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Special Fishing Issue

FOREWORD

It is a pleasure to present this special issue of *Massachusetts Wildlife* dedicated to freshwater fishing. The intent has been to provide basic information for the novice angler on how to identify and catch our most common and popular fishes, but an effort has been made to include data and various reference materials that veteran trophy seekers will also find useful. Hopefully it will be a practical resource for anyone interested in fish or fishing.

The sport, art and food procurement activities collectively known as fishing date back to the Old Stone Age. The survival benefits of these activities are so ancient, obvious and valuable, it's likely that many members of our species (and maybe all of us to some degree) have "aquatic game-hunting skills" (i.e. "fishing") genes woven into our DNA (this may explain why fishing is described by so many of its practitioners as spiritually therapeutic and fulfilling).

Our ancestors were probably fishing by hand a half million years ago, drawn to the easily captured fish available in drought-shrunken pools or to the multitudes of fish that appeared annually during spawning runs. (Some theorists suggest we may first have learned about fishing by observing bears!) Ingenious ways to catch fish — including by spear, net, arrow and even basket — were developed independently in many parts of the world at different times. The use of double-pointed gorges and bone, antler, shell and stone hooks designed to catch fish with a line dates back at least 10,000 years.

Based on 1996 figures, today there are approximately 30 million people in the United States — about a third of them women by the way — who fish in freshwater at least once a year (18 days per year on average). Nationwide they expend close to $25 billion on equipment, bait and trip-related expenses — over half a billion in Massachusetts alone. Their motivations, methods, gear, what they try to catch, and what they do with what they catch, vary from one individual to the next.

This is a key to the popularity of fishing: it offers almost infinite variation suitable for every personality type from the most intensely competitive to the totally laid back. It can be enjoyed as a sociable family activity, with one or two close friends, or entirely alone. It can even be followed as a big money, televised, professional sport. Anglers can keep their catch for the table or release it to fight again. The monster or the minnow can be pursued with equal intensity and, on some level, equal reward. Young or old, man or woman, from boat or shore, big river or small pond, trickling brook or deep water lake, fly or spin, bait or lure, it makes no difference: the object is to have fun trying to catch fish.

The average angler fishing a broad selection of the Bay State's inland and estuary waters can expect to encounter more than 50 species of fishes in a lifetime. At least half again as many are known to inhabit our inland waters. It is frustrating that space constraints prohibit covering them all in this issue (there wasn't even room for baitfish, the fascinating American eel and sea lamprey, or any of our endangered species), but those that are included are the ones most anglers want to catch. To learn more, invest in a good field guide to the fishes and take it along on every angling excursion.

Please remember that if you have any questions about fish or fishing — or questions about *anything* relating to wildlife in Massachusetts — all you have to do is write, call or e-mail ***MassWildlife***. On behalf of all our staff, I wish you luck on our waters, great companionship, and a lifetime of celebrated fishing memories.

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On the Cover: The rainbow trout, originally from the West Coast, has become the "bread and butter" fish of coldwater aquaculture worldwide. More than 250,000 are raised and stocked into selected Bay State waters by ***MassWildlife*** every year to provide anglers with a popular "put and take" fishery. The species is noted for its fighting ability, beautiful markings and coloration, and its quality as tablefare. Photo by Bill Byrne

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Fishing Basics

by Jim Lagacy,
Angler Education Coordinator

It was a steamy summer afternoon as my assistant Kristin McCarthy and I pulled up to the lake in Northbridge. We could see children engaged in various activities associated with that great New England tradition, summer camp. We had come to provide these campers with instruction in fishing through one of the many fishing clinics we do every year.

I remember this particular clinic because of one little boy. He was an apprehensive, somewhat outspoken child who confessed that he'd never been fishing, thought the practice to be boring, and maybe even wrong. ("We shouldn't be fishing because fish are endangered and we need to save them," he said). Kris and I quickly cleared up his misconceptions (and a few others among the group) with our introductory lecture on fish and fishing. Then we issued rods and reels into many eager hands, and shortly thereafter all the kids had lines in the water. As predictable as sunset, the bobbers started to bob and shouts of "I got one!" began to fill the air.

Before long every camper had landed a fish — all but one: the little boy. His frustration was building, but to his credit he stuck with it. Perhaps it was the occasional tug of a biting fish, or the sight of his bobber bouncing up and down that kept him interested. Whatever the reason, through perseverance he was finally able land a fish: a two-pound largemouth bass that was by far the biggest catch of the afternoon.

The kid was elated. "Look at my fish, look at my fish everyone!" he screamed. An amazing transformation was taking place. He couldn't get his line back in the water soon enough. "How much time do we have left?" he asked anxiously. "That was awesome! I want to do it again." As we were packing up he thanked us, and reported that he was going to ask his parents for a fishing pole as soon as he got home.

It's those little experiences that make my job so rewarding.

Free Clinics

Fishing clinics are but one component offered by ***MassWildlife***'s Angler Education Program (AEP). Others include family fishing festivals, basic freshwater fishing classes, and a rod and reel loaner program.

The fishing clinics are 2 - 3 hour short courses conducted mainly in the late spring and summer for small groups of people, mostly children. The freshwater fishing festivals are larger weekend events focusing on fishing and families. The basic freshwater fishing classes — 10 hour courses for beginners spread over 4 or 5 weeks — are offered in the spring, winter and fall. The program also makes rod and reel combinations available for loan to various civic and educational groups on a first come first serve basis.

Amazingly, all of these programs are provided to the public free of charge. They are funded entirely from a minuscule federal excise tax imposed on all fishing equipment and motor boat fuels (see editorial). Most folks don't even re-

Photo by Bill Byrne

MassWildlife*'s Angler Education Program offers a number of activities that allow children and families to learn the skills and experience the joys of fishing with basic equipment.*

alize that when they buy a fishing rod or tackle box they are, among other things, helping us teach someone to fish!

Housed in ***MassWildlife***'s Information and Education Section, the AEP has been around in one form or another for over 20 years. It was launched as the Urban Angler Program in 1979, with a focus on bringing fishing instruction to dense urban centers like Boston and Worcester. When two school-based educational components — Watershed Education and Aquatic Project Wild — were added to it in the mid-1980s, it became the Aquatic Resource Education Program. It also became primarily volunteer-driven at that time. A cadre of big-hearted, seasoned anglers were recruited to assist the Program Coordinator with learn-to-fish events throughout the state. The final change came in 1999 when the fishing component of the Aquatic Resource Education Program was finally given a name, the Angler Education Program.

Today the AEP has roughly 100 active volunteers in ten workshop groups throughout most of our state, assisting the coordinator with all aspects of the program. Interested persons can get involved by apprenticing within a given volunteer workshop group, or by attending an annual instructor training course.

Getting Started

So how does one who knows nothing about fish or fishing get started in this delightful sport? Well, taking one of our courses or clinics would obviously get any neophyte off to a good start. But that isn't the only way. Despite what you might think (or overhear in certain company), fishing isn't a highly technical pursuit. Some anglers would like to give you that impression (and certainly you can *make* fishing that way), but as someone who started fishing with a bent pin and some sewing thread, I can assure you that nothing could be further from the truth.

All you need for beginner equipment is a basic push button spin-casting outfit, the sort you can find in the sporting goods section of most any department store. My advice is to buy quality: not necessarily top-of-the-line, but certainly not the cheapest outfit or the inevitable "kid's stuff" offered in any store. A cheesy outfit might look good to the wallet, but most of the moving parts in lower end models are made of plastic. They just won't stand up to the punishment a child or a novice adult will inflict upon them. It's far better to get something a bit more expensive that can take the abuse. A decent starter push button rod and reel combination will usually run about 25 dollars.

After that all you'll need is what goes on the end of the line, the stuff anglers refer to as "terminal tackle." For the beginner this should consist of hooks (size 6, 8, or 10 are fine for panfish and most trout), bobbers (round, floating, hollow plastic balls clipped on the line above the hook that indicate if a fish is biting by bobbing up and down in the water), and some split-shot sinkers (small weights that are pinched directly on the line a few inches

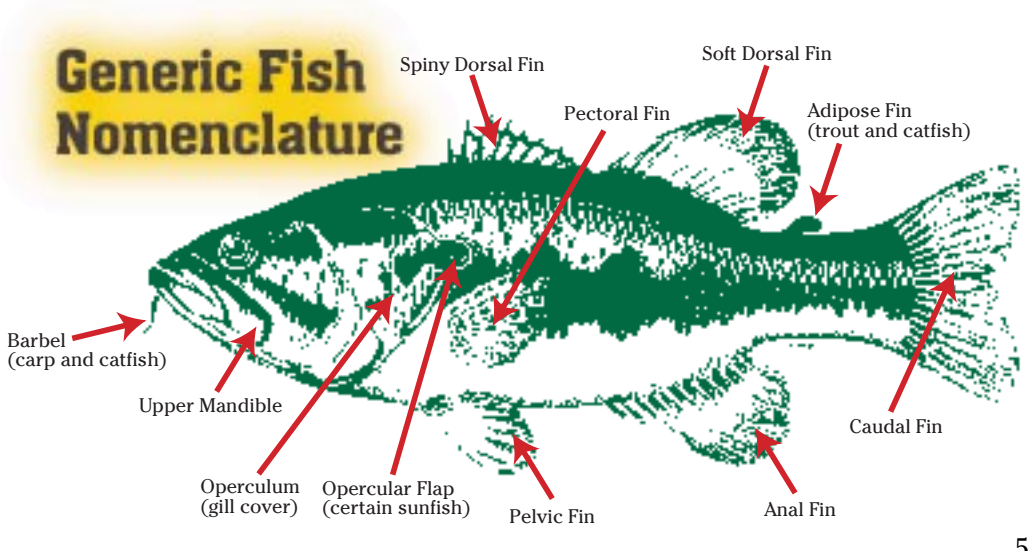


Photo by Bubba Free Dave

The three standard reel designs are bait-casting (left), spin-casting and spinning (right). The spin-casting reel is recommended for beginners. Basic terminal tackle consists of a hook, a split-shot or two for weight, and a bobber to indicate bites.

above the hook to allow longer casts and/or to get the bait down). You may want to purchase a small tackle box to hold these inexpensive accessories.

Now tie on your hook (I recommend a clinch knot for beginners) and you're ready for some live-bait fishing. Using live bait is a good way to start, especially with kids, as it will generally attract more bites than anything else, and fast action is what beginners usually want. Getting bait isn't rocket science: we're talking worms, grubs or live insects that are readily available in most suburban yards. If you can't envision yourself stalking night crawlers with a flashlight out in the grass on a dewy summer night, just go down to the local tackle shop and buy some. Ask for night crawlers or dilly worms (small night crawlers). These work wonders on a hook thrown from shore in most New England lakes and ponds in summer.

If you can't bear the thought of putting something squirmy on a hook, that's not a problem either. Just go to that same department or tackle store, and plop down a few bucks for the fake stuff: stinky colored paste or marshmallow-like chunks, sold in small jars. This is sometimes an excellent bait, especially for trout, for reasons only the fish understand. Eventually you may want to try fishing lures (fake bait designed to imitate the real thing), which at times and in certain situations work great. But if your only desire is to get out there and experience the euphoric feeling of having a fish on the end of your line, the live stuff is all you'll need.

So now you've got all the gear, but you still need to learn how to cast the line

The clinch knot is the most popular fishing knot. Pass line through eye of hook. Double it back and make 5 - 7 turns around standing line. Thread end through first loop above the eye, then through the big loop as shown. Moisten and pull steadily on both ends to close; slide tight against eye. Clip tag end.

out. Well, it's always best to have someone show you, but it's not a requirement. If the rod and reel are not assembled, put them together. Then push and release the button on the back of the reel, which will release the line. Pull the line up through the hoops (guides) in the rod. (You may need to clip off and discard a small plastic tab or metal ring on the end of the line.) Now tie on a lightweight, hookless "practice plug" (a clothespin works great) and you are ready to cast.

Hold the rod and reel with the reel facing up and your dominant hand wrapped around the grip just behind the reel. There is a large button on the back of the reel: push it in with your thumb and hold it down (children and others with a gentle grip may want to use two thumbs). Lift the rod straight up toward the sky and slightly over your shoulder with a smooth motion (keeping that button depressed all the while). Just after the tip of the rod goes behind your shoulder, snap it back forward toward your target (the spot where you want your lure to land), reversing what you just did. (Think of flinging water off the end of a wand.) Just after the tip of the rod passes your shoulder, release the button, sending your clothespin — and later your baited hook and bobber — on its way.

The only difficult part is timing when to release the button. Release it too soon and the line will go straight up and land somewhere around you. Release it too late and it will smack into the ground in front of you. You know the drill: practice, practice, practice! Children love doing this, and you can make a game of it by having them try to cast at a target, preferably outside the house.

So there you have it, the basics. The only other thing you need, if you are between the ages of 15 and 69, is a fishing license, which can be purchased at all ***MassWildlife*** locations, most town halls, and selected tackle, sporting goods and department stores. It's good from the time of purchase until the end of the calendar year. The proceeds go towards fish and wildlife management in Massachusetts; in fact ***MassWildlife*** operates almost entirely from the funds provided by the sale of hunting, fishing, and trapping licenses. Along with your license purchase you will receive the rules and regulations on fishing and hunting in Massachusetts. Keep these handy whenever you're fishing, and be sure to observe all size and creel limits.

As you become a more competent angler, you will probably want to upgrade your equipment, expand your tackle arsenal, and experiment with different fishing methods and techniques. Visit the library and/or bookstores for quality reading materials and seek advice from fellow anglers. Though their prices may be a little higher than those in the mail order catalogues and department stores, I also advise supporting the folks at your local tackle shop with your business. They are almost always the best source of timely fishing information (like what lures and baits are working best at that moment), and — so long as you don't drop by during their busiest periods — are ever willing to spend the time with you to answer questions regarding bait and tackle.

The goal of the Angler Education Program is a simple one: to get folks interested in the outdoors through the experience of sportfishing. Fishing, as you will quickly discover, is a very enjoyable family pastime, and a great way to get out and experience nature. In fact, I credit fishing with my friends at a very young age, and later hunting with my dad, for my career choice. For more information contact ***MassWildlife***'s Angler Education Program at 508-792-7270 x109.

Fishing Info

MassWildlife offers numerous publications to aid fishermen in finding and enjoying the Bay State's many freshwater fisheries resources. These include lists of stocked waters for trout (general), tiger trout, broodstock salmon, pike and tiger muskies; topographical maps for most lakes and ponds with public access (most include info on fish populations, water clarity, fishing tips, etc.); a list of "best bet" waters for black bass; and a list of certified weighing stations. Most of these publications are available free of charge at all our offices; some can be downloaded from our website (MassWildlife.org); or for ordering information call Field Headquarters in Westboro at 508-792-7270 x 101.

The SUNFISH

The sunfish are by far the most common, abundant and obliging of our fishes. Dangle a hooked worm or cricket a foot or two beneath a bobber, toss it into any lake, pond or slow-moving river, and it is virtually guaranteed that sunfish will provide immediate and prolonged action. Sunnies are ideal angling targets for beginners, and not surprisingly are usually the first fish most anglers catch. While most examples are less than a pound in weight, they tend to be scrappy fighters, and are avidly pursued by advanced anglers using untra-light spinning gear and flyrods. Ice fishermen also pursue them, typically with small, worm-sweetened jigs.

While the black bass are technically members of the sunfish clan, the name sunfish is commonly applied only to the disc-shaped, palm-sized panfish that are found in most freshwater habitats. While at least nine species have been recorded in our waters, the most common, widely distributed and sought after are the pumpkinseed, bluegill, and black crappie. These sunfish all have sharp spines in their dorsal and anal fins, so use some care when handling them.

The ***pumpkinseed***, often referred to as a "kiver" or "kibbie" in New England, is a native species and is among our most colorful fish. The best identifying feature for this near-shore sunny is a bright red or orange spot on the tip of the opercular flap, but emerald blue "war paint" lines radiating from the snout over the head and operculum are also a unique and striking feature. The body is often densely patterned in olive green and silver, with the breast and belly grading into reddish orange or yellow. Most pumpkinseeds in

Best Bets for Sunfish

Ashumet Pond, Falmouth
Chicopee River
Onota Lake, Pittsfield
New Bedford Res., Acushnet
Dick's Pond, Wareham
Leonard's Pond, Rochester
Mary's Pond, Rochester
Lake Noquochoke, Dartmouth
Tinkham Pond, Mattapoisett
Cheshire Reservoir, Cheshire

The pumpkinseed is our most common native sunfish and easily identified by the bright red or orange tip on its opercular flap.

Photo by Bill Byrne

Photo by Bill Byrne

The bluegill is highly variable in color, but can be identified by its velvety bluish-black opercular flap and a dark blotch near the rear base of the dorsal fin. Many individuals display 6-8 irregular vertical bars along the sides.

Massachusetts weigh less than half a pound; the biggest one ever caught in the state and recorded in our database was 1 pound, 6 ounces.

Like all sunfish, pumpkinseeds breed in saucer-shaped, shallow depressions scooped out by the males in the spring. Unlike bluegills, pumpkinseeds usually place their nests in scattered locations. Females come to the nests to lay their eggs, which are then guarded by the males until hatching occurs. Pumpkinseeds are not thought to be as prone to overpopulate their waters as the other sunfish, perhaps because they frequently feed on smaller fish, including their own young. They have high reproductive rates, however, and have no difficulty maintaining their numbers even under heavy fishing pressure. Due to its native status, the pumpkinseed is the only sunfish that may be caught and used by licensed anglers as live bait.

The ***bluegill*** was introduced to Massachusetts from its natural range to the west and south. Beautiful, adaptable and prolific, it was widely stocked in our waters during the first half of the last century and is now common except on Cape Cod. It is easily the most prevalent and popular sunfish in North America and esteemed for its white, sweet-tasting meat.

Bluegills are variable in color depending on their age, breeding condition and the clarity of the water in which they live. In general, look for a wide, squarish opercular flap that is solid bluish-black and velvety in appearance (hence the name bluegill). Adults often display a depth and richness of color comparable to oil paintings, with dark green to blue bodies grading to rusty or coppery red on the breast and belly. Big males have prominent foreheads and look positively bullish! Sub-adult bluegills can usually be identified by six to eight irregular vertical bars on the sides and a dark blotch, not always easy to discern, near the lower, rear end of the dorsal fin.

Minimum length for a bluegill or pumpkinseed to attain 1 pound award weight is 9 $^1/_2$ inches; girth 9 $^1/_4$ inches

Bluegills breed during the spring in the same manner as other sunfish, although they tend to concentrate their nests in colonies. Each male-guarded nest may contain up to 60,000 eggs. Bluegills are very prone to overpopulate the waters in which they occur, which leads to stunted growth rates. They feed primarily on insects, crustaceans and aquatic vegetation, and are in turn eaten by bass and pickerel. Unlike most of their relatives,

Photo by Bill Byrne

The black crappie, known as the calico bass to many New Englanders, is the largest of our sunfish and can be identified by its large, symmetrical dorsal and anal fins, a papery mouth, and black and silver patterning.

bluegills almost never eat other fish. In our waters, they rarely exceed about 10 ounces in weight; the current state record is 2 pounds, 1 ounce and was caught at South Athol Pond in 1982.

Other common sunfish include the ***rock bass***, a bronze-colored, red-eyed introduced species typically found in the same habitat as smallmouth bass; and the ***redbreast sunfish***, a native species with reddish spots, a reddish orange belly and long, black opercular flaps that are narrower than those on a bluegill. The redbreast is common in coastal streams

Best Bets for Calicos

Webster Lake, Webster
Quabbin Reservoir
Lake Quacumquasit, Brookfield
Lake Quinsigamond, Shrewsbury
Long Pond, Lakeville
Congamond Lakes, Southwick
Quaboag Pond, Brookfield
Mary's Pond, Rochester
Snipatuit Pond, Rochester
Halfway Pond, Plymouth

Photo by Peter G. Mirick

Photo by Bill Byrne

Calicos are often taken through the ice on conventional tip-ups baited with shiners. They will also strike small jigs.

and scattered inland impoundments, including Quabbin Reservoir.

The ***black crappie***, known to most Yankee anglers as the "calico bass," is our biggest sunfish and widely distributed throughout the state except for Cape Cod. Like the bluegill, its original range was to the west and south, but it was widely stocked during the first half of the last century. It has a dark olive or black back that grades into silvery sides peppered irregularly with black spots. Some individuals are almost solid black, others predominantly silver, but the best identifying features are the fan-like, almost symmetrical anal and dorsal fins, a deep but very narrow body, and a large, papery mouth.

Calicos are very popular panfish due to their relatively large average size (about a pound) and exquisite table quality. Thanks to their physical construction they are simple to fillet, having soft, easy-cutting skin and meat that separates almost effortlessly from the bones. Their fillets are thin and tender, and almost flounder-like in flavor.

Minimum length for calico to attain 2 pound award weight is 14 $^1/_4$ inches; girth 12 $^1/_2$ inches.

Calicos feed on plankton, insects, and especially on smaller fish, and often gather in schools around shade-providing structure such as fallen trees, sunken stumps and submerged brush piles. Schools and individuals can also be found suspended at various depths in deep water areas. The current state record calico weighed an astounding 4 pounds, 10 ounces and was caught at Jake's Pond in Plymouth in 1980.

Like the other sunfish, calicos breed over roundish nests cleared and guarded by the males. Nests are often located in shady areas under trees and brush, and may contain up to 100,000 eggs. The species is prone to overpopulate its waters, causing stunted growth rates, but when conditions are right, calicos can reach 12 inches in 4 years. It appears that "boom and bust" cycles of calico abundance and scarcity are the rule in at least some waters, but more research is required to confirm this phenomenon and investigate its causes.

Calicos are typically caught on small baitfish, jigs or worms, and their light strikes are notoriously difficult to detect. Almost any angler will catch one or two in a day of panfishing on open water or the ice, but those who specifically target the species and learn its habits can often catch a dozen or more in an outing. Unlike most other sunfish, calicos tend to be most active during low light conditions, especially around dawn and dusk. A landing net is recommended equipment when fishing for them, as large calicos often tear free of the hook during attempts to hoist them from the water by the line alone.

Editorial

Federal Aid in Sport Fisheries Restoration — A Successful Government Program

Massachusetts offers an incredible variety of recreational fishing experiences — more than most other states in fact. Recent surveys indicate that more than 700,000 men and women over the age of 16 will go fishing in our waters this year. Given that fishing is a family activity for many, and that a lot of kids will also fish by themselves, the total number of anglers will be well over a million.

Anglers can readily find freshwater fishing opportunities for panfish such as bluegills and calico bass, white and yellow perch, black bass, pickerel, shad, five species of trout and salmon, pike and tiger muskellunge. Saltwater fishing opportunities for surf casters include striped bass and bluefish, while recreational boat anglers can pursue shark, tuna, tautog, flounder and groundfish such as haddock, cod and pollock.

A 1996 survey conducted by the U.S. Fish and Wildlife Service found that Massachusetts' anglers over the age of 16 spent nearly 6,750,000 days fishing in freshwater and 4 million days fishing in saltwater. Nearly one billion dollars of economic activity resulted from fishing, and slightly more than 11,000 jobs were directly attributable to recreational fishing. This generated revenues of about $26,225,000 in state sales tax, $14,880,000 in state income tax and $30,170,000 in federal income tax.

Surveys also found that angler satisfaction is high. The public is pleased with the quality and diversity of Massachusetts' fishing opportunities and is very supportive of the state's fisheries management programs.

As Director of ***MassWildlife***, I would like to take credit for establishing such successful recreational fisheries programs. The truth, however, is that their foundations were established 50 years ago when Congressman John Dingell (MI) and Senator Edwin Johnson (CO) mustered sufficient support to pass the Federal Aid in Sport Fisheries Restoration Act. It was signed into law by President Truman on August 9, 1950.

Commonly referred to as the Dingell-Johnson or "D-J" Act, this legislation directed that federally collected excise taxes on fishing tackle and related equipment were to be apportioned to state fish and wildlife agencies for fisheries restoration, research and management efforts. The Act also contained a clause that prevented the use of state fishing license fees for anything other than fish and wildlife management programs. The stable funding stream the Act established has enabled the 50 state fish and wildlife agencies to institute longterm fisheries research and management programs.

Massachusetts has been able to take full advantage of this funding source and currently receives about $2 million annually in D-J support. The money is divided equally between the Division of Fisheries and Wildlife and the Division of Marine Fisheries. Freshwater programs presently utilizing these funds include black bass management, Quabbin and Wachusett Reservoir fisheries management for lake trout and landlocked salmon, salmon and shad restoration efforts on the Connecticut and Merrimack Rivers, and fish hatchery operations for trout, salmon, pike and tiger muskellunge. Saltwater sport fish programs being supported by these funds include striped bass stock assessments, Massachusetts Bay smelt spawning habitat research, shark research and winter flounder young-of-the-year surveys.

The impact of the Sport Fisheries Restoration Act is particularly evident in the improvement in the quality of trout fishing that has occurred over the past 50 years. There is a tremendous amount of

Photo by Bill Byrne

interest in trout fishing in Massachusetts, with anglers making more than 1.25 million trips per year to fish for them in the state. Two surveys, one conducted by the Division in the 1984, and another by the University of Massachusetts in 1992, found that approximately 50% of Massachusetts' freshwater anglers fish for trout.

This significant level of angler effort directed at trout is for two primary reasons - accessibility and a high quality hatchery product. The Division has put trout fishing within easy reach of just about everyone by stocking waters across the state in both rural and urban areas. Trout are stocked in more than 400 different water bodies in 246 cities and towns throughout all regions of the Commonwealth from downtown Boston to Martha's Vineyard and the Berkshires.

This year the Division will stock 450,000 to 500,000 pounds of trout, 70 percent of which will be 12 inches or greater in length. Until the latter part of the 1980s, less than 2 percent of the trout stocked were likely to be 12 inches or greater in length! This huge improvement in the quality of trout being stocked was undertaken in response to the desires of the angling public, but it couldn't have been accomplished without the funding provided by the Sport Fisheries Restoration Act.

In 1984 Senator Malcolm Wallop (WY) and then-Congressman John Breaux (LA) introduced legislation that amended the Act to include taxes on boats, trailers and motors to provide funds for boating access and aquatic resource education, as well as fisheries management. Later amendments to the Act in 1988, 1990 and 1992 further expanded the dedicated revenue base to provide funding for wetlands protection and restoration, and to create a boat sewage (pump-out) management program. Today these funds are helping Massachusetts to fund the more than 200 boating and fishing access facilities developed by the Public Access Board; the Recreational Boating Safety Program of the Environmental Police; and the development of boat pump-out facilities at marinas to collect and process recreational boat sewage.

The many benefits provided by the Sport Fisheries Restoration Act have clearly met or exceeded the expectations of the recreational fishing and boating community — the community that is its primary fund producer, as well as its primary beneficiary. However, *all* members of the public benefit from its positive impact on water pollution abatement, educational opportunities and aquatic habitat preservation. So the next time you purchase some new fishing equipment, remember: You're not just buying some sporting goods, you're investing in a healthy environment.

You can't do *that* with a set of golf clubs!

Wayne F. MacCallum, *Director*

The BLACK BASS

The term "black bass" is a misnomer, since it is applied to two fishes that are neither black, nor bass. The color reference is to their fry, which for a few hours or days after hatching are indeed black, and hover over their nests in dense clouds before scattering and assuming lighter coloration. Although they bear a superficial resemblance to the true bass, the black bass are actually members of the sunfish family. They are, however, larger and more elongated in body shape than the bluegills, calicos and other roundish species we typically think of as "sunfish."

The black bass are the most avidly pursued fishes in North America and probably account for more fishing-related expenditures than all other freshwater fishes combined. The two species inhabiting the Bay State today — the ***largemouth*** and ***smallmouth*** bass — are not natives: they were first introduced to our waters from New York and other states in the 19th century. Today there are well established populations of one or both species in most of our aquatic habitats except the smallest trout streams.

Bass are fine table fare, especially when taken during the colder months and baked or fried as fillets, but they are generally sought more for their sporting qualities than their table qualities. Many anglers, including those involved in the big business of professional bass tournaments, pursue them on a strictly catch and release basis. However, like all the sunfish, bass have high reproductive rates and can easily withstand high harvest levels; their growth rates may even improve under heavy harvest pressure.

If you want to eat bass, we suggest you keep ones in the 12-16 inch size range and release the bigger, older fish except for the rare trophy you may want to have mounted for the den wall. Bass have very small teeth that are no more threatening than sandpaper, hence these fish can be safely removed from the water by inserting a thumb in the mouth and taking a firm grasp on the lower jaw.

Photo by Peter G. Mirick

Common members of the sunfish clan in Massachusetts (from the top): smallmouth bass, largemouth bass, rock bass, pumpkinseed and bluegill.

The largemouth is probably our most common gamefish. It seems to prefer mud- or sandy-bottomed habitats with little or no current, plenty of rooted aquatic vegetation and lots of overhead cover, but it is a highly adaptable species and can be found in most of our lakes, ponds and slower-moving rivers. A robust, sometimes big-bellied predator, the largemouth can be silvery, brassy or golden green in color. Most individuals display a dark, broad, sometimes broken band along each side. If present, this marking is a reliable feature for distinguishing a largemouth from a smallmouth; if not present, close the mouth and see how far back the upper jaw extends. If it goes beyond the back of the eye, the fish is a largemouth.

Largemouths spawn in May like most other sunfish, the males scooping out big, platter-like nests in relatively shallow water and inducing females to deposit their eggs. Females produce from 2-7 thousand eggs per pound of body

weight. The males fertilize and guard the eggs until they hatch. If food supplies are adequate, largemouths can grow at a rate of nearly a pound per year, reaching a length of about 20 inches in 5 years. They feed on virtually anything alive that will fit in their mouths, including insects, crustaceans, frogs, fish and snakes.

Minimum length for largemouth to attain 7 $^1/_2$ pound award weight is 21 $^1/_4$ inches; girth 16 inches.

Most largemouths are caught on artificial lures. Popular choices include plastic worms, "lizards" and other soft-bodied lures; jigs and spoons; spinnerbaits, various minnow imitations, and floating plugs such as the Jitterbug and Hula Popper. The latter are particularly effective when fished in the dead of night. Flyfishers catch largemouths on fuzzy "bass bugs" the fish presumably mistake for frogs or big insects.

Fertile waters can provide lots of largemouth action, particularly when fished on warm summer evenings when the fish are most active. Cast to weedy shorelines, downed trees and patches of lily pads and other aquatic plants. While trophy largemouths over 5 or 6 pounds are not rare, they are undeniably much more difficult to catch than their smaller brethren. The biggest fish are typically taken on live bait in the form of big shiners or small pumpkinseeds, which are often fished beneath a bobber. A jig with a porkrind tail, fished very slowly and patiently in late fall or early spring, is also a proven giant killer. Largemouths are often caught through the ice in winter, typically on live shiners. The state record — 15 pounds, 8 ounces from Sampson's Pond in Carver in 1975 — came through the ice.

The smallmouth bass is more particular in its habitat needs than the largemouth, and seems to require fairly clear, cool water. Unlike the largemouth, it is well adapted to living in rivers and streams, is rarely associated with aquatic vegetation, and prefers areas of rocky or

Best Bets for Largemouth Bass

Glen Charlie Pond, Wareham
Sampson Pond, Carver
Agawam River
New Bedford Reservoir, Acushnet
Mashpee-Wakeby Pond, Mashpee
Snipatuit Pond, Rochester
Quabbin Reservoir
Long Pond, Lakeville
Webster Lake, Webster
Wachusett Reservoir

Photo by Bill Byrne

Largemouth bass vary greatly in shade, but the overall pattern generally includes a broad, dark line along the side. When the mouth is closed, the upper mandible extends beyond the eye.

Photo by Peter G. Mirick

Smallmouth bass vary in color from bright green to dark bronze, and most sport a small, light chevron on the operculum. When the mouth is closed, the upper mandible does not extend beyond the eye.

gravelly bottom. Most smallmouths are bronze to green in color, and may display irregular blotches and vertical bands. Many specimens display a small white chevron on the edge of the operculum, particularly during the spawning season. They are judged by many fishermen to be "the gamest fish that swims," and are notorious for jumping — often several times — when hooked.

Like all their relatives in Massachusetts, smallmouths spawn in May on nests built and guarded by the males. Each nest typically contains from 2-10 thousand eggs which hatch in just a few days. Smallmouths are slower growing than largemouths, and may take 3 - 4 years to reach the legal size of 12 inches and about a pound in weight. Anglers can expect that trophy-class "smallies" greater than about 4 pounds in weight have been around for more than a decade. The state smallmouth record is 8 pounds, 2 ounces and was caught at Wachusett Reservoir in the spring of 1991.

Minimum length for smallmouth to attain 4 $^1/_2$ pound award weight is 18 $^3/_4$ inches; girth 14 $^1/_2$ inches.

"Smallies" can be induced to strike an almost infinite variety of artificial baits; the same lures that work for largemouths will generally work for smallmouths. Keep in mind that smallies like cool water, however, and therefore in summer will tend to hold deeper than largemouths. A jig with a fluttering plastic or porkrind tail is as good a choice as any. The best livebaits are crayfish, hellgrammites, night crawlers and shiners. During winter, smallmouths appear to be less active than largemouths, but late ice in March can produce fast action and some of the largest smallmouths of the year.

Best Bets for Smallmouth Bass

Wachusett Reservoir
Quabbin Reservoir
Long Pond, Brewster
Connecticut River
Peter's Pond, Sandwich
Spectacle Pond, Sandwich
Great Herring Pond, Bourne
Cliff Pond, Brewster
Flax Pond, Brewster
John's Pond, Mashpee

Photo by Bill Byrne

The PERCH

There are two abundant and tasty fishes commonly called perch in Massachusetts: the yellow perch, a native species inhabiting the majority of our inland waters, and the white perch, a native of our coastal streams and rivers that has also become established in many inland waters through introductions. Both species are renowned for their firm, white meat, and are excellent for almost any cooking preparation from deep frying to chowder.

The ***yellow perch*** is a true perch, and has at least two other relatives in Bay State waters. One is the ***tessellated darter***, a small, inconspicuous native that dwells on stream bottoms and gravel shoals; the other is the ***walleye***, one of North America's most popular gamefishes and the largest member of the family. During the middle decades of the last century walleye from their native habitat to the north and west were widely stocked in our waters, but most of these introductions failed to establish reproducing populations. Exceptions include the Connecticut and Merrimack Rivers, but even in those waters walleye have failed to achieve great abundance.

Yellow perch, in contrast, are found in almost every river, lake and pond in the state, and are almost always in great abundance. They vary in color from bright golden yellow to brassy green and are easily identified by the 5 to 8 dark bands that run across their backs and almost to the belly. Some individuals display striking red pelvic and anal fins. When landed, perch erect their dorsal spines and clamp their mouths shut to lift their razor-edged operculums. It takes little practice to handle them safely however, and by pinching the operculums back down together, an angler can get the mouth to pop open for easy hook removal.

Yellow perch spawn early in the spring, broadcasting their eggs in long, gelatinous strands over vegetation and other structure. The young grow quickly in their first year, but growth rates after that can vary dramatically depending on the quality of the habitat. Thanks to their

Photo by Bill Byrne

The yellow perch is unmistakable with its yellowish sides and dark "zebra" bands. Abundant and well distributed, most anglers agree it's one of our best table fish.

Photo by Bill Byrne

White perch have an almost silver-plated appearance with their gleaming, heavy scales. Handle them with respect, as they have sharp spines and razor-like operculums. Big ones like these are commonly caught in estuaries and at the Quabbin and Wachusett reservoirs.

high reproductive rates and proficiency at exploiting their food resources, yellow perch are prone to overpopulate their habitats — a situation that invariably results in stunted growth rates. The current state record weighed 2 pounds, 12 ounces and was taken at South Watuppa Pond in Fall River in 1979, but most yellow perch are 7 - 10 inches long and weigh less than a pound.

Yellow perch feed on a great variety of small fish, insects, crustaceans and other invertebrates, and with their rather pointed snouts are experts at picking morsels off the bottom or vegetation.

Minimum length for yellow perch to attain 1 $^1/_2$ pound award weight is 13 $^3/_4$ inches; girth 9 $^1/_2$ inches.

They almost always gather in like-size schools, and usually swim within a few feet of the bottom. They tend to hold in deeper water during the day, moving into the shallows around dawn and dusk to feed. It is almost unheard of to catch them at night. They are commonly enticed with worms or small shiners fished near the bottom. Ice fishermen probably account for more yellow perch than all other anglers combined, catching them on conventional tip-ups baited with live shiners, or jigging them up with weighted hooks or jigs tipped with worms, perch eyes, grubs or little plastic tails. Anglers can almost always improve perch growth rates in their favorite ponds by keeping all of the perch they catch. Transform a batch of small ones into delicious mock shrimp: Fillet, boil for a few minutes until

Best Bets for Yellow Perch

Long Pond, Brewster
Long Pond, Lakeville
Onota Lake, Pittsfield
Wequaquet Lake, Barnstable
Connecticut River, Northampton
Long Pond, Plymouth
Cliff Pond, Brewster
Jenkins Pond, Falmouth
Lake Rohunta, Orange

fillets curl, chill, and serve with cocktail sauce and toothpicks.

The ***white perch***, like several of our fishes, is misnamed. It is actually a member of the true bass family which includes the famous striped bass of our coastal waters. White perch are greenish black on the back with bright chrome, usually unmarked sides. They are anadromous fish that typically dwell in coastal bays and estuaries, moving up rivers to spawn in fresh or brackish habitats every spring, but landlocked populations are common and clearly do not require flowing water habitat to reproduce. White perch require respect during handling, as they possess a pair of nasty spines on each operculum, as well as sharp dorsal and anal fin spines. Although they have tough skins and are not the easiest fish to fillet, everyone who tastes white perch agrees they are well worth the effort required to get them onto the table.

Minimum length for white perch to attain 1 $^1/_2$ pound award weight is 14 inches; girth 9 inches.

White perch are active schooling fish and are almost continually on the move. Unlike yellow perch, they do not always orient to the bottom, and are often discovered cruising in the middle depths of lakes and reservoirs. They are also more likely to feed on the surface than yellow perch. They may be more prone to overpopulation and resultant stunted growth rates than any other species, perhaps because most of their potential predators prefer less prickly prey. Huge but stunted populations commonly monopolize virtually all of the biomass in some waters, preventing other species from thriving. Our fisheries management crews expended tremendous effort during the middle of the last century to "reclaim" many ponds by removing white perch, but because they either missed some fish, or there were illegal introductions subsequent to rotenone treatment, the perch are still present in most of those waters.

White perch average 6 - 8 inches and much less than a pound in most inland waters, but large and relatively infertile waters such as the Quabbin and Wachusett Reservoirs can provide numbers of big whites averaging 10-12 inches. Target them with nightcrawlers or small spinners fished on light line. They can also be jigged up, winter or summer, on small flies, jigs or shiners. The biggest catches of white perch of the largest average size are usually taken on estuary rivers in the spring, typically on sea worms fished on the bottom. The state record white perch weighed 3 pounds, 5 ounces and was taken at Wachusett Reservoir in 1994.

Best Bets for White Perch

Wachusett Reservoir
Quabbin Reservoir
Long Pond, Lakeville
Quacumquasit Lake, Brookfield
Long Pond, Brewster
Singletary Pond, Sutton
Mashpee-Wakeby Pond, Mashpee
Snake Pond, Sandwich
Weweantic River, Wareham

Photo by Bill Byrne

The Sportfishing Awards Program

by Richard A. Hartley

The Freshwater Sportfishing Awards Program has been recognizing the outstanding achievements of anglers fishing the waters of the Commonwealth for nearly four decades. The program awards bronze pins for 22 different species of fish when they exceed our minimum trophy weights (Table I). The rules are pretty simple: the fish must be legally caught from waters of the Commonwealth open to the public (i.e. requiring a fishing license), then brought to one of nearly 80 certified weigh stations (phone 508-792-7270 for a complete listing). The station agent weighs and measures the fish, then fills out an affidavit that is submitted with photos of the catch. In addition to the bronze pins, "gold" pins are also awarded to the lucky anglers who catch the largest fish in each category each year. The program caters to all ages and skill levels, and in an average year award anglers will range in age from 4 to 94!

In addition to providing bragging rights to anglers, the data generated by the program provides a wealth of valuable information to our fisheries biologists. Stephen Quinn (now with *In-Fisherman* magazine) did the first analysis of the program back in 1987 when he looked at data from 1971-1982 (see *Massachusetts Wildlife*, # 2, 1987). The plan was to provide updates every five years. Well, better late than never. Throughout this special fishing issue of *Massachusetts Wildlife* we have tried to provide valuable information for anglers of all skill levels. Once you've mastered the basics of fishing, the following tables will help you in your quest to advance to the next level, the hunt for trophies.

The program began in 1963 with minimum lengths rather than weights for 16 different species. Lengths changed throughout the years, and were slowly replaced with the minimum weights we have today. Similarly, the number of species expanded from the original 16 to our current 22. The latest arrivals were broodstock salmon (1993) and tiger trout (1999). Over 16,000 pins have been awarded to anglers so far for fish from nearly 900 different waters.

In the first year, a modest 324 pins were awarded. That number has increased throughout the decades, with an average of about 500 awarded annually and an all time high of nearly 700 in 1988! At the start of the new millennium we're on a pace to top 600 this year. The program entered the technology age in 1985 when we began compiling results on the com-

Table I: No. of Awards & Weights

Rank	Awards / Year*	Minimum Weight
1) Largemouth bass	15	7 lbs. 8 ozs.
2) Chain pickerel	11	4 lbs. 8 ozs.
3) Smallmouth bass	10	4 lbs. 8 ozs.
4) Yellow perch	8	1 lb. 8 ozs.
5) Lake trout	8	7 lbs. 0 ozs.
6) Channel catfish	6	6 lbs. 0 ozs.
7) Northern pike	6	15 lbs. 0 ozs.
8) White perch	5	1 lb. 8 ozs.
9) Bullhead	5	1 lb. 12 ozs.
10) Carp	4	20 lbs. 0 ozs.
11) Brook trout	3	2 lbs. 0 ozs.
12) Shad	3	6 lbs. 0 ozs.
13) Rainbow trout	3	4 lbs. 0 ozs.
14) Brown trout	3	6 lbs. 0 ozs.
15) Crappie	2	2 lbs. 0 ozs.
16) White catfish	2	4 lbs. 0 ozs.
17) Broodstock salmon	2	10 lbs. 0 ozs.
18) Sunfish	2	1 lbs. 0 ozs.
19) Walleye	1	5 lbs. 0 ozs.
20) Landlocked salmon	1	5 lbs. 0 ozs.
21) Tiger muskellunge	<1	10 lbs. 0 ozs.
22) Tiger trout	-	3 lbs. 0 ozs.

* Note that these averages are based on more than 30 years of data and do not necessarily reflect present numbers. Awards for largemouth bass, for instance, have declined in recent years, while the tiger trout has only recently been added to the program.

Table II: Top Ten Waters / Awards

(43% of all Awards)

Water	Town	Total
Quabbin Reservoir	NA	1,914
Connecticut River	NA	1,334
Wachusett Reservoir	West Boylston	696
Onota Lake	Pittsfield	380
Lake Congomond	Southwick	309
Mashpee-Wakeby Pd.	Mashpee	289
Long Pond	Lakeville/Rochester	237
Merrimack River	NA	229
Long Pond	Brewster/Harwich	180
Snipatuit Pond	Rochester	172

Table III: Top Ten Waters / Species

(Waters that produced the greatest variety of species)

Water	Town	# of Species
Quabbin Reservoir	NA	16
Onota Lake	Pittsfield	15
Connecticut River	NA	14
Wachusett Reservoir	West Boylston	13
Merrimack River	NA	13
Long Pond	Plymouth	13
Lake Congomond	Southwick	12
Mashpee-Wakeby Pd.	Mashpee	12
Quaboag Pond	Brookfield	12
Long Pond	Lakeville/Rochester	10

puter. Today we have a database containing over 13,000 weight-derived records. Using this database, lets take a brief look at what anglers are catching and where they're catching them.

The species being sought by participating anglers has changed throughout the decades. For the entire period of record, the black bass (large and smallmouth), chain pickerel and yellow perch have reigned supreme (Table I), but it wasn't always that way. Although largemouth bass accounted for the most "weigh ins" of all species from the '60s through the '80s, it has now dropped to 8th place. There are still plenty of the old standbys like yellow perch, chain pickerel and northern pike being weighed in, but surprisingly, throughout the '90s, lesser known species such as lake trout, channel catfish and carp have become the heavyweights. (The number of pins awarded annually for carp reinforces the fact that this once ignored fish is increasing in popularity; in fact, carp was the leading trophy in 1998 with nearly 70 pins awarded!) The way things are going, the next decade may belong to the bottom feeders as channel and white catfish

join the carp as some of the most sought after species in Massachusetts.

If you're looking for the best opportunity to catch a trophy fish, knowing where the fish are reported to be caught reveals that a mere 10 waters account for nearly half of all awards (Table II). The mighty Quabbin Reservoir has produced a whopping 15%! Not only do these waters produce a tremendous number of pins annually, they also represent the greatest variety of species weighed in (Table III). Fishing at any of these waters will therefore greatly increase your chances of landing a pin fish no matter how you fish.

Looking at catch by season shows catching trophy fish mirrors fishing trends themselves (Table IV). Pin fish landings reach their maximum in May as trout stocking peaks and interest in fishing picks up. Numbers remain steady throughout the summer, drop in the fall, then pick up again as safe ice sets in. If your goal is the coveted gold pin (and be honest, who wouldn't want one of those jewels adorning their fishing hat!), either set your sights high, or target the species with the least competition. Table V shows the average weight for the gold award over the years. Catch a fish that's close and you know you're in the ball park.

Low competition species — those averaging less than 10 awards annually — include landlocked salmon, sunfish, tiger muskellunge, walleye and shad. Other than the sunfish, which simply get overlooked by most anglers (even though large ones can be found in virtually every waterbody), the rest produce low numbers for good reasons. Landlocked salmon are only found in two waters in the Commonwealth — the Quabbin and Wachusett reservoirs — and are only vulnerable during certain periods (par-

Table IV: Percentage of Awards by Month

Month	Percent	Month	Percent
January	7	July	9
February	10	August	9
March	4	September	7
April	14	October	5
May	20	November	2
June	10	December	2

ticularly at Wachusett where only shore fishing is allowed). Tiger muskellunge are stocked in low numbers in only a handful of waters, many of which are just beginning to produce trophy fisheries. You just can't beat the bragging rights when you pull a 10+ pound tiger onto the ice! Walleye are only found in respectable numbers in the Connecticut River and are really only fished heavily during their early spring spawning run. Persistent anglers who concentrate on these species could find themselves at the annual Sportsman's show in February being presented with a gold pin and plaque!

One species which requires explanation is shad. Shad minimum weights have been tinkered with for the past two decades. Throughout the early 80s when the minimum weight for shad was 6 pounds, an average of 16 pins were awarded. In 1985, however, a particularly large year class produced a whopping 132 pins! As a result, the minimum weight was increased to 7 pounds the following year. Not surprisingly, the number of pins dropped back to about a dozen. Then it dropped to single digits and dried up all together in 1991. Despite returning the weight to 6 pounds in 1998, we haven't awarded a single pin for shad in nearly a decade. Results of the annual shad fishing derby on the Connecticut river, as well as weight samples taken by us, confirm that the average weight of shad in the Connecticut has dropped, and finding a fish over 6 pounds is exceedingly rare. Although we will probably drop the weight yet again, in the meantime, land a 6 pound shad and you're virtually guaranteed a gold pin.

Although this has been a very cursory presentation of what the Freshwater Sportfishing Awards Program can offer for valuable information to both anglers and biologists alike, we hope that it helps in your quest for that "once in a lifetime fishing experience." The program has provided many such moments from the 5 year old who caught the gold pin tiger muskie to the senior citizen who fished all his life to finally get the gold.

What does the future hold for the Sportfishing Awards Program? First, after numerous requests, we will be developing a catch and release category. Many of our anglers simply don't want to remove a trophy fish from the water in order to have it weighed, but would still like to have their catch recognized. To that end, we are working on the minimum lengths (and logistics of verification) needed to qualify as a trophy.

As the program coordinator, I would also like to encourage anglers to widen their horizons. Rather than award multiple pins for every fish of the same species over the minimum weight limit, I would like to create a "Master Angler" category. Anglers who can land trophies of multiple species need to be recognized. We will begin to salute not only the angler who can catch the widest variety of species in a single season, but we'll also track participating anglers for decades. We'd like to see someone who's earned an award for all 22 species: truly a master angler!

And when an angler has accomplished that, what's next? Why, a gold pin for each category of course. How hard could that be?

Table V: Average Weight of Gold Award Fish

Black crappie	2 lbs. 10 ozs.
Bullhead	3 lbs. 8 ozs.
Broodstock salmon	18 lbs. 10 ozs.
Brook Trout	3 lbs. 13 ozs.
Brown trout	10 lbs. 5 ozs.
Carp	30 lbs. 5 ozs.
Channel catfish	16 lbs. 0 ozs.
Chain pickerel	6 lbs. 13 ozs.
Landlocked salmon	7 lbs. 3 ozs.
Largemouth bass	10 lbs. 0 ozs.
Lake trout	18 lbs. 2 ozs.
Northern pike	24 lbs. 13 ozs.
Rainbow trout	7 lbs. 13 ozs.
Shad	7 lbs. 14 ozs.
Sunfish	1 lb. 10 ozs.
Smallmouth bass	6 lbs. 5 ozs.
Tiger muskellunge	15 lbs. 6 ozs.
Walleye	7 lbs. 14 ozs.
White catfish	7 lbs. 10 ozs.
White perch	2 lbs. 8 ozs.
Yellow perch	2 lbs. 3 ozs.

The CATFISH

There is no mistaking the members of the catfish family: they all have broad mouths surrounded top and bottom by paired barbels or "whiskers" that give the group its name. They have skin rather than scales, and they all sport an adipose fin. The cats also share some formidible defensive weapons: the dorsal and pectoral fins are each equipped with a sturdy, sharp spine the fish can erect and lock into place. These spines are easily avoided, but are capable of inflicting painful, slow-to-heal puncture wounds if the fish are handled carelessly.

Catfish are scent-oriented animals with many scent-detecting cells imbedded in their skins, particularly in their barbels and around their mouths. They tend to be nocturnal in their habits, and are typically rather inactive by day, holing up under logs, weeds and other shady cover. As the sun falls, they become active and venture forth from their lairs in search of food. Fishermen therefore target them at night, generally with dead baits or nightcrawlers fished on the bottom with a weight. There are even commercial catfish baits on the market. Some anglers chum for cats, broadcasting baits and/or scents into the water as attractants.

Cats are rarely shy in taking a bait, and typically swallow the hook. For this reason, when catfishing, it is often wise to use snelled hooks attached to the main line with a snap swivel. With this rig, the fish can simply be unsnapped, and the hook quickly and easily replaced. Catfish are excellent eating — so much so that they are a staple in the aquaculture industry — and they are easy to clean (see illustration). Recipes abound, but breading and pan-frying is tops in New England. Catfish nest in holes they dig under banks or debris, and guard their eggs from small predators until they hatch. The young can be observed in dense schools, often with a parent in attendance, as they swim through the shallows in summer.

The largest, most streamlined member of the catfish family in Massachusetts is

Photo by Bill Byrne

Channel cats vary in shade (this one is quite pale) but they can usually be distinguished from our other catfish by their large eyes, streamlined shape and deeply forked tail. Our largest population resides in the Connecticut River.

Photo by Bill Byrne

Large white cats have strikingly large heads. Note the moderately forked tail — an easy way to distinguish this species from the closely related bullheads.

the ***channel catfish***, an introduced gamefish that is self-sustaining and abundant in the Connecticut and Chicopee rivers, present in the Charles, Merrimack and other rivers, and is occasionally caught from scattered lakes around the Commonwealth. Channel cats are identified by their deeply forked tails, dark olive-brown to light bluish-gray coloration, and a white belly. Young channel cats display a peppering of black spots on the sides, but these disappear with age. The meat of this fish is firm and white.

Compared to our other catfish, channels have relatively large eyes, probably reflecting the fact that they are more active predators than the other members of the clan. They are the only cat that will commonly strike lures. Fish for them with baits such as worms, crayfish, shucked freshwater mussels, live shiners or chunks of fish near logjams or deep holes that provide cover. A jig head baited with a chunk of cut fish — shad, mackerel or even anchovie — is always a good choice for casting or jigging.

Minimum length for channel cat to attain 6 pound award weight is 23 inches; girth 15 inches.

Most channel cats caught on the Connecticut River, which is by far the mecca for this species in Massachusetts, weigh 2 - 4 pounds, but fish of 5 - 10 pounds are not uncommon. Really big channel cats turn up as rarities in a handful of lakes and ponds around the state; many undoubtedly the result of illegal releases from home aquariums. Many of these fish clearly do not represent reproducing populations. The state record channel cat was caught at Ashfield Lake in Ashfield in 1989 and weighed 26 pounds, 8 ounces.

The ***white catfish*** is also an introduced species, intermediate in size between the bullheads and the channel cat. It is

Best Bets for Channel Catfish

Connecticut River

Chicopee River

Onota Lake, Pittsfield

Congamond Lakes, Southwick

Willet Pond, Walpole

Baddacook Pond, Groton

Best Bets for White Catfish

Mashpee-Wakeby Pond, Mashpee
Charles River
Merrimack River
Connecticut River
North Pond, Hopkinton
Jenkin's Pond, Falmouth
Coonamessett Pond, Falmouth

less streamlined than the channel cat, with smaller eyes and a stouter body. Large examples have such wide heads that, when viewed from above, they are somewhat reminiscent of tadpoles. They are black to bluish-black in color with white chin barbels and bellies, and have a moderately forked tail. Never widely distributed in Massachusetts, they are most common in the Charles and Merrimack Rivers and a handful of east-central ponds where they were apparently stocked as "bullheads" in the 1940s or '50s. They seem to be more difficult to catch than either channel cats or bullheads, but will hit all the same baits, plus various smelly concoctions such as chicken entrails, rancid bacon and the like. A few big ones are taken through the ice every winter. The state record is 9 pounds, 3 ounces and was taken at Baddacook Pond in Groton in 1987.

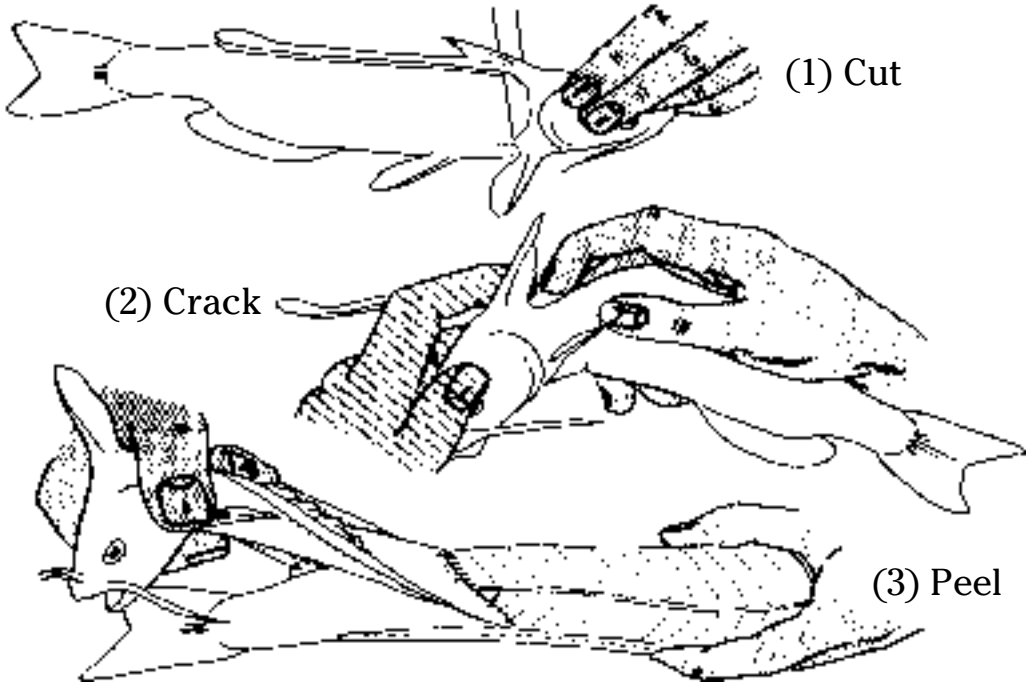
The ***brown bullhead*** is our only native catfish and well distributed in virtually all the waters of the state, including rivers and streams. It has a squarish or only slightly indented tail, and black or dark chin barbels. Color is variable from black to yellowish brown with a pale belly, and many specimens display brown mottling on the sides. Known traditionally as the "horn'd pout" to New England fishermen, the brown bullhead has pinkish, flavorful meat that has long been a favorite at the dinner table whether broiled,

Minimum length for white catfish to attain 4 pound award weight is 18 inches; girth 14 inches.

poached or fried. The best tasting bullheads come from sandy- or gravel-bottomed waters; those from mud-bottomed areas often taste a little, well, muddy. While it can grow to 18 inches and weigh a few pounds (the state record is 3

Photo by Bill Byrne

Bullheads, commonly called "horned pout" in New England, are our most abundant catfish, found in virtually all freshwater habitats. Dark chin barbels identify this one as a brown bullhead. The yellow bullhead typically has white chin barbels and a convex tail.



A simple method for cleaning small to moderately sized catfish is to slice a narrow ribbon of skin off the back, starting at the adipose fin. When your knife reaches the dorsal spine, turn the blade and cut downward about halfway through the body. You may need to "crack" the backbone, similar to snapping a stick. Put a finger or two in the resulting opening to hold the meat, then grasp the head in your other hand and pull downward. Head, guts and skin will strip away cleanly, leaving a nice chunk of fish to bread and drop in the frying pan.

pounds, 8 ounces from Stiles Pond, Boxford, in 1985), most brown bullheads are 6 - 12 inches and weigh around a pound. The species overpopulates some waters, leading to stunted growth rates and lots of fish in the 4 - 6 inch range. Harvest them!

The ***yellow bullhead*** is closely related and nearly identical in size and habits to the brown bullhead. It is an introduced species with a broad distribution in Massachusetts and can be distinguished from the brown bullhead by its white (or at least pale) chin barbels and a slightly convex (outward curving) tail. Fish for them on the bottom from dusk to midnight with worms or slices of shiners for bait. Setting up in a spot with a little current — such as near an inlet to a pond or lake — is often very productive, as the current will disperse the scent of the bait over a large area, drawing actively feeding fish.

Minimum length for bullhead to attain 1 $^3/_4$ pound award weight is 14 inches; girth 10 inches.

Best Bets for Bullhead

Santuit Pond, Mashpee
Leonard's Pond, Rochester
Snipatuit Pond, Rochester
Lout Pond, Plymouth
Mashpee-Wakeby Pond, Mashpee
Quabbin Reservoir
Bartlett Pond, Plymouth
Tihonet Pond, Wareham
Mill Pond, Wareham
Connecticut River

The PIKE

The members of the pike or *esocid* family — which include the pickerel, pike and muskellunge — are ambush predators, designed like dragsters for explosive acceleration rather than steady cruising. They tend to frequent the edges of weed beds — aquatic "edge" habitat that provides them with good viewing as well as concealment from both predators and prey. They have long, torpedo-shaped bodies, with opposing dorsal and anal fins placed far back near the tail. Their most distinguishing feature is a long snout shaped somewhat like a duck's bill, but armed with loads of sharp teeth for grasping prey. Care must be taken to avoid the teeth when removing hooks, but at least the pike don't have any fin spines to contend with.

While the members of this family aren't renowned for performing acrobatics like bass or trout when hooked, they have always been considered gamefish and are famed for their ferocious strikes and strong runs. They are very bold and will attack almost any lure, even ones that are almost as big as themselves. Some pike fishermen claim these fish have a preference for red, and recommend spoons and spinners with that color in them. They also advise that lures be retrieved at a fast clip for best results. If a fish follows your lure to the boat or dock — a habit pike are especially known for — try swirling it in a figure eight pattern before you remove it from the water. The fish may hit it, so be certain you have adjusted your drag beforehand! The pike are strictly sight hunters, and are rarely caught after dark. They are among the most active fish under the ice in winter, however, and the majority of the trophy catches from Massachusetts are taken through the ice on live bait.

Minimum length for pickerel to attain 4 $^1/_2$ pound award weight is 24 inches; girth 13 inches.

All members of the pike family are excellent eating with firm, white meat that is particularly good for making fish chowder; however, their body structure includes a line of "Y-bones" that runs along each side above the ribs. These bones make the pike somewhat complicated to

Photo by Bill Byrne

Chain pickerel are native members of the pike family found in most waters with reasonable clarity. The dark "teardrop" is a good identification feature.

Photo by Bill Byrne

Northern pike are identified by their pattern of light, usually oval spots on a darker background. A wire leader is recommended when fishing for them, or their sharp teeth will often allow them to cut the line and escape.

render into boneless fillets (the strip of meat containing the bones must be removed after conventional filleting), so many anglers don't bother to remove them until after cooking. A traditional Yankee method for making good use of pickerel is to pickle them; the vinegar used in the process dissolves those pesky Y-bones!

The ***chain pickerel*** is the most common pike in Massachusetts, inhabiting virtually all lakes, ponds and rivers with adequate clarity and aquatic vegetation. It is a native species, and was the top predator and bane of pumpkinseeds and yellow perch long before black bass were introduced more than a century ago. It is identified by the dark, chain-like pattern covering its back and much of its sides, which have a background color of green to greenish silver. The belly is white (typical of almost all fish, since it makes them harder to see from below against the lightness of the sky) and there is a distinct black "teardrop" bar under the eye, angled straight down or slightly forward. The chain pickerel's diminutive relative, the ***redfin pickerel***, inhabits stream pools, beaver ponds and swamps, and is identified by its reddish fins and a teardrop bar that angles backward. Redfins rarely grow to more than a foot in length.

Chain pickerel, like all members of the family, spawn early in the year, usually just after the ice melts. Females, attended by one or more males, broadcast their eggs in shallow water over submerged vegetation. Once they reach a length of about 3 inches, young pickerel begin eating other fish, which remain their dietary staple throughout life. Pickerel grow quickly in habitat offering good food re-

Best Bets for Chain Pickerel

Mashpee-Wakeby Pond, Mashpee
Long Pond, Lakeville
Stockbridge Bowl, Stockbridge
Snipatuit Pond, Rochester
Monponsett Pond, Halifax
Wequaquet Lake, Barnstable
Lake Pearl, Wrentham
Otis Reservoir, Otis

sources, and can attain the legal length of 15 inches in about 2 years. They rarely live for more than 5 years. The state record was taken at Laurel Lake in Lee in 1954 and weighed 9 pounds, 5 ounces. It remains one of the largest pickerel ever caught anywhere, and is by far our oldest standing record.

Minimum length for northern pike to attain 15 pound award weight is 37 inches; girth 18 inches.

The ***northern pike*** is one of the largest freshwater fish in Massachusetts, so far surpassed in weight only by the carp. The current state record was caught at Lake Quacumquasit (South Pond) in Brookfield in 1988 and weighed an astounding 35 pounds. Pike over 20 pounds are taken every year. This toothsome predator — the most widely distributed freshwater fish in the world — is not a native species and has failed to establish reproducing populations in the majority of the Bay State waters where it has been stocked. It prefers flooded meadows and grasslands for spawning habitat in the spring, and this may be a limiting factor in Massachusetts.

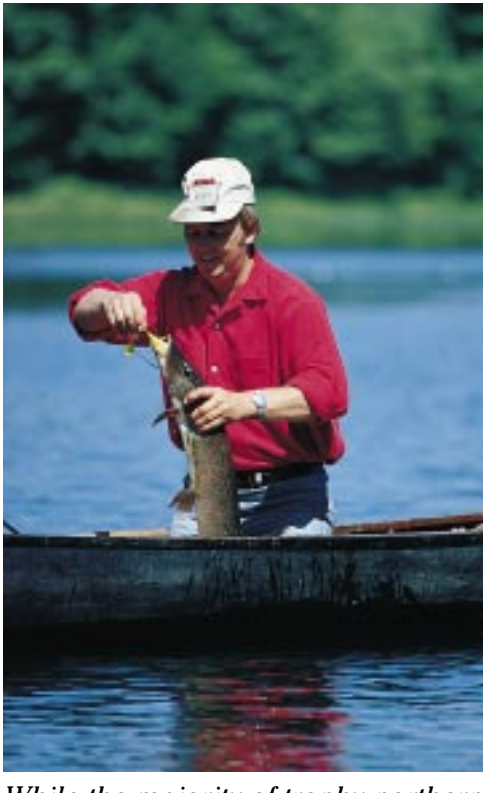


Photo by Jack Swedberg

While the majority of trophy northern pike catches are made through the ice in winter, they can also be taken in open water on conventional gear. This one hit a spinnerbait lure.

Best Bets for Northern Pike

Onota Lake, Pittsfield
Lake Quinsigamond, Shrewsbury
Lake Buell, Monterey
Lake Pontoosuc, Pittsfield
Lake Cochituate, Framingham
Quacumquasit Lake, Brookfield
Quabaug Pond, Brookfield
Concord River
Webster Lake, Webster
East Brimfield Res., Brimfield

When supplies are available, ***MassWildlife*** stocks 6 - 12 inch fingerlings in roughly two dozen lakes, ponds and rivers around the state. These fish grow quickly, typically reaching the 28 inch minimum size in 3 - 5 years. Males rarely get much larger, but females may continue to grow to lengths in excess of 4 feet! Thanks to the large minimum size and a one fish per day limit on the species, Bay State anglers are provided with an exciting trophy fishery.

Northern pike are easily identified by their pattern of light, often yellowish,

Minimum length for tiger muskie to attain 10 pound award weight is 36 $^1/_2$ inches; girth 16 inches.

elongated oval spots arranged in irregular rows on a darker greenish to greenish brown background. Some individuals sport reddish orange fins. Typical of all the members of the family, northerns are most frequently taken through the ice on live shiners, but open water fishermen who target them with big plugs, spinners and spoons, or fish for them with big shiners suspended beneath bobbers, can also enjoy considerable action. A thin

Photo by Bill Byrne

The tiger muskie is a sterile hybrid created by crossing a northern pike with a muskellunge. Due to their limited numbers, large size and striking pattern, they are among the most coveted of freshwater fishing trophies.

wire leader is recommended, or thanks to the pike's teeth, many cut-offs will be inevitable.

The only other esocid in our waters is a beautifully marked hybrid called the ***tiger muskellunge***. Like the tiger trout, it is a hatchery fish produced by crossing two species: the northern pike and the muskellunge (largest member of the family in the world). The result is a strikingly handsome, sterile animal patterned with light and dark green tiger stripes. Fingerlings are typically acquired as surplus from other state hatcheries (particularly Pennsylvania's) which produce them by the hundreds of thousands. We have stocked them in over 25 water bodies, but returns have so far been much poorer than for northerns. This is probably due to much higher mortality rates (they appear to be much more susceptible to predation), as well as the fact that tigers are simply much more difficult to catch. These two factors, plus the beauty of the fish, make it one of the most rare and desirable trophies found in our waters.

Tiger muskies enjoy the same size and creel limits as northerns, and most are also taken through the ice. The current state record weighed 19 pounds, 6 ounces and was taken through the ice at Lake Quannapowitt in Wakefield in 1994. Since tigers are capable of reaching weights in excess of 40 pounds, it is unlikely that this record will stand for long. A listing of all waters stocked with northern pike and tiger muskies is available from all ***MassWildlife*** offices or our website.

Best Bets for Tiger Muskie

Spy Pond, Arlington

Lake Pontoosuc, Pittsfield

Lake Mascopic, Tyngsboro

Hampton Ponds, Westfield

South Watuppa Pond, Fall River

A-1 Site, Westborough

Lake Quannapowitt, Wakefield

The TROUT

No other group of fishes commands greater interest among New England sport fishermen than the trout, salmon and char known collectively as salmonids. Praised and glorified in innumerable tomes and articles from the 18th century to the present day, they were the first fish to be pursued primarily for their sporting qualities, and the art of fooling them with feathered hooks and a fly rod is held by many to be the highest, most elite form of fishing. All romance aside, the trout are exceptional fighting and table fish, and thanks to the continued presence of self-sustaining populations and intensive culture and stocking programs, they remain one of the most prized and abundant fisheries resources available to Bay State anglers. More and larger trout are stocked annually in Massachusetts waters than in any other state in New England

Although diverse in their habits, habitat requirements and geographic origins, all the salmonids share some common traits including an adipose fin, relatively small scales, somewhat oily flesh, and a requirement for fairly cold, well oxygenated water. The most famous of the bunch is the ***Atlantic salmon***, an anadromous, ocean-dwelling species that spawns in the rivers emptying into the North Atlantic. The species has declined dramatically in recent decades due to dams, pollution, overexploitation by commercial interests and other human-generated factors that have interfered with reproduction and survival. Millions of dollars have been expended in an ongoing attempt to restore populations to the Connecticut and Merrimack rivers (which lost their salmon populations in the 19th century) but results have been pretty dismal so far. Even in the wilder rivers to our north in Maine and Canada, the species appears to be in dire straits, and the continued survival of natural, self-sustaining populations into the foreseeable future remains in doubt.

Due to their extreme scarcity and value, wild sea-run Atlantic salmon must be released immediately if caught, but the restoration attempt is currently provid-

Photo by Bill Byrne

Hatchery-bred Atlantic salmon no longer needed for production are widely stocked and have provided anglers with an exciting "bonus" fishery in recent years. Landlocked salmon are restricted to the Quabbin and Wachusett Reservoirs.

Photo by Ken Simmons

A native brook trout is as beautiful a fish as any in the world — and just as delicious as it looks! Most examples are less than 8 inches long, but are often quite abundant wherever coldwater stream habitats have survived.

ing an incidental benefit to anglers in the form of hundreds of surplus "broodstock salmon" which have been hatchery-raised to provide eggs and milt for fry production. When they are no longer needed for production, these "bonus" fish are stocked in various lakes and impoundments around the state. As a result, anglers fishing these waters have a chance to match wits and tackle with salmon ranging from 4 - 20 pounds! These fish are caught on all the same lures and baits as other stocked trout.

Minimum length for landlocked salmon to attain 5 pound award weight is 22 inches; girth 12 1/2 inches.

While sea-run Atlantics may remain scarce, landlocked populations have been established at the Quabbin and Wachusett Reservoirs. The Wachusett population is naturally self-sustaining, while the one at Quabbin is maintained in part by annual stockings of hatchery raised smolts that grow to adulthood in the reservoir. Both populations spawn in tributary rivers in the fall. They are conserved through a statewide 15 inch minimum size limit and a 2 fish daily bag limit. Most landlocks are taken on cast or trolled spoons and smelt imitations, or on live shiners or nightcrawlers drifted in current or floated beneath a bobber. Most experts recommend a very fast retrieve when using lures. Salmon can put up a spectacular fight, and are renowned for their speed and leaps. They are silver in color, brownish on the back grading to white on the belly, and speckled on head, body and dorsal fin with numerous black spots, some of which are nearly always X-shaped.

Our only other native trout is the ***brook trout***. Judged by many to be the most beautiful freshwater fish in North America, it is a handsome char with yellowish, worm-like vermiculations along the back, yellow and red spots (the latter surrounded by blue halos) sprinkled along the sides, and reddish, white edged pelvic, pectoral and anal fins. Males often develop a deep reddish tint along the belly and darken to black on the chin and throat as spawning season approaches in the fall. This increases the striking contrast of their white fin edges. Brookies require cold water and are intolerant of thermal and chemical pollution. As a result, self-sustaining populations are today largely restricted to headwater streams and a few relatively pristine rivers.

Wild brook trout rarely reach 10 inches in length, and average about half that. Grab a few topographical maps of your area, explore the most shaded stream habitats, and it is likely you will find them. For many brook trout anglers, fishing the places where these fish live is more important than the size of the trout. For those who want big brookies, however, ***MassWildlife*** raises and stocks thousands of 10 - 12 inchers every year, providing anglers with the opportunity to

catch them from many lakes, ponds and rivers. The current state record brook trout weighed 6 pounds, 4 ounces and was taken at Otis Reservoir in 1968. It can generally be assumed that any brook trout qualifying for a Sportfishing Award (2 pounds) is a stocked fish, although there may be some exceptions.

Brook trout are notoriously easy to catch, and will strike flies, streamers, small spoons and spinners, worms, grasshoppers and all manner of insects. Stockies will even eat tiny colored marshmallows. Those who pursue natives must approach stream pools with considerable stealth to avoid detection: if the trout see you, they will not bite. Drifting a garden or meal worm downstream beneath a tiny bobber is a very effective technique; you may need to add a little weight in the form of a split-shot a few inches above the hook to get the bait down in swift current areas. Clean brookies like all trout: simply slit the belly from vent to throat and remove gills, viscera and the bloody membrane under the backbone. The traditional way to eat brookies is to dip them in cracker or bread crumbs and fry them whole.

Though originally from Europe, the ***brown trout*** is widely stocked and has established self-sustaining populations in many of the same waters as the brook trout. As is the case with the brookies, wild browns in headwater streams average only 5 or 6 inches in length, but stocked fish are typically twice as large. Brown trout are golden to light brown in color, sometimes almost silvery, with prominent dark brown and orange spots scattered along the sides. They lack the back vermiculations of brook trout, the X-shaped spots of salmon, and the heavily spotted tails of rainbow trout. They are more tolerant of pollution and heat than most other members of the family.

Brown trout can grow quite large in "big water" environments, and the current state record, caught at Wachusett Reservoir in 1966, weighed 19 pounds, 10 ounces. Other than those that have been recently stocked, browns have a well deserved reputation for being very challenging fish to catch. They are much more "spooky" (apt to get frightened) and difficult to "fool" than brookies or rainbows, are more nocturnal in their habits, and more piscivorous (fish-eating) in their dietary preferences than the other trout. These factors make them

Minimum length for brown trout to attain 6 pound award weight is 23 $^1/_2$ inches; girth 15 inches.

that much more difficult to catch, but anglers target them with minnow-imitating plugs, spoons, spinners and streamers, various moth imitations (especially at night) and with cast or trolled live shiners. As with brook trout, there are populations of "salter" browns that live in estuary streams and rivers and spend at least part of their lives in near-shore marine environments. Like all our trout, browns are stocked primarily to provide a "put-and-take" fishery, rather than to establish populations, but South Pond in Brookfield has special regulations designed to promote a trophy brown fishery.

The ***tiger trout*** is a sterile cross between a brook trout and a brown trout, identified by the vermiculations that cover almost its entire body, a well marked tail, and lack of the red or orange spots that both brookies and browns

Photo by Bill Byrne

The notoriously wary brown trout varies from deep golden brown to silvery in color and typically sports a large number of spots, including some with halos.

typically display. While this odd hybrid sometimes occurs in the wild, most tigers in Massachusetts waters are the product of ***MassWildlife***'s Sandwich Fish Hatchery, which has recently begun producing thousands for annual stocking across the state. This fish is said to strike more readily and fight harder than either of its parents, and adds another interesting possibility to the angler's creel. The current state record is 3 pounds, 1 ounce and was taken from the Westfield River last year. Expect to see this record broken frequently in the years to come.

Minimum length for a rainbow to attain 4 pound award weight is 20 $^3/_4$ inches; girth 13 inches.

The ***rainbow trout*** is a West Coast anadromous fish that is probably the most widely cultured and stocked member of the trout family in the world. Virtually all rainbows caught in Massachusetts are hatchery products that provide a "put-and-take" fishery wherever they are stocked (with the exception of a few designated "catch and release" areas on selected coldwater rivers). They commonly range from 10-12 inches, although some "holdovers" (stocked trout that live and continue to grow for a season or more after release) are caught from various waters every year. The state record rainbow was a 13 pound, 13 ounce holdover taken at Wachusett Reservoir last year. Rainbows can be identified by the small, profuse spots that cover them from head to tail, plus a pinkish band along the midline that gives the fish its name.

Photo by Bill Byrne

The tiger trout is a sterile hybrid created by crossing a brook trout with a brown trout. It has the base color of a brown, but is covered with the squiggly vermiculations that brook trout sport only on their backs.

Rainbows will strike a great variety of baits and lures. When fishing them in rivers, drifting half a night crawler or a salmon egg down into pools and holding areas behind boulders is generally effective, as are nymphs and small gold or silver spinners fished with ultra-light gear. In lakes and ponds all manner of small spoons and minnow imitations, gaudy streamers, weighted nymphs, and live baits in the form of garden worms, meal worms and tiny shiners will all work. The most effective "stockie killer" of recent years is Berkley's marshmallow-like powerbait, which is rigged to float suspended above the bottom and comes in a rainbow of colors. What color the fish will prefer on any given day remains one of the greatest mysteries in fishing.

Minimum length for lake trout to attain 7 pound award weight is 25 inches; girth 16 $^1/_2$ inches.

Our last trout, the ***lake trout***, is really a char and the largest of all our salmonids. Native to the deep, coldwater lakes of northern New England and Canada, it was stocked in Quabbin Reservoir during the 1960s in an attempt to create a self-sustaining coldwater fishery there. Not only was the lake trout successful in

Best Bets for Trout

Most members of the trout family of award-winning size in Massachusetts were stocked at that size. The majority of our waters are simply not suitable for trout to achieve the longevity required to attain large size. Exceptions include South Pond, Brookfield and Walden Pond, Concord for brown trout, and the Quabbin and Wachusett reservoirs for lake trout, landlocked salmon, and probably rainbows and browns. Other than at these sites, anglers seeking trout in quantity and quality should just consult the annual stocking lists, available from all ***MassWildlife*** offices and the agency's website, and fish accordingly. If the object is to catch an award-winner, keep in mind that our stocking crews typically release the largest trout in the lakes, rivers and ponds that receive the highest fishing pressure.

Photo by Bill Byrne

Rainbow trout are usually heavily speckled from from nose to tail and often display a pinkish band along each side.

establishing itself in Quabbin,but it also colonized Wachusett Reservoir through an aqueduct that runs between the two reservoirs. These waters both support self-sustaining laker populations today.

Lakers commonly run from 1 - 4 pounds in weight, although fish in the 15 - 20 pound range are taken every season. The state record is currently 22 pounds, 10 ounces and was taken at Quabbin in 1988. Lakers feed on other fish — especially on a coldwater baitfish called the ***rainbow smelt*** — and also on insects and other invertebrates. Most are taken on live shiners fished on the bottom, or on trolled spinners, spoons and smelt imitations. Anglers must go deep to find them during the summer months. They are easily identified by their deeply forked tails, creamy white spots on a gray to olive background, and of course the location where they are caught. As with all trout, there are no spines or sharp operculum edges to worry about when handling a laker, but some care should be taken to avoid the sharp teeth on larger examples. Lakers are the most oily of our trout, and many anglers claim they are best when smoked or broiled on an outdoor grill.

Photo by Joe Bergin

A big laker is an impressive fish; the largest trout trophy Massachusetts has to offer. The only waters that hold them in Massachusetts are the Wachusett and Quabbin reservoirs.

The CARP

The carp is the largest of all the freshwater fish found in Massachusetts. The current state record, caught from the Connecticut River in 1993, weighed 44 pounds, 2 ounces. Even average carp run 8 - 12 pounds, and specimens up to 20 pounds are not exceptional. Aside from their enormous size, carp offer the angler many attractive features including a powerful fight (they rarely jump, but their sustained runs are legendary), wide distribution, great abundance, and plenty of inexpensive action. The carp is the best choice for any angler seeking to battle lots of big fish in freshwater. Look for them in most urban rivers and lakes.

Minimum length for carp to attain 20 pound award weight is 32 inches; girth 21 inches.

Carp are big members of the minnow family, easily identified by their large size, deep bodies, golden brown coloration and a single pair of short barbels (one on each side of the low slung mouth). They have tough, rubbery lips and toothless jaws. They bear a single spine in the dorsal fin, and another in the anal fin. Most carp are heavily scaled, but some have only scattered large scales ("mirror carp") while others have almost no scales ("leather carp"). These are just variations in skin covering within the single species, but carp fishermen invariably distinguish between them.

Carp were introduced to Massachusetts from Europe and Asia in the 19th century. Their high reproductive and growth rates, ability to thrive in degraded environments, and supposedly wonderful table qualities made them sound ideal. Fishermen were soon blaming them (without cause in many cases) for the loss of native fisheries and declines in water clarity, however, and denouncing their flavor and dubbing them "trash fish." As a result, carp were dismissed (and in many cases persecuted) by most American anglers for several generations. Only in recent decades have fishermen begun to take a second look at the carp, and taking a cue from their European counterparts, are now starting to pursue them with the sort of fervor only gamefish can inspire.

Look for carp in the larger rivers and warmwater impoundments, particularly in urban areas. Cast and set your rod(s) with the bail open, so the fish can grab the bait and swim without resistance until you set the hook. The best bait is whole kernel corn, fished without a weight on a small hook, but in areas with current, a slip sinker (which allows the line to run through it unimpeded) is necessary. Carp are also caught on bread, various vegetables including beans, peas and potatoes, and a great variety of flavored dough baits (crushed bran flakes mixed with raspberry soda to a firm consistency is a popular recipe). Chumming the area before and during fishing will attract and hold carp in the vicinity.

Photo by Bill Byrne

Carp can be identified by their large size, golden coloration, underslung mouths, and a single pair of barbels. Based on its large, asymmetrical scales, this example would be classified by many anglers as a "mirror" carp.

Photo by Bill Byrne

Shad migrating up the Connecticut River during the spring spawning migration.

The SHAD

The ***American shad*** is an ***anadromous*** fish, meaning it spends most of its life at sea, but returns — like the Atlantic salmon, rainbow smelt and blueback herring — to freshwater rivers to spawn. The largest "run" of shad in Massachusetts, involving hundreds of thousands of fish, takes place on the Connecticut River, but other rivers such as the Merrimack, North, Westfield and even the Charles support small to moderate spawning runs. Most shad weigh 3 - 4 pounds, but the state record — which also happens to be the world record for the species — weighed 11 pounds, 4 ounces and was taken from the Connecticut River in 1986. The heaviest shad, as with most fish, are females carrying eggs.

Best Bets for Carp

Merrimack River
Connecticut River
Concord River
Quinebaug River
Charles River
Lake Quinsigamond, Shrewsbury
Flax Pond, Lynn
Sudbury River
Pontoosuc Lake, Pittsfield

Shad are silvery, schooling fish covered with large, almost mirror-like scales. They are easily identified by their deep but compressed bodies and a long, narrow lower jaw that opens like a drawbridge. Shad are filter feeders for the most part, gathering plankton on their gill rakers as they cruise through coastal waters with their mouths open. When they enter a river to spawn in the spring — usually in May in Massachusetts — they stop feeding, but will strike small, brightly colored lures, apparently out of sheer irritation.

When hooked, shad put up the sort of fast, boisterous battle one would expect of a fish that has the power and stamina to ascend miles of swift running rivers. They rarely jump, but are always a challenge to land with light tackle, particularly when aided by river current. Generations of Yankees have referred to the shad as the "poor man's salmon," and indeed it is at least in terms of its fighting ability. Because their mouths are delicate, a landing net is strongly recommended.

The best places to fish are generally in the slack waters below dams or rapids where schools are likely to stack up before tackling the next obstacle in their migration. Anglers are sometimes almost shoulder-to-shoulder in such areas at the height of the run, and typically use shad darts — small, colorful jigs that are cast upstream and retrieved near the bottom as the current carries them down. Fly fishermen use a similar retrieve with weighted flies. Although very boney and impossible to fillet, shad are delicious when baked or pickled.

Fishing Ethics

Much has been written about fishing ethics, but it all comes down to **RESPECT**: respect for your catch, your environment, and for your fellow anglers.

Respect for your catch is demonstrated in how you handle it. If you plan to release a fish, do not fight it to total exhaustion. Keep it in the water as much as possible. Wet your hands before you handle it; otherwise you will remove the animal's protective slime, leaving it vulnerable to various bacterial and fungal infections. Handle fish gently but firmly when removing hooks: don't pick up a fish by its eyesockets or gill flaps if you intend to release it, and don't apply excessive pressure on the gills or body cavity. Delicate trout and hefty species such as large pike and carp are best removed from the water in a net. Bass and large panfish can be safely grasped by the lower jaw; trout, catfish and toothy predators like pike and pickerel require body gripping, usually around or just behind the head. Long-nosed pliers are very useful for safely removing hooks from the latter species.

If a fish is hooked deeply in the throat, gills or stomach, it will generally survive if it is properly handled and the line is cut as close to the hook as possible. Trying to remove a "swallowed" hook virtually guarantees that the fish will die, even if it can still swim when released. If you wish to practice true "catch and release" fishing, it is suggested that you pinch down or file off the barbs on your hooks, replace treble hooks on lures with single hooks, and fish only with artificial flies and lures. Remember, releasing a fish is a hollow gesture if it doesn't survive.

There is of course nothing unethical about keeping fish for the dinner table. Fishing for food is as healthy and natural a human activity as picking berries or hunting — and it originated a lot further back in our history than organic gardening! There are size and bag limit regulations designed specifically to prevent overharvest or "fish-hogging" of the game species, and due to their very high reproductive rates, it is virtually impossible to harvest too many panfish (which exhibit stunted growth in many of our waters due to overpopulation). If you keep your fish, however, show respect for your catch by insuring that it will be table fare of the highest quality.

Fish destined for the table should be cleaned and put on ice as soon as possible. A fish consigned to the bilge water in the bottom of the boat or allowed to succumb on a stringer in summer-warm surface water will obviously not provide meat of the highest possible quality. As blood tends to impart a bitter or iron taste to meat, a fish destined for the table should be bled immediately. Slit the throat right through the base of the the gills, and the heart will pump out most of the blood in about 2 minutes. The fish should then be gutted (including removal of the gills and the dark material under the backbone) and put on ice if it will be cooked "whole" (typical with trout). If the fish will be filleted, immediate gutting isn't necessary: just put it on ice after it's been bled. It is much easier to fillet a stiff, well-chilled fish than a soft, freshly caught one.

Don't let your catch soak in water, even in the ice chest, or much of its flavor may be lost. If you freeze your catch, first pat it dry with a paper towel, then package it tightly in freezer wrap or a sealed plastic bag.

Respect for your environment is demonstrated by leaving all fishing areas in the same or better condition than when you found them. No ethical fisherman will litter, yet it is clear from visiting almost any shoreline that many fishermen are unethical in this regard. Empty bait containers, snarls of monofilament, lure packaging and other litter abounds. Pack out anything you pack in, and even better, pick up the areas where you fish and remove any refuse that's been left behind by slobs. The mere presence of trash encourages further littering.

If you observe someone littering, don't hesitate to inform them that what they are doing is wrong and hurts us all. Don't be belligerent: just make your statement. Sometimes the problem is nothing more than simple ignorance. If your remonstrations are ignored, or if you observe someone violating fisheries regulations, get as much information as possible (description of the perpetrator(s), location, license plate, etc.) and call the Environmental Police toll free at 1-800-632-8075. Good ethics requires the reporting of scofflaws who choose to violate regulations designed to conserve our fisheries resources for the benefit of everyone.

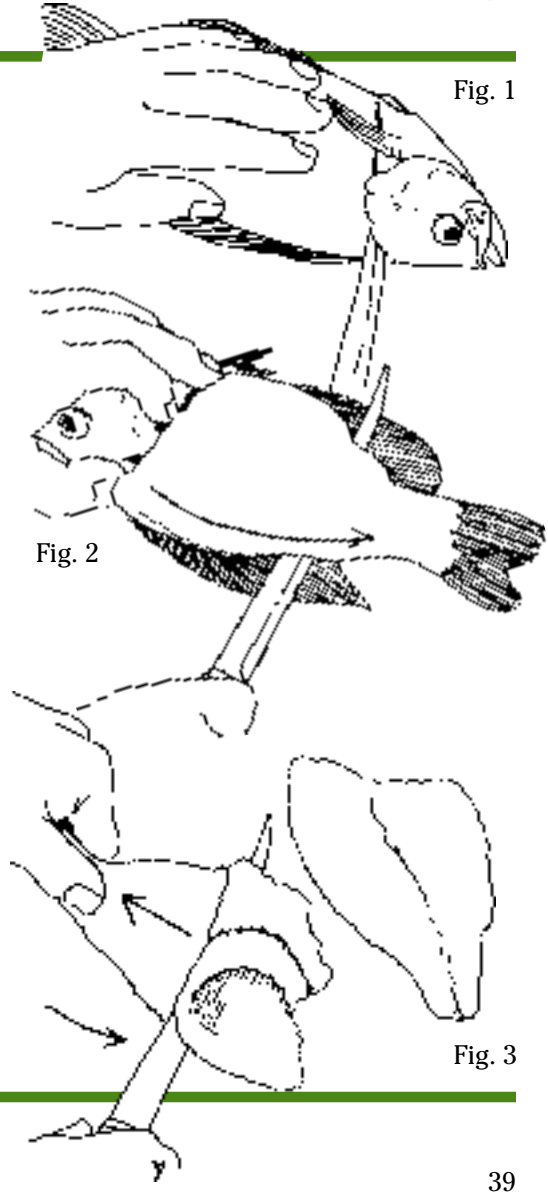
Respect for your fellow anglers is demonstrated by practicing common courtesy. Be

polite. Treat other anglers in the same manner you would like to be treated. In general, this means don't crowd the other guy: if he or she was fishing the pool first, move up or downstream to another pool. Don't muscle in on someone else's hotspot. Every fishing situation is different, however, and protocol can vary markedly depending on location and season. It is perfectly reasonable to fish almost shoulder to shoulder in certain situations (such as on the Connecticut River during the spring shad run). Use good judgement. Get permission to cross private property when accessing fishing sites. And ***always*** watch your language: sound carries exceptionally well over water.

As a final note, please consider that an ethical fishermen has a responsibility to pass on his or her skills, knowledge and passion for the sport. There are few entirely self-taught fishermen: almost all of us can recall several incidents in our angling histories when a more proficient angler — often a complete stranger who just happened to be fishing along the same stretch of shoreline with us — offered useful advice or information (or maybe even a special bait) that allowed us to catch fish instead of frustration. To a kid, or any beginner, such a simple act of kindness can turn on a light that shines for a lifetime.

How to Fillet a Fish

There are variations, but here's one way to fillet a fish. Start with a very sharp, flexible fillet knife. The first cut is vertical, angled slightly forward and just behind the operculum and pectoral fin (fig. 1). Cut down to the backbone, but not through it. Next, starting at the top of the first cut, run the knife down to (but not through) the ribs, and horizontally backward along and as close to the backbone/dorsal spines as possible. When you reach the end of the ribs, push the knife all the way through to the vent, and keeping the knife against the backbone, cut straight back to the tail (fig. 2). Carefully peel/cut the meat away from the ribs, and cut the skin to free the fillet from the carcass. Turn fish over and repeat. Place a fillet skin side down on a flat surface. Gripping the very tail end, cut down through the meat to the skin, then angle the blade forward, and using a sawing motion while pulling on the tail strip, remove the skin from the fillet (fig 3). Repeat with other fillet. Discard the carcass and skins and you are left with two perfect, boneless fillets! Rinse under cold water to remove any blood or scales. The process seems difficult at first, but once you've done a half dozen perch or calicos and gotten a feel for the knife and fish anatomy, it becomes a routine skill you will never lose — and one your friends and family will appreciate when they sit down at your table!



Thanks to idyllic scenes like this one in paintings and photos, books like "A River Runs Through It" and the pervasive power of modern advertising, there are few outdoor sports that currently hold the public imagination or command the romantic appeal of fly fishing. Fortunately you don't have to spend thousands of dollars on travel, guides and fancy equipment to enjoy the benefits of sportfishing: it's all available right here in Massachusetts, in almost every variety, for every pocketbook, as simple or eleborate as you'd care to make it. What are you waiting for? Get out and enjoy your fisheries resources! Photo by Bill Byrne

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