the low 60s, so be sure to take your thermometer on trout treks. Try your luck from daybreak through midmorning, or until the heat becomes stifling.
This brook trout hit a black ant wet fly at about 8:30 during a bright—and hot—August morning.

Coachman and black ant wet flies as I fished downstream along one of my favorite sections of a nearby little spring-fed creek. It took me an hour-and-a-half to work the half-mile section of water, and I picked up a half-dozen lovely wild browns of eight to 12 inches, mostly from the heads of pools. When I reached a long meadow with little bankside cover, I decided it was time to turn around and work my way back to my parked car. I replaced the wet flies with a size 14 tan caddis dry fly. During the next hour-and-a-half I caught and released over a dozen additional trout of a size similar to those I had duped with the wet flies. If this sounds like poor fishing to you, remember that I was on a hard-fished public access trout stream that averages no more than 25 feet in width!
Freestone stream

"Aha!" counter the skeptics. "You said that this action was on a spring-fed creek. You couldn't have done that on a low, clear freestone stream!"

Yes, I could. There is a little freestone stream not too far from my home, and I have learned that it can be quite productive in midsummer, too. Although I admittedly prefer to fish the spring creek, I make a half-dozen forays to the little mountain stream each season, and it is equally kind. In two or three hours of fishing I usually catch and release 10 or 12 of its denizens, most often employing the caddis. This little creek maintains a fairly cool temperature, though last summer's defoliation by hordes of gypsy moths allowed heating of its waters to the mid-70-degree range. But, unlike many streams, it did not seem to affect the fishing adversely.

Marginal waterways

"What about marginal streams?" you ask. "What about the ones in which trout disappear in midsummer when the temperature forces the trout to move on?" Well, there is one like that near my home, and for many years its dog-day demeanor perplexed me. I knew of several spring holes, but these entered along the creek's banks and were known by other anglers as well, and these other anglers kept them cleaned out of trout. There had to be other less evident holes as well, for trout always reappeared in autumn; how to find them was the problem.

Spring holes emerge from the bottom of streams, too, and their presence is indicated by light-colored sand, which is kept clean of debris by the constant action of the spring water.

That summer I sought midstream springs, and bingo—I found two! Not only did they produce trout, but larger ones than I had anticipated!

Believing that the cover of darkness would mask my movements, I waited until dusk to make my expeditions, fishing one hole per foray. The first venture produced three trout. I plopped my favorite duo of wet flies into the head of the pool above the location of the spring and drifted the flies into the pool. My first four casts were rewarded with solid strikes, and I landed three trout, two in the 12-inch range and a bruiser of better than 17 inches.

When I went to the second of the spring holes, I used the same duo of flies, and again I caught and released three trout. Two were of the 10-inch variety, but the third one was another dandy. When he felt the hook sink home, he took off downstream, as an express train. About 50 yards below the spring hole there was a double strand of barbed wire fence crossing the creek, and when I hunched down and started under it, I slipped. Water quickly filled my right hip boot, and I snagged my jeans on the fence. Luckily, the fish settled to the bottom of the long pool below the fence, and not too gracefully I extricated myself and sloshed after him. A couple of minutes later I slid the heavy trout, a twin of the one I'd caught earlier, into my landing net. Fish of this size are not an everyday occurrence around home, and I was elated by my success!

The largest trout

A third spring hole, revealed to me by a veteran angler, produced my biggest trout. It was in a stream a half-hour from home, and in the mood for a potential wild goose chase, I decided to give it a try early one morning. Dawn's rosy fingers had just stretched over a nearby ridge when I settled into casting position, and for a while I thought I was going to draw a blank. But about halfway through the pool I began to pick up trout and realized that the man had told me the truth.

I hit the lunker at the tail of the pool, which emptied into a long stretch of lovely white water. My cast toward a bush, which left its shadow on the water, was met with a savage, surging spray as soon as the flies hit the water. I immediately set the hook. I spent the next 20 minutes parrying with the trout, which obviously did not want to leave his home, for he never once attempted to bull his way over the lip of the pool and into the heavy rapids where he would have surely escaped.

Finally, I beached him on a sandbar at the edge of the stream, and I taped him at slightly under 20 inches, though he was so thick, I guessed his weight at nearly four pounds!

Mayfly hatches

A third way to find dog day trout fishing pleasure is to enjoy the specialty sport of finding and fishing the *Tricorythodes* hatches. Finding hatches of these midge mayflies does not always ensure success. A couple of spring-fed streams near home have superb hatches, but the trout there ignore the flies, probably because the fish want larger mouthfuls. But when you do find a stretch of water where the fish rise well to the hatching flies, it can produce exciting fly fishing.

Quite a few years ago I located a fairly remote spring creek that has fine hatches of *Tricorythodes* mayflies—and the creek's population of brown trout feed voraciously on the tiny insects. These trout aren't the storied monsters of many *Tricorythodes* tales, but when using size 22 and 24 imitations, fish of eight to 12 inches provide a fine morning's sport. I have found that it takes an unusually high population of trout to have consistently good fishing with *Tric* hatches, and though my analysis has raised some eyebrows of noted fly fishermen, that is the way it appears to me after careful study.

I am glad that I never heeded the advice of those who used to tell me that midsummer trout fishing was absolutely awful. It may not provide the fast action of May and early June's fly hatches, but adapting your tactics to take advantage of the trout's summertime habits can provide delightful fishing during summer's dog days.
Crayfishes Are Fascinating and Useful

by Clark N. Shiffer

Youngsters investigating the plant and animal life of a local stream or lake may call them crabs. Grown-ups also use this term, but may also refer to them as crayfish, crawfish, and crawdads. Most resemble miniature lobsters, but unlike marine lobsters, crabs, and shrimps, all close relatives in the class Crustacea, they prefer freshwater habitats. In addition to lakes and streams of various sizes, these habitats also include roadside ditches, seepage areas, water-saturated soil in swampy areas or open fields, and cove streams and pools.

About 350 different kinds of crayfishes can be found on the North American continent, about 114 in Australia, and about 16 in Europe, Asia, Japan, and Madagascar combined. According to a 1906 publication, nine kinds of crayfishes are found in Pennsylvania. More recent studies done in other states include a similar or smaller number in the western and other northeastern states, with the largest number in the southeastern states.

Individual crayfishes of most kinds can be encountered walking about over the bottoms of streams, lakes, or ditches at dawn or dusk, on cloudy days, and at night. Many kinds construct burrows, and some are seldom, if ever, encountered outside them, while others may leave the burrow to feed primarily at night. Some crayfishes construct earthen "chimneys" or above-ground extensions of the burrow. Cave-dwelling forms, altered in pigmentation and form, are only encountered by visitors to these subterranean environments.

Although crayfishes are related to insects, they are readily distinguished from them by possessing five pairs of legs, while insects have three pairs. The first pair of crayfish legs are usually larger than the others and bear conspicuous claws or "pinchers," which the animals use during breeding, feeding, and defending themselves. While most movements from place to place are headfirst or sideways and relatively slow, crayfishes are able to move very quickly in reverse, when threatened, by means of powerful downward and forward thrusts of the abdomen and tail fan. An additional pair of weaker appendages is found on the underside of each of the five abdominal segments.

While male and female crayfishes are similar in appearance, adult breeding males usually possess larger or longer claws, specially modified appendages on the underside of the first two abdominal segments, and somewhat narrower abdomens. Both sexes possess stalked eyes containing hundreds of individual facets, but sex recognition may depend more on secreted chemical substances (pheromones) and behavior. Males become more aggressive during the spring-through-fall breeding season and may seize any other crayfish they encounter. Other males resist vigorously, and in the ensuing struggle one or more legs may be broken at special joints. If the legs are not lost too late in the three or more years most crayfishes live, they will grow back, but are not identical to the original appendage.

After the breeding season, males of all except some western United States kinds molt, or shed, their outer skeletons, and lose their aggressiveness and the modifications of their abdominal appendages. This seasonal change from breeding male (referred to as form I) to nonbreeding male (form II) occurs in no other freshwater crustacean.

Each form I male uses the modified abdominal appendages to transfer a spermatophore to a special receptacle on the underside of the female abdomen. Several weeks to several months later, primarily in the spring or fall, the females release darkly colored eggs onto the underside of the abdomen and immediately cover them and the entire abdominal bottom with a sticky cement-like substance called glair. Stored sperm are then released from the receptacle and mixed with the eggs, thus fertilizing them. Females arch the abdomen downward and forward to protect the eggs and move currents of water over them with the abdominal appendages. At this time females are said to be "in berry."

Within two to 20 weeks, eggs become lighter in color and hatch. The young remain on the female's abdomen until they have molted for the third or fourth time, leaving intermittently, and finally strike out on their own. They are miniature copies of the adults, and may reach adulthood within 2-3 months in the South and several summers or more elsewhere.

Both juveniles and adults feed primarily on a variety of plant materials, in or out of water, and may in some places become a pest of cultivated crops. They also feed on snails, aquatic insect larvae, and animal remains.

Because they serve as food for fishes and other animals, crayfishes are important for their role in assimilating, processing, and recycling plant material, which benefits these and other living things. Fishermen have learned to take advantage of their importance as food for various fishes, and often use as bait those that have recently molted ("soft-shelled crabs"). Because crayfish are popular as fishbait or fish food, some kinds have been introduced into parts of this and other countries where they did not occur. These introductions have created problems for man and the native crayfishes in some cases. Crayfishes are also harvested as food for people in states like Louisiana, California, Oregon, Washington, and Wisconsin. They are commercially cultured in Louisiana. Large numbers of preserved crayfishes continue to be used in the teaching of biology.

Many of us have come to know something about these freshwater inhabitants as bait fishermen, as possibly reluctant dissectors of preserved specimens in biology class, or as partakers of Creole cuisine. Long before we made their acquaintance as fishermen, biology students, or would-be gourmets, however, we came to know them as youngsters investigating the plant and animal life of a local stream or lake, and found them to be useful in having things of endless fascination.

Because crayfishes were established on the earth long before mankind was able to exert undue influence over a shared environment, we might expect them to stay with us a while longer. They will with our help. Pollution and serious modification of their habitats and natural populations must be averted. so that future generations can continue to find them fascinating and useful.

Clark, N. Shiffer earned a bachelor of science degree in biology at Elizabeth/own College, and he's completed other graduate work in entomology at The Pennsylvania State University. He is the Fish Commission's Herpetology and Endangered Species Coordinator.