

The Complete Angler: Adult Saltwater Fishing Activity Manual

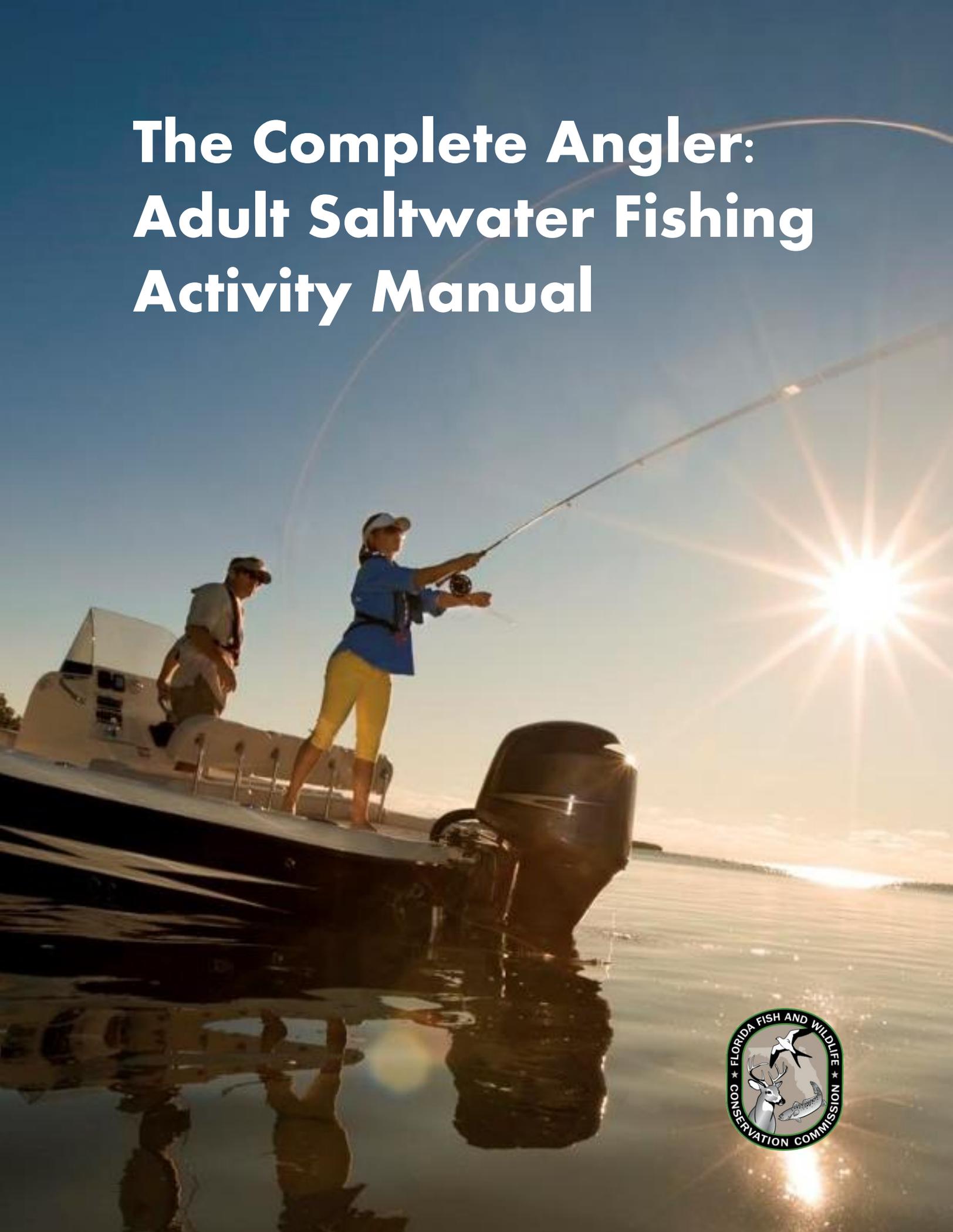


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The Florida Fish and Wildlife Conservation Commission (FWC)

FWC's mission is to manage fish and wildlife resources for their long-term well-being and the benefit of people. FWC has many different Divisions and Offices that work together to achieve agency conservation goals.



The Division of Law Enforcement strives to be recognized as the leading conservation law enforcement agency in the nation and to protect Florida's natural resources and people through proactive and responsive law enforcement services.

The Division of Freshwater Fisheries Management provides expertise on freshwater fish populations, angler use, and other aspects of freshwater fishing that may be important for management decisions. They also ensure quality fisheries and fishing in selected Florida lakes, fish management areas, rivers and streams.



The Division of Habitat and Species Conservation's goal is to ensure healthy populations of all native species and their habitats on a statewide basis. The division integrates scientific data with habitat management to maintain or increase populations of fish and wildlife. This division provides aquatic habitat management and habitat management for terrestrial systems including public



lands; land acquisition; scientific support and assistance for habitat-related issues; species management and recovery plans; exotic species prevention and control; population recovery of manatee, Florida black bear, Florida panther, and sea turtle; invasive plant management; and various activities that are vital to maintaining diverse and healthy fish and wildlife populations.

The Florida Fish and Wildlife Conservation Commission (FWC)

The Division of Hunting and Game Management provides safe and responsible programs related to hunting and wildlife. This process involves working with scientists to develop management strategies, providing hunter safety training and certification, maintaining public shooting ranges, and developing literature for wildlife management areas, wildlife and environmental areas, and other public hunting areas.



The Fish and Wildlife Research Institute, with headquarters in St. Petersburg, focuses on statewide research programs that obtain data and information needed by natural resource managers and stakeholders. Spatial analysis, biostatistics and modeling, wildlife forensics, and socioeconomic research are also focus areas.



The Office of Strategic Initiatives houses the Florida Youth Conservation Centers Network, which aims to uphold Florida's outdoor heritage by educating and empowering Florida's youth and educators with outdoor know-how and conservation concepts.



These Divisions represent only a portion of the numerous FWC offices and employees that all strive to properly manage our natural resources. Please visit MyFWC.com for information on additional FWC offices and programs.

FWC Division of Marine Fisheries Management

The Division of Marine Fisheries Management’s (DMFM) mission is to manage Florida’s marine fisheries for their long-term sustainability, their economic benefits and for the enjoyment of the public. Division activities include recreational and commercial marine fisheries outreach and education programs, facilitating artificial reef development and deployment, preparation of the fishery strategic plans, issuance of special activities licenses, conducting wholesale fish dealer audits, lionfish outreach, rulemaking, and assisting trap-retrieval efforts.

The Outreach and Education subsection conducts a variety of programs that target current and future recreational anglers. These include Kids’ Fishing Clinics, fishing club presentations, Adult and Women’s Fishing Clinics, and various activities that directly engage recreational anglers.

Using funds from Sport Fish Restoration (SFR) grants and the sale of saltwater fishing licenses, the FWC’s Division of Marine Fisheries Management Outreach and Education Subsection promotes the conservation of Florida’s marine resources by educating anglers about catch-and-release, habitat conservation, ethical angling, environmental stewardship, fisheries research and the public’s role in fisheries management. This work is achieved through a variety of statewide programs, several of which are listed below.

Aquatic Education Programs

Kids’ Fishing Clinics: Statewide events that teach youth the vulnerability of Florida’s marine resources, demonstrate basic fishing skills at hands-on stations and provide a positive fishing experience.



FWC Division of Marine Fisheries Management continued

Women's Fishing Clinics: Statewide events that teach women basic saltwater fishing skills through hands-on skill stations, explain the role of anglers in fisheries management, demonstrate fisheries conservation techniques and offer an on-site fishing opportunity.

Aquatic Species Collecting Workshops: Partnership with the Florida Marine Science Educators Association (FMSEA) to conduct workshops for educators that teach best-management practices for collecting and holding aquatic organisms used for educational purposes.



Angler Outreach Programs

Angler Interactions: Staff engage anglers at fishing shows, outdoor events and club meetings; disseminate fisheries information; answer questions; promote habitat conservation, resource stewardship and the Federal Aid in Sport Fish Restoration Program; and explain the role of anglers in fisheries management.

Hatchery Outreach: Informs saltwater anglers of the role of stock enhancement in managing Florida's marine resources and how SFR funding contributes. Hatchery fishing events provide the public with an opportunity to catch marine sport fish, give instructions on basic fishing skills and teach participants how to be ethical anglers and stewards of natural resources.



Saltwater Angler Recognition Programs: Entice anglers to target multiple species and learn more about Florida's marine resources while fishing. Participants provide photos of their catch and receive recognition for their achievements.



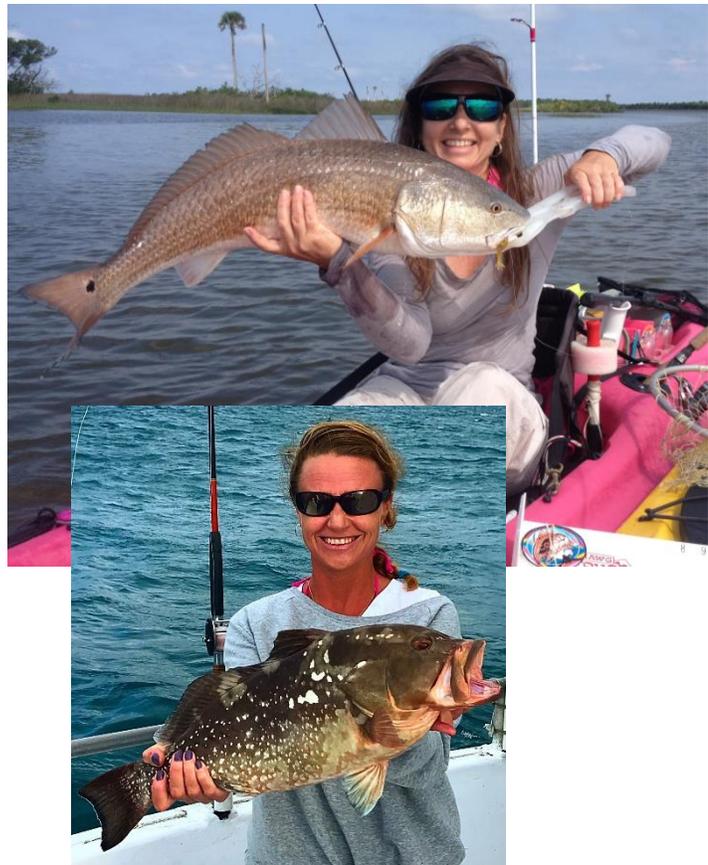
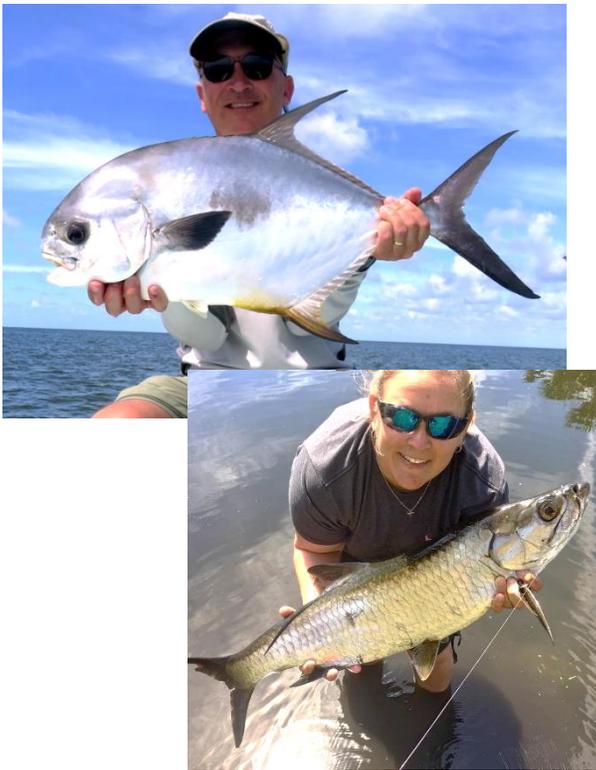
Saltwater Angler Recognition Programs

Grand Slams - Win prizes for catching three listed fish Species in a 24-hour period

Saltwater Fish Life List - Challenge to catch as many different fish species as possible

Reel Big Fish - Rewards anglers for extraordinarily-sized catches

Florida Saltwater Fishing Records - Partnership with the International Game Fish Association to present awards to anglers for catching record-sized fish, including 76 marine species in both conventional and fly fishing categories.



To learn more about FWC's Saltwater Angler Recognition Programs, visit CatchaFloridaMemory.com. For more information about Marine Fisheries Outreach and Education Programs, please contact the Division of Marine Fisheries Management at (850) 487-0554.

Wildlife and Sport Fish Restoration Program (WSFR)

Sport Fish Restoration (SFR)

The Wildlife and Sport Fish Restoration Program, managed by the U.S. Fish and Wildlife Service (USFWS), is one of the most successful conservation efforts in our nation's history. This program provides funding used to benefit fish and wildlife resources while enhancing recreational fishing and hunting opportunities across the country. Funding for the program is derived from a portion of the sale of motorboat and small engine fuels as well as equipment purchased by anglers, boaters, hunters, archers, and recreational shooters.

Funds collected go to federal accounts used specifically for wildlife and sport fish conservation. The USFWS redistributes the funds to states based on the number of resident, licensed, recreational anglers and hunters, as well as the land and water areas of the state. When states receive funding, they are required to make a 25% matching contribution to grant funds. In Florida, these federal funds are managed by the Florida Fish and Wildlife Conservation Commission (FWC).

How You Participate

Every time you purchase fishing equipment or fuel for your boat, you are contributing to fisheries conservation. Even better, the small contribution you make with each purchase translates into millions of dollars toward restoration and management of fisheries each year. In fact, with your help, Florida receives around \$13 million annually to support both freshwater and saltwater fisheries resources. It is a user pay, public benefit cycle of success.

Anglers and boaters contribute to the Wildlife and Sport Fish Restoration Program, which provides funding to increase fishing and boating opportunities. The SFR funding contributes to enhancing/improving the diverse natural resources, which provides the public with a variety of opportunities. Additionally, industry also benefits through increased fishing, the sale of fishing equipment and boats, and sustaining jobs in these areas. Since the program began, SFR has provided nearly \$500 million to the states for thousands of individual projects.

Wildlife and Sport Fish Restoration Program (WSFR) continued

How You Benefit

Increased fishing and boating opportunities provided through:

Saltwater Projects – about \$6.5 million annually

- **Angler Outreach:** Direct interaction with the public to provide information, answer questions, promote fisheries conservation and collect feedback from anglers.
- **Aquatic Education:** Provides hands-on opportunities to learn about responsible angling, basic fishing skills and marine conservation.
- **Marine Fisheries Research:** Researchers gather life history, genetics, health and other biological data used to develop fisheries management strategies.
- **Stock Enhancement Research:** Researchers develop efficient methods of raising fish species to enhance natural populations.
- **Artificial Reefs:** There are over 3,100 artificial reefs in Florida, with about 100 new reefs constructed annually, providing enhanced fishing and diving opportunities as well as tools for fisheries research.

Boating Access – 15% of annual funds

Maintains existing public boat ramps and funds construction of new boat ramps, marinas and other public launching facilities throughout Florida.

Publications

Boating and angling guide pamphlets, fish identification posters, the Fishing Lines field guide, this field guide and more.

Available to the public free-of-charge.

To request publications, call (850) 487-0554 or visit MyFWC.com/Fishing and click on “Saltwater Fishing” and “Saltwater Publications.”

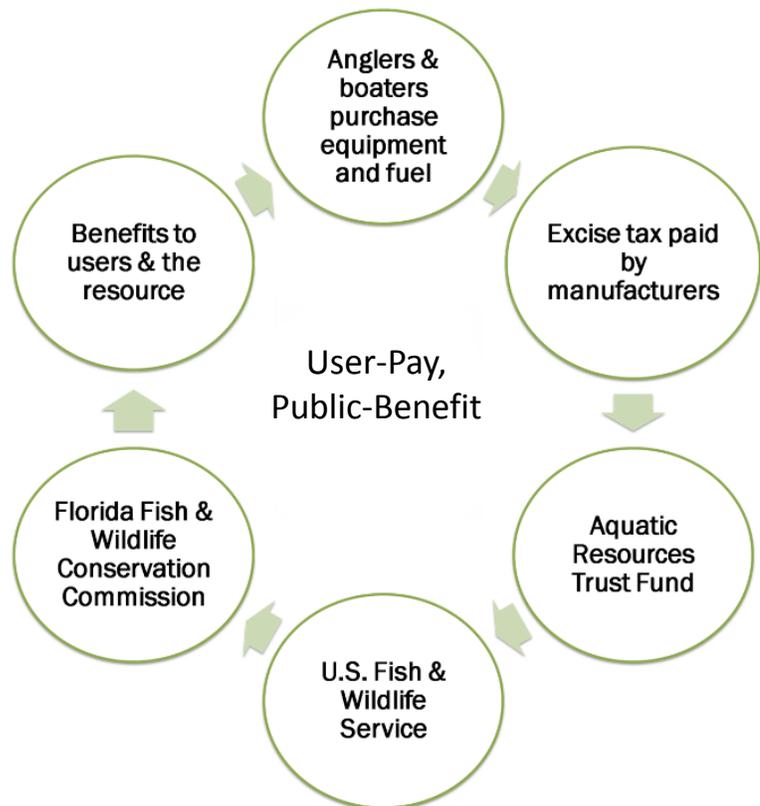
For more information on the Sport Fish Restoration Program, visit MyFWC.com/Fishing and click on “Sport Fish Restoration.”

Wildlife and Sport Fish Restoration Program (SFR) continued

Aquatic education programs such as Youth and Adult Fishing Clinics, programs targeting teachers and students, and saltwater youth fishing camps benefit greatly from the SFR funding. Additionally, fishing publications are also supported by the SFR funds. These publications include the Fishing Lines field guide, catch and release brochure, life history information about a variety of fish species, fish ID posters, the Fishing Florida activity book, and boating and angling guides.



These logos indicate that your excise taxes were used to fund Wildlife and Sport Fish Restoration projects.



This user-pay, public-benefit cycle of money flow is all part of the Sport Fish Restoration Program.

Fisheries Management Glossary

Aggregate spawning: When the mature members of a species come together for a mass breeding event.

Bag limit: The maximum number of fish allowed to be harvested per harvester per day.

Bycatch: A caught non-targeted species. It may be discarded (called discard catch) or harvested if legal (called incidental catch).

Catch Per Unit Effort (CPUE): The number of fish or invertebrates caught per unit of time (e.g., hour or day) along with the fishing power used to harvest the fish or invertebrates. The fishing power includes gear type, size or efficiency, boat size and horsepower. CPUE is used to measure the relative abundance or the number of fish or invertebrates of a particular species as a percentage of the total number of organisms of a given area.

Closed seasons: Certain periods of the year when harvest is prohibited.

Effort: The equipment used to catch a fish and the time spent fishing.

Escapement: The proportion of fish that survive through a certain age, relative to the number of fish that would have survived if there were no fishery.

Fishery: All activities involved in catching a species of fish or group of species.

Fish population: A group of fish that live in the same area. One population can be made up of several stocks that are considered separate due to distinct migratory ranges, geographic barriers or other non-genetic differences.

Fish stock: A managed unit of a fish population.

Harvest: The total number or pounds of fish caught and kept from an area over a period of time. Also, it is the taking or removing of a fish from the population.



Fisheries Management Glossary continued

Maximum size limits: The maximum size at which a species of fish can be legally harvested. This is used to prevent anglers from removing large fish from the fishery because mature individuals are important contributors to the growth of the populations.

Minimum size limits: The minimum size a species of fish must be before it can be legally harvested. They are often set to allow juvenile fish to survive long enough to reproduce.

Overfished: A population that is harvested above levels that would enable the stock to replenish itself. It is a measure of when a fish population has reached a critically low abundance level.

Overfishing: The rate of harvest exceeds the rate at which fish can replenish themselves through reproduction. A population may be overfished, but not undergoing overfishing and vice versa.

Size limit: A limit on the size of fish that may be legally kept.

Slot limit: The regulated size of a fish that can be legally harvested or kept that falls between the minimum and maximum size limits.

Spawning potential ratio: The ratio of the total weight of mature fish (usually mature females) in a fished population to the total weight that would exist if the population was not fished. Fisheries managers work to ensure that this ratio is high enough to prevent biological decline.

Stock assessment: A report that summarizes the biological condition of a fish stock. It includes a history of the fishery, impacts of management actions over time, age ranges, gender ratios and predictions for the stock based on current trends.



Rod and Reel Types: Cane Pole and Spin-Casting



A **cane pole** is a simple fishing rod used to catch freshwater and/or saltwater fish. A piece of fishing line (the same length as the cane pole) is attached to the end of the pole along with a float and a hook. Instead of casting, the line is simply swung out into the water by holding the end of the pole in your dominant hand and the line just above the hook in your non-dominant hand. While facing the water near the bank, hold the pole at about a 45 degree angle and let go of the line so it swings out over the water. At the farthest end of the swing, drop the end of the pole, thus dropping the bait and bobber into the water. Do not overhead cast the cane pole for safety reasons.

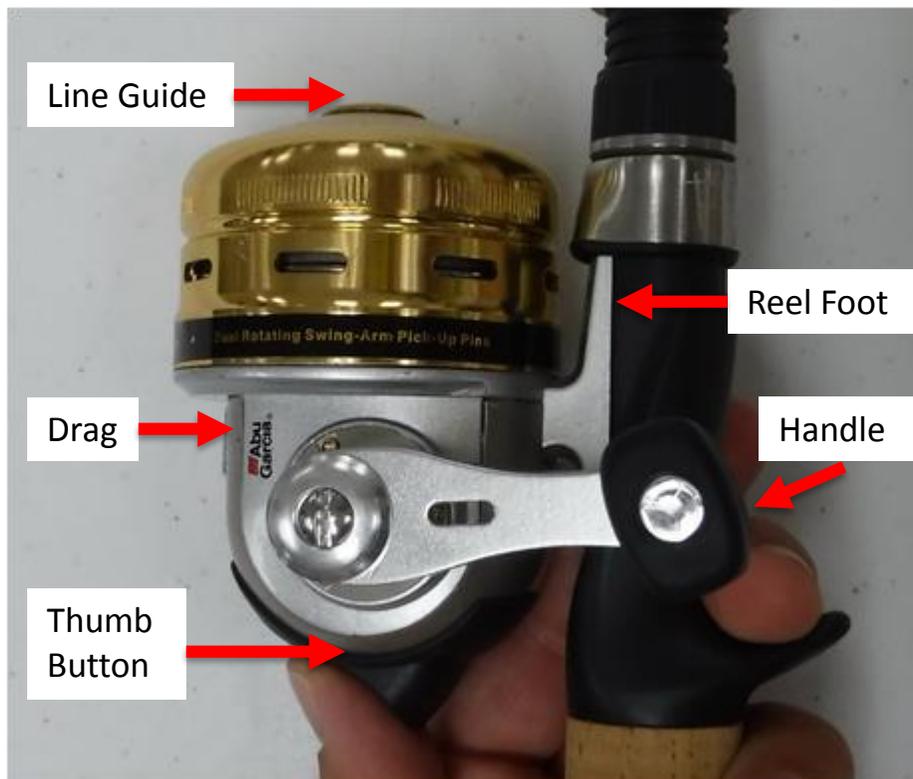


A **spin-casting rod and reel** is a very simple combo that will enable you to cast to fish. The reel has a push-button control for releasing the line off the covered spool. These reels are good to use in freshwater and require regular maintenance if used in saltwater to prevent corrosion. The spin-caster is also known as a closed-face reel or the push button reel. Spin-casting reels eliminate backlash tangles because the spool doesn't move. During a cast, line is pulled off the fixed spool through a hole in the top of the reel by the weight of the lure. The spin-casting drag is set by turning the small wheel on the front to either the left or right (each reel is marked with – or + to show which direction to turn the wheel). The reel and guides are on top when the rod is held correctly. See the next page for an up close image of the reel parts.

Spin-Casting Reel Parts and Proper Holding



The proper hold for a spin-caster while casting is with index and middle fingers above the pistol grip, ring and pinky finger behind, and thumb on the thumb button.



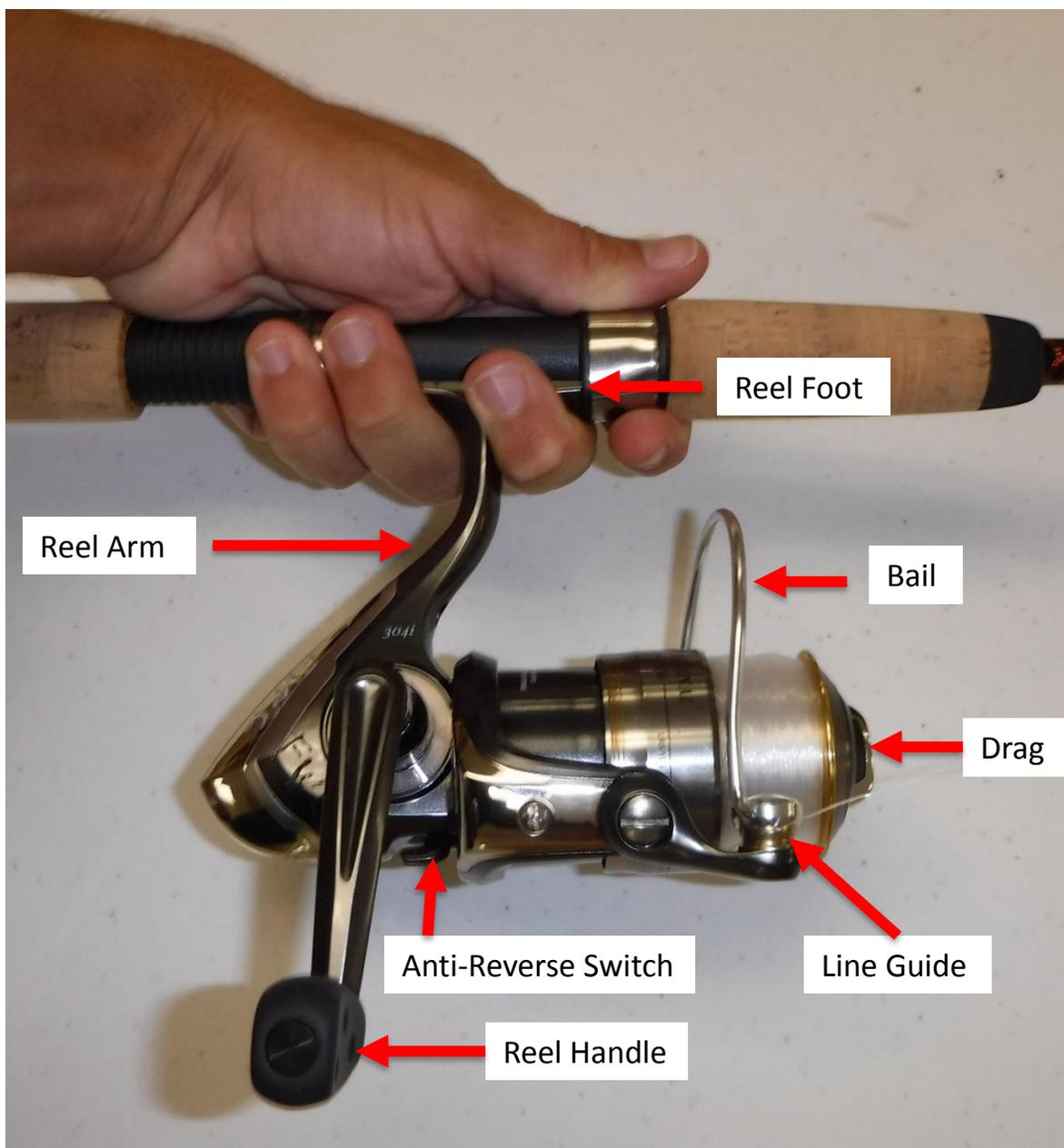
Rod and Reel Types: Spinning



A **spinning rod and reel** is designed for use in either freshwater or saltwater. Available in a wide range of sizes, depending on where you want to use them. The reel and guides are on the bottom when the rod is held correctly. This rod and reel has a bail that winds the fishing line onto the reel. To cast, lift the bail, hold the fishing line between your finger and the rod, and cast while letting go of the fishing line. The spinning reel is also known as the open-face reel or the flip-bail reel.

The drag is usually the knob on top of the reel, however, there are some spinning reels with a rear drag. To set the drag correctly, start by releasing the drag tension. Then, as you pull line from the reel, slowly increase the drag tension to the proper setting. The best way to measure the setting is to use a fish scale tied to the line, but you can also simply use your experience in feeling how much tension is best as you pull on the line. Remember, you should always be able to pull line through the tension of the drag to prevent line breakage.

Spinning Reel Parts and Proper Holding



The proper hold for a spinning rod and reel while casting is with index and middle fingers above the reel arm, ring and pinky finger behind the reel arm, and thumb wrapped around the rod.

Rod and Reel Types: Bait-Casting



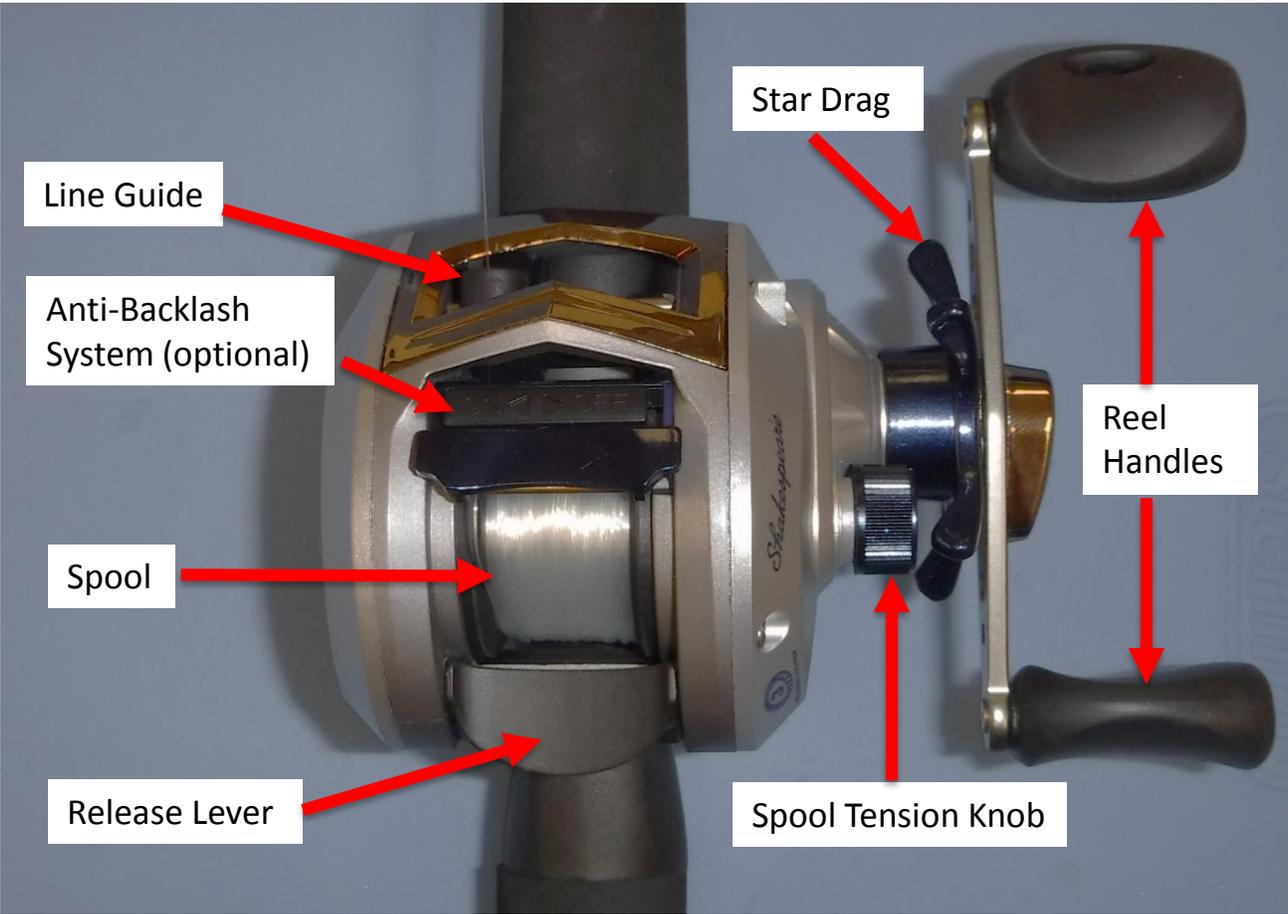
A **bait-casting rod and reel** can be used in either freshwater or saltwater. It is designed so the spool that holds the line rotates when letting line out, casting or retrieving line. This rod and reel is available in a wide variety of sizes and styles for use in many situations. Some have a device to wind the line neatly onto the spool. The reel and guides are on top when the rod is held correctly. To set the drag, turn the star drag counterclockwise to loosen and clockwise to tighten the tension.

When casting, place your thumb on the spool to prevent the line from tangling. Press the push button release. Bring the rod back and then forward in one swift motion, releasing your thumb from the spool during the forward motion, allowing the bait to be cast. Stop the spool with your thumb as the bait enters the water. Press the push button release up to the engaged position and slightly turn the handle to put some pressure on the spool, ensuring it is fully engaged. Bait-casters have a high potential for tangles and require practice to fish properly. Slightly tightening the tension knob will apply resistance to the spool and allow for better casting control.

Bait-Casting Reel Parts and Proper Holding



The proper hold for a bait-caster while casting is with index and middle fingers above the pistol grip, ring and pinky finger behind, and thumb on the spool.



Rod and Reel Types: Conventional

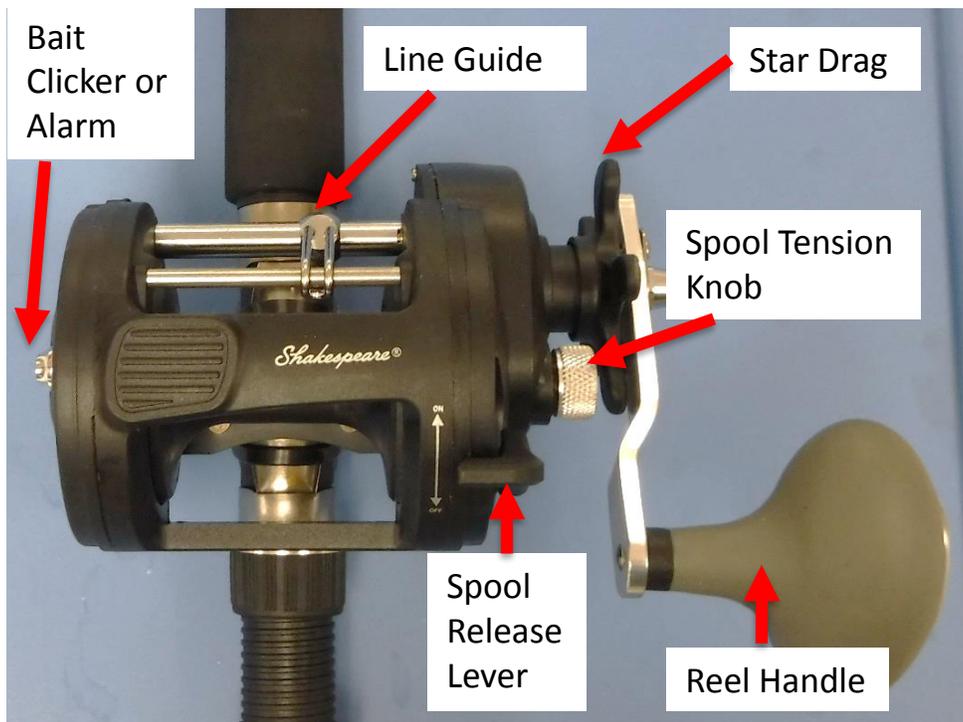


A **conventional rod and reel** is generally used to catch large fish from offshore. Most conventional rods are used for trolling or bottom fishing, but not for casting. However, some newer models are light enough to cast large baits. Like bait-casting reels, conventional reels are designed so the spool holding the line rotates when releasing and retrieving the line. Conventional reels can have two types of drag systems, either a star drag or a lever drag. The star drag is located between the handle and the spool. The knob looks like a star. For a star drag, turn the star counterclockwise to loosen and clockwise to tighten the tension. A lever drag can be easily slid forward to apply more drag or backward to release. Because they have a high potential for tangles, conventional rods and reels take practice to fish properly.

Conventional Reel Parts and Proper Holding



The best way to hold the rod while fighting a fish is to have your dominant hand on the reel handle while your non-dominant hand is holding the rod above the reel. A fish fighting belt, harness and chair can also aid in reeling in the big fish.

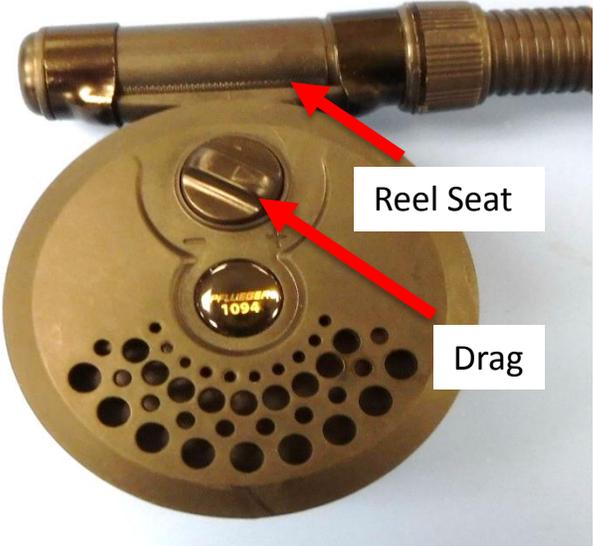
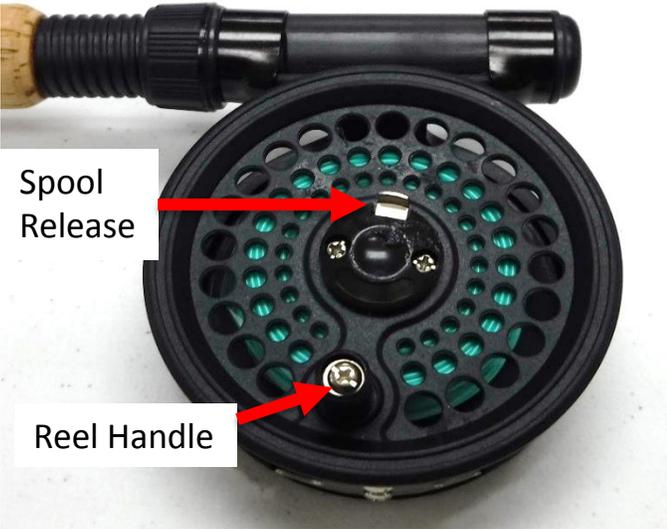


Rod and Reel Types: Fly



Fly rods and reels are called flies and use the weight of the line to carry the lure to the fish. Lures for fly-fishing are light and made from feathers, fur and fiber. Fly-fishing requires training and lots of practice to fish properly.

Fly Reel Parts



Rod and Reel Maintenance

All rods and reels need to be lightly rinsed with freshwater after each use. Avoid excessive water from a high pressure source as this may push salt and/or debris inside the reel. Wipe down reels with a rag or towel after rinsing. Then lightly oil and grease the easily accessible moving parts. Lubricate the following on the spinning reel: line roller or guide, bail hinge, crank handle knobs and shaft, beneath the anti-reverse switch, and where the center shaft exits the top of the reel. In the other reels, lubricate some of the same spots as the spinning reel and any location that rotates. Lubricating the moving parts is good practice after every fishing trip.

After rinsing your reel, always release the drag on it. Storing reels for an extended period of time with the drag engaged compresses the drag washers and decreases their ability to properly function. Store rods vertically or horizontally with at least two contact points. Never lean rods against a wall or something that bends the rod tip. Always store the rods so that they remain straight.



Fishing Line

Pound test: The pound test of fishing line means the weight at which the line would break at a direct, straight pull.

Monofilament fishing line (mono): The most commonly used and most versatile line. Mono stretches under pressure, which may be good and bad depending upon your needs. Stretch may weaken the strength of a line, but it also gives you more reaction time when a fish runs or jumps. Mono is available in many different colors, which are appropriate to different water conditions. Typically, anglers pick a color that will be least visible in the water. There are times when fluorescent lines may be best.

Nylon copolymer-resin monofilaments: A newer variation of the traditional mono. These lines offer more flexibility than traditional mono, are easier to cast and are more accurate.

Superbraid fishing lines: Superbraid is sensitive to vibrations and is thinner than traditional mono lines. These attributes allow for anglers to detect “pick-ups” from a fish while also allowing for increased line capacity on a reel. These lines are also easy to cast, have little to no memory, and tend to cost more than traditional mono.

Dacron braided fishing lines (braid): Dacron lines have very little stretch, are relatively limp and have little or no memory. This means the line won't stay coiled or kinked once spooled onto a reel.

Wire and monel lines: These specialized lines are often used for trolling in strong currents because they sink quickly. Wire is prone to kinking, so take care when letting this line out or reeling in. Monel, or lead-core lines, are more flexible and less likely to tangle than wire line but still offer the same weight. Both lines are optimal for conventional reels with extra line capacity (to handle the wider diameter lines) and chromed-bronze spools for corrosion resistance.

Fly fishing line: Specialized line that comes in different weights and tapers that either float or sink. Be sure to match the number on the line label to the number on the fly rod to balance the rod.

What to know before you buy: Know the size of your target species and use appropriate tackle. Some lines work best with certain tackle or a particular type of fishing.

Loading Line on a Spinning Reel

Some tackle shops have machines that can load line onto your fishing reel but you can also do it yourself. Here is how.

Lift the bail up (up is open, down is closed).

Run your line from the spool of line through the rod guides, starting at the tip of the rod, and tie it to the spool of the reel using a uni-knot.

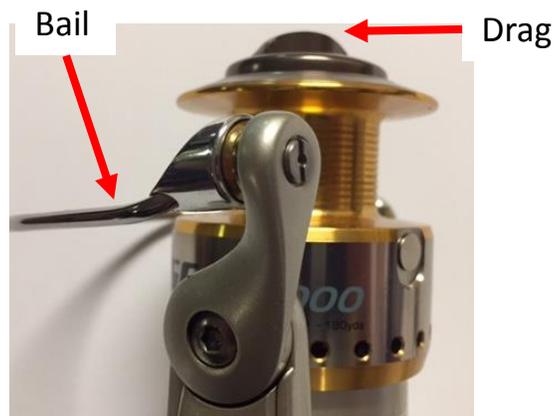
Close the bail.

Adjust the drag so the bail will load line on the reel.

Have another person hold the spool of line and make sure the line feeds off the top of the spool to avoid twists.

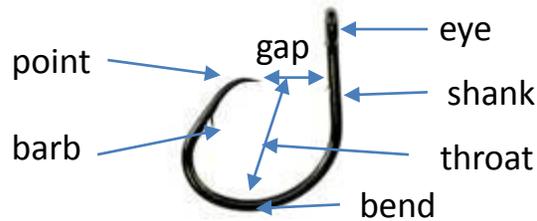
Reel the line in while the second person holds onto the spool of line. Either the person holding the spool or the person reeling the line on the spool will need to apply pressure to the line to wind it on the spool tightly.

Fill your spool until it is $1/8^{\text{th}}$ inch from the rim. Do not overfill as this creates casting problems.



Terminal Tackle: Hooks

Parts of a hook



Circle hook: A fishing hook that has the point sharply curved back to the shank to form a circular shape. The curve shape causes the hook to catch in the corner of the fish's mouth a large percentage of the time. Do not set these hooks; keep the line tight and reel the fish in. Circle hooks are recommended whenever using natural bait for any fishing. Some fisheries require this hook when using natural bait. Check regulations.



"J" hook: A fishing hook that has the point parallel to the shank and looks like the letter "J." The hook has to be set with a quick yank. "J" hooks are available with different lengths and bends in the shank for different types of fishing.



Kahle hook: This hook looks similar to a circle hook, but there is a subtle difference in shape. In kahle hooks, the point is pointed toward the hook eye instead of toward the shank of the hook. The distance is also much greater between the point and the shaft.



Worm hook: A "J" hook with a 90 degree bend or notch at the top of the hook that aids in keeping plastic baits on the hook. Rarely used in saltwater fishing.



Treble hook: A three-pronged hook used often on artificial lures. The use of this hook with natural bait is prohibited in some fisheries. Check regulations.

Terminal Tackle: Sinkers



Split shot: A type of sinker with a split cutting halfway through that can be crimped and uncrimped onto fishing line to add weight quickly and easily.



Pyramid sinker: Three to four sided sinker that comes in different weights used to keep bait on the bottom in waves and currents such as in the surf or pier fishing over sand. When a fish grabs the bait, the line is sharply pulled causing the pyramid sinker to free itself easily. Fishing line is attached to the loop on the sinker.



Egg sinker: A type of weight shaped like an egg with a hole in the center, designed to roll over rocks and rubble. Fishing line goes through the hole and is secured by a knot or swivel. This allows the line to move through the sinker when it is on the bottom. See fish finder rig.



Dipsey/swivel sinker: An egg-shaped weight used for multi-directional trolling or for bottom fishing with live bait. The fishing line is attached to the weight using the loop of wire or swivel. The swivel embedded in the sinker decreases line twisting. Some have a snapping mechanism that allows for easy adding on or removal of the weight from the fishing line.



Bank sinker: Bell-shaped weight with a small hole at the top for the fishing line. Made to stay on the bottom without getting stuck, don't snag easily, and have a good casting distance.



Sputnik sinker: Unique design holds sinker on the bottom using the four stainless steel wire arms that lock into place to anchor it in substrate such as sand. Excellent for use in currents and tidal areas. Jerking the rod tip to collapse the arms back for easy retrieval.

Terminal Tackle: Floaters



Popping cork: A type of float that has weights and beads. The end with the beads is tied to the main or standing line while the weighted end is tied to your leader, hook and lure. When the float is jerked, it makes a “popping” sounds that attracts fish.



Float/bobber: Suspends your bait in the water column and can be set at different distances from the bait. The end with the fluorescent color and/or the end without a weight is the end that is closest to the main or standing line. The weighted end is closest to leader, hook or lure. It is attached by removing the middle plastic peg, sliding the fishing line into the slotted portion of the float at the desired height on the line, and then replacing the plastic peg. The float serves as a good indicator of a fish strike when it disappears underwater. Jig or jerk the float to catch water in the cupped part at the top of the float; this action attracts fish.

Terminal Tackle: Swivels/Leader



Wire leader: Thin wire used with terminal tackle when the targeted species of fish has sharp teeth, when trolling offshore, and when fishing around sharp habitats such as oyster bars.



Monofilament leader: Single strand of nylon. It typically holds knots better, is easy to cast, has low visibility, shows some abrasion resistance, and is less expensive than other fishing leaders. But it can stretch out over time and deteriorate from ultraviolet light exposure. The leader should be of a stronger pound test than the monofilament on the reel spool.



Fluorocarbon leader: Single strand of polyvinylidene fluoride. It has very low visibility and stretch, resistance to abrasion and ultraviolet light, good knot strength, and it sinks to the bottom. However, it can be very stiff to tie and is more expensive than monofilament.

Snap: A piece of metal that can be attached to a swivel and a lure (snap-swivel). This helps an angler switch lures quickly.



Barrel swivel: A piece of metal with two eyes that attaches leader to line and spins/rotates at the leader. This keeps kinks and twists out of the main line.



Three-way swivel: A swivel with three eyes. Tie your standing line to one eye, to the second eye tie your leader ending with a sinker, and to the third eye tie your leader ending with a hook and bait/lure.

Artificial Lures

Spoon: Artificial lure made of metal with a dished-out or elongated concave shape that causes it to perform a wobbling or darting motion in the water. The metallic finish provides flashing to attract fish. The knots recommended for spoons include the end-loop knot or another loop knot.



Plug: Lure constructed from hollow plastic or wood to resemble baitfish or other prey. They have one to three treble hooks. One or two sets of treble hooks may be removed to make it easier to unhook fish. These lures can be fished at almost any depth, as some are made to float, dive or both. Types of plugs include crankbaits, jerkbaits, surface plugs, floating/diving plugs, rattling plugs and surface poppers. The knots recommended for plugs include the end-loop knot or another loop knot.



Diver: These are deep running plugs and have an extra long lip that makes them dive at a fast rate the harder the angler reels the lure in. They also can have a tight wiggle and have a wide side to side wobble depending upon the lip or bill shape. Knots recommended for plugs include improved clinch, uni-knot and end-loop knot.



Artificial Lures continued

Jig: A single, weighted hook molded into a lead head, either painted in various colors with eyes in a contrasting color or dressed with feathers, rubber skirts, hairs or soft material to mimic prey.



Feather jig



Doll flies



Jig head

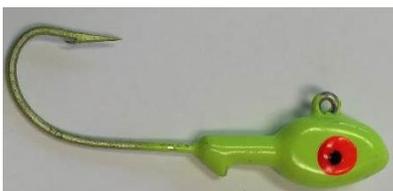
Soft body lures: Molded from soft plastic and made to imitate natural bait. They come in countless shapes, colors and lengths and may be fitted onto a jig head. Some soft body lures come pre-rigged with a jig head. Knots recommended for plugs include improved clinch, uni-knot, and end-loop knot or any other loop knot.



Soft bodies



Pre-rigged soft body jigs



Jig head



Pre-rigged soft body jigs

Fishing Tackle: Conservation Tools



Dehooking tool: Allows the hook to be secured and the barb shielded without re-engaging or re-hooking the fish when the hook is removed. These are intended for use with single hooks with bait. Cannot be used with lures. These tools reduce handling time with fish and minimize or eliminate handling the fish.



Gripping tool: Grips the lower jawbone (mouth) of fish to help anglers land and handle the fish while eliminating the need to grab the gills, eyes or other sensitive parts. Some have scales to weigh your fish. Always hold the fish horizontally, supporting the weight of the fish.



Landing net: Supports the weight of the fish. Knotless rubber (coated) landing nets minimize the removal of the fish's protective slime.



Fish sling: Supports the weight of the fish horizontally when weighing a fish.



Venting tool: A sharpened, hollow instrument that releases expanded gases from the fish's body cavity, enabling the fish to swim back to capture depth. Used only when the fish exhibits signs of barotrauma, see page 41.



Descending tool: Used to recompress gases in deep-water fish without puncturing the body cavity. More examples on page 42.

Fishing Tackle: Conservation Tools continued



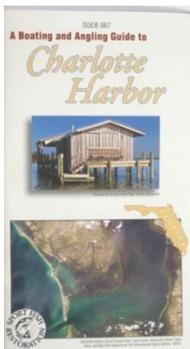
Gaff: A large, sharp hook used to pierce the body or mouth of a fish. This tool helps lift fish intended for harvest on board a boat.



Line clippers: Used to clip fishing line.



Measuring device: Used to measure the length of the fish.



Boating and Angling Guide: Shows the location of boat ramps, marinas, the location of different marine habitats, and some artificial reefs.

Tomorrow	Sat	Sun
 Clear	 Clear	 Rain
37°/25° Precip 0%	43°/32° Precip 10%	45°/39° Precip 30%
Back		

Weather forecast: Check weather forecasts prior to doing anything outside.



Pliers: Can be used to remove a hook, to crimp down a weight, cut line, crimp barbs, etc. For saltwater use, purchase stainless steel or titanium. There are many styles and varieties.

Natural Baits

Natural baits – Usually preferred by fish, but can be difficult to catch and maintain. Natural bait can also be purchased. REMINDER: Circle hooks are recommended when fishing with natural baits.

Live bait

Shrimp: Insert a circle hook through the head and avoid dark spots in order to keep the shrimp alive; effective near the bottom or midwater using a float rig.

Crabs: Insert a circle hook up through back corner of shell, near swimmerets, or cut the body into halves or quarters; works well for bottom fishing.



Baitfish: Insert a circle hook across the “nose” of the fish, upward through the top of the mouth, or through the back of the fish, just in front of the dorsal fin.

Common baitfish include ballyhoo, bonito, pinfish, pigfish, mullet and killifish.



Cut bait

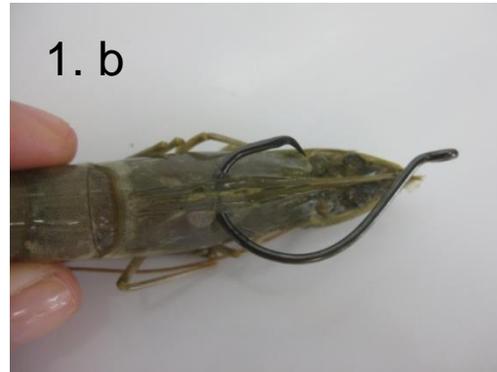
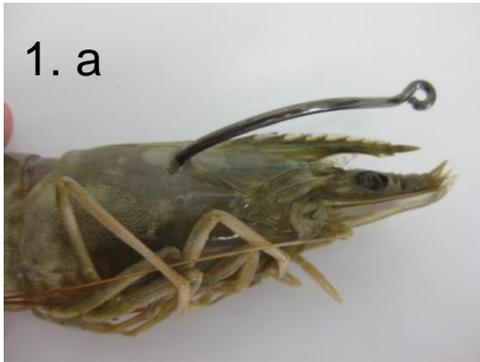
Squid: Sold frozen and can be cut into pieces; works well for bottom fishing.



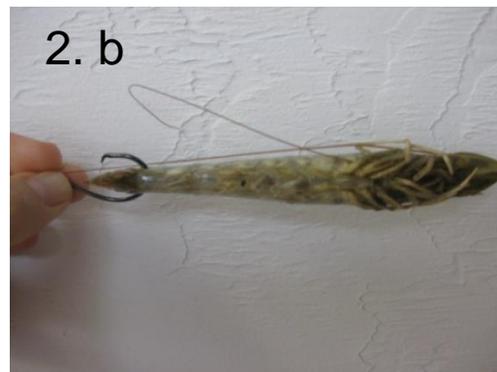
Fish: Cut fish into strips or chunks and attach to hook, using the smallest pieces possible to avoid losing the bait.



Three Ways to put a Shrimp on a Hook



1. a-b Insert hook through the head but not through the black brain of the shrimp.



2. a-b Insert hook through the hard part of the tail.



3. a-b Remove head and tail and insert the hook through the body starting from the tail and coming out through the belly.

How to put a Soft Body Lure on a Jig Head



1. Place jig head above the soft body to see where the hook should exit.
2. Begin by putting the jig head hook into the top of the soft body lure.



3. Push about half of the soft body lure onto the hook and start to poke the hook through the top of the soft body lure.
4. Slide the soft body all the way to the "eye" of the jig head.

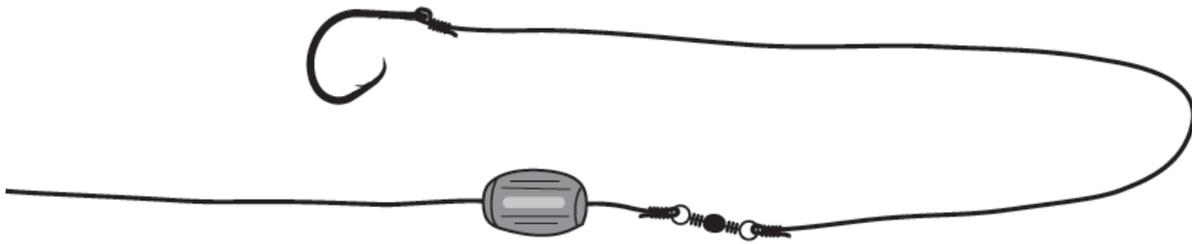
Fishing Rigs

There are several different fishing rigs that you can learn to make yourself, or you can opt to purchase rigs that have been manufactured and are ready to use. Here are a few important rigs that can be used in a variety of settings.

Slip-sinker or fish-finder rig: Designed to hold your bait on the bottom. Once the egg sinker reaches bottom, your bait is able to move around. This rig can successfully catch all kinds of fish, freshwater and saltwater alike.

Supplies needed: Fishing line, leader, egg sinker, swivel, hook and bait

Directions: First, slide an egg sinker onto the fishing line, then attach a swivel using an improved clinch or uni-knot. Next, tie the leader to the other eye on the swivel. Finally, tie the desired hook at the end of the leader.



Slip-Sinker or Fish-Finder Rig

Float rig: Used when targeting fish that feed away from the bottom. It has a float added to the main line above the swivel; this helps hold the line up and also helps reduce the erratic action of the rig.

Supplies needed: Fishing line, float, leader, swivel, hook, bait and split shot

Directions: If the float does not have a quick-attachment mechanism, slide the fishing line through the float, then slide the plastic securing pin into the float. Tie a swivel on the end of the line, then attach a leader with hook to the other eye on the swivel. Adjust the float to the desired height above the bait. Split shot may be added to weigh-down the bait.



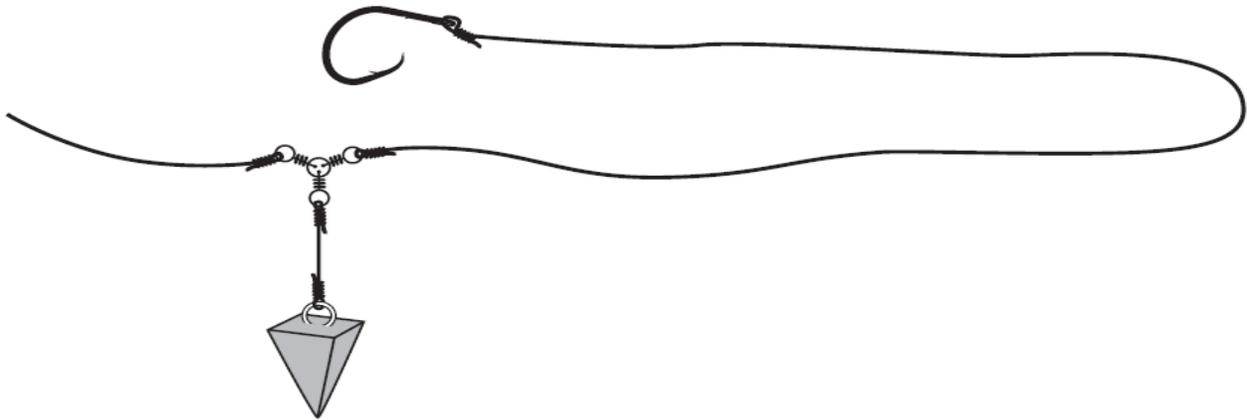
Float Rig

Fishing Rigs continued

Bottom-surf rig: Designed to hold your bait in bottom sediments with some water current. The pyramid sinker maintains the rig's position, while the bait is suspended just over the bottom. This rig works well with both live and cut bait.

Supplies needed: Fishing line, leader, pyramid sinker, three-way swivel, hook and bait

Directions: First, tie a short piece of leader to one of the eyes on the three-way swivel, then attach a pyramid sinker to the other end of the leader. Next, tie a long piece of leader to another eye on the three-way swivel, then tie a circle hook to the end of the leader. Finally, tie your fishing line to the last open spot on the three-way swivel.

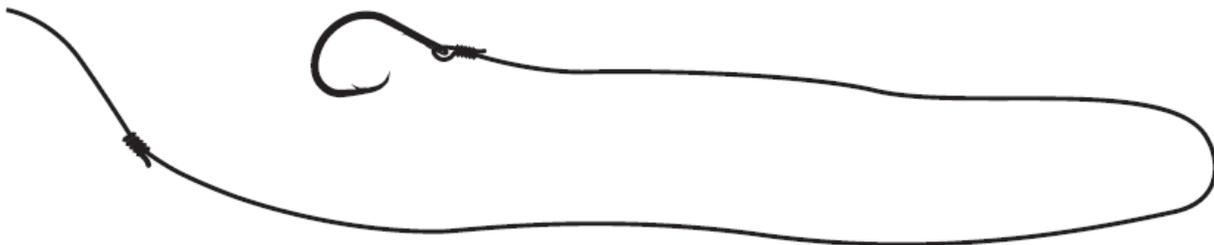


Bottom-Surf Rig

Live-lining or live bait rig: Used when targeting species such as tarpon, snook, sailfish and dolphinfish. The rig allows live bait to move freely while suspended in the water column.

Supplies needed: Fishing line, leader, circle hook and live bait

Directions: Tie a piece of leader to a piece of fishing line using an albright special knot. Then, tie a circle hook to the end of the leader. Finally, attach your choice of live bait to the hook.



Live-Lining or Live Bait Rig

Fish Fighting Tips

Once the fish is hooked, keep your line tight and rod tip up.

Keep your shoulders squared in the direction of the fish (perpendicular to the fish).

Make sure your rod always points toward the fish.

Use those legs. When landing a large fish, keep your knees slightly bent and your center of gravity low to maximize your reeling effort and maintain your stability.

Remember, “Pull up, Reel Down.” Don’t waste energy reeling as you pull up on your rod. Instead, reel quickly while lowering your rod tip to maximize your effort.

When using circle hooks, you do not need to set the hook. The design or shape of the circle hook allows for the hook to align itself in the corner of the fish’s mouth. Just keep the line tight and reel the fish in.

Be aware of your surroundings. Make sure there is nothing nearby for you to trip on or entangle your fishing line.

Have the drag pre-set to match your strength and that of the equipment.

Have a plan – keep all tackle and materials you may need nearby for a quick release such as a dehooking tool, venting tool, camera, landing net, gripping tool, etc.



Ways to Conserve Marine Fisheries

- Be able to identify the species you are targeting to ensure compliance with all rules and regulations.
- Use tackle heavy enough to quickly land the fish and minimize tiring it.
- Use non-offset circle hooks (when using live bait) and dehooking tools to ensure a quick, live release.
- Keep the fish in the water as much as possible during the release.
- If you have to handle the fish, use wet hands, not gloves or a towel, and support the weight of the fish.
- If a net is needed, use a knotless rubber-coated landing net to minimize removing the fish's slime layer.
- If needed, revive the fish by moving it forward in the water to force water over its gills or use a figure 8 motion. Never pull the fish backward in the water.
- Do not put anything in the eyes or gills, and do not hold the fish vertically by its jaw.
- If the fish is hooked deeply (in the throat or stomach), cut the line as close to the hook as possible.
- Use a gaff only when keeping a fish; avoid lip gaffing a fish when releasing it.
- Use a dehooking tool to easily remove hooks from fish. Dehook the fish in the water whenever possible.
- Be able to identify the signs of barotrauma (gas expansion) in deep water fish (see page 41 for images).
- Employ effective venting or use of descending devices for deep water fish that display one or all four signs of barotrauma (bulging eyes, swollen belly, intestines hanging from the vent, and/or stomach protruding from the mouth).
- Know how to return fish to the water that exhibit signs of barotrauma (venting or recompression on pages 42 and 43).
- **CPR- Catch, Photograph, Release** – quickly!
- Use gripping tools when needed and always remember to hold the fish horizontally.

Dehooking a Fish

1. Hold the fish by the line (preferably while the fish is in the water) with the non-dominant hand.
2. Slide the dehooking tool down the fishing line and engage into the hook as close to the fish's mouth as possible.
3. Gently pull both right and left hands away from each other and, while pulling taunt horizontally on the fishing line and dehooking tool, make a straight line.
4. Making sure to keep the line tight, begin to drop the hand with the fishing line and raise the hand with the dehooking tool. Use a quick downward jerking motion to release the hook from the fish's mouth. Dehooking the fish is best done over the water.



Dehooking Tools

- Dehooking tools allow the hook to be secured and the barb shielded without re-engaging when the hook is removed from a fish.
- These tools come in a variety of shapes and sizes; even a pair of needle-nosed pliers is considered a dehooking tool.
- Keep these tools in a convenient place so fish may be released quickly.
- If a fish swallows a hook, it is better to cut the line as close as possible to the hook instead of trying to remove it.



Barotrauma-Releasing Fish Caught in Deep Water

Fish that are brought to the surface from deep water and released may face additional challenges to survive. Many reef fish species, such as snappers and groupers, have a gas-filled organ called a swim bladder that controls buoyancy and allows the fish to maintain a certain depth in the water column. When these fish are pulled up from deep water (typically depths greater than 50 feet), the change in pressure can cause the gas in the swim bladder to expand and in some cases burst. Damage to the swim bladder or other internal organs that is caused by such change in pressure is called barotrauma.

When a fish suffering from barotrauma is released, it is unable to swim back down to capture depth making it difficult to survive the elements and avoid predators. If a fish needs to be released and shows any or all of these signs of barotrauma (see the following page for images), venting tools and descending devices may increase the fish's chance of survival after release.

Sometimes symptoms of barotrauma are not readily apparent. If you release the fish and it floats at the surface, struggling to swim down on its own, that is a good indication the fish may need to be vented or the use of a descending device is necessary.

If the stomach is protruding from the mouth of the fish, do not puncture or push the stomach back into its mouth. When the fish swims back down to depth it will re-ingest or swallow its stomach. Return the fish to the water mouth first as soon as possible and, if necessary, revive the fish by moving the fish forward in the water allowing water to pass through the mouth and over the gills or mouth first into the water with a quick forward motion.



Signs of Barotrauma

If a fish needs to be released and shows any or all of these signs, venting tools and descending devices may increase the fish's chance of survival after release.



The stomach protruding from the fish's mouth



Bulging eyes



Bloated or swollen belly



Distended Intestines

photos courtesy of Florida Sea Grant

Venting a Fish

Before venting a fish, an angler must observe at least one or all four signs of barotrauma. They are bulging eyes, swollen belly, intestines showing from the vent, and/or the stomach protruding from the mouth of the fish.

A venting tool is defined as a sharpened, hollow instrument such as a hypodermic needle. Knives, ice picks, gaff, nails, and similar devices are NOT considered a venting tool because they are not hollow and do not allow the gas to escape the fish's swim bladder.

To vent a fish:

1. Lay the fish on its side on a cool, wet surface.
2. Lay down the pectoral fin, which marks the location to vent the fish (two or three inches past the base of the pectoral fin).
3. Follow the trailing edge of the pectoral fin and slide the needle under a scale at a 45 degree angle until a hissing sound is heard (similar to a flat tire sound).
4. Once you hear the hissing sound, stop inserting the venting tool. Once the hissing sound stops, remove the needle and release the fish head-first into the water.
5. It's important to remember that venting is a controlled process.



Descending Devices

A descending device (recompression device) is a tool used to reverse the effects of barotrauma (seen on page 41). The device descends fish back down to a depth where the increased pressure from the water will recompress the swim bladder gases and allow the fish to swim away.

A number of descending devices have been developed. The type of descending device to use is often based on individual angler preference.

Most devices are weighted and attached to fishing line (or rope) and clamp or hook to the mouth of the fish.

Another option is an inverted milk crate with a rope attached to the top and weights on the sides. This creates a bottomless cage that allows the gases to recompress while the fish is brought down to capture depth. Once the crate is pulled up, the fish is able to swim away.

Although more research is needed, there are indications that the use of descending devices can increase the survival of released fish. If you choose to use a descending device, follow the instructions on the package carefully to ensure the device is used properly.

Descending Device Examples



Pressurized release tool
(courtesy of Florida Sea Grant)



Weighted spring release tool
(courtesy of Florida Sea Grant)



Wire hook



Weighted milk crate

Marine Habitats: Estuaries

Estuaries are semi-enclosed areas, such as a bay or lagoon, where fresh and salt water meet. Estuaries are dynamic systems with waters that can range from very salty to almost fresh. They rank as one of the most productive ecosystems in nature. More than 70% of Florida's important recreational and commercial marine species spend a portion of their lives in these sheltered and fertile waters. That's why estuaries are sometimes called "the cradle of the ocean." Estuarine habitats include salt marshes, seagrass beds, mangroves, mud and sandy bottom, oyster bars, exposed rock and algae beds.

More than 95% of Florida's recreational and commercial marine species use estuaries, mostly when they are young.

Estuaries are productive environments that are constantly changing with tides, temperature, salinity and sunlight.

Animals that live permanently in an estuary have adapted to the changes mentioned above.

To help preserve estuaries, *you* can:

- Stash your trash. Trash is often mistaken for food and has lethal effects when ingested by marine life. It can also destroy or damage habitat.
- Properly dispose of oil and other toxic compounds. Improperly disposed oil can contaminate the soil and water.

Common fish found around estuaries:

Red drum, black drum, spotted seatrout, sheepshead, tarpon, mullet, flounder, catfish and ladyfish.



Marine Habitats: Mangroves

Mangroves are another of Florida's most important coastal habitats. Mangroves are trees that grow in intertidal salty environments because they can tolerate frequent flooding and are able to obtain freshwater from saltwater. Florida has three species of mangroves - red, black and white. They are a crucial part of south Florida's coastal ecosystem, providing nesting sites for shore birds and shelter for juvenile fish, crustaceans and shellfish.

Red mangroves are found closest to the water and are easily identified by their large arching tangle of roots called "prop roots." Black mangroves usually inhabit shallower waters slightly more landward and can be identified by numerous pencil-like root protrusions (pneumatophores) around the base of the tree's trunk. White mangroves can be found farthest landward occupying higher elevations and usually lacking a visible root system.

Mangroves are an important component of maintaining the health of Florida's coasts. They trap and cycle pollutants, chemical elements and inorganic nutrients and their roots provide attachment surfaces for filter feeders such as barnacles and oysters. In addition, mangroves provide the two most basic requirements for animal survival: food and shelter. The food comes from rich "marine compost" produced when microorganisms consume animal droppings and plant litter that falls from mangrove canopies into the water. Shelter is provided by tangled prop roots and pneumatophores that extend below the water line.

Mangroves provide nursery areas for fish, crustaceans and shellfish.

Animals feed and find shelter around the roots of the mangroves.

To help mangroves, *you* can:

- Clean up pollution and avoid touching mangrove roots.
- Never cut down mangroves, they protect the shoreline from storms and erosion.

Common fish found around mangroves:

Sight fishing for snook, tarpon, and red drum is popular; although jacks, sheepshead, snapper, oysters, crabs, and shrimp are found here too. Anglers can pole through shallow areas, perfectly placing casts toward fish sighted from tall poling platforms on flats boats. Fish can also be caught by casting bait into areas along mangrove shorelines where birds are feeding or branches are overhanging, creating a hiding place for favorite baitfish.



Marine Habitats: Salt Marshes

Salt marshes are grassy, coastal wetland areas found on the margins of estuaries in Florida. They are also called tidal marshes since they are heavily influenced by tidal movements. They are primarily along low-energy shorelines and within bays and estuaries.

Mullet, red drum, grouper and other fishes are nurtured in salt marshes as juveniles, but move offshore as adults to spawn. As their eggs develop into larvae, they are transported into estuarine communities such as salt marshes by tides and currents. This makes salt marshes excellent nursery habitat for fish, crustaceans and shellfish.

Salt marshes also function as filters that trap pollutants and have an extensive root systems that enable them to withstand storm surges and limit damage to uplands. Salt marshes also serve as filters, absorbing or trapping pollutants from upland development and reducing the amount of contaminants that enter estuarine waters.

To help preserve salt marshes, *you* can:

- Stash your trash. Trash is often mistaken for food and has lethal effects when ingested by marine life.
- Properly dispose of oil.
- Limit the use of harmful fertilizers and pesticides on your lawn.
- Use shore-side restrooms and pump out facilities.
- Avoid boating in shallow waters.

Common fish found around a salt marsh:

Red drum, black drum, flounder, stingrays, catfish and many juvenile fish. When fishing salt marshes, look for spots that have bottom structure like shells, oysters or rocks. These areas tend to concentrate fish by providing a place to feed and hide. Look and listen for signs of fish, such as birds diving, bait leaping and fish breaking the surface or creating wakes.



Marine Habitats: Seagrass Beds

Seagrasses are underwater flowering plants that live in Florida's protected bays, lagoons and other shallow coastal waters. Clear water is needed to grow and maintain these habitats and they may take decades to form.

Florida has 2,000,000 acres of seagrasses. Turtle, manatee, widgeon, shoal, star, paddle and Johnson's seagrass comprise the seven species that can be found in Florida waters.

Seagrass beds are rich with biological diversity and productivity. More than 400 species of marine organisms can be found in Indian River Lagoon's seagrass beds alone. They provide shelter for a large variety of juvenile fish and shellfish such as gag grouper and bay scallops. They are also a major food source for organisms ranging from manatees and sea turtles to pinfish and sea urchins. Seagrass beds are vitally important to hundreds of marine species since they provide protection and food.

Seagrasses stabilize the bottom with roots and rhizomes, they help maintain water clarity, and the organisms that grow on seagrass are food for many marine animals and water birds. Seagrasses perform many other important ecological functions as well, such as binding sediments to prevent erosion, reducing turbulence on the bottom, and absorbing excess nutrients in cloudy water. In the absence of seagrass, water would begin to silt and become cloudy, preventing sunlight from penetrating further into the water column. Seagrasses are key in keeping Florida's saltwater estuaries clear and beautiful.

Because of their vast biodiversity, seagrass beds can provide extremely productive fishing opportunities. Several species of seatrout, grunt, snapper and grouper spend time in these habitats and can be caught by presenting bait when drifting over seagrass beds. When fishing near seagrass, carefully pole through shallow areas to avoid causing prop scars that can greatly damage these fragile habitats.

To help preserve these beds, *you* can:

- Tilt or stop your engine when near beds. Pole or walk your boat to deeper water to avoid scarring the seagrass beds.
- Know your boating area. Studying marine chart will help you identify areas to avoid in an effort to preserve these marine habitats.

Common fish around seagrass beds:

Jacks, tarpon, sharks, spotted seatrout, flounder, scallops and Spanish mackerel.



Marine Habitats: Coral Reefs

Florida is the only continental state to have extensive shallow coral reef formations. The extensive Florida Reef Tract spans more than 330 miles from the Dry Tortugas in Monroe County (west of Key West) to the St. Lucie Inlet in Martin County. Approximately 6,000 reefs range between the Atlantic coast of Stuart and the Dry Tortugas in the Gulf of Mexico. More than 6,000 species of marine organisms are found on these coral reefs.

Some people mistake corals for rocks or plants, but they are actually living animals. A coral colony is made up of hundreds of individual animals called polyps that extract minerals from seawater to create a limestone skeleton, similar to our bones. Corals are among the slowest-growing organisms on earth and most grow at a rate of just two millimeters per year. It can take more than 13 years for a coral colony to grow one inch. This slow growth rate is why it is so important to protect these valuable and highly vulnerable resources from threats like anchor damage and water pollution.

Florida has three types of reefs: patch reefs, which grow close to shore in shallow water; and fringing and barrier reefs, which grow farther offshore in deeper waters and rise steeply from the ocean floor.

Coral reefs protect the shoreline from storm waves and aid in the formation of beaches and lagoons.

A myriad of fish species are found among coral reef structures and crevices, including permit, amberjack, snapper, grouper, mackerel, barracuda and sharks. Extreme care must be taken when fishing near reefs to avoid damaging the slow-growing coral polyps that create these important ecosystems. Never anchor on coral reefs, but instead drift-fish or tie your boat to mooring buoys.

To help preserve reefs, *you* can:

- Anchor on mooring buoys or in the sand, *never* deploy your anchor in coral.
- Avoid touching coral when diving or snorkeling.
- Obey the law. All coral is protected by law and the harvest, collection or sale of coral is prohibited.

Common fish around coral reefs:

Grouper, snappers, jacks, sharks, barracuda and hogfish.



The State of Florida is committed to conserving the Florida Reef Tract, which is both a state and national treasure. To learn more, visit DEP.State.FL.US/Coastal/Programs/Coral.

Marine Habitats: Open Ocean

“Bluewater,” a term often used to describe the open ocean, can be found off the coast of Florida in both the Gulf of Mexico and Atlantic Ocean, typically near continental shelf edges. In the Gulf of Mexico, these shelf edges come much closer to land near Pensacola and Destin than in the Big Bend and west coast areas. In the Atlantic Ocean off Florida’s east coast, the shelf comes within miles of Fort Lauderdale then gradually moves father from shore as it continues northward.

The north-flowing Gulf Stream originates in the southern Gulf of Mexico, moves north through the Florida Straits, brushes near the coast of Palm Beach, follows the U.S. Atlantic coast north and then swings eastward toward Europe. The Gulf Stream has an important influence on continental shelf edge areas and other habitats of Florida’s east coast by moderating temperatures and creating conditions under which hundreds of marine species thrive.

Bluewater areas and the Gulf Stream provide a range of temperatures that are comfortable for virtually all pelagic (open-ocean) fish, including wahoo, billfish, tunas, dolphinfish and mackerel. Look for visible signs of fish, such as birds hovering or diving into the water and surface commotion that might indicate feeding. Fish are attracted to debris and patches of floating sargassum that collect along current edges and in areas where currents mix. Eddies that break off from currents are also worth investigating, as are color changes or edges of currents, where two different bodies of water meet.



Marine Habitats: Beach and Surf

A sandy beach under constant siege from storm-stirred seas may seem unwelcoming at first glance; however, this environment typically boasts good water quality and plenty of nutrients from seaweed washed up on the shore. For hardy sea creatures, this surf habitat can in fact prove quite hospitable.

Florida pompano, kingfish, bluefish, Spanish and king mackerel, cobia, jacks, tarpon and other prize marine fish can all be found off Florida's beaches. Beach piers are also a great place to catch a variety of fish species. Fish are often trapped in troughs between sandbars or reefs and the beach. Cast a baited surf rig toward these areas for a chance to catch fish as they swim outward from the troughs.



Marine Habitats: Artificial Reefs

The FWC Artificial Reef Program is one of the most active and diverse programs of its kind in the United States. The more than 3,300 artificial reefs in state and adjacent federal waters have been built to provide recreational fishing and diving enhancement, socioeconomic benefits for adjacent coastal communities, research opportunities to address reef ecology questions and structural habitat for reef-associated fishes and invertebrates.

Because of Florida's extensive coastline and statewide local involvement in reef activities, the FWC Artificial Reef Program is a cooperative partnership with local coastal governments. Many of the 70-100 public artificial reefs constructed annually are built using a combination of federal, state and private funds.

Artificial reefs primarily consist of concrete and steel materials and can be designed to achieve specific fishery management objectives, including supporting the sustainability of Florida's marine fish communities. Several species can be caught over or near artificial reefs including grouper, snapper, mackerel, jacks and barracuda. Drop a weighted rig with a circle hook close to the bottom while drifting over the reef to draw fish up to your bait. Avoid trolling over reefs since gear can become caught, damaging important structure.

More information about Florida's artificial reefs can be found online at MyFWC.com/Conservation by clicking on "Saltwater Programs" and "Artificial Reefs." Many counties also publish their own directories for local artificial reef sites. For more information, call the Division of Marine Fisheries Management at (850) 487-0554.

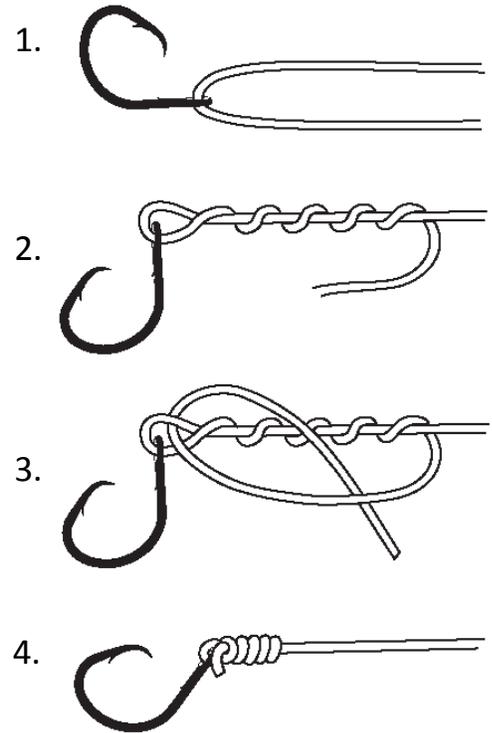


Fishing Knots

Remember to match the knot to a function, tie the knot correctly, wet the knot prior to fully tightening it, and trim the tag end to 1/8 inch after the knot is completely tightened. The tag end is the active end of the line used to tie a knot. The standing line is the longer end of the line that is not used to tie a knot.

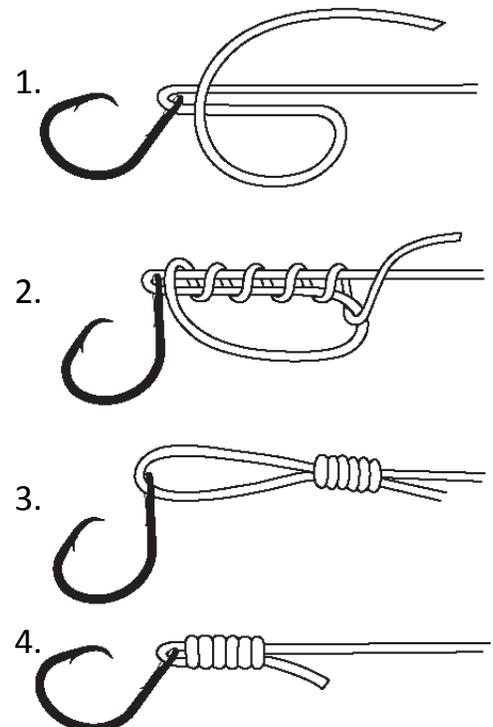
Improved clinch knot – Used to tie line to hook, swivel or some artificial lures.

1. Thread line through the eye of the hook and double-back parallel to the standing line.
2. Using the tag end, make five or more twists around the standing line.
3. Take the tag end back toward the hook and push it through the first loop nearest the eye of the hook. Then bring the tag end through the big loop that was just created.
4. Holding the hook and line, moisten the knot and pull it tight against the hook eye.



Uni-knot – Used to tie line to hook. Light line to heavy line, and in many other applications.

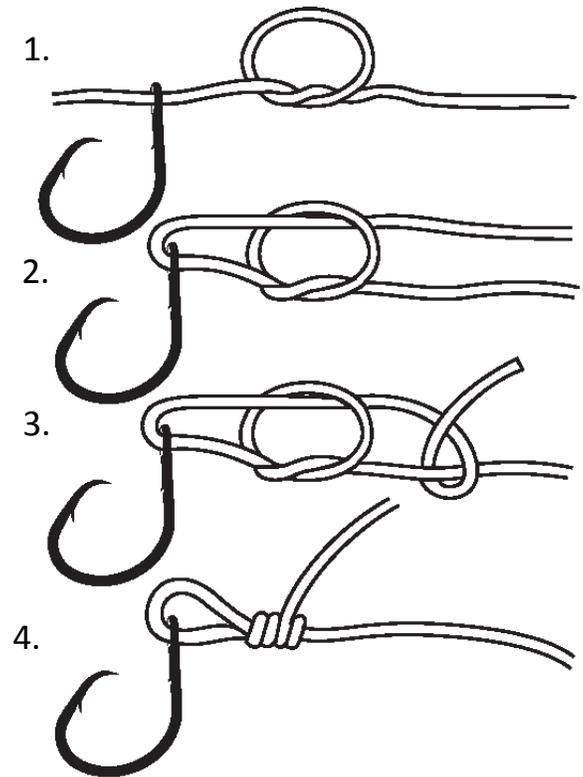
1. Run line through the eye of the hook and double-back parallel to the standing line. Make a loop by laying the tag end over the doubled line.
2. Make six turns with the tag end around the doubled line and through the loop.
3. Moisten the lines and pull the tag end to snug up the turns.
4. Slide the knot down to the eye or leave a small loop, if desired.



Fishing Knots continued

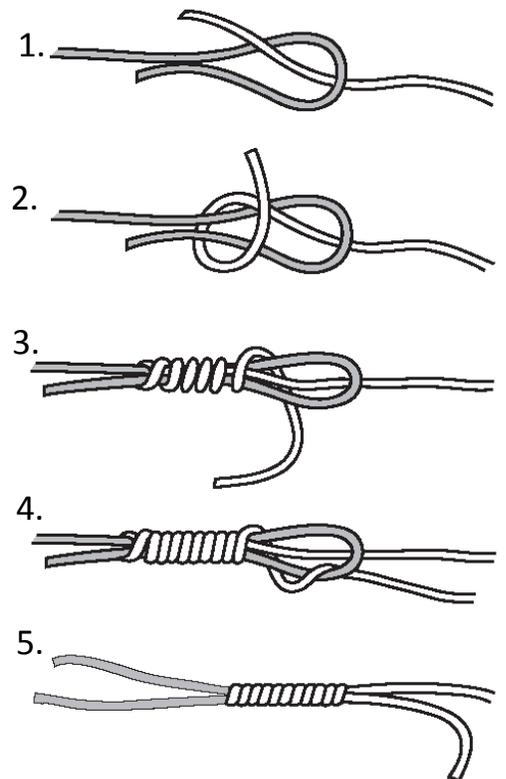
End-loop knot – Used to tie leader to lures that require freedom of movement, like jigs and plugs, by leaving a loop near the lure eye.

1. Tie a simple overhand knot in the line several inches from the tag end. Do not tighten the knot at this point.
2. Insert the tag end through the lure eye, then insert the tag end through the wide portion of the overhand knot while keeping the knot loose.
3. Loop size is determined by moving the overhand knot a desired distance from the lure eye. Make a simple half-hitch with the tag end around the standing part of the line **ABOVE** the overhand knot.
4. Moisten the knot and pull tight on the line and lure to cinch it.



Albright special – Used to tie light line to heavier line, such as a leader.

1. Make a loop with the heavier line. Run about 10 inches of the lighter line through the loop.
2. Hold the three lines between your thumb and index finger. Wrap the light line back over itself and both strands of the loop.
3. Make 10-15 tightly wrapped turns with the light line.
4. Feed the tag end back through the loop, exiting the loop from the same side as it entered.
5. Hold the line and pull both ends of the heavy line to slide the wraps to the end of the loop. Moisten and pull knot tight.



Fishing Knot Tips

- The **knot strength** is how strong your knot is on your fishing line.
- Remember to match your knot to the function.
- There may be more than one knot for the same function.
- The **standing line** refers to the longer end of the line that is not used to tie a knot.
- The **tag end**, also referred to as the working end, refers the end of the line that is loose and manipulated through the knot.
- Always wet your line before you tighten the knot. This will lubricate the line and reduce the friction on the fishing line as you tighten the knot.
- Trim the tag end to 1/8 inch after completely tightening the knot.
- The more you practice tying knots prior to fishing, the better you will be able to tie them when fishing.
- Tight, correctly tied knots have a conservation benefit for the fish because a loose knot will tighten under strain and break the fishing line.
- Correctly tied knots reduce break offs which reduces the amount of fishing line and hooks that end up in the environment.
- For an angler, a correctly tied knot means less retying while fishing.



How to Throw a Cast Net

1. Place your non-dominant hand through the rope loop and begin to coil the line into your non-dominant hand.
2. Grab the horn of the cast net (hard, plastic ring at top of cast net) and check for tangles in the net.
3. Place the horn into your non-dominant hand.
4. Grab the net at your hip height (4 a) and place the net into your non-dominant hand (4 b).
5. Separate $\frac{1}{2}$ of the net into one hand and the other $\frac{1}{2}$ of the net into the other hand.
6. "Check the watch" (6 a) on your non-dominant hand and roll the net in your dominant hand over the "watch" (6 b).



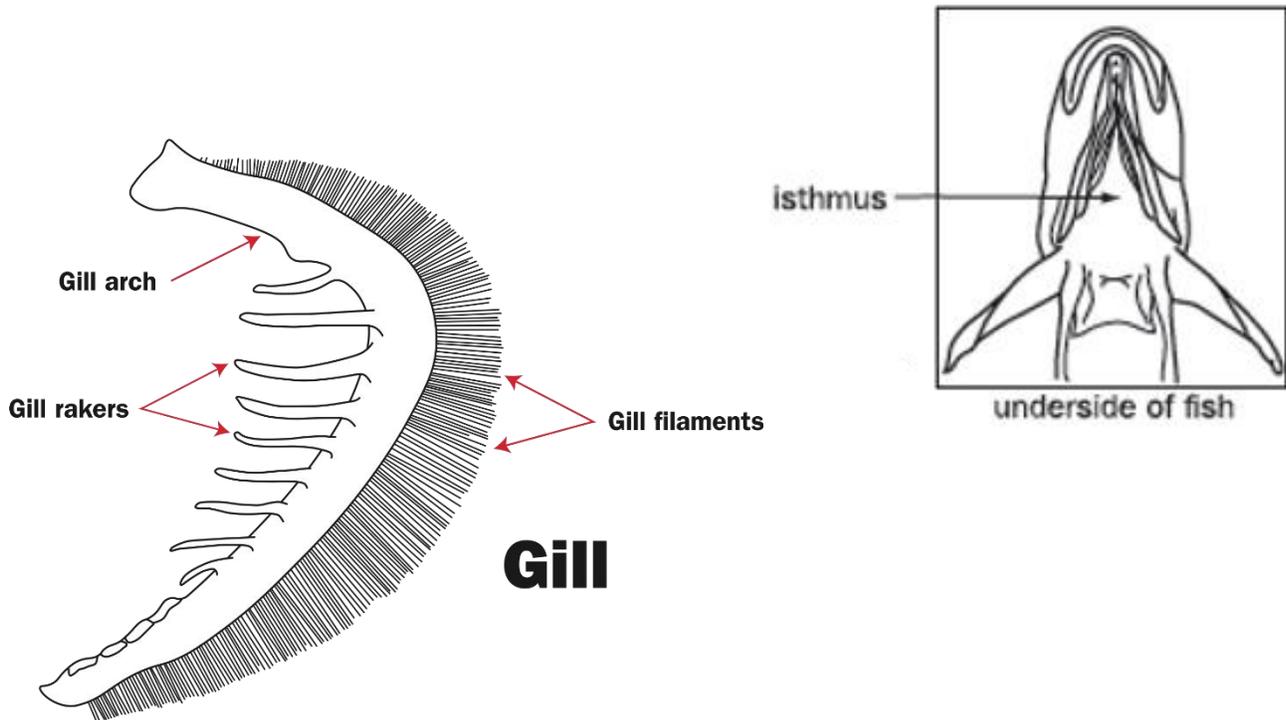
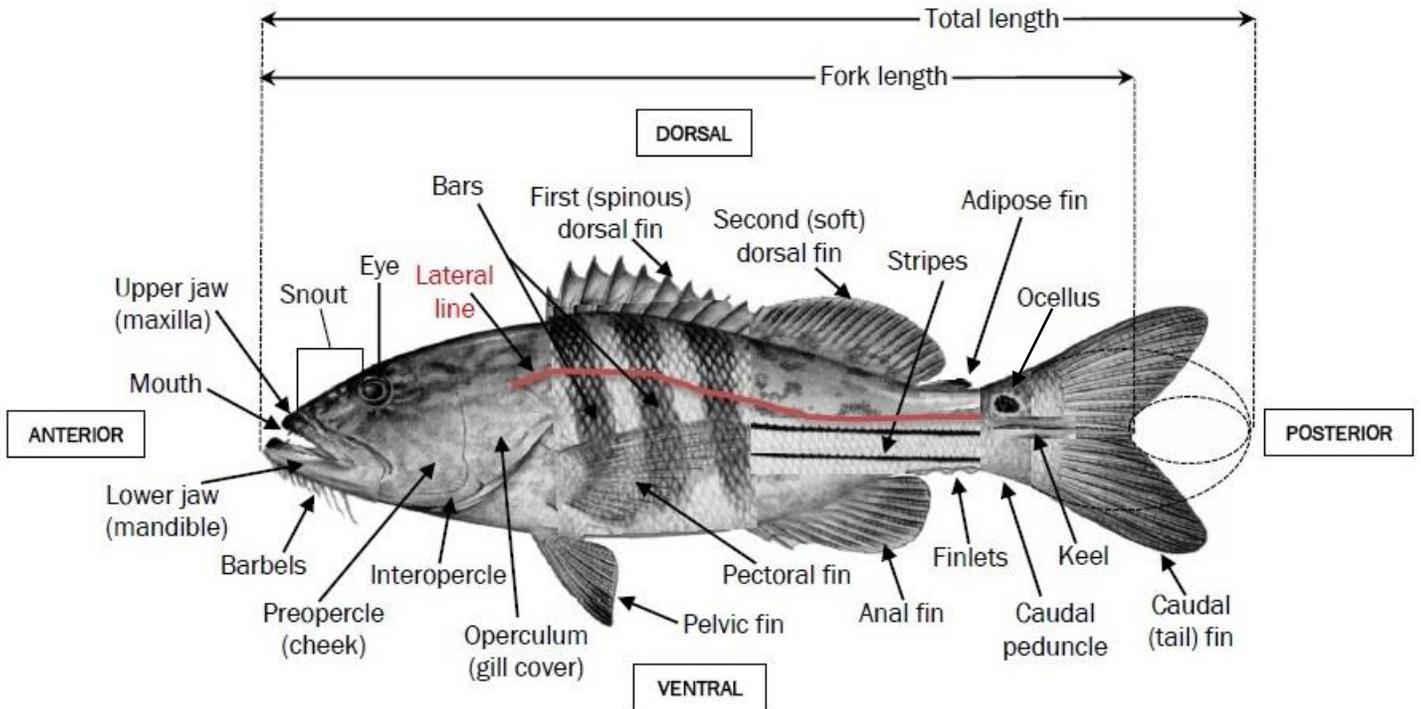
How to Throw a Cast Net continued

7. Check for two piles, a high and a low, and the transition zone between the piles.
8. Find the transition and with the pinky finger of your dominant hand, pick up the outside of the transition and place over your shoulder (not in your mouth).
9. Your dominant hand should be free of any net at this point. Reach down toward the “high” pile and pick up another section of the net with your pinky finger. Roll all of the net that was over the “watch” on your non-dominant hand into the dominant hand and pinky.
10. Throw net flat, like a Frisbee, using the momentum from your hips. Make sure to let go of everything when you throw the net.

Always rinse your cast net in freshwater once you are done using it. Hang it up to air dry out of the sun. Store the net in a five gallon bucket or in the container it came in once it is completely dry.



Fish Morphology



Fish Morphology Glossary

Adipose fin: A small fleshy fin that lacks fin rays.

Anal fin: The median fin on the midventral line behind the anus that stabilizes the fish while swimming.

Bar: A straight color mark oriented vertically unless otherwise stated.

Barbels: Fleshy sensory appendage on the head, usually on the snout, around the mouth or on the chin.

Carapace: Bony or horned covering encasing the body.

Caudal fin: The tail fin at the rear end of the body behind the anus that propels or pushes the fish through the water.

Caudal peduncle: Slender region where the body attaches to the tail. The depth of the caudal peduncle is significant for propulsion.

Dorsal fin: Fin located on the back; may be separated into first dorsal fin and second dorsal fin.

Finlets: Small fins positioned behind the dorsal and anal fins.

Fin ray: One of the hornlike, cartilaginous or bony dermal rods which form the skeleton of the fins of fish.

Fork length: Measured from tip of snout to tail fork.

Gill arches: The bony support structures that provide physical support for the gill filaments. Usually four gill arches in each gill of a fish.

Gill filaments: Feathery tissue that radiates backward from the gill arches and contains the primary and secondary lamellae and blood vessels where oxygen is absorbed.

Gill rakers: Structures that project forward from the gill arches, like the teeth of a comb, that prevent extraneous material from getting into the gill filaments and clogging the lamellae. Rakers are very fine to coarse based on the size of the prey the fish eats.

Interopercle: Bone between preopercle and operculum (gill cover).

Isthmus: The triangular, front most part of the underside of the body; largely separated from the head, in most bony fishes, by the gill opening.

Keel: Horizontal ridge on the caudal peduncle that provides stability.

Fish Morphology Glossary continued

Lateral line: A sensory organ consisting of fluid-filled sacs with a hair-like sensory apparatus that are open to the water through a series of pores found along a fish's body from the operculum to the tail (caudal fin). The lateral line primarily senses water currents and pressure, and movement in the water, which allows the fish to locate predators and find prey.

Maxilla: Upper jaw

Mandible: Lower jaw

Nape: Upper surface of body behind the head and before the dorsal fin.

Operculum (gill cover): Bony flap that protects the gills; opens and closes at the rear during respiration.

Ocellus: An eyespot in which the central color is bordered by a ring of another color, which is also different from the adjacent body color or fin. Ocellus, as a false eyespot, are used to confuse predators.

Pectoral fins: A pair of fins generally located in the shoulder region of the fish that allow for abrupt changes in side-to-side direction and speed. They also act as brakes to decrease speed while swimming.

Pelvic fins: A pair of fins on the lower part of the body around the pelvic girdle that stabilize the fish while swimming and allows for up-and-down movement in the water. These fins can vary in their placement on the body in different fish species.

Preopercle: Bone between cheek and gill cover.

Scutes: Bone-like projections

Snout: Portion of the head in front of the eyes and above the mouth.

Snout length: Measured from tip of snout to the front eye.

Soft dorsal fin: Fin supported by soft rays usually in the back.

Soft fin rays: Jointed soft rods that support a fin.

Spinous dorsal fin: Fin supported by bony spines usually in the front.

Spinous fin rays: Sharp bony spines that support a fin.

Stripe: A straight color mark usually oriented horizontally.

Tail section: The portion of the body behind the anus consisting of the caudal peduncle and caudal fin.

Total length: Measured from tip of the mouth closed to tip of pinched tail.

Vomerine tooth patch: Found on the roof of the mouth in snappers and in other fishes.

How to Fillet a Fish

Items needed:

Sharp fillet or boning knife

Cutting board

Wax paper

Container for fillets such as plastic freezer bags

Knife sharpener

Note: Filleting techniques may differ for fish of various sizes.

Directions:

1. Place the fish on the cutting board. Grasp the fish's mouth, take the knife and position it just behind the pectoral fin. Slice downward about a half inch keeping the rear of the knife blade up (watch your fingers) until you feel the knife hit the spine. Be careful not to cut into the fish's backbone.
2. Turn the knife blade toward the tail and continue cutting, staying on top of the spine. You will feel resistance as you cut through the rib cage; but be careful not to cut into the backbone. It's better to cut too shallow than too deep. It will be obvious if you cut too close to the backbone to retrieve more meat. It will feel like you're cutting through wood your fillet will be full of backbone. Continue your cut toward the tail, almost cutting the scaly fillet off, but not quite.



How to Fillet a Fish continued

3. With the fillet barely attached to the tail, flip it away from the fish. Position your knife onto the narrow portion of the fillet closest to the tail. While holding the fish, slice the meat from the fish's skin. To obtain the maximum meat, cut very closely to the skin; but if you want a less fishy taste, cut only the upper white meat from the skin, leaving the red meat attached. When the fillet is removed, place it, with ribcage still attached, on a sheet of wax paper.



4. Flip the fish over and fillet the other side, repeating steps 1 through 3.



5. Take each fillet and with the tip of your fillet knife carefully cut out the rib cage. To retrieve the most meat, angle your knife and slice close to the ribs.



6. If you want to skin the fillet, place it flat on the cutting board with the scales facing down. With a firm stroke of the knife, slice the meat off the attached skin and scales.

7. Carefully rinse and dry the fillets then place in the plastic freezer bags. Fillets should be eaten the same day if possible. Avoid freezing fish for long durations and always check with the Department of Health for consumption advisories and fish handling tips.





FOODFACTS

From the U.S. Food and Drug Administration

Fresh and Frozen Seafood

Selecting and Serving it Safely

SCAN ME
Access our
Education
Resource
Library



Fish and shellfish contain high quality protein and other essential nutrients and are an important part of a healthful diet. In fact, a well-balanced diet that includes a variety of fish and shellfish can contribute to heart health and aid in children's proper growth and development. As with any type of food, however, it is important to handle seafood safely in order to reduce the risk of foodborne illness, often called "food poisoning." Follow these basic food safety tips for buying, preparing, and storing fish and shellfish — and you and your family can safely enjoy the fine taste and good nutrition of seafood.

Buy Right

Fresh Fish and Shrimp

Only buy fish that is refrigerated or displayed on a thick bed of fresh ice that is not melting (preferably in a case or under some type of cover).

- Fish should smell fresh and mild, not fishy, sour, or ammonia-like.
- A fish's eyes should be clear and bulge a little.
- Whole fish and fillets should have firm, shiny flesh and bright red gills free from milky slime.
- The flesh should spring back when pressed.
- Fish fillets should display no discoloration, darkening or drying around the edges.
- Shrimp flesh should be translucent and shiny with little or no odor.

Some refrigerated seafood may have time/temperature indicators on their packaging, which show if the product has been stored at the proper temperature. Always check the indicators when they are present and only buy the seafood if the indicator shows that the product is safe to eat.



Selecting Shellfish

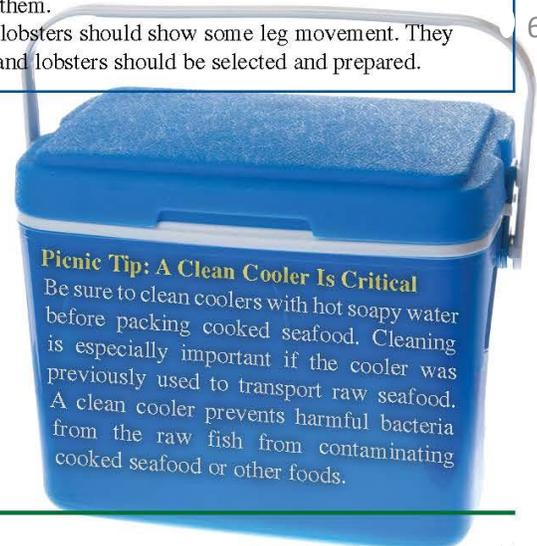
Follow these general guidelines for safely selecting shellfish:

1. **Look for the label:** Look for tags on sacks or containers of live shellfish (in the shell) and labels on containers or packages of shucked shellfish. These tags and labels contain specific information about the product, including the processor's certification number. This means that the shellfish were harvested and processed in accordance with national shellfish safety controls.
2. **Discard Cracked/Broken Ones:** Throw away clams, oysters, and mussels if their shells are cracked or broken.
3. **Do a "Tap Test":** Live clams, oysters, and mussels will close up when the shell is tapped. If they don't close when tapped, do not select them.
4. **Check for Leg Movement:** Live crabs and lobsters should show some leg movement. They spoil rapidly after death, so only live crabs and lobsters should be selected and prepared.

Frozen Seafood

Frozen seafood can spoil if the fish thaws during transport and is left at warm temperatures for too long.

- Don't buy frozen seafood if its package is open, torn, or crushed on the edges.
- Avoid packages that are positioned above the "frost line" or top of the freezer case.
- Avoid packages with signs of frost or ice crystals, which may mean the fish has been stored a long time or thawed and refrozen.



Picnic Tip: A Clean Cooler Is Critical

Be sure to clean coolers with hot soapy water before packing cooked seafood. Cleaning is especially important if the cooler was previously used to transport raw seafood. A clean cooler prevents harmful bacteria from the raw fish from contaminating cooked seafood or other foods.

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FOODFACTS ■ ■ ■

Store Properly

Put seafood on ice or in the refrigerator or freezer soon after buying it. If seafood will be used within 2 days after purchase, store it in the refrigerator. Otherwise, wrap it tightly in plastic, foil, or moisture-proof paper and store it in the freezer.

Separate for Safety

When preparing fresh or thawed seafood, it's important to prevent bacteria from the raw seafood from spreading to ready-to-eat food. Take these steps to avoid cross-contamination:

- When buying unpackaged cooked seafood, make sure it is physically separated from raw seafood. It should be in its own display case or separated from raw product by dividers.
- Wash your hands for at least 20 seconds with soap and warm water *before* and *after* handling any raw food.
- Wash cutting boards, dishes, utensils, and counter tops with soap and hot water between the preparation of raw foods, such as seafood, and the preparation of cooked or ready-to-eat foods.
- For added protection, kitchen sanitizers can be used on cutting boards and counter tops after use. Or use a solution of one tablespoon of unscented, liquid chlorine bleach to one gallon of water.
- If you use plastic or other non-porous cutting boards, run them through the dishwasher after use.

Prepare Safely

Thawing

Thaw frozen seafood gradually by placing it in the refrigerator overnight. If you have to thaw seafood quickly, either seal it in a plastic bag and immerse it in cold water or — if the food will be cooked immediately thereafter — microwave it on the “defrost” setting and stop the defrost cycle while the fish is still icy but pliable.



Cooking

Most seafood should be cooked to an internal temperature of 145°F.

If you don't have a food thermometer, there are other ways to determine whether seafood is done.

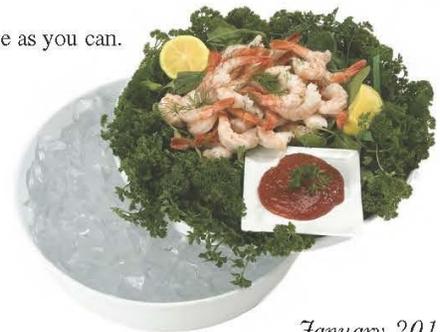
- **Fish:** The flesh should be opaque and separate easily with a fork
- **Shrimp and Lobster:** The flesh becomes pearly and opaque
- **Scallops:** The flesh turns opaque and firm
- **Clams, Mussels, and Oysters:** The shells open during cooking
— throw out ones that don't open

Uncooked spoiled seafood can have an ammonia odor. This odor becomes stronger after cooking. If you smell an ammonia odor in raw or cooked seafood, do not eat it.

Serving

Follow these serving guidelines once your seafood is cooked and ready to be enjoyed.

- Never leave seafood or other perishable food out of the refrigerator for more than 2 hours or for more than 1 hour when temperatures are above 90°F. Bacteria that can cause illness grow quickly at warm temperatures (between 40°F and 140°F).
- Carry picnic seafood in a cooler with a cold pack or ice.
When possible, put the cooler in the shade and keep the lid closed as much of the time as you can.
- When it's party time, keep hot seafood hot and cold seafood cold:
 - ◇ Divide hot party dishes containing seafood into smaller serving platters.
Keep platters refrigerated until time to reheat them for serving.
 - ◇ Keep cold seafood on ice or serve it throughout the gathering from platters kept in the refrigerator.



Catch fish, not pelicans! With just a little extra attention to your surroundings, you and your pelican friends can both have a great day out on the water.

The brown pelican is now a common sight on the coasts. Pelicans eat smaller fish that are not preferred by recreational fishermen and that are not commercially important. Pelicans are protected by federal and state laws.

A brown pelican's keen eyesight allows it to spot fish from high in the air. Plunge-diving for fish is their specialty. After surfacing and draining water from its pouch, the pelican swallows its well-deserved catch. Even though pelicans are large birds with broad wingspans, their feathers and hollow bones are very light, exquisitely designed for agile and expert flight.

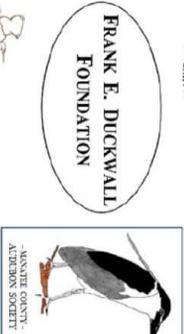
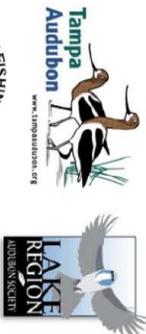
Entanglement in fishing gear may be their number one enemy, leading to slow death from dehydration and starvation. Bony fish scraps are also a killer, tearing the pouch or lodging in the throat. Feeding pelicans draws them to fishing areas and puts them in danger. Shorebirds, storks, herons, terns and gulls are also casualties. We can all help keep pelicans alive and healthy.

TIPS TO HELP our pelican friends

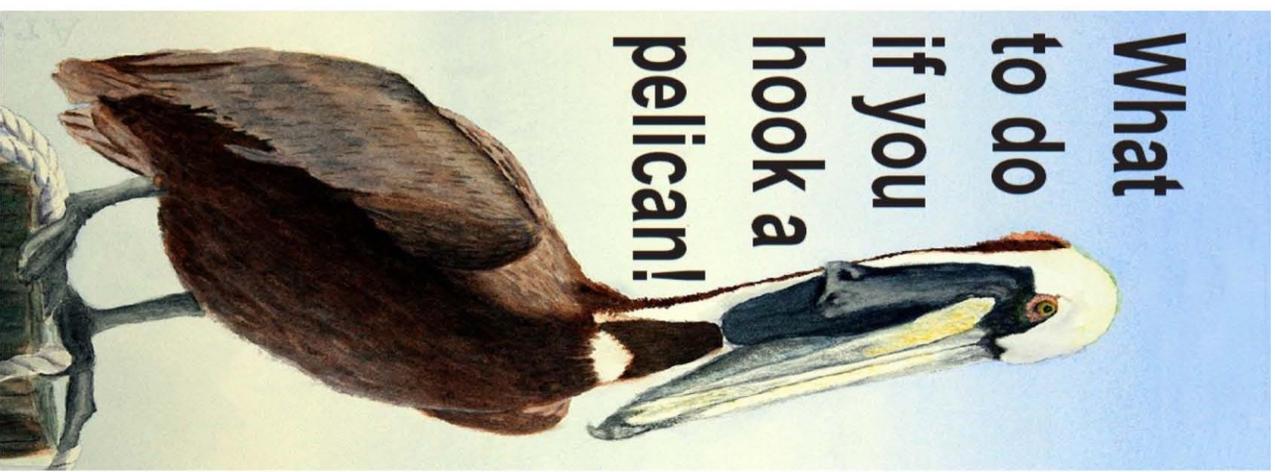
- Casing near any bird only increases the chances of hooking one. Birds focus on the injured fish in a school, which is your lure or baited fish. Pelicans dive for fish on the surface of the water or just below it. When fishing, never cast towards any bird.
- Don't feed the filleted honey carcasses to the birds, even if they are begging for them. Pelicans and other fish-eating birds such as herons and egrets easily digest the bones of small fish, but they can be severely injured by the stronger, sharp bones of the bigger fish you have caught. Carcass bones may puncture the pouch, throat, or intestines, leading to infection and a slow, painful death.
- It is illegal to feed wildlife in all state parks.
- Don't feed your extra bait fish to the birds. Feeding attracts birds to fishing areas, where they are more likely to become hooked.
- Always discard your old or tangled fishing line in recycling bins or covered trash cans. Birds and other wildlife become entangled leading to entrapment, strangulation, starvation, loss of limb, or subject to easy predation.
- Don't leave your fishing pole unattended as accidental entanglement may occur.
- Lead or zinc weighted jigs, lures, and tackle are deadly toxic. Instead use stainless steel, tin, tungsten, copper, pewter or brass, porcelain or stone fishing gear.

If you've caught too many bait fish, throw them back in for the next time! Don't feed them to the birds!

This pamphlet has been produced by



With the generous help from
 Sebastian Inlet State Park: Ranger Terese Harber,
 Audubon Florida: Ann Paul and Mark Rachal
 Pelican Island Audubon Society:
 Paintings and photographs by Don Schuster.
 Text by Karen Schuster.
 Layout by Bob Montanaro.



What to Do If You Hook a Pelican

Although its wingspan is over 6 ½ feet, a pelican weighs only 8-10 pounds and your fishing line test will hold it. Note: the bird won't know you are trying to help and will try to defend itself. Pelicans do not have teeth, but they have a hook at the beak's tip and its edges are sharp and could give you a small "paper" cut.

IMPORTANT, NEVER CUT THE LINE IF YOU CATCH A PELICAN.

1. Enlist a partner to help you release the bird. Extra hands and tools are useful. Put on sunglasses or other eye protection.



2. Reel the bird in slowly and evenly. Jerking the line will increase injury.
3. Grasp the bird firmly. Cover the bird's head with a towel, shirt, or your hat to calm it.
4. Hold the beak firmly and slightly open so the pelican can breathe easily. Fold the wings gently and firmly against the bird's body.

If you hook an egret, heron, or cormorant, extra care to protect yourself is needed because their sharp beaks can inflict injury. Enlist a partner to help you and put on sunglasses, goggles, or other eye protection. Grasp the bird firmly, controlling the head first. Cover the head with a towel to calm it. Hold the head behind the eyes, fold up the wings, and grab the legs to control the feet and toes.

5. ALWAYS REMOVE THE HOOK BY CUTTING THE BARRB.

THIS REDUCES INJURY. CAREFULLY PUSH THE BARRB FORWARD TO EXPOSE IT AND

CUT THE BARRB OFF WITH WIRE CUTTERS.



cut the barb off with wire cutters.

6. Back the rest of the hook out.
7. Before you let the pelican go, carefully check it over for other hooks and fishing line. Gently unfold each wing, one at a time, to examine the bird for line or hooks.
8. If the bird is not seriously wounded, release it immediately. To release the bird, point its head towards the water, away from you, and step back. Let it fly away on its own.
9. If the bird is seriously injured, lethargic, or has swallowed the hook, it should be taken to a veterinarian or wildlife rehabilitator. Call the Florida Fish and Wildlife Conservation Commission 1-888-404-3922 for a list of rehabilitators.



Basic Fishing Journal

Take a few minutes after each fishing trip to complete a fishing journal. Writing down this information will show what bait works best at catching a certain fish species during any given condition. By charting the information from each trip, you will establish a pattern that will help you to be more successful and allow you to better enjoy your time fishing.

Site fished: _____ **GPS Coordinates:** _____

Date: _____

Habitat description: _____

Time: (circle one) Early morning Midmorning Early afternoon Late afternoon Evening

Wind conditions: (circle one) Calm Gentle breeze Occasional gust Strong winds

Weather conditions: (circle one) Cloudy Clear Light rain Stormy

Bait used: _____

Fish caught: (species and numbers) _____

Tides: _____ **Depth:** _____

Notes: _____

Basic Fishing Journal

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Bait used: _____

Fish caught: (species and numbers) _____

Tides: _____ **Depth:** _____

Notes: _____

Drawings

Contact Information

FWC Contact Regional Offices

Northwest Region

3911 Hwy 2321
Panama City, FL
32409
850-265-3676

North Central Region

3377 E. US Hwy 90
Lake City, FL
32055
386-758-0525

Northeast Region

1239 SW 10th St.
Ocala, FL
34471
352-732-1225

Southwest Region

3900 Drane Lake Rd.
Lakeland, FL
33811
863-648-3200

South Region

8535 Northlake Blvd.
West Palm Beach, FL
33412
561-625-5122

Purchase fishing & hunting licenses over the phone at:

Fishing 888-347-4356*
Hunting 888-486-8356*

*A surcharge will be added to licenses purchased via phone.

FWC Division of Marine Fisheries Management

Outreach and Education
2590 E. Executive Center Circle, Suite 204
Tallahassee, FL 32301
850-487-0554

FWC Law Enforcement Numbers

Northwest Region

Carrabelle 850-697-3764
Panama City 850-233-5175
Pensacola 850-595-8905
24-hour 850-245-7710

North Central Region

Crystal River 352-447-1633
Jacksonville 904-573-2400
Lake City 386-758-0529
24-hour 386-758-0529

Northeast Region

Ocala 352-732-1225
Titusville 321-383-2740
24-hour 888-404-3922

Southwest Region

Fort Myers 239-332-6971
Lakeland 863-648-3200
Tampa 813-272-2516
24-hour 813-558-5050

South Region

Jupiter 561-624-6935
Miami 305-926-2500
W. Palm Beach 561-625-5122
24-hour 561-625-5125

Report a Fish or Wildlife Violation to 888-404-3922 or cellular phone customers throughout most of the state can make a free call by dialing *FWC or #FWC, depending on service carrier.

Other resources:

Florida law requires reporting of oil or other hazardous substance spills to 850-413-9911 or 24-Hour State Warning Point 800-320-0519.

Report catching a tagged fish to 800-367-4461.

Report a fish kill, diseased fish or fish with other abnormalities directly to Aquatic Health Group at FWC's Fish and Wildlife Research Institute in St. Petersburg by calling 800-404-3922.



Your purchase of fishing equipment and motor boat fuels supports these Sport Fish Restoration funded saltwater programs in Florida:

Aquatic Education
Artificial Reefs
Marine Fisheries Research

Angler Outreach
Stock Enhancement
Boating-Access Improvements

