MERIT BADGE SERIES

FLY-FISHING

Scouting America

SCOUTING AMERICA
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FLY-FISHING

"Enhancing our youths' competitive edge through merit badges"

Scouting America

Requirements

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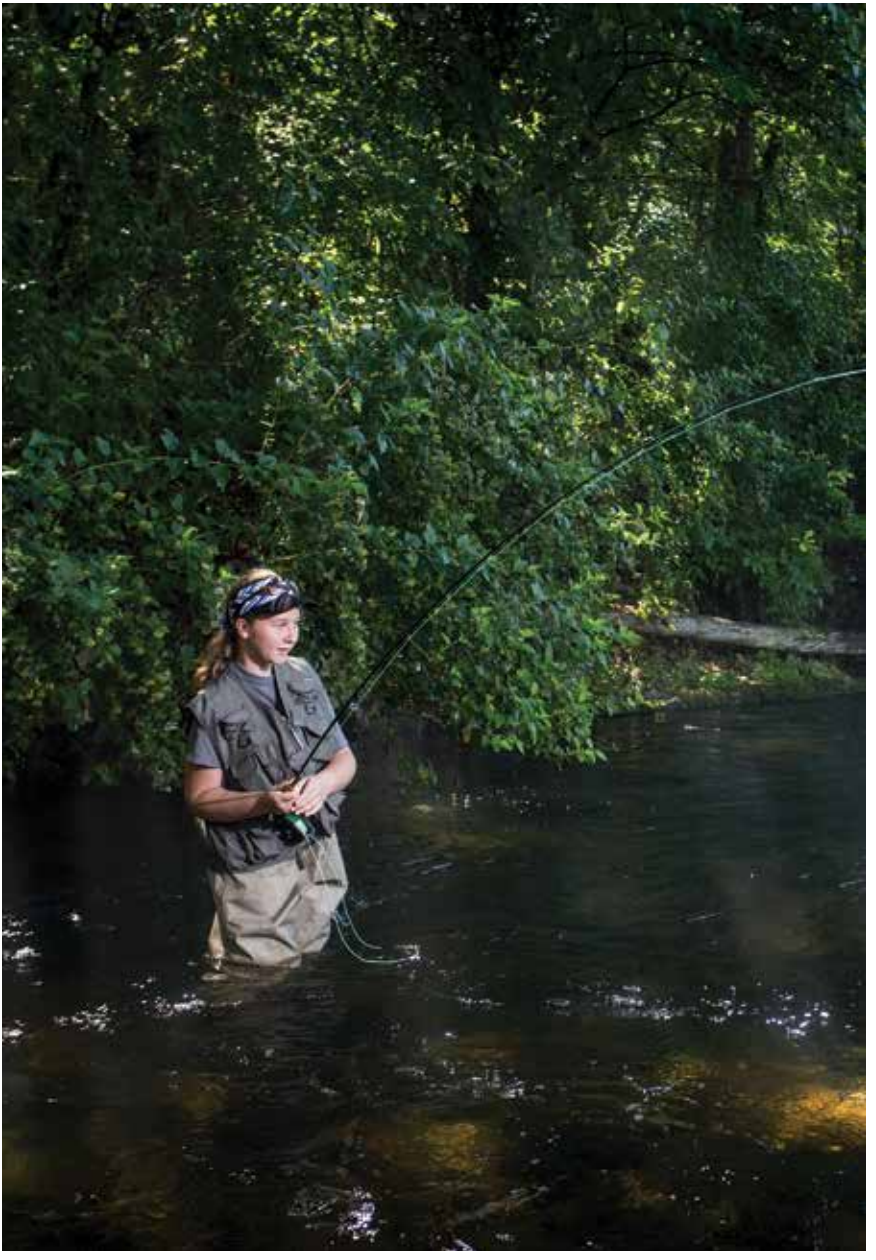

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Earning the **Scouting America Complete Angler Award** could help you expand your fishing knowledge and experiences. To become eligible for the award, start by earning these three merit badges: Fishing, Fly-Fishing, and Fish and Wildlife Management. Then complete one or more of the following projects:

- Teach a Fishing or Fly-Fishing merit badge skill to your unit as part of a program activity.
- Help instruct Cub Scouts on fishing skills or fishery management as part of a Cub Scout meeting or outing.
- Participate in a local fishing derby or tournament, either a Scouting or community event.
- Complete a conservation project that will benefit a local fishery.

With the Complete Angler Award, you can become a mentor for younger Scouts, sharing your knowledge and helping others to enjoy a positive fishing experience. For more information, visit scouting.org/outdoor-programs/fishing

Introduction

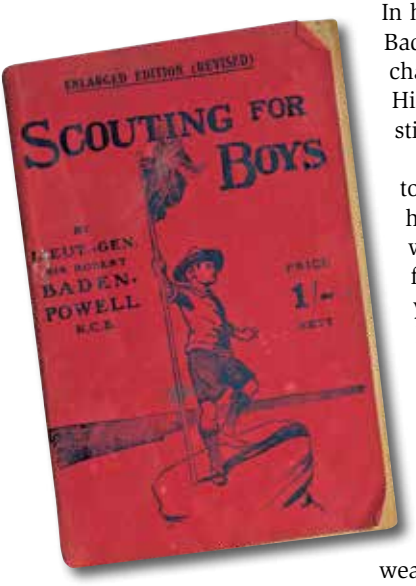
Fly-fishing is a specialized form of fishing that emerged centuries ago, as far back as 1653, when Sir Izaak Walton wrote *The Compleat Angler*, and perhaps to the time of the Roman empire. Long before there was spin fishing or bait casting, there was fly-fishing. Because it combines skill and artistry and because it is so rich with tradition, fly-fishing is a passion for millions of people. The beauty of the water, the solitude, and the skills that the sport requires have made fly-fishing very important in the lives of many notable people, including former President Jimmy Carter, who wrote books about fly-fishing after he left office. Another avid fly fisher was Lord Baden-Powell, a former general in the British Army, who wanted to use his military fame to help youth become better adults and eventually started the worldwide movement that we know today as Scouting.

Some experts believe fly-fishing may date back to the time of the Roman empire.

In a biography of Baden-Powell, we find the following description by a fellow angler:

"I should say B-P was as good an angler as he was at most things. He preferred river fishing for sea trout or salmon, and liked to be on his own, particularly on any river requiring more than the usual care and courage. I think his chief joy in fishing was that it took him away from the ordinary business of life more effectively than anything else, particularly when the formalities too often connected with sport were bypassed. He was always entranced with the beauty of river life, especially in the autumn, with its gorgeous colouring.

"Even the Boy Scouts had to give place to science and philosophy when the day's work was finished on the river. I don't think he was ever so supremely happy as he was when wading deep and waiting for that electrical thrill of taking a fish."



In his book, *Scouting for Boys*, Baden-Powell included a small chapter titled "Fishes and Fishing." His advice in this passage is still sound:

"Every Scout ought to be able to fish in order to get food for himself. A tenderfoot (beginner) who starved on the bank of a river full of fish would look very silly, yet it might happen to one who had never learned to catch fish.

"Fishing brings out a lot of the points in Scouting, especially if you fish with the fly. To be successful you must know about the habits and the ways of the fish, what kind of haunt he frequents, in what kind of weather he feeds and at what time of the day, and so on. Without knowing these, you can fish away until you are blue in the face and never catch one.

"A fish generally has his own particular haunt (position) in the stream, and once you discover a fish at home you can go and creep near and watch what he does.

"And you have to have infinite patience. Your line gets caught up in bushes and reeds, or in your clothes—or when it can't find any other body it ties up in a knot around itself. Well, it's no use getting angry with it. There are only two things to do—the first is to grin, and the second is to set to work very leisurely to undo it. Then you will have loads of disappointments in losing fish through the line breaking, or other mishaps. But remember they happen to everybody who begins fishing, and it is the troubles that in the end make it so very enjoyable when you get them.

"When you catch your fish do as I do—only keep those you specially want for food or specimens, put back the others the moment you have landed them. The prick of the hook in their leathery mouth does not hurt them for long, and they swim off quite happily to enjoy life in their water again."

Fly fisherman, circa 1884

Baden-Powell was both entirely sensible and far ahead of his time in this advice. Today, all fishermen practice a conservation ethic. Fly fishermen pioneered the idea of *catch and release* fishing and generally put most of the fish they catch back in the stream to live—and perhaps be caught again—another day.

In Baden-Powell's time, fly fishermen were out to catch either trout or salmon. Today, fly fishermen go after all kinds of fish in all kinds of environments, including salt water. Fly-fishing is demanding and requires practice, skill, and knowledge. But it is also a form of recreation through which an angler finds himself in beautiful surroundings, observing the natural world and becoming a participant in it. Learning to be an expert fly angler pays off in a lifetime of the deepest kinds of satisfaction and enjoyment.

The Basic Equipment

Early fly fishers practiced their craft with rudimentary and basic equipment—a line tied to the tip of a long, thin rod. As their expertise developed, their fishing equipment did, too. They devised a system of guides, tied in a row, so that loose line could be released at the cast, allowing the fly to sail out much farther. Later, a reel was devised, fastened to the lower, butt end of the rod, as a place to store the extra line.

Today's fly rods are limber and light, weighing only a few ounces, and they provide the maximum amount of leeway to a fighting fish. The lines are tapered, as are the leaders, to add to the unfurling effect of the cast.

A Balanced Outfit

When the rod, reel, and line are correctly matched to handle a given-weight fly line, they are considered to be in **balance.** When balanced, they allow the angler to accurately present flies within the equipment's normal casting range. Modern tackle manufacturers continually test and upgrade their rods, reels, and lines to create better balance for line control and easier casting.

Fly-fishing requires a match between the rod and line, with the reel mainly functioning as line storage, although its weight can determine how easily casts can be made. Fly rods usually are marked with numbers indicating which line works best on a particular model.

The Rod

The basic piece of fly-fishing equipment is the rod. A fly rod is long—usually 8 to 10 feet—and limber enough to flex when casting a line or playing a fish. Most modern fly rods are made from a material called **graphite,** although a few manufacturers and some artisans still make rods from the traditional bamboo. Bamboo rods tend to be expensive and do not perform any better than those made of fiberglass or graphite.

Fly rods are tapered with a cork grip and a reel seat at the thick end. Near the grip is a small wire loop, called a hook-keeper, that holds the hook of a fly safely when it is not in use.

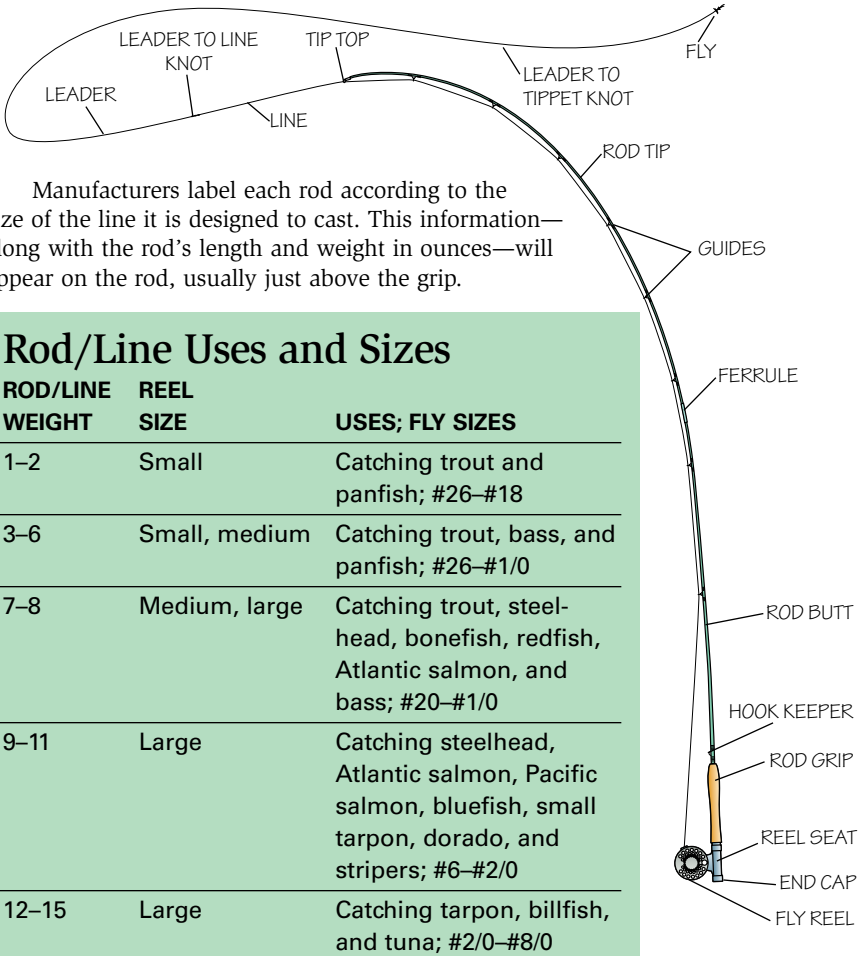
Spaced along the length of the rod are several **guides,** designed to run the line to the rod tip. The first guide, usually made from some abrasion-resistant material, is called the **stripping guide.** Above this guide, there will be snake guides, which are normally simple wire loops. The last guide, at the tip of the rod, is called the **tip top.**

For convenience while traveling, most rods are designed to be broken down into at least two—and sometimes as many as 10—sections. The joints where the rod comes together are called **ferrules.**

Tenkara rods are typically made of several tapered, thin-walled graphite sections that telescope out to form the rod. On a modern Tenkara rod, the line is attached to a flexible, braided cord on the end of the rod, called a lillian. At the other end of the line is attached a thin, clear section of monofilament or fluorocarbon called a tippet. The fly is attached to the far end of the tippet. There are no rod guides nor reel. Tenkara-style fishing doesn't even require a modern telescoping rod. A simple bamboo fishing pole, rigged with the right line, tippet, and fly will work.

Selecting a Rod and Line

A fly rod is a long lever that flexes. As it flexes more deeply, it delivers longer casts. Every fly rod is designed to be matched to a line of specific weight. Lines of lighter weight are matched to rods that flex more easily. These rods cast smaller and lighter flies more delicately. Heavier, stiffer rods, matched with the correct line, cast larger, more wind-resistant flies a longer distance. Anglers use these, in general, to deliver tiny artificial lures (flies) to where they believe a fish may be lurking. The rod and the line must match because the weight of the line is what causes the rod to flex and turn the line over in a smooth, efficient cast.



Manufacturers label each rod according to the size of the line it is designed to cast. This information—along with the rod's length and weight in ounces—will appear on the rod, usually just above the grip.

Rod/Line Uses and Sizes

ROD/LINE WEIGHT	REEL SIZE	USES; FLY SIZES
1–2	Small	Catching trout and panfish; #26–#18
3–6	Small, medium	Catching trout, bass, and panfish; #26–#1/0
7–8	Medium, large	Catching trout, steelhead, bonefish, redfish, Atlantic salmon, and bass; #20–#1/0
9–11	Large	Catching steelhead, Atlantic salmon, Pacific salmon, bluefish, small tarpon, dorado, and stripers; #6–#2/0
12–15	Large	Catching tarpon, billfish, and tuna; #2/0–#8/0

Rod Length

Fly rods can be as short as 6 feet and as long as 15 feet or more. Many anglers use one-handed rods between $7\frac{1}{2}$ and $9\frac{1}{2}$ feet in length. Shorter rods are desirable on close brushy streams. Longer rods enable the angler to make higher back casts and to keep the line and the fly above obstructions such as grass and brush. Rods longer than 10 feet are generally used by anglers who employ a specialized two-handed casting technique, called spey casting, that is popular on some salmon and steelhead rivers.

Lines

Most fly lines are 80 or 90 feet long. Lines vary by weight, and must be matched to the rod. They come in different styles (called **tapers**) and colors and are designed either to float on the surface of the water or to sink to different depths at different rates. Intermediate lines, for example, sink very slowly and can be fished just below the surface. Heavily weighted lines sink quite rapidly and are designed to get down deep very quickly.

Most fly-fishing is done with floating lines, which are the easiest to cast and control. But there are times and conditions when fish lie deeply in the water and are not feeding at or near the surface. A sinking line is then useful to get the fly down to them.

Fly lines come in different colors. Sinking lines usually come in drab, darker colors so that the fish cannot spot them. Floating lines can be very brightly colored, even fluorescent. Many anglers prefer these lines for their high visibility. In low light conditions, a darker line can be hard to see on the water. A visible fly line can be the best means of keeping track of the location of small flies on the water.

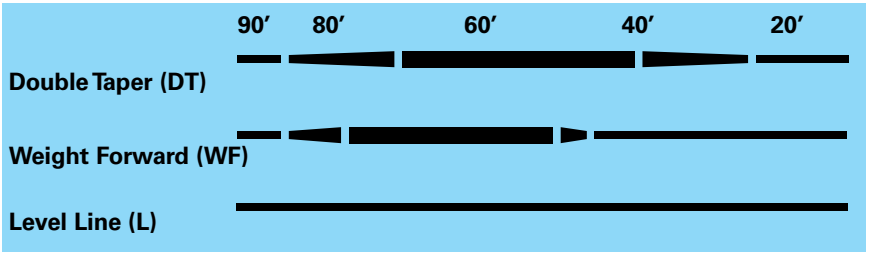
Fly lines are constructed of a soft, strong core with a tough, enamel-like coating. Avoid situations that might cause nicks or small cuts in the fly line, taking special care not to step on the line. Heat and sunlight are the greatest threats to a fly line, so do not store a reel with a line on it in a hot place or leave it in a car trunk for long periods of time. A properly maintained fly line should last several years.

If your fly line becomes dirty, it will not function well. Be careful when using insect repellents; some will damage the coating of the line. Clean your line with mild soap and water. Rinse and thoroughly dry before storing in a cool, dry location. Some manufacturers endorse cleaning and lubricating fly lines with a specifically designed product.

Tapers

Fly lines of all weights are designed in different **tapers,** which describe the shape of the line. The narrow point of the line allows for delicate presentations. A line that is of the same diameter throughout its length is called “level.” Level line is inexpensive but is not recommended for casting.

A line that has its widest diameter at the midpoint is called a double taper. This is a popular line for some kinds of fishing, especially those requiring shorter casts.



A **weight-forward taper** line has several sections, including a narrow tip, a forward taper, a level belly, a rear taper, and a narrow running line. The front part of the line up to the running section is normally about 30 feet long and the running line is about 60 feet long to make a 90-foot line. Each of these sections may be tailored by the manufacturers to fine-tune the performance of the line for different fishing conditions. The heavy forward part of the line is designed to pull or "shoot" the lighter line following it.

Decoding a Fly Line

When you buy a fly line, the information about that line is marked on the packaging in a kind of code. For instance, you might see the following: **WF5F.** The first two letters of the code tell you the taper of the line. In this case, it is a *weight-forward taper.* Other designations include **DT** (double taper) and **L** (level). The number that follows the taper designation is the weight of the line. In this case, the line is a number **5.**

The letters that follow the number indicating the weight of the line tell you whether the line floats or sinks. In this case, the **F** indicates that this is a floating line. Other designations could be **S** (sinking), **F/S** (sink tip), **I** (intermediate), **HD** (high density or fast sinking).

Fly Reels

A fly reel stores line and puts tension on the line when a fish makes a long run and pulls line off the reel. When catching smaller fish, such as panfish, small bass and small trout, line storage is the reel's chief function. A bluegill weighing less

than half a pound, is unlikely to take off on a long run and strip yards of line from the reel. As the fish get larger, however, the reel must have a mechanism to handle the runs of a large fish.

The mechanism for providing resistance when a fish is taking line is called a **drag**. The drag system on a simple reel, like the one used for panfish, may be a simple ratchet and pawl. Some anglers call this a **clicker**. Some reels, especially those that are more expensive, have stronger and more complex drag systems that allow a smoother release of line from the spool. Both drag systems are adjustable by means of a knob on the outside of the reel that allows the angler to increase or decrease tension.

When selecting a reel, choose one that is the right size for the kind of fishing you plan to do. It should have the capacity to hold the selected line and some backing (the line that goes on the reel before the fly line). Manufacturers will indicate a reel's line capacity somewhere on the packaging. For instance, the manufacturer might state a reel is designed for a WF5F line with 100 yards of backing. This means you could use a little heavier line with a little less backing or a lighter line with more backing. Also, if you plan to fish in salt water, make sure that the reel you choose is designed for this kind of use. It should be made of corrosion-resistant material such as anodized aluminum for the frame and stainless steel for the inner workings. If your reel is not corrosion resistant, be sure to wash it and the line in fresh water to clean away the salt. Thoroughly dry the line and reel before storing.

Next, decide which hand you will use to reel in line. Some anglers prefer to cast and reel with the same hand—which means they have to switch rod hands when they are playing a fish or retrieving loose line—while others cast with one hand and reel with the other. Most modern reels can be easily changed from one side to the other by hand or with simple tools, although some might require more elaborate work that will have to be done at the factory or by an expert. Another consideration when buying a reel is whether you plan to use more than one type or size of fly line. If so, you will want a reel for which you can easily fit extra spools.

Backing

Backing is the line that goes on the reel before the fly line. It is generally made of polyester fiber of a fine diameter. It costs less than coated fly line. In the case of larger reels for bigger fish, there may be as much as 300 yards of backing.

There are two reasons for using backing. The first is that some big fish will run much farther than the length of the fly line. Fly fishermen love to talk about how a fish "took me into the backing." A big tarpon, in salt water, might run out 200 yards of backing before the pressure from the reel's drag and the rod's deep bend stop him. The second reason for backing is that the reel arbor is generally of fairly small diameter and fly line tends to hold a coiled shape when it comes off the reel. The closer to the arbor, the tighter the coils and the harder they are to pull out of the line. With backing on a reel, the fly line comes off in wider coils that are easier to manage.

Leaders

The **leader** is a transparent plastic line tied between the end of the fly line and the fly. It is often tapered to a very fine point to which the fly is tied. Leaders are supple, so they do not hinder the natural action of a fly. They are transparent so that they are hard for a fish to see. Usually they are 6 to 12 feet in length. In general, clearer water demands longer leaders. Smaller flies call for finer leaders.

You can make your own tapered leader by tying lengths of monofilament of different diameters together. Also, manufacturers have developed knotless leaders that are tapered throughout their length by an extrusion process.

Avoiding Leader Problems

Leader problems result in a lot of lost fish. And more fish are never even hooked because of the wrong leader, one that made it impossible to cast properly or did not allow the fly to behave as intended.

Leaders become damaged while fishing. They pick up nicks from rocks or branches. Sometimes they become knotted when the angler makes a poor cast and throws what is called a **tailing loop.** These **wind knots** can decrease the breaking strength of a leader by as much as 50 percent. Leaders should be inspected for such knots and damage. If you find a knot, take it out of the leader. If the leader looks frayed, replace the damaged section of the leader and tie on new tippet material or replace the entire leader.

Tippets

The **tippet** is the most delicate link between the angler and the fly. Choose a tippet fine enough to allow the fly to move naturally and strong enough to hold a fish. Tippets can be as small as .003 inches in diameter, as fine as a human hair. The breaking point of such a tippet is just over a pound. Tippets are measured by diameter. A heavy tippet is a 0X. Very fine is 8X.

For a given diameter, tippet strength varies among manufacturers. It also varies depending on material. There are two types of common tippet material, nylon monofilament and fluorocarbon. Each has its advantages, depending on the situation. Nylon floats or sinks very slowly, stretches to absorb shock and is relatively inexpensive. It also absorbs water and weakens over time. Fluorocarbon is slightly less visible in water, stronger for a given diameter when wet, more resistant

Tippet size	Tippet diameter	Approx. breaking strength for Orvis Super Strong nylon	Balances with these fly sizes
8X	.003"	1.75 lbs.	22, 24, 26, 28
7X	.004"	2.5 lbs.	18, 20, 22, 24
6X	.005"	3.5 lbs.	16, 18, 20, 22
5X	.006"	4.75 lbs.	14, 16, 18
4X	.007"	6 lbs.	12, 14, 16
3X	.008"	8.5 lbs.	6, 8, 10
2X	.009"	11.5 lbs.	4, 6, 8
1X	.010"	13.5 lbs.	2, 4, 6
0X	.011"	15.5 lbs.	1/0, 2, 4

to temperature extremes, UV radiation and abrasion, higher in density, and stiffer. It is also more expensive than monofilament. Both materials take a long time to decompose — nylon about 530 years and fluorocarbon about 4,000. A new material, bioabsorbable polymer monofilament, decomposes in about five years.

Tippet material, size and length are important. With a proper cast the leader should efficiently transmit the flow of energy all the way to the tippet, which will straighten out and allow the fly to fall gently on the water. A tippet that is too limp or fine for the fly will collapse at the end of the cast instead of unfurling. A tippet that is not fine enough will cause the fly to land heavily and behave unnaturally.

A leader that is too short will cause the fly line to land too close to fish, possibly alarming it. In clear water with skittish fish, a longer, finer tippet may be needed. A leader that is too long may be difficult to control, especially under windy conditions. A leader of 7½ to 9 feet is about average, but it can be lengthened or shortened as conditions require. When fishing with a fly that sinks, the length of the leader will affect how deep the fly may be fished.

A tippet can be added to a leader with a surgeon's knot or a loop-to-loop connection. With a proper cast this leader would efficiently transmit the flow of energy all the way down to the tippet, which would straighten out and allow the fly to fall gently on the water.

Knots and Knot-Tying

Fly fishermen depend on knots and must know how to tie several different knots properly. A poorly tied knot will result in lost fish and great frustration for the angler. Well-tied knots ensure that all the elements of a properly matched fly-fishing outfit work smoothly together. Learn the essential fly-fishing knots and practice tying them. Some tips:

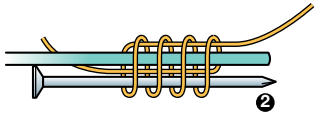
- Small-diameter monofilament is hard to work with. While learning and practicing, use something that has a larger diameter and is relatively stiff. If you can find an old discarded fly line, cut it into short sections to practice.
- Knots must be neat. If a wrap crosses another it can cut through itself when fighting a fish causing the knot to fail and the fish to escape.
- Test each knot after you have finished tying the fly on by giving it a good tug. Better for it to fail now rather than when fighting a trophy fish.
- When tying knots in monofilament, tighten gently and firmly.
- Lubricate knots with water before tightening. But do not put leader material that has been in a stream into your mouth. Just a few drops of stream water can carry harmful parasites.
- Clip knots closely and neatly, and check them often.

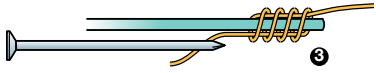
Nail Knot (or Tube Knot)

Use the nail knot to tie the backing to the fly line or to attach a leader to a line. Better than a nail is a short piece of narrow tubing like a plastic coffee stirrer into which the line can be inserted.

Step 1—Hold the nail along the fly line and backing between your thumb and forefinger.

Step 2—Lay a loop of line along the nail and, with the free end, wind the monofilament around the nail, loop, and leader about six times. Feed the tag end of the monofilament through the loops so it sticks out the back of the knot.





Step 3—Hold the "coils" carefully between your thumb and forefinger. Remove the nail, and tighten the knot carefully, allowing the turns of the leader to settle closely together.

Step 4—Lubricate the knot and then pull both the tag end and the main part of the backing or leader butt. Test the knot and then trim excess backing or leader as well as fly line. For left-handed persons, reverse the hands that you use.

Improved Clinch Knot

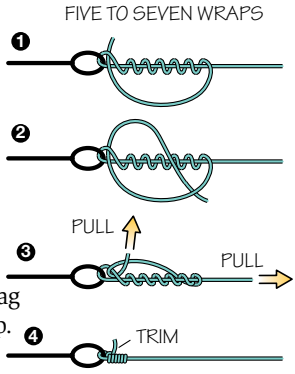
The improved clinch knot can be used to connect the fly to the leader. It works well for tying small flies.

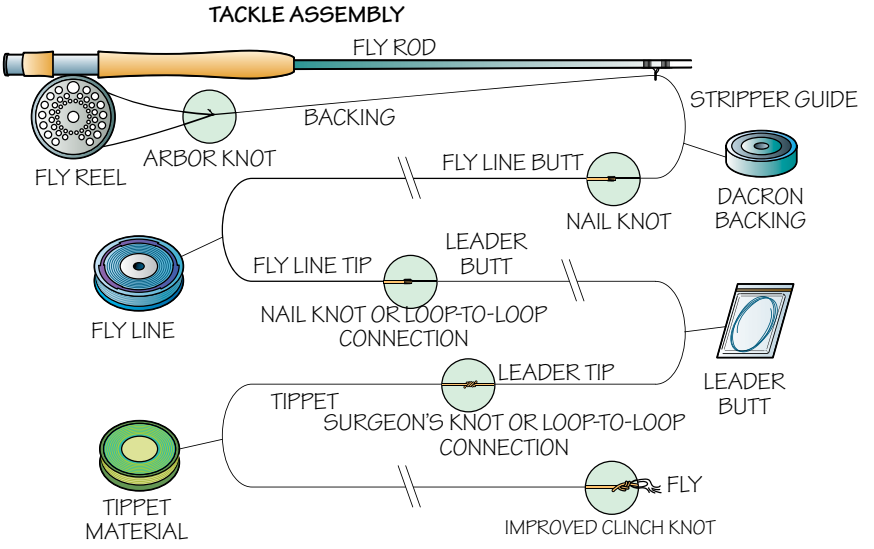
Step 1—Run the end of the line through the eye, double the line back, and make five to seven wraps around the line, leaving a loop.

Step 2—Run the end of the line through the loop where the line joins the eye and then pass the line through the large loop.

Step 3—Partially close the knot and moisten it a little with water before securing it tightly against the eye.

Step 4—To make an unimproved clinch knot, pull the tag end and standing line tight after completing the first step.

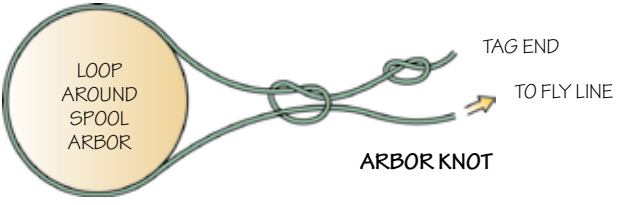




Assemble the gear systematically for trouble-free performance.

Putting It All Together

All of the previously discussed elements of a properly balanced fly-fishing outfit must be assembled properly. Begin by attaching the reel to the seat on the rod. Make sure the handle is on the side of the hand you intend to reel. When reeling in the line, it should come into the bottom of the reel, and the drag should be engaged if the line is pulled out. The inner workings of the reel may need to be adjusted to use the handle on the preferred side. Now, run the point of the backing through the stripping guide of the rod and attach the backing to the reel spool using an arbor knot.



Attach the backing to the reel spool with an arbor knot. Pass the line through the stripper guide before tying the knot. After snugging the arbor knot tight, the line must then flow from the bottom of the spool back toward the stripper guide.

Now, keeping the backing under tension, slowly wind it uniformly onto the reel. Reeling too fast without keeping tension in the line will cause the loops to work over each other, creating fouling (knots) that could mean the loss of a big fish when it takes you into the backing.

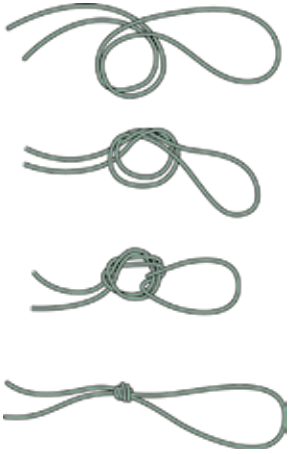
At the other end of the backing tie the backing to the fly line using the nail knot (tube knot) and finish the knot with a flexible adhesive such as Pliobond®. First make sure you still have enough room on the reel for the entire fly line with a little left over.

To connect the leader to the fly line, use a nail knot or a loop-to-loop connection. If your fly line includes a permanent loop in the end you can tie a surgeon's loop on the butt end of the leader and then form a loop-to-loop connection. This is good to use if you plan to change leaders periodically.

To connect the leader to the line, use a nail or needle knot or a loop-to-loop connection. You are now ready to string the line through all the guides of the rod and to begin casting.

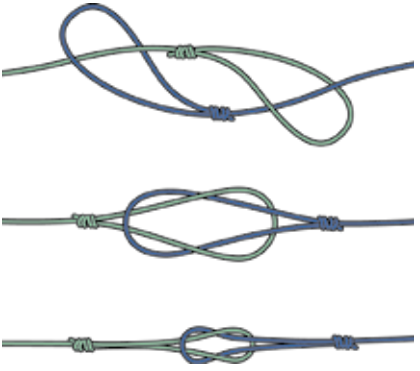
If the fly line doesn't come with a loop, attach a section of heavy monofilament to the line with a nail (tube) knot. Tie a double surgeon's loop in the other end, then change leaders using a loop-to-loop connection.

DOUBLE SURGEON'S LOOP



The double surgeon's loop works well for joining two sections of line. 1. Overlap several inches of the ends of the lines to be joined and form a loop. 2. Make an overhand knot, keeping the loop open. 3. Run the lines through the loop again, forming a loose double overhand knot. 4. Draw the knot up until it's snug, then lubricate with water, draw it tight and trim the tag end.

LOOP-TO-LOOP CONNECTION USING DOUBLE SURGEON'S LOOPS



Anglers use loop-to-loop connections like the double surgeon's loop to attach a tippet to a leader or a leader to a fly line. The illustration above shows how to connect two lines with double surgeon loops.

Other Equipment

In addition to a balanced outfit—rod, reel, line, and leader—and some flies, you may require other equipment. You may also want to acquire some slightly less essential—but still useful—equipment such as waders or boots, a fishing vest, and various accessories.

Waders and Boots

Waders or boots are nice to have when wading. Waders come in a variety of materials and styles. Chest-high waders are the most versatile, especially for deep water, but waist-high and hip waders are more comfortable when the weather is hot. Make sure your waders fit comfortably, do not pinch, and allow a full range of motion.

Keep a patch kit handy and know how to use it. Felt soled boots are good to use on slippery rocks, but invasive species that have appeared in some streams may prohibit their use. Rubber soled boots or studded boots are two alternatives. Be mindful that rubber soled boots may be slippery on some surfaces. Studded boots can damage the surfaces of docks, floors and boats, and are noisier under water than other sole types.

Vest

Fly fishermen need pockets where they can put fly boxes, tools, spare tippet spools, and other things. The answer is a vest with many large and small pockets. Some of the big pockets should have zippers. Use these to store those things you absolutely do not want to fall out into the water. Some pockets can be fastened with hook-and-loop fasteners for easy access. A very large pocket on the back of the vest is handy for storing rain gear and a lunch.

Organize your vest so that you can find exactly what you need, when you need it. Also, keep one pocket for trash.

Slippery rocks, underwater obstructions, and strong currents all can make wading conditions challenging. So can soft mud or lakes with quicksand-like bottoms. A safe angler carries a wading stick to probe the bottom before taking the next step.

Accessories

Experienced fly fishermen have learned that a few well-chosen accessories can make a difference in their enjoyment of the fishing trip. Consider taking some of these items along.

Sunglasses. Polarized, glare-cutting glasses are great for helping spot fish in the water, for protecting your eyes from the sun, and from flying fishhooks.

Sunglasses and a hat will not only provide protection from the sun, but also serve as an extra defense against a flying fishhook.

Hat. For added protection from the sun, a baseball cap works OK, but a brimmed hat will also protect your ears and neck. A hat can also deflect a flying hook.

Fly boxes. These come in many styles. Several smaller boxes might be a better idea than a single large one. Put different styles of flies in different boxes.

Forceps. This little tool is invaluable for releasing fish or crimping down the barb on a hook.

Clippers. Standard fingernail clippers or some variation are excellent for trimming knotted leader material.

Hook sharpener. A small file is a great tool for touching up the point of a dull hook.

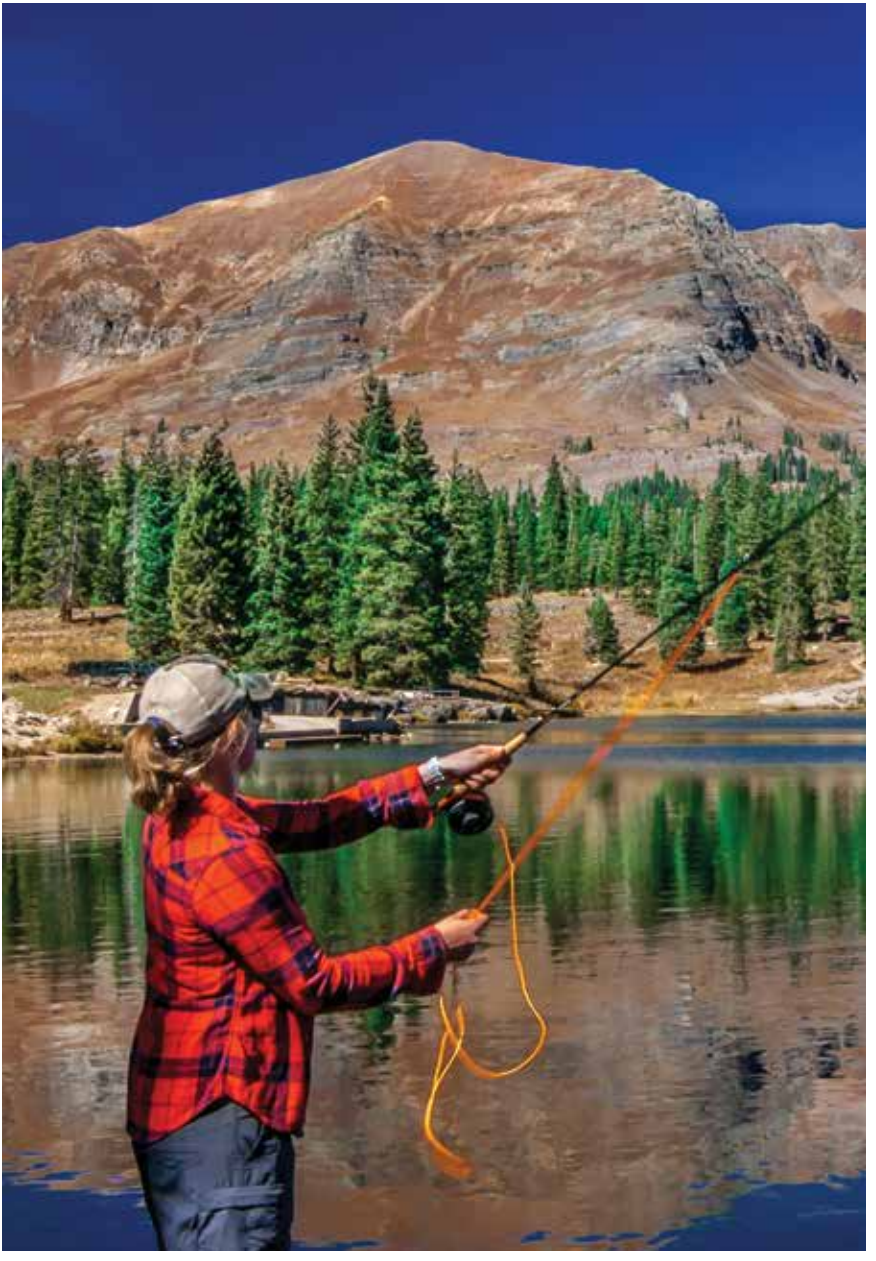
Line dressing and fly line cleaner. Commercial products for keeping flies, lines, and leaders clean can come in handy.

Duct tape. This multipurpose tape can be kept on hand for small repairs.

Bandanna. Worn around the neck, this accessory has several uses, including cleaning eyeglasses.

Small flashlight. This will help light the path for evenings when you stay on the water until dark.

Rain jacket. Some varieties of this garment can be folded small enough to fit inside a tackle box or fishing vest until it is needed in an unexpected rain.



Learning to Cast

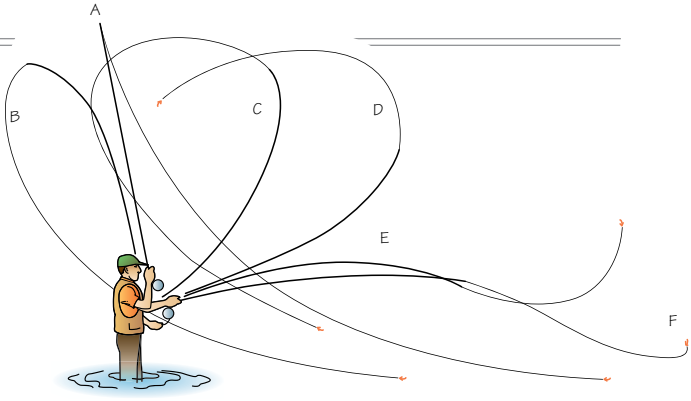
Fly-casting is a skill that depends not on strength, but on proper technique and timing. This means that it can be learned but that it requires practice. Almost nobody can simply pick up a fly rod—even a properly balanced outfit—and begin casting properly, accurately, and for distance. On the other hand, almost anyone who is willing to study the proper technique, listen to instruction, and practice can quickly become an accomplished fly caster. The key is to discover that there is a proper technique and that, through practice, it can be learned and mastered.

Learn to cast before you learn to fish. It is best to practice on water—preferably a pond where you do not have to contend with currents. Even if there are fish in the pond, do not try to catch them with a fly. Tie a small piece of colorful yarn to the end of your leader to imitate a fly. If a pond is not available, a yard or mowed field will do just fine. Be careful of obstructions, though, especially overhead power lines.

When you are learning to fly cast, it helps to learn from someone who knows how to cast. Members of local fishing clubs may offer casting and fly-tying classes. Fishing clubs and organizations also hold clinics at Scout jamborees and camps, some of them free. In addition, commercial clinics and schools can help you to learn proper technique from certified instructors.

Perhaps you know an experienced fly angler in your troop who can serve as your coach. Another option is to study videos and books to help you with your casting technique. You can learn this way, although it is harder than if you had personal instruction and it might take longer. But you *can* learn by practicing and by following some basic rules.

Fly Fishers International is a nonprofit organization with a threefold mission of conservation, restoration, and instruction. See the resources section at the end of this pamphlet for the FFI's contact information.



Watch your back cast. You don't want to snag overhanging wires, trees, shrubs—or people!

Roll Casting

If there are obstructions behind you, if you have a lot of slack line on the water, or if you want to make a quick, soft presentation that doesn't alarm the fish, the roll cast is a useful technique.

Start with the rod tip low to the water, your elbow bent, and a few feet of line out of the rod tip in the water. Pull out 15 to 20 more feet of line from the reel and let it lie next to you. Holding the line in your line hand, gently stroke the rod back and forth, releasing line out through the rod guides. You will end up with loose coils of line on the water in front of the rod tip. To start the cast, face the target squarely, but with your right foot back a little.

Moving slowly, raise the rod and your arm until your hand is slightly above eye level. Keep your wrist straight and your arm in line with your shoulder and hand. Point the rod straight up, with the line hanging in front of you (Position A, above). Cock your hand to the right so the tip is outside your body. This moves the hanging fly line to the side so it won't collide with the rest of the line during the cast.

Keeping the rod in position, rock back on your back foot and let the line swing behind your shoulder and come to rest (B).

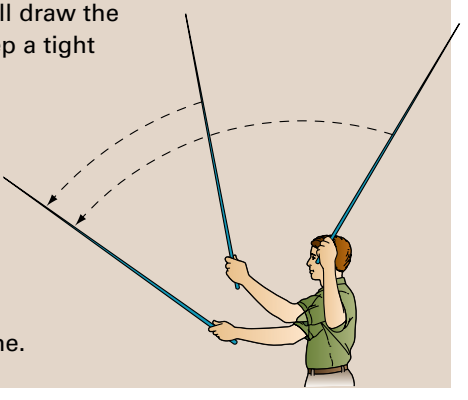
Choose a target to the left of the line in the water, rock forward, and follow through by stroking the rod forward and downward. As you stroke the rod, accelerate forward to an abrupt and complete stop, pushing forward with your thumb (C and D). Follow through by pointing the rod down, in line with where you want the fly to go (E). The line should roll out straight on the surface, with the leader and fly straightened out ahead of it (F).

Casting at a Glance

These are the essential points to remember as you practice casting.

- Pick up the line cleanly with a crisp forearm movement that takes the rod tip from 9 o'clock to 1 o'clock. Remember to abruptly stop the rod tip at the 1 o'clock position.
- Pause at the top of the back cast to let the line unroll and straighten out behind you. Turn your head and watch to make sure this is happening. If you bring the rod tip forward before the line straightens out, you will hear a crack, like the sound of a whip, and the line will pile up on the forward cast. If you wait too long, the line—and fly—will fall onto the ground or water behind you.
- Bring the rod forward from the 1 o'clock position to the 12 o'clock position with a smooth but powerful forearm motion. This is the **forward loading move**, and you should feel the weight of the line behind you.
- Smoothly accelerate the rod to a hard stop at about 10:30. As the line unfurls and falls to the water, follow it with the rod down to 9 o'clock or lower so that it is pointed at the fly.
- Keep the wrist fairly stiff and use the forearm in an up-and-down motion to move the rod.
- Do not overpower the rod. Let it do the work.
- Keep the slack out of the line with the hand you are not using for casting. Extend the arm that holds the line as you make the back cast with the other arm. This will draw the slack out and enable you to keep a tight line and loop.

Practice this technique for 15 minutes a day. Concentrate on making a tight, clean loop with the line and getting it to lie out straight in front of you when you have finished a cast. Do not go for distance until you are able to accurately cast about 30 feet of line.



Overhead Casting

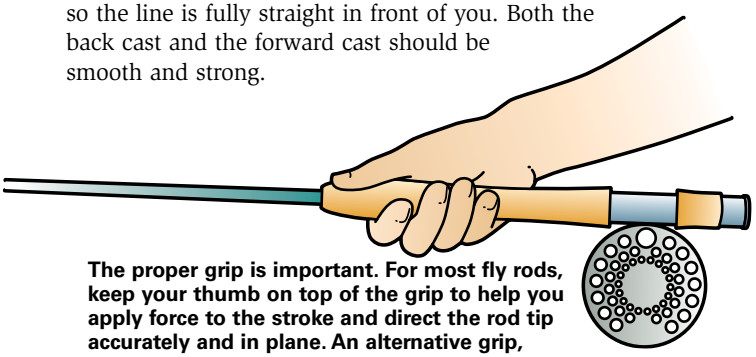
Begin with the grip. Make sure your thumb is on top of the rod's cork grip and that you have a firm hold. Now, strip out 20 to 30 feet of line from the reel. You might want to make a mark 30 feet from the line tip, using a waterproof marker. Since most lines are designed to properly load the rod when 30 feet of line are just outside the tip top, this reference mark will help you pull out the right amount of line for optimal casting. With that length of line in front of you, more or less in a straight line, start with the rod tip down near the ground or the surface of the water.

A large plastic hoop (such as a hula hoop) makes an excellent target for practicing casting.

On an imaginary clock, with the rod tip in the fishing position near the water, bring the rod up slowly to the 9 o'clock position to remove any remaining slack, and then lift the rod by raising your forearm with a motion that is crisp but not sudden or violent. Smoothly accelerate the rod through the vertical, or 12 o'clock, position and then stop it abruptly. The rod should stop at the 1 o'clock position. This loads the rod like a spring and then vigorously launches the fly line up and behind you.

The line will soar up and behind you in a loop that will quickly straighten out. When the line has almost straightened out and is roughly parallel with the ground, smoothly accelerate the rod forward, pushing with your thumb, and stopping abruptly at the 10:30 position. As the line flies out in front of you and unrolls, follow it down until the rod is once again in the fishing position.

The back cast is the foundation of the forward cast and should be directly opposite the target. With a strong back cast and good timing, it is easy to launch your fly to the target so the line is fully straight in front of you. Both the back cast and the forward cast should be smooth and strong.



The proper grip is important. For most fly rods, keep your thumb on top of the grip to help you apply force to the stroke and direct the rod tip accurately and in plane. An alternative grip, where the index finger is on top of the grip, is sometimes used with light conventional fly rods and especially with Tenkara fly rods.

Casting in windy conditions can cause a fly to behave unpredictably. When the wind makes casting difficult, try moving a few yards to the left or right. Doing so will sometimes help by shifting your body and fly away from the wind's direct path. It may also keep you from getting hit by your own fly.

Tenkara Casting

Tenkara casting is not very different from conventional fly casting. It works best with a shorter and slower casting stroke and requires little force. The basic cast is a simple overhand "back to 12 o'clock, short pause, and then forward to 10 o'clock" motion. Grasp the rod handle with your thumb or index finger on top of the handle. Hold the rod in a relaxed manner that still allows for positive control of the rod.

Start with rod and line held in front of you at roughly 10 o'clock, with the line hanging free. Draw the tip up and backward by flexing your forearm and wrist. Keep your elbow in place, held comfortably near your side.

Stop abruptly when the rod tip reaches 12 o'clock. Pause briefly to allow the rod to load (bend) with the line's weight. Depending on the rod and line, you might feel the weight shift as the rod loads. Stroke the rod tip forward in a smooth motion. Keep that elbow in place!

Check the cast abruptly at 10 o'clock. Do NOT drop the rod tip as you would with a conventional fly rod. You want to keep the line out of the water. Only the tippet and fly will be on or in the water.

Experiment and practice your casting to gain control and confidence.

- Stay relaxed and keep your motions smooth and consistent
- Use the minimum amount of energy you need to throw the line and present the fly. Too much force will spoil the cast.
- As in conventional fly casting, the back-cast is the most important part of the cast. You want the line to unfurl up and back before being cast forward.
- Stop the forward cast high to allow the fly and tippet to land first and enjoy the biggest advantage of Tenkara: keeping the line off the water for drag-free presentations.
- Roll casting can also be done with a Tenkara rod. Just stop the rod at the 10 o'clock position as with the basic cast.

Going for Distance

As your technique improves, you can work with more line. Distance in fly-casting is achieved by **shooting the line** on the forward cast. A proper power stroke will have put enough momentum to the line that it can pull more line through the guides if you have first stripped it from the reel. Hold a couple of coils of slack line in the hand you are not using to cast—this is your **line hand**—and release these coils when you have finished the power stroke—at 10:30—and feel the loop straightening out in front of you. The slack line will be pulled through the guides.

False Casting

If you have made the forward cast and, instead of softly lowering the rod tip and letting the line and fly settle on the water, you execute another back cast with the fly still in the air, you are false casting. False casting allows the angler to change directions from cast to cast without disturbing the surface of the water and to add more length to the cast. It is also a good way to dry a fly that has soaked up too much water. Practice false casting 30 feet of line. Much more than this is unwieldy.

Practice Your Casting Technique

- Learn to feel the tug of the line when it straightens out behind you on the back cast. This is the signal to start the forward cast.
- Learn to use the weight and speed of the line to make the fly rod work for you.
- Work on accuracy. The line and fly will travel in the direction in which your thumb ends up.
- Exaggerate the up-and-down motion of your forearm when you are learning to cast. Don't be afraid to look behind you to see the action of the line and leader.
- Remember that the roll cast has a vertical stopping point of 1 o'clock. The roll cast is essentially half a cast. It uses the same grip and the same vertical stopping point as the full back cast. As such, you may wish to perfect your roll cast technique before progressing to the full, traditional back cast.

All About Flies

Fly-fishing is done with artificial imitations of natural foods (insects, minnows, and so forth). The angler presents a hook that has been dressed with feathers, fur, and other materials —both synthetic and natural—in an attempt to trick a fish into striking. These artificial lures are called **flies,** even when they imitate fish, crabs, or, in some cases, nothing in particular. Each fly is tied according to a **pattern,** and fly tiers are constantly developing new patterns that vary in presentation—each with the hope of hooking choice fish.

Types of Flies

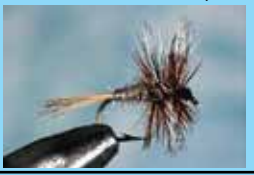
Although many of the lures fly fishers use to catch fish are designed to duplicate the immature and adult stages of aquatic insects such as mayflies, dragonflies, and midges, many other types of fish food are represented by flies, including baitfish, leeches, worms, and crustaceans. The term *fly* is only generic; it does not necessarily refer to flying insects.

Today's fly tiers can create flies that mimic aquatic insects in all their life stages, nymph, hatching forms, mature, and even "spent" insects. Many fly tiers familiarize themselves with entomology, the study of insects, to improve their fly-tying skills.

Dry Flies and Terrestrials

Use these flies to catch trout, bass and panfish on the water's surface.

PATTERNS	MATCHES
Adams	Adult mayflies, caddis flies, midges
Black Gnat Parachute	Adult black mayflies, caddis flies, gnats
Elk-Hair Caddis	Adult caddis flies (color to match naturals
Fur Ant	Color to match naturals
Foam Beetle	Color to match naturals



The following charts list the types of patterns that have been designed to imitate live baits for certain fish.

Dry Flies

Traditional trout flies that float are called **dry flies.** They are designed to imitate the adult forms of mayflies, caddis flies, and other insects that trout and other fish feed on. Anglers use dry flies to catch fish that are feeding on surface-hatching insects. The dry flies are tied in patterns to look like the specific species of insect. This is called **matching the hatch,** and it is one of the most important principles in fishing. If you see fish feeding on a specific insect then you should use a fly that closely imitates this food source. In addition to shape, color and movement, the size of the fly is also important when matching the hatch. Good casting with the wrong fly can result in a lot of refusals by fish and a lot of frustration for the angler.

Nymphs and Wet Flies

While most anglers consider dry fly-fishing to be the most exciting form of fishing—because the strike of the fish can be anticipated—fish do the bulk of their feeding beneath the surface, where mayflies and other aquatic insects spend most of their lives, from egg to adult form. Flies that are fished beneath the surface are called **wet flies.** They often imitate aquatic insects in the nymph or pupae stage that are struggling to reach the surface. Also fished beneath the surface are flies that imitate baitfish or crayfish; they are called **streamers**.

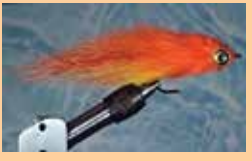
Nymphs and Wet Flies

Use these flies to catch trout, bass and panfish below the water's surface.

PATTERNS	MATCHES
Gold Ribbed Hare's Ear	Mayfly nymphs
Bead Head Pheasant Tail	Caddis and mayfly nymphs
Simple Stone	Stonefly nymphs (color to match naturals)
Zug Bug	Caddis pupae
Woolly Worm	Caddis and mayfly nymphs

Streamers

Use these flies to catch larger freshwater and saltwater fish below the water's surface.

PATTERNS	MATCHES
Clouser Deep Minnow	Baitfish
	
Muddler Minnow	Baitfish
	
Synthetic Streamer	Baitfish
	
Olive Bucktail	Baitfish
	
Woolly Bugger	Baitfish, leeches
	

Streamers

As fish get larger they need bigger prey to get the energy they need to thrive. Unlike dry flies, nymphs, and traditional wet flies—which imitate small aquatic and terrestrial insects—streamers are designed to simulate larger baitfish, leeches, and other swimming critters. They are used in both fresh and salt water, and are tied from a variety of natural and synthetic materials. Bucktails are traditionally those baitfish imitations with hair wings, while streamers were traditionally those with feather wings. Since wings of mixed materials are now common, including synthetics, "streamers" is used to describe the entire range of such flies. Both freshwater and saltwater streamers can be tied to imitate very small to very large prey. Flies for large apex predators like saltwater barracuda or freshwater muskellunge can be over 12 inches long!

Among the most intricate and beautiful flies are those designed to catch Atlantic salmon. The **recipe** for some salmon flies requires the use of more than two dozen different materials. At the other extreme, some flies are tied to look like salmon eggs and are nothing more than some synthetic floss or yarn tied in a clump around the hook shank.

Bass Bugs and Poppers

A popular fly in bass fishing is the **popping bug.** This fly consists of a cork, foam, or hair body that is attached to a hook and **dressed** with some feathers, fur, synthetic hair and perhaps some pieces of pliable rubber. They imitate a large insect or frog. Anglers use the fly line and rod tip to impart some action to these bass bugs and make a popping noise on the surface of the water. Such action can arouse the curiosity of a fish and get it to strike.

Size, color, and shape are three of the most important characteristics of any fly.

Bass Bugs and Poppers

PATTERNS	MATCHES
Lefty's Popper	Frogs, small baitfish, large insects
Cork Slider	Frogs, small baitfish, large insects
Deer Hair Diver	Frogs

Tying Flies

Flies are sold commercially in stores, through mail order, and online. Many anglers, however, tie their own flies. This provides a satisfying hobby, although it might require developing some skills. Most serious anglers have tried fly tying and are familiar with the basics, even if they buy their flies from a commercial source. Some anglers even carry a portable fly-tying kit with them when they go fishing so they can match whatever the fish are eating.

In the following sections we will discuss basic fly-tying tools, hooks, materials, and skills. These will be used to tie the fly patterns that follow as well as many more you might want to tie.

Fly-Tying Tools

For a very basic fly tying kit all you need is a **vise, bobbin, and scissors**. Other useful tools include **bodkin, hackle pliers, half-hitch tool,** and **bobbin threader**. A number of other special tools are available for the more advanced tier.

A simple kit like this makes fly tying easy. Everything fits into the box for storage.

Vises are available in a range of designs and should have a simple, sturdy and adjustable action that will firmly hold a variety of hooks. Most tiers prefer an action that includes a lever that is pressed down to grip the hook in the jaws. Better and more expensive vises have hardened jaws to withstand many years of use and some vises even allow rotation of the partially dressed fly, giving the fly tier better access to add the next material.

The bobbin holds a spool of thread, which is used to attach materials to a hook. The bobbin is adjustable so you can control the amount of tension on the thread. It also allows you to pause your tying, while the weight of the bobbin and thread spool keep tension on the thread wraps, while you prepare the next piece of material for your fly. Many beginning fly tiers start with 3/0 or 6/0 black or other subdued color that can easily be used for tying many different patterns. Other thread sizes and colors can be added later as needed to tie more refined patterns.

A quality pair of scissors is a must-have tool. It should have razor-sharp blades with fine points that allow you to work closely around the hook. Many tiers use two pairs—one for cutting tough materials such as feather stalks, hair and tinsel, and a finer pair for delicate tasks such as trimming hackle fibers.

Bodkins, sometimes called dubbing needles, are used to tease out dubbing, divide wing slips, free trapped hackle fibers, and precisely apply small drops of head cement. You can make your own from a small cork and a large needle. Keep it clean with a small piece of steel wool.

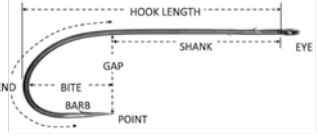
There are many hackle pliers available in different sizes. The best are simple and include a small piece of rubber on one of the jaws to firmly grip the hackle without breaking it. You can always use your fingers, but there are times when a hackle plier makes tying easier and more precise.

Some bodkins come with half hitch tool—basically a hole in one end—that can be used to tie half hitches on the head of your fly to finish it off. You can also use a small coffee stirrer straw for flies without bead heads, or a larger straw if a bead head is used. An inexpensive pen has a number of parts that can be used as well.

A bobbin threader is a specialty tool that helps you slip thread through the narrow tube in the bobbin. You can also use a dental floss loop, available at most drug stores. Sometimes you can just slip the tip of the thread into the bobbin tube and carefully feed it through.

Fly Hooks

It is best to use barbless hooks or to crush down the barb on barbed hooks. A small pair of flat-jawed needle-nose pliers can do the trick. Hooks are usually made from high-strength steel wire. A wide range of hook types and sizes are available for fly tying, many of them developed for specific types of flies. Almost all hooks have a number of common features, which are important to know. The dimensions of some hook parts are used to establish the key **proportions** of a fly, such as the tail, body and wing. Hooks may be extra-long or extra-short, they may be formed of extra strong or extra light wire, and they may have an eye that is bent up bent down, or straight. Most fly recipes will tell you what hooks are best to use.



The **hook length** is often used to measure fly wings and tails. It is measured from the back of the **bend** to the back of the **eye**. The eye is not usually included in this measurement, but is often used to set the size of the fly head.

The **shank** is also used as a reference. The marabou tail on a Woolly Bugger streamer, for example, is supposed to be the same length as the shank. It is important to note that the shank does not always end opposite the **point**, as shown in the figure, but is often close.

The **gap** (or gape) is another hook feature that is used to measure materials. The tail on a Woolly Worm wet fly, for example, should be no longer than the gap. The hackle fibers on some dry flies should be 1½ to 2 times the gap. Another common hook feature is the **barb**. We recommend that you use barbless hooks or flatten the barb with smooth-jawed pliers before you tie your fly.

It is important to note that hooks dimensions vary slightly from one manufacturer to another. The differences are usually small, but experienced tiers often develop a preference for one hook over another for specific fly patterns.

Fly-Tying Materials

A fly is made by using thread to secure natural and synthetic materials on a hook. The **thread** we use to secure materials on a hook may be made from a number of materials including nylon, rayon, silk, gel spun polyethylene, polyester and even Kevlar. Threads are usually specified by a number corresponding to its diameter (where 8/0 is very fine and 3/0 is thicker and stronger) or its weight (where 70 denier is lighter and weaker than 210 denier). Denier is the weight in grams of 9,000 meters of thread. The actual strength of the thread will vary significantly depending on material and manufacturer. Most fly recipes specify what thread works best, but you can usually substitute with whatever you have.

Metal beads, dumbbell eyes or **lead-substitute wire** can be used to add weight to a fly such as a nymph or streamer. A bead can be slipped on the hook before tying in

other materials and provides both weight and flash. Dumbbell eyes are tied in behind the hook eye to add weight, cause the fly to swim in a specific way, and serve as the eyes of the imitation.

Lead-substitute wire can be wrapped around the hook shank and positioned to give a fly a special action in the water. Copper, brass and other **wire** is sometimes used to add strength to a fly and to serve as a rib. The segmented body of a nymph, for example, is highlighted by the addition of a rib.

Yarn and **chenille** are used to form fly bodies. They are made of both natural and synthetic materials, and come in a wide variety of colors, sizes and styles.

Feathers are used to create tails, wings, legs, bodies, ribs and other fly parts. They include **hackles, body feathers, tail fibers, herl, marabou**, and many others. Some are stiff, good for dry flies that float on the surface, and some are soft, good for underwater flies that are more effective when their materials wave in the water.

Patterns

Fly patterns are basic designs tied to match a live insect or bait when fished under certain conditions. Patterns call for standard hooks and materials, but experienced fly tiers can modify an existing design to match the color, size, or shape of the "real" fish food that exists in the area. For example, if trout on a particular stream seem to be feeding on a certain color and size of mayfly, the angler can modify a basic pattern to tie a fly that specifically matches the real mayflies in size and color.

Learning to tie a few of the basic patterns will allow a beginning fly tier to imitate the characteristics of a fly enough to make an informed judgment about which type of fly will catch the biggest fish. Fly tying takes practice, but the enjoyment of trial and error can be half the fun; catching fish on flies you have tied is the other half.

Four simple and effective flies are included here to help you learn the basics of fly tying—**Bead Head Woolly Worm** (wet fly), **Bead Head Pheasant Tail** (nymph), **Elk Hair Caddis** (dry fly) and **Clouser Minnow** (streamer). Each one uses different materials and requires some different skills and techniques to master. These patterns can be adapted and used in both fresh and salt waters for a wide variety of fish. Once these have been tied and the basic skills and techniques learned, you can tie hundreds of effective flies to match what fish may be eating.

Woolly Worm Wet Fly Recipe

- ☐ **Hook:** wet fly or 2XL nymph/streamer hook, size #12 to #8
- ☐ **Thread:** 3/0 or 6/0 to match the body color
- ☐ **Weight:** (optional) lead-free wire and/or bead
- ☐ **Tail:** floss, yarn or soft fur to match or complement the body
- ☐ **Body:** chenille or yarn (black, brown, olive, yellow, etc.) or peacock herl
- ☐ **Hackle:** soft hen body feather (grizzly or to match or complement the body)

TYING THE WOOLLY WORM WET FLY

Step 1—Crush the hook barb. Slide a metal bead over the point and up the hook so the small hole is against the eye. Grip the hook firmly in the vise by the lower part of the bend so the shank is level and the barb and point are exposed. If desired, wrap lead-free wire around the front of the hook shank, leaving some bare shank behind the eye. For a heavy fly that goes deep, wrap the wire behind a metal bead, then push it forward to seat the bead.

Step 2—Lay in the thread on the hook behind the eye, bead, or wire. Make a few wraps back over itself toward the hook bend, creating a "**jam knot**" to lock the thread in place. If wire is used, build a tapered thread dam behind the wire, then cover the wire in crisscross wraps and wrap back to the end of the shank to a spot between the hook point and barb. This spot is often called the "**origin**," and it is where the materials for this fly will be tied in. Cut the excess thread.

Step 3—Cut a piece of floss, yarn, or soft fur for the tail. Using the **critical pinch** technique, tie in a sparse amount of material on top of the hook just behind the wire or bead (if present). Otherwise, start a short distance behind the hook eye. Wrap the

thread down the hook, trapping the tail material on top of the hook until you reach the origin. If using floss or yarn, you can trim the end of the tail to even it up. The tail should stick out beyond the origin so it's about as long as the width of the hook gap or even with the back of the bend.

Step 4—Hold a hackle feather by its tip and gently stroke the fibers toward the butt so they stick out from the stem. A good feather will feel smooth and slightly waxy. If it feels dry or brittle it might break, so pick a better feather. Using the critical pinch technique, tie the tip in with a few firm thread wraps at the origin. Most of the feather should lie over or beside the tail, shiny (convex) side up. Trim the excess tip.

Step 5—Cut a piece of body material. Using the critical pinch technique tie in behind the wire or bead, if used, or a short distance behind the hook eye, then wrap the thread down the hook, trapping the body material on top of the hook until you reach the origin. Advance the thread forward to just behind the bead, if used, or a short distance behind the hook eye.

Step 6—Wind the body material forward in touching turns to the tying thread, tie off with several thread wraps, and trim the excess material. It's best to end up with the material sticking up so you can cut it close without cutting the thread. If you accidentally do this, start the thread again, cut the excess thread, and continue.

Step 7—Wrap the hackle forward in about 5 open turns, evenly spacing each wrap, to the front of the fly. This is called "**palmering**." Tie off with some firm thread wraps, trim excess hackle, add a few half hitches to finish, and cut the thread. If you're not using a bead, you can form a neatly tapered thread head and then add a few firm half hitches to secure the wraps.

Bead Head Pheasant Tail Nymph Recipe

- ☐ **Hook:** #14 to #10 nymph (straight or curved)
- ☐ **Thread:** 3/0 or 6/0, rusty brown or black
- ☐ **Head:** 7/64", 1/8" or 5/32" copper, brass, or black bead to fit the hook
- ☐ **Weight:** lead-free wire, same diameter as hook wire (optional)
- ☐ **Tail/Body/Legs:** pheasant tail fibers
- ☐ **Rib:** fine copper or brass wire
- ☐ **Thorax:** peacock herl (optional)

TYING THE BEAD HEAD PHEASANT TAIL NYMPH

Step 1—Crush the barb and slide a bead on the hook with the small hole next to the hook eye. Grip the hook firmly in the vise by the lower part of the bend so the shank is level and the barb and point are exposed.

Step 2—(optional) Wrap 3-4 turns of lead-free wire on the hook shank and slide them up into the back of the bead to seat it.

Step 3—Start the thread behind the wire, lock the wire in place with a dam of thread and then open crisscrossed thread wraps over the wire. If no wire is used, form a loose ball of thread (20-30 wraps) and push it under the bead to seat it.

Step 4—Cover the shank with thread.

Step 5—Tie the wire rib on top of the hook from behind the wire or bead to the bend.

Step 6—Tie in 5-6 pheasant tail fibers with the tips to the rear for a short tail, no longer than the width of the hook gap. Keep your wraps together, not spread out.

Step 7—Lift the pheasant tail fiber butts and run the thread up to the bead.

Step 8—Wrap the pheasant tail fibers up to the bead to form the body and tie off. Trim the fiber butts.

Step 9—Counter-wrap the copper or brass wire up to the bead to form a rib, tie off firmly, then wiggle or twist it to break it—do not cut with scissors.

Step 10—Tie in 2-3 peacock herls behind the bead and wrap to form a thorax about the diameter of the bead.

Step 11—(optional) Tie in 4-6 pheasant tail fiber tips below and behind the bead to form legs. The tips should just reach the hook point. Trim the butts short.

Step 12—Add several half hitches to secure and trim excess thread.

Many anglers consider fly tying to be an art in itself, apart from the actual use of their flies on the water. They use many specialized tools and materials for this craft. You might wish to look at a commercial sporting-goods catalog just to marvel at the huge selection of flies and fly-tying materials. In earning the Fly-Fishing merit badge, you will need to learn only the basics of fly tying. Consult the resources included at the end of this pamphlet to learn more about the art of fly tying.

Elk Hair Caddis Dry Fly Recipe

- ☐ **Hook:** #16 to #10 dry fly
- ☐ **Thread:** 3/0 or 6/0, color to match the body
- ☐ **Rib:** extra-fine copper wire
- ☐ **Body:** polypropylene yarn or peacock herl
- ☐ **Hackle:** brown rooster neck, sized to the hook
- ☐ **Wing:** bleached elk or deer hair

TYING THE ELK HAIR CADDIS DRY FLY

Step 1—Crush the barb. Grip the hook firmly in the vise by the lower part of the bend so the shank is level and the barb and point are exposed.

Step 2—Attach the thread about two eye lengths back from the eye and wrap a thread base on the shank back to the bend. Make sure to keep the section of shank right behind the eye free of all materials until it's time to tie in the wing.

Step 3—Spiral-wrap the thread back to the front, making a ridged foundation.

Step 4—Tie in a length of extra-fine copper wire and wrap the thread over it to the bend and back to the front. Keep the wire along the side or top of the shank.

Step 5—Tie in a piece of polypropylene yarn or peacock herl, wrap the thread down the shank and back to trap the body material, then wrap the material in close turns to the front to form a thin body. Tie off and clip the excess.

Step 6—Select a brown rooster hackle feather with a barb length about 1½ times the hook gap. Prepare the feather by stripping off any fuzzy material at the base, then firmly tie it in by its butt at the front of the body with the concave side facing the body. Don't cut off the butt end yet.

Step 7—Grasp the tip of the feather and palmer it back to the bend with 6–7 evenly spaced turns.

Step 8—At the bend, wrap the wire rib firmly over the tip of the hackle one turn and then carefully palmer the wire forward to the front of the body. Wiggle the wire as you wrap to avoid trapping hackle fibers.

Step 9—Tie off the wire firmly and then wiggle or twist it to break it—do not cut with scissors. Cut off the hackle butt and

tip as well. Form a narrow thread base between the body and the eye. End with the thread hanging just in front of the body—about two eye widths behind the eye.

Step 10—Cut, clean and stack a medium-size clump of elk or deer hair. Measure the hair so it reaches from the rear of the hook eye to the hook bend.

Step 11—Cut the hair to this length and, using the critical pinch technique, place it on top of the hook with the butt ends at the back edge of the eye.

Step 12—Make 4-5 firm turns of thread to compress and secure the hair.

Step 13—Tie off under the hair wing, just behind the eye, then add several half hitches and trim the excess thread. A small plastic tube, like a coffee stirrer, makes this easy. Check the wing from the front and adjust it if it's slightly off center.

Streamer Construction

Streamers come in a wide range of sizes and are tied with a variety of materials. The recipe may include deer hair, bucktail, rabbit fur strips, hackles, and synthetic materials. Adding eyes to the larger patterns can often make them more effective.

This traditional fly, known as the Clouser Minnow, is easy to tie. You can incorporate variations by using different colors of bucktail. The Clouser Minnow can be used to catch any species of fish. Practice tying this fly to learn the basics of fly tying.

Clouser Minnow Streamer Recipe

- ☐ **Hook:** Mustad® 3366 (freshwater), Mustad® 34007 (saltwater), or equivalent, #10 to #2
- ☐ **Thread:** 3/0 or 6/0 thread, color to match belly or wing
- ☐ **Eyes:** brass or nickel dumbbell eyes (larger hooks or deep water) or bead chain (smaller hooks or shallow water)
- ☐ **Belly:** white bucktail
- ☐ **Flash:** Pearl Krystal Flash or equivalent
- ☐ **Wing:** chartreuse, natural brown or gray bucktail

TYING THE CLOUSER MINNOW STREAMER

Step 1—Crush the barb and set the hook in the vise with the shank level and the barb and point exposed.

Step 2—Start the thread behind the eye, then spiral wrap to just opposite the hook point and back to about 2-3 eye-widths from the eye, forming a ridged foundation.

Step 3—Tie in the dumbbell or bead chain eyes with figure-eight thread wraps. Tighten the wraps by frapping—firmly passing the thread over the hook shank and under the eyes several times.

Step 4—Cut, clean and stack a small clump of white bucktail. Select hair from near the tip of the tail where the hair is less hollow to minimize flaring when you tie it down.

Step 5—Cut the hair to about 2½ hook lengths (at an angle) and then tie it in with firm thread wraps between the hook eye and the dumbbell eyes. If the hair twists a bit due to thread torque, straighten it before proceeding.

Step 6—Bring the thread under the barbell eyes, hold the hair down over the eyes, and tie in with soft spiral wraps up to a point opposite the hook point and back to in front of the barbell eyes. The thread should be hanging midway between the barbell eyes and the hook eye.

Step 7—Flip the hook over in the vise so the point is on top. This is the way the fly will swim in the water.

Step 8—Fold one or two pieces of Krystal Flash over the hanging thread and then bring the thread up and over the hook,

Fly Selection Tips

Some tips for choosing and tying flies include the following:

- The same types of mayflies hatch year after year and at roughly the same time of year on most trout streams. Therefore, the same fly patterns work on these streams, year after year, in the right season. Know what flies generally work and make sure you have some in your box.
- If the pattern you are using doesn't work but you think you have matched what is hatching, try going up or down one fly size.
- If nothing is hatching but you see trout rising, try a very small fly—especially if the fish are rising softly. They could be taking very small flies—midges—in the surface film or nymphs just below the surface.
- If nothing is rising but you want to prospect with a dry fly, try one of the reliable attractor patterns like a Royal Wulff or a Humpy. These patterns seem to imitate a broad cross-section of insects and they have caught a lot of fish.
- If a bass bug isn't getting any strikes and you have been giving it some action, try letting it rest motionless. Sometimes fish will take it when it hasn't been moved at all.
- Check the hook on the fly often. Remove any debris. The point of the hook should be sharp enough to scratch the top of your thumbnail. The barb will sometimes break off during casting (for example, if it hits a rock).
- If the fly is of a lighter color than the naturals you see, darken it with a permanent marker.

trapping the flash on top of the hook. Make several thread wraps to tie down the flash and then evenly distribute the fibers on each side of the bend.

Step 9—Prepare a clump of chartreuse, brown or gray bucktail, about the same size as the first.

Step 10—Cut the hair at an angle to the same length as the previous clump, place it on the hook with the butt ends about one hook eye width behind the eye, and tie down using the critical pinch technique. If the hair flares too much, place several soft wraps just in front of the dumbbell eyes to bring the hair down.

Step 11—Form a neat, tapered thread head and add several half hitches for durability.

Step 12—Trim the flash so it sticks out just a little bit beyond the bucktail.

Fishing Dry Flies

When you fish a dry fly, you cast either to a fish you have seen feeding—"a rising fish"—or to a location, or **lie,** where you think a fish will be holding and waiting for food to pass above. The fly should drift without "dragging" over the head of the fish and look natural to it. If you are fishing in water with current, cast far enough upstream to give the fly a chance to float down over the lie, where you have seen the fish or think it is holding.

When fishing dry flies in moving water, an angler must contend with **drag.** This occurs when the line moves down current ahead of the fly and pulls it along. This will create a wake and look entirely unnatural to a fish. Anglers traditionally have cast upstream with dry flies to avoid drag.

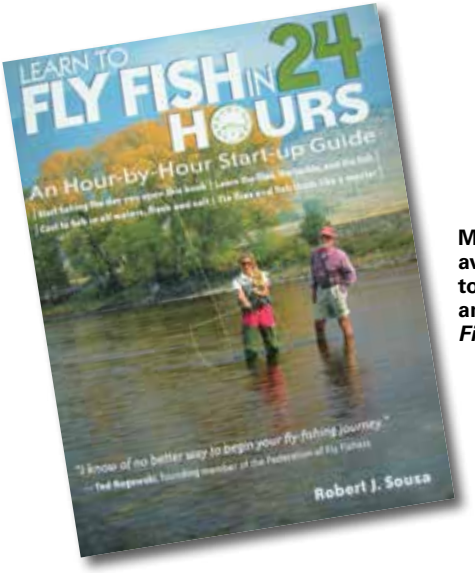
When anglers must cast across current, they can throw an upstream "bend" into the line with a **reach cast** or **mend.** After completing the power stroke, the angler reaches upstream with the arm and rod tip. This sends the belly of the fly line up current.

An angler also can put slack into the line by waving the rod tip back and forth at the end of the power stroke, throwing S-curves into the line before it lands on the water. Another option is to use a **parachute cast,** in which the angler stops the rod abruptly at the end of the power stroke. This puts slack loops into the line before it lands on the water. Raise the rod tip to set the hook with dry flies. If you miss, you can deliver the fly right back to the same spot on the next cast.

Fishing Sinking Flies

When fishing sinking flies in moving water, the anglers control the line by keeping the casts relatively short. They cast upstream and follow the drift of the fly with the tip of the rod, raising the rod as the fly swings downstream to keep slack out of the line. Watch carefully where the leader is tied to the fly line. When it stops—or when you see a flash in the water beyond this point—tighten up with the line hand and lift with the rod hand to set the hook. If you do not strike quickly, the fish may spit out the fly. Some anglers use a small piece of bright yarn or cork on the line as a **strike indicator.** When the indicator stops moving or dips under the surface, the angler strikes.

Streamers and saltwater flies are tied to look like minnows or bait fish. These flies are fished deeply in a lake or stream when fish are not at the surface. They should be moved through the water by short, quick strips of line with the line hand. You also can impart movement to a streamer by moving the rod tip slightly. When fishing nymphs and streamers, use the line hand to set the hook. Even if the fish misses, you will not drag the fly very far away from its view, and the fish may still wish to pursue it.



Many additional sources of information are available to you to take your fly-fishing skills to the next level. Inspired by Scouts like you, angler Robert J. Sousa wrote *Learn to Fly Fish in 24 Hours.*

Where to Fish

To survive in a lake or stream, fish need unpolluted water, a source of food, and shelter that will protect them from predators. Often fish will find food and protection at **edges.** An edge is where two things come together, where something ends and something else begins. If you are fishing a pond, there is an obvious edge where the shallow shore water meets deeper water. This is where you will find fish. When you study water, trying to decide where the likely spots might be, look for edges.

You also may find fish where a gravel bar or sandbar drops off into deeper water. A stump or a fallen log creates an edge effect, and so does a weed bed. In moving water, fish lie where one line of current meets another or where the current breaks up around a rock, creating slack water or an **eddy.** Trout that are feeding on floating insects, like hatching mayflies, will take a position where the current brings the food down to them. Look for these feeding lanes. In salt water, a feeding place might not be visible. It could be a tide that is carrying bait, a deep hole, or an eddy near a rock.

Sometimes, you will be able to see the fish. This is especially likely in salt water when fish are cruising in shallow areas, looking for food. But you also can spot fish by the rise, or action a fish makes as it comes to the surface to feed. You can spot trout in shallow, moving water by the shadow they leave on a sand or gravel bottom or by the flash when they move to take a nymph or some other kind of food.

Remember, if you can see the fish, they can likely see you, so move slowly and wear clothing in colors that match your surroundings.

To spot fish in the water, you need a pair of polarized sunglasses to cut the glare. Do not stare at one place for a long time; rather, keep your eyes moving. Don't expect to see the fish in full profile. Look for a shadow, a part of the fish, a slight movement, or a flash. Once you have spotted one of these signs, you will be able to pick out the entire fish. Some saltwater species, like bonefish and redfish, feed in water so shallow that their fins and tails sometimes show above the surface. Casting to a feeding **tailing fish** is one of the great thrills of saltwater fly-fishing.

Schooling fish, especially in salt water, can be located from a distance by the presence of birds that are feeding on the same baitfish the game fish are eating. Anglers who fish for bluefish, striped bass, and false albacore look for flocks of birds just above the surface of the water, diving into the schools of baitfish. Fish can be spooked easily, so you may be more successful by casting around the edge of a school rather than directly into it. Fish also gather around moving water like inlets or tidal guts. Often predatory fish will try to ambush their prey in the areas of turbulent water.

Kinds of Fish

The types of fish that can be caught by fly-fishing are almost as numerous as the fish themselves. While this sport is often equated with trout, salmon, and other brook- and river-swimming fish, almost any species of fish can be caught with a fly.

Freshwater Fish

Lakes, ponds, rivers, and streams are home to many hard-fighting and tasty species.

Largemouth Bass. No fish was more aptly named than the largemouth bass. Its jaw extends well back past its eye, and when it opens its mouth to swallow something, it seldom misses. Because it often strikes explosively on the surface, the largemouth is one of the most prized and highly sought game fish in North America.

In the South, largemouth grow to 20 pounds or more. In the North, 10 pounds is a record-breaker. Largemouth are structure fish, meaning they hang around brush, fallen trees, weed beds, and ledges, usually in fairly shallow water. Where they are heavily fished, they become cagey, and the angler must be careful, quiet, and skillful to be successful.

In areas where fishing pressure is heavy, many anglers release the bass they catch, perhaps keeping one or two small ones for supper. Small bass are excellent eating; big bass are not as good.

Smallmouth Bass. Smallmouth bass have been described as "pound for pound, the gamest fish that swims." Some anglers will argue for other species, but there is no question that this snub-nosed, jut-jawed warrior of the cold water is a foe to test the tackle of any angler.

Smallmouth bass were once confined to the Mississippi River and Great Lakes drainages, but they have been stocked in all of the northern states, much of Canada, and parts of the southern United States. Fly-fishing techniques work well on smallmouth. They are especially fun to catch with deer-hair bugs and popping bugs fished on the surface, but smallmouth are caught more readily

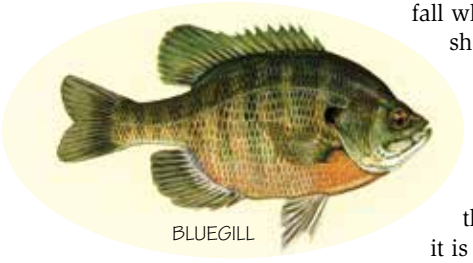
The easiest way to distinguish smallmouth from largemouth is by the upper jaw. In the smallmouth bass, the jaw comes back to a point just to the eye. In the largemouth, the upper jaw ends behind the eye. Also, smallmouth are yellow or tan with brown markings. The largemouth is greenish-gray with black markings. Both fish are known as black bass.

on streamers like clouser minnows, woolly buggers and muddler minnows, as well as crayfish imitations.

Panfish

This year, a million American young people will be introduced to the sport of fishing. Most of them will catch a species of panfish. Aptly named, the species that are lumped together in this category are some of the tastiest in the frying pan. They also are fun to catch, and some are ferocious battlers for their size.

Rock Bass and Bluegill. The rock bass, of the sunfish family, is brassy colored with rows of black scales. A stubby fighter growing to 2 pounds, it will strike almost any kind of live bait or artificial lure. It likes to hang out around old bridge piers, docks, boulders, and weed beds. Except in the late fall when it goes deep, the rock bass is a shallow-water feeder that likes to take minnows and bugs near the surface.


BLUEGILL

The bluegill, like many of the sunfish, has a shiny, dark blue patch on the edge of the gill cover. Like its sunfish cousins, it is brightly colored. The bluegill has purplish sides with black bands and a bright yellow or orange throat. It has a small mouth, and anglers use small hooks to catch it. Bluegill are found just about all over the United States. They are tough fighters and are superb eating. They are often taken on small popping bugs with rubber legs.

Crappie. Crappie are white and black fish that may grow to 4 pounds, although a 2-pounder is considered a trophy in most areas. It will take flies, especially woolly buggers, without hesitation. The crappie has a paperlike mouth and must be carefully handled so that the hook does not pull loose. It is excellent eating.

Stream Trout

For sheer beauty, the members of the trout family are hard to beat. They are sleek, colorful, and built for speed through the water.

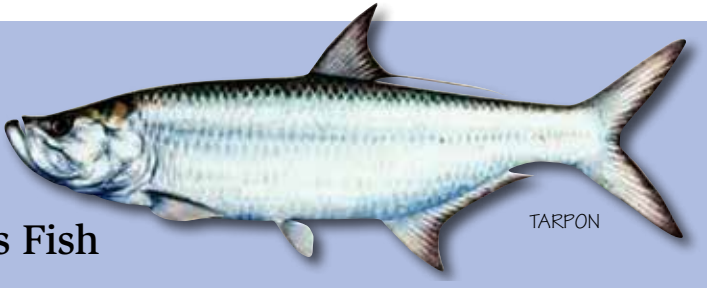
Brook Trout. A dark green back with yellowish tracks, spotted sides with bright red spots, red fins, and a white underside mark this all-American warrior. Brook trout are found in tiny beaver brooks as well as the great rivers of the North. In lakes they reach 7 to 8 pounds, but the average brookie is under a pound. Brook trout can be caught on dry or wet flies.

Rainbow Trout. Aptly named for the bright pink streak down its silvery side and its bluish-green back, the rainbow trout is not only a handsome fish but also one of the most spectacular leapers among freshwater species. There are many varieties of rainbow trout, some growing to more than 20 pounds. The migratory steelhead, a fish that spawns in streams but spends most of its life in salt water or the Great Lakes, is a cousin.

Brown Trout. This European import has taken hold in many of the warmer streams that will not support native American species. It is stubbier than most trout, yellowish-tan with brown and red spots, shy, and is the wariest of the trout. Planted in the Great Lakes, it grows to more than 20 pounds.

Saltwater Fish

Fly fishermen fish for many species of saltwater fish. Because saltwater fish are usually much larger than their freshwater cousins, anglers casting for them require specially designed rods and lines. Some of the species can be taken on a regular fly rod, but extra care must be taken to clean, rinse, and lubricate the equipment to reduce the corrosive effects of seawater.



Flats Fish

Three species of fish that live in the shallow, subtropical waters of Florida are among the finest fly-fishing trophies. These are the tarpon, bonefish, and permit.

Tarpon are the largest of the three and can reach weights of more than 150 pounds. They are spectacular jumpers and are sometimes called "silver kings."

Bonefish seldom grow to more than 10 pounds. They feed in very shallow, clear water, which makes them exceedingly wary, and when they take a fly, the angler will experience the thrill of one of the longest, fastest first runs in all of fishing.

The **permit** is found on some of the same flats where anglers look for tarpon and bonefish. It is rare, wary, and very hard to catch. Many expert anglers have never caught a permit and would consider their first the fish of a lifetime.

Shallow-Water Species. Spotted sea trout and drum are abundant and easily caught where they swarm in coastal bays and lagoons and at river mouths. They will hit streamer flies, and in some cases, skipping bugs work rapidly along the surface. Spotted sea trout and drum are good eating.

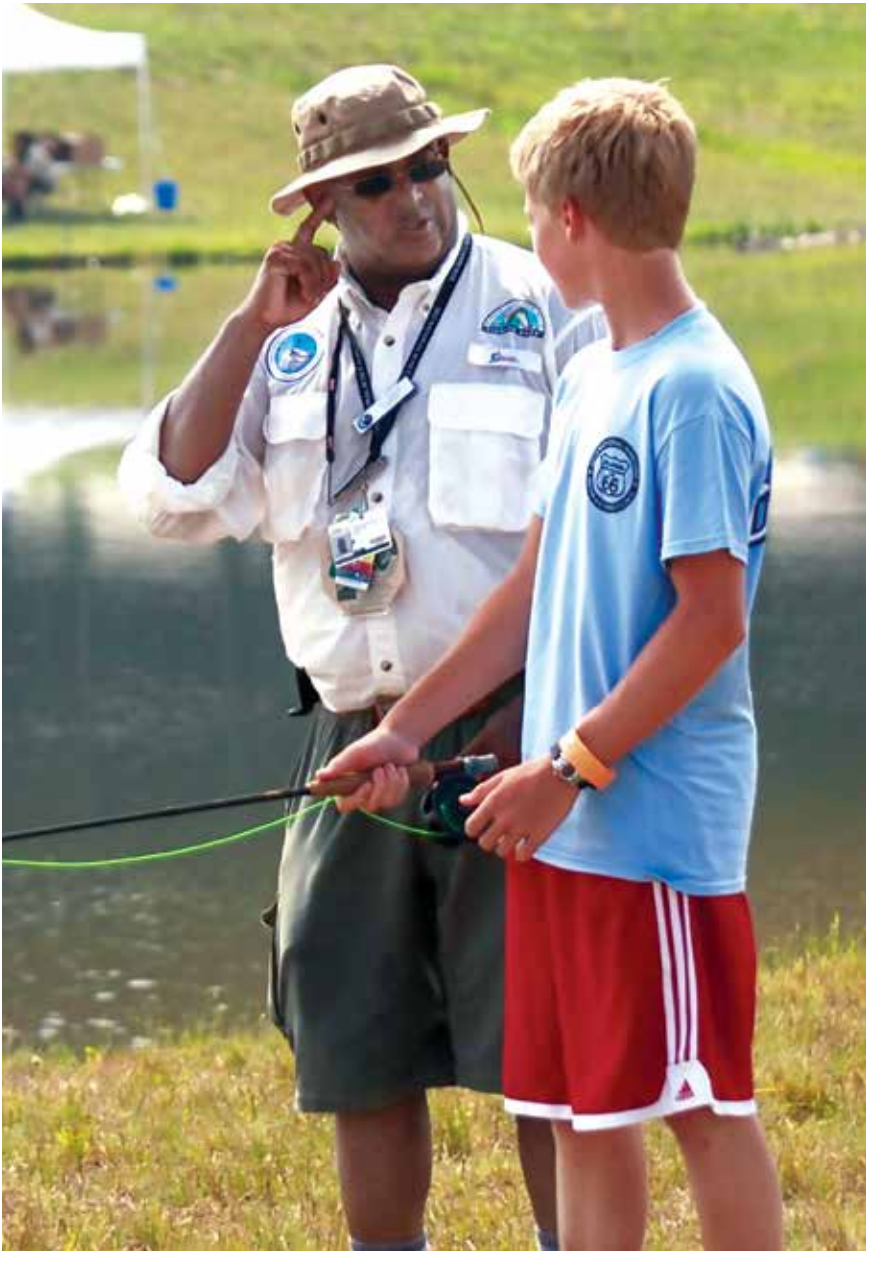
Redfish live along the Gulf Coast and southern Atlantic. They can be found cruising and feeding in shallow water where they will take a fly after a careful presentation. Redfish are terrific fighters and excellent table fish.

Striped Bass

The striped bass is a native of the Atlantic. On the East Coast, it can be found from Chesapeake Bay to Maine. It has been widely transplanted in both freshwater and in the Pacific, especially around San Francisco Bay. In the shallow-water flats of Long Island and around Cape Cod, fly rodders spot cruising and feeding fish and take them on flies. They are excellent fighters and, after many years of scarce stocks, are now plentiful enough that one may occasionally be kept for eating.

School Fish

Bluefish are among the most aggressive of all salt-water fish. They have razor-sharp teeth, so use a short piece of wire leader when fishing them or any other fish known to have sharp teeth. Anglers take bluefish on flies that imitate small minnows. Bluefish usually are found schooling and are located by the birds that flock over to eat the baitfish they chase to the surface. False albacore are tunalike fish that also school on the surface. Many anglers will claim that false albacore are strong fish that fight harder than anything in the ocean.



Hooking, Playing, and Releasing Fish

Hooking a Fish

To set the hook quickly, the fly angler often uses the line hand and not the rod. This is especially true for flies fished underwater. When a fish takes the fly, the fish will spit it out upon discovering it is not real food. The rod flexes and is difficult to control. An angler trying to set the hook by raising the rod tip will often pull the hook out of the fish's mouth. On very big fish such as tarpon, a long pull with the line hand followed by a sharp raising of the rod hand usually will set the hook.

Many fly fishermen use either barbless hooks or, if the hook they are using does have a barb, flatten the barb with pliers. Barbs tend to damage a fish's mouth more than necessary and may make releasing the fish difficult. Barbless hooks make releasing a fish easier and cause less trauma if they become lodged in an angler's skin.

If using a barbless hook, be sure to keep a tight line when playing a fish, as it will sure help you to land the fish.

Playing a Fish

Play the fish aggressively but not to exhaustion. Try to turn its head and make it fight against the full flex of the rod, not just a slight bend at the tip. Do not play a fish too long—it will become exhausted and might not recover if you release it, or it might be too weak to escape from predators.

Releasing a Fish

Releasing fish is an important conservation measure. **Catch and release** is a concept that fishers pioneered and hold dear. One of the great anglers, the late Lee Wulff, was fond of saying that a fish is too valuable to be caught only once.

Catch and release is the law on many popular trout streams and for some species of saltwater fish. Be sure you know the law on which fish must be released and follow it completely.

It is a good idea to wet your hands before handling a fish—even when using a net.

When releasing a fish, try not to remove it from the water. Use needle-nosed pliers or forceps to remove the hook. If the hook is deeply imbedded in a fish's mouth, do not try to remove it. Simply cut the leader as close to the hook as possible. Trying to remove a deeply imbedded hook can cause more harm to the fish than cutting the leader close to the hook and allowing the hook to deteriorate over time.

If you do remove the fish from the water, handle it gently, with *wet hands* or a finely meshed landing net so as not to disturb the protective slime that covers its body. If taking a picture of the catch, have a friend ready with a camera to reduce the time the fish is out of the water. Support the weight of the fish while you hold it horizontally (never vertically), and return the fish to the water as quickly as possible.

Before releasing, revive a tired fish by facing it upstream in a natural position. Let it swim away on its own.

Cleaning, Filleting, and Cooking Fish

There are as many recipes for cooking a freshly caught fish as there are anglers. Proper cleaning and preparation of a fish before cooking will help ensure success with whatever cooking method you choose.

Cleaning Fish

Follow the Leave No Trace Seven Principles and the Outdoor Code and local regulations for proper disposal of all fish entrails, skeletons, and other remains. In many areas, you should treat this waste as you would human waste.

Step 1—Cover the area with brown paper or newspaper. Keep a plastic bag handy for any waste. Make sure you have a sharp knife.

Step 2—Rinse the fish under clean, cool water.

Step 3—Skin the fish, or remove the scales using a scale remover, spoon, or knife. (Hold the fish by the tail and run the dull edge of your knife from tail to head until the fish feels slick.) If you skin the fish, it won't need to be scaled. To skin the fish, cut down the backside and loosen the skin around the fins. Remove the skin with pliers; pull the skin down from head to tail and cut it off at the tail.

Step 4—Starting at the anal opening near the tail, cut through the belly to the gills.

Step 5—Open the belly and remove the entrails and gills from the fish. (Don't burst the stomach.) Scrape out the kidney line (it's reddish-brown) along the backbone.

Step 6—If you want, remove the head by breaking the backbone against the edge of the cutting board or a table. Detach the head by cutting through the fleshy area.

Step 7—Remove the tail and pull off the dorsal fin (along the top of the fish) with a quick tug.

Step 8—Rinse the fish well under cool running water.

Filleting Fish

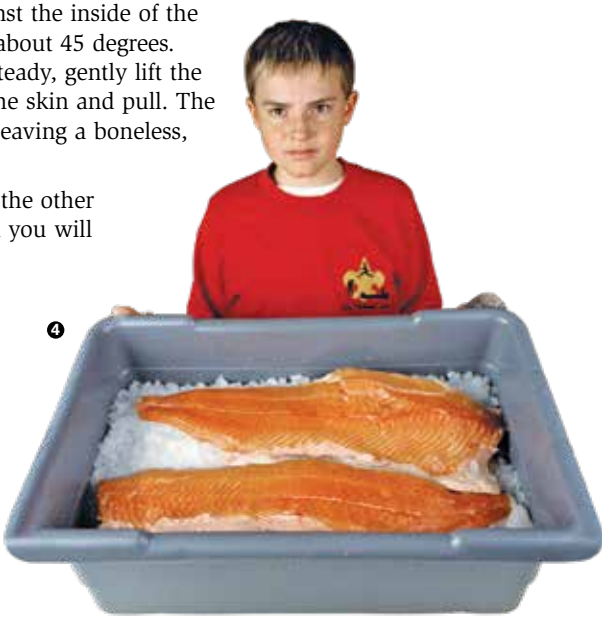
Keep in mind that not all fish should be filleted. Trout, for instance, need only be cleaned. However, removing the meat of some fish from the bones and skin makes it easier to cook and to eat. Here is one way to do it.

Step 1—Lay the fish on its side and make a cut just behind the gills down to the backbone, but not through it.

Step 2—Start at the cut made in step 1 and run the point of the knife alongside the backbone, down to where it starts to click along the tops of the ribs. Cut alongside the ribs, working back toward the tail until the entire side of the fish is free from the ribs and backbone, but leave it attached to the tail.

Step 3—Lay the side flat and hook a forefinger under the skin near the tail. Run the knife into the meat next to the skin and hold the blade against the inside of the skin at an angle of about 45 degrees. Holding the blade steady, gently lift the forefinger holding the skin and pull. The skin will slide out, leaving a boneless, skinless fillet.

Step 4—Repeat on the other side of the fish, and you will have two fillets.



Cooking Fish

There are many ways to cook fish. One of the easiest and tastiest is to simply sauté the entire fish—or the fillets if the fish is larger—in some butter in a hot skillet. Keep the heat low enough that you do not burn the butter. Turn the fish after it has cooked for five minutes on a side. Serve with lemon.

Try this tasty, no-nonsense recipe next time you bag a fish on the fly. Serves four.

Oak's Grilled Fish in Foil*

1 lb. fish fillets
1/4 teaspoon pepper
2 tablespoons margarine or butter
1/2 teaspoon garlic powder
1/4 cup lemon juice
Pinch of paprika
1 tablespoon chopped parsley
1 medium onion, thinly sliced
1 teaspoon dried dill weed
Heavy-duty aluminum foil
1 teaspoon salt
Margarine or butter to grease the foil

Grease four large squares of foil with margarine. Place equal amounts of fish on each square. In a small saucepan, melt 2 tablespoons of margarine. Add the lemon juice, parsley, dill weed, salt, pepper, and garlic powder. Pour equal amounts of the mixture over the fish. Sprinkle with the paprika, and top with the onion slices. Wrap the foil securely around the fish, but leave some room for the fish to expand. Grill 5 to 7 minutes on each side or until the fish flakes with a fork. Enjoy!

*This recipe provided courtesy of David Oakley.

Fishing Safety

Fly-fishing is not a dangerous sport, but you should always be prepared for emergencies and know how to handle them. Be prepared to treat minor injuries by bringing along a small first-aid kid complete with bandages, antiseptic wipes, insect repellent, and sunscreen. Also be prepared to manage risk so that your outing will be safe and fun.

As in any outdoor activity, you must take precautions to prevent heat reactions and dehydration. Wear sunscreen with a sun protection factor (SPF) of at least 15 (reapply it often), drink plenty of water, and limit your physical activity in the heat of the day.

When fly-fishing, you should always wear eye protection and a broad-brimmed hat. A good pair of polarized glasses will protect your eyes and also help you spot fish.

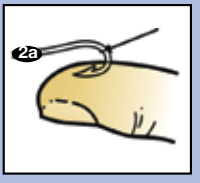
When wading, be careful not to get in too far or too deep, and avoid strong currents. If you should lose your balance and fall, simply tread water or float as you are carried downstream. Wait until you have reached relatively quiet water, then swim to shore. If you have an open wound, do not wade without wearing waders.

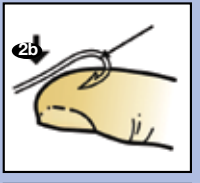
Always be aware of the path of your fishing rod and line when you cast so that the hook and line don't catch on anything—especially another angler!

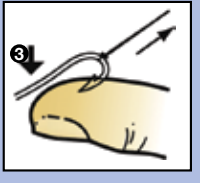
Removing a Fishhook in the Skin

A fishhook embedded in the skin is a frequent outdoor injury. Using a barbless hook allows for easy hook removal, but if you are using a barbed hook, follow these procedures.

Do not try to remove a fishhook from the face or from an eye or an earlobe. Cut the fishing line and, if possible, let a doctor remove the hook from the flesh. If that isn't possible, you might have to do the job yourself. First, wash your hands with soap and warm water. Wear nonlatex disposable gloves and protective eyewear to avoid contact with blood.







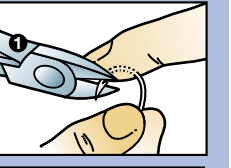
Step 1—Wrap a 3-foot length of fishing line around the bend of the hook, and securely wrap the ends around your index or middle finger.

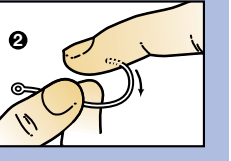
Step 2—Keep the affected body part flat and stable, then firmly push down on the shank to free the barb from the injured tissue. The shank should be parallel to the injured tissue.

Step 3—Keep bystanders well away from the area. While maintaining pressure on the shank, give the line a quick, sharp jerk. Be careful to avoid getting snagged by the outcoming hook.

Step 4—Wash and bandage the injury, and keep the wound clean. Apply triple antibiotic ointment if there are no known allergies or sensitivities to the medication. See a doctor as soon as possible, because the risk of infection is high with this type of injury.

If the hook has lodged so that the barb is visible above the skin, try this method:





Step 1—Cut off the barbed end with wire cutters or pliers.

Step 2—Back the shank of the hook out through the entry wound.

Because the risk of infection is high with any type of puncture wound, be sure to see a doctor as soon as possible.

Treating Minor Injuries

Even a gentle sport like fly-fishing can come with its perils. A good angler will be well-versed in first-aid for cuts, scratches, puncture wounds, and insect bites and stings.

Cuts and scratches are wounds—openings in the skin and tissues that can allow germs to enter the body and cause infection. Wash minor scratches and cuts with soap and water. Apply antiseptic to help prevent infection. Keep the wound clean with an adhesive bandage. On camping trips, clean and rebandage small wounds daily.

Larger cuts should be treated with direct pressure to stop bleeding, then cleaned as well as possible to limit infection. Cover an open wound with a sterile gauze pad or clean cloth that has been folded to make a pad. Hold the pad in position with tape, a cravat bandage, or other binder. Remember, anyone suffering a serious wound should be treated for shock and seen by a physician.

Puncture wounds can be caused by pins, splinters, nails, and fishhooks. All can be dangerous, because they allow germs into a wound that is hard to clean. To treat a puncture wound, encourage the wound to bleed to help flush out dirt or other particles that might have been forced inside. Use tweezers sterilized over a flame or in boiling water to pull out splinters, bits of glass, or other objects you can see. Wash the area with soap and water, apply a sterile bandage, and get the victim to a doctor.

Many spider bites can be dangerous. Victims of spider bites should be treated by a doctor as soon as possible.

The bites or stings of insects, spiders, chiggers, and ticks can be painful. Some can cause infection. Applying calamine lotion to insect bites may bring relief, but the most important thing to remember is to try not to scratch. Applying an ice pack can help reduce swelling.

For a bee or wasp sting, scrape away the stinger with the edge of a knife blade. Don't try to squeeze it out; doing so will force more venom into the skin from the sac attached to the stinger. Ice also will help ease the swelling of stings.

Never try to remove a fishhook that is lodged in the face or near an eye, artery, or other sensitive area.

If a tick has attached itself, grasp it with tweezers close to the skin and gently pull until it comes loose. Don't squeeze, twist, or jerk the tick, as doing so could leave its mouthparts in the skin. Wash the wound with soap and water and apply antiseptic. After dealing with a tick, thoroughly wash your hands and any affected area to help prevent Lyme disease, a bacterial infection that is spread through contact with infected ticks. If redness develops in the bite area, see a doctor.

Treating Heat Reactions

When the body's cooling system gets overworked, heat exhaustion can occur. Symptoms can include pale, clammy skin; nausea and fatigue; dizziness and fainting; and headache, muscle cramps, and weakness. Treat heat exhaustion by having the victim lie in a cool, shady place with the feet raised. Remove excess clothing. Cool the victim with wet cloths applied to the body. Let an alert victim sip a little water. Recovery should be rapid, but if symptoms persist, call for medical help immediately.

Heatstroke is a reaction to heat that is more serious than heat exhaustion. It occurs when the body's cooling system shuts down completely. The victim's temperature often soars to a life-threatening level. Symptoms include very hot skin; red skin that is either dry or damp with sweat; rapid and quick pulse; noisy breathing; confusion and irritability; unconsciousness. In cases of heatstroke, call for medical help immediately. While waiting for medical help, cool the victim as soon as possible. Move the victim to a cool, shady spot and cool the person any way you can, using any of the following techniques:

- Remove outer clothing and sponge the person with cool water.
- Cover the victim with wet towels, wet clothing, or whatever else is available.
- Fan the person.
- Place the person in a cool stream or in front of a car air conditioner.

Keep the victim lying down and comfortable with head and shoulders slightly raised. Monitor the person's temperature until help arrives.

Trip Itinerary

Always tell your parents or guardian where you are going and when you expect to return. If fishing a remote area, leave your trip plan with a resort owner or dock operator. If nothing else, write your trip plan on a piece of paper and stick it up under the windshield wiper of the car. If you run into trouble, trained searchers will know where to look.

Sunburn

Sunburn is a common injury among people who enjoy being outdoors. Most sunburns are first-degree burns, but prolonged exposure to the sun can cause blistering—a second-degree burn.

If you or one of your companions gets sunburned, prevent further injury by getting out of the sun and into the shade. If no shade is available, have the person put on a brimmed hat, pants, and a long-sleeved shirt that will afford protection from the sun. Treat painful sunburn with damp cloths. Remedies containing aloe vera also might provide relief.

Sunburn is easy to prevent by wearing protective clothing and applying plenty of sunscreen with an SPF rating of at least 15. Reapply if you are sweating and after you have been in water.

Treating Dehydration

Dehydration is caused by lack of water in the body. Your body must have water for digestion, respiration, brain activity, and regulation of body temperature. The first signs of dehydration are dark-colored urine, thirst, dry lips, and a slightly dry mouth. Signs of moderate dehydration include a very dry mouth, sunken eyes, and pale skin. As dehydration progresses, other signs can include fatigue, headache, body aches, a rapid but weak pulse, rapid and short breathing, cold hands and feet, and confusion. Left unchecked, severe dehydration can lead to shock and death.

Never drink water that has not been treated. Treat it on the trail or carry fresh water from home.

If you are mildly dehydrated, drink plenty of water to help rehydrate your body. You should see a physician if you are moderately dehydrated. However, severe dehydration requires hospitalization because you must be pumped with intravenous fluids right away.

Prevent dehydration by drinking enough water to keep your urine clear; don't wait until you are thirsty. If you feel overheated, stay in the shade whenever possible. Don't overlook prevention in cold-weather conditions, too. Cold, wet conditions can mask dehydration symptoms to dangerous levels. So, in cold or hot weather conditions, it's important to stay well-hydrated.

Treating Hypothermia

Hypothermia is the lowered internal body temperature that occurs when the body loses heat faster than it can produce it. Water or air temperature lower than 70 degrees poses hypothermia risks. Moving water and wind substantially increase the loss of body heat. Any combination of cool weather and damp clothing, wind, exhaustion, or hunger can bring hypothermia on. In fact, most cases occur when the air temperature is well above freezing.

The best way to deal with hypothermia is to prevent it in the first place. Dress appropriately for the weather; always carry rain gear to keep yourself and your clothing dry. Wearing a U.S. Coast Guard–approved personal flotation device (PFD) if there is any risk of being in cold water or being stranded in water far from shore; the PFD also can serve as insulation against the cold. Wear a hat, eat plenty of energy foods, and do not push yourself to a dangerous point of fatigue.

See the *Swimming* and *First Aid* merit badge pamphlets for more detailed information on treating heat- and cold-related illnesses.

Wading

This can be treacherous, particularly in the spring when water is high or late in the fall when water is cold. It's best to start wading in shallow water before venturing farther out so that you can better gauge water current and depth. It will also help if you wade diagonally rather than face the current straight on.

Rock-bottom streams often are slippery. Experienced fishermen take small steps and wade slowly, moving one foot ahead and feeling the bottom while supporting the body weight on the other foot. Steel cleats or felt boot soles sometimes help, as will walking around slippery rocks rather than over them whenever possible.

Felt boot soles are generally to be avoided in fresh water as they may harbor organisms hitchhiking from one water body to another. The spread of certain diseases, algae, snails and other noxious organisms occurs when anglers do not sterilize their boot as they fish from one place to another. A wading staff is very useful for feeling out the bottom and providing stability as you wade.

Lightning

During lightning storms, avoid the summits of mountains, crests of ridges, slopes above timberline, and large meadows. If you see a storm approaching, quickly descend to a lower elevation, away from the direction of the approaching storm. Instruct Scouts to squat down and keep their heads low. Avoid isolated trees and trees much taller than adjacent trees; and water, metal objects, and other substances that will conduct electricity over long distances.

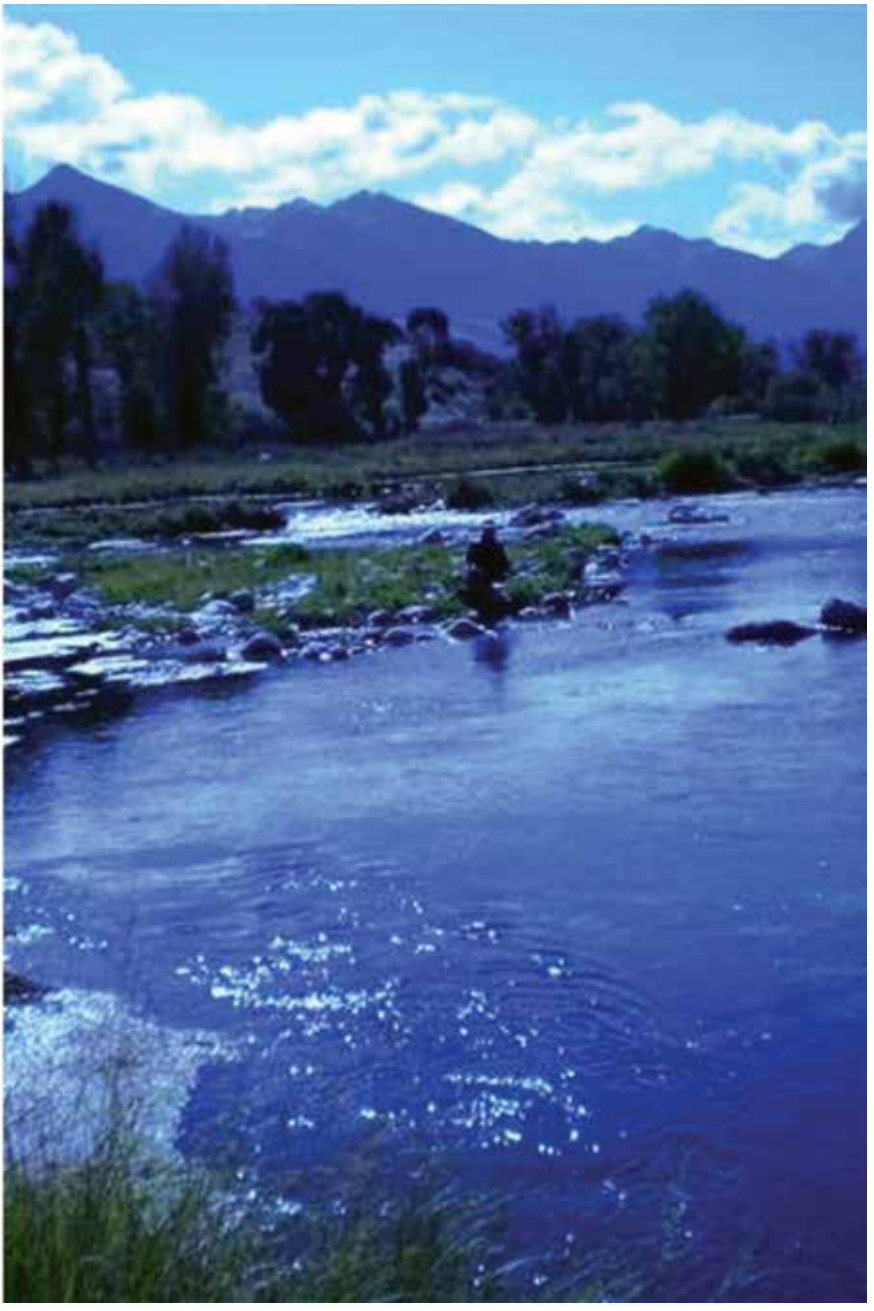
If the threat of lightning strikes is great, group members should spread out at least 100 feet apart and squat with feet close together. Remove backpacks with either external or internal metal frames. In tents, stay away from metal poles.

Look Out for Lightning

Many fly fishermen use graphite rods—which conduct electricity—and stand in water in open areas, so lightning is a particular danger. At the first indication of an approaching thunderstorm, get out of the water and retreat quickly to a safe location.

Anticipate, Help Prevent, Mitigate

Prevention goes hand in hand with mitigation, which means "to lessen in force or intensity" and "to make less severe." By taking precautions to manage risk and first aid, you can be prepared to anticipate, help prevent, mitigate, and respond to just about any fly-fishing hazard.



Fish Conservation and Ethics

Fly anglers are dedicated conservationists, concerned with keeping the waters where they fish clean and encouraging actions that improve the quality of fishing. They try to have as little impact as possible on the banks of the streams where they fish and were the first to make **catch and release** popular. However, some waters have a surplus of certain species. In these situations, harvest of some types and sizes can improve fishing. Harvesting such fish is called **selective harvest**. For other situations where the quantity of fish does not match the demand by anglers, catch and release produces the best fishing. In the southeast and some northern areas, cold-water fish like trout are stocked with the goal that they will be caught by anglers before the water warming. Any uncaught fish will likely die in the heat of summer if they cannot find an aerated spring or other cold water source. Fishery biologists and managers take this fact into account when they make their spring stocking prescriptions for a given body of water. Contact a local or state fisheries biologist to discuss the waters you fish. Find out what species and sizes of those species are best to harvest from the waters you fish. See more in the box on page 89.

Several organizations help spread the conservation ethic by working on stream restoration, restocking, and other projects. Consider joining Trout Unlimited, the International Game Fish Association, or the Fly Fishers International and learn what you can do to promote and preserve the sport.

Fly-fishing is a more than a leisure activity; it is a heritage. When you step into a clear, cold stream where mayflies are hatching and you study the water for the rise of fish, you will feel a thrill that has been experienced by thousands of anglers before you. Enjoy the experience to its fullest—the water, the fish, and the plant, bird, and animal life. As you enjoy the experience, make a promise to do what you can do to pass it along.

Practice good stream etiquette. Do not crowd other anglers. Make sure you have permission before you cross private land.

Outdoor Code

As an American, I will do my best to —

BE CLEAN IN MY OUTDOOR MANNERS.

I will treat the outdoors as a heritage.
I will take care of it for myself and others.
I will keep my trash and
garbage out of lakes, streams,
fields, woods, and roadways.

BE CAREFUL WITH FIRE.

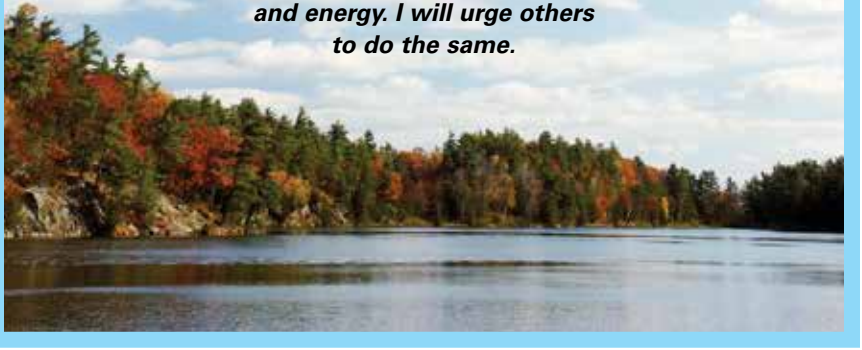
I will prevent wildfire. I will build my fires only when and where they are permitted and appropriate. When I have finished using a fire, I will make sure it is cold out. I will leave a clean fire ring or remove all evidence of my fire.

BE CONSIDERATE IN THE OUTDOORS.

I will treat public and private property with respect.
I will use low-impact methods of hiking and camping.

BE CONSERVATION-MINDED.

I will learn how to practice good conservation of soil, waters, forests, minerals, grasslands, wildlife, and energy. I will urge others to do the same.



Leave No Trace Seven Principles and the Outdoor Code

Sooner or later, an angler discovers that it is not enough to enjoy the sport of fishing and the tasty fish dinners that go with it. All anglers find that they have a responsibility to their sport and to the environment in which the fish live.

Entire rivers and lakes have been emptied of game fish because of human-caused pollution. However, many rivers and lakes have been reclaimed once fishing enthusiasts banded together and demanded it. Scouts have been active in cleaning up trash from rivers and in helping state fishery managers with the rehabilitation of streams for game fish species.

To ensure a healthy future for ourselves and our environment, we must do more than simply pick up litter. We must learn how to maintain the integrity and character of the outdoors. Leave No Trace is a set of guidelines as well as an awareness and an attitude that helps us to do just that. These guidelines apply to fishing just as well as they do to hiking, camping, or any other outdoor activity.

Plan Ahead and Prepare. Proper planning and preparation for a fishing trip help you to have a safe and enjoyable experience while minimizing damage to natural and cultural resources. Anglers who plan ahead can avoid unexpected situations and minimize their impact by complying with area game and fish laws, such as size and catch limits, tackle and bait regulations, and seasonal restrictions. Failure to know and obey these laws can lead to an arrest and a stiff fine. If you need more information, ask a local game warden. Be sure to obtain a fishing license if necessary and any other needed permits or permission.

Obtain information concerning geography, water levels, and weather where you plan to fish so that you are not caught off guard by a storm or difficult terrain. Always leave a trip plan with a responsible adult or two so they will know where you are going and when you plan to return.

Allow ample time to travel to and from your desired fishing spot, whether on the water or the shore. Take along the proper equipment and tackle for the type of fishing you plan to do. It also is helpful to schedule your outing to avoid times of high use. Following these steps will ensure a safe, comfortable, and fun fishing trip.

Using a float tube or waders is a good way to minimize your impact. These devices leave little or no lasting impact and allow you better access to the fish.

Learn the Leave No Trace Seven Principle and the Outdoor Code for your specific activity or destination. Check with local land managers to be sure you are using the proper techniques.

Travel and Camp on Durable Surfaces. Whether you fish for a few hours, an entire day, or plan to camp and fish, it is important to minimize your impact on the land. In high-use areas, concentrate your activity where vegetation is already absent. Use wading gear to reduce stream and lakeside impact. Use existing trails and select designated or existing fishing areas. In more remote, less-traveled areas, avoid creating new trails that cause erosion, and avoid places where impacts are just beginning to show.

If camping overnight, always camp at least 200 feet from shorelines. Keep campsites small by arranging tents in close proximity. If you are camping and cooking that day's catch, disperse tents and cooking activities—and move camp daily to avoid creating permanent-looking campsites. Always choose the most durable surfaces available: rock, gravel, sand, compacted soil, dry grasses, or snow.

It is especially important to avoid impacting stream banks and lakesides. The area that is immediately adjacent to a stream or river is called the riparian zone. These zones supply food, cover, and water for a diverse number of animals, both in and out of the water. They also serve as migration routes and forest connectors between habitats for a variety of wildlife, especially birds. In addition, riparian zones generally contain more diversity and are more productive in plant growth and animal species than land farther away from the water.

Dispose of Waste Properly (Pack It In, Pack It Out). This simple yet effective saying helps motivate outdoor visitors to take their trash home with them. Inspect your fishing spot, boat, or campsite for trash or spilled foods. Pack out all trash, leftover food or bait, and litter. Use designated fish cleaning areas, or check with the local game and fish officials if you will be fishing in a more remote area.

Responsibly dispose of used or broken fishing line by packing it out with the rest of the trash. Many tackle shops offer recycling bins specifically for used fishing line. Anglers should make every effort to retrieve broken line and snagged hooks. If a hook is snagged and the leader breaks, the responsible thing to do is go after that hook and line. Do not leave it there to decompose. Monofilament line can last for decades under certain conditions and can potentially harm birds and other wildlife.

You must properly dispose of any wastewater or bodily waste while in the backcountry. If cooking in the backcountry, strain food particles from your dishwater and disperse the water at least 200 feet from any springs, streams, or lakes. Use biodegradable soap 200 feet or more from any water source. Dig catholes to properly dispose of human waste and to prevent the spread of disease and exposure to others. The catholes should be 6 to 8 inches deep in humus soil and at least 200 feet from water, trails, and campsites.

Disposal of Fish Entrails

If you decide to keep what you catch, you must dispose of the entrails properly. Tradition held that you would throw the entrails back into the water or scatter them in a large area so animals could eat them. If everyone disposed of a catch in this manner, the outdoors would quickly become unattractive to humans. In addition, attracting wildlife to areas where people camp is not a good idea.

Accepted practice today is to dispose of all fish entrails in solid waste facilities. In the backcountry, treat the entrails as you would human waste by burying them in a cathole at least 200 feet from any water source. This disposal method is especially important when you fish trout streams.

In certain states there is a growing threat to trout called whirling disease. This disease attacks the trout's central nervous system. Spread through spores inside infected fish, whirling disease is potentially deadly, especially to younger trout. When the infected fish die or the entrails are thrown into the water, the spores are transferred to a new host and the cycle starts all over again.

If fishing in an area that might be affected with whirling disease, be sure to wash and completely dry all tackle, waders, float tubes, and boats. It is always a good idea to check with local land managers for the best ways to dispose of fish entrails.

Practice catch-and-release fishing to help ensure quality fishing for future anglers. The statement "Limit your kill; don't kill your limit" should be part of every Leave No Trace fishing experience.

Leave What You Find. Allow others a sense of discovery, and preserve the past. Leave rocks, plants, animals, archaeological artifacts, and other objects as you find them. Examine but do not touch cultural or historical structures and artifacts that you may stumble across. It may be illegal to remove artifacts.

Good fishing spots are found, not made. Avoid altering a site, digging trenches, or building structures. Never hammer nails into trees, hack at trees with hatchets or saws, or damage bark and roots by tying horses to trees for extended periods. Replace surface rocks or twigs that you cleared from your fishing spot or campsite. On high-impact sites, clean the area and dismantle inappropriate user-built facilities such as log seats or tables and multiple fire rings.

To avoid spreading invasive species and disease, do not transport fish or live bait from one body of water to another or from one location to another. Be sure to always clean your gear and clothing after a fishing trip so you don't spread invasive species that might have caught a ride home.

Minimize Campfire Impacts. If you plan to cook what you catch while on your fishing trip, you must consider the potential for resource damage. A low-impact alternative to campfire cooking is a lightweight camp stove. Stoves are fast, eliminate the need for firewood, and make cleanup after meals easier.

If you build a fire, keep it small. Whenever possible, use an existing fire ring and dead and downed wood that can be broken easily by hand. Burn all wood to ash and remove all unburned trash and food from the fire ring. Be certain all wood and campfire debris are cold-out. Choose not to have a fire in areas where wood is scarce.

Respect Wildlife. Help keep wildlife wild. Be respectful of any catch-and-release areas, and return unharmed to the water any fish that exceed the designated limit. Use appropriate tackle; lead sinkers, for example, are harmful to fish and other wildlife. Nontoxic alternatives to lead sinkers, some of which have other advantages over lead, include rock, ceramics, iron, steel, and bismuth. These materials are becoming readily available and should be used as an alternative whenever possible.

Observe wildlife from afar to avoid disturbing them; you are too close if an animal alters its normal activities. Never feed wildlife. Store food securely, and keep garbage and food scraps away from animals so they will not acquire bad habits.

Selective Harvest

Catch and release has a big place in the world of fishing. Harvest does, too. Many of the waters in the U.S. are very productive and produce a surplus of fish each year. This is especially true in the southeast, where there is a long growing season and plenty of water relative to the number of anglers. Fishing is better when anglers harvest at reasonable levels.

Catch and release is important, but **selective harvest** can be a better ethic where fish are harvested in such a way that fishing improves. For example, ponds in the south can reach their carrying capacity in a year. For the average fish to gain weight, another fish has to die or be harvested. A managed pond (without feeding) can produce up to 30 pounds of bass and 125 pounds of bream each year.

By harvesting smaller bass, larger bass have more food and will continue to grow. Without harvest, the fish die before reaching their full potential.

If you plan on keeping a fish you caught, dispatch it right away. Do not allow a caught fish to languish on a stringer while you continue to fish. The quickest and most humane way to dispatch a fish is with a sharp blow to the area right behind its head.

Be Considerate of Other Visitors. Thoughtful anglers respect other visitors and protect the quality of their experience. The following are a few tenets of outdoor ethics.

- Travel in small groups no larger than that prescribed by the land managers.
- Let nature's sounds prevail. Keep the noise down and leave radios, music players, and pets at home (fish can be spooked by such interruptions).
- Select fishing spots and campsites away from other groups to help preserve their solitude (and your chances of catching fish). The ethical angler will do this even if it means walking a bit further down the stream or lakeside.

- Always travel quietly to avoid disturbing other visitors. If fishing from a watercraft, take care not to disturb other anglers' efforts on the water.
- Make sure the colors of your clothing and gear blend with the environment.
- Respect private property and leave gates (open or closed) as found.

The Leave No Trace Seven Principles and the Outdoor Code might seem unimportant until you consider the combined effects of millions of outdoor visitors. With a 750 percent increase in the use of designated wilderness areas over the last 30 years, leaving no trace is everyone's responsibility. Tailor your outdoor activities to the environment where the outing will occur. Whether outdoors for sport or leisure, you are nature's guest; remember to act accordingly while there.

Angling Regulations

With millions of anglers fishing the nation's waterways, it is necessary for the taking of fish to be regulated so that there are enough to go around. State conservation departments seek laws that will balance fish production with the harvest. Trained conservation officers patrol the waterways to see that the laws are followed.

Limits. Each state puts a limit on the number of game fish of each species that may be taken by an angler at one time. Limits vary in direct proportion to the availability of the fish. More scarce species have a much lower limit. Muskellunge, for instance, in many states are limited to one a day. Panfish, which are prolific and numerous, have much higher limits or no limits at all.

Methods. With the change from gathering fish only for food to the concept of fishing for sport, rules of sportsmanship have been woven into regulations. In most states, game fish must be taken on hook and line and cannot be speared or netted except with a landing net. In some areas, trout may be taken only on artificial flies or on barbless hooks. Where salmon and steelhead trout migrate up streams to spawn, only single hooks may be used on lures to prevent unscrupulous anglers from trying to snag fish with treble hooks. In many areas, only one lure or bait may be used on one line, and only one line is allowed for each angler.

Seasons. To protect fish while spawning, seasons are set so that game fish can lay their eggs without interference. For species such as bass, pike, and walleye, the seasons open after spawning ends in the spring. For lake trout, brook trout, and other fall-spawning species, the seasons may close in late autumn, just before spawning starts.

Failure to know and obey the fish and game laws can lead to an arrest and a fine. True sportsmen never consider breaking the rules. Many states have a TIP (Turn In Poachers) hotline telephone number that can be called to report violations. People who break the fish and game laws are thieves, stealing from other outdoors enthusiasts and demonstrating a disregard for the environment.

Glossary

anadromous. A fish that lives most of its life in saltwater but needs to swim up freshwater rivers to spawn.

backing. The line attached to the reel before the fly line.

balance. The state in which the rod, reel, and line are correctly matched to handle a given-weight lure or bait. Balance allows an angler to deliver the lure or bait with accuracy within any desired distance.

catch and release. A fishing technique in which fish are caught and immediately released back into the water.

clicker. The mechanism on a fly reel that supplies resistance to the turning of the spool and prevents overruns. It is called clicker because of the clicking sound it makes when engaged.

drag. The effect created when a fly line drags a floating fly along the surface of the water. Also, the resistance provided in the line by the reel when a fish is taking the line.

dress. To create a fly using items such as feathers, fur, and other materials that imitate how "real" fish food looks in nature.

dry flies. Traditional trout flies that float. They imitate adult forms of mayflies, caddis flies, and other insects that trout and other fish feed on.

eddy. In moving water, the edges where one line of current meets another or where the current breaks up around a rock, creating slack water.

edge. An area where two dissimilar elements of a stream or lake meet, allowing fish and fish food to gather.

ferrules. Joints where a fly-fishing rod fit together.

flies. Artificial lures with little weight designed to be cast with fly-fishing equipment. Typically, flies are made from feathers, fibers, and fur and bound to the hook with thread, but many materials have been incorporated to dress a fly.

FLY

GUIDE

graphite. A strong substance with flexible fibers that are often used to manufacture fishing rods.

guides. A series of metal loops positioned along the fly rod to hold the line and distribute stress evenly along the rod.

leader. Transparent, tapered plastic line between the fly line and the fly.

lie. An area where fish tend to wait for food to float by.

line hand. The hand you are not using to cast.

matching the hatch. The practice of using a fly that mimics the size, shape, and behavior of the prey a fish is currently feeding on.

monofilament. Synthetic, nylon, or other plastic line used in the manufacture of leader material.

nymphs. Sinking flies that simulate the underwater, immature stage of many aquatic insects. Aquatic insects live most of their lives in this stage.

parachute cast. A casting technique in which the angler stops the rod abruptly at the end of the power stroke, putting slack loops into the line before it lands on the water.

pattern. A recognized recipe or model for a tied fly made of synthetic and natural materials and imitating natural fish food.

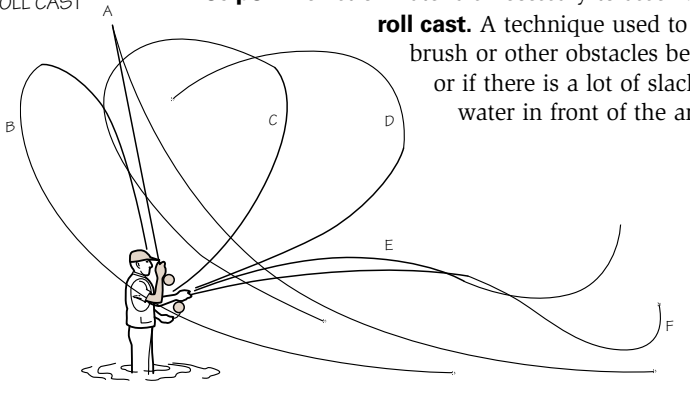
popping bug. A popular fly consisting of a cork, closed-cell foam or hair body dressed on a hook to imitate a frog, wounded baitfish, or large insect. Anglers impart action to create a popping noise on the water's surface that can arouse the curiosity of a fish and get it to strike.

reach cast or **mend.** A technique used to place line upstream when an angler must cast across current.

recipe. The list of materials necessary to assemble a fly.

roll cast. A technique used to avoid heavy brush or other obstacles behind the angler or if there is a lot of slack line on the water in front of the angler.

ROLL CAST



selective harvest. When an angler harvests certain sizes of certain species to improve the fishing in a watershed.

shooting the line. A casting technique in which extra line is held in the line hand and is released and pulled by the cast line to gain additional distance.

spey casting. Two-handed method of casting used with very long rods, usually on salmon rivers. This technique is popular in Europe and gaining popularity in the United States.

streamers. Artificial flies tied to imitate baitfish or crayfish.

strike indicator. Generally a bright piece of yarn or material tied to the line or leader to help anglers identify when a fish has taken the bait.

stripping guide. The first guide up from the reel of a fly rod, usually made from abrasion-resistant material.

tailing fish. A fish that feeds in water so shallow that its fins and tail sometimes show above the surface.

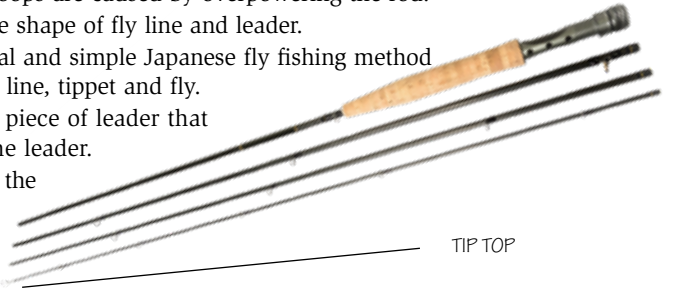
tailing loop. Term that describes what happens to the line in a poor cast. It can be caused by a number of casting mistakes that result in the fly hitting the rod or putting knots in the leader. Most tailing loops are caused by overpowering the rod.

tapers. Describes the shape of fly line and leader.

Tenkara. A traditional and simple Japanese fly fishing method that uses only a rod, line, tippet and fly.

tippet. The delicate piece of leader that attaches the fly to the leader.

tip top. The guide at the very tip of the rod.



weight-forward taper. A type of fly line that has the most weight in the front portion of the line.

wet flies. Flies that often simulate the pre-emerging or emerging stage of aquatic insects. Some traditional wet flies have wings, while soft hackle wet flies usually do not.

wind knot. An undesirable overhand knot in the fly leader caused either by a gust of wind that forces the leader to roll over on itself or by a bad cast.

Fly-Fishing Resources

Scouting Resources

Conservation Handbook; Fieldbook; Deck of First Aid; Emergency First Aid pocket guide; *Be Prepared First Aid Book; Freshwater Fishes* pocket guide; *Scouts BSA Handbook for Boys* and *Scouts BSA Handbook for Girls; Camping, Cooking, Fish and Wildlife Management,* and *Fishing* merit badge pamphlets

With your parent or guardian's permission, visit Scouting America's official retail site, **scoutshop.org**, for a complete list of merit badge pamphlets and other helpful Scouting materials and supplies.

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Periodicals

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americanflyfishing.com

***Fly Fishing & Fly Tying* magazine**
flyfishing-and-flytying.co.uk

***Fly Fisherman* magazine online**
flyfisherman.com

Organizations and Websites

American Fisheries Society
Telephone: 301-897-8616
fisheries.org

The American Museum of Fly Fishing
4070 Main St.
Manchester, VT 05254
Telephone: 802-362-3300
amff.org

Catskill Fly Fishing Center & Museum
1031 Old Route 17
Livingston Manor, NY 12758
Telephone: 845-439-4810
cffcm.com

Fly Fishers International
Telephone: 406-222-9369
flyfishersinternational.org

International Game Fish Association
Telephone: 954-927-2628
igfa.org

Leave No Trace Center for Outdoor Ethics
Toll-free telephone: 800-332-4100
lnt.org

Trout Unlimited
Toll-free telephone: 800-834-2419
tu.org

U.S. Fish and Wildlife Service

Toll-free telephone: 800-344-9453
fws.gov

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