

# Fishing Merit Badge Study Guide

## Fishing Hazards

### Most likely hazards:

1. Casting – the hook, weigh or rod may hit surrounding individuals and cause puncture wounds
2. A hook that has lodged in your finger.
3. Cut from a knife, plier, or fishing line
4. Fish sting from spiny dorsal fin and/or pectoral fin
5. Fish bite (some fishes have sharp teeth)
6. Slip in water
7. Fall overboard a boat into water
8. Dehydration
9. Heat exhaustion
10. Heat Stroke
11. Sunburn
12. Insect bites

### Prevention, mitigation and respond to these hazards

1. Always fish with at least one other person and tell your parent or guardian where you are going.
2. Check the weather condition (rain, thunderstorm, wind, etc.) before heading out to fishing. This is especially critical if you are planning to fish on a boat. You need check for any small craft advisory and plan the time to travel back to shore incase a storm comes.
3. Dress appropriately for the weather; always carry rain gear to keep yourself and cloth dry.
4. Bring water enough water and food for the duration of your trip. Drink plenty of water; do not wait until you are thirsty to drink or it may be too late.
5. Apply sunscreen before going out to fish and remember to reapply occasionally.

## Safety Practices

1. Wear personal flotation device (PFD); life jacket while fishing onboard a boat
2. Bring a first-aid kit
3. Take precautions to prevent heat reactions, dehydration, or hypothermia
4. Wear sunscreen
5. Wear eye protection (sunglass) and a hat.
6. Watch your surrounding before casting.

## Remove a Hook that has lodged in your skin

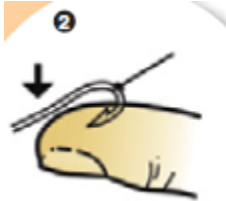
If only the point of the hook enters the skin and does not go deep enough to let the barb take hold, you can safely remove the hook by backing it out. **If the barb becomes embedded, it is best to let a physician remove it.**

**If the medical help is not available, try this method:**

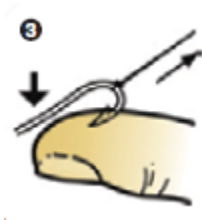
1. Tie a length of strong string to the bend of the hook.



2. Press down on the shank of the hook to free the barb.

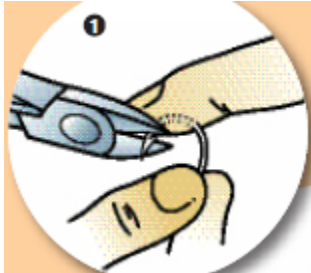


3. While maintaining pressure on the shank, pull firmly on the string in the direction in which the hook entered.

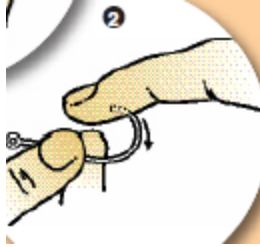


If the hook has lodged so that the barb is visible above the skin, try this method:

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



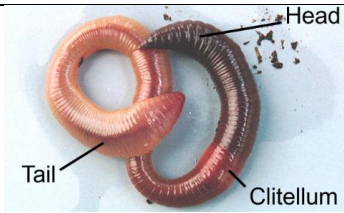


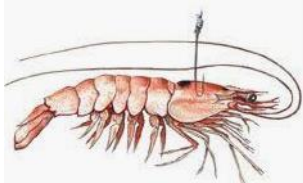
2. Back the shank of the hook out through the entry wound.





After removing the hook, wash the area with soap and water and cover it with a dry adhesive or gauze bandage. Be sure that the injured person consults a physician.

## Baits and Lures

### Live Baits:

<b>Common Freshwater Live Bait</b>	
<b>Nightcrawler worm</b> <ul style="list-style-type: none"> <li>Use to catch trout, largemouth and smallmouth bass, bluegill, crappie and redear sunfish.</li> </ul>	
<b>Crayfish</b> <ul style="list-style-type: none"> <li>Use to catch largemouth and smallmouth bass</li> </ul>	
<b>Minnows</b> <ul style="list-style-type: none"> <li>Use to catch largemouth and smallmouth bass</li> </ul>	
<b>Common Saltwater Live Bait</b>	
<b>Shrimp</b> <ul style="list-style-type: none"> <li>Hook at the tail or tip of the nose</li> <li>Use to catch small ocean fishes such as sand bass, calico bass, sheephead, red bull, etc.</li> </ul>	

<p><b>Sardine</b></p> <ul style="list-style-type: none"> <li>• Hook at the tail or tip of the nose</li> <li>• Use to catch small ocean fishes such as calico bass, yellowtail, halibut, barracuda, skipjack</li> </ul>	
<p><b>Squid</b></p> <ul style="list-style-type: none"> <li>• Hook at the tail</li> <li>• Use to catch small ocean fishes such as calico bass, yellowtail, halibut, barracuda, skipjack</li> </ul>	

### **Artificial Baits:**

**Jigs** is a type of artificial lures that have a weighted hook that can be attached to various different types of imitate food such as plastic worms, small fishes, bugs, etc. Jigs are meant for slow, patient anglers. Retrieve the jigs with an “action” motion – jerks and pull to simulate a swimming motion.



**Plastic Worm** is an artificial bait made of soft plastic that can be made to swim and wiggle underwater. Four good ways to use plastic worms are worm-and-jig with an artificial night crawler trailing out behind a bare hook; a plastic worm impaled on the hook of a regular bucktail hair jig; a Texas rig, which uses a sliding sinker with the hook stuck through the head of the worm and the point buried back in the worm body; and a plastic worm on a weedless hook with a split shot clipped on the line for fastening weight.



**Spoons** are made of metal and hammering to shape and polishing to a high shine. They are called spoons because most of them are shaped like the lower part of a teaspoon.



**Plugs** are minnowlike replicas that are designed to look like real bait fish. They are design to swim in the water like minnow when you retrieve the line. Some plugs come weighted to sink to the bottom before you retrieve.



**Spinners** is very thin metal piece that is mount onto a strip of wire. The metal blade spins around the wire shaft, glinting lie a live minnow swimming in the sunlight. Spinner may be rig with hair flies, feather streamer, or live bait. Most spinners work best if retrieved slowly, just fast enough for the blade to revolve without being a blur.



**Flies** are tied to represent insects, crabs, shrimp and tiny minnow. These flies are preferred food for trout, salmon, bass, panfishes and pike. They are usually use for fly-fishing.

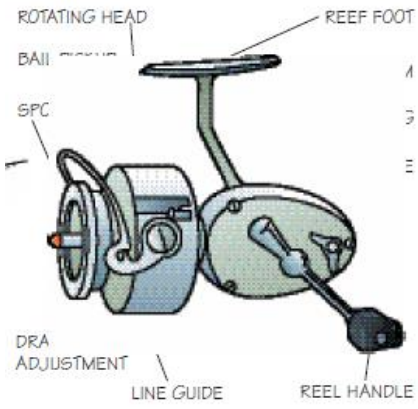
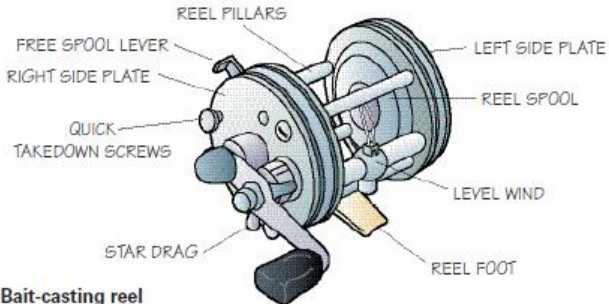

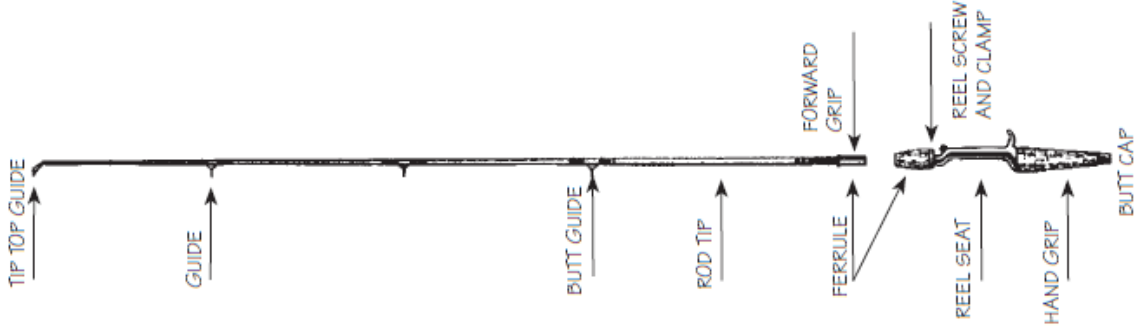


## Types of Fishing Outfit

Type 1: **Spinning reel and rod**

Type 2: **Bait-cast reel and rod**

	<b>Spinning reel and rod</b>	<b>Bait-cast reel and rod</b>
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<p>Reels</p>	<p><b>Open-face spinning reel</b></p> 	 <p><b>Bait-casting reel</b></p> 
<p>Rods</p>	<ul style="list-style-type: none"> <li>• The guide holes are on the bottom of the rod</li> <li>• The reel is hanging on the bottom of the rod</li> </ul>	<ul style="list-style-type: none"> <li>• The guide holes are on the top of the rod and are typically smaller</li> <li>• The reel is secured on the top of the rod</li> </ul>  <p><b>Fishing Rods Size and Length Guide:</b></p> <ul style="list-style-type: none"> <li>• The size and length of the fishing rod to use is all depended on the type of fish you are targeting and the fishing environment.</li> <li>• Generally, you want use the rod size that can handle the lure or bait of a given weight and the fish size you are targeting</li> </ul> <p><b>Fishing Rod Specification:</b></p> <ul style="list-style-type: none"> <li>• <b>Length:</b> the length of fishing rode</li> <li>• <b>Line weight:</b> the size of fishing line designed for this rod handle</li> <li>• <b>Lure weight:</b> the size of the lure or sinker designed for this rod to handle</li> <li>• <b>Power:</b> rod stiffness or resistance to bend</li> <li>• <b>Action:</b> rod bends when pressure is applied to the rod; fast action rod will bend in the top third or less of the blank, a medium action rod will bend in the top half and a slow action will bend starting the lower third.</li> </ul>

When used:	<ul style="list-style-type: none"> <li>• Generally use with lighter line and lures or baits</li> <li>• Line flows off the spool with no drag restriction allowing light lures to launch far.</li> <li>• Easier to use and cast for new angler</li> </ul>	<ul style="list-style-type: none"> <li>• Generally use with heavier line and target larger fishes</li> <li>• Can handle heavier fishing line</li> <li>• Allow longer cast than spinning reel in the same size range</li> <li>• Allow for casting lures like jigs, spinner baits and crankbait with more accuracy</li> <li>• Require more practice to be able to thumb the spool as line flows off; which if not done correctly you will have a bird's nest of tangled line at the spool.</li> </ul>
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Type 3: **Ice Fishing**

Type 4: **Fly Fishing**

	<b>Ice Fishing</b>	<b>Fly Fishing</b>
Reels/Rods	<ul style="list-style-type: none"> <li>• You can use the same spinning reel or bait-cast reels describe above.</li> <li>• Use short rods ice fishing rod</li> </ul>	<ul style="list-style-type: none"> <li>• The rod use for fly-fishing a typically long and flexible fly rod.</li> <li>• The line use for fly fishing is plastic-coated line. The weight of the line carries the fly out. The fly imitates the small insects (mayfly, caddis, stonefly, etc.) which the fish feed on.</li> </ul> <div data-bbox="844 1008 1380 1386"> <p style="text-align: center;"><b>Standard fly reel</b></p> <p>The diagram shows a side view of a fly reel. It has a circular body with a handle on the right side. A release button is located on the front face. An adjustable drag knob is at the bottom. A reel foot is attached to the top. The entire assembly is mounted on a reel frame.</p> </div>
Casting	<ul style="list-style-type: none"> <li>• No casting necessary for ice fishing</li> <li>• Release the line with weight to the depth you are targeting the fish.</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="https://www.youtube.com/watch?v=nuAijGRv2b8">https://www.youtube.com/watch?v=nuAijGRv2b8</a></li> <li>• <a href="https://www.youtube.com/watch?v=ne3rRyfs3Mc">https://www.youtube.com/watch?v=ne3rRyfs3Mc</a></li> <li>• <a href="https://www.youtube.com/watch?v=oDJJ6W23gHw">https://www.youtube.com/watch?v=oDJJ6W23gHw</a></li> </ul>
When used:	<ul style="list-style-type: none"> <li>• During winter and the lakes freeze over</li> <li>• Some species of fish that can be caught are – bluegill, crappie, perch, pike, walleye, and trout and is done with lures, spoons, jigs</li> </ul>	<ul style="list-style-type: none"> <li>• Fly-fishing is usually fish at river, lake or in bay where the water is calmer.</li> <li>• Since the bait is present at or near the surface of the water, this type of fishing target species that feed at the surface (trout in river, tarpon in bay area, bass in lake, etc.)</li> </ul>

Other equipment you would need	<ul style="list-style-type: none"> <li>• An ice auger to drill holes</li> <li>• A skimmer to dip the slush and ice chips out of the fish hole</li> <li>• A bucket or box to sit on</li> <li>• Plenty of warm clothing</li> </ul>	•
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#### Caring of the gears:

- Wash or rinse your gear with clean freshwater after use and allow it to dry thoroughly. This is especially important if you are fishing at the ocean. The saltwater will cause corrosion in the gears (reels, hooks, swivels, hooks, plier, knives, etc.)
- Oil and lubricate the reel and clean the fly line every once a while can increase its useful life
- Never store equipment in high temperature area which can destroy the plastics
- Change out the monofilament line yearly with new line

#### Fishing line:

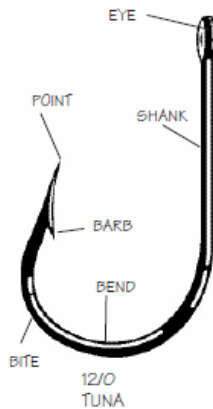
Types of fishing lines	
Monofilament (Mono) line	<ul style="list-style-type: none"> <li>• A synthetic, single-strand line vary from 1-pound strength to lines that will easily hold 40 to 50 pounds.</li> <li>• Monofilament is transparent and almost invisible to fish.</li> <li>• Monofilament line can stretch to absorb shocks</li> <li>• Over time, monofilament form loop to the shape of the spool</li> <li>• Not as strong as braid line; but is less expensive</li> <li>• Will break down over time when exposed to sunlight; so it's important to respool with new line every year</li> </ul>
Braid line	<ul style="list-style-type: none"> <li>• Braid line is made up of several super-strong, very thin fibers that are braided together to form a line</li> <li>• Braid line is very strong for a given diameter, often twice as strong as mono so you can pack more line on a spool at a given pound test.</li> <li>• Loops and twists to shape of the spool is not a problem</li> <li>• Braid line do not stretch so you can easily feel the nudge from a fish</li> <li>• Braid do not break down in sunlight</li> <li>• Braid is very slippery so you have to use knots that can hold despite the low friction.</li> <li>• More expensive than mono</li> </ul>
Fluorocarbon line	<ul style="list-style-type: none"> <li>• Fluorocarbon is commonly used as leader line (line from the hook to the main fishing line) because it is invisible underwater and very abrasion resistant.</li> <li>• Fish can easily be spooked and not bite when it see the line.</li> </ul>

#### Fishing hook:





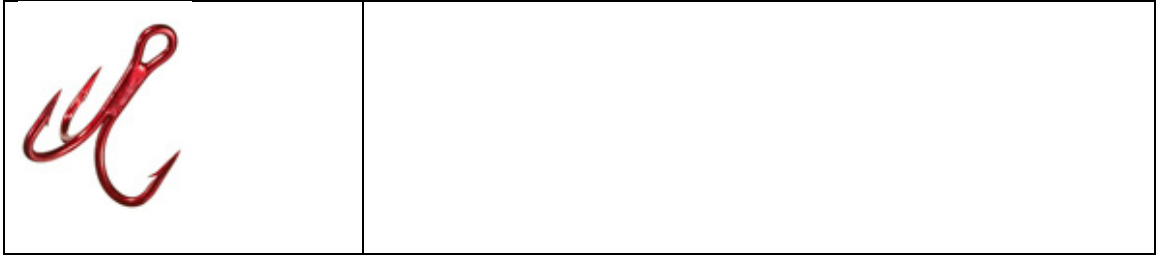
Hooks come in a wide range of sizes and types. Different hooks are design for different type of fishing. The hook you choose should be suitable for the fish you wish to catch.

Part of the hook:



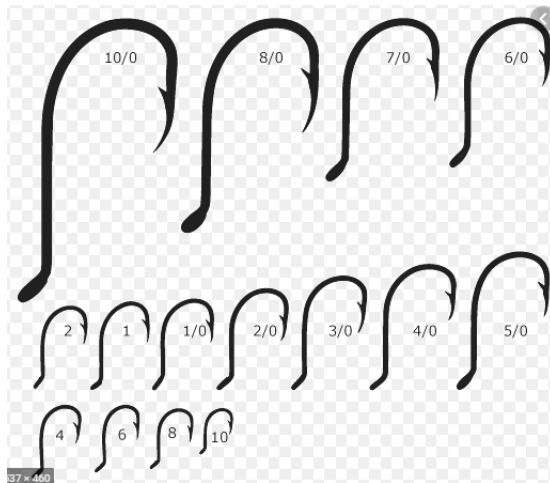
Commons types of hooks:

Types of hooks	Descriptions and Use
Bait hooks 	<p>Bait hook come in a variety of style and options. Most bait hooks has a barb at the point end. There are sections of the river and lake that do not permit barb hook; only “barbless” hooks are allow so you have to be aware of the regulation at the area you are fishing. Barbless hook is easier to un-hook the fish for “catch and release” practice.</p> <p>Bait hook also comes with barbs on the shaft to hold bait in place. This is usually use for dead baits. For live bait, choose a hook that do not have barbs at the shank.</p>
Circle hooks 	<p>Circle hook has a circular shape design to prevent gut hooking a fish. When a strike occurs, the hook slides out of the fish throat. The barb does not penetrate until the hook reaches the corner of the mouth and sets for a safe and solid hookup. You do not have to set the hook hard, you just simply apply steady pressure.</p> <p><b><u>IMPORTANT - Catch and Release Practice:</u></b> Since the hook is less likely to hook deep inside the throat or at the gut, the chance of the fish surviving on release is higher. Therefore, it is highly recommend to use circle hook.</p> <p>Used primarily for live bait fishing.</p>
Treble hooks	<p>Treble hooks feature three bends and points in one hook.</p> <p>Used primarily for artificial baits.</p>



Hook size:

- The larger the number, the smaller the hook; a size 6 is smaller than a size 2.
- If the hook size has “/0” labeled, then the bigger the number, the bigger the hook; a size 1/0 is smaller than 3/0.
- Example: For trout fishing, the typical size to use is a 10 or 12 size.
- Below is a size comparison (not scale to actual size)



### Sinker and Bobber/Floater:

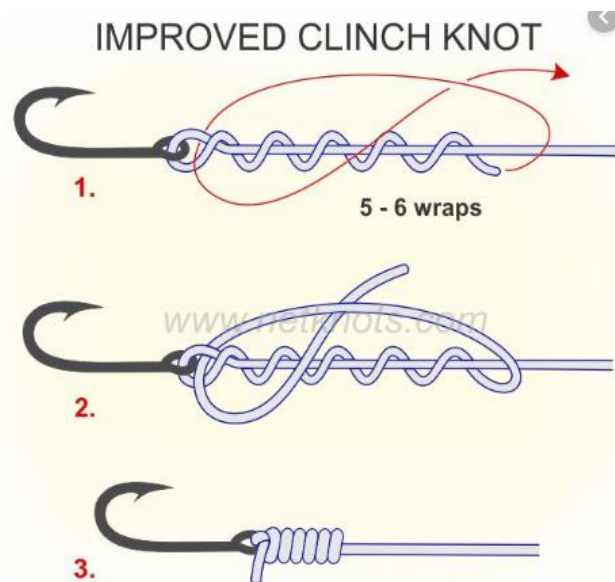
There are many types of sinkers, and each designed for specific types of fishing, are useful to get the bait down to the fish. The sinkers are weighted and come in different size ranging from 1/16 oz. and up to 10+ oz.



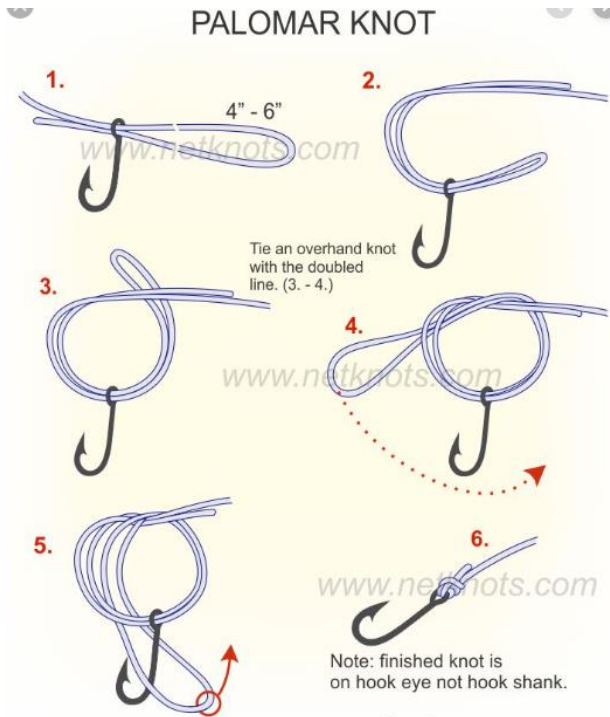
Bobber or floater are used to keep the bait closer to the water surface and let anglers know when a fish bites; as a fish takes the bait, it causes the bobber to dip.



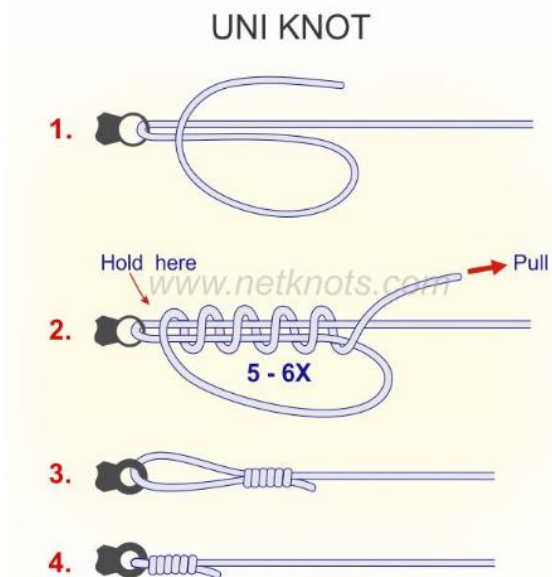
## Fishing Knots



- The Clinch knot is used to tie fishing line to a hook, lure, or swivel. Do not use with heavy line.

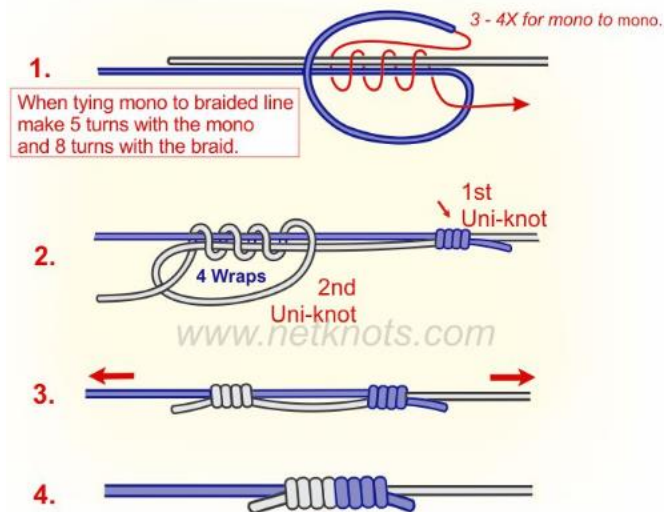


- The Palomar knot is used to tie fishing line to a hook, lure, or swivel. Easier to tie than the Clinch knot



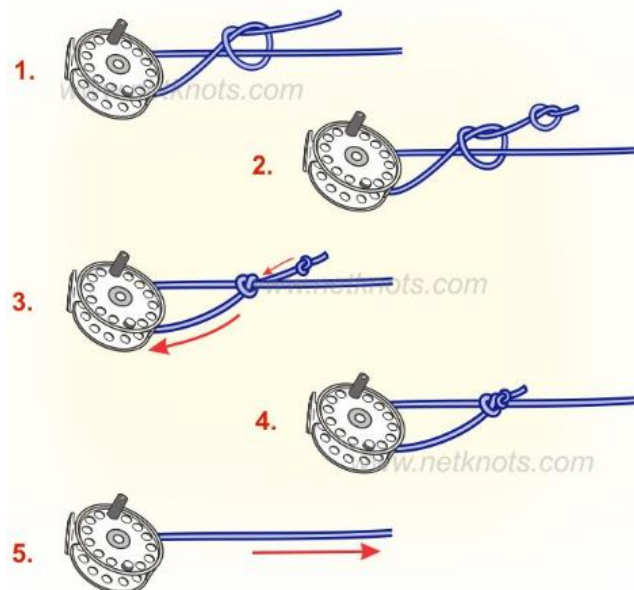
- The uni knot is a multi purpose fishing knot that can be used for attaching the fishing line to the arbor of a reel, for joining lines, and for attaching lures, snaps, and swivels.

## DOUBLE UNI KNOT



- The double unit knot is used to join lines of similar or different strength and type.
- Recommend when tying in a braided line to monofilament, make 8 turns with the slippery braided line and 5+ turns with the monofilament.

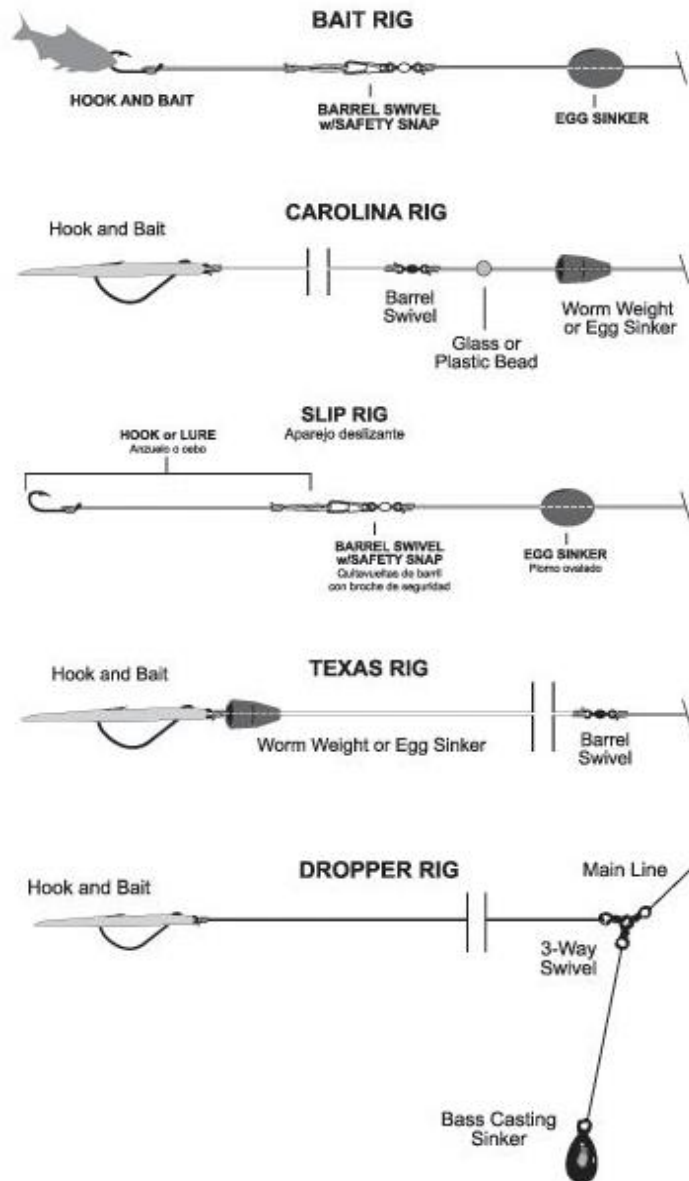
## ARBOR KNOT



- To attach fishing line to the arbor of a fishing reel.

## Fishing Rigs

When a bait is used with any combination of bobbers, line, sinkers, and hooks, a fisherman's rig is created. The rig usually connects to the end of the fishing line.



## Outdoor Code of the Boys Scouts of America Relate to Fishing Sports

### Be Clean in my Outdoor Manners – No Littering:

Treat the outdoors as a heritage. I will keep my trash and garbage out of lakes and streams.

### **Be Considerate in the Outdoors – No Trespassing:**

I will treat public and private property with respect. Respect private property and leave gates (open or closed) as found.

### **Courteous behavior:**

Select fishing spots and campsites away from other groups to help preserve their solitude and their chances of catching fish.

Always travel quietly to avoid disturbing other visitors. If fishing from a watercraft, take care not to disturb other anglers' efforts on the water.

### **Conservation-Minded - Obeying fishing regulations:**

**Limits** - The California Department of Fish and Wildlife (CDFW) has laws and regulations to keep balance of fish production and harvest. There are limits on the number of fish of each species that may take by an angler at one time. Limit vary in direct proportion to the availability of the fish. More scare species have a much lower limit or cannot keep. Be sure to check for specific regulations, size limits and bag limits at the location you are fishing. Size limit allows young fish to grow to an age where they can reproduce.

**Method** - Regulating the method to catch fishes is another way to keep the balance. Game fish must be taken on hook and line and cannot be spared or netted except with a landing net. In some area, trout may be taken only on artificial flies. Where salmon and steelhead trout migrate up streams to spawn, only single hooks may be used on lures to prevent unscrupulous fisherman from trying to snag fish with treble hook.

**Season** – To protect fish while spawning, seasons are set so that game fish can lay their egg without interference. For species such as bass, pike and walleye, the seasons open after spawning ends in the spring. For lake trout, brook trout, and other fall-spawning species, the season are closed in late autumn.

**IMPORTANT:** A fishing license is required for any one 16 years of age or older.

## **Catch and Release**

### **The meaning and importance of catch and release:**

Practice catch-and-release fishing to help ensure quality fishing for future anglers. The motto, "Limit your kill; don't kill your limit" should be part of every Leave No Trace experience. This practice prevent overfishing and help lengthen the fishing season and with conservation of the fish.

Keep only the fish that you are going to cook and eat.

Some species are not particularly good to eat (for example tarpon) or fishes that are too big such as large bass.

### **How to properly release a fish safely to the water?**

Use a landing net, preferably with a companion handling the net while the angler concentrates on the fish. Using the net can reduce the stress on the fish and increase the chance the fish can survive on release.

Here are tips on how to catch and release the right way:

- Use artificial lures with barbless single hooks. Fish tend to swallow live bait more deeply, and barbless hooks are easier to remove and do less damage than barbed hooks.
- Release the fish as gently and quickly as possible. Do not play the fish to exhaustion or it may not recover.
- If the fish has swallowed the hook, cut off the line as close to the hook as possible. Never try to remove a deeply embedded hook because you may damage the fish beyond recovery.
- Avoid stainless steel hooks. If swallowed, they will not dissolve over time.
- Use soft nylon landing net and not hard mesh which can damage the slime that covers the fish and helps protect it from disease.
- If you must handle the fish, wet your hand first. Support the fish horizontally – never vertically – in the water across the back and head, avoiding the eyes and gills. **Before releasing, revive the fish gently by moving it back and forth in the water until it swim away.**

### **Why are live bait fishes are not to be released?**

You should never release live bait or bait water into a lake or stream. You might unknowingly introduce nonnative species or disease.

<https://www.nps.gov/miss/learn/nature/ascarpover.htm#targetText=Asian%20carp%20cause%20serious%20damage,organisms%20like%20native%20freshwater%20mussels.>

## **Leave No Trace**

### **Leave No Trace techniques:**

1. **Plan Ahead and Prepare.** Anglers who plan ahead can minimize their impact by complying with area game and fish laws, such as size and catch limits, tackle and bait regulations, and seasonal restrictions.
2. **Travel and Camp on Durable Surfaces.** Damage to land occurs when visitors trample vegetation or communities of organisms beyond recovery. Minimize resource damage by using existing trails and selecting designated or existing fishing area.
3. **Dispose of Waste Properly.** Take your trash home or dispose it properly. Never leave used fishing line to decompose. Monofilament line can persist in the environment for many years.



4. **Leave What You Find.** Never transfer fish from one watershed to another. This can cause the spread of disease and invasive species.
5. **Catch-and-release.** Practice catch-and-release fishing to help ensure quality fishing for future anglers. The motto, "Limit your kill; don't kill your limit" should be part of every Leave No Trace experience.

Positive effect of Leave No Trace on fishing resources:

## Review a copy of the regulations affecting game fishing where you live

You can find many articles about conservation from the California Department of Fish and Wildlife  
<https://www.wildlife.ca.gov/Conservation>

### Angling for a Big Sturgeon? Keep an Eye Out for a Reward Tag!



<https://cdfgnews.wordpress.com/2019/07/31/angling-for-a-big-sturgeon-keep-an-eye-out-for-a-reward-tag/>





### CDFW Documents Statewide Impact of Recent Drought on Fish and Aquatic Species

[https://www.wildlife.ca.gov/Science-Institute/News/cdfw-documents-statewide-impact-of-recent-drought-on-fish-and-aquatic-species?utm\\_medium=email&utm\\_source=CA\\_ALDS&utm\\_campaign=CAanglerupdate\\_071519&utm\\_content=drought-button](https://www.wildlife.ca.gov/Science-Institute/News/cdfw-documents-statewide-impact-of-recent-drought-on-fish-and-aquatic-species?utm_medium=email&utm_source=CA_ALDS&utm_campaign=CAanglerupdate_071519&utm_content=drought-button)

## Freshwater Fish Identification

Types of fishes at Cachuma Lake:

<b>Rainbow Trout</b> <b>(adult typically weight between 1 to 5 lbs)</b>	
<b>Largemouth bass</b> <b>(adult typically measure 15")</b>	

<p><b>Smallmouth bass</b> (adult typically measure 15")</p>	
<p><b>Catfish</b> (can weigh up to 30-50 pounds)</p>	
<p><b>Crappie</b> (adult typically measure 5" – 10")</p>	
<p><b>Bluegill</b> (adult typically measure 6" – 12")</p>	
<p><b>Redear sunfish</b> (adult typically measure 8" – 10")</p>	