On Sunday, July 30, three major boating accidents were reported on Pennsylvania waters. Two individuals, aged 70 and 55, lost their lives by falling overboard in two separate incidents on the Susquehanna River. Both operators had approved PFDs on board, but were not wearing these protection devices.

On the same day, a Commission patrol boat’s fuel system caused an explosion on Lake Erie. Both men on board escaped serious injury by going overboard, but they were kept safely afloat by their PFDs in open waters for a long time.

In one day, two men were lost, even though witnesses and assistance were nearby, while two men were saved in a much more serious incident in which assistance was not readily available.

During the past two years, 25 fatalities have occurred in Pennsylvania and only five of these victims wore a PFD. In May 1989 alone, five canoeists lost their lives from unexpected capsizing or falls overboard. In all but one case, if they had worn the PFDs that were on board, they would probably be alive today.

PFDs, or personal flotation devices, are safe, attractive and comfortable, yet many boaters are still reluctant to wear them. Usually, it is the inexperienced boater who fails to realize the dangers of boating without wearing a PFD. Most experienced boaters use their PFDs regularly.

Over the past 11 years, 227 boaters have lost their lives on Pennsylvania waters. Only 32 of these fatalities wore PFDs. These persons died because they were pinned underwater, body functions failed due to hypothermia (cold water exposure), or they were wearing a device that kept them afloat but did not keep their heads safely out of the water when they lost consciousness. Many of the 195 people lost could still be alive.

The fact that we lose only about one of every seven boaters who goes overboard while wearing a PFD means that your chances of surviving this type of accident are greatly increased by proper use of PFDs. To be safe, the device must be worn at all times. However, it is difficult to put on a PFD when swimming in the water. All children under nine years of age and non-swimmers must wear PFDs on Commission and state park lakes, but wise boat operators insist on this practice on all waters.

Pennsylvania law requires that all vessels have on board a Coast Guard approved personal flotation device for each person. In addition, the Commission has several boating education programs directed at all types of boaters. The Boating and Water Safety Awareness Program is a hands-on boating safety course taught primarily to youngsters through public schools, parks and recreation departments, and conservation groups. The Water Rescue Program trains people in the safest rescue and water safety techniques. The Commission also has a home study boating course and coordinates safe boating classes with the U.S. Coast Guard Auxiliary, U.S. Power Squadrons, American Red Cross and other volunteer organizations.

Please, if you are now or plan to become a boater, enroll in one of these programs, but above all, see that all persons aboard properly use a PFD. It may save your life or the lives of your family and friends.
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The covers
This month's cover, photographed by Lefty Krehe, shows a fall scene on a southcentral Pennsylvania trout stream. If trout fishing is your passion, check out the stories beginning on pages 8, 20 and 26. Are you a boater? Don't miss the vital information on page 22, and if wading is your thing, read page 31. Be sure to check out the Angler survey on page 13. Please fill it out and mail it in. The Commission wants to know your opinions.

If you'd like to get a colorful, well-made "Fish Pennsylvania" patch free, please turn to this issue's back cover.
An Indian Summer's Day on the River

by Jeff Mulhollem

Wumph, wumph, wumph, wumph. The great blue heron abruptly exploded from the moon-lit shallows just 10 feet from the canoe, sounding like a small helicopter taking off. The commotion scared my 3-year-old son so much that he nearly jumped out of the boat.

Although we admired the regal bird's five-foot wingspan as it flew over the Raystown Branch of the Juniata River several times hours before, we did not anticipate seeing it again. The heron apparently did not expect to see us, either. We startled it as we glided silently downstream, where it probably stood motionless on one leg, waiting for a small fish to swim out of the weedbed, within reach of its lethal bill.

Like us, it was fishing. I wondered if the bird enjoyed the success we had. It was a magical day to remember, and the encounter with the heron was the perfect ending. As we floated the last half-mile over smooth water to the access area that marked the end of our trip, I wondered whether my son,
Joshua, would be able to remember any of the happenings on his first fishing adventure later in life. Probably not. But I knew I always would.

"Was that the big bird, Daddy?" he asked again, squeezing my hand, seeking reassurance in the growing darkness. "He scared me. But he won't hurt us."

We floated more than four miles from Corbins Island Access just below Raystown Dam to the Fish Commission's Ardenheim Point Access. It was one of those warm, sunny Indian summer afternoons when the Huntingdon County landscape appeared like a postcard. Ironically, it had not even started out as a fishing trip.

We launched the canoe in early afternoon just to see the foliage and relax, but had thrown rods and my tackle box into the boat as an afterthought. We caught a few nice smallmouth bass throughout the day, but at about 4:30 p.m., the bass went on a feeding binge the likes of which I had never seen before. For more than 90 minutes, nearly every cast with small, mostly orange crayfish-imitating crankbaits brought a strike. For more than an hour, my friend and I had fish on constantly. And as is usually the case in autumn, the bass ran larger than we are accustomed to catching in other seasons.

"Catch another fish, Daddy!" my son repeated. And every bass we landed the little boy touched, held or tested the sharpness of its teeth and dorsal spines before release. He held onto our rods, helped us crank the jumping, tailwalking smallmouths in and posed for pictures.

When we came across a pair of mating river turtles, his interest was really aroused, and for weeks afterward, he would tell friends and family about the turtles he saw "fishing with Daddy."

All of this happened on a stretch of river we had stopped fishing a few years ago because the few smallmouth we caught were small. I never dreamed so many big bass dwelled in this shallow, clear section of the Juniata.

My friend, who doesn't fish much, couldn't believe how many bass we saw. He was equally amazed by the lack of competition.

"Where are all the fishermen?" he asked repeatedly. "Maybe they all stayed home to see the Steelers get clobbered again. We haven't seen another angler all day."

But we lingered so long over the good fishing that dusk found us a mile or more from our takeout point, facing the prospect of rock-dodging in the gloom with a child in the canoe. We began to paddle nervously, straining our eyes for disturbances in water flow that might signal trouble.

As we rounded a bend, a doe, knee-deep in the river, looked up from her drink. A crashing in the underbrush behind the animal indicated that her companions had winded us. She hesitated momentarily and then bounded up the bank, melting into the shadows. But not before Joshua got a good look at her.

"Was that a deer, Daddy? Wow, that was a big deer, Daddy."

A sliver of moon shed just enough light to navigate by and we reached the truck without incident, except for the heron scare.

There would be a few days like this one left this year, we knew, and that made the whole experience even more special. We sat for a while in the darkness after loading our gear, while my son slept on my lap. I wondered why we were so fortunate to stumble on such a perfect day, lamenting its passing and trying to connive a way to return to the river soon for another day of angling under a harvest moon.

September 1989 Pennsylvania Angler 5
M any anglers fit into a specific category known as "weekend warriors," fishermen who go fishing only on Saturday or Sunday. The remainder of the week is usually dedicated to their avocation, which in turn provides the funds to make those boat payments every month. However, at least once a year, they enjoy taking a week-long excursion to one of those exotic locations where nearly every cast results in an arm-jolting strike. In moments of weakness, they take their wives, but often, it's not the spouse who accompanies them on the trip, but an old friend who claims to know and enjoy fishing as much as you do.

If you were taking your wife on an extended fishing trip, you would likely know what to expect. Naturally, she would catch the largest and most fish. This is an iron-clad unequivocal guarantee. Wives have an uncanny way of getting even for all those little things you did wrong since the day you repeated the nuptial vows. This especially holds true when you take them fishing. Although they may not make those long, graceful casts, you can bet your bottom dollar they'll outfish, outlive and out-talk their loving husbands. And once they've performed these tasks, they'll never let you live them down. Thus, this accounts for the fact that wives rarely accompany their husbands on extended fishing trips.

To avoid embarrassment, you've ruled out taking the best fisherman in the family. Therefore you must go about the task of selecting an alternate fishing partner. Naturally, you wouldn't select someone who has never picked up a fishing rod or landed a fish. This type of person can turn any trip into a disaster. You'll spend more time tying knots, unhooking fish and telling them what they did wrong than fishing. Therefore, you must select someone with at least as much experience as you have. Granted, it will be extremely difficult to locate such an individual, but it can be done.

By using the experience criteria, you'll be able to narrow the choices down to a few dozen good friends. But have you ever spent an entire week with them? I'm not talking about a week where you stayed in different motel rooms and talked about fishing over lunch. A week-long fishing trip means you'll likely be sleeping in the same room, fishing from the same boat, eating all three meals together and riding in the same car. If you and the selected individual do not have a lot in common, you'll likely end up trying to kill each other by the end of the week. Therefore, selecting a fishing partner to accompany you for this length of time is just as serious as finding the right person to marry. Consider the notion that two-thirds of most marriages end up in divorce court and your chances of hooking up with the right fishing partner are one in three.

To determine who you should take on that next extended fishing trip, I talked with Dr. Carl Schleiffer, a well-known psychiatrist and friend. Doc is an ardent fisherman and spends most of his free time chasing big fish in large bodies of water. He carefully screens everyone who goes fishing with him and places them in certain categories. By doing this, he's able to determine who he takes on one-day trips and who makes trips lasting a week or more. Although his selection method seems easy, you'll likely find that some of your best friends may not fit his criteria for making an extended trip.

Determining how much fishing experience a person has can be a difficult chore. A classic example of this was discovered when I allowed a good friend to talk me into taking him on a recent one-day trip. He claimed to have fished extensively, but this, I found, was only talk. Once we arrived at our destination, this guy opened up his rod case and produced a quarter-century-old solid-glass spinning rod, a rusted reel and rotten line. This I could overlook because he was a friend. Then he opened his tackle box, revealing the contents, which consisted of a dozen rusty hooks, rusty pliers, a jar of pork rind that had taken on a life of its own and a half-dozen 8-ounce sinkers. Not exactly the type of equipment you would take on a smallmouth bass trip.

After loaning him one of my custom-built rods and a few of my most productive lures, we motored to a good spot. Not only was this day's fishing companion without tackle, his casting ability left something to be desired. His second cast resulted in placing my best fishing hat in orbit when the lure hooked the bill. At this point, I strategically positioned him at the bow of the boat while I cringed in terror at the stern. By the end of the day, he boated three fish, lost a dozen plugs and I spent most of my time keeping out of his way instead of fishing.

He often asks why I haven't asked him to go again. I've fortunately been able to come up with some sort of excuse of why I can't go. I guess the best way to determine someone's fishing ability is to take him fishing a few times. If you don't spend most of your time unraveling backlashed line and they have the correct equipment, they meet the first rule of Doc's criteria for a fishing companion.

Phase two of Doc's selection process is somewhat more involved. Again, you'll have to go fishing a few times with the individual to make the determination of his ability. Does this person put forth an equal amount of effort to ensure that the fishing trip is a success? Does he share in the work as well as the enjoyment?

Anyone who owns a boat knows a fishing trip consists of 75 percent work and 25 percent pleasure. Little chores such as cleaning up the boat, making sure the essential items are on board and sharing expenses are a must.

Doc had a minor mishap a few years ago which could have been disastrous. His fishing companion failed to top off one of the fuel tanks, thinking a quarter-tank would be sufficient for the day. Dock ran...
out of gas right in the middle of the busy lake and was immediately washed sideways by the strong wind. This alone would have raised your hackles, but when his partner also failed to fill the spare gas can. Doc considered throwing him overboard. The result was that Doc’s boat had to be towed back to the nearest fuel dock. He was fortunate that no injuries were incurred.

Phase three is where the psychology of making the selection is complex. Several questions must be answered. Does the person snore? If he does, you should think about separate rooms. There’s nothing worse than sleeping in the same room with someone who sounds like a choking cow.

Anyone who owns a boat knows that a fishing trip is 75 percent work and 25 percent pleasure.

Does he have similar taste in foods? Let’s face it, most of us can live on fat burgers for a few days, but no one in his right mind wants a steady diet of chicken chunks, fries and milkshakes.

Of course, you could also be confronted with the opposite end of the spectrum. I know of a few individuals who think any meal under $50 is not fit for human consumption. And if it takes less than two hours to prepare, it’s considered fast food. Not only does this cut into valuable fishing time, but it gets expensive.

The final phase in making the selection pertains to activity levels and priorities. I once fished with a fellow who spent more time sleeping and eating than fishing. His idea of rolling out early meant getting up in time to catch the noon news on TV. He would then spend the next two hours preparing and eating breakfast and another hour packing lunch. By the time we were heading away from the dock, most of the other boats had already put in an eight-hour day. Naturally, he made sure we were back at the dock in time for dinner, which was promptly served at 5 p.m. If everything went off without a hitch, you had nearly an hour-and-a-half to catch fish. Therefore, it’s imperative to select someone who places fishing at the top of his priority list.

I find taking my spouse on extended fishing trips works out best. Do we have confrontations? You bet we do. But this is mainly due to jealousy on my part when she lands a fish that outweighs the boat. We enjoy the same restaurants, usually roll out of the sack at the same time and enjoy many of the same activities. She even shares the job of cleaning up and running the boat, and she rigs her own tackle.

Finding a fishing partner with these qualifications who is also willing to share expenses is akin to being struck by lightning in the middle of January. If you find such a person, one who meets Doc Schleiffer’s fishing partner criteria, able to cope with your own bad habits and is of the opposite sex, head for the nearest courthouse and marry her. Then sit down and plan lots of great fishing excursions you’ve always dreamed of.
No-Name Streams

by Joe Loue

Fishing over trout that have survived a lot more than a ride from a hatchery is a unique experience. Prime wild trout streams are not easy to locate, but the effort is worthwhile. You need an experienced eye for finding the action.
Look at a topo map from nearly any mountainous region of Pennsylvania and you’ll see them—those little blue lines with no names. They indicate small, obscure streams. Officially known as “unnamed tributaries,” I call them no-name streams. They may not look like much at first glance, but to the astute angler they can be a goldmine of action for brook trout.

I was introduced to fishing the no-name streams at an early age in the rugged mountains of southwest Pennsylvania where I grew up. The hills were full of tiny brooks, which in turn were full of native brook trout. I can still remember my father, my grandfather, and all my uncles getting together to fish the small streams that cascaded down the ravines and hollows. They’d come home with a sack of “natives” and we would have a delectable fish fry.

Later, when I was big enough to tag along, I’d dutifully follow my father along the stream, sneaking and crawling, always cautious about spooking the fish. It didn’t take me long to realize that the trout were alert for movement in and around the water, but they were quick to grab a morsel if I stayed out of sight.

Food was a precious commodity in the no-name streams and the fish were not likely to pass up an easy meal. The trout we caught were rarely large. But what they lacked in size they made up for in spirit and beauty. Their delicate yet brilliant markings were absolutely breathtaking.

Many years have passed and I have since moved away from the mountains, yet I have not lost my enthusiasm for fishing tiny brooks. The inevitable encroachment of civilization has degraded many of our fragile mountain streams, but there are still thousands of watersheds across the Appalachians that hold native brook trout. Even in populated areas, brookies can cling to small creeks that remain cool and unpolluted.

**Topo maps**

The best way to find native trout streams is through the use of topographic maps. One of the first things I did when I made my first move away from home was to pick up a few U.S. Geological Survey 7 1/2-minute quadrangle maps of the region surrounding my new home. These quadrangle maps show the position and shape of the topography through the use of contour lines, landmarks, roads and streams. Nearly every trickle of water within a quadrangle appears on the map. Drawn to a scale of 1:24,000, the 7 1/2-minute maps have sufficient detail to be read easily.

Topographic maps are also produced in 15-minute quadrangles and in county sizes. These maps show a greater area than standard 7 1/2-minute maps, but they have a much smaller scale. The small scale maps are handy for sizing up large areas, but the standard maps produce better detail.

When you study a topo map in hopes of locating a native trout stream, look for remote watersheds. Try to find unnamed streams, but don’t automatically pass over streams that are called “runs.” They are usually larger than unnamed streams, but smaller than stocked creeks. The headwa-
ters of stocked streams are also possibilities, although they are likely to receive at least some fishing pressure.

Streams that flow near highways are generally not good candidates for native trout. The farther you get from civilization, the better your chances of finding pockets of native brookies. There is an exception, however. Turnpikes and interstate highways are major barriers to man’s encroachment in some areas. These roadways were designed to skirt valuable farmland where practical, and that sometimes puts them adjacent to hilly, forested tracts. In this situation, they tend to isolate the rugged terrain from connecting roads and associated developments.

If you find an area that has open farmland on one side of a major highway and undeveloped mountain land on the other, you are likely to find no-name streams and native brook trout. On several occasions I have crept through culverts and tunnels underneath major highways to enjoy fantastic fishing in pristine streams on the forested side of the roadway.

**Unlisted streams**

You may occasionally find a stream that is not indicated on a topographic map. I stumbled onto one by accident while following a small run upstream on a scouting expedition. When the run split I was taken by surprise. The map clearly showed two hollows branching out, but only one indicated a stream on the map. Intrigued, I followed the “nonexistent” stream. It was a typical no-name stream, nearly inaccessible with heavy brush and rhododendron along each bank. The flow of the stream was low, but the water was clear.

I skirted the first 50 yards or so of the bank. The cover was just too thick to crawl through. When I spotted the shimmer of water through a small opening, I crashed into the brush, nearly falling headfirst into the creek. The handsome brookie that lived there was frantic when he realized that a large predator had invaded his pool. He made two quick circles before heading upstream to the next hole.

**“Black water”**

The water was a little more than ankle-deep, yet the 8-inch trout had located a secure feeding station in what I call “black water.” I don’t use the term “black water” to convey the thought that the water itself is discolored. I use “black water” to describe certain sections of the streambed that are dark because of the exposed underlying strata.

In many Appalachian streams there is a distinct demarcation between areas of light sand and dark bedrock within a pool. In shallow water a trout can disappear from view by lurking near a rock inside this black water. Black water is ideal for brookies because it is usually in the current where the sand is constantly brushed away from the underlying rock. The current also carries food, making the area a perfect feeding station.

I continued up the creek for another half-mile and found a brookie in nearly every pool I could reach. Many were only 5 to 6 inches long, but that is typical of an Appalachian stream. A 10-inch fish is a trophy. I noted the stream’s location and returned to the car feeling a little like Lewis and Clark. I have yet to fish that stream, but I am satisfied just knowing that it is there, hidden even from the mapmakers.

**Hiking gear**

More likely than not, you will have to hike to reach a stream with potential. I prefer leather boots to rubber boots for hiking. Rubber boots are rarely needed anyway when fishing small streams. If there is a possibility that I will encounter a large stream or remote pond, I carry a pair of sneakers and stocking waders in a pack. After using them, I turn the waders inside out and put the sneakers inside before putting them back into the pack. The waders take up little room, but that sure beats a long hike to the car with soggy feet.

A pack is a handy item to carry along while fishing remote mountain streams. An angler who is going to fish in a secluded area should carry a map, extra fishing gear, insect repellent, a small first aid kit, matches, lunch, and an extra shirt or jacket. I often wear a long-sleeve shirt because of mosquitoes and other biting insects. The sleeves also offer some protection against the brush and brambles that may be encountered along a stream.

When you plan to fish a no-name stream, be prepared to crawl, push, and curse your way through the brush. Some stream sections may be open, but most ar-
that comes from a natural diet of aquatic insects, something that is sadly lacking in stocked trout.

**Conservation lesson**

In nearly all native trout streams the fish are extremely wary of predators but are not particularly finicky feeders. Because a substantial meal is a rare item in tiny brooks, a cautious approach and a good presentation entice most fish to strike quickly. This gluttony makes the trout susceptible to exploitation from fishing pressure. One of my most memorable experiences on a no-name stream serves as a case in point.

One of my fishing buddies located what looked like a good stream high up in the mountains of northcentral Pennsylvania. We hiked for 45 minutes over several ridges only to find a dry ravine. Undaunted, we followed the hollow down the mountain and began finding pools of water here and there as small springs broke to the surface. Eventually the stream rose to the surface from its underground channel and we began catching a few small fish. The stream increased in size as it twisted its way down the mountain, but the fish were all small.

Our luck changed when the towering forest trees gave way to a long, narrow meadow. The larger fish were in the meadow feeding on the abundant insect life. There wasn't much cover for the fish or us. But we pulled a trout from every pool we were able to approach. The two of us caught and released over 100 trout that day.

The next summer we fished the stream again, only to find that someone else had fished it and apparently left with a bulging creel. We saw very few fish and our catch was dismal. It may take years for that stream to recover with so many trout missing from the breeding population.

Because native trout are so susceptible to fishing pressure, you won't want to fish any given stream more than a few times a year if you creel any fish. Luckily, natives are cooperative in just about any type of weather and you can space out your excursions. A fishing diary is helpful in recalling when you fished a particular stream, what the weather was, and what the trout were hitting.

**Adaptability**

I have discovered over the years how adaptable native trout are to changing stream conditions. In my youth I had been told that brook trout burrow into wet sand to survive when the creeks dry up. That was a notion that I dismissed outright. I assumed the fish moved downstream and took refuge in larger creeks during drought conditions. Last year I accompanied several biologists when they electrofished a native trout stream in the middle of the summer. The biologists moved the portable generator through each pool and riffle temporarily stunning the fish with a mild electrical current. The fish were weighed, measured, and returned to the water no worse for the experience.

The experience was, however, eye-opening for me. I was astounded by the sheer number of trout they found, but I was even more fascinated by where the trout were found. In shallow, apparently lifeless pools they were consistently bringing brook trout to the surface. The trout were under large rocks where the subterranean water depth was 6 to 10 inches compared to the rest of the pool where the surface water barely covered the sand.

The fish had apparently followed the water table down as it receded and wriggled into crevices in the stream bed. With no current to tire them, I believe the fish could remain in these pockets for several weeks without expending much energy, waiting for a rainstorm to restore the surface flow. The alternative for the trout would be to expend a tremendous amount of energy moving downstream while exposing themselves to many dangers along the way. Although the fish were not exactly buried in wet sand as I heard, I found their solution to drought to be a fascinating adaptation.

Fishing over trout that have survived a lot more than a ride from a hatchery is a unique experience. Prime wild trout streams are not easy to locate, but the effort is worthwhile. An experienced eye for no-name streams can be the key.
Fall Fishing Word Search

In the word search below there are 18 things you might see or experience on a fall fishing trip. See if you can find them all. Be careful—some are diagonal and some are spelled backwards.

BLUE SKIES
FLASHING LURES
SLOW INSECTS
CLEAR WATER
MISTY MORNINGS
BUSY BEAVERS
SPAWNING TROUT
FUZZY CATERPILLARS
WARM SUN
FLYING GEESE
COOL NIGHTS
SASSY BLUEJAYS
COLORED LEAVES
BUSY SQUIRRELS
NOISY CROWS
HUNGRY BASS
FLEECY CLOUDS
WOOD SMOKE

Fall Fishing Word Search Answers

A K S E V A E L D E R O L O C A A
S E Y L Z Z U F S W N T F L I L V
S A S S Y B L U E J A Y S S A F E
P W U P V L B R A E U O V N J R R
M A B K T U O R T G N I N W A P S
The Commission surveys *Pennsylvania Angler* readers so that we can keep fine-tuning magazine content and continue to provide you with the kind of features you want most. We invite all subscribers to complete this survey. The information will be used in no other way except to understand better your likes and dislikes.

We'd appreciate your answering all the questions that pertain to you. Just skip questions that don’t apply.

Our deadline to receive completed surveys is September 30, 1989, and we look forward to receiving yours. Please tear this one page from the magazine and mail to: *Pennsylvania Angler Survey, P.O. Box 1673, Harrisburg, PA 17105-1673*. Thank you for assisting us.

1. In the spaces next to the fish species, please number the species for which you fish in order of how often you fish for them. Indicate no more than seven (7) choices.

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<th>Fish Species</th>
<th>Number</th>
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<td>pike</td>
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<td>striped bass/hybrids</td>
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<tr>
<td>catfish</td>
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<td>other (name)</td>
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2. What kind of fishing tackle do you use most often? Please choose only one item.

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<tr>
<td>baitcasting tackle</td>
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<td>downrigger</td>
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3. Do you consider yourself to be primarily (choose only one)

- a bait fisherman?
- fly fisherman?
- lure fisherman?

4. Do you ice fish?            

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5. Do you tie flies?           

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<th>No</th>
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6. Do you build your own rods? 

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7. Do you make your own lures and tackle, such as jigs, plastic worms, and sinkers? 

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<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

8. Do you own a boat or canoe? (If you own none, go to #18.) 

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

9. How many watercraft do you own? 

<table>
<thead>
<tr>
<th>only one</th>
<th>two</th>
<th>three or more</th>
</tr>
</thead>
</table>

10. Check the size of your boat. (If you own more than one boat, mark the size of the one boat you most frequently use.)

<table>
<thead>
<tr>
<th>less than 12 feet</th>
<th>12 feet to 14 feet</th>
<th>over 14 feet to 16 feet</th>
<th>over 16 feet to 18 feet</th>
<th>over 18 feet to 20 feet</th>
<th>over 20 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. Check the appropriate spaces that describe your boat, or the one boat you own and use the most. Be sure to check all that apply.

**Power**
- [ ] outboard
- [ ] inboard or I/O
- [ ] jet drive
- [ ] electric
- [ ] airboat
- [ ] other

**Hull design**
- [ ] vee-bottom
- [ ] tri-hull
- [ ] john boat
- [ ] canoe
- [ ] pontoon boat
- [ ] houseboat

**Construction**
- [ ] aluminum
- [ ] wood
- [ ] plastic
- [ ] fiberglass
- [ ] inflatable

12. If you own a boat, do you use a gas motor?  [ ] Yes  [ ] No

13. If you use a gas motor, what horsepower is the one engine you own and use the most?
- [ ] 0-5hp
- [ ] 6-10hp
- [ ] 11-35hp
- [ ] 36-75hp
- [ ] 75-110hp
- [ ] 110-150hp
- [ ] more than 150hp

14. Do you use an electric motor (with or without a gas motor)?  [ ] Yes  [ ] No

15. Mark an “x” in the space next to the items you own:
- [ ] depth sounder (graph, LCD, flasher, or video)
- [ ] downrigger(s)
- [ ] VHF marine radio
- [ ] CB radio (for boat use)
- [ ] LORAN (navigation aid)
- [ ] compass

16. Do you trailer your boat?  [ ] Yes  [ ] No

17. Do you cartop your boat?  [ ] Yes  [ ] No

18. Do you read *Pennsylvania Angler* from cover to cover?  [ ] Yes  [ ] No

19. Rate the following *Angler* columns according to how much they interest you:
1—Very interested  2—Fairly interested  3—Slightly interested  4—Not interested
- “Kids Page”
- “Caught & Released”
- “Regulation Roundup”
- “The Law and You”
- “Notes from the Streams”
- “Straight Talk”
- “Anglers Notebook”
- “Mail”

20. How much interest do you have in each of these topics?
1—Very interested  2—Fairly interested  3—Slightly interested  4—Not interested

**How-to-do-it articles**
- river fishing
- float fishing
- pond fishing
- stream trout fishing
- smallmouth bass stream fishing
- largemouth bass lake fishing
- walleye fishing
- panfishing
- fly fishing
- large-lake or reservoir fishing
- Lake Erie fishing
- boating (for fishermen) skills, navigation
- boat trailering
- rod building
- fly tying
- lure making

**Where-to-go articles**
- Fishing in specific waterways
- General information, entertainment articles
  - legislation
  - nostalgia/history
  - humor
  - fiction
  - fishing adventure stories
  - natural history
  - profiles of fish and aquatic life
- Conservation
  - environmental concerns
  - habitat protection, enhancement
  - pollution investigations
  - studies and research
  - articles about the Fish Commission

21. In addition to fishing, indicate in the appropriate spaces the other water-related activities in which you participate:
- [ ] water skiing
- [ ] white-water rafting
- [ ] sailing
- [ ] canoeing
- [ ] cruising
- [ ] kayaking

22. How long have you been fishing?
- [ ] 0-3 years
- [ ] 4-8 years
- [ ] 9-15 years
- [ ] 16-25 years
- [ ] 25-40 years
- [ ] more than 40 years
- [ ] I’m not an angler

23. What is your age?
- [ ] under 13
- [ ] 13-15
- [ ] 16-19
- [ ] 20-24
- [ ] 25-30
- [ ] 31-40
- [ ] 41-50
- [ ] 51-64
- [ ] over 64

24. How long have you been a *Pennsylvania Angler* subscriber?
- [ ] 1 year
- [ ] 2 years
- [ ] 3 years
- [ ] 4 years
- [ ] 5 years
- [ ] 6-10 years
- [ ] 11-15 years
- [ ] 16 or more years

25. Are you a *Boat Pennsylvania* subscriber?  [ ] Yes  [ ] No

25. Your ZIP code ________________________________
Many anglers do it. Many experts don’t. While becoming more common, backreeling is not the best method of catching fish under all circumstances. Anglers often backreel because of ignorance, bad drags, improperly set drags or over-tightened drags, all of which result in lost fish.

To understand backreeling, or any fight-fishing technique, first understand basic fighting. The hooked fish is not simply winched in as a boat is hauled onto a trailer. Light lines with big fish require letting the fish run and take line until it is tired and can be landed. Far more complicated than this simple description, this can result in fish making long or short runs, sudden surges at the end of the line or close to the boat, one run or many.

All reels—fly, spincast, spinning and casting—are made with drag systems that allow a fish to take line against the drag to prevent a hook from tearing out, line breaking, or tackle damage. All reels allow setting the drag through knobs, stars or levers to a resistance appropriate to the line test. In addition, spinning and spincast reels (and a few casting reels) allow turning this drag “on” and “off.” When off, the handle turns backward as the fish takes line, although the drag is still usable.

Just how and when to use backreeling as opposed to the reel drag depends on the fishing conditions, size of the fish and type of fishing. For example, many bass pros set their drags tightly to be sure of striking fish hard and when worm fishing to drive the hook of a Texas-rigged worm through the worm and into the bass. As a result, many like backreeling, leaving the anti-reverse of the reel in the “off” position so that they can turn the reel handle backward to cope with a sudden surge of a bass, fight at the boat and still control the fish.

Anglers after large inland stripers, muskie, large catfish, big carp, and pike—fish that run far and hard—find that backreeling is an invitation to instant disaster. As the reel overruns, tangles result and fish are lost. Here, a properly set drag—usually about 1/3 of the line test when line is pulled straight off the reel—is best. In these cases, the combination of the reel drag, angle of the rod to control line friction, and line resistance as it flows through the water affect the total resistance to the fish.

Both are learned techniques and a drag wrongly set, a fish poorly fought or a handle turned backward too fast or not fast enough can result in lost fish.

The danger of backreeling is that the reel handle might not be turned fast enough, causing a break, or that it will be turned too fast, causing loose line tangles and subsequent breaks and lost fish. Backreeling can’t handle long runs or fast-moving fish.

To fight a fish with a drag properly, set the drag as above, and set the anti-reverse to “on.” When a fish hits, strike, and if necessary strike again to set the hook. One way to increase strike drag is to hold the line by thumbing the spool with casting tackle or holding the skirted spool with spinning gear to prevent line slippage and to drive the hook home. Once properly hooked, let the drag do the work of controlling the fish, along with using the angle of the rod and a proper “pumping” technique to land the fish.

Reset the drag after a long run but set the drag lightly again when landing the fish. The short line allows for limited shock absorbency.

It is also possible to use both systems—using the drag for long runs but backreeling close to the boat to prevent a break-off. One other way is to use backreeling for all but large fish, but to set the drag appropriately rather than in a lock-down mode. That way, you can backreel if you must, but have a drag override (hold the reel handle stationary) for those do-or-die situations when you have to keep a big fish from knitting a doily in the middle of a brush pile.

Just how and when to use backreeling as opposed to the reel drag depends on the fishing conditions, size of the fish and type of fishing. Sometimes you shouldn’t use backreeling. Others times you can. Still other times you can use backreeling and the reel’s drag.
Linesville Fish Culture Station Open House

by Larry Shaffer

The day was overcast and cool—some would say downright cold and damp. Only two days before, five inches of new snow covered the hatchery grounds. Today, it was mud. And still they came to see it. “They” were people, thousands of people, and “it” was the Fish Commission's Open House program at the Linesville Fish Culture Station. The Linesville Fish Culture Station is located just outside the borough of Linesville, in Crawford County, on the shores of Pymatuning Lake.

Clockwise from the top photo: Commission personnel demonstrated methods of taking and fertilizing eggs from walleye and muskies. Crowds watched as crappies, yellow perch, walleye and muskies were sorted by species and size. Young anglers lined the bulkhead to practice casting. Commission biologists demonstrated electrofishing along the shoreline so that visitors could see up close how it’s done.
Interested visitors of all ages gazed into a Commission display tank filled with largemouth bass, panfish and yellow perch. The brisk, cloudy day didn't deter guests.
Clockwise from the top at left: Visitors peer into the depths of a tank that holds huge muskies, catfish, walleye, largemouth bass and plenty of baitfish. Linesville Fish Culture Station superintendent Jim Harvey explained to visitors how hatchery personnel collect fish from trapnets. Plenty of small fish fit into the collection nets, but on one haul the net was barely big enough for one musky.

Although not held in recent years, Open House at the Linesville facility as an annual event actually began some 20 years ago and was the brainchild of Shyril Hood, chief of the Commission's Division of Cool/Warmwater Fish Production. Hood spearheaded revival of this popular event, and on April 2 the gates to this large fish hatchery swung open wide. Through those portals came people from all over Pennsylvania and eastern Ohio, some from as far as Cleveland. Estimates by those helping with traffic control placed attendance during the four-hour event at some 8,000 people.

One of 12 Commission hatcheries, Linesville produces a variety of coolwater and warmwater fish, such as panfish, walleye, northern pike and muskellunge, and coldwater fish including salmon and lake trout. The Open House provides visitors the opportunity to get a behind-the-scenes look where they can observe firsthand a variety of tasks associated with producing fish that ultimately are stocked in waters open to public fishing.

During the course of the Open House, visitors watched as fish culturists raised trapnets set earlier in the sanctuary portion of Pymatuning Lake, the first step in securing brood fish. The fish retrieved from these large nets were taken into the hatch house where they were sorted by species and size and placed in holding tanks. Crappies, yellow perch, walleye and muskellunge were among the fish found.

Using fish brought in from the lake, fish culturists demonstrated methods used in taking and fertilizing eggs from walleye and muskellunge. Visitors were intrigued to find large muskies anesthetized and wrapped with a sleeve (similar to a blood pressure cuff). Filled with air, the sleeve exerts a gentle but uniform pressure on the sleeping musky's abdomen that pushes the eggs into a waiting collection pan.

**Attendance during the four-hour event was estimated at some 8,000.**

Commission biologists also demonstrated the techniques of electrofishing. Introducing low-level electric current into the water causes fish to come to the surface where they are picked up by hand nets. Using this collection method, fishery managers identify, count, examine and return fish to the water unharmed. Hundreds of people lined the banks as the biologists worked, using both backpack and boat-mounted equipment. As fish were retrieved, they were identified and discussed for the benefit of onlookers before being returned to the water.

As visitors strolled the hatchery grounds, they saw several types of nets needed to run a complete fishery program. They inspected the variety of stocking trucks used to deliver fish to lakes and streams all over the Commonwealth. They watched as hatchery aeration devices spilled oxygen into the water, and they studied boating safety displays.

Anglers had the opportunity to learn how to fillet panfish and even sample these tasty morsels. Large crowds watched as waterways conservation officers filleted crappies and yellow perch. And as onlookers discovered this simple procedure to prepare fish for the table, they were delighted to learn that these panfish taste good, too.

This was a family event, and kids of all ages had a great time at the casting rings. Placed at varying distances from the shoreline, the floating rings made ideal targets, and for practice kids used fishing rods provided just for that purpose. Waterways conservation officers offered instruction and answered questions.

In the large visitor's center, fishery biologists demonstrated and explained the method used in "reading" fish scales to determine the age of a fish. Exhibits were set up to cover stream habitat improvement, the cooperative nursery program, pond ecology and other Commission activities. Numerous species of fish swam in the center's two-story display tank with its multi-level viewing windows, and young and old alike discovered a few Pennsylvania fish they had never seen before. Commission publications were available and numerous anglers took the opportunity to purchase their 1989 fishing license.

More than just a pleasant way to spend a Sunday afternoon, a day at the Linesville Fish Culture Station introduces the public to the interesting, but sometimes complex, tasks associated with managing the diverse fishery resources of Pennsylvania.

Larry Shaffer is an information officer in the Commission Bureau of Education and Information.
The Tri-Point Hairwing Dun
by Chauncy K. Lively

For a long time I've been partial to fully shaped dry fly wings cut or burnt from broad, webby body feathers. Carefully dressed in correct proportions, they provide the prominent image trout become accustomed to when they view real floating mayflies.

Not only are such flies effective, but they are a delight to use because they look like real mayflies on the water. Although they are reasonably durable, they are "fussy flies." They require attention after each encounter with a fish. Misalignment of these wings nearly always causes twisted leaders.

Cut-wing enthusiasts soon develop a discipline in which they inspect the fly after removal from a fish. If sighting along the wings from front to rear indicates they are "out of plumb," it's generally a quick and simple task to twist the wings back into alignment. However, in failing light or when one's eyes have seen better days (like mine), determining when sufficient correction is achieved is sometimes a problem.

For the past four years I've been experimenting with a style of hairwing dun that attempts to address the requirements of form, outline and light pattern dictated by natural mayflies. At the same time, I sought to use materials and techniques that would render the fly as carefree as possible in use. Because of its known durability, I chose hair to represent both the legs and the single wing. The outwardly extending hair legs, positioned well back of the eye, provide both the fly's requisite support on the surface film and its stability, replacing the use of hackle for these functions. The two tails are represented by four microfibetts divided into two widely split pairs. Microfibetts are fine, tapered synthetic fibers with outstanding durability. They are marketed in small bundles and are stocked by most fly shops. A dubbing twist of natural or synthetic fur forms the pattern's abdomen and thorax.

When viewed from the front, the tips of

1. Clamp the hook with the bend recessed in the vise and with only the front half of the shank exposed. Tie in the thread about one-third the shank length behind the eye. For legs, tie in a small bunch of pale elk body hair (30-35 hairs) with the tips forward for an effective length equal to twice the hook's gap.

2. Trim the excess hair butts and wind them over. Separate the hair into two equal halves and criss-cross the thread between to set the hair at right angles to the shank.

3. Cut a sparse bunch of dark deer body hair and tie it in, butts forward, immediately in front of the legs. Make several firm turns over the butts. Then make a full loop of thread around the base of the wings and pull the wing upright to the angled-back position shown. Half-hitch the thread around the shank to secure the wing position. Trim the hair butts on a bevel and wind them over. Apply a liberal drop of Flexament at the base of the wing, allowing the cement to flow into the base of the legs. Repeat this on the opposite side of the wing.

photos by the author
the fly's hair legs and the tip of the wing are arranged like the three points of a triangle. From this aspect the pattern's name is derived. Flattening the hair at the base of the legs and wing is a critical step in dressing the Tri-Point Dun because it permits the use of sparse bunches of hair, keeping weight to a minimum.

Flattening is accomplished first by applying Flexament or acrylic lacquer to the base of the hair. Then, before the cement has completely hardened, it is squeezed flat with smooth-jawed tweezers or pliers. The resultant fanlike conformation of the legs is permanent and provides maximum support of the fly on the water. Similarly, the flattened wing more nearly simulates the broad wings of the naturals.

Although the dressing I describe here represents an *Isonychia* dun, with appropriate modifications in size and coloration, it can be applied to virtually any mayfly. The genus *Isonychia* is represented by several species in the East and Midwest and the duns are surprisingly alike in general coloration and size. They are fairly large duns with gray bodies and dark dun wings. The rear two pairs of legs are generally pale, as are the twin tails.

Many entomologists describe *Isonychia*'s mode of emergence to be similar to that of many stoneflies. They crawl out onto exposed boulders, logs or other projections to emerge out of the water. Some anglers underestimate the importance of the duns for this reason, believing that they are not available to trout. I disagree with this view because I have seen these duns emerge at the surface in midstream at Penn's Creek and other streams in Penn's Woods, particularly during high water.

Deer hair is a good choice for wing material. My preference is for fine to medium-textured body hair. Avoid coarse body hair of the type used to spin bass bug bodies because it is difficult to bunch without flaring and individual hairs fracture easily. Select dark hair for the wing. It's not necessary to match precisely the dark gray color of the real insect's wings. Generally, the darker deer body hair is a nondescript grayish-brown shade that serves adequately. Pale elk body hair is a good choice for the pattern's legs.

In a fly as large as the *Isonychia* Tri-Point, I prefer a long-shank size 14 hook over the usual size 10 regular-shank hook because of the weight-saving advantage of the smaller gap. Mustad's 94831, with its 2X long, 2X fine shank, is ideally suited for this dressing.

However, one should avoid being heavy-handed when dressing the hair legs and wing because the long, fine shank will flex under the pressure required to bind the hair firmly. For this reason I like to recess the hook's bend back into the jaws of the vise until only the fore part of the shank is exposed. The shank is then sufficiently rigid to withstand dressing the legs and wing, after which I reset the hook in the vise in the normal fashion for the remainder of the dressing.

I have dressed the Tri-Point Dun in various patterns to represent diverse late-evening mayflies. I find it a real luxury to be able to catch trout after trout on a fly that requires no more care than the occasional sponging off in the folds of a bandanna. That's a routine that could make one lazy, I suppose. But I like to think that it allows me more freedom to enjoy the sights and sounds of the stream as darkness unfolds.

**Dressing:**

**Tri-Point *Isonychia* Dun**

**Hook:** Size 14 Mustad 94831 (2XL, 2SF)

**Thread:** Black 6/0 prewaxed

**Legs:** Pale elk body hair

**Wing:** Dark, thinly textured deer body hair

**Tails:** Four white microfibett fibers

**Body:** Gray natural or synthetic fur

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**PA**

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4. Remove the hook from the vise and reset it in a normal position. Wind the thread back to the bend and tie in four microfibett fibers as tails. Separate the fibers into two pairs and wind them between to set the tails in a widely split angle. Wax the thread next to the shank and apply fur dubbing. Double the thread back to the shank and wind it over itself, forming a dubbing loop. Clamp your hackle pliers to the loop. Wind working thread forward of the wing. Then twist or twirl the hackle pliers to form a tight dubbing twist.

5. Wind the dubbing forward to form a tapered abdomen. Then make a turn in back of the wing, a turn in front of the wing, and then wind the dubbing criss-cross around the base of the wing and the legs, ending behind the eye.

6. With smooth-jawed tweezers or pliers, squeeze flat the hair at the base of the wing and legs where cement was applied in step 3. Whip-finishing the thread and lacquer the head.

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September 1989 Pennsylvania Angler 21
If you fish in a small boat, calm weather and fast autumn fishing can beckon you. But when it comes to currents, tides, wind and waves, you need special skills to maximize your safety in a small boat, like a john boat or semivee of about 12 to 14 feet. One Coast Guard estimate suggests that capsizings, sinkings and falls overboard from small boats account for 70 percent of all boating fatalities, and Fish Commission figures show that small boats account for nearly 80 percent of all Pennsylvania boating fatalities. Here, then, are explanations of small-boat dangers with ideas on how to beat them.

**Fishing safely in cold, moving water requires special know-how. Understanding the dangers gives you the edge on taming the problems and letting you have more fun on the water.**

**Anchor only from the bow.** Anchoring from the stern often causes swampings. In a small boat, the combined weight of a person seated in the stern, an outboard, a gas tank and a battery greatly reduces freeboard at the stern. (Freeboard is the space between the top of a boat's gunwale and the waterline.)

Suppose you anchored from the stern in moving water and sat amidships to fish. The flowing water against the pull of the anchor could force the boat stern downward toward the waterline. Your reaction might be to lunge toward the stern to pull up the anchor, but moving toward the stern could send the transom underwater, swamping the boat.

In this situation, rowing backward might relieve the pressure on the transom enough for you to pull the anchor, but frequently the only way to prevent imminent swamping is to cut the anchor line, if you can reach it without moving toward the stern.

Using bow and stern anchors to position your boat across a flow of moving water is also dangerous. If the bow anchor fails, you face the consequences of stern anchoring.

To anchor safely from the bow, rig your boat so that you can raise and lower the anchor from any position in the boat. Devices and hardware for this purpose are readily available in marine supply stores and catalogs.
Load your boat properly. A common problem with overloaded boats is that under way they often plow grudgingly through the water. The boat bow rides high and the transom sits low, usually with dangerously little freeboard. The boat operator notices the problem and stops suddenly to make adjustments that would improve the ride, and the sudden stop swamps the boat over the transom.

Loading your small boat properly is one way to prevent a capsizing. Check your boat's capacity plate, which tells you the gross weight capacity your boat can safely carry. Remember that this number includes the weight of passengers and all your gear. Don't exceed this capacity, and distribute your equipment evenly.

Pennsylvania has some 2,000 low-head dams. This typical low-head dam (below) is located on Swatara Creek near Hershey.

Low-head dams are dangerous because they are nearly impossible to see looking downstream. Many are marked only seasonally. Some are unmarked, giving boaters no warning. The hydraulic cycle below the low-head dam can trap victims. Debris below the dam can injure a victim, and some good swimmers wearing PFDs don't survive the hydraulic circular pulling power of the water.

Wear a PFD. Coast Guard accident data and Pennsylvania statistics show clearly that wearing PFDs saves lives. Coast Guard statistics reveal that as many as 80 percent of the victims who drowned in boating accidents could have lived had they been wearing PFDs.

In many cases, small-boat accident victims drowned because they wore no PFDs and they entered the water suddenly and unexpectedly. Many of these people were good swimmers in at least average physical condition.

The problem with ending up in the water suddenly and unexpectedly is that the experience is disorienting. Studies have shown that panicked victims who are reasonably physically fit and who are at least fair swimmers swim downward to greater danger as often as they swim up to the water's surface to safety.

The flotation of a PFD has one special advantage for boaters who fall in the water suddenly and unexpectedly. A victim who is wearing a PFD would likely stay up in the water long enough to gather his wits quickly and facilitate his own rescue.

Wearing a PFD is by no means a guarantee of safety, but donning the device has proven over and over again that it gives victims that vital edge to effect their own rescues. This is the reason wearing a PFD is so important.
Try to put on a PFD in the safe confines of a swimming pool while you tread water and you'll see that the task is difficult enough. But when you add waves, wind, current, cold water and sudden, unexpected immersion, donning a PFD when you're already in the water is nearly impossible. Even though having a PFD readily available aboard your boat may satisfy the legal requirements for small boats, wearing the device is far safer.

For fishing in a small boat, many anglers wear Type III PFDs. These devices are more comfortable than Type I or II devices, and many companies offer Type IIIs in stylish colors with fishing-vest-like pockets.

Ribbed Type III PFDs, like those worn by some canoeists, offer the same amount of flotation as do vest-like Type IIIs, and they are even more comfortable.

Furthermore, Type III PFDs are made in a variety of sizes to fit just about anyone.

The new Type V hybrid PFDs are also comfortable to wear, but they must be worn at all times to satisfy the legal requirement for PFDs in small, open boats. In addition, Type Vs are available for adults only (persons who weigh 90 pounds or more).

For more details on PFDs, their uses and legal requirements, see pages 12 and 13 of the Summary of Boating Regulations 1989.

You are responsible for the safety of everyone aboard your boat. The Best Tip: In a small boat, every passenger wears a Coast Guard approved PFD (personal flotation device).
Stay seated in a small boat. Standing in a small boat is tempting to play a fish, or net or gaff a nice catch for an angling partner. But standing in a small boat is dangerous because john boats and semivees are not built to stand up in. Semivees and flat-bottomed john boats have few or no keel-like stabilizing structures, so the bottom slides effortlessly out from under standing victims who fall overboard. Ironically, many drowned victims who stood in small boats and fell overboard were often uninjured by their actual falls.

Falls overboard in cold water are particularly dangerous. Entering cold water suddenly and unexpectedly stuns the body. Your reaction to a fall in cold water is like your response in the shower to the water suddenly turning cold. It's shocking, but actually falling into cold water from a boat is considerably more overwhelming. Most boating safety authorities call water "cold" when the temperature is below 70 degrees.

Terrific fishing in the moving water of fall and spring makes small-boat angling popular in "cold" water. That's why it pays to get into the habit of staying seated in a small boat. In a small boat, adopt the habit of playing fish and casting while seated. A person who falls overboard needs help quickly. For this reason, you may want to carry a rescue bag aboard your small boat. A rescue bag is a length of rope coiled in a nylon bag. It was standard equipment during World War II aboard U.S. Navy lifeboats.

A rescue bag is the fastest, safest way to get a rescue line to a person overboard. You just toss it underhand or side-arm to a victim.

Rescue bags require a little skill and practice to throw accurately, but after only a few practice throws, you can gain enough skill to use one effectively in an emergency. Make sure that you and your angling partners know where the bag is stowed and how to use it.

Avoid low-head dams. "Low head" refers to the amount of water the dam holds back, so most low-head dams are small. They abound throughout Pennsylvania. The Commonwealth has about 2,000 low-head dams. Nearly every year, the Commission sadly reports accidents and fatalities at low-head dams.

Low-head dams attract small-boat anglers because fishing above and below them is often good. But low-head dams are small-boat dangers for several reasons. For one thing, seeing them from upstream is damn near impossible, so unless you know the specific location of a low-head dam, you could easily capsize over one.

For another thing, the hydraulic action below the dam is a killer. Suppose you capsized over a low-head dam. The force of the water spilling over the dam would send you to the bottom of the base of the dam. The base of the dam would likely have protruding obstructions and debris, so you could be injured there or become entrapped underwater.

From the base of the dam, water flows downstream some and then to the surface. The hydraulic cycle would then pull you back toward the dam, and the current would again send you to the bottom at the base of the dam.

This cycle is difficult to escape, even for victims who are wearing PFDs and who are strong swimmers. This is the reason why low-head dams are killers. Low-head dams are dangerous enough that water rescue personnel undergo special training to learn how to rescue victims caught in the hydraulic action of a low-head dam without endangering the rescuers.

Thus, the best course is to know the locations of low-head dams on the waterways you fish, and avoid them. Find good fishing elsewhere on the waterway.

Practice these special safety skills that you need in a small boat. In this way you can maximize your fun and safety for small-boat fishing.
Tenebrio molitor descended through the warm epilimnion to the waiting Lepomis macrochirus. Moments later the conflict was resolved. In other words, some lucky angler caught a nice bluegill on a mealworm. Bluegills and trout make fine-tasting fare, and mealworms are great bait.

So spotlight and center stage for the mealworm. Two species exist—Tenebrio obscurus, the dark mealworm beetle, and Tenebrio molitor, the yellow mealworm beetle. These insects go through a complete metamorphosis from egg to larva to pupa to adult beetle. The two middle stages are good bait forms. The larva, or "worm," is the best.

The dark mealworm beetle is the more common one available in bait stores. By the same token, it is more often raised by anglers for their own use. Both species work equally well.

*Mealworms make excellent bait for panfish and trout, and they are easy to grow, producing a year-round crop.*
Life cycle

White to cream bean-shaped eggs are coated with a sticky secretion and left singly or in small groups on or in food materials. Beyond deliberate cultures, the basic food and natural locations for these insects are granaries, barns, storage warehouses and some packed flours and cereal products.

The minute eggs hatch into equally small larval forms, which grow to an inch-and-a-quarter on the average. These “worms” shed their outer shells or skins as growth forces the process. And in this stage of development the mealworms are most useful to anglers. Mealworms are an excellent food for many laboratory animals and pets. Included here would be most amphibians, lizards, some snakes, small turtles and many birds.

Following the “worm” stage, the insect pupates and begins to look like a beetle taking a nap. Color tends to lighten into a creamy white and the pupa is shorter than the larva it had been. The pupa is suitable as bait but it is very soft and requires a careful placing on the hook and a quick move on the part of the angler at the hint of a bite.

The final stage is the adult beetle with some color variation and technical part size differences according to species. The adults crawl around for a few days, lay eggs and die. The cycle is complete.

The natural time for the complete cycle could be as long as one year. However, under laboratory or wholesale rearing facilities, this one-generation-a-year pattern can be shortened with single phases stretched or shortened by proper handling. For example, the larval stage can be maintained for months by placing them in a refrigerator. In reverse order, the cycle can be moved along by raising the temperature and holding it at that higher level.

Methods

How does the average angler raise an average number of above-average mealworm baits? Easy. There are several methods. The following one is often found successful by a lot of mealworm growers. Materials needed include several containers. Five-quart plastic ice cream pails are fine. A larger container is also useful. Then food with regular bran as a favorite fits loosely or has some air holes in it completes the list.

In use, the container is filled to a depth of a few inches, leaving some space for additional food to be added as the worms develop. Then add a few dozen worms, secured from a bait dealer, a fishing buddy, or from a local grain mill or storage facility.

For rearing your own mealworms, avoid trying to use the super-sized ones for your culture. Many of these worms have been fed a treated diet to get the growth and they do not respond well to continuing their natural cycle to an egg-laying adult.

With the worms in place, add some crumpled Kleenex as a top layer. The worms and beetles crawl through it and the larva actually feed on it to a degree. Add a lid and place the container where temperatures are fairly constant and not extreme. Then wait for things to happen.

After the larvae have reached bait size, sort out the larger larvae for immediate use. If the fishing season is not right, or there are more larvae than needed, place these “worms” in the same setup as described above and pop them into the refrigerator, not the freezer, and hold them for several months until needed.

The nice thing about mealworms, and a point to be made for folks who may not want mealworms in their refrigerators, is that they have no odor. They may dry up and turn black, but that’s it. And with the lid on the container, there’s nothing to worry about.

Moisture

A caution for mealworm users is to avoid too much moisture. The mealworms need a certain amount of moisture but not an excessive amount. Molds and fermentation of the food base may occur and destroy the entire culture. So a piece of raw carrot seems best with a slow moisture release as well as a food supplement to the bran. The carrot should be replaced when it vanishes or appears as a hard, dry sliver. Some sources suggest a piece of raw apple, but the moisture release is faster and the danger of molds is more prevalent.

The large container comes into play as the cultures in the smaller containers need to be restarted or appear to have served their function with a deep layer of granular debris forming as a bottom layer in the container. These smaller units should be emptied into the larger one. Add a carrot and some fresh Kleenex and forget about it for a time. Results should be impressive.

The material in the “worn out” units probably contains eggs or minute larvae hard to see. Crop these larvae off as they appear, and then maybe discard the material when it is really worn out.

Some sources advise covering the smaller containers with black paper. There is nothing wrong with the idea, but it may not be necessary. The ice cream buckets are opaque, they work well, and you may save a little bit of extra work and still get all the larvae you need.

A small culture of mealworms, once started, can last for many years with succeeding generations of good bait if properly handled.

Large quantities

For those anglers or clubs that may want large quantities of mealworms at about the same time, the pattern is similar with some variations. For example, a mixture of bran and chick mash seems to be the best food combination, keeping it in large screened boxes, the size dependent on the need. Food and starter mealworms are put in place and the box or boxes below the screening are covered with layers of burlap. These layers are carefully moistened as needed with the same concern for molds, mildew and fermentation. The boxes are deep enough so that additional food can be added as needed without emptying, which becomes necessary eventually in the ice cream buckets.

The quarry

Mealworms are great bait in all seasons with special emphasis on ice fishing. Spring trout fishing is another good time for mealworms. Panfish, particularly the sunfishes, take them almost anytime during the daylight hours. Yellow perch occasionally take the mealworm, but not as a preferred food or bait. Small bass and walleye may be caught occasionally on mealworms. Small hooks to match the bait and the size of the fish’s mouth, particularly bluegills, are in order. Light lines up to six-pound test are best on a spinning outfit with a splitshot to carry them down to the fish.

One worm, two or more worms, a worm and a red salmon egg, and a worm or two plus a small white marshmallow are just a few combinations that take fish. Mealworms can also be used to dress the hook of a small jig, ice fishing lure or single-hook spinner lure.

So try some mealworms. Fish love them.
MAIL

Retiree talks
Just a quick tip of the hat to the whole Fish Commission organization for a fine job done year after year. You’re the number one reason we’ve bought a home in Crawford County (Espyville) to retire to. Golf was second, wife’s family a distant third (ha!). Keep up the good work, we’ll become involved when we make our move.—Dave White, Hollywood, FL

Pine Tree Stater comments
I offer the following comments on the article entitled “Feathered Thieves From The Sky,” by Dennis C. Ricker, in the April 1989 Pennsylvania Angler. The problem of avian predation and the fact that birds are vectors of fish diseases and parasites are difficulties that most fish growers have to cope with. The astounding thing about this article is the impact that predation has on the Fish Commission’s programs. Although this article indicates the relative proportion of the loss of more than one million fish worth more than $450,000 to the total program, it has got to be substantial. An annual loss of this magnitude should quickly justify strong corrective action.

The “padding” of fish production in anticipation of predation losses produces not only extra costs, but results in a poorer quality product because the fish have been reared under more stressful environmental conditions. We have learned that fish reared under less stressful hatchery conditions survive better than those reared at maximum densities. Consequently, it is not necessary to stock as many fish to provide the same level of fishing quality.

Maine has tried just about all control methods for avian predators. The only satisfactory solution is to totally enclose the fish rearing pools. Fortunately, most of our facilities are concrete raceways 100 feet wide, arranged in blocks of three pools wide and in series. We first started to cover raceways used to rear landlocked Atlantic salmon and lake trout with aluminum pole-barn structures about 25 years ago, primarily to provide shade and to minimize harmful behavioral impacts from overhead disturbances. We found that by fully enclosing these structures with one-inch poultry wire we could eliminate mammalian predators such as mink and otter as well as birds.

We have built these buildings a few at a time each year with hatchery personnel and have gradually enclosed most of our rearing units.

I would be interested to know more about the five different types of bird enclosures currently being evaluated in Pennsylvania hatcheries. Although we have eliminated most of the bird predation at Maine State Fish Hatcheries, we still have a few problems and are interested in solutions.—David O. Locke, Supt. of Hatcheries, Maine Dept. of Inland Fisheries and Wildlife

Hatchery thieves comments
I read the article “Feathered Fish Hatchery Thieves,” by Dennis Ricker, in the April 1989 Angler. The same problems exist at state fish hatcheries in New Hampshire. We also find that the only way to keep bird predation to a minimum is by covering the pools with bird netting material or vinyl tent covers.

Unfortunately, early fall or late spring snowfalls can collapse bird netting and the fence and fence poles supporting the net covers. This past spring, we had a late April snowfall of two to three inches. The snow was wet and heavy and resulted in the collapse of large portions of fence and netting. At least in New Hampshire, if we continue to use bird netting it will have to be put up during late spring and removed about the 1st of October.

I believe New Hampshire will purchase and install vinyl tent material over all circular pools and raceways. We spent about $100,000 for fence, netting and pool covers in 1988 and have $150,000 budgeted for 1989. It appeared that this is the only sure way to prevent bird predation and disease-related mortalities caused by birds in our hatcheries. Total cost over the next four years will probably approach one million dollars.—Peter E. Brezosky, Supervisor, Fisheries Management, New Hampshire Fish and Game Department

Backtalk
If you have an opinion on Angler content, a question on conservation, fishing, boating, or on the Fish Commission, or a helpful idea, send it to: The Editor, P4 Angler, P.O. Box 1673, Harrisburg, PA 17105-1673.
**NOTES FROM THE STREAMS**

**Satisfaction**
How gratifying it was to see so many people at the Linesville Fish Culture Station Open House last March! Their eyes gleamed with excitement, keen interest and appreciation.—Art Michaels, editor, PA Angler, Boat PA

**Hair**
It was a beautiful warm May afternoon, the kind of day that made us glad our job takes us all through northeast Pennsylvania. As our maintenance truck sailed up Route 42, heading for Hunters Lake, it was obvious that spring fever was having an effect on other Pennsylvania motorists. A gentleman in a sporty red convertible, top down, grinned as he breezed by us on the inside of a sweeping tree-lined turn, obviously enjoying the balmy sunshine and wind in his hair, when our driver said, “Uh-oh, I think we just hit a grouse.”

As we slowed down and drifted to a stop along the berm to survey the damage, the little red sports car pulled up behind us. The gentleman quickly emerged and he was no longer smiling. Without a word he stormed past us and plucked the “grouse” from our radiator. As he walked away mumbling, I couldn’t help but notice he was minus the hair that had previously been “blowin’ in the wind.” It was hard to keep a straight face as I heard one of my crew remark to himself, “I guess he was minus the hair that had previously enjoyed the balmy sunshine and balmy wind in his hair, but quickly returned his attention to the fish. I figured I’d just lay back and see what this bird’s next move would be! I had an idea he would soon go fishing because he had an unmistakable gleam in his eyes. Before long he crouched down like a cat ready to pounce. All of a sudden, splash under the water went his head and he came up with a trout about 12 inches long. The blue heron devoured his catch immediately!—Don Parrish, WCO, McKean County

**Bair facts**
When I started with the Fish Commission 35 years ago, we worked out of a big old army tent with wooden troughs and we hatched eggs in wire baskets. We picked dead eggs with a rubber syringe, one at a time. We raised about 100,000 fish to 25 or 30 pounds—100 fish on marine fish and liver feed with a spoon or dipper. Wages were $1.10 per hour with no vacation time or sick leave. We worked 5 1/2 days per week.

During shipping season it took a 5-man crew to net fish and prepare fish for next-day shipping. Today, we have concrete raceways with cleanouts at every 100-foot section that let us clean debris through a clarifier for cleansing water before it reenters streams.

We feed about 600,000 fish a pellet diet with a blower feeder mounted on a pickup truck. It takes about 40 to 45 pounds to feed 100 fish per month. It takes approximately 15 months for them to reach a length of 9 to 12 inches.

Eggs are now treated in incubators at one to 600 ppm Formalin for 17 minutes each day until they hatch. This is either 8 or 16 trays at one time.

It takes one man in each raceway—brook, brown, and rainbow—about one hour to load three trucks.

We then get enough fish in the raceway with an elevator for the next day’s shipment.

We also work out of a two-story brick building that is heated now.

Along with trout, we do quite a bit of coolwater work also—walleye, tiger muskellunge and pike.—Walter R. Bair, Bennet Spring Fish Research Station, State College, PA

**Kudos to Carnell**
In May 1949, Waterways Conservation Officer Bryce Carnell started with the Fish Commission. He’s still hard at work in his district, Franklin and Fulton counties. We fish culturists at the Big Spring Fish Culture Station have stocked with Bryce since 1972 and we have a special place for him in our hearts. When we take trout to him we know we will have a good day, rain or shine. His organization of stocking is amazing—he involves many volunteers, farmers and landowners in the effort.

His pleasant manner, courtesy to the public and his firm and uniform application of the law make him an especially valuable member of our agency. Bryce, we wish you good luck on the job and thank you for the years of service to the fishing and boating public.—David Jordan, Fish Culturist, Big Spring Fish Culture Station

**Angler’s mettle**
DWCO Mick Essner agreed to take photos of successful fishermen for the weekly paper Reporter Argus (Port Alleghany). The second day of trout season we approached Beth Barber, age 6, of Smethport, who had just caught her first trout. I asked, “What did you catch it on?” Beth turned to her fishing companions and inquired what kind of bait she had used. “A maggot,” replied one of her fellow fishermen. Little Beth looked at me and proudly reported, “I caught it on a magnet!” I relayed the message to Deputy Essner who was taking the necessary info.

Mick grinned and said, “What kind of a fish was it? . . . a STEELHEAD?”—Don Parrish, WCO, McKean County

**Avian angler**
We had just finished stocking trout in Willow Creek when I saw an angler in a refuge area (a section of stream enclosed by wire wherein fishing is prohibited and involves a fine of $100). The offender stood inside the wired area looking the situation over. He moved to a better vantage point atop a large rock. I watched to see what his next move would be, but he just stood motionless, obviously watching a large school of trout. Every now and then he would fidget nervously and look behind him, but quickly returned his attention to the fish. I figured I’d just lay back and see what this bird’s next move would be! I had an idea he would soon go fishing because he had an unmistakable gleam in his eyes. Before long he crouched down like a cat ready to pounce. All of a sudden, splash under the water went his head and he came up with a trout about 12 inches long. The blue heron devoured his catch immediately!—Don Parrish, WCO, McKean County

**WCO Bryce Carnell**
Land Donated to Fish Commission

A recent donation of 5.59 acres in Centre County will form a greenway for fishermen along the banks of Spring Creek from Bellefonte to the confluence of Spring Creek with Bald Eagle Creek. The donation was made by West Penn Power Company to the Fish Commission. The site links other lands given to the Commission by West Penn in 1984 for a total of 39 acres along prime trout waters.

Included in the 1984 grant was the McCoy Dam, a 10-foot high structure that the Commission regards as important in maintaining the trout habitat of Spring Creek. The dam provides aeration to the water and helps stabilize the stream.

In accepting the donation for the Fish Commission, Executive Director Edward R. Miller said, "We are pleased that we can now link together this valuable property and protect it for the citizens of the Commonwealth. Fishermen and other outdoorsmen will benefit from West Penn Power Company's generous donation." He also expressed appreciation to the Western Pennsylvania Conservancy for its assistance in the transaction.

ANGLERS CURRENTS

For fishing muddy or heavily stained waters, try topwater lures that make a lot of noise or a sonic or rattling type of lure that attracts fish by sound through their lateral line.

Walleye school by size. A catch of a big fish can often lead to catches of others of the same size from the same area.

Use dark topwater lures for bass fishing at night. The dark (preferably black-bellied) lure shows up better against the night sky than a lighter color lure.

To prevent noise from a canoe paddle striking a canoe gunnel, cover the gunnel with foam water pipe insulation. It comes in several sizes to fit any pipe or gunnel, and is often split for application. It can be split easily with a razor blade.

Bass like to lie in the shade to ambush prey. Fish the shady side of any structure and remember that the shady side changes as the sun changes during the day.

Consider the barometer and sky when fishing for bass. High pressure, with bright, blue-bird skies, keeps bass tight on cover so that accurate casting is a must. Low pressure, often accompanied by overcast skies, keeps bass foraging farther from their basic home structure.

The deepest pools in rivers often produce the biggest fish. So even on shallow Pennsylvania rivers, deep-diving lures are a must to get down to the bottom when fishing the deepest holes.

Overhanging trees are ideal spots to fish anywhere, but especially in ponds. The trees harbor insects that drop into the water to provide food for waiting bass, bluegills, rock bass and trout.

Keep waterborne sounds to a minimum when boat fishing. Talking won't hurt; scraping a tackle box or banging an oar will.

When starting fishing for the day, pick out those several lures that you think will work for existing conditions, weather and season. That way, they will be out and ready if you want to change lures rapidly.

For drifting a boat or canoe downstream, use a length of chain on a rope tied to the bow to keep the boat tracking straight and to slow the drift to a good fishing speed. On very shallow rivers you can make the rope and chain no longer than the length of the boat so that you can run your outboard without pulling up this drift anchor or catching it on the prop.
The Susquehanna River just above Harrisburg is a wide, fast-flowing river, full of my favorite fish, the smallmouth bass. A couple of years ago toward the end of July a buddy and I had planned a wading expedition to fool some smallies. Unexpectedly, he cancelled, so I decided to go alone. I waded out among the rocks just downstream from the Clarks Ferry Bridge near Duncannon. The water was low and clear and ranged from two to four feet deep. I wore an old pair of sneakers, a shirt with a large pocket for my plug box and a pair of shorts with a fish stringer hanging from my belt loop. My net was hung around my neck by a loop so that it was easily available but not constricting.

The fishing was slow at first, but as the evening progressed, things picked up. After releasing several small bass, I caught a nice 14-incher. I wanted to eat one bass, so I hooked the fish to the end of my stringer so that it could swim around until I was ready to quit. Satisfied that even bigger fish were yet to come, I began slowly working my way across the river toward a little grassy island that I knew would be dynamite just before dark.

Without warning, I stepped off a ledge into a hole. Immediately I submerged in the current. My first thought was not to drop my fishing rod. Then I thought, “How can I swim and hang onto my rod?” By then the stringer was also becoming a factor because the bass was wrapping the stringer around my legs. My ball cap with fishing license attached floated off, destination Baltimore! I had accidentally inhaled some water and was coughing and sputtering. Though a confident swimmer, I was having trouble staying on the surface. Fear entered the picture. Decision time arrived. I dropped the rod, unwrapped the stringer and swam to safety.

I spent the remainder of the evening retrieving my cap and looking for my rod. My wife, after listening to my recounting this episode, reminded me of my responsibilities as a husband, father and breadwin-ner and asked me never again to wade alone. Some days later the lecture was followed by the gift of a camouflage PFD.

I soon found that wading in the river wearing a life jacket is like using a microwave oven. Once you own one you wonder how you ever lived without it. Now, when I step into water over my head, I don’t have to swim because I float. It has pockets for my plug boxes, knife, pliers, and other tackle, and loops to attach my stringer. I keep a thermometer and pair of clippers attached to the zipper. It’s surprisingly light and helps keep you warm in cool weather. Best of all, I can also use it on my boat, and it’s always prepacked with the gear I need to fish for smallmouth.

When the water is in your comfort range, you don’t need waders or hip boots to protect you from the cold, so I added a pair of wading shoes to my summer wading gear. The felt bottoms cling to slippery rocks much better than my old pair of tennis sneakers, and they protect my ankles as well. Because they are nylon, they dry as quickly as my life jacket.

All too often, a day of wading turns into an unpleasant exercise in how to swim holding a fishing rod. Worse yet, every year people drown or are injured because they didn’t take one simple precaution. They didn’t wear a personal flotation device: a life jacket. Many fishermen still mistakenly think that life jackets are only for boaters. They’re wrong!

Modern PFDs come in a wide variety of types and styles. Many are specifically designed for fishermen. Several manufacturers produce life jackets that are available in any well-equipped sporting goods store or marina. The one I have cost $35, a cheap investment for so useful a device. The rod and reel I lost cost three times that much.

An important consideration when purchasing a life jacket for wading or boating is proper fit. It should fit snugly and be adjustable so it can be worn over clothing on colder days. I recommend it be bought from a store rather than a mail order house. It can be fitted properly this way. Get one with pockets and rings to clip things to when fishing.

Moving water kills several fishermen every year. Be smart. When wading or boating give yourself the added safety and convenience of wearing a life jacket.

Dan Martin is a Commission boating education specialist.
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