STRAIGHT TALK

WHY WE'RE INVOLVED WITH THE NATIONAL WILDLIFE FEDERATION

Individually and collectively, personally and officially, we have been involved with the National Wildlife Federation for many years. An organization of over 4.6 million members throughout the country, the National Wildlife Federation is a non-governmental, non-profit conservation education organization. The NWF has objectives “to create and encourage an awareness among the people of this nation of the need for wise use and proper management of those resources of the earth upon which the lives and welfare of men depend; the soils, the waters, the forests, the minerals, the plant life, and the wildlife.”

We are particularly impressed by the manner in which the National Wildlife Federation goes about reaching these objectives. We have joined with them in a number of instances and found that their cooperation and support not only have been strong and effective, but that they believe enough in their objectives and policies to become very successful and aggressive litigants.

In general, to reach the objectives set by the NWF a number of far-reaching policies have been adopted, and it is these policies that attract us to ally with the NWF:

**Environmental Education.** The FEDERATION constantly encourages improved educational methods, the training of teachers in conservation, and providing useful educational materials for schools, youth groups and adult organizations for the enlightened advancement and understanding of resource management. Along these lines, the FEDERATION constantly shares its opinions and attitudes with members of the Congress and, on occasion, with state legislators, as well as with Executive Branch agencies.

**Cooperation.** The FEDERATION exerts a leadership role among conservation organizations and allies itself with other agencies and organizations, public and private, that concern themselves with sound management and wise use of the land and its products.

**Partisan influence in the management of resources.** The FEDERATION holds the conviction that the management of the nation’s resources should be neither directed nor influenced on the basis of partisan politics or special user interests which conflict with overall public benefit.

**Efficiency in government.** The FEDERATION strives to bring about a better public understanding of a need for the coordination of all government and conservation agencies and programs and for the elimination of overlapping functions, and of unnecessary agencies or personnel.

**Resource conservation.** As the demand for energy and land increases, it becomes more imperative that conservationists join forces in working to conserve, maintain and improve fish and wildlife habitat—the critical factor in achieving optimum numbers. As such, the FEDERATION endorses sound policies on wildlife management, on wildlife research, and on the establishment of short-term, mid-term and long-term goals for a coordinated national energy policy, and for a multiple-use compatible concept that means the harmonious and coordinated utilization of resources.

The FEDERATION also endorses the principle that water resources are protected and enhanced with sound management plans, including the coordination of river basin developments; that natural streams which are productive of fish and wildlife and valuable for human recreation and aesthetic enjoyment can be protected; that pollution controls and the protection of habitat are sound, effective and tough; that wetlands are protected from exploitation and draining; that urban recreation needs should be within the framework of a well-defined, balanced urban/rural national recreational policy; that the public lands belong to all the people; that private lands and their use be the subject of better understanding, with research and educational programs, both public and private, aimed at promotion of sound land management policies and practices; that wilderness areas yield certain unique values to mankind, measurable only in terms of spiritual uplift, of scientific interest, and of recreational benefit; that the conservation of soil resources requires an education and implementation of effective soil conservation practices and programs, and that the marine environment is essential to the welfare of all nations.

In summary, we are most pleased to be allied with this outstanding organization—the National Wildlife Federation, which provides such a comprehensive conservation education program, distributes numerous periodicals and educational materials, sponsors outdoor education programs in conservation, and litigates environmental disputes in an effort to conserve natural resources and wildlife.
Pennsylvania ANGLER

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With ultralight spinning tackle and four-pound-test monofilament, about three or four feet below a
three-quarter-inch bobber suspend a 1/32-ounce white or yellow jig with an inch-long or 1-1/2-inch-long yellow or white split-tail grub. This is one secret to
enjoying superb bluegill action. This month's
cover, painted by Jeff Hoffman, depicts the quarry.
Slab-sided 'gills—and I mean the husky ones—will
clobber these jigs in six to eight feet of water. See page 4 for details.

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Here’s how to fill your creel with these platter-sized slabs.

'Gills

by Jim Gronaw
Knowledgeable anglers know that warm spring weather triggers fish of all kinds into feeding frenzies. But to the fisherman who avidly seeks bluegills, it is a time of unparalleled fishing quality. It's spawning time, and those who angle for these sunfish will agree that from late May until early July, those big, male spawners are most susceptible to the angler's hook.

For the most part, big bluegills are found south of the Mason-Dixon Line. But I've enjoyed some excellent big-gill action in a number of public lakes and farmponds throughout Pennsylvania. The fish won't run as large as those deep-south, platter-sized slabs, but half-pounders are common in many waters with numerous one-pound specimens cropping up.

**Locating bluegills**

When searching for bedding 'gills, always scout for areas with a bottom content of fine gravel or sand. If you can find such an area that has submerged brush, stickups, or weed beds, so much the better. Like other gamefish, bluegills are structure-oriented, especially the big boys. A place with these characteristics offers cover and adequate spawning sites.

There are many ways to locate these big spawners, but I've had exceptional success with small jigs of 1/32-ounce or smaller. I suspend them three feet below small plastic bobbers and systematically cast around the finer gravel areas until I locate a bedding site. If the water is shallow (three feet or less), the bigger 'gills usually spawn a good distance from the bank, sometimes in water as deep as six to eight feet. Using four-pound mono and ultralight gear, you can achieve the needed distance to pinpoint these husky slabs without spooking them. Such a tactic works in other waters that sport good bluegill populations.

**When to fish**

The overall progression of springtime weather governs the peak spawning periods in any good bluegill lake. If southern Pennsylvania anglers are enjoying good action the third week in May, then the 'gills farther north may not start nesting until ten days later, when water temperatures have approached the 70-degree mark. Farther north, near the New York border, the bluegills may require another week of warm weather to begin spawning.

The smallest jigs you can find—those of 1/64-ounce and 1/32-ounce—are deadly on bluegills. Select a one-inch or three-quarter-inch bobber and suspend the jig. Remember that the plumpest bluegills spawn in water that's six to eight feet deep.
This platter-sized bluegill socked a 1/32-ounce jig in about five feet of water in mid-June.

A good rule is that southern Pennsylvania waters sport bluegill spawns as much as three weeks earlier than lakes in the northern section of the state. Additionally, immature, juvenile bluegills spawn two or three times a summer. But those plump, eight- to 10-inch slabs are caught best during that initial spawning period each spring. That is the premier time to capture those fillet-sized panfish.

Where to find action
Although many anglers believe that big waters are necessary to produce big fish, such is not the case with bluegills. For instance, Pymatuning Lake (13,900 acres) and Lake Wallenpaupack (5,700 acres) are big, sprawling reservoirs that are far more famous for the “glamour” species than for their panfishing opportunities. They rank second and fourth respectively for yielding award-sized bluegills. Yet they are both far surpassed by Struble Lake, a 146-acre puddle in Chester County that ranks as the number-one big ‘gill lake in Pennsylvania.

Also to be considered are the hundreds of farmponds throughout the state. Many anglers overlook them, concentrating on the big-name waterways. But just about everybody’s angling roots were at a secluded pond complete with a can of worms and stringerful of plump, tasty bluegills. Unlike the fishermen and the economy, ponds haven’t changed much—they’re still producing more big panfish per acre than the bigger, publicized lakes.

When fishing for spawning ‘gills, tackle doesn’t have to be refined or expensive to be successful. However, by using the lightest gear, you can get more enjoyment from your quarry, and you stand a better chance of fooling the big boys. Large bluegills, even during the spawn, are still skittish, and in clear water must be approached carefully so you don’t alert them to your presence. The kerplunk of a half-ounce sinker or splashdown of a fist-sized bobber is sure to alarm bedding ‘gills.

Tackle
My favorite equipment is ultralight spinning gear with two- or four-pound-test line. I use no swivels, and if weight is needed for casting distance, I pinch on a couple of BB-sized splitshot. My bobbers are very small plastic bubbles no larger than an inch in diameter, preferably smaller. Hook sizes range from 8 to 12. by keeping terminal gear light and minimal, you stand a better chance of filling your stringer.

Fly fishing gear
While fly fishing is a great sport for shallow bedding ‘gills, it can be somewhat of a challenge when they are nesting in eight feet of water, as do most of the bigger slabs. In such situations, I’ve found the midget spinning gear ideal and easily adaptable. However, the choice is yours, with sinking lines and weighted nymphs (sizes 10 to 14) usually the fly rodder’s ticket to taking deep-water spawners.

Whether you prefer live baits or lures, keep your offerings small. Common earthworms are one of the best baits going and are available to all of us for the digging. Other top tempters are mealworms, mousies, and bits of nightcrawlers. By completely covering your hook with the bait, those wary, mature ‘gills will be more receptive to your delivery.

If you’d rather fool those panfish with artificials, use the smallest jigs. Marabou or calftails of 1/32-ounce or 1/64-ounce are deadly on spawning ‘gills, and the rebaiting of hooks is not needed as in bait fishing. In my experience, color doesn’t seem to affect spawning bluegills as it may during other times of the year. However, I stick to jigs of white, yellow, or chartreuse for the most consistent results. In practically every case, bedding ‘gills eagerly pounce on a properly delivered leadhead. By approaching the spawning sites with caution, you can get plenty of action with bait or artificials.

Pennsylvania bluegills are hard to beat for sport or table fare, so try your favorite lake or farmpond for good panfishing this spring.
Ever think about how a trout or bass eats a minnow or a crayfish? It has to grab, kill, and crush it with only its mouth and teeth. Imagine you had to do the same thing. Your mouth would be shredded. But when we think of the hooks on our lures, flies, or our baits, we unconsciously relate our mouth to that of a fish. Really experienced anglers test every hook before they put it in the water.

Another reason why it’s important to have sharp points is the mistaken belief that it’s easy to drive home a hook with the power strike of the rod. That’s simply not true. If you want to surprise yourself and a friend, string up a fly, plug, or spinning outfit, walk 20 feet away, and tie on a snap swivel. Clench the swivel firmly between your first finger and thumb, and ask your friend to raise the rod slowly and apply all the pressure he can. If he doesn’t make a violent jerk, he lacks the strength to pull the swivel free.

The amount of pressure applied on a strike is much lower than we assume. Experienced anglers think that no hook right out of the box is sharp enough to be fished with. They wouldn’t dream of using a lure on which the hooks hadn’t been touched up or a fly tied on a hook that wasn’t sharpened. Anyone who has seen the movie, “Bigmouth,” may remember expert bass angler Homer Circle retrieving a plug. The movie shows both the fish and the angler, and also
Here are some basic tools for honing hooks. At left is a diamond dust fingernail file next to a Mill Smooth file with a carrying case made from plastic sleeve and duct tape. Vise grips hold hooks well for sharpening. A triangulated point, not a rounded one, has the best holding power, so hold the hook with the point facing you, and file from the hook point back toward the bend.

As right, nymphs that are fished properly tumble along the bottom. This action dulls hooks and lets points pick up debris, as shown here. Be certain your nymph hooks remain sharp. Hold down the nymph hook on your thumbnail and with just a little pressure, push down and draw the hook across your nail. Only hooks that stick into your nail are sharp enough.
that the bass took the lure without Homer knowing it had struck. The same problem occurs with nymphing. The trout accept the fly, tests it, and quickly spits it out. But if the hook point is sharp enough so that on contact it starts to dig in, the fish can't spit it out so easily.

Similarly, bass hugs sit on the water, and as the fish hits a bug it pushes it away. Only a sharp hook helps hold until the angler can strike. And jigs are worked in an up-and-down motion. Many times the fish hits as the jig falls freely—a sharp hook is vital to increased strikes.

Mass-produced hooks

If you think hooks are sharp enough, you can make a simple test. It is a manufacturing marvel that companies can produce millions of hooks inexpensively and still get the points as sharp as they do.

But with a magnifying glass you discover that many of the points appear rounded—sometimes even rough. This applies to hooks of any size, even as small as size 22. The barb on a hook is important, too, on the strike. If the barb is excessively oversized it can prevent the hook from penetrating properly. A barb is made on the hook before the metal is tempered. The wire is fed into a machine that holds a tiny tool that resembles an adz, which slashes into the metal, raising the miniature barb. Close examination with the magnifying glass reveals that the bars on various hooks in the same box differ greatly in their shapes and sizes.

What all this boils down to is that the angler who realizes that he must have sharp hooks will simply catch more fish. Lures removed from the box should be sharpened, as should jigs and hooks of any type. Some points sharpen better than others, too. The eagle claw-styled hook is much more difficult to put a good point on than standard models.

A simple test

How can you tell if the hooks are sharp enough? Many anglers test the point against the flesh of their thumbs. This test is really not good, but there is a simpler technique that anyone can use. Hold the hook point against the thumbnail, and with only the slightest pressure, push down and draw the hook point across the nail. No hook out of a box will stick. And if it doesn't, it isn't sharp enough. A hook that begins to bite into the fingernail is sharp enough so that on contact inside the mouth of a fish it will begin to stick.

Sharpening hooks

Once you are convinced that sharpening your hooks leads to more catches, you need to know the right and wrong ways to do it. Just like a knife blade, a hook point that is very sharp but long and thin will bend or fold on contact with anything tough, such as bone on the inside of the fish's mouth. A good, sharp point is relatively short, but very sharp, and a hook point that is rounded like an ice pick is perhaps the most inefficient of all. It simply punctures. A good hook point has sharp cutting edges that taper to a point. Properly sharpened hooks also have some of the barb removed so that it can penetrate easier. Anyone who has ever had a tiny hook in his flesh can testify how much holding power there is in even the slightest hint of a barb.

Almost no stone are really useful for making properly sharpened hook points. Here's why: the stone wears away where the metal is pressed against it. This makes a puncturing point, not one with flat cutting edges. There is also some tiny sharpening tools on the market in which the hook is inserted into a tube and turned. It's better than no sharpening at all, but it produces only a puncturing point.

Triangulated point

Many expert anglers believe that the best point is what they call a triangulated one. Hold a hook upside down with the bend away from you. If the outside of the bend were filed flat, and then each side filed so that they met at the barb (this resembles an upside-down pup tent), you would have a triangulated point. It would have three cutting edges that come to a sharp, well-supported point.

When you sharpen hooks it is customary to file from the bend toward the point. But this procedure causes the point to bend over, creating a burr that frustrates penetration. Instead, the hook should be held with the point toward the angler, and the filing done from the hook point backward to the bend. No burr then occurs.

Sharpeners

There are some good tools available for sharpening hooks. Perhaps the most useful for trout fishermen, or anyone who uses small hooks no larger than size six, is a diamond dust fingernail file—a file that has a rough and a smooth side, so that you can use the side you need according to the hook size used. These files cost less than $2, and are available in drug stores that sell fingernail polish and other accessories for women. It is the finest hook file I have ever found for sharpening the really small hooks, sizes 8 through 24. Best of all, it has an aluminum strip to hold the cutting compound, so it will never rust.

The next most useful file for sharpening is the Mill Smooth. Many hardware stores don't carry it, but they can order it for you. I prefer the knife-edged style, but a standard flat file will be fine, too. This file has unusually fine cutting teeth. It comes in sizes from 4 inches to one of more than 12 inches in length. The eight-inch length is ideal for the bass, salmon, or saltwater angler. Because all metal files rust, I take a small plastic envelope (such as those in which jigs are sold) and slip the file inside the plastic sleeve. Then with duct tape I make an outer covering for the sleeve that is super-tough. By coating the file occasionally with WD-40 or light oil, such a file can even be used for several years around salt water. A suede brush quickly cleans the file's teeth to improve cutting after hard use.

There are some useful hobby tools on the market, too. Most rotate at too high a speed for sharpening hooks because the heat can ruin the metal's temper. But if you have a foot control switch and can slow the tool, it is perfect for sharpening hooks larger than size 4. Use the small grinding disks that come with the tool.

Finally, to hold hooks easily so you can sharpen toward the back, I use a small vise grips.

If you insist on sharp hooks, you'll catch more fish.
Your underwater eyes:

A Guide to Depth Sounder Use

Here's how to use underwater eyes properly—and catch more fish.

By Darl Black
What started back in 1957, when the first transistorized sonar unit for freshwater anglers was introduced, has grown into an industry with technological advances beyond the wildest dreams of anglers a decade ago. Once upon a time, this item was referred to as “that little green box” and was considered a luxury for fishermen. Today the unit is regarded as a necessity by anglers who use them. What is a depth sounder?

How sonar works

The flasher, graph recorder, and video graph operate on the same principle. In most basic terms, the sonar transmitter takes electrical energy from your 12-volt battery and sends it via a cable to the transducer. The transducer changes the electrical energy into sound pulses. The sound pulses travel through the water in an expanding cone. When the pulses encounter an object within the cone range, an echo bounces off. The echo is picked up by the transducer, converted back to an electrical signal, and returned to the transmitter. The transmitter measures the amount of time it takes the sound waves to travel from the transducer to the object and back again. This measurement is converted to feet for visual display.

The most common unit, the flasher, displays its reading by means of a light spinning around a calibrated dial. The light flashes on the dial scale indicating the distance from the transducer to the bottom or to any object in between.

With the chart, or graph, recorder (the second most popular unit), a stylus revolving on a belt imprints the distance information on paper. The moving band of paper becomes a permanent record of the underwater scene. A third type of unit, not in wide use and therefore not discussed in detail here, is the video graph, which displays a temporary picture on a screen.

Do I need a depth sounder for fishing?

There are circumstances in which you do not need a sonar. If you angle away your hours wading streams for trout and smallmouth bass, there’s not much sense in purchasing a unit. And even if you own a boat but spend all your time fishing weed-choked, shallow marshes where open water does not exist, a depth sounder is not practical.
However, as soon as you launch your boat onto a lake, reservoir, or river with depths greater than your six-foot fishing rod, a sonar unit becomes your underwater eyes.

Most freshwater fish relate to structure—the changes in the bottom terrain of a body of water. Fish that do not relate to structure are considered open-water species, whose location depends on water temperature and traveling schools of forage fish.

Flasher units can show you the submerged dropoffs, creek channels, deep weed lines, brush, timber, man-made foundations, roadbeds, and schools of baitfish. In addition, a well-tuned chart recorder shows you the thermocline (temperature stratification) and algal blooms. So whether you are seeking structure-oriented fish or open-water fish, a sonar unit can assist you.

In addition, portable depth sounders are becoming an integral part of the ice fishing scene. Because a transducer has the capability to shoot through the ice, sounders locate specific sites without drilling test holes.

**How to operate a depth sounder**

There is no great mystery in learning to operate a depth sounder. The typical flasher unit has two controls—sensitivity and noise reject, or suppression—and usually a switch for choice of depth scale.

The on/off control is integrated in the sensitivity control knob. Increasing the sensitivity amplifies the ability of the unit to pick up detail. However, too much sensitivity results in unwanted interference. Most anglers set the sensitivity control high enough to produce only a secondary echo.

For instance, say the unit is reading the bottom at 12 feet. Increase the sensitivity until a second reading appears at 24 feet on the dial. This setting generally gives you the best detail of fish, brush, and other bottom changes between 0 and 12 feet.

The noise reject, or suppression, control suppresses unwanted readings such as boat motor interference, but you pay a price for increasing the suppression: you lose resolution. Resolution is the ability of the unit to separate objects that are close together. Too much suppression on a flasher may cause a trophy musky hovering near the bottom to look like a stump connected to the bottom. Keep the suppression turned off or set very low for best target separation.

On most graph recorders the sensitivity and suppression controls are joined by a paper speed control and a white line (or gray line) control. Generally speaking, the faster the paper speed, the better the detail. The paper speed must be adjusted according to the boat speed and water depth.

![Diagram of depth sounder controls and outputs](image)
The white line control helps define the bottom. This control should be adjusted to establish a narrow line of lighter shading just under the heavy dark line, which denotes the bottom.

A final control knob is the depth range. The choice of ranges depends on the maximum depth of water you are fishing. On most graph units the range is a multiple of 0-30 feet; that is, the scale choice will be 0-30, 0-60, 0-120, and so forth.

The latest in graph recorders incorporates a computer and keyboard to offer you an unlimited range selection. You may select any upper and lower limit. In other words, you are not bound to the surface as the upper limit. You have the option to program, say, a 20-foot to 40-foot range to fill the screen.

What do I see with a depth sounder?

Sonar units provide the angler with information from the water world, but the interpretation of this information is the key to successful use of a depth sounder. The best possible education on sonars comes from on-the-water experience with an individual well versed in interpretation of the signals.

To help acquaint you with the possibilities of readings, see figure 1, which depicts actual graph recorder paper compared with what a flasher unit would read in the same situation and an artist’s conception of the lake bottom.

Readings from flasher units are more difficult to master and more open to misinterpretation than readings from a recorder. Here are some points to keep in mind in reading underwater features.

• **Bottom texture.** Hard bottoms—rock, gravel, roadbeds, and building foundations—show multiple echoes on the flasher. Over muck or silt you will frequently lose the second echo because sound pulses do not bounce off the softer bottom as well as they bounce off firmer bottoms.

• **Bottom objects.** Stumps, large rocks, brush, and piles of rubble give similar readings on a flasher. However, on a graph these items are somewhat easier to identify.

• **Fish.** Schools of small panfish and baitfish may show up on the flasher as multiple weak thin lines or simply as solid wide readings, depending on the compactness of the school. Larger fish are indicated by single wide lines. If either the fish or your boat is moving, the target will move rapidly out of the transducer cone.

On a graph, fish register as arcs or partial arcs, depending on their location in the transducer cone. While species cannot be positively identified, the size of the particular fish may be determined by comparing it to other fish in the picture. That is, larger arcs are larger fish. In some cases, knowledgeable anglers may be able to make accurate guesses as to the identification of the fish. Those anglers look closely at the position of the arcs in relation to the bottom or to other fish.

Small schools of baitfish show up as dark, fat arcs on a graph. However, massive schools of small fish simply shade the paper from the top depth of the school to the bottom depth of the school.

• **Standing timber.** In Pennsylvania there are actually very few lakes where one may expect to find submerged standing timber. Raystown Lake is the one that comes immediately to mind.

Upright trees and schools of small fish are easily mistaken on a flasher. Both appear as multiple line readings. One clue to watch for is the bottom connection. If the multiple reading appears to touch the bottom, it may be a tree. If the reading is clearly separated from the bottom, you have located a school of small fish. With the flasher it is virtually impossible to distinguish between fish and standing timber when the fish are “in the trees.”

On the other hand, graphs practically draw a picture of a tree. Depending on the resolution ability of the unit, you may be able to pick out individual fish around the tree.

• **Dropoffs.** With a flasher a rapid change in depth appears as a wide reading on the scale from the top of the break to the bottom of the break. Cliff-like ledges show up as broken lines, while creek channel banks usually show a wide solid line.

Graphs provide more detail by showing the slope and shape of the dropoff. Individual fish and schools of baitfish may be identified with a chart on the dropoff, but they tend to blend into one reading on a flasher.

How does this information help you catch fish? Many anglers use a depth sounder to find areas where they expect to find fish, and then they carefully fish the structure or cover. Finding the probable fish-holding sites is more than half the game. Other anglers, particularly those seeking the open-water species like salmon and stripers, use the unit to search for fish.

The depth sounder, in the hands of experienced anglers, can be used to determine if structure-oriented fish, such as bass and muskies, are in a positive feeding attitude. Active structure-oriented fish hold near dropoffs, on top of humps, at the edges of standing timber, along the edges of deep weed lines, or schooling schools of baitfish. Inactive fish may suspend in open water some distance from structure, lay on the bottom, or bury themselves in the weeds.

Therefore, a rule of thumb is that the closer a gamefish is to structure or schools of bait, the greater the catchability of that fish; the farther away from these positions, the lesser the chance of one taking your bait. Careful reading of the signals from your depth sounder helps locate suitable fish.

Which unit is for you? There is little doubt that a good-quality graph recorder provides much more detail than a flasher unit, as well as a permanent record for later study. But graphs are not cheap. The cost starts at $400 and runs to over $700. There is also the ongoing expense of paper to feed the graph. On the other hand, a top-quality flasher may be purchased for under $200 and does not require paper.

Many serious anglers equip their boat with both units. The chart recorder is used to locate specific sites or for trolling. When working a piece of structure carefully by casting, the flasher is switched on and the graph off. (There is some evidence that the stronger power output of the graph recorder may spook fish.)

The choice is up to you, based on your style of fishing, the type of water you most frequently visit, and the amount of time you spend on the water.

Darl Black is a freelance writer-photographer when he’s not charting—and catching—fish.
If a swarm descends on you, hope that a stiff wind starts blowing; if the air is still, there is no escape.
Neither the love of the picturesque nor the interest in science could tempt us into the woods, so terrible were the black flies.

Of all the pests that plague fishermen, none can change a peaceful wilderness into a purgatory so quickly, so completely, as can black flies. I’ve encountered stable flies, mosquitoes of many species, punkies or no-see-ums, and horseflies of many kinds, and I’d welcome the attack from them all, rather than be overwhelmed by a swarm of black flies.

Naturalist Alexander Agassiz, in his report on an expedition titled “Lake Superior,” tells how the members of his group were almost driven insane by the constant attacks of these blood-thirsty insects. He wrote, “Neither the love of the picturesque nor the interest in science could tempt us into the woods, so terrible were the black flies.”

Appearance

Black flies are true flies, stolid little demons, usually black but sometimes gray—only 1/16- to 1/8-inch long—with a high-arching thorax that gives them a hunchback appearance. Each carries a single pair of wings with two strong upper veins but with vestigial veins that begin to disappear after the veins start across the unspotted, rounded membrane below. The hind wings, as in all true flies, are replaced by tiny pinlike balancing organs, called halteres. The head is disproportionately small; antennae, short and stout; eyes of the male, curiously two-parted to make it possible for him to see in dim and in bright light—His eyes are so large they touch each other; eyes of the female are normal and separate. Neither males nor females have ocelli (simple eyes).

The female’s mouth parts, short but rapier-sharp, make this insect so dreaded. They require blood, mammal or in some species bird blood, for producing eggs.
Fortunately, the males do not bite. When the keen mandibles enter the flesh, they are bathed with a liquid so anesthetic that the victim feels no pain. Pain comes later when the fly is gone and a bloody welt arises. An itching also starts that is almost impossible to resist. Scratching makes possible other infections. Stampedes of hoofed animals, notably deer, buffalo, and caribou, have been caused by clouds of black flies descending on the herds.

Ancient scourge
Among the several divisions of true flies, the most primitive include crane flies, midges, moth flies, punkies or no-see-ums, mosquitoes, and gnats. About midway in the list belong black flies. Their ancestry goes back some 200 million years. Some of them are known as buffalo gnats because of the humped thoraxes.

On fishing and hunting trips, I have encountered black flies in the mountains of northcentral Pennsylvania, in the Adirondacks, and in Ontario north to Hudson Bay. They take over at midday when the sun is apt to be shining and temperatures are high, though they often compete for blood with the less sun-minded no-see-ums and mosquitoes. If a swarm descends on you, hope that a stiff wind starts blowing; if the air is still, there is no escape.

Protection
Don't wear bright colors; neutral shades like khaki are best. Use zippered garments, not buttoned ones, because the flies crawl into any gaps to reach your body. Clothing should be tightly fitted at the wrists and ankles. Carry cotton gloves; they needn't be thick because a black fly's mouth parts are short. A head net is often a comfort and a joy.

Our northern species of black flies are not vectors of human maladies, so they are not as obnoxious as are those in the tropics. In mid-Africa and Central America, the flies cause the dreaded onchocerciasis, or river blindness, a disease caused by a worm that lives in the fly's digestive tract. When the fly bites, the insect's saliva places the worms under the skin where some form nodules and others travel about the body of the new host. Those that reach the eyes slowly destroy the retina and the choroid layer of the organs.

There is new hope. According to Time magazine (July 19, 1982), entomologists B. Federici and M. Muller of the University of California, Riverside, have developed a powerful insecticide deadly to the larvae of both mosquitoes and black flies. The insecticide has been tested against black flies in Africa by the World Health Organization, which pronounced the results “superb.”

Life cycle
Unlike the dragonfly or stonefly that have three life stages, the black fly undergoes four: egg, larva, pupa, and adult.

The yellowish egg is merely dropped into the water by some species; in others, the females dash into the water, glue an egg to submerged sticks or stones, then escape to lay more.

Larvae
The larvae are usually found in large numbers in rapidly moving water. They hold themselves in place by hooks and suckers at both ends of the body. In addition, the insect has the ability to spin a silk to anchor itself so that it isn't swept away. The two suction disks also aid the animal in “looping” along to another location. Larvae are always found in habitats of abundant oxygen, such as areas of much aquatic vegetation or in fast-flowing streams and even in white water. They live on diatoms, algae, and protozoa that their fanlike rakers snatch from the surrounding waters. They secure oxygen through gills found only in the last segment of
the abdomen and in the rectal area within the body. The length of the larval stage depends in part on the species and in part on the vagaries of weather.

When full-grown, the larvae spin silken, sack-like, open cocoons that they attach to anything that seems permanent: underwater logs, stones, often another's cocoon. Countless numbers of them, resembling shaggy blankets, are often found where dashing waters bring plenty of oxygen. Here the fly pupates. The gills migrate to the thoracic region, and there are other radical changes. It will soon be an aerial insect instead of an aquatic insect. It must develop new breathing, food-getting, locomotive, and sexual apparatuses.

Adults

Perhaps the most traumatic time in its life cycle is when it leaves the water. Inside the cocoon it stores a bubble of air, and at just the right moment, as it pushes the bubble out of the cocoon into the surrounding water, its pupal skin splits down the dorsal side and the new adult hugs its bubble as it zooms to the surface of the stream. Its wings expand, and it takes to the air. There is no second try. Every step in the rise must mesh perfectly or the hapless insect is swept away.

The life of the adult is short. Dragonflies are the greatest daytime nemesis. There may be several black fly generations during a summer. The longest stage is apt to come during the cold months when the flies are larvae.

DDT was once used in not very successful attempts to control black flies. The chemical was too successful in killing fingerlings, swamp birds, amphibians, and other insects, and the flies soon developed immunity to the poison.

There are some 60 species of black flies in North America, about 300 worldwide, but only a few species attack man. Many find flower nectar more appetizing for their few days or weeks of adulthood.

Years ago in my insect-collecting days, there was nothing on the market to repel winged pests but citronella—
Once each year I try to set aside an evening or two to sort through my fly boxes for patterns that require attention. Invariably, there are matted flies that need to be steamed, others that require reconstruction, and still others too mangled to save. But last year the job was more pleasant than usual because in the course of emptying the contents of a seldom-used box, I came across an old friend. Buried deep in one compartment was a Wonder-Wing Caddis, a pattern I had first dressed 30 years ago and used for several years with great success. It was eventually replaced by a succession of newer patterns and finally forgotten.

Seeing the pattern again, I recalled many pleasant angling moments and I promised myself I'd fish it again, if only to verify it was as good as I had thought. Last year was a fine year for caddis hatches on our streams, and I used the Wonder-Wing Caddis alternately with newer patterns. The results were pleasing, and it was nice to find it hadn't missed a beat in all the intervening years.

Wonder-Wings first caught my fancy in the early 1950s when they were introduced in one of the national magazines. Formed by reversing the barbules below the tips of two large hackles, these wings have a beautiful contour not unlike the shape of insect wings. In addition, the separation between the barbules permits excellent translucency, and the inverted barbs produce a convincing vein pattern. When they were first introduced, Mr. Golden's Wonder-Wings were intended as upwings for mayfly patterns. They were ideally suited to this purpose and in those days—before cut or burnt wings were

1. Clamp a regular-shank hook (size 12 or 14) in the vise and tie in 6/0 olive prewaxed thread at the bend. Apply a dubbing of medium-olive fur or synthetic to the thread and wind it forward to form the body.

2. Select two dark, mottled grouse body feathers and prepare them as follows: Stroke the barbules below the tip to reverse their direction. Then determine the proper wing size (see text), and strip off the excess barbules from the butt of the stem. Trim the excess stem.

3. Match the two feathers back-to-back, and stroke the barbules until they lie flat along the stem. With your right hand, hold the barbule tips just below the end of the stem.
known—they were the most lifelike wings available.

For several years I dressed Wonder-Wings on most of my dry flies, not only as upwings to represent mayflies but also as downwings for caddis and flatwings in stonfly patterns. They proved to be excellent fish-getters, but eventually I abandoned them as upwings because they were fragile. Trout seemed to have a habit of getting their teeth caught in the reversed barbules, and after a few fish the wings were generally rendered shapeless.

But with downwings and flatwings it's a different story. Wonder-Wings dressed close to the body are less vulnerable to the teeth of the trout, and patterns so dressed enjoy a considerably greater life expectancy. A spot of vinyl cement applied at both the base and tip of each wing is an additional aid to durability.

Wonder-Wings may be fashioned from many kinds of body feathers. Large hackles with webby centers are ideal when solid colors are required, and grizzly hackles show interesting markings when the barbules are reversed. But for many caddis patterns with mottled wings, nothing beats the speckled body feathers of our ruffed grouse. Generally, they range from light tan to dark brown, the choice depends on the coloration of the caddis the tyer intends to represent. The paler feathers are appropriate for the many small, straw-colored caddis flies, such as *Hydropsyche*, while the dark are suitable for the larger *Rhyacophila*. The smaller mottled feathers on the back of the ringneck pheasant are also useful, as are mallard and wood duck flank feathers.

Dressing caddis Wonder-Wings is not a difficult task, but there are a few tricks that make things easier. The effective wing length should be equivalent to the overall length of the hook. Each wing is sized by first stroking the barbules below the tip to separate the usable barbs. Then measure the stem from the point of separation toward the butt for correct size, and strip away all other barbules from the butt. Trim off the excess stem. The unreversed tips should remain in place until after the wings have been set. They provide handles to grasp if the wings require adjustment during dressing.

Next, match the two feathers back-to-back, and stroke the barbules along the stems, away from the tips. Hold the formed wings in the right hand at a point just beyond the butt end of the stem, and position them on the shank with the tips pointing to the rear. Using a pinch grip, make two turns of thread with the left hand and draw tightly, binding only the barbules. Allow the thread to hang under weight.

When the wings are tied in they will probably spring upward as the thread is tightened. If so, grasp the tips and gently pull back and down until you are satisfied with the wing position. Then make three or four firm turns of thread. The hackles are then wound reverse-palmer with the tie-off at the bend. Finally, the hackle is trimmed underneath to produce the low-floating posture typical of caddis flies.

Body coloration varies among caddis species, but the Wonder-Wing Caddis dressed with bodies of olive, tan, and ruddy brown will cover most situations. Although the pattern illustrated represents the so-called Green Caddis, one of the *Rhyacophila*, the dressing may be altered to represent species common to your own stream. Sizes may range from 12 through 18.

4. Manipulating the thread with your left hand, tie in the wings by the barbules only and secure them with several turns. Trim the excess barbule tips. Then apply a drop of vinyl cement to the outside surface of the base and to the tip of each wing.

5. Select a ginger and a grizzly hackle with barbules about twice as long as the gap. Tie them in together in front of the wings, at right angles to the shank, on edge and with the dull sides toward the eye. Wind a neat head, and wind the thread back to the bend in three or four equally spaced turns.

6. Grip the tip of one hackle and make a full turn in front of the wings. Then lift the wings and wind them behind, over the thread ribbing. Tie off the hackle at the rear of the body. Repeat this hackling procedure with a second hackle. Trim the excess hackle tips, and whip finish the thread at the bend. Then trim the excess feather tips, leaving the formed wings, and trim a wide, inverted "V" from the underside of the hackle. Finally, finish the head.
**ANGLERS CURRENTS**

**The LAW and YOU**

*by Kerry Messerle*

Q: May I use sunfish as bait when musky fishing?
   A: Yes. As long as the sunfish are caught in a lawful manner by hook and line, they may be used for bait.

Q: How can I tell if the fire extinguisher aboard my boat is acceptable by law?
   A: Fire extinguishers must be U.S. Coast Guard approved. Approved models carry a statement to this effect.

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**New Sucker Record**

Seventeen-year-old Daniel Lee Waugaman has broken the long-standing sucker record set back in 1938. The previous record fish was taken by Ernest Kemper, Jr., Butler, PA, from French Creek in Venango County. Waugaman's new record fish was taken from the Allegheny River, also in Venango County - apparently a stronghold for state-record suckers.

The new record was taken on March 3 while Waugaman was drifting a nightcrawler in the waters of the big river. The fish weighed a hefty 10 pounds, 12 ounces and was 29½ inches long, beating the old record by an even pound.

Although the sucker was one of the oldest records on the books (exceeded only by the chain pickerel and the muskellunge), in the past three years the Fish Commission has recognized some 18 new state record holders for 11 different species of fish.

For more information on the Commission's Angler Recognition Program and for a listing of current state records, send a self-addressed, stamped envelope to the Pennsylvania Fish Commission, Office of Information, P.O. Box 1673, Harrisburg, PA 17105-1673, and request the pamphlet, "Angler Recognition Program."

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**Walleyes to Presque Isle Bay**

Studies have revealed that the walleye population in Presque Isle Bay is sparse, even though Lake Erie itself has good populations of the fish.

Because of the depressed populations, the Fish Commission has stocked 7 million fry into the bay. The experimental stocking consisted of two separate plantings to hit conditions just right - hopefully ensuring excellent survival of the fry.

According to Delano Graff, Chief of the Fish Commission's Fisheries Division, biologists will resurvey the bay, when the fry reach adult size, to determine if stocking will solve the problem concerning walleye populations in that area.

"We are not convinced that stocking will rectify the situation in the bay. The problem may be related to habitat, but we think the fry introduction is worth the effort, and it just might bring populations back. We will at least have some answers when we resurvey the bay in three years," Graff said.

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**Abele, Green Elected**

Fish Commission Executive Director Ralph W. Abele has been elected Regional Director of the National Wildlife Federation and will represent Delaware, the District of Columbia, Maryland, New Jersey, New York and Pennsylvania. Abele is a member of the Mid-Atlantic Fishery Management Council, the Pennsylvania Environmental Quality Board, the Water Resources Coordinating Committee, and the Boating Advisory Board.

Leonard A. Green, a member of the Fish Commission, has also been elected Vice-President of the National Wildlife Federation's Eastern Region. Green is Director of Public Affairs for United Telephone Systems Eastern Group. He served as President of the Pennsylvania Federation of Sportsmen's Clubs from 1970 to 1972.

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**Attitudes Toward Water Pollution Surveyed**

American attitudes toward water pollution was the subject of a recent Harris Survey, which was reported to the American Resources Council of America. Here are some of the findings.

By a margin of 95 percent to 4 percent, people feel that disposal of hazardous wastes is a serious problem in America, and by a 93 percent to 6 percent margin, people believe that pollution of lakes and rivers by toxic substances from factories is a serious national problem.

In addition, curbing water pollution was rated as "very important" by 70 percent or more of the public, and 74 percent of those questioned say that curbing water pollution is a very important quality-of-life issue.

The survey reports that the issue of water pollution control has a high priority among Americans, and that any contention that it is a peripheral issue with the public is simply a mistaken claim.
Safe Boating: A Parent’s Guide


*Safe Boating: A Parent’s Guide* is a comprehensive booklet that addresses the fundamentals of safe boating. With today’s growing interest in recreational boating, it is becoming more and more critical that boating neophytes get a good foundation in the activity. The increased demand for training and the limited number of instructors make this manual ideal for the interested adult to present basic boating safety information. Although the title indicates that the manual is a parent’s guide, it is nonetheless useful to outdoor educators. Teaching children the proper boating skills yields worthwhile results.

The booklet includes common-sense rules and basic procedures of transporting, launching, and operating a boat. Equipment needs, upkeep, and basic maintenance are all explained in a practical manner, stressing use, care, and storage.

In addition, the manual emphasizes not only the importance of avoiding trouble, but also taking prompt, proper action to return safely in the event of an emergency.

This inexpensive booklet might be just the thing to foster safety awareness while boating skills are being developed. — *Virgil Chambers*

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Act 1982-88 provides that certain records of the Pennsylvania Fish Commission are not public records for purposes of the Right-To-Know Law. This means that the Fish Commission can place appropriate conditions on the release of such records. The Commission has decided to make the subscriber list for Pennsylvania Angler available to statewide nonprofit, nonpartisan fishing, boating, and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do NOT want your name and address included on the subscriber mailing list to be made available to the described organizations, you MUST notify the Commission in writing prior to August 1, 1983. Send a postcard or letter stating, “Please exclude my name and address from Pennsylvania Angler’s subscriber mailing list.” Send these notifications to Art Michaels, Editor, Pennsylvania Angler, P.O. Box 1673, Harrisburg, PA 17105-1673.

Anglers Notebook By Richard F. Williamson

Don’t worry about the color of surface plugs used for bass fishing. The fish actually look at the silhouette of the lure against the sky.

Never jerk a rod of any kind straight up after you hook a fish. Set the hook with a sideways motion of the rod. That prevents the fish from pulling directly on the line, which would rip the hook out of its mouth.

Perch up to five or six inches long make excellent bait for northern pike, if both pike and perch live in the water you’re fishing.

Freeze-dried baits, the newest bait items on the market, feature dehydrated nightcrawlers, minnows, and salamanders. All you do is add water and the bait returns to its natural shape and size. In the dry state it can be kept indefinitely.

Look for hatches of Pale Evening Duns from late June to late July in most trout streams.

If trout are feeding just under the surface and you have no nymphs in your fly selection, cut the wings and most of the hackle off a wet fly. This fly haircut produces a good nymph imitation.

Bobbers and minnows and great fishing combos. If you set the bobber correctly, the minnow stays just off the bottom, where it is most visible to prowling lunkers.

A good trick to try when fish refuse a worm is to impale the worm on the hook of a wet fly and fish the rig just under the surface. The fly probably attracts the reluctant fish to the bait.

Fish lures very slowly in heavy cover like weeds and lily pads. Give the fish time to see and “feel” the lure action.

Crappies, also called calico bass and many other local names, feed around patches of aquatic vegetation and brush, where they consume great numbers of insects, larvae, and minnows.

Cork and plastic bass bugs are effective in many dark colors, even black, but they are often difficult to see in rough water or under overhanging vegetation. It helps to paint the bug’s face yellow or orange so you can see it.
I would like to express my anger at the growing politicization of our once politically independent Fish Commission and its official publication, Pennsylvania Angler. You are using this once fine publication as a platform for your ultra-liberal, left-wing ideology. The recent April issue was the last straw. Do you think all license holders are left-wingers like yourselves? In recent issues there has been a steady stream of liberal diatribe against the President, Secretary of the Interior James Watt, and against many of this Administration's programs, designed to get this country back on the right track after near derailment by you liberals. I have sent copies of the April issue to my representative, Leonard Gruppo, who happens to be a conservative Republican. You smug Radicals think you have cornered the market on concern for the environment. We Republicans and Conser-attives have let you get away with it long enough.

Jerome E. Grehl
Mt. Bethel, PA

Where can I purchase barbless flies for use in the catch-and-release areas of Lehigh County? They are not available in local stores and I don’t tie my own.

Dennis O. Gehris
Center Valley, PA

You may want to contact Barry Staats at The Sporting Gentleman, 306 E. Baltimore Pike, Media, PA (215-565-6140), who custom ties flies. I mention this establishment because it’s the first to come to mind that’s reasonably close to your home, but there are many other fly shops and private tyers who could easily produce some flies tied on barbless hooks.

Most anglers who fish the special regulation areas use needle-nosed pliers to pinch down the barbs on the flies tied on standard hooks. Have you tried this?

The reason why most fly shops don’t stock flies tied on barbless hooks is that the cost of barbless hooks is more expensive than standard hooks. As other state conservation agencies realize the need to recycle fish and thus increase the number of waterways that carry special regulations, fly tyers might see an increased need for tying and stocking flies on barbless hooks. Until then, most anglers fishing these waterways break out their pliers and bend down the barbs of their flies tied on standard hooks.

It makes me sick to go fishing in the Susquehanna River and see all the garbage along its banks.

There’s a story of a person who saw an elderly man planting fruit trees. He asked the old man when the trees would bear fruit, and the old man answered, “after 70 years.”

“Do you expect to live that long?” the younger person asked.

The old man replied, “I didn’t find the world desolate when I entered it. As my ancestors planted fruit trees for me before I was born, so do I plant for those who will come after me.”

We must protect the environment for future generations. Our charge is to leave the world better than we found it.

Charles Abent
Avoca, PA

Readers may be interested in the activities of the Susquehanna River Watch Coalition, a newly formed group coordinated by the Luzerne County Federation of Sportsmen. The organization is made up of environmental, sportsmen, and civic groups that are concerned with the abuse of the Susquehanna River. The coalition concentrates its efforts in the area of solid waste disposal. For more details, contact Edward Zygmunt, Secretary, Luzerne County Federation of Sportsmen, 409 Packer Street, Avoca, PA 18641.

Last Christmas I received a worm rod as a gift, and now I’d like to try bass fishing with plastic worms. What kinds of hooks, worms, and other tackle do you recommend?

B. L. Riverton
Perkasie, PA

With a stiff-action baitcasting rod and a good-quality reel, rig up with 15-pound-test blue or golden Stren, or similar monofilament line. For starters, get a supply of black, blue, and purple worms that are six, eight, and 10 inches long.

For hooks, start out with Mustad 38928s or Eagle Claw 41s in sizes 3/0 to 6/0. Use the 3/0 hooks with the six-inch worms, and match up the 6/0 hooks with the 10-inchers.

Use worm weights in sizes from an eighth-ounce to three-eighths-ounce. Some half-ounce weights may also come in handy for fishing worms deep on windy days.

Be sure to read “A Pennsylvania Bass Fishing Seminar” in the July Angler for specific how-to details.

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.
Delaware River Shad Moved to the Susquehanna

In a cooperative effort between the Pennsylvania Fish Commission, U.S. Fish and Wildlife Service, and several public utility companies, American shad were collected from the Delaware River and transported live to the Susquehanna River for spawning. The shad restoration program on the Susquehanna is geared for establishment of natural reproduction and hatchery production in that river. However, because shad in the upper Chesapeake Bay and lower Susquehanna River are scarce, spawners were collected from other streams and transported to the upper Susquehanna.

The Susquehanna River Anadromous Fish Restoration Committee (SRAFRC) is composed of members from the Pennsylvania Fish Commission, Maryland Department of Natural Resources, New York Division of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Philadelphia Electric Company, Pennsylvania Power and Light Company, Safe Harbor Water Power Corporation, and York Haven Power Company. The 1983 program calls for collection and stocking of up to 5,000 pre-spawn adult shad from the Delaware, Hudson, and Connecticut rivers, trapping and transfer of shad from Conowingo Dam, Maryland, to Harrisburg, Pennsylvania, collection of up to 50 million shad eggs from various East and West coast sources, and propagation and release of up to 10 million shad fry and fingerlings from the Fish Commission’s Van Dyke Research Station on the Juniata River near Thompsontown, Pennsylvania. This year is the first that the Delaware River is added as a source of adults and eggs.

Federal and state biologists worked with nets near the National Park Service’s Smithfield Beach Access Area north of the Delaware Water Gap in May. They collected about 1,000 “green” adults and 5 million shad eggs for the Susquehanna program. Adults were stocked at Berwick and at Tunkhannock, Pennsylvania.

The size of the shad run on the Delaware and the closeness to release sites on the Susquehanna were important considerations leading to the decision to collect fish from the Delaware. Successful reproduction and development in the Susquehanna should imprint the juvenile fish to return to that river as spawning adults following three to five years at sea. As the Susquehanna shad population rebuilds to sufficient size, fish passage facilities will be developed at lower river hydroelectric dams, thus opening the waterway to natural migrations of shad, herring, and eels.

For further information on this program, contact the Susquehanna River Coordinator, U.S. Fish and Wildlife Service, P.O. Box 1673, Harrisburg, PA 17105-1673.

Pennsylvania Angler

Watch for PLAY Fishing Days this month and next—three-hour sessions that let kids have a chance to catch panfish. A short instructional session on fishing techniques precedes the angling action. Kids ages 9-13 can pick up applications at participating McDonald’s Restaurants.
Boating

Trouble Shooting Your Outboard

by Virgil Chambers

In listing the causes of difficulties aboard recreational boats, engine trouble tops the slate. Fortunately, most engine trouble is a problem rather than an emergency, and can be solved with a tool kit and some basic knowledge of trouble shooting.

Here are some common problems associated with outboard motors.

Engine fails to start or engine loses power or stops while under way (Engines are more likely not to start than to quit while running):
• Out of gas, gas is old, or the fuel system is dirty.
• Check the valves of a portable fuel tank and the fuel line from the tank to the engine. Be sure the line is properly connected to the tank and to the engine.
• Check the battery connections.
• Loose wire in ignition circuit.

Warning: The ignition system on an outboard engine can cause a serious shock.
• Fuel not reaching cylinders: check the on/off valve and the fuel line from the tank to the cylinders; check the fuel line under the engine cover; check the spark plugs to see if they are wet with fuel; if so, the engine may be flooded.
• Overheated: If engine is hot, the cooling system may be blocked, or the water pump may be worn out. Do not try to start an overheated engine; let it cool. New outboard engines have water pump indicators that discharge a steady stream of water when the water pump is operating properly.

Here are tips on engine tuneup and maintenance that will help you get maximum performance and enjoyment from your outboard motor.

Lubrication: Check grease requirements and make oil changes as listed in the owner's manual.

Fuel system check: Fuel filters should be replaced periodically, and carburetors need routine adjustment. Both are necessary to obtain peak performance from the engine.

Spark plugs and ignition system: These items are subject to wear and contamination, and should be checked regularly.

Propellers: Propellers are subject to various underwater hazards, so for maximum performance, service, straighten, or replace propellers when necessary.

Water pump wear: These parts are subject to various amounts of wear, depending on water conditions. Your dealer will be able to tell you how often these parts need replacing in your area.

Keep in mind that normal maintenance is your responsibility as the owner-operator of the craft, and proper operation of the engine enhances its life span. For extensive repairs, consult your dealer or manufacturer.

Virgil Chambers is a Boating Education Specialist in the Fish Commission's Bureau of Waterways.

Boat Trailering, Personal Flotation Devices, and Marine Fire Extinguishers are three pamphlets available free of charge (for single copies) from the Fish Commission. Send requests to Publications Section, Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673, and include a stamped, self-addressed legal-sized envelope.
Potato Creek is Alive Again

by Francis X. Sculley

It has more varieties of gamefish than any other creek in the Commonwealth, other than the Oswayo in Potter County and the Tionesta in Forest County. Nationwide, other than the two mentioned, it is doubtful if any other stream comes close.

Potato Creek—named for the accidental capsizing of a small boatload of spuds early in the 19th century—is home to brook, brown, and rainbow trout; both varieties of bass; muskellunge; and—within recent years—walleye, which have been taken from the marshy lower reaches of the stream. Pickerel are infrequently caught above the village of Coryville, and for the panfisherman there are bluegills, sunfish, and bullheads; recently, fallfish have been caught during early autumn. Other kinds of fish abound in Potato Creek, almost from its source above Crosby to the union with the great Allegheny River: one of the many reasons why so many lusty species of gamefish are found in this remarkable creek.

The 1800s

Throughout most of the last century, Potato Creek was exclusively a brook trout stream. Salvelinus fontinalis reigned supreme. Old McKean County newspapers and journals make frequent mention of a lone angler taking 100 trout—and even more—in a single day. They were carried from the stream by the basket-load. Children with a cut pole and penny hook could catch enough in an afternoon to provide the evening meal for the entire family (often quite large a century-and-a-half ago). In the tiny feeders, their numbers were almost beyond belief. Market fishermen caught them by the hundreds, selling the entire catch to hotels and boarding houses. Fried brook trout were a staple on everyone's breakfast menu.

For many years the McKean County Historical Society proudly exhibited a monstrous mounted brook trout on the wall of its splendid museum. It was over 21 inches in length and almost as broad as a bass. Taken from Potato Creek back in the days when only a cow had been to the moon, it was by no means the largest of the species ever caught.

That five-pound brookies lurked in the depths of Potato Creek a century-and-a-quarter ago is almost a certainty. It is a large stream, and the biggest brookies are always found in large streams, ponds, or lakes.

18th-century muskies

Late in the 18th century, a monstrous finny predator began to appear in all of the upper Allegheny River. It was known as the muskellunge, and was a migrant from Chautauqua Lake, where its kind had dominated the beautiful body of water since the Ice Age. From the outlet of Chautauqua, to the Conewango and then to the Allegheny, the ever-hungry tiger of the lakes made its way to Potato Creek.
it to both the Oswayo and Potato creeks early in the 19th century, and then only at those streams' junction with the Allegheny River it was uncommon. The brookie was still king. Today the musky is king and *Fontinalis* occupies a minor role in both streams.

While smallmouth bass were common in all the Allegheny a century-and-a-quarter ago, they were rare in Potato Creek. It was not until the post-lumbering days that the increased water temperature brought hordes of newcomers to Potato Creek, among them the smallmouth.

**Largemouth bass**

The largemouth's story is a strange one. It was unknown in the Allegheny a century-and-a-quarter ago. The building of the Erie Canal provided satchelmouth with the way to make it to such unheard-of places as the Hudson and the Mohawk. The Genesee Valley Canal, which connected Lake Erie, Ontario, and the Erie Canal with the Allegheny, was completed to Olean in 1856, and the bigmouth started its migration westward. How many locks the lusty fish must have passed in its memorable swim is pure conjecture. It also had to climb a 1,000-foot mountain and cross Letchworth Falls by wooden aqueduct. Probably one of our greatest gamefishes did not begin to appear in the upper Allegheny much before the start of the Civil War. Today the largemouth is infrequently taken in all the lower reaches of Potato Creek.

**Village life**

As early as 1880, the handwriting was on the wall for Potato Creek's brook trout population. From its junction with the Allegheny at present-day Larabee Junction for a distance of almost 20 miles, the beautiful stream was lined with bustling, bustling villages: Coryville, Farmer's Valley, Smethport, East Smethport, Crosby, Coleville, Keystone-Betula, and later, Norwich.

Each of these towns survived on the economy produced by lumber mills and chemical plants. All released tons of raw sewage and factory waste into the meandering stream. In between the villages there were acres of pastureland. While the tinkle of cowbells may have had its romantic appeal, Bossy had contributed little to conservation.

Bovines churned the soft banks into a marshy quagmire, and with the coming of rains, Potato Creek took on the color of a chocolate soda. The building of a canal from Larabee to Coryville contributed to the carnage: the brook trout was doomed in Potato Creek, and from below Crosby all the way to the Allegheny River only "scrap" fish survived, along with the random bass and muskellunge.

**Brown trout**

No one is quite certain when the brown trout was first introduced into Potato Creek, although it is believed to have happened in 1903. Prior stockings, if any, had resulted in failure. The lusty European—always called the German brown trout by older citizens—found a home in McKean County, and in the years prior to World War I became firmly established, though it had its trials and tribulations with chemical waste, and there are records of serious destruction of fish life. The bloated bodies of dead brownies and other fish could often be found during periods of low water.

Inspired by the success of the brown trout experiment and the building of the new fish hatchery at Port Allegany, Fish Commission authorities began the reintroduction of the brook trout to Potato Creek throughout the first quarter of the century. Few of the despised "liver-fed" brookies survived to see the coming of summer, but it was a noble effort.

**End of an era**

The lumbering era ended in 1919 with the abandonment first of Norwich and then Betula. The discharge of sawdust and wood residue into the stream ended. In the next decade one chemical plant after another folded and was dismantled. While it had an effect on the economy of Potato Creek valley, it also created a change in the stream itself. No longer would there be an annual fish kill due to the discharge of chemical sludge.

While the light was not yet visible at the end of the tunnel, the water quality of Potato Creek improved during the 1920s and 1930s. The Fish Commission stocked the stream every season, even introducing a new species—the rainbow. Fishing did improve.

Experts say that one cannot restore a stream to its former greatness by restocking. Maybe so, but Potato Creek has been stocked for almost 75 years, and the catches made are almost legendary. Few streams endure as much fishing pressure as Potato Creek. On opening day, a random count of the anglers on the East Smethport bridge totaled 236. This count was taken around noon, and because the bridge was packed all day long, it is safe to say that 2,000 to 3,000 fished from that bridge on that day. Every bridge the length of the stream was lined with fishermen—many of whom had the limit.

Of the seven trout we took, three were natives, fugitives—no doubt—from the small feeders. About 30 years ago, a Potato Creek native brookie was a rarity.

**Restoration**

First and foremost, the cleaning up of the stream and the end of pollution played a major role in the restoration of Potato Creek. Still, one has to recognize the Fish Commission. It must have invested millions of dollars in the future of Potato Creek over a period of three-quarters-of-a-century, to say nothing of thousands of man-hours in heartbreaking disappointment. But it paid off in the long run.

While the handsome McKean County stream has enjoyed a rebirth, it had a bad time in both 1942 and 1972, the result of devastating deluges. Immense sand and gravel bars were formed through the center of the stream, all the way from Coryville to the Allegheny. During low water, capricious winds and birds seeded these islands. In the deep channels between these king-sized hummocks, bass and muskies are frequently taken—yet the flow was barren at this location three decades ago.

The rebirth of Potato Creek was nothing less than a miracle, but there are still problems. The junction with the Allegheny is not a pretty one. The defect is residue from the ill-famed canal of a century ago.

Still, things are rosy compared to 1942.

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 Freelance writer Francis X. Sculley has been studying Pennsylvania's wildlife and waterways for more than 50 years.

June 1983 27
Our Top Smallmouth

Big bass abound “at the top.” Here’s how to catch them.

by Mike Bleech

Lake Erie is our top smallmouth bass water, geographically at least. The big lake offers almost limitless bass fishing opportunities. Smallmouths in unbelievable numbers swim in the shallow waters along the shoreline, and I have even caught them miles offshore while downrigger fishing for salmon in 90 feet of water.

Other than a few popular spots like Erie Harbor, the bass go largely unnoticed. Far more attention is given to salmon, trout, walleye, and even perch, but it is hard to understand why.

My first step a few years back when I decided to sample Lake Erie’s bass was to stop at a local marina to see if I could pick up a few tips. The owner was happy to help.

Crankbaits and jigs

He suggested I use a deep-diving crankbait, a Bomber Model A, which is one of the most popular lures at Lake Erie. Luckily, I already had quite a few in various sizes, but I bought a couple in a color I did not have.

Chartreuse, red, and silver are all popular lure colors, though I rely heavily on a crawfish pattern, which catches smallmouths wherever they swim.

When the water is too deep for crankbaits, a switch to jigs is necessary for the artificial lure users. Black, brown, chartreuse, silver, and yellow jigs all catch bass. A tournament fishing buddy who lives near Erie swears by a translucent brown leech-type jig about four inches long.

Shiners and crayfish

Most live bait anglers opt for shiners, which are cheap and plentiful at local bait shops. When you can find crayfish, they are hard to beat. Small hardshells, sometimes called grass crabs, work every bit as well as softshells.

The cooperative shop owner went on to explain how to find the bass:

“Look for dropoffs in about ten feet of water,” he prescribed.

After thanking him for his help, my fishing partner and I headed for a boat launch in the city of Erie. We were relieved to see that the lake was nearly calm. A light offshore breeze slightly rippled the water, just enough to cut light penetration.

We launched our boat and headed east. Because the lake was so calm and the weather report promised more of the same, we ran down the lake a few miles, enjoying the beautiful shoreline scenery. The rugged cliffs and sandy beaches make a truly unique setting for Pennsylvania anglers.

It was a long while before we spotted another boat. As if to remind us of our purpose, the angler in the front of that boat was battling a bass, which was doing its best to throw the hook in a wild dance across the surface.

This place was obviously bass country, so we switched on the sonar to look for a dropoff. The strong echo indicated we were over a rock bottom.

We found a dropoff in short order. It began at about six feet and dropped nearly to nine. As I tied on a lure, I could see my partner had been better prepared than I. He was already hooked up to a bass. It was a rugged smallmouth weighing about a pound, but it threw the hooks in the middle of its aerial antics.

Losing that first fish did not matter much. Working slowly along the drop with the aid of an electric motor, we had hits on nearly every cast. None of the bass was large; most were just under two pounds.

In about a half-hour, we both caught more bass than we are used to catching in an entire day, releasing all but one, which had been hooked very deep.

We both switched lures, going to shad jigs because they did not hook the bass as hard as the crankbaits with two treble hooks. The bass like 1/8-ounce chartreuse jigs every bit as much as the crankbaits.

Deep-water bass

We had our hearts set on bigger
bass, so we decided to look for a drop in deeper water. The depth remained steady at nine feet as we moved straight out from shore for 50 yards, but then it dropped abruptly to 12 feet. Changing to size 7A Bombers, which would dig bottom at the base of the drop, we worked our way along that depth break line.

The smallmouths were harder to find in the deeper water. Find them we did, though. Keeping the boat directly over the drop with the aid of sonar, we fan cast ahead. Our casts missed a narrow 20-foot outward extension of the drop line, but the sonar did not.

"This has got to be it," I told my partner.

Zig-zagging across the sunken point, watching the sonar to get an idea of what it looked like, we outlined it with marker buoys. Then we started casting over and around it.

I got the first hit at the top of the point, and leaned back to set the hooks. The fish did not rocket to the surface like the bass did at the shallower drop. Instead, it sluggishly crossed the bottom. From its power, I could tell that this bass was larger than any we had caught so far that day.

After a spirited battle, I worked the bass to the surface and grabbed the lip of a thick-bodied 3½-pound smallmouth.

We worked that area for the next few hours. While we did not catch bass as fast as we had on the shallower drop, we caught enough bass in the three-pound to four-pound range to cap off an outstanding day's fishing.

**Erie harbor action**

This type of smallmouth bass action can be duplicated at many spots scattered along the coastline of Lake Erie. The protected water of Erie Harbor is a good place to start. Here you find the best convenience of services, including launches, bait, and tackle.

Fishing in the harbor is much like fishing in the open lake—dropoffs are some of the most productive spots. There is much more manmade structure, though, in the form of riprap and docks.

One of the most popular hotspots is a steep break near the harbor entrance. It is well marked with buoys and lots of boats when the fish are hitting.

Erie Harbor is the site of the annual Presque Isle Invitational bass tournament, sponsored by the Pennsylvania B.A.S.S. Chapter Federation.

A well-known bass fishing area in the main lake is off Shade's Beach. The key to finding smallmouths here, as it is in most of the lake, is finding rocky bottom, then finding the most productive depth.

A bottom covered by rubble usually holds a scattered bass population. I like to fan cast these areas with a crankbait that will dig along the bottom. Because the bass are not grouped as tightly in such places, covering much water is the best way to catch a lot of bass. Sometimes, though, a small bottom hump or depression will be occupied by a school.

Much of Lake Erie's rock bottom is flat shale. Bass in these areas often congregate along the depth breaks. Here, casting accuracy is important. Marking a section of the break with buoys saves a lot of wasted casts.

Cribs, man-made rock piles, are favorite bass spots among the locals. Cribs and many other bass-holding areas can be located on NOAA chart 14824, which covers most of Pennsylvania's Lake Erie waters, and on chart 14835 for Erie Harbor. These charts, which I purchased at Bayshore Marine in Erie, are valuable aids to any Lake Erie angler.

Next time you're looking for some good smallmouth bass fishing, look to Lake Erie. Erie may not only be our state's top smallmouth bass water geographically; its fishing quality is also tops.

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*When Mike Bleech isn't battling Lake Erie bass, he's editing Drop Off, the newsletter of the Pennsylvania B.A.S.S. Chapter Federation.*

June 1983 29
**The Tasty One**

*by David Spotts*

_Perca_, meaning dusky, _flavesceus_ (yellowish) is the scientific name given to one of Pennsylvania’s native fish—the yellow perch. The natural range of the perch extends from the Hudson Bay region east to Nova Scotia, south along the Atlantic Coast to South Carolina, and westward through the Great Lakes to the northern parts of the Mississippi River drainage. Because of their popularity, they have been introduced to many western states; however, southern stockings have been unsuccessful due to elevated water temperatures.

An olive back blending into golden yellow sides with six to eight dark bands distinguishes the perch from any other Pennsylvania fish. Unlike its larger relatives, the walleye and sauger, perch lack canine teeth.

Primarily considered a lake fish, perch can also be found in slow-moving rivers. They are a schooling fish for the majority of the year and prefer water temperatures from 60° F. to 70° F.

Mature females are followed by as many as 25 males for spawning. This activity occurs at night or early morning in the shallows usually over rooted vegetation, submerged brush, or other obstacles to which the eggs can adhere. The female extrudes a unique gelatinous, ribbon-like string that contains anywhere from 2,000 to 90,000 eggs, depending on the size of the female. The string may be as long as seven feet, as wide as four inches, and weigh up to two pounds. After fertilization, fry hatch in approximately three weeks at 50° F.

It takes five days for the fry to absorb the yolk sac, and during this period they are very slow swimmers, which subjects them to heavy predation. Fry start feeding on zooplankton and various insect larvae, and eventually they change their diet to crayfish, snails, and small fish, including their own.

Growth of perch varies, depending on the population size, habitat size, and productivity of the water. Usually, it takes three years for a perch to reach five to eight inches. Fishery managers consider perch a good forage fish if the predator population (walleye, pike, etc.) is high. However, if the predator population is low, perch can overpopulate and stunt, providing poor fishing. If this situation occurs, a six-year-old fish may only be five or six inches long. Fortunately, this “out-of-balance” population can be corrected by using management tools such as lake draw-down, fish toxicants, or predator stockings.

To anglers, perch are not noted for their fighting ability. They are considered panfish in Pennsylvania and up to 50 can be harvested daily. This can provide anglers with a lot of action and a pan full of delicious fillets. Favorite times to fish for perch are during the winter months through the ice and in spring, when they are spawning close to shore. Perch will accept all natural baits and some artificials such as flies, jigs, and small spinners. The current state-record perch, a 16-inch fish of 2 pounds, 3 ounces, was taken from Lake Winola.

Commercial fishermen of the Great Lakes region harvest these fish for the markets. In 1980, commercial fishermen harvested 15.5 million pounds of perch from Lake Erie, worth roughly $8 million.

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_David Spotts is with the Commission’s Fisheries Environmental Section._
You've got a friend in Pennsylvania