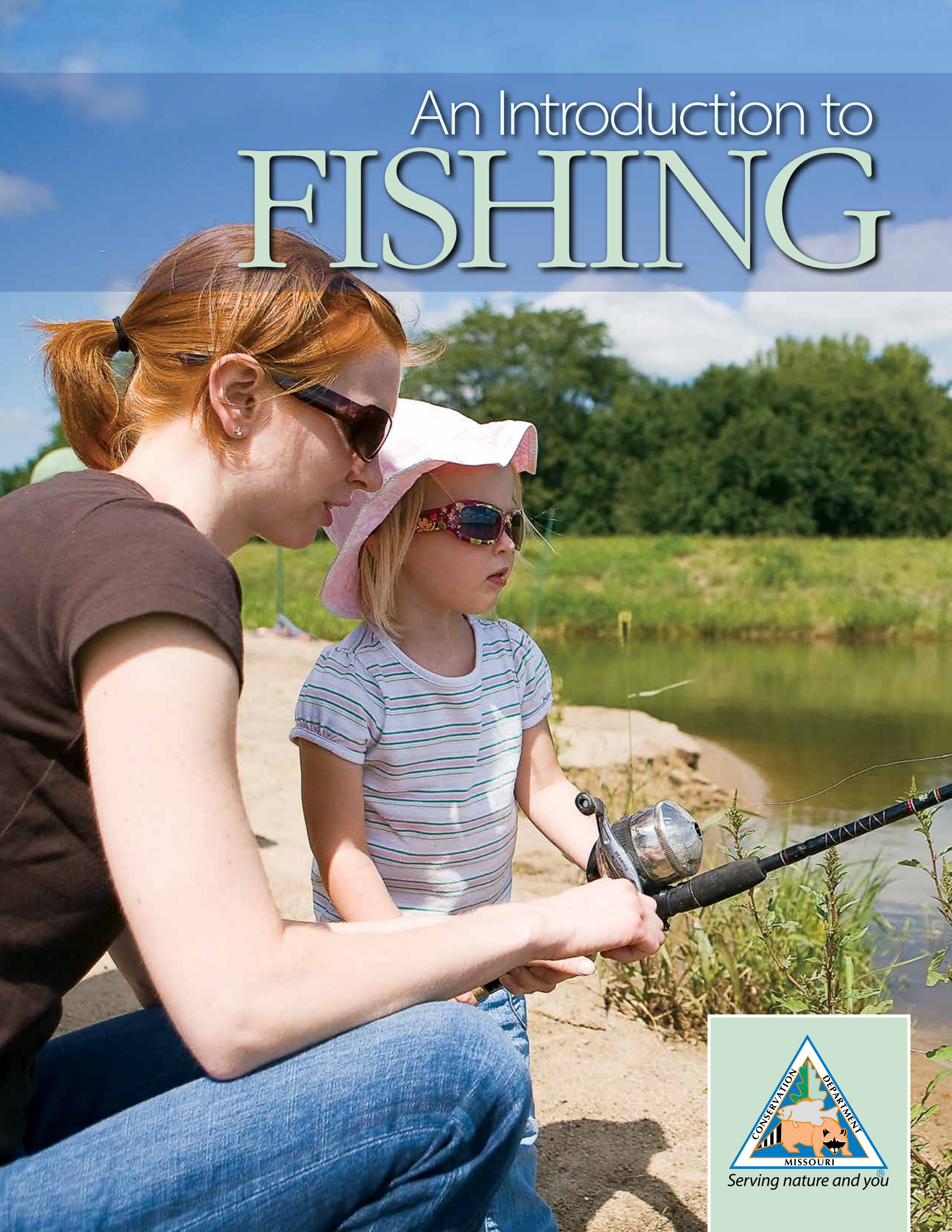
An Introduction to FISHING



CONSERVATION DEPARTMENT
MISSOURI
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Fishing

"God never did make a more calm, quiet, innocent recreation ...."
Izaak Walton

David Stonner

Fishing is a great way to spend a day. You can take a lunch and picnic as you fish. You can camp near a lake. You can hike or boat to a fishing spot. Many people build their vacations around fishing. Be sure to take your family or your friends along, for there is no more sociable activity.

Missouri has more than 800,000 acres of surface water, and most of it provides great fishing. Our waters hold ancient paddlefish, wary largemouth bass, and tasty bluegill—more than 200 different species. About 40 of those fish species are the targets of anglers.

Some Missourians fish for sport or relaxation, while others fish only for food. Regardless of motivation, the majority of anglers reap all the benefits of fishing. They spend quality time on the water and then return home to a satisfying meal of fried or grilled fish they have caught themselves.

One of the joys of fishing is that it can be fun and productive at any skill level. You can complicate the sport with jargon and sophisticated equipment, but the whole sport can be pared down to some basic equipment and techniques.

This publication presents those basics to you. It would take many volumes to introduce you to all the species of fish, all the methods, and all the lures, and so much information at once would be overwhelming.

Instead, we want to be your guide for your first fishing trips. Let us go with you hand-in-hand to the water and patiently teach you how to catch some fish. We know that once you start fishing, you will quickly learn to love the sport.

Rod and Reel

You could catch fish with a stick, some string and a safety pin. In a similar vein, you could also drive nails with a rock. But wouldn't it be easier to use a hammer?

Modern fishing reels, rods, line, and hooks take the place of a stick, string, and pin. They are designed to improve your fish catching ability and to decrease your frustration. Like the hammer, a fishing rod and reel is a purchase that will serve you over and over again.

Fortunately, taking this giant evolutionary step from stick and string to a modern and suitable fishing rod and reel is not expensive.

You might start by borrowing some equipment from a relative or friend to begin fishing. Your request could lead to a fishing outing with an experienced partner. You could also use equipment from the many Missouri Department of Conservation (MDC) rod and reel loaner locations (available online at **short.mdc.mo.gov/Z4X**).

Most beginners use spin-fishing equipment. In spin fishing, the reel lays line around a fixed spool, the way you might wind thread on a spool. The spool end points toward the guides on the rod, and line falls off it in loops when you cast.

Spin-fishing reels are of two types: closed-faced (or spin-casting) and open-faced (or spinning). The spin-casting reel has a cap with a hole in it over the top of the spool. On the open-faced reel, you can see the entire spool and the line wound on it. (See illustrations on page 7.)

Closed-faced reels have either a push button or a lever that, when depressed, allows line to fall off the spool. Open-faced reels have a semicircular metal device known as a bail, which guides line onto the spool when closed and allows line to be released when open.

You can pick either spin-casting or open-faced reels. Note from the pictures on Page 7 that the push-button reel requires a different rod handle and grip than do the reels with a bail or a lever.

You will want a good, all-purpose rod-and-reel combination to start with—something that will let you catch fish of all sizes. Look for or ask a clerk in a sporting goods store for a medium-light rod from 5 1/2 to 6 1/2 feet long and a matching reel that will handle lines from 4-pound test to 12-pound test. (The "pound test" tells you how strong the line is.) Medium-light tackle is sufficient for fishing ponds, small lakes and rivers, and even trout parks.

Rod and Reel photos: Cliff White

Stocking a Basic Tackle Box

Sporting goods departments and bait shops often stock mind-boggling inventories of equipment and accessories. They offer artificial baits in every color and size. Plus you'll encounter a whirlwind of bugs, bobbers, sinkers, hooks, and swivels.

Don't be misled; you don't need a garage full of equipment to go fishing. In fact, the following basic items will equip you nicely for your first outings.

Shopping List

- *A Summary of Missouri Fishing Regulations*
- Bait and lures
- Hooks
  - » Size 6
  - » 16–20
- Sinkers
  - » Assorted sizes of split shot
  - » One package of three bell sinkers, ½ ounce
- Bobbers
- Spare fishing line
  - » Monofilament line, 6- to 12-pound test
  - » 4-pound test or less
- Needle-nosed pliers and nail clippers
- Tape measure
- Stringer (or fish basket)
- Landing net
- First aid kit
- Sunscreen and insect repellent
- Area map
- *Know Your Catch* fish ID booklet

Line: Your Link to the Fish

We suggest starting with 8-pound test monofilament line. People sometimes use lighter line to cast farther or to get more bites from skittish fish or heavier lines to pull out of snags, but 8-pound test line is a good compromise for most fish. Choose clear, light blue or green line for your starting outfit.

Check your reel or the instructions that came with it to determine how much 8-pound-test line it will hold. Usually a 100-yard spool is large enough to fill a medium-light reel.

Follow the instructions that come with your reel and line before filling. The reel is full when the wrapped line is about 1/8 inch from the outside edge of the spool. Don't allow knots in your line, except at the end. Knots both weaken line and make it difficult to cast.

Fish: David Stonner; Tackle Box: Cliff White

Casting

Casting is a mechanical activity. The fishing rod extends your arm and allows you to "throw" your lure or bait a long distance with little effort. Keep in mind that casting is a matter of timing, not strength.

We'll teach you a reliable one-stroke cast.

You can learn to cast on the water, or head to your backyard or a nearby park and throw to targets on the grass. Practice with a bell sinker or a casting plug attached to the end of your line. A few 10-minute sessions will make you proficient enough to fish. There are six steps to a successful cast: grip, stance, aim, cast, release, and follow-through.

Grip

If you are right-handed, grip the rod handle with your right hand, placing your forefinger on the rod handle trigger. If you are left-handed, grip the rod handle with your left hand, placing your forefinger on the rod handle trigger. Place your thumb on the release button but do not press it yet.

Stance

Face your target with feet shoulder-width apart. If you are right-handed, put your right foot forward. If you are left-handed, put your left foot forward. More of your weight should be on your forward foot, also known as the aiming foot. Keeping your body and target in a straight line increases your chances for a successful cast.

Aim

Aiming has already begun with a proper stance. The casting arm, the rod, and eye need to be in alignment. Place the rod in front of your body, pointing at the target. Keep your elbow bent at approximately a right angle. Keep your eye on the target and not the rod. Make a point to check to see what's behind you. Press the push button with your right thumb (if you are right-handed) and raise the rod to the 2 o'clock position. The right hand, rod, and reel should all be in direct line with the right eye, right foot, and target. This places the rod and lure in natural line with the target. Keep your eye focused on the target during the entire cast.

Cast

Hold the rod so that the tip is at eye level and centered on the target. Your elbow should be close to, but not touching, your body. With a smooth upward motion, start the cast by raising your hand almost to eye level, bending the wrist and elbow so that the rod extends over your head and behind you. When the rod reaches the 11 or 10 o'clock position, the weight of the plug will cause the rod to bend to the rear. As it does, bring the rod forward in a crisp downstroke with the forearm, applying only a slight wrist motion forward.

Release

When your forearm, wrist, and rod reach the 1 o'clock position on the forward cast, release the push button with your thumb and allow the plug to travel toward the target. Line is released when the push button is released. The correct release usually occurs when the rod is between 1 and 2 o'clock, but this will take some practice.

Follow-through

As the plug is released, your arm should follow through to about the 3 o'clock position.

Note: The cast should begin with the plug hanging about 1 inch below the rod tip. If more casting distance is needed, increase the starting distance from the plug to the rod tip in 1-inch increments, until the desired distance is obtained. The farther the plug starts from the rod tip, the harder it will be to achieve accuracy. Holding the plug against the rod tip can cause excessive wear to the tip guide, which can affect accuracy. The best rule of thumb is to start with the plug hanging 1 inch below the rod tip, and then experiment.

Of course, you'll get even better with more practice.

If your lure shoots up in the air and doesn't go very far, you probably released the line too early. If the lure smacks into the ground in front of you, you released the line too late.

Remember that the cast has no sudden or jerky motions. Practice until it becomes smooth and nearly effortless.

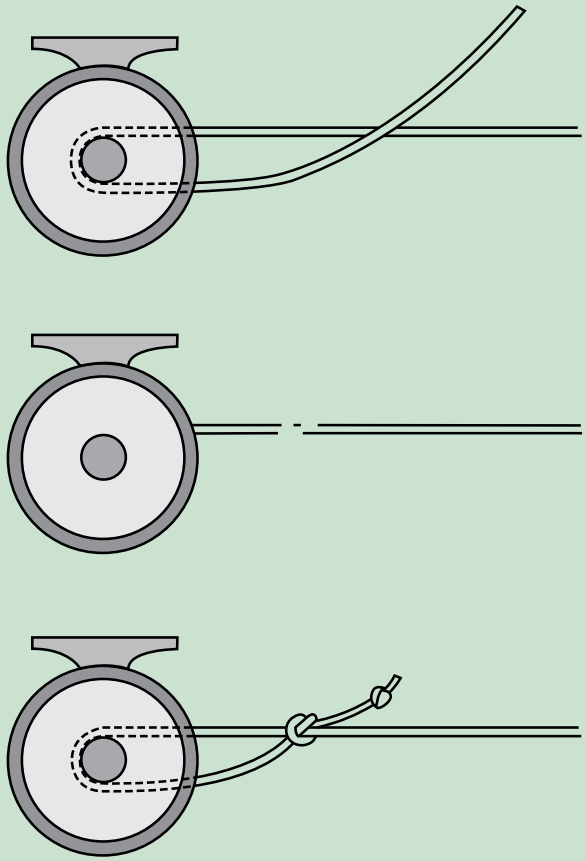
Reel: Cliff White; Casting Illustration: David Besenger

Filling the reel spool

Thread the line through the spool cap or under the bail to start. Tie one end of the line to your reel spool with an arbor knot, and then reel it on. Most spools of line come with suggestions on how to avoid line twist when filling your reel.

How to tie an arbor knot

1. Wrap the tag end of your line around your reel spool.
2. Tie an overhand knot in the tag end. This will keep the end from pulling through the main knot.
3. Tie another overhand knot with the line around the spool.
4. Wet the main knot and pull it down tight onto the spool. Make sure the first overhand knot pulls in tight to this main knot.



How A Drag Works

Fishing reels have a drag to prevent the weight and pull of a fish from snapping the line, making it possible to land even large fish with light lines.

Before fishing, set the drag to release line before the breaking point of the line is reached.

When a big fish is pulling, line will come off the reel, sometimes making a clicking sound. Learn to recognize when the drag is letting a fish run and don't reel during that time, or your line will twist. Avoid the temptation to tighten the drag while fighting a fish.

Cliff White

Finer Points

All anglers do not cast alike. As you fish, you will develop your own casting style. You will also learn special casts, such as the sidearm cast or underarm flip, that will allow you to throw a lure when branches or brush make the overhand cast impossible. All casts, however, depend on the basic back and forth motion. That's the best way to take mechanical advantage of the rod. Here are some tips to improve your casting:

- Accuracy is often more important than distance. Many fish remain near protective cover and will strike only those lures that come into their immediate vicinity.
- Improve your accuracy by casting to definite targets, even while on the water. Make sure you focus on your target while casting.
- If you sense you've cast too far, you can slow the lure by providing some drag on the line with your fingers or by lifting the rod so that the line drags against the end guide, instead of flowing through it.
- Casting heavy lures or baits requires more of a lob than a cast. Increase slightly the distance between the lure and the rod tip, and use more of a sidearm cast. Bring the rod back more slowly and pause longer before beginning the forward cast. Use your entire arm, instead of just the forearm, for casting.
- Longer rods generally allow you to cast farther, if they are correctly matched to the weight of the lure or bait. Make sure your reel is filled to capacity, so the line does not drag on the reel spool.
- If you need more distance, use a two- hand grip and bring the arm back more quickly on the backcast, loading the rod with more energy potential.
- Casting into a strong wind requires a lower trajectory, which is achieved by releasing the line slightly later in the forward part of the cast.
- If your lure bounces or skitters across the water, you are releasing the line too late. Release earlier for a higher trajectory. Remember the bouncing technique, though, for you may someday want to skip your lure under a dock or raft.
- Many problems with distance or accuracy result from holding the rod too tightly. Use the minimum amount of force necessary to hold the rod through the cast. Seizing the rod tightens muscles and restricts fluidity, especially in your wrist. The lighter the grip, the more control and distance.

Spin-fishing reels and rods and how anglers hold them

Open-faced reel
The rod is held in the right hand with the reel on the underside for both casting and retrieving. Right-hand anglers reel with their left hand. Closed-faced reels with levers are also held in this position.

Spin-casting reel
The rod is held with the reel up. Cast with the rod in the right hand and switch the rod to the left hand before retrieving. Reel with the right hand. (Some reels allow you to switch the handle to the other side of the reel if you prefer.)

Cliff White

Rigging Up

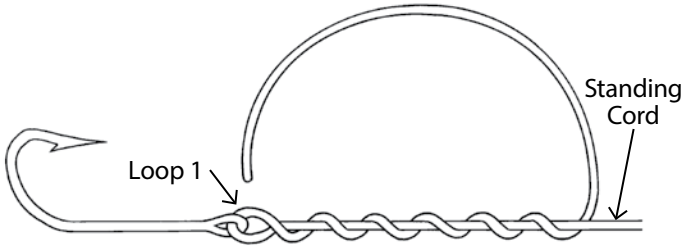
Now that you've acquired some fishing gear and learned how to cast, it's time to arm your fishing pole for action. The end of your line is the scene of all the action. Here you'll tie a hook or lure and, perhaps, fasten on split shot sinkers, swivels, or bobbers.

Use the improved clinch to tie on hooks and lures.

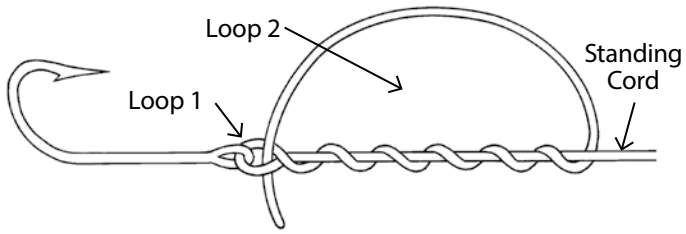
Improved Clinch Knot

There are dozens of different knots, but most anglers settle on one or two favorite knots to tie line to reels, hooks, swivels, and lures. The improved clinch knot is strong and easy to tie, even with cold, wet fingers.

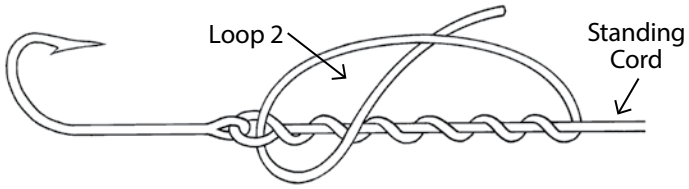
1. Run the end of the line through the eye of a hook about 6 inches and fold it back on itself.
2. Leaving a loop (Loop 1) near the eye, wrap the end of the line around the standing (or long piece of line held in your hand) about five complete turns.



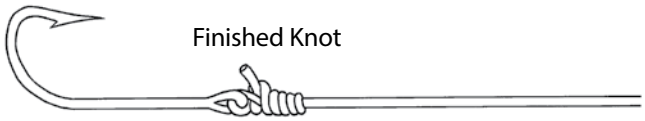
3. Pass the end back up through Loop 1 (the loop beside the eye). This creates another loop (Loop 2) between the standing cord and Loop 1.



4. Pass the end down through Loop 2 and out along the side of the standing cord. You'll find it helpful to use the fingers holding the hook to help you guide the end through the loop.



5. Pull on both the line and the tag end to tighten the knot and snug it up to the eye. The knot will come together more smoothly if you moisten the line with saliva before tightening. Trim the tag end about 1/4 inch away from the knot.



How you rig depends partly on the kind of fish you hope to catch. Catfish usually search for food near the bottom, so you need weight to keep your bait near the fish. Crappie and many other panfish often swim a few feet beneath the surface, and a bobber will hold your bait up where the fish can see it.

Generally, use the lightest tackle you can. Holding your bait on the bottom of a pond on a calm day, for example, doesn't require a large sinker. One or two split shot will do, and the lighter weight is less likely to alert fish that are sampling your bait.

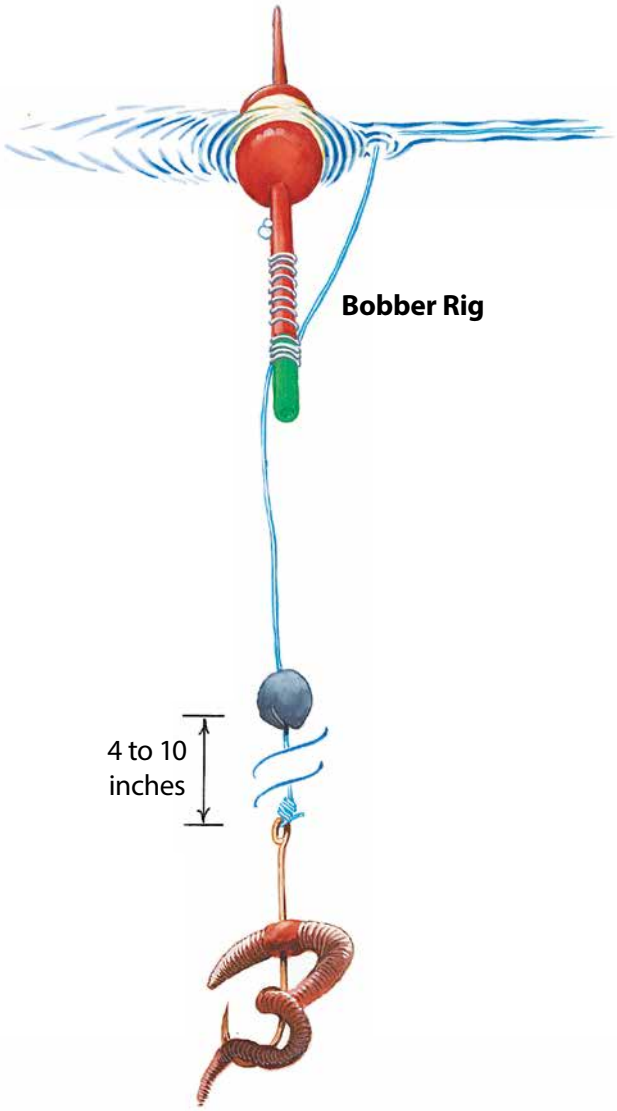
Similarly, use a small bobber and balance it with enough split shot beneath that the fish can pull your bobber down without much resistance.

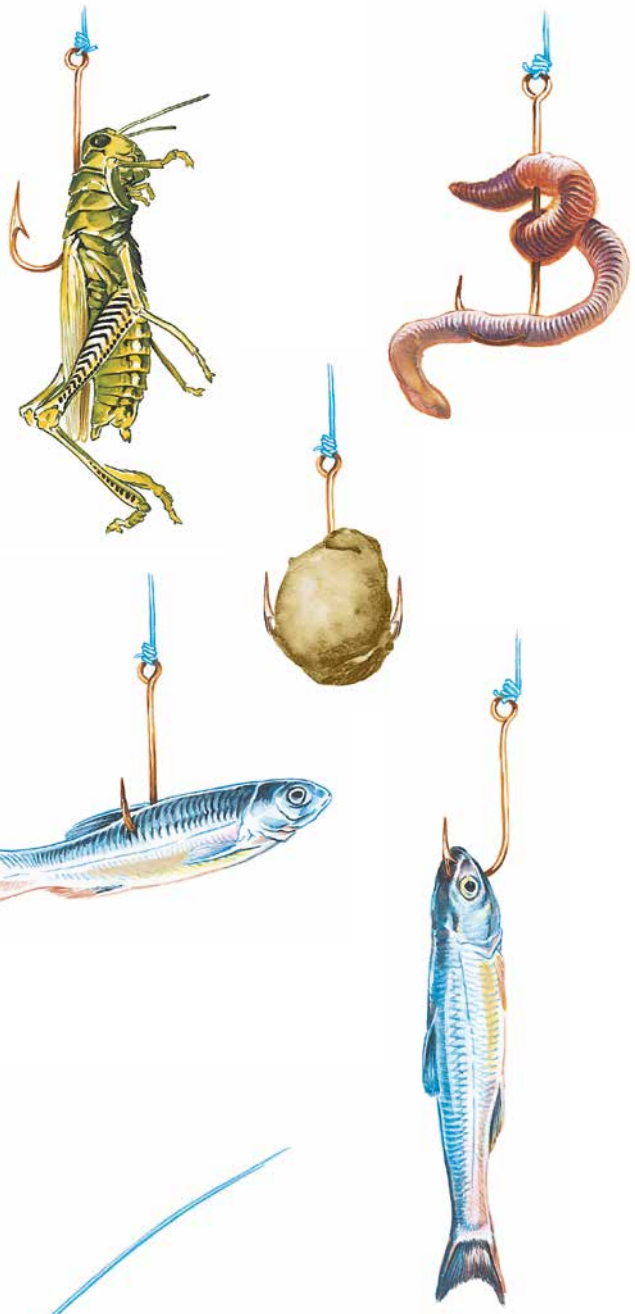
Sinkers and Bobbers: Cliff White

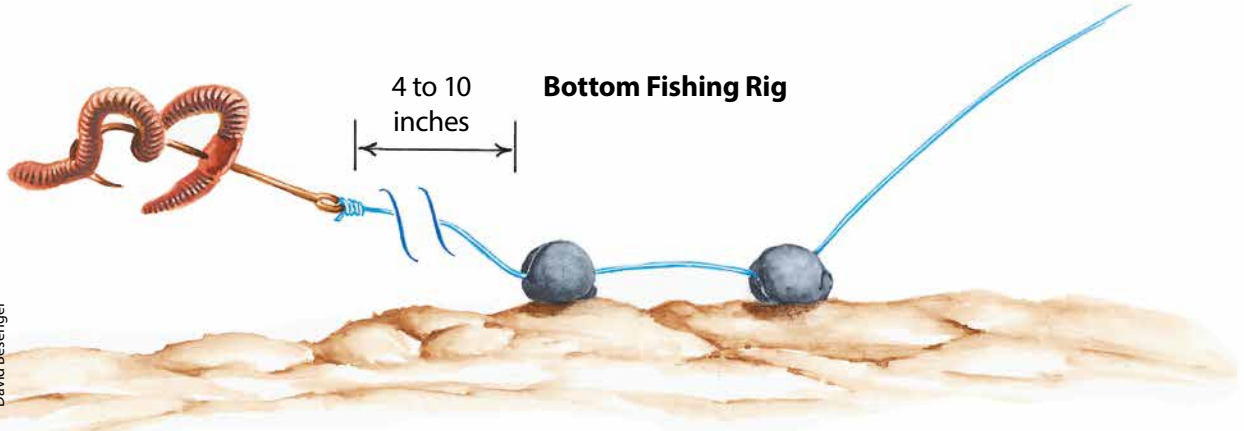
What you should use for bait also depends on the kind of fish you're after. (See the chart on Page 11.) The best all around bait is probably a worm or a part of a nightcrawler, both of which will catch panfish and trout, as well as most larger species. Hook the worm several times through, or pinch off part of a nightcrawler and run the hook through it.

Baited Hooks

Keep baits fresh. With few exceptions, fresh bait will attract more bites than old bait.







David Besenger

Hooks come in many sizes and shapes. An ideal hook is one that is small enough to slip into a fish's mouth, yet large enough to hold its lip securely. Hooks are measured with a numbering system that runs from No. 20 to No. 0 — the bigger the number, the smaller the hook. For example, a No. 20 hook is much smaller than a No. 6 hook.

When fishing with natural or live bait, a package with an assortment of hooks ranging from sizes No. 6 through No. 10 is good to have. However, when fishing for catfish or other large fish, larger hooks are needed, such as No. 2 through No. 6. Trout fishing requires small hooks in the No. 14 to No. 20 range.

Aberdeen Hook
The Aberdeen hook has an elongated shank and wide gap. Mostly used with worms, minnows, and insect larvae, the Aberdeen allows for easy removal from a fish, as the shank is usually visible for easy access. This hook is a good beginner's hook. The long shank helps anglers get a safer feel for unhooking fish, and baiting is easier than if using short-shank hooks.

Bait-holder Hook
Bait-holder hooks are recognizable by a series of two or more barbs on the shank. Anglers who fish with nightcrawlers often use them. These barbs help hold the worms on the shank. This keeps bait on the hook longer and limits bait loss from small fish that try to pull the worm off the hook.

Treble Hook
The treble hook is actually three single hooks stuck together. Used most often with lures, but are also used to hold doughbait or stinkbait because they hold soft bait better than single hooks.

Types of Lures and Baits

Hooks: Cliff White; Spoons, Crankbaits, Flies: David Stonner

Bait Chart		
Species	**Baits**	**Lures***
Bluegill	worms, insect larvae, crickets	jigs, flies, small spinners
Crappie	minnows, worms	jigs, spinners, small crankbaits
Catfish	worms, stinkbaits, cheese, cut bait	occasionally take jigging spoons or crankbaits
Bass	minnows, nightcrawlers	plastic baits, spinnerbaits, crankbaits, jigs, topwater lures, jigging spoons
Carp	worms, doughballs	rarely strike artificials
Trout**	worms, minnows, grasshoppers, dough balls	spinners, small crankbaits (e.g., crayfish imitations), flies
Walleye	minnows, nightcrawlers	jigs, crankbaits, jigging spoons
Muskellunge	large minnows	large bucktail spinners, oversized plugs
* Choose sizes and lures based on the size of the fish. Don't expect bluegills, for example, to eat a big minnow or muskellunge to attack a small fly.		
** Many trout fishing areas have restrictions on natural baits, so check the *Wildlife Code of Missouri* before venturing out.		

Spinnerbaits

Jigs

Soft Plastic Lures

Surface Lures

David Stonner

About Fish

Fish are cold-blooded, which means that their body temperatures are about the same as their surrounding environment. Because they don't produce body heat, fish must find and remain in water that they are adapted for.

A fish's streamlined shape helps it move through the water. The water also helps "float" fish; many species can make themselves lighter or heavier in the water by increasing or decreasing the amount of gas in their swim bladders.

A fish swims by alternately contracting muscles along each side, which causes its tail to sweep and propel the fish forward. The smaller fins assist with forward and backward movement, provide stability and steering, and may help the fish brake.

Fish markings usually serve as camouflage. For example, fish that are found near rocks or weeds often have blotches or bars on their sides. Many fish are dark on top and light beneath, making them more inconspicuous when viewed from above or below, respectively.

Most fish have scales, which are embedded into the skin and are arranged in overlapping rows. Scales may be thick and tough, as in the sunfish, or extremely small, as in trout. Catfish have a tough skin, instead of scales. Growth marks on scales reveal the age of fish, just as tree rings show the age of trees.

The life span of most of our gamefish is about 4-6 years, but some of them live more than 10 years. Fish continue to grow in length and girth as they get older.

Many fish swim in groups or schools; solitary fish may concentrate when a feeding opportunity presents itself.

Some fish wander constantly in search of food; others have narrowly defined home ranges and wait for food to come close enough to ambush.

Fish often make regular daily movements between feeding and resting places, seasonal movements to summer and winter habitat, and annual movements to traditional spawning areas. Many species travel long distances to spawn. Spawning activity concentrates fish and makes them easier to find and catch.

Fish Senses

Lateral line: Nerve endings along a row of pores on either side of a fish from gills to tail detect minute changes in flow or water pressure, allowing the fish to detect other fishes, preferred habitats, predators, and other objects.
Touch: Fish can detect minute temperature differences and can discriminate between hard and soft baits. Fish are more likely to hold soft bait longer.
Sight: Fish are able to see well, but not in muddy water or low light. Out of the water, a fish's vision is very restricted.
Hearing: Water conducts sound better than air, and fish hear directly through bone structures in their head called otoliths. Noise on the bank or dock may attract or spook fish.
Taste: Most fish do not rely much on taste, but catfish and bullheads have taste buds concentrated on their barbels (whiskers) that help them find food.
Smell: Fish have a nasal sac to help them detect odor. Night feeders or fish that live in muddy water have a highly refined sense of smell.

Can they hurt me?

Fish are not inherently dangerous or threatening; however, careless handling can result in unpleasant cuts or punctures. Handle fish firmly, but carefully, or use a landing net to stabilize fish while you unhook and measure them.

The catfishes possess a mild, but painful, venom that can be introduced when a person is pricked by spines at the front of the pectoral or dorsal fins. Protect yourself by holding the fish from the underside, with your fingers firmly beneath the pectoral spines. The barbels of catfish are harmless.

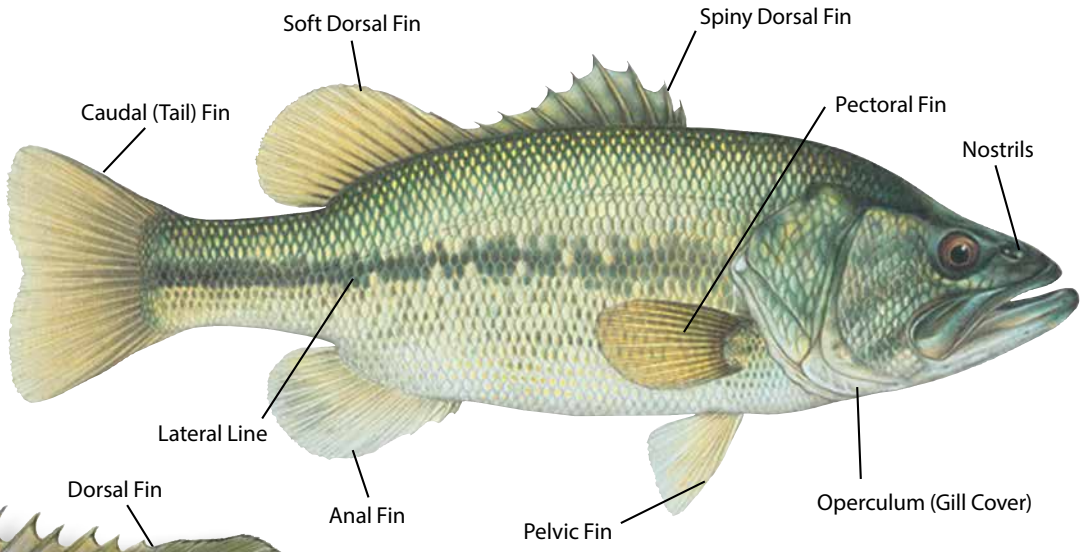
Bass, crappie, and small catfish can be safely held by putting your thumb into their mouth and pinching their lower lip. Walleye, gar, and large trout have sharp teeth that can inflict a painful wound when lipped. Grip these fish around the back of the head, above the gills.

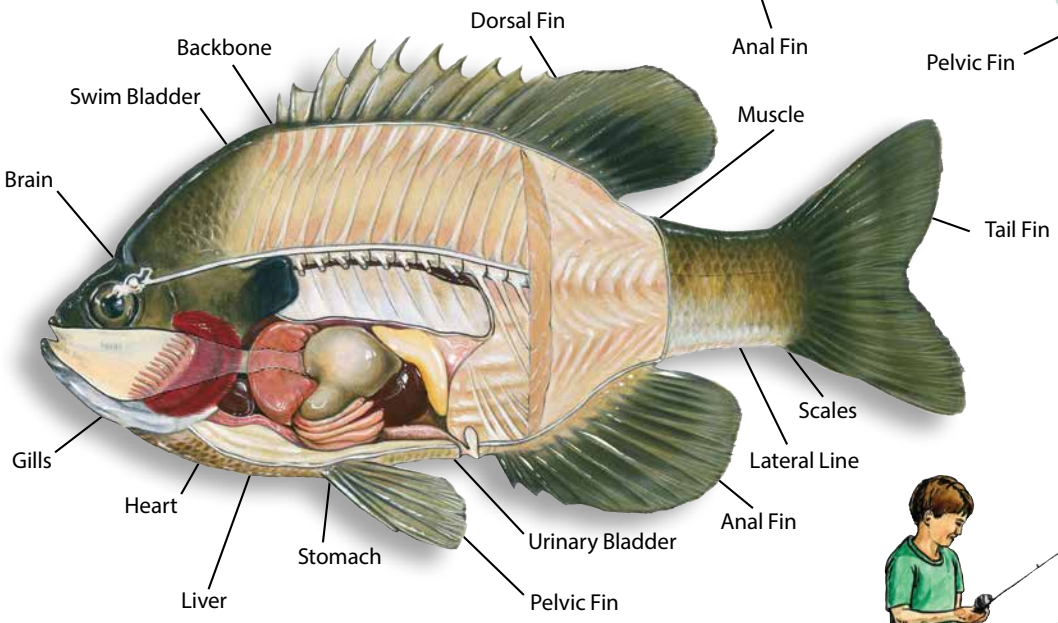
White bass, striped bass, and walleye have sharp edges on their gill plates that can slice a finger.

The fins of sunfishes, bass, and the walleye family become rigid when the fish is threatened. Slide your hand down over the fins of small fish and hold them firmly. Grasp larger fish over the back of the head, above the gills.

Don't let a struggling fish sink your own hooks into you. Keep hands and legs away from flopping fish and use hemostats or needle-nose pliers to safely remove the hooks from fish.

Scale

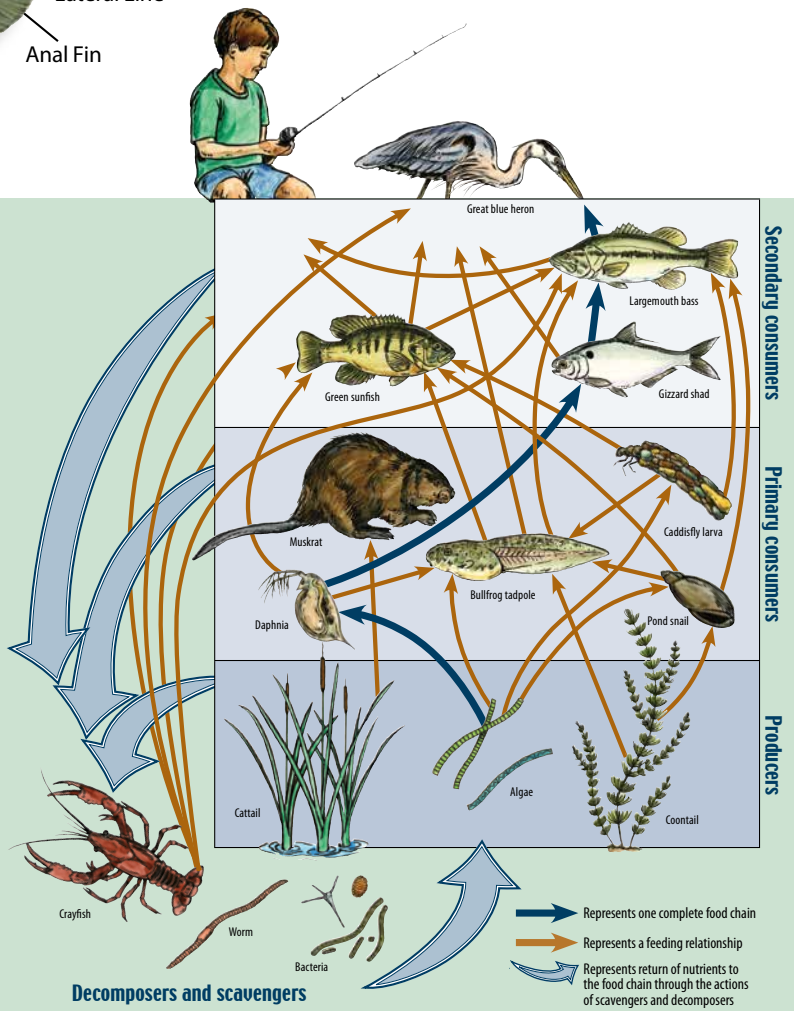




Aquatic Food Web

A food chain shows how energy from the sun moves from producers (plants) to herbivores (plant eaters) to carnivores (meat eaters) and omnivores (plant and meat eaters). Food chains show what eats what. However, because most animals eat many different kinds of plants or animals, different food chains are interconnected.

Understanding aquatic habitats and food webs can help us be successful at catching fish. If you know what makes a fish a fish (its anatomy and how it uses its body parts to move, etc.), what your fish looks like (fish identification), where it likes to live and hide (its preferred habitat), and what it likes to eat, you will know where to find it and how to catch it.



Largemouth Bass: Joseph Tomelleri; Scale: David Besenger; Fish Cut-away and Food Web diagram: Mark Raithel

Common Missouri Fishes

Largemouth Bass
Largemouth bass are plentiful in lakes and ponds. Even a small pond may hold big fish. They often hold near cover, such as aquatic vegetation, docks, or timber. Bass eat fish, crayfish, large insects, and occasionally, frogs, mice, snakes, or other small animals. Adult bass commonly run 10 to 20 inches.

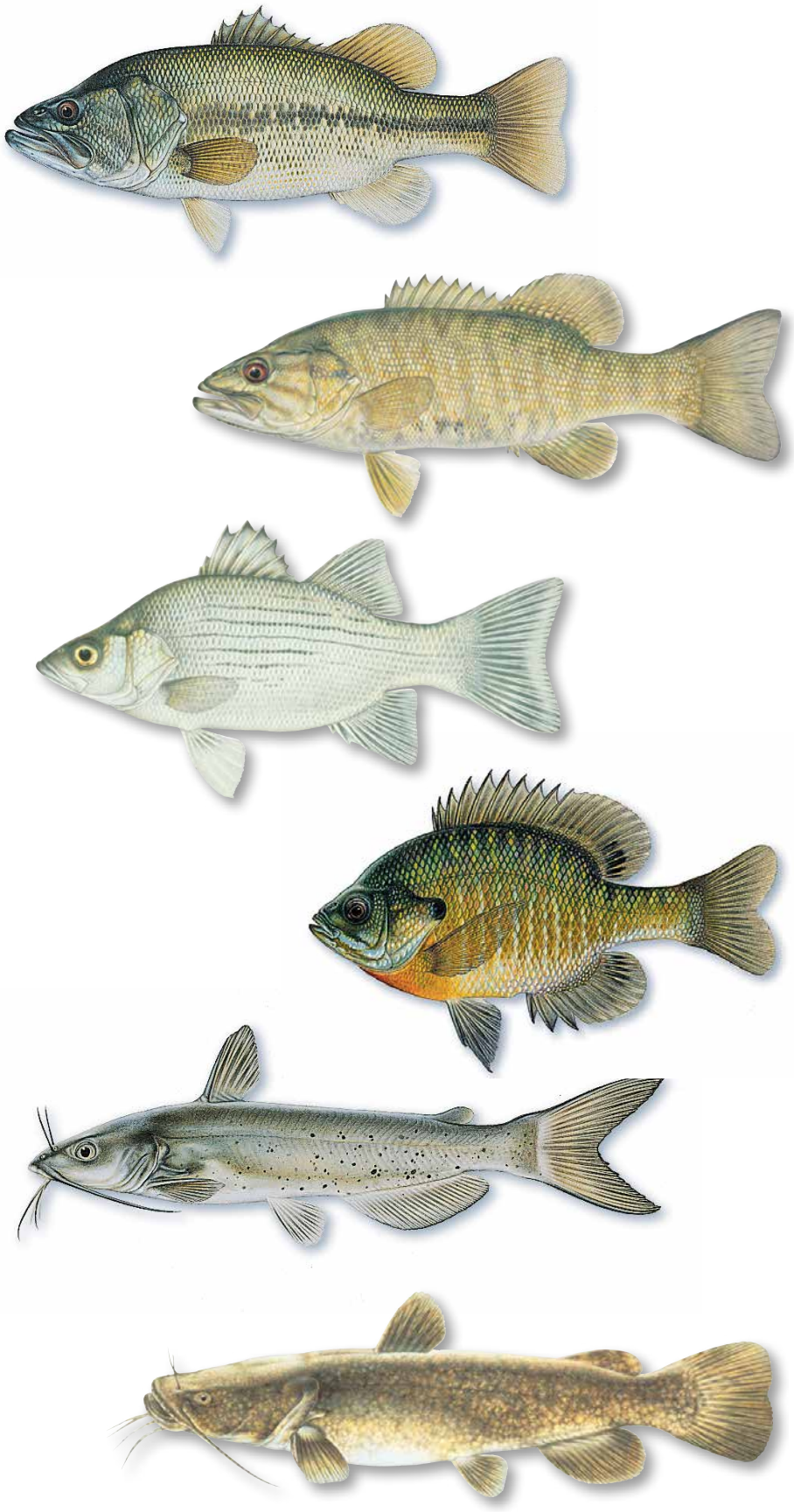
Smallmouth Bass
Smallmouth bass can be found in cool, clear streams and large lakes primarily in southern Missouri. They prefer structure, such as rocks, where they can find fish, crayfish and aquatic insects to eat. Adult bass commonly run 10 to 18 inches.

White Bass
White bass inhabit the deeper pools of streams and the open waters of lakes and reservoirs. They feed primarily on other fish, but also may eat emerging aquatic insects. Adult white bass commonly run 9 to 15 inches.

Bluegill/Sunfish
Found in ponds, lakes, and streams, bluegills and sunfish thrive in warm, clear water with aquatic vegetation and insects. They often feed in shallow water and can be caught on worms, crickets, or flies. Average size is about 6 inches.

Channel Catfish
Channel catfish live in ponds, lakes, and streams, and bite on a variety of live, cut or prepared baits fished on the bottom. The best fishing is at night or following a heavy rain. Adults run 12 to 32 inches long.

Flathead Catfish
Flathead catfish can be found in reservoirs or large streams with slow current. During the day, they prefer deeper water or cover. At night they move into riffles and shallow areas to feed upon other fish and crayfish. Adults commonly run 15 to 45 inches.



Joseph Tomelleri

Joseph Tomelleri

Carp
Carp prefer shallow water and feed on plant and animal material. They bite best on worms, canned corn, and dough balls. Carp usually range from 1 to 8 pounds, but often grow much larger. Their flesh is bony, but flavorful.

White Crappie
Crappie usually prefer cover, such as brush piles placed by anglers, and submerged trees. They bite best on small jigs or minnows fished slowly and sometimes quite deep. These popular food fish usually run from 9 to 11 inches.

Goggle-eye
Goggle-eye, or rock bass, live in Ozark streams. They prefer nooks and crannies of root wads and undercut rocks in running water. They feed on crayfish, small fish and aquatic insects. Adult goggle-eye commonly run up to 11 inches.

Golden Redhorse
Golden redhorse can be found primarily in Ozark and northeast Missouri streams. These bottom feeders prefer the deeper pools of clear, gravelly rivers and streams, where they feed on aquatic insects. Adults commonly run 9 to 15 inches.

Rainbow Trout
Trout prefer cool, flowing water, but some are stocked in lakes in winter for anglers to catch. They bite on worms and insects and are a favorite of fly fishers. Trout typically range from 10 to 16 inches.

Walleye
Walleye are native to large rivers and streams in Missouri and have been stocked in reservoirs and selected streams. They feed on a variety of fish, including shad. They prefer deeper pools with rocky or submerged log cover in rivers, and creek channels and drop-offs in lakes and reservoirs. Adult walleye commonly run 12 to 28 inches.

Where To Look

Fish require healthy surroundings, and essential fish habitat includes food, shelter, and good water quality. Fish might be found in water scarcely deep enough to cover their backs, or they might swim in unfathomable depths.

Each species of fish may inhabit different places at various times of the year and eat different foods.

Anglers have been trying to figure out the intricacies of fish location since people used bone fishhooks. There are still no absolutes, but we have discovered some pretty reliable indicators of fish location. Study the stream and pond art on these pages for hints to fish location.

Food

Fish tend to concentrate where food is plentiful. Schools of minnows or other prey will attract larger fish to feed on them. Fish take advantage of many feeding opportunities, including hatching insects and migrating frogs.

Signs of small fish activity can lead you to fishing hotspots. Minnows darting above the surface are often trying to escape from larger fish. Numerous small fish in the shallows could mean that larger fish will later arrive to feed.

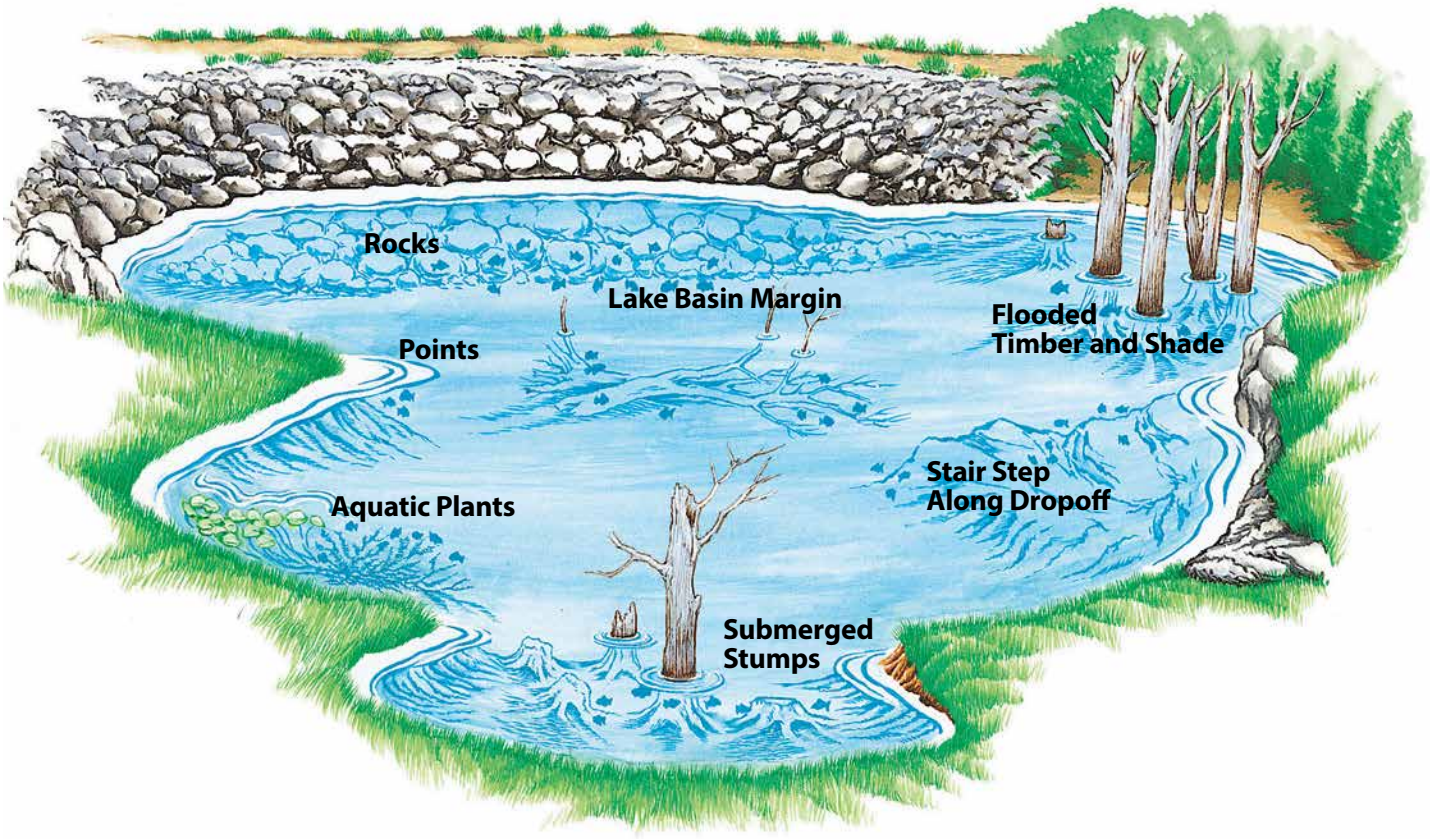
Cover

Fish use cover to escape predators and as an aid in ambushing prey. Some fish spend most of their lives near cover; others move from cover only to feed.

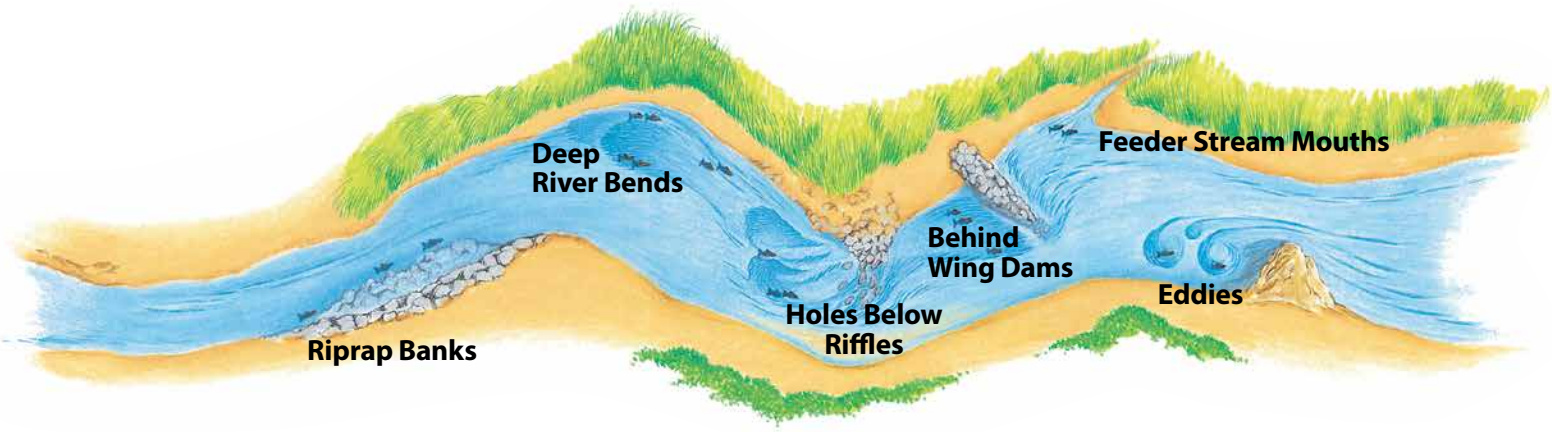
Cover can be loosely defined as anything that will hide or protect the fish. Aquatic plants, docks, brush, rocks, and logs all provide cover—as do overhanging trees, cliffs, or swimming platforms, which shade the fish and make them less visible to other fish, predatory birds, and humans.

Much cover is visible. Aquatic plants grow near the bank, fallen trees lean over the water, boat docks and swimming platforms rim the lake, flooded timber reaches above the water's surface, and loose rock often line shorelines.

A lot of cover cannot be seen. Underwater rocks and sunken logs, as well as fish shelters of sticks, brush, or discarded Christmas trees that anglers have placed to attract fish can be found on many lake and river bottoms.



David Besenger



Structure

Drop-offs, points, ridges, and sandbars shape the beds of lakes and rivers. These structural elements often attract more fish than do flat or gently sloping bottoms.

You can find good places to fish from clues on land or in the water. Land points often extend into a lake; a path between flooded timber indicates an old river channel; a break in a wave pattern reveals an underwater island and the aquatic vegetation edge tells where the water has become too deep to allow sunlight to penetrate to the bottom.

Edges

Feeding fish seem to favor transition zones between different habitats. The edge of a plant bed, for example, usually produces the most fish. In rivers, fish often feed near current breaks, where the flow is deflected or slowed. These are often visible from the surface.

Similarly, the break between muddy and clear water, the edges of main lake basins, the margin where mud bottom meets gravel bottom and drop-offs also attract fish.

Deep or Shallow?

Fish respond to both feeding opportunities and light levels. Generally, fish are in shallower water in low light and choppy conditions, and in deeper water when the sun is bright and winds are calm.

Fish are often shallower in the spring and early summer. Summer heat sends fish deeper to find cooler temperatures, but not to the bottom, where there is little oxygen. Fall fish tend to remain deep. Fish in ice-covered lakes often stay near the surface, especially in late winter.

Day or Night

Fishing can be good at any time. However, fish seem to prefer the low-light conditions of morning and evening better than the bright sun of midday. Cloud cover creates a twilight of its own and may encourage fish to bite.

Catfish, bass, crappie, and many other species of fish will bite day or night. In some clear lakes, fishing is better at night than during the day. Big fish seem to be less selective and easier to catch when it is dark.

Fishing at night is difficult even for experienced anglers. Beginning anglers can experiment with fishing at night by fishing during the evening and continuing to fish until after dark.

Weather Conditions

Weather conditions certainly affect fish, but not always in predictable ways. The following statements often prove true:

- Fishing is good before and during a gentle rain but poor during and after a thunderstorm.
- Except in the heat of summer, warm fronts improve fishing, and the longer the front stays, the better. Cold fronts often reduce fish movements.
- A light to moderate wind is better than no wind. Fish will move shallower to feed in windy conditions. Fishing is usually better where the wind blows into the shore than along protected shorelines.
- The best time to go fishing is whenever you safely can.

Patterns

Patterning means using information you have learned from the fish to find more fish. We can assume whatever caused a fish to locate in one place would prompt others to be in similar places.

Catching a fish off a windswept point, for example, could mean that other fish will be located on that point and on similar points throughout the lake. What works for one fish often works for others of the same species.

Patterns may hold for a few hours or all day, or they may persist for weeks. Some patterns repeat themselves year after year. Experiment until you discover a pattern then use that pattern to catch more fish.

David Besenger

Let's Go Fishing

Patience

Many fish are constantly on the move, looking for food. You can either intercept them or wait for them to come to you. If you know you are in a good spot—for example where you have seen other people catching fish or have caught them yourself—then it might be best to wait for them to return.

If you are fishing unfamiliar waters, then it is often wiser to search for good fishing spots. Keep in mind, however, that even the best fishing holes do not produce nonstop action. Patience has always been a virtue among anglers.

Stealth

Being quiet is almost as important as being patient. The bigger the fish the more skittish they are. Commotion on a dock, along the shore or in a boat can scare fish away or cause them to stop feeding. Conversation is fine, but jumping or running or banging equipment will reduce your catch. Think sneaky.

You can usually approach closer to fish under cloudy or windy conditions or in flowing water. When fishing in streams, wear muted colors and keep a low profile. Try not to let your shadow fall over areas you are fishing.

Stealth also applies to the way you present your bait or lure. Don't cast directly to the spot where you think the fish are. Instead, cast beyond it and reel until your bait or lure is among the fish.

Recognizing a Bite

Fish may hit a bait or lure ferociously, tentatively or somewhere in between, making it difficult to predict how you may see or feel a bite.

Bobbers could jiggle, plunge downward or skate across the water. If the fish swims upward after taking the bait, your stick bobber may lay flat or float higher in the water.

When bottom fishing, your rod tip may plunge downward or quiver, or your line may unexpectedly go slack.

If you are holding your fishing pole, you may feel a tap, a tug or a pull, or the line may go slack.

David Stonner

Setting the Hook

When you suspect a bite, have your rod pointed in the direction of the bait or lure with no slack in the line. Setting the hook calls for a sharp backward and upward movement of the rod. Fish have tough mouths, so it takes a good sharp action to set the hook. Sharp hooks help ensure that the hook sets well.

Beginning anglers sometimes set their hook too hard, which can break their line, straighten their hook, or pull the hook out of the fish's mouth. If your drag is set correctly, you can set the hook vigorously. Stretch in your line, the drag, and the bend of the fishing rod will absorb much of the pressure of the strike to keep from ripping the hook out.

Playing the Fish

After the hook is set, anglers should hold their rod tip high, keeping pressure on the fish. This will keep the fish's head up and will help keep the line tight. Keeping the fish's head up is important because it reduces the chance of the fish getting tangled in rocks, vegetation, or other structures. Keeping the line tight is important because it helps keep the hook embedded in the fish's mouth. If a fish senses slack in the line, it may have a chance to shake the hook free, especially if the hook isn't set well.

Playing a fish is fun, but a fish should be brought in as soon as possible if it is going to be released. Shorter playing time reduces fish stress or death, which is important in catch-and-release fishing. Allow the fish to run, taking line from the reel. Recover line by lifting the rod handle and then lowering the rod tip as you reel in, pumping the fish closer. Last-moment struggles of fish often surprise anglers and result in lost fish. When playing a large fish, loosen the drag slightly as the fish gets close.

Proper Fish Handling

Once a fish is brought to shore, proper handling will help prevent injury to the angler and to the fish. When bringing in a fish, anglers should be ready with necessary equipment like a landing net and needle-nosed pliers or a similar tool for grabbing the hook. Net fish head first. Place your net in the water and guide the fish toward it. When the fish is over the net, lift it firmly and quickly. If you have no net, play the fish until it is tired and cradle it in your hand.

To avoid removing the protective slime coating on the fish, you should wet your hands before touching the fish. Don't let fish flop on the ground or the boat bottom. They could injure themselves. Don't put fingers in their gills or eyes or squeeze them too hard. Leave the fish in the water, if possible.

Jim Rathert

Some fish, like largemouth bass, can be grasped and lifted by their lower lip, which tends to calm them. Larger fish should also have their midsections supported. Avoid the sharp teeth of some species like walleye and trout, and be careful not to hook your fingers or hands when handling hooked fish.

You should grasp small fish around the body, flattening the spines as you slide your hand down over the head and midsection.

With catfish, anglers should get a firm grip around the midsection, taking care to avoid the sharp spines in the dorsal and pectoral fins.

Fish gills can be easily damaged, so anglers should not touch them or lift the fish by the gill covers.

Hook Removal

Keep the fish in water or directly in the angler's wet hand. The hook can be removed by carefully backing it out through the hole made in the lip when the hook was set. If the hook is through the lip of a smaller fish, hold the body of the fish and remove the hook with the other hand. Hemostats or needle-nose pliers will help to remove hooks set deeper in the mouth, throat, or tongue of the fish.

With a deeply hooked fish, it could do more harm to remove the hook than it would to simply clip the line. In this case, it is preferable to cut the line, leaving the hook still lodged in the fish. Most deeply hooked fish survive if the line is clipped and the fish is quickly released.

Keep or Release?

Some anglers fish primarily for sport and release all the fish they catch. Others like to eat some species or particular sizes of fish, but release all others. Many times regulations require us to release fish.

Fish have a good chance of surviving after being caught, if they are handled carefully. Released fish can be caught over and over again. They grow large and produce even more fish for our pleasure.

There is nothing wrong with keeping fish to eat, so long as you obey regulations. On the other hand, give every fish you release, even small fish and nontarget species, the respect of careful handling.

Good catch-and-release technique begins even before you catch a fish. Choose lines and equipment that will bring fish in quickly, so they don't exhaust all their energy in a prolonged battle. Fish often deeply swallow live bait, which can make releasing the fish unharmed difficult. Use artificial lures in favor of live bait if you plan to catch and release fish. Fish that hit artificial baits are less likely to be hooked deeply enough to damage vital organs and have a high survival rate.

Measuring

Measure most fish from the tip of the snout to the end of the tail, with the fish laid flat and the tail lobes pressed together.

Prepare for easy release by squeezing barbs of hooks flat with pliers or filing them off. Barbless hooks won't cost you fish, if you keep a tight line, and they allow you to unhook fish without causing serious wounds.

Release fish as soon as possible. There's time for a quick picture of a fish, but the longer the fish remains out of the water, the less its chances of surviving.

A stressed fish often can be revived, however. Hold it gently and right-side up facing away from you in the water. When you sense that it can swim away under its own power, let it go.

Hung Up?

It's hard to imagine moving a hook and sinker through the water for any length of time without occasionally getting hung up on a rock, a stick, a log, a dock, a cable, plants, or some other object. Snags are part of fishing.

When you get snagged, try to free the hook by holding your rod tip high and jiggling it. Often it helps to move to one side or the other to change the angle.

If the hook remains snagged, you may need to break your line. Do not just pull hard with your fishing pole, or it may snap instead of the line. Point the rod tip at the snag, tighten your drag all the way or hold the spool, and steadily pull or back away until the line breaks or the hook pulls free. Should the latter happen, check your hook and replace it if it is bent or broken. If the line is frayed near the hook, cut it off and retie.

Measuring Fish: Noppadol Paothong; Boy Fishing: David Stonner

Cleaning

Cleaning fish is easy after a little practice. You can clean fish on a dock, paddle, cooler lid or flat rock. Many fishing accesses and parks provide fish cleaning stations with water for rinsing fish.

Handy fish cleaning tools include a sharp knife, a scaler and a glove to protect your hand and help grip the fish. Cleaning fish on old newspaper will make clean-up easy.

Remove the scales from small fish that will be cooked whole or large fish that will be steaked by scraping the skin with a dull knife, a spoon, or an inexpensive scaling tool.

Pan-dress fish by cutting along the sides of the fins on the back and behind the stomach and pulling them out. Cut off the head, then slit the belly and scrape out the entrails.

Fillet larger fish by cutting down to the backbone behind the head and sliding the knife blade with a sawing motion toward the tail. Slice out the rib bones from top to bottom.

Skin fillets by cutting down to the skin near the tail, turning the knife blade and, pulling firmly on the tail section, sliding and sawing the knife between the skin and the flesh.

Most anglers choose to fillet and skin bass, crappie, walleye, and carp. Sunfish and bluegill are usually scaled and pan-dressed. Remove the head, entrails and pectoral fins from trout. Trout scales are so small, it is not necessary to remove them. Peel the tough skin from catfish with pliers and fillet the meat or cut it into chunks. Steak very large fish by cutting down through the backbone at 1-inch intervals.

Cliff White

Cooking

Fish tastes great and is good for you. It is high in digestible protein and low in fat. Fish is a wonderful natural food, especially when you are eating the ones you caught yourself. Some people can be sensitive to certain chemicals occasionally found in fish. The Missouri Department of Health and Senior Services (DHSS) has a website that describes the fish consumption advisories and list problem waters. You can view that at ***short.mdc.mo.gov/Zwb***.

Fish can be fried, smoked, broiled, baked, poached, steamed, microwaved, or boiled, or put in chowders or stews. Use simple recipes that let the fine flavor of the fish come through. Follow recipes carefully and don't overcook.

Fish flesh is done when it becomes opaque and flakes easily. Test for doneness by probing the thickest portions with a fork. If the flesh flakes easily or separates from the bone, it is done. Further cooking will detract from its flavor and texture.

As is the case with sweet corn, the sooner you can get the fish to the table, the better it will taste. Fish flesh is sterile when it comes out of the water but it starts to go bad quickly, unless you take care of it. Preserve the quality of the fish you catch by keeping them alive or by keeping them cold.

During cool months, live baskets, stringers or live wells will keep your fish alive until it's time to go home. When fishing in warmer months, bring along a cooler of ice to keep your catch in. Drain the cooler occasionally, so that dead fish do not soak in the water.

Use fish quickly. Refrigerated fish begin to lose their flavor after only 24 hours. Frozen fish start to deteriorate in quality after two to four months.

Some fish, such as white bass and largemouth bass, have a strong-tasting dark layer of flesh along their lateral lines that should be cut away before being cooked or frozen.

Pan-frying

All fish are excellent candidates for the frying pan. Cooking oil keeps the flesh moist, and a coating keeps the fish's natural juices from cooking out.

Dust pan-dressed small fish or the fillets from larger fish in seasoned flour and place them in an open, heavy skillet in which about 1/4 inch of cooking oil has been heated to almost "foaming." Don't crowd the fish or they will come out soggy. Cook each side over medium heat until brown. The flesh flakes easily when done.

For a thicker coating, dip fillets in milk or beaten egg and then coat them with crumbs, cornmeal, or seasoned flour before cooking. Drain the pieces on paper towels before serving.

Deep frying

Use a thermometer to ensure your deep frying oil is between 360 and 380 degrees. You can deep fry in a skillet by using enough oil to completely submerge the fish.

Dip the fish in batter and place them gently in the oil. Avoid overcrowding them. Cook from 2-5 minutes until golden brown. Dry on paper towels. Allow the oil to reheat between batches.

Baking

Baking works well for large fish. Line a shallow baking dish with aluminum foil for easy removal of the fish. Baste the fish with a seasoned butter and lemon juice mixture, cover the pan with aluminum foil or a lid and cook for 10 to 30 minutes, depending on the thickness of the fish, at 375 degrees. Test frequently to see if the fish is done. Baste the fish in its own juices during cooking for more flavor. Save the pan juices for soups or sauces.

Broiling and Barbecuing

The high heat of broiling and barbecuing can dry fish flesh, unless they are basted often with sauce or oils. Broil skin side up first, then turn carefully. Thin fillets do not need turning. A small amount of liquid in the broiling pan will help keep fish moist. When barbecuing, use a basket-like fish holder sprayed with cooking oil.

Microwaving

Place fish in a dish or on a plate with the thickest portions to the outside. Brush fish with butter/lemon mixture and cover with waxed paper. If fish "pops," cook at a lower setting. Check for doneness frequently. Add liquid and seasonings and cover dish to poach or steam fish.

Cooking Methods

	Pan Fry	*Deep Fry*	*Bake*	*Broil*	*Barbeque*	*Microwave*
Sunfish	★	★	●	●	●	●
Bluegill	★	★	●	●	●	●
Catfish	●	★		●		●
Bass	★	●	●	★	★	●
Trout	●		★	★	★	●
Walleye	★	★	★	●	★	
Carp	●	★				
Sucker	●	★				

★ *Excellent* ● *Good*

Fishing Rules/Regulations

Fishing regulations make fishing better. The regulations help us share our aquatic resources. Length limits give fish an opportunity to grow and spawn while slot limits provide us with fish of varying lengths.

Golden Rules

The simple courtesies and conventions of fishing all fall under the golden rule: Do unto others as you would have them do unto you.

Everyone has a right to the fish. Don't crowd other anglers to the point where you tangle lines.

Shouting, screaming, playing loud music, throwing rocks into the water, and other noises can scare the fish and ruin the fun of other anglers.

Fishing does not give you the right to trespass. Ask permission before fishing and show respect for private property.

Dispose of all your litter, including bait containers, cans, fishing line, and fishing equipment packages.

Watch your backcast so you don't hook angling companions or other anglers. Alert others before trying to pull a snagged lure free, for the lure could sail back in your direction.

Observe all fishing regulations. Length limits, seasons, daily or possession limits, and restrictions on methods are part of the overall management of the fisheries. The future of fishing requires anglers to heed regulations.

Fishing Permit

Everyone over the age of 15 and under the age of 65 must have a permit to fish in Missouri. The exceptions are residents and members of their households fishing on waters completely enclosed by their property and people with certifiable disabilities. On some specially managed waters, such as trout parks, anglers also need a daily tag. Daily, annual, and lifetime permits are available. See the current *A Summary of Missouri Fishing Regulations* for details, or go to ***mdc.mo.gov***.

General Rules

Length limits, daily limits, and seasons vary somewhat on specially managed bodies of water. Specific rules can be found in the fishing regulations and are often posted at accesses and fishing areas. Several general rules apply to most angling situations:

- Rod and reel anglers are limited to three unlabeled poles at one time.
- The fish you keep must be kept separate or identifiable from fish taken by another person.
- Game fish not hooked in the mouth or jaw must be returned to the water unharmed immediately after being caught.

Daily and Possession Limits

The fishing regulations list limits for most species of fish. While on the water, you can possess no more than the daily limit for that area. Possession limit is twice the statewide daily limit, which also includes fish in your vehicle, cooler, refrigerator, or freezer.

Live Bait

While live bait may be collected and used for fishing in some areas, there are regulations about what may be used for bait and how it may be collected. Also, live bait is prohibited in some fishing areas.

Do not dump your unused bait into the water. Doing so can spread invasive species. Unused live bait of all types should be disposed of in a trash dumpster when your fishing trip is over. Otherwise, unwanted animals and plants can invade local water, damage habitat, and ruin fishing.

Where to wet a line

Now that you know how to fish, go online to find conservation areas where you can put your skills to use. The Conservation Department's online atlas will help you find a place near you or across the state to fish, hunt, hike, and enjoy the outdoors. Go to ***mdc.mo.gov/atlas***.

The free "MO Fishing" app (***short.mdc.mo.gov/Zoh***) will help plan your next fishing trip. Search for nearby bodies of water and view whether it has fish attractors, boat ramps, parking lots, or restrooms available for public use. You can also view a fish identification guide, the current fishing report and fishing prospects, and purchase your fishing permit. Try it now!

Sport Fish Restoration Program

Anglers across the nation are paying the bills for fisheries research and management; development of new fishing lakes, and lake and stream accesses; fish hatcheries and educational programs, and other activities aimed at maintaining and improving sport fishing. A special tax on each purchase of fishing tackle, related items, and motorboat fuel goes into the Wallop-Breaux Trust Fund, which is dedicated to recreational fisheries and related boating. State fish and wildlife agencies are allocated money from the fund based on area of surface water in the state and the number of licensed anglers. This funding arrangement, known as the Sport Fish Restoration Program, is hailed as a model of efficient "pay-your-own-way" financing.

The Missouri Department of Conservation receives monies every year from the fund, paid as reimbursements for 75 percent of the cost of approved projects. Keep your eyes open for the Sport Fish Restoration Program logo, shown here. You should find it on fishing tackle packaging and displayed at areas where the funds were used.

SPORT FISH RESTORATION

CONSERVATION DEPARTMENT
MISSOURI

Serving nature and you®

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