UNIT II

BECOMING A BETTER ANGLER

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LESSON 8

TACKLE TYPES ---- THREADLINES AND SIDECASTS

LESSON 8

Tackle Types− Threadlines and Sidecasts

Lesson Objectives

Following this lesson students will:
1. Know basic types of fishing outfits and their uses.
2. Be able to identify the parts of threadline and sidecast outfits.
3. Understand how outfits are "balanced", and why this is important.
4. Know the uses of basic tackle.
5. Understand the similarities and differences of sidecast and threadline outfits.
6. Be able to use threadline and sidecast outfits.

Materials for the Lesson

1. Several threadline and sidecast rods and reels of different sizes and brands.
2. Practice plugs for each rod and reel outfit.
3. Small lures, rigs, hooks, and basic tackle suited for these outfits in your locality.
4. Tin cans, hula hoops, or other items to use as targets for casting practice.
5. Copies of graphics to use as overheads or as photocopies for individual students.
6. Any booklets or other printed materials or wall charts received from manufacturers to distribute to students.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
I. Tackle Basics, General A. Basic Outfits B. Tackle for Different Waters, Lures, and Baits	1. Introduce the class to the lesson objectives. 2. Begin with a discussion of the variety of fishing equipment available. Explain that the type of outfit and tackle utilized depends upon the conditions to be fished and the fish sought, but this lesson will focus on the use of threadline and sidecast equipment.
C. Balancing Tackle	3. Explain the concept of balancing tackle. It does not mean how a rod and reel balance on your finger, but that the rod, reel, line, and lure are in proper relation to each other. Show, and pass around to the students, a properly balanced fishing outfit, a light sidecast or threadline outfit with 2 to 4kg. line and a 10gm. casting plug. If space permits, demonstrate its casting ability. (This can wait till later.) Then show an improperly balanced outfit. (Similar to the first one, but utilizing a very heavy plug.) Show how the heavy weight is too much for the small rod and reel and light line. Ask the students what problems this could cause. (Loss of lure due to line breakage, broken rod, etc.). Also discuss the use of a heavy line with light rods and small reels and potential problems with spooling the line.
D. Basic Tackle 1.Hooks	4. Using the graphics available, discuss different hook sizes and the importance of selecting the proper size for the fish, and for the equipment. Talk about the parts of a hook and how double and treble hooks are used on many lures. Distribute hooks of various sizes and styles that are locally popular, including jigs and ganged hooks.
2.Sinkers 3.Floats a. Bobber Stops	5. Show several different sizes and styles of sinkers and floats (bobbers). Discuss the purpose of these basic tackle items. Distribute these to students, along with some pieces of fishing line, and have them attach the different types of sinkers and floats, including those with bobber stops.
4.Prepared Rigs 5.Leaders/Traces	6. Distribute two or three prepared bait rigs to show different methods of rigging basic tackle. Also discuss the use of leaders and why they are utilized in some situations. This should receive emphasis with older or more advanced students.
6.Snaps, Swivels	7. For older or advanced students distribute and discuss the use of snaps and swivels, the different types and the advantages and disadvantages of each.
II Sidecast Outfit A. Reels B. Rods C. Line D. Uses E. Casting Technique	8. Distribute photocopied materials for sidecast outfits. Use a prepared overhead projector transparency if possible, or if not, a rod and reel to discuss, and point out the parts of this equipment. Distribute small casting plugs. Discuss their use and what typical weights are used locally. Use graphics of casting technique and discuss and demonstrate the proper techniques of casting, including the proper grip, stance, and casting fundamentals. Explain that everyone will get an opportunity to practise these techniques. Stress the importance of accuracy over distance.

III. Threadline Outfit (called Spinning Outfit)

A. Reels
B. Rods
C. Line
D. Uses
E. Casting Technique

9. Distribute photocopied materials for threadline or outfits. Proceed as in #8 above.

10. Move the class to an area where they can perform casting routines. Distribute equipment, both sidecast and threadline. If you do not have an assistant or two, limit the number casting at any one time to a maximum of 3-5, so that you can give them individual assistance. Have the other students listen and learn from the experience of others. Stress technique and accuracy as the students cast toward the targets that have been provided. Stress the importance of safety. Even though there are no hooks now, there will be later. It is important for them to know where the "lure" is on the backcast and to cast the plug toward a specific target. With beginning students, work only with basic casts. Sidecasts, underhand casts, and other more advanced techniques could be appropriately taught to older or more advanced or experienced anglers.

INTRODUCTION

Fishing outfits can be very simple and consist of nothing more than a hand line, hook and sinker. It can also be more complex, such as expensive outfits used for saltwater trolling, baitcasting or fly casting. Some reels, while complex in design, are very simple to use. This is the case with threadline or spinning reels. Other reels such as sidecast reels, while simple in design, are very effective and extremely reliable.

Other than the simplest outfits made up of a handline or cane pole, all outfits consist of several elements. These include a reel, rod, line and the basic tackle including a hook, sinker and swivel, or a lure. Each serves a purpose. The reel holds the line, which is the sole connection between the angler and the fish. The reel can hold more than enough line so a fish may "run", after taking the bait. The line must be thin, strong, and have good knot strength. The rod serves as a "leaf spring" or shock absorber to propel a lure or bait into the water and also to act as a lever with which to fight and land fish.

Outfits are designed for a particular purpose. Threadline and sidecast outfits are ideal for beginners and for much light tackle fishing.

NARRATIVE

Types of fishing Outfits

Basic Hand Lines

One of the basic ways of fishing is with a hand line. A hand line is simply a fishing line wrapped around some type of holder or spool. It may have a sinker or float with a baited hook on the end. To use or "cast" a hand line, the spool is held in one hand, crossways in front of your body and pointing in the direction of the cast. The rig (hook and sinker) is spun around the head and released to fly out into the water, peeling line off the reel as it goes.

Ned Kelly Outfits (cane poles)

Such outfits are generally not utilized to cast or to throw the line. They consist of a long cane pole, although other pole materials can be used, with a line tied to the end. While the angler is carrying or storing the outfit, the line is spiraled down the pole for security. The baited hook, sinker and/or float are lobbed or swung out into the water. To make fish landing easy, the line is usually no longer than the length of the pole.

Baitcaster Outfits

Baitcasters utilize a revolving spool reel that requires the angler to control the spool rotation to prevent tangles or "backlashes". A button or lever places the reel into "free spool" for casting. The rod is similar to that used for spinning, only with a stiffer action and the reel is mounted on top of the rod. Monofilament line is used most often, although some anglers use super braids.

Flyfishing Outfits

Flyfishing equipment is completely different from other types of outfits used to cast lures. In fly casting, the line is cast, rather than a lure. The fly "goes along for the ride" and is attached to the thick fly line with a tapered monofilament leader. Fly reels are usually single action with no gearing and serve primarily as storage for the line. Fly rods are long 2.2 to 3 metres, limber, and equipped with small guides, mounted below the grip.

Surf and Beach Outfits

Surf and beach fishing require big reels and long rods, ranging in length from 3.5 to 4.5 metres to allow the angler to make long casts with heavy baits and lures. The long rods also hold the line up above the breakers, which would otherwise catch the line and drag the bait. Surf tackle can be either sidecast, threadline or revolving spool style, although most anglers fish the easier-to-use sidecast style.

Trolling Outfits

Trolling generally uses fairly heavy tackle. Larger threadline or overhead multiplier reels with large line capacities are used with 2 to 2.4 metre stiff rods. Trolling tackle is used to trail a lure or bait behind the boat. Usually the rods are held in rod holders, and have long

handles. Line test is usually heavy. In salt water, many anglers use lines that correspond to tournament and record "line classes" from l to 60kg test line. The rods are relatively short to allow for leverage in fighting hooked fish.

Tackle for Specific Fishing Conditions

The first consideration in any tackle choice is the fish sought. The size, food habits and depth of the fish are critical in choosing tackle. For large fish, heavy tackle is a must. For small fish, light tackle should be used. Fish that are strong and make long runs must be raised off the bottom with a stout rod.

Cover and habitat are important considerations in tackle selection. Barramundi in open water can be fished for with lighter tackle than similar size fish found around snags and mangroves in a creek or river. Open-water mackerel can be caught on light tackle while reef-hiding coral trout of the same size require heavy tackle to get them out of the reef.

Food preferences of fish also determine tackle choice. The trout habit of eating mayflies, caddis flies, stone flies, and small aquatic insects, makes the fly rod ideal for stream fishing. Bottom feeders do not require a rod and reel that will cast well, while fish that strike lures and require repeated accurate casting are a different story altogether. Stiff action rods are preferred for fish that strike surface lures since the stiff rod allows the angler to work these lures properly.

The kind and type of water also determine tackle. Ponds and small streams can be fished with light tackle since they usually contain smaller fish. Offshore fishing in salt water requires trolling a bait and utilizing larger, heavier tackle necessary for the much larger fish.

Balanced Outfits

Outfit balance is often misunderstood. Many anglers think that it means how a rod and reel balances on the finger or hand in terms of being tip or butt heavy. While this is important for fishing comfort, balancing means that the elements of the fishing outfit - rod, reel, line, lure - are in proper relation to each other. Often anglers choose the rod and reel first and then the other tackle items. Usually it is best to work in reverse. Understand the fish sought and the fishing conditions. The type and size (weight) of the lure/bait will then determine the line.

To fish effectively the line size and lure weight determine the required reel size and the rod strength and length. It is extremely difficult to cast with heavy line. The wiriness of the line and its resistance when coming off the reel render it impossible to make a reasonable cast with a small lure. A heavy line attached to a small or light lure restricts lure movement. On the other hand, a heavy lure might break light line during a cast, as well as the smaller lines being too light to hold once a fish strikes.

Similarly, a heavy line does not spool well on the tiny spools of an ultra-light spinning reel. The reel spool is too small to hold enough line, and the line is too wiry and heavy to cast well, even with an appropriate size lure. A large reel can hold very light line but requires great amounts to fill up the reel for good casting. A light rod can break when casting a heavy lure, and a heavy rod does not flex properly to cast a light lure.

Basic Tackle

Basic tackle refers to those items - hooks, floats, sinkers and snaps, swivels and connector links - that are attached to the end of the line properly to get the lure or bait to the fish.

1. Hooks
   Hooks come in many styles and sizes, each suited for a particular purpose. Hook sizes, points, lengths, sturdiness (thickness of hook shank), shank shape, eye, and finish vary widely. Treble hooks are used on most plugs. Special hooks are designed for livebaits, offshore riggings, and lures. In the case of jigs and hooks for soft plastic worms, dozens of styles are available. For bait fishing, often hooks are ganged.
2. Sinkers

As with hooks, sinkers also vary in weight, size, shape and style. A sinker is designed to sink the bait. Some sinkers, such as pyramid and ball styles are used to hold baited hooks on the bottom. Others such as pinch on, rubber core, wire twists and split shot, fasten to the line.

3. Floats
   Surface floats are designed to hold a baited hook and sinker off the bottom. Floats are round or tapered, with the best floats just large enough to hold the other terminal tackle up. In this way they are more sensitive to fish bites. Bobber stops allow bobbers (floats) to slide along the line, so that deep fishing can be done and the rig can still be cast. (The bobber slides up to the sinker/hook on the retrieve and cast and slides down to the preset bobber stop after landing in the water.) Submerged floats are used with sinkers to hold a bait or lure up off the bottom, above weeds or free of snags. These usually slide on the line.
4. Prepared Rigs
   Prepared rigs are available for bait fishermen. While these will vary in style and materials, they usually are single or double hook bottom rigs, trolling rigs, or ganged rigs that require only the addition of a sinker and the bait.
5. Leaders/Tracers
   Leaders and tracers can range from very short 7.5cm long wire traces, often used for fishing for toothy fish (mackerel, shark, barracuda), up to long leaders for trolling, fly fishing, casting, and surf fishing. Traces generally come with a snap on one end and a loop or swivel on the other and are tied between the line and the lure or bait. Most leaders and traces are available in monofilament, wire and nylon coated wire in different strengths for different fishing.
6. Snaps or Swivels
   Snaps or swivels can vary from very small to very large and from inexpensive models on up to expensive, but better performing, ball bearing styles. Snaps are available with and without swivels attached. Swivels and snap swivels are particularly important for trolling and for fishing with any bait or lure that can cause line twist.

Spincast Tackle

Spincast reel, sometimes called closed face spinning reel, is one of the easiest type of reel to use. The line is released through a small hole in the nose cone of the reel. It comes out straight, unlike a threadline or a sidecast, yet allows the casting and fishing of lightweight lures and bait. All spincast reels are similar in that the line is held on a shallow spool within the nose cone. A pickup pin rotates around the front of the spool to pick up the line as it is retrieved. The reel fits on top of the rod handle and is cast using an action similar to that used with a baitcaster outfit. The handle can be single or double. It is almost always found on the right side of the reel, but some newer reels have right/left interchangeable handles. The drag system can be a simple drag, set by a small lever or knob on the top or side of the reel, or a star drag system as seen on bait cast and salt water reels. The anti-reverse lever or knob (slide lock) prevents turning the handle backward and forces the drag to control or slow outgoing line as a fish runs. The foot or rod mount allows mounting of the reel onto a spin cast rod.

Spincast rods are designed for fresh or very light salt water fishing and are very similar to casting rods. They include a similar low profile, off-set reel seat, and larger guides for the line, all on rods that vary between 1.4 and 1.8 metres in length. Most rods will be of medium power for casting 6 to 18gm lures. The easy release of line from the spincast reel makes casts with lighter lures possible.

Spincast tackle is best used for smaller fish in fresh water. It is ideal for spangled grunter, small catfish, bass, trout, jungle perch and sooty grunter. It is rarely used in salt water, but could be used for small estuary species. It is ideal as a beginner's or occasional user's tackle since there is no possibility of tangled loops that can occur with spinning tackle, or spool overruns (backlashes) that can occur with casting tackle. It can be used with lures or bait, and most modern outfits have a good drag system and sufficient line capacity to handle any of the above fish or similar species.

Casting Technique

The spincast rod and reel must be assembled properly, with the reel mounted securely on the reel seat of the rod. If the line is not visible, twist off the nose cone of the reel (see the instruction guide), pull the line through the line outlet in the nose cone, and reassemble. Next, thread the line through the guides. After the line is run through the guides, tie on a weight. A 6 to 18gm practice casting plug is best. Spincast lures are not really any different from any other type of lure. The light weight spincast outfit will best cast lightweight lures such as small jigs, spinners, tiny spinnerbaits, small plugs, top water lures, plastic worms and grubs, small spoons and small pieces of bait. Be sure to select lures that will cast well and are suited to catch the fish sought.

Threadline Reel

Threadline reels work on the same principle as spincast reels but do have noticeable differences. First, the spool is exposed. Second, the reel hangs underneath the rod and thus it has a slightly more comfortable feel and balance for a long day's fishing. Spinning reel spools, because they are not enclosed in a nose cone, have a much greater line capacity. The reel seat or the rod mount holds the reel onto the rod, mounted under the rod. The body of the reel holds the gearing necessary to turn the bail and to cause the spool to move in and out to lay the line on the reel evenly. The spool holds the line. Spool size varies with reel size, and line capacities vary from as little as 150m of 2kg test line to as much as 300m of 10kg test line. The handles on most threadline reels are interchangeable so that both right and left handed casters can use the same reel. The bail usually has a roller on which the line rolls as it is retrieved. This roller prevents line wear. The bail also flips open to allow casting. Bails automatically flip closed when the handle is turned. The drag of the reel is adjusted by knobs on either the front of the spool or rear of the body. The drag must be adjusted to less than the breaking strength of the line.

Threadline Rods

Threadline rods are usually longer and lighter than equivalent baitcasting rods. Threadline rods can vary from tiny 1.2m long ultra light to 2 – 2.5m boat models and 4m or longer surf rods. There are often finger grips on the reel seat, and all have large guides to help the loops or coils of line "funnel" down as they go through the guides. The reel hangs underneath the rod and the angler usually places two fingers on each side of the reel shaft.

Uses

Threadline outfits can be used for everything from ultra light fishing to trolling offshore for marlin and sailfish. Naturally, the right tackle must be chosen for the fish sought, and all parts of the tackle package - rod, reel, line and lure - must be properly matched.

Basic Spinning Lures

Basic spinning lures include just about any lure designed for casting. Hard-bodied minnow patterns, jigs, poppers, spinners, plugs, spinnerbaits, worms, spoons, buzzbaits and inline spinners are all easy to cast with any type of spinning tackle. It is important that the outfit match the weight and type of lure used and that the lure match the fish sought.

Sidecast Tackle

Sidecast reels work on the same principle as threadline reels when casting but do have noticeable differences. First, the spool is turned to the side when casting and is turned back in line to retrieve the line. Second, the reel hangs underneath the rod low down close to the butt of the rod. Thus it has a slightly more comfortable feel and balance for a long day of fishing. Sidecast reel spools, because they have large diameter spools, have a much greater line capacity.

Spool size varies with reel size, from 12.5cm (5 inch) to 17.5cm (7 inch) diameter, and line capacities vary from as

little as 150m of 2kg test line to as much as 300m of 10kg test line. The simplest models have the handles fixed to the spool and the drag is supplied by the angler's hand on the rim of the spool. Other models have a star or lever drag under the handle bar. The drag of the reel is adjusted by turning the star drag nut or shifting the drag lever. The drag must be adjusted to less than the breaking strength of the line. The drag model reels also have an anti-reverse mechanism.

Sidecast Rods

Sidecast rods are usually longer and lighter than equivalent threadline rods. Sidecast rods can vary from 2.4m long ultra light estuary rods to 4m or longer surf rods. There are often open runners just above the reel seat, and all have large stripping guides to help the loops or coils of line "funnel" down as they go through the guides. The first guide is usually about half way up the rod. The reel hangs underneath the rod and about one hand span from the butt of the rod. The angler usually guides the line on to the spool with one or two fingers to keep tension on the line and to spread it evenly on to the spool. .

Uses

Sidecast outfits can be used for everything from ultra light fishing to trolling offshore for marlin and sailfish, though this sort of use is not recommended. The sidecast outfit comes into its own as the best way to fish light soft baits with a minimum of sinker weight. The simplicity and ruggedness of the reels combined with the ease of casting makes them a favourite with serious surf and beach anglers. Naturally, the right outfit must be chosen for the fish sought, and all parts of the equipment - rod, reel, line and lure - must be properly matched.

LESSON 9

TACKLE TYPES ---- BAITCASTERS MULTIPLIERS, GAME REELS AND FLY

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LESSON 9

Tackle Types − Baitcasters, Multipliers, Game Reels and Fly Tackle

Lesson Objectives

Following this lesson students will:

1. Understand the uses of fly and revolving spool tackle.

2. Be able to cast with fly and revolving spool tackle.

3. Be able to identify the components of baitcaster and fly fishing tackle.

4. Know how to match correctly fly and revolving spool tackle for specific fishing conditions.

5. Know when to utilize fly and revolving spool tackle.

Materials for the Lesson

1. Several casting (revolving spool) rods and reels of different sizes and brands.

2. Several fly casting rods and reels of different sizes.

3. Several types and sizes of fly lines.

4. Practice plugs for casting revolving spool tackle and leaders and hookless bugs for fly casting.

5. Several different types and sizes of locally popular artificial lures and styles of flies and bugs for fly fishing.

6. Tin cans, hula hoops or other items to use as targets for casting practice.

7. Copies of graphics to use on overhead projectors or photocopies for individual students.

8. Any booklets, printed materials, or wall charts received from manufacturers.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
I. Introduction	1. Introduce class to the lesson objectives.
A. Tackle Differences	2. Baitcaster, multiplier, overhead reels and fly fishing tackle are often used by advanced anglers. Since the spool revolves in baitcaster and overhead reels, they are very different from threadline, sidecast or spincast tackle. They are much more difficult to use, even though new advances have made the equipment easier to use. Because of the revolving spool, anglers often experience "backlash" which is a result of the spool continuing to revolve after the line has stopped being taken from the spool. Fly tackle is probably even more difficult to utilize since the line is cast rather than the lure. Both types of tackle are excellent for many fishing situations, but they both require more practice for effective use.
B. Balancing Tackle	3. Balancing baitcaster and fly fishing tackle is just as important as for sidecast or threadline equipment. Balancing these types of outfits is very similar to balancing sidecast or threadline equipment. However, fly fishing equipment requires that the weight or size of the rod be matched to the weight or size of the line. Since the lures in fly fishing are extremely light, they really are less of a factor in balancing tackle.
II. Baitcaster and Overhead Outfits A. Reels B. Rods	4. Distribute the photocopied graphics to students and utilize overhead transparencies to show a baitcaster outfit. Discuss the specific parts of the rods and reels. During this procedure, the class can benefit from being able to pass around and examine balanced outfits that will later be used to practise casting. Stress that these types of reels are essentially winches to take in line. Discuss the parts of the reel at some length including the star drag, the cast control knob, magnetic drag system, and their uses to simplify casting and to lessen the possibility of backlash or line breakage while fighting fish. For advanced students the "flipping" feature should also be discussed. Inform the students that many larger rods and reels used for trolling and open water fishing operate on the same principles as the smaller baitcaster reels and rods.
C. Casting Techniques	5. Use graphics of proper casting procedure to discuss effective casting. The technique for baitcaster equipment is very similar to that used for spinning with the exception of using the thumb to assist in controlling the revolution of the spool. Demonstrate how to hold the rod and reel correctly, how to make the backcast, and the importance of the rod bending so that the lure will be propelled from the rod. Stress the importance of accuracy.

D. Uses

6. Baitaster tackle can be utilized for nearly all types of fishing and species of fish. It can be utilized for both fresh and salt water fishing, from piers and shore, as well as for trolling or jigging.

E. Lures

7. The variety of lures for baitcasters is limited only by the imagination. Lures come in all sizes, colours, and styles. They should be matched to the equipment, line size, and type of species sought. Examples can be passed among the students and effective lures for the local area can be discussed.

F. Line

8. Monofilament line is almost universally used for bait casting tackle, however an increasing number of experienced fishers are now using braided line because of its low stretch. When casting with a braided line, an angler usually uses a leader of mono, to separate the visible braided line from the lure.

III. Fly Fishing Tackle

A. Rods

B. Reels

9. Fly fishing is much different from other types because the line, rather than the lure, is cast. The casting procedure is more difficult for some people to learn. However, any angler willing to practise can become proficient. Distribute photocopied graphics from the appendix and utilize an overhead transparency, or fly rod and reel outfit, to acquaint the class with the parts of fly fishing tackle. Note the difference in the reel, which is used primarily as a line holding device. There is a big difference between this and other types of fishing reels. Note also the length of the rod, which is much longer than those used in most other types of fishing. Discuss the rod sizes and the "coding" which indicates the power of the rod and the line size that should be matched to the rod.

C. Fly Line

10. Fly lines vary in shape. They are made with a plastic coating over a braided core and are made to different tapers. Use an overhead transparency and distribute photocopied graphics to students so that they can see the differences. Discuss weight forward, double taper, level, and shooting taper line and those that are used in your area. It is also important to discuss the reasons and uses of each type, which include floating, sinking, and those with a sinking tip, along with the use of leaders and why they are important.

D. Lures

E. Uses

11. Lures for fly fishing are small hand-tied flies and bugs. Flies are tied for specific fish and can be broken down into the categories of: dry flies (floating), wet flies (sinking), nymphs (imitate underwater insects), streamers (imitate minnows), and bugs (lures made for bass and saltwater species). Use graphics and overhead transparencies to illustrate and pass examples around the class.

F. Casting Technique	12. Move the class to an area where casting can be performed. Distribute equipment. If you have an assistant, one can concentrate on fly casting and the other on regular casting tackle. Without an assistant, practise casting with one type of equipment at a time. First demonstrate the proper technique, and then have the students practise. Keep the group small; 3-5 students, so that they can receive individual assistance, with the balance of the class watching, and learning from your comments. Stress again the importance of accuracy and safety. Continue until everyone has an opportunity to practise with both types of equipment.

INTRODUCTION

Fly and baitcaster tackle are both highly effective fishing tools for a wide variety of fish. Both are generally used by more advanced anglers since both do require a higher level of skill than do threadline or sidecast outfits. Fly and baitcaster tackle are markedly different to use, yet both can be mastered by any angler with patience and practice.

NARRATIVE

Baitcaster Tackle

A baitcaster reel differs from threadline or sidecast tackle in that the spool of the reel revolves while the cast is being made. This often results in overruns of the line during or at the end of a cast. These overruns are called backlashes and have caused many anglers to avoid this type of tackle.

Modern reels have added some new developments that help prevent this from happening, and thus make it possible for any angler to master this gear. In addition, modern lightweight materials and tooling methods have resulted in reels with light weight spools that, together with light lines, make it possible for very light lures to be cast. In some cases, baitcasters can cast lures as light as those cast with threadline tackle. Also, baitcasters can frequently cast lures as far as spinning outfits. As with any fishing outfit, the gear should include a properly balanced and matched rod, reel, line and lure combination. The outfit includes:

Reel

Baitcaster reels are essentially winches, in which the spool revolves to take in line. The frame of the reel is the part that holds the spool in place and, in turn, holds the handle and the various control levers and buttons. The frame usually consists of two side plates and several posts or pillars which connect and hold these side plates together. In some modern reels, the frame is moulded in one piece, usually of a graphite fill (resin) material. The foot is that small plate on the base of the reel that is used to secure the reel to the reel seat of the fishing rod. Handles can be single or double grip, with the single grip usually counter-balanced with a weight to prevent chattering of the reel when the handle is turned rapidly.

The drag is the brake of the reel, designed to slow the line and tire the fish as it runs. The cast is controlled by an adjustable knob found on the sideplate in line with the spool axle. Adjusting it slows the reel spool during the cast. This "centrifugal" brake helps prevent overruns or backlashes. This is one of several casting control systems found on most reels and should be adjusted according to the weight of the lure or bait cast. Magnetic cast control is usually located on the left side plate of the reel and consists of an adjustment that controls the positioning of magnets in relation to the spool. This control helps to slow the cast at the end as well as to prevent backlashes. The magnets create an electromagnetic field that slows the aluminum spool or spool flange. The free spool control can be a small push lock button or a thumb-controlled bar or knob.

Almost all modern baitcaster reels have level wind mechanisms. The level wind works off a gear and pawl arrangement that tracks back and forth in front of the spool thus laying down the line evenly on the spool. Level winds usually disengage when casting, except on the larger models where they continue to operate whenever the spool revolves.

Multiplier or Overhead Reels

Many conventional overhead multiplier style reels (revolving spool) work on exactly the same principle as the baitcasters. These larger reels do have some differences in that they lack level winds and cast controls, and may have lever drags. The lever drag functions in the same way as a star drag except that simply pulling the lever backwards instantly changes the reel from standard operating method to one in which line can be let out from the reel. These large

reels are seldom used to cast, but are most commonly used for trolling.

Game Reels

These are the largest and most costly reels built for extreme strength, with some differences. They lack level winds and cast controls (they are not cast anyway because of the heavy super strong spools). They have special, more sophisticated, lever operated drag systems, and in some cases have low and high range gear ratios.

Rods

Baitcaster rods differ from spinning rods in that the reel is held on top of the rod and the guides of the rod are on top. A finger grip or trigger allows for a more secure grip on the outfit. Features and parts include the handle, which consists of a reel seat to hold the reel and a grip by which the rod is held. Reel seats often clamp the reel foot in place by means of a small screw operated plate. The junction of the grip and the reel seat has a trigger for the index finger. Small guides are located on top of the rod. Large guides are not needed since the line comes straight off the reel.

The length of most rods range from about 1.5 – 1.8m although saltwater and specialized jigging rods can be as long as 2.4m. Surf rods fitted with similar but larger casting reels will be as long as 4m or more with long butts so that the angler can spread his shoulders to get maximum power in his casts. Game rods have long butts and fore grips to give leverage against the fish and, in some cases, sets of roller guides to reduce line wear.

Monofilament line is almost universally used for baitcaster tackle, although experienced anglers are now using braided line because of its strength and low stretch. Modern reels are designed to be used with monofilament line that makes attachment of lures, baited hooks and other riggings very easy. When using braided line, an angler must add a leader of mono to the end to separate the visible braided line from the fishing lure or bait.

Casting

Casting with a baitcaster outfit uses the same principles as when casting with any rod/reel outfit. The rod performs as a leaf spring to propel the lure to the target. Set the drag on the reel so that the line will not slip (about 25 –33% of line strength). Reel in the line to within 30cm of the tip. Set the cast control knob on the side plate of the reel until the weight of the lure will barely pull line off of the reel, with the reel in free spool. For a first cast, adjust the magnetic cast control to the maximum setting (usually a high number). Turn the reel to the side so that the handles are pointing straight up for right-handed casters or straight down for left-handed casters. Place the reel in free spool by pushing down on the thumb bar or push the button release, holding the spool with the thumb. For best results, place the thumb in the corner of the spool and aim the tip of the rod at the target.

Baitcaster Uses

Baitcaster outfits are very versatile for all types of fishing. With ultra light outfits, it is possible to cast with lures as light as 4 grams. Heavy outfits can be used for casting heavy 80 gram plugs for giant trevally, barramundi, murray cod, black bass, mulloway, kingfish, sharks, and barracuda. While this type of tackle is designed for casting, it can also be used for trolling, deep jigging (fishing vertically with heavy lures) and still fishing (fishing deep with bait, or bottom fishing).

Baitcasters are often the outfit of choice for fresh water bass fishing and is also good for yellowbelly, trout, sooty grunter, carp, and catfish. In short, except for stream trout where fly rods are used and in rivers where threadline tackle is often a must, due to the small lures used, there is no fresh water fish that cannot be caught with casting tackle.

Baitcasters also work extremely well for a variety of saltwater applications, including just about all inshore fishing; surf, pier and rock fishing (with

specialized long rods); fishing with bait or lures; vertical fishing over tropical reefs; and some light boat trolling. Often special rods with a longer rear grip are used for trolling or while downrigger fishing, since these will be more secure in standard boat rod holders.

Basic Lures

Lures for baitcasters include anything that is of the right weight range to be easily cast. They include hard bodied minnow patterns, poppers, metal lures, spinnerbaits, buzzbaits, in-line spinnerbaits, jigs, weed spoons, structure spoons, trolling spoons, trolling lures, worms, and soft plastics.

Fly Fishing Tackle

Line

In all other discussions of tackle, the rod or reel has been discussed first, followed by the line and lures. In this case, starting with the line is for a very definite reason. It is the line which is cast in fly casting and, as such, is important to the casting and fishing technique.

The rod is important in propelling the line. The reel is relatively unimportant except as a storage spool for extra line. However, this is not true in fly fishing for large fish since the fish is played from the reel when sturdiness and a good drag are as important as they are for any reel.

In flyfishing, the weight of the line is cast. The fly does not have any appreciable weight and is carried along with the line. This method of casting, "throwing" long loops of line back and forth in the air until the target area and distance are reached, makes fly casting very different from other casting methods.

Fly lines vary by their construction and shape. Since lines are made with a plastic coating over a braided core, they can be adjusted to different shapes or tapers. Lines, which have the same thickness from one end to the other, are called level lines. These lines are inexpensive and suitable for the beginner and simple fishing. Double taper lines are identical at each end and become thinner near the ends, tapering down over a couple of metres to a short (1 metre) level section at the very end. Double taper lines are more expensive but do allow for the more delicate presentation of a fly so that the thinner end will land more delicately on the water.

Weight forward tapers have a thick "belly" near the front of the line, a sharp taper ending with a short, level section (only a metre), a longer taper and long thin level section (running line) at the reel end of the line. These lines, also more expensive than level lines, are best for casting bigger flies and bugs the longer distances. They are most often used in bass bugging and saltwater fishing.

A final type of line is a short, usually 10 metre long “shooting head". This is like the weight forward designed for long distance casting, and must be attached to a long running line of thin dacron, GSP braid or mono. Slight variations of all these lines by different manufacturers are common.

Lines also vary in their ability to float or sink. The vast majority are designed to float, because most fly fishing is close to the surface. In addition, lines that have neutral buoyancy (suspending just under the surface), slow sinking ability, and medium and fast sinking speed are all available in most line types and styles. They allow fly fishermen to fish and reach different water depths with flies.

A final variation concerns those lines in which the fishing end sinks while the rest of the line floats. These are made for fishing deep while still allowing for easy casting. A line that sinks completely is much harder to get out of the water or to pick up for a second cast than a floating line. These can also vary in the amount or length of the line that sinks.

All of these lines are labeled with the following simple code that explains these differences:

WF: weight forward DT: double taper
L: level ST: shooting taper
Number 3 through 12: weight of the line
F: floating S: sinking
F/S: floating/sinking

Thus, a line label would look like any of the following examples:

WF7F: weight forward-7 weight-floating DT4F/S: double taper-4 weight-floating/sinking L6S: level-6 weight-sinking STIOS: shooting taper-10 weight-sinking

The best line for most fishing is the weight forward floating line in the line size suited and matched to the rod. All fly lines are strong since they are constructed on a braided core and much stronger than the leaders that are used with them. This is why the breaking strain of a fly line is never listed or important. While most fly lines are about 30m long and long enough for any cast and most fishing, many anglers will add a backing to the line for insurance against long runs. The backing goes under the line and is tied to the reel at one end with the back of the fly line at the other.

Those using shooting tapers will also need a shooting line attached to the end of the shooting taper. These are similar to thin level fly lines.

Leaders

Because the thick fly line can not be threaded through the eye of a hook or fly, and because it would also scare fish, a thin long mono leader is used. Most leaders are tapered, just as most lines are tapered. The tapering of the leader, from a heavy end (often about 15kg test) to a "tippet" of 1 to 4kg test (based on the fly and type of fishing), allows a smooth transition of energy to uncoil (turn over) the line/leader at the end of the cast.

Leaders vary from 2m to 4m for most fishing and can be bought tapered, or tied at home using short lengths of standard mono. Short leaders of about three feet are used when fishing sinking lines since long leaders will prevent the fly from going deep.

Knots

As many connections are required in the lines and leaders (backing to fly line to leader to fly), special knots are used.

Rods

Fly rods vary from other rods in many ways, though the principle of a lever or leaf spring to propel the line/lure remains the same. Because the line is cast with a fly rod, the best action is one that is often called parabolic, i.e. bending smoothly from the tip to close to the grip. Rods with fast tip or fast taper action will not cast a line well. Fly rods vary in strength and power (corresponding to the weight of the fly line being used) and also length. Most rods range from 2.2m to 3m in length. As a result of their length, most are two-piece. The ree1 seat is placed below the grip to keep the reel out of the way, and the rod is held so that the guides are under the rod.

Ferrule

Almost all fly rods are two-piece and the joint of these parts is called a ferrule. Most rods today have ferrules built into the design of the rod blank so that parts of the blank fit together without the need for the heavier metal ferrules used in the past.

Reel Seat

These are at the very end of the rod and similar to reel seats of other rods, with the addition of a closed end or hood at the butt. An exception to this would be for larger rods that take a slide or screw in the extension butt, designed to assist in fighting large fish. Many fly rod reel seats are beautifully designed with fancy wood inserts and well-made barrels and hoods.

Grip

The grip on most fly rods is composed of cork and of a shape that is comfortable to hold. Hypalon is too heavy and allows the rod to twist in the angler's hand while casting.

Hook Keeper

This is a small fixed or loose ring just above the handle, and is there only to hold the hook of the fly, or bug, when it is not being used.

Guides

Guides are either single foot synthetic ring guides, or snake guides. Various sizes and finishes are available. To aid casting, rods also have one, two or three larger ring "stripper guides" at the butt end of the rod.

Fly Reels

Reels are usually simple storage spools to hold the line. Three basic styles are available. The single action reel is simply a spool in a frame. It is called single action since the handle is built on the spool; one turn of the handle causes one turn of the spool. Most fly reels are like this. The multiplying action reel is similar except that it has internal gearing so that one turn of the handle causes several turns of the spool. Most have a 2:1 or 3:1 gear ratio. The automatic reel has internal springs and gearing along with a trigger level to cause the spring to retrieve the line automatically. Ratchet controls adjust the spring tension.

Reels come in different sizes to hold different size lines. Some large reels are designed for big game fishing and large fish and have highly sophisticated drag systems built in. They are more expensive than most fly reels. Parts of a single or multiplying action fly reel are the frame that includes the rear plate, and the pillars or posts holding the outer rim. The spool fits into this rim and frame. The foot holds the reel on the fly rod reel seat, and the spool has a wide, narrow shape, allowing adequate line retrieval with the single or multiplying reel. The single action reel also has a handle built into the edge of the spool. Line stripping guides are nothing more than highly polished bars or a ring through which the line passes. They prevent line wear. Drag adjustment can include levers or knobs and can be found almost anywhere on the reel, including the spool shaft, the rear frame plate or the frame lip. It allows for adjustment of the drag that acts as a brake as the line goes out when a fish runs.

Basic Lures

Lures for flyfishing are small, hand-tied flies and bugs. Flies are tied for specific fish (trout, bass, saltwater species) and can be broken down into basic categories as follows: dry flies that imitate floating insects such as mayflies are designed primarily for trout. They float on the surface. Wet flies are soft and webby and sink. They can imitate underwater insects or land based insects (ants, crickets, etc.). Nymphs usually closely imitate underwater aquatic insects. Streamers are long flies tied on long shank hoods and imitate minnows and bait fish. Most have feathered wings. Similar style bucktails use fur in the wing.

Bugs are floating fly rod lures usually made for larger fish such as bass, tarpon and many saltwater species. They are most often tied with a bulky body of cork, floating plastic or rubber, and have a tail or wings of feather hackle or fur. Hair bodied bugs of hollow hair (deer hair) so that they float and are hand tied, are also popular among some fly rod fishermen.

Fly Casting

Fly casting does not involve the reel, but does actively involve the rod and line. To practise fly casting, one does not need a fly, but should have a leader tied to the end of the line. A fly with the hook cut off or a small knot of wool yarn works fine as a fly substitute.

Begin by assembling the reel on the fly rod. Make sure that the line guides are facing forward and the handle is on the correct (usually right) side when holding the rod. Run the line through the guides.

At this point, it often helps to lay 3 or 5 metres of line/leader straight out in front of the rod.

While the principles of casting are similar to that of other tackle, the application is completely different. Some of the major differences include the following:

1. The line is cast rather than the lure.

2. The rod must pause between the two segments (front to back and back to front) of the cast.

3. Both hands are used (one for rod control, one for line control) to make a proper cast.

To cast with a fly rod, begin with the line out in front of the caster with the rod held at 9 o'clock. To make the cast, grasp the rod with one hand (usually the right hand) and the line (above the reel scat) with the other (left) hand.

To make the back cast (propelling the line to the back of the caster), both hands are used. Raise the rod to a 1 o'clock position, gradually accelerating the rod and stopping smoothly, but abruptly, at 1 o'clock. At the same time, pull back on the line with the other hand to accelerate the line and help make the cast. Pause at this point in the cast. Properly done, the line will flow back in a smooth loop or arc until straight behind. At this point, begin moving the rod forward, again gradually accelerating as the rod is pushed forward through the air, changing the position of the rod from 1 o'clock to 11 o'clock. Push the rod forward until the hand is completely extended, then turn the rod down (to a 9 o'clock position) to make the loop of line to open and turn over, causing the line to float down and the fly or bug to land delicately on the water. As the rod comes down to a fishing position and the line straightens out, release any slack line from the line hand to increase casting distance. Once the fly has landed, keep the hand on the line to begin retrieving.

Common faults of beginners include the following:

1 .Bringing the rod back too far. This will drive the line down on the ground or water and "kill" the backcast.

2. Bringing the rod forward before the loop of the backcast has properly opened up. This will not allow the energy of the forward cast to propel the line and will cause a "crack the whip" effect.

3. Not accelerating properly during the backcast or forward cast. An even rod movement will cause a wide line loop, which will not allow maximum distance or accuracy.

LESSON 10

BASIC TACKLE , BAITS, LINES, KNOTS AND HOOKS

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LESSON 10

Basic Tackle , Baits, Lines, Knots and Hooks

Lesson Objectives

Following this lesson students will:

1. Know what basic tackle is, its purpose, and how to use it.

2. Know the important characteristics of fishing line.

3. Be able to tie several fishing knots.

4. Know how to select hooks for fishing.

5. Be aware of basic salt and fresh water baits and how to hook and use them.

6. Know how to sharpen hooks.

7. Have a basic understanding of berleying.

Materials for the Lesson

1. Examples of several different types of line. Individual spools of monofilament for each student, at least enough for each student to be able to tie several knots.

2. Knot and hook booklets, ordered from companies in the appendix.

3. Several lengths of clothesline rope, enough for students in pairs to practise knot tying.

4. Several eye bolts to simulate the eye of a hook for knot tying.

5. Examples of the many sizes, styles, shapes, and finishes of hooks.

6. Files and hones to demonstrate hook sharpening, and some very large hooks for the same purpose. Several pairs of needle nose pliers to hold hooks during sharpening.

7. Examples of bait used in the local area.

8. Photocopies and overhead transparencies of appropriate graphics from the appendix.

Much of this lesson will be "hands on" work for the students. If the class is large, the use of a volunteer is suggested to assist students with tying knots and hook sharpening. Again, stress safe handling of the hooks.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
1. Introduction	1. Introduce students to the lesson objectives.
11. Basic Tackle, Lines, and Knots A. Basic Principles B. Knots for Hooks and Swivels C. Line to Line Knots	2. Lead a brief class discussion concerning the items classified as basic tackle and the importance of these items in fishing. The students should understand that these items determine whether or not a hooked fish is landed. The importance of sharp hooks, good swivels or snaps, quality line, and well-tied knots cannot be overestimated.
D. Specialty Knots E. Splices	3. Discuss the characteristics of good fishing line. Line is the only connection between the angler and the fish. Good quality line will make fishing a more pleasant experience and will increase the percentage of hooked fish that are landed. Monofilament line is the most widely used today, but there are numerous special lines including braid, lead core, fly line, and "line class" (pre-tested) line. If the class is young or inexperienced, concentrate on the monofilament. If it includes experienced anglers, discuss other specific lines based on their needs and local use. 4. Distribute the lengths of rope, monofilament line, eye bolts, pliers, and photocopies of those knots that will be learned. Using your transparency and a length of line demonstrate how to tie the clinch knot. After the students can tie this knot, move to the improved clinch. After practising with the rope, have each student tie these knots with monofilament line directly onto a regular hook. With advanced students, several other knots of your choice can now be taught. The blood knot can also be taught to beginning students. This knot is used to join two pieces of monofilament together. Encourage students to practise these and other knots shown in the booklets received from the manufacturers.
III. Hooks and Bait A. Hooks and Sizes B. Hook Parts	5. Using the photocopies and the overhead transparencies, discuss fish hooks. The different sizes of hooks should be noted for use with different species and sizes of fish. Distribute single, double, and treble hooks and discuss how these can be used to hold bait or artificial lures. Again, using the visual aids discuss the parts of a hook and how different styles of hooks differ in some of these areas.
C. Sharpening Hooks	6. Distribute hook files and hones. Discuss the importance of using sharp hooks and the fact that most hooks need to be sharpened before being used. Show students how to determine if a hook is sharp. Tell them to scrap their fingernail carefully with one of their hooks. Dull hooks will slide easily across the nail, but sharp hooks will begin to penetrate the nail with very little effort. Discuss hook sharpening using the overhead and then demonstrate. Hold a hook with the needle nose pliers, sharpen one side of the hook and then the other. After filing both sides, sharpen the bottom of the hook. This provides a very sharp hook. Have

students test their sharpened hook on their fingernail. Caution them to be very careful.

D. Bait
1. Fresh Water
2. Salt Water
3. Attaching Bait

7. Lead a brief discussion of common fresh and saltwater baits used in your area. These can include live or preserved baits such as pilchards or prawns. Discuss the importance of using bait that is similar to the food that the fish normally eat. Distribute the baits to the class one at a time. As each is distributed, demonstrate methods of attaching it to the hook and then let students practise. Worms, various baitfish, yabbies, pippies, prawns, and others are suggested for use. If fresh water fishing is popular in your area, earth worms, shrimp, mussels, and others can be utilized.

E. Berley

8. Explain to students that fish use their senses of smell, sight, and sound to located their bait. For those fish that rely heavily on their sense of smell, berleying is often used to attract them to the bait. Berley is spreading finely ground bait in a fishing area. This works well where there is a slow current or tide.

INTRODUCTION

No matter how good and expensive a rod and reel are, or how expertly they are used, the fishing equipment is only as good as the combination of line, sinker, float, hook, lure and/or bait. The simplest error, such as the wrong hook, improper hook size, dull hook point, wrong size line, incorrect sinker or poor rigging, can result in no fish and a poor fishing experience. Equally important as the selection of this basic tackle, is the understanding of these choices of tackle and why different lines, hooks, floats, sinkers and rigs are used.

Good knot tying procedures are also important since a poorly tied knot will be too weak. A few good knots must be mastered in the areas of line-to-line connections, making up rigs, line-to-lure (or hook) connections, along with some special knots. Just as hooks and basic tackle are important, so are the proper bait and its use for all types of fishing. Some baits are used whole, and others are prepared or cut up for the best fishing success.

Berleying is a technique used in many salt water and fresh fishing situations to help attract fish to the bait and hook. Berleying basically involves the use of fish food parts or ground up attractants.

NARRATIVE

Lines, Knots and Connections

It is obvious that fishing line is the only connection between the angler and the hooked fish. Fishing line must be strong, thin, have good shock strength, good tensile strength, good knot strength, be limp to cast properly, and hopefully, be invisible to the fish.

These characteristics are best suited by monofilament nylon fishing line, by far the most widely used line available today for all fishing. Mono, as most fishermen call it, has all the good line characteristics listed above. It is ideal for almost all casting, trolling, still fishing, drifting and other fishing, using boat, trolling, surf, threadline, sidecast and baitcaster outfits.

Other lines are also available, including braided Dacron or Gel Spun Polymer line, often used for trolling for big game or when little line stretch is desired. However, gel spun polymer braids do not have good knot strength compared to the same knots that work well for mono. Thus, special knots must be used.

All line comes in varying strengths (test or breaking strain) and spool sizes. Strengths can vary from as little as 1kg test up to 100kg test line. Typical "tests" for monofilament would include 2kg through to 100kg, with 3kg – 10kg probably the most popular. In addition, some heavier tests are also used, but primarily for special fishing conditions or as leaders for big game fishing.

Spool sizes range from as little as 100 metre spools to large service spools of 6,000 or more metres. The latter are primarily used by stores for filling customers' reels, or by heavy users, such as clubs, record seeking fishermen (who often change line with each fish caught) or big game anglers. Most anglers use spools containing 250 to 600 metres of line. Most line used by fishermen is designed to break at not less than the line strength marked on the package, while "class line" or pretest line is directly different, being designed to break under the line strength marked.

Some anglers like to fish for record fish, usually in "line classes" specified by the Australian National Sportfishing Association or the International Game Fishing Association or a cooperating tournament. Line samples must be submitted when records are entered. A line too heavy for one class will push that entry into the next higher class. Consequently, a 10kg "class" or pretest line for use in a 10kg record category cannot test more than 10kg wet strength. Thus, all "class" line is slightly weaker than the label listing.

Line colour is also important to prevent the fish from spotting the line. Most monofilament lines are designed to "disappear" in the water, although the best colour or shade is the subject of much debate. Water, bottom and turbidity conditions can also affect the colour choice. Some bright coloured lines are popular, primarily because they can be seen by the angler. Bright lines are best seen and used by lure and trolling anglers, since the line helps to indicate the position or location of the bait or lure.

Braided lines cannot be made transparent or translucent as can mono, but often like wire, leaders are chemically treated to make them green, black, brown or coffee coloured, rather than the bright white colour. Also, mono leaders are often used between the braided line and the lure or bait. Dacron and gel spun polymer lines are often used with mono leaders, both for knot tying ease and for their relative invisibility.

Fly lines are completely different because the line is not designed for strength. Instead they are designed for a weight and diameter that allows casting. Fly casting is really fly line casting, with the fly carried by the line. Fly lines are strong since they are made of PVC plastic on a braided core that usually tests about 15kg. The lines come in level, double tapered, and weight forward styles. The double taper has a thick centre section, or belly, that tapers at each end. The weight forward taper has front taper, short belly and long thin level rear section of line. Fly lines can be bought in floating, slow sinking, moderate sinking and fast sinking types, with special lines also available for certain fishing applications. Most lines are about 27.4m long. For more details, see Lesson 9.

Tackle Selection-Casting and Fly Outfits

Leaders are often used in fishing. A leader is nothing more than a short length of connecting material between the line and the lure, or hook. Leaders are used with fly lines to keep fish from seeing the heavy, thick fly line. Also, fly line is too thick to thread through any fly. The tapered leaders also help to transmit the energy of the cast properly to straighten (or "turn over") the fly for presentation to the fish. Mono leaders used with Dacron line or GSP (gel spun polymer, super braid) line helps to separate the line from the lure. Mono leaders are used for the same reason, even when fishing with mono line when a trolling sinker, planer (diving plane), downrigger or other gear is used.

Shock leaders are heavy leaders used to prevent fish from cutting off or breaking off; they are also used to protect against the strain of a forceful cast. These leaders, originally meant to prevent line breakage on a surf cast, can be of heavy mono, wire, or braided wire and range from several centimetres to many metres long. To prevent cutoffs, they are used for mackerel, wahoo, barracuda and similar species. To prevent fish from rubbing or wearing them off, they are used when fishing for billfish (marlin, and sailfish), whose bills can run through a light line, and for species such as shark which frequently rub their rough bodies against a leader or roll up in it.

Terminal knots are used to tie a line or leader to a hook or lure. Good knots must be easy to tie, have a knot strength that approaches the strength of the line (90 percent or higher), and hold without slipping. Good knots for line-to-hook fastening include the locked blood knot, the palomar knot, the trilene knot and the uni-knot system.
Line-to-line connections (knots) are required when making tapered fly leaders, tying shock leaders to line, tying fly line to leaders, tying fly line or other line to backing line and similar connections. Good knots must be easy to tie, small (to flow through guides if required), and strong. Good connections include the blood knot and the uni-knot system.

Specialty knots include those in which some special characteristic is required, such as a loop knot to allow lures to move freely, a knot to connect heavy shock leader to light line, and knots that must be one hundred percent strong for record and light tackle fishing. Loop

knots do not generally have good knot strength but are easy to tie when using the Uni-knot, Rapala knot, or Homer Rhodes loop knot. Connecting lines of dissimilar thickness is difficult; however, the Albright and surgeons knots are two examples that work. One hundred percent knots include the Spider hitch and the Bimini twist, with the Bimini the surer knot.

Splices are necessary with wire and are often used with braided line. With the hollow braided line, a special splicing needle is used to make splices to connect lines and make loops. Wire requires special loops and twists, including the figure 8, flemish eye, haywire twist and barrel roll for terminal connections.

Hooks

Hooks have one purpose - to hook and hold the fish. There is an almost endless variation of sizes, added bait fasteners, point styles, bend types, shank shapes, shank lengths, wire thickness, eye types and finishes. Popular styles have names such as French, Perfect, Kirby, Carlisle, Suicide, Wide Gape and Circle, in addition to manufacturers' stock numbers.

Basically, hooks come in single, double and triple (treble) points. They come in a number of basic styles, with each style having a special name or stock number by which it is known. Hook sizes seem confusing but range from size 22 (very small for fly tying) through to size 1 in even sizes (22, 20, 18, 16, 14, 12, 10, 8, 6, 4, 2, and 1). Larger sizes range from 1/0 (smallest of the 10 sizes) through to size 16/0 in both odd and even sizes. Each particular style of hook has its own shape, shank thickness, shank length and point style, with changes in hook sizes incrementally and proportionally changing through these dimensions.

In addition, there are hook variations as follows: *Points* can be straight or curved, barbed or barbless (for use on special waters where these are required). *Bends* vary from the half round shape (perfect) through odd shapes, often a characteristic reflecting the particular name of the hook. Bends, such as the kirbed, usually forged, can also be twisted sideways so that the point is not in line with the shank, (pointing left with the hook up and facing the angler) and reversed or offset (bent in the opposite direction). In addition, some modern hooks have in the shank similar offsetting bends that cause a turning or camming movement (for better hooking) when in the fish's mouth.

Shanks can be round or flattened slightly and forged in the bend for strength. Shanks can also be shorter or longer or stouter or thinner for a given style of hook. *Eyes* can be ball (a round eye), tapered (used primarily for fly fishing in which the wire of the eye is tapered), and needle eye (formed in the shank for high strength and used for offshore, big game hooks). Some styles used for snelled hooks (hooks fastened to a short length of mono for adding to a bottom rig) do not even have eyes. Instead they have a ball or swelling on the end of the hook shank to prevent line slippage.

Bait holders on hooks vary widely. Some include springs on treble hooks and safety pins on single and double hooks. The most common are slices on the shank of single hooks to prevent bait slippage. Finishes on hooks vary from bronzed to black to blue and special finishes such as nickel and cadmium plating. Some hooks for saltwater use are solid stainless steel to prevent or reduce corrosion problems. Stainless steel hooks are up to 25% weaker per wire diameter than carbon steel hooks but cause the lowest death rate in fish if breakoff occurs, according to trials conducted in the United States. Special hooks include almost round shaped tuna hooks, open eyed hooks designed for ganging, and long shank, needle eye double hooks, designed to be threaded through a baitfish.

Some hooks today are chemically sharpened or rotary honed by the manufacturer. However, all hooks become dull and must be sharpened. Curved point hooks must be sharpened with a round or half round file or stone. Hooks with straight points should be sharpened with a flat stone or file, flattening both sides and the base into a

triangular shape for easiest penetration with maximum strength. Special hand files, stones and diamond embedded sharpeners are available for field use, with electric sharpeners made for home use. Sharpening should be carefully done since all hooks can be dangerous.

Bait

Baits can be animal or vegetable in a biological sense including worms, pilchards, shrimp, baitfish, yabbies, algae (black fish weed), dead or cut up baits, non-natural foods eaten by fish, including corn and dough balls, and prepared baits. To be effective, baits must reflect the natural foods of the fish sought. Thus, insects are often used for trout, minnows for bass, and dough balls and corn for carp and catfish. Baits can range in size from a tiny insect threaded on a hook to a large, metre long, spanish mackeral for trolling for big game marlin.

Typically, baits and their preparation can be broken down into fresh or salt water as follows:

Freshwater Baits

Worms of all sizes are used for fishing since most fish will eat them. Worms range in size from large African night crawlers to small tiger worms. To be effective as bait, worms must be kept cool and moist, but not wet. In most cases, a single worm is best threaded back and forth on the hook. Small fish are best taken using a small hook and only a piece of worm, while large fish are best attracted by several worms or multiple hooks, each with a worm.

Baitfish

Baitfish can be trapped easily in most waters. Baitfish include various gar, herring, and other species. A live bait bucket is a must to keep baitfish for fishing. Hooking methods include running the hook through the lips, hooking through the back at the dorsal fin, and running the line through the mouth/gills with the hook in the tail. Dead minnows are often fished with the hook run through the body while trolled minnows are often wrapped or sewn on the hook.

Land Insects

Land insects are also hooked through the body or wired on the hook using fine copper wire. Typical insect bait includes grasshoppers, crickets, various grubs and maggots, wood worms and caterpillars.

Water Insects

Water insects such as Mudeyes (dragonfly larvae), larvae of caddis and mayflies are also good bait. Mudeyes are hooked through a thorax collar. *Crayfish* are also good bait, especially for yellowbelly and bass. Good hooking methods include hooking through the tail or just using the tail as bait. Shrimp used alive or dead are one of the most effective baits in fresh water. Other baits for fresh water fishing include, dough balls and kernel corn for carp; clams and mussels for catfish and carp; and cut bait consisting of cut up fish parts for bottom feeding fish.

Saltwater Baits

Sea worms can be gathered from surf beaches or from tidal mud or sand flats in the more sheltered waters of bays or estuaries. They can be used whole or in pieces threaded on to the hook. A couple of beach worms threaded onto a 4/0 hook makes a great bait for mulloway and pieces of wriggler worm on a number 4 hook is an ideal whiting bait.

Various shellfish such as pippies and cockles removed from their shell and then threaded onto the hook are great bait for fish such as dart, whiting and bream in the surf. Small cut up pieces used on smaller hooks for small *fish.* Yabbies pumped from the sandflats in most estuaries are great bait for almost any fish in the estuary and work well on reef fish over shallow inshore reefs. Squid can be sewn onto a hook as a trolling bait for bigger fish or cut into small pieces to be threaded on to a small hook as bait for smaller inshore fish. Strips of fish and squid are also used for trolling and bottom fishing. Octopus is used in a

similar fashion. *Crabs* are used whole when fishing for parrot, cobia, drummer, and blackfish, or can be cut into small pieces (usually quartered) for fishing for smaller fish. Small pieces of legs of shedder or soft crabs are also used for small fish. *Shrimp or prawns* can be used live or dead, hooked through the tail, or cut up into small pieces and threaded on a hook, after the shell is peeled off to make it more attractive. Baitfish and minnows include mullet, gar, pilchards, herring, yellow tail, and other similar species, which are usually hooked through the lips, sewn onto a hook, or cut up into pieces for use as bait. Small tuna are typically cut into chunks for bottom fishing or into strips for casting or drifting. Large baits for trolling include Slimy mackerel to Spanish mackerel, dolphin, rainbow runners, striped tuna, albacore, 3 by 2 gar, wolf herring and other ocean species.

Berleying

Berleying is a method of broadcasting finely ground bait or attractant in a fishing area in an effort to attract fish. Berleying is done in both fresh and salt water. The purpose of berley is not to feed the fish, but to attract the fish. The berley is finely ground up or mixed with sand, pollard, grain or oatmeal to spread the bait. Typical berley could include scattered corn or a doughball when fishing for carp or mullet, ground soldier crabs for fishing for whiting, or ground up pilchards to lay down an oil slick to attract tailor, tuna or mackerel. Some fishermen are using even the currently popular lure scents as a "berley" to attract fish or make them more interested in feeding. Good berleying usually takes place in still waters for bottom feeders or waters with a slow current or tide to attract fish to the fishermen. If the angler is working with a current or tide, a constant release of berley is necessary. Any break in this release will interrupt the scent trail (back to the anglers) that the fish follow. Best baits include the same baits as the ground up berley, although some anglers will use a berley to attract the fish, taking the fish on lures or flies. The most effective fishing occurs with a bait drifted in with the berley.

LESSON 11

LURES

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LESSON 11

LURES

Lesson Objectives

Following this lesson students will:

1. Recognise different types of fishing lures.

2. Understand the role of action, colour, scent, size and pattern in lures.

3. Understand the response of fish to lures; aggressive, feeding, protective, and reacting.

4. Understand how to fish lures effectively.

5. Know how to store fishing lures.

Materials for the Lesson

1. A number of different lures including hard bodied minnow patterns, spinners, spinnerbaits, buzzbaits, plastics, jigs, spoons, flies, and any others locally popular.

2. There are numerous graphics of lures in the appendix. Have photocopies of several available to distribute to students as well as overhead transparencies for your use.

3. If possible, have a tackle box arranged with shallow running lures in the top shelf, deep runners in the lower shelves, with medium depth lures in between.

4. Sufficient quantities of lure catalogs from several companies so that students can each keep at least one.

5. Photocopies and overhead transparency of tackle box organization.

6. An aquarium filled with water if possible or, if available, much of this lesson could be taught at a swimming pool.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
I. Introduction	An easy way to organize this lesson on lures is to begin with those utilized as surface lures and progress down through shallow, medium runners, deep divers, through to those effectively utilized on the bottom. Basically, this is also an efficient method of organizing a tackle box, and as various lures are discussed students can be shown the lure's place in the box. It would be prudent to remove the hooks from any lures that will be handled by the students, especially beginning or younger anglers. 1. Introduce students to the lesson objectives.
II. Artificial Lures A. Plugs (hard bodied) B. Spinners C. Spinnerbaits D. Buzzbaits E. Soft Plastics	2. Ask students why we use artificial lures. Write their responses on the chalkboard. Discuss how they are designed to take the place of natural bait and can be made of many different materials. Most lures have a built-in action, but some must be manipulated by the angler.
F. Jigs G. Spoons H. Flies, Bugs	3. Utilising the photocopied graphics and the overhead transparencies, lead a classroom discussion on the general categories of artificial lures, especially the ones most popular in your area. For introductory or younger, inexperienced anglers, concentrate on only a few. Advanced anglers can benefit from a thorough discussion of jigs, spoons, and fly fishing lures, not often used by younger anglers. 4. As these lures are discussed, demonstrate their action in an aquarium, if one is available. Also bring colour, scent, and size into the discussion. 5. Stress safety in the handling of lures, and while fishing. Let students feel a sharpened hook, under supervision. Otherwise use lures with no hooks or those whose hooks have been covered with tape, corks or some other protective material.
III.Other Lures A. Miscellaneous Lures B. Scents for Lures C. Lights and Colours D. Prepared Baits	6. Show some lures that do not fit neatly into one of the general lure categories. These lures might incorporate a spoon, spinner, or propeller with a floating body, or combine spoons and spinner-baits. These lures are often designed to fill a specific fishing need, and often may be popular in a limited geographical area.
IV. How to Fish Lures A. How to Fish Lures B. Methods of Working Lures C. Feeding and Strike Response	7. Some anglers use some type of prepared bait or commercially available bait to enhance their lures. Discuss the use of pieces of fish, whole baitfish, pork rind, etc. to appeal to the fish's senses of taste or smell. Ask students if they have ever done this.

8. Ask students if they have fished with artificial lures. Have them explain how they used them, to lead into a discussion of effective methods of working lures in still, as well as moving water; how fish strike lures, and what to do when a fish strikes

V. Tackle Boxes

9. Utilise the photocopied handouts and overhead transparencies, along with a tackle box that you brought, to stress again how a tackle box should be organized. Discuss the different sizes and styles for differing needs and sizes of lures for different species of fish. It is also important to stress keeping different colours of soft plastic lures in different compartments from each other and from other types of lures. Their colours will bleed onto others. Also discuss the importance of keeping lures dry so that rust does not damage the hooks. Lures should be dried before storing to prevent this from happening.

10. Distribute the lure catalogs to the students. Enough should be available so that every student can keep at least one.

INTRODUCTION

This lesson is designed to introduce the class to all types of lures and the reasons for their use. Safety when handling lures is emphasized and will decrease the possibility of accidents. Emphasize that a lure is only as good as the angler fishing it and that care and proper lure manipulation must be used to be successful in this type of fishing.

NARRATIVE

Artificial Lures

Artificial lures have been around almost as long as man has fished. Artificial lures are designed to take the place of natural bait in catching fish. They include those made of metal, wood, hard plastic, soft plastic, and lead. Unlike much bait, which can be allowed to drift in the current, lay on the bottom, or be dragged through the water, lures must have some action to simulate a natural bait or to attract a fish to strike. Some lures have a built in action, while other lures must be carefully manipulated by the angler.

Basic Artificial lures - Plugs or Hard Bodied Lures

These hard wood or molded plastic lures are usually designed through size, shape and action to simulate a baitfish or aquatic food. A variety of plugs is available for all kinds of fishing in fresh and salt water. Freshwater plugs are generally small, while salt water plugs are usually larger for the large fish caught.

Freshwater plugs have colour patterns that imitate fresh water bait, usually in a large variety of natural colours, although plugs used in the impoundments or murky water are often fluorescent colours. Saltwater plugs are available in many colours also. Blues, golds, and bright shiny chrome plated finishes are popular. As is true in freshwater, some saltwater lures are solid colours while others are patterned or printed to resemble a saltwater bait fish.

Different types of plugs are designed for specific purposes. Surface plugs often have special plates or cupped faces to create action and splash, while diving plugs have bibs which force them to dive under water and control their depth. How deep plugs can be fished depends upon the bib design and angle (short bibs dive shallow, long lips dive deep), and whether the plug is a floating or sinking model. Most plugs can be used for both casting and trolling. Some top water plugs are designed only for casting while some specialized plugs are built only for trolling. Plugs range in size from tiny 2.5cm long, 3 gram, models to large saltwater and musky models of over 30cm in length.

Basic Artificial Lures-Spinners

Spinners are usually metal lures built so that a spinning or rotating blade revolves around a central shaft holding the body and the hook. While completely metallic, spinners are common. Many today are also equipped with fur or feather hook dressings or have the addition of other items such as soft plastic minnows, grubs, and plastic tails. All of the parts are in line on a single wire shaft. Spinners also range in size from very small 3cm 2g models to large Murray cod models 20cm and 40g. Spinners are almost exclusively used in fresh water and cast by the angler. A similar spinner style with a weighted head to get down to the bottom is now being used for bass fishing in dams.

Basic Artificial Lures - Spinnerbaits

Spinnerbaits are basically bass fishing lures. A round or tapered lead head is molded on a spring safety pin wire form with a single hook in the lead head. One or more spinner blades are attached to the arm and a skirt or tail is added to the lead head. They are for casting and can be fished from the surface down to the bottom. They come in a variety of colours and blade finishes in single blade or double blade (side by side or in line) styles. A similar lure fitted with a tail of soft plastic or capable of holding bait could be used when fishing the bottom.

Basic Artificial Lures - Buzzbaits

These bass fishing lures are like spinnerbaits except that they are made in a J shape with a single or double propeller blade attached to the upper arm to create a surface disturbance. As with spinnerbaits, they are equipped with skirts and come in a wide variety of colours, sizes and styles.

Basic Artificial Lures - Soft Plastics

Soft plastic lures were originally designed in America for bass fishing and were made in the shape of a worm. Today, thousands of sizes, shapes, lengths, styles and colours of worms are available, in addition to other soft plastic lures. Other lures include those for all fresh water fishing (frogs, minnows, insects, leeches, and eels) and salt water lures (grubs, shrimp, crabs, minnows, eels, mullet, and squid).

These soft plastic baits can be rigged (sold with a hook and ready to use) or unrigged (fitted with a hook by the angler), cast or trolled, and made of a firm or very soft plastic. These lures do not have any built-in action and must be manipulated by the angler to work properly.

Basic Artificial Lures - Jigs

Jigs are widely used in both fresh and saltwater fishing. They are heavy-headed lures, usually lead, into which a hook is molded. Traditional jigs have a skirt of fur, feather or both, although modern jigs often consist of just the bare, painted head fitted with a soft plastic tail or body. As with the soft plastics, these do not have any built-in action, thus must be manipulated by working the rod to create a bait-like movement in the water.

Basic Artificial Lures - Spoons

Spoons can be divided into three basic categories. Fresh water spoons are thin-bladed and designed for casting or occasionally for trolling. They might have a fixed (stationary) single hook or a free swinging hook. Dozens of colours, styles and sizes are available, ranging from tiny 2.5cm long blades up to huge 25 –30cm models. Some for fresh water are fitted with weed guards (wire, plastic or nylon protectors over a fixed, single hook to prevent weeds from catching on the hook), so that they can be fished in heavy weeds without snagging or picking up weeds.

Structure or jigging spoons typically are slim shaped and heavy bladed to sink rapidly. They have free swinging hooks and are designed to be worked on the bottom by lowering the spoon to the fishing area, then working the spoon up and down in a jigging action. Both fresh and salt-water models are available. Trolling spoons are large, usually thin bladed spoons with a single hook designed to he trolled (trailed) behind a boat. They have a built-in action caused by their movement through the water.

Basic Artificial Lures - Skirted Trolling Lures

Basically used for trolling for salt-water pelagic fish, these lures consist of a shaped head with a shredded plastic skirt attached behind. The hooks are attached to the leader, which is threaded through the head of the lure. This allows the lure to move up the leader out of the way when the fish is hooked. They range from 10cm models for small tuna to 60cm or more for giant marlin.

Basic Artificial Lures - Flies

Flies for fishing with a fly rod are hand-tied and are constructed on a bare hook using synthetic and natural (often very exotic) materials. Many fishermen tie flies for a hobby, but commercially tied flies and bugs are also available. The materials used include thread, feathers, fur, wool, nylon, tinsel, Mylar, and chenille. Exotic materials include such things as Jungle Cock, Golden pheasant, bustard, and peacock herl, but do not include endangered or threatened species. Flies were originally tied primarily for trout fishing, but now are also often used for bass, barramundi, saratoga and salt water species such as tarpon, trevally, flathead and tuna. Even billfish such as marlin and sailfish are targeted with flies.

Typical fly styles include streamers and bucktails, both imitating a minnow in their length and design; wet flies and nymphs imitating aquatic insects; and dry flies imitating floating aquatic insects, such as may flies. In addition to flies, floating bugs are also used for fly fishing, primarily for bass, saratoga and salt water species. These bugs are made of cork, plastic foam, or tied with floating deer hair.

Miscellaneous Lures

Some lures defy categories. These lures combine the various elements of several basic types. They can include a spoon, spinner, or propeller blade with a floating plug body or may combine spoons and spinnerbaits, jigs and spinners, spinners and spoons, and flies with spinners, jigs, spoons, and plugs. In addition, many lures will incorporate a soft plastic tail or grub, although these are most found often in spinners, spinnerbaits, spoons, and jigs. Lures are specifically designed to fill a specific fishing need. In most cases they are loosely placed in the category that seems best to suit the lure, purpose and design.

Factors in Lure Design and Lure Choice

Manufacturers consider a number of factors in any lure design. These include the intended quarry, since no lure will work for every fish. The size of the fish must be considered, as well as what and how it eats. Since most lures are based on the feeding response of the fish, eating habits are predominant in choosing the basic size, shape, design, action, colour, flash, pattern and fishing depth of the lure.

Colour

Colour is important in attracting fish, and recent electronic equipment helps fishermen determine the most visible colour lure at various depths and water conditions. In some cases, bright colours are important, as in the bright fluorescent colours used in some salt-water fishing and in discoloured fresh water. In other cases, such as when fishing for river bass, which feed primarily on black or brown beetles and crayfish, black and brown are often utilized. Typically, colours will closely resemble the baitfish eaten by the fish.

Colours can be too bright or too dark. Bright flashy metallic spoons and spinners are often too flashy for crystal clear fresh-water, though a black lure or spoon will often show up best in cloudy or muddy waters. Spinners and spoons typically have metal parts available in nickel, copper, brass, gold or black, although painted colour blades are also available.

Jigs are painted, usually in simple primary colours. Cork and foam bass bugs are painted, but the colour of flies is determined by the choice of materials used to tie them. As a general rule, “on a bright day use a bright lure, dark day, use a dark lure”.

Action

Some lures have built in action when the lure is retrieved; others do not. Those that typically have a built in action include plugs, spinners, spinnerbaits, buzzbaits and spoons. The plugs and spoons have a wobbling action because of their design, while the spinners, spinnerbaits, and buzzbaits have a straight movement with action occurring in their spinner parts and rotating blades. Lures that do not have any intrinsic action or movement include jigs, soft plastics, flies and bugs. There are exceptions to the above since some surface plugs have no action while some jigs have action in their skirts or attached spinner blades. Soft plastic lures with curly or minnow-like action tails seem to "swim" in the water.

Pattern

At one time, many lures (mostly plugs) were made through a photoprint method that allowed very close imitation of a natural forage colouration and pattern. Most patterns or finish styles in lures are only suggestive of a baitfish, although natural patterns as well as simple, one colour finishes are also common.

Size

Size of the lure must be based on the size of the quarry and also the size of the food they normally eat. For example, a large mackerel is likely to be receptive to a large lure that imitates a large bait fish, while a small fish in a river would be more likely to hit a small lure imitative of a small prawn or fish. The same concept applies to all fishing, but some fish will take markedly different sized lures than another species of the same size, based on their different feeding habits.

Scent

Scent has recently become very important as a fishing lure additive for all types of game fish. All fish have olfactory glands and are able to smell. Sharks and eels can smell far more acutely than many other species. The importance of this sense in fishing varies with the species. Species such as catfish, carp, bonefish, and tailor use scent to find food. Other species, while using this scent, rely more on sight and sound.

Fresh and saltwater scents are available. Such scents are generic or of a specific smell such as shrimp, shad, crayfish, or mullet. Scents are popular additives to all types of lures but are best when used with lures that are moved slowly, such as jigs, soft plastics, and flies. Scents can damage some lures when used over a long period of time and can damage some other fishing related items such as boat carpeting.

Light

Light in lures through small chemical lights, or phosphorescent additives is also becoming popular. The chemical lights are activated before fishing, while the phosphorescent lures are "charged" by light. Most are built into the lure.

Lure and Bait Combinations

Often lures and bait are combined for added attraction in catching fish. Almost any type of bait can be added to a lure or the lure hook, provided that it will not impede the action of the lure and provided that it will stay on the hook. Bait can be added to attain more action, such as a strip of fish or squid, or added to attract fish by taste and smell, minnows to a jig, clams to jigging spoon, or a crayfish to a weedless spoon. There are no right or wrong ways to use bait other than what works best, which baits are available, and what is legal.

Methods of Fishing with Lures

Bait fishing usually involves casting a bait and letting it drift through the current or rest on the bottom until a fish picks it up. To attract fish, even if modified with scents or bait, a lure must be moved. Moving the lure can be done by casting and retrieving (as in still water), letting the lure tumble and swim with the current (as in fishing a saltwater tidal flow or freshwater river), or trolled from a boat.

Some lures have a built in action so that the lure can be cast and simply retrieved to catch fish. This applies to plugs, spinners, spinnerbaits, buzzbaits, and spoons. Soft plastic worms in particular, and jigs, must be manipulated by the angler to have action. This action is usually best accomplished by sharply jerking the rod up or sideways or by moving the rod in long sweeps to make the lure swim, hop along the bottom, spring up off of the bottom, or act in a natural, lifelike way.

One other difference in working with lures opposed to bait is how the fish reacts. Usually a fish taking a bait will carefully mouth the bait. Every fish species varies in the reaction time, and much of the success of bait fishing is in interpreting these signals by the fish and reacting properly. Fish usually hit lures rapidly and savagely, although they will carefully pick up soft plastic lures, or in salt water, sharply knock a trolling lure so that it can be picked up when "dead" in the water.

Since lures generally move more rapidly than bait, fish apparently strike rapidly to keep it from getting away. Most strikes are a feeding response. This occurs with almost all fish, in almost all fishing conditions. When fish are spawning, they might strike a lure to protect their young and to remove the intruding lure from the

spawning bed or young. They will also strike aggressively, presumably to keep other fish from getting the lure, almost like a dog eating food, it wants to keep another dog from getting it. Fish that apparently are not feeding will also strike reflexively, such as mangrove jack or bass striking flies and lures that intrude into their territory, even though they are not feeding at this time.

Fishing Lure Storage

Fishing lures should be kept organized. Some sort of tackle box, lure box, or fly box must be used. Tackle boxes come in many styles, including those that look like tool boxes, those with a hip roof (both sides of the top open), and single or double side "satchel" boxes that look like and are carried like brief cases. Most of these boxes come in several sizes and in styles for specific fishing methods. Thus, boxes designed just for large (barramundi or salt water) lures, for spinnerbaits, for jigs and pork rind, and for plugs can be found.

In addition, there are small single compartment lure boxes in various sizes to hold lures. Fly boxes are made the same way, but these also include synthetic or lamb's wool boxes to hold flies. Bugs are usually stored in some type of lure box or a special bug box.

A system to store lures assists the angler in finding them easily. Many anglers store lures in trays by category (plugs, spinners, jigs) and will further divide these lures by sub-types (top water plugs, minnow like plugs, medium running plugs, deep running plugs). Lures should be kept separate in tackle boxes, and boxes designed for soft plastics are available. Soft plastics contain chemicals that will harm many plastics. Most tackle boxes currently made are designed for these lures, thus are "worm proof". It is equally important to keep soft plastic lures from hard plastic and painted lures in order to prevent chemical reactions that can ruin lures. Similarly, if fishing with soft plastics, the angler should separate different coloured lures to prevent bleeding of one lure colour into another.

After fishing, be sure to check lures to prevent rust. If the tackle box becomes wet or lures are put away without drying, the box should be opened to allow drying, thus preventing rusted hooks and damaged lures.

LESSON 12

TACKLE MAINTENANCE AND RELATED ACTIVITIES

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LESSON 12

Tackle Maintenance and Related Activities

Lesson Objectives

Following this lesson students will:
1. Understand the necessity of properly maintaining tackle.

2. Be able to perform simple repairs on rods, reels, and lures.

3. Know which tackle can be modified and which types are difficult to change.

4. Know how to prepare a simple tackle repair kit for use in the field.

Materials for the Lesson

1. Old nylon stocking to check for damaged guides.

2. Wet rag for wiping rod.

3. Can of demoisturising spray.

4. Reel oil and grease.

5. New binding thread for binding a guide

6. Spool of new line 3 – 6kg test

7. Parts for lure modification - tape, fast drying paint, glitter, hooks, skirts, and metal polish.

8. Tackle repair kit.

9. Reel parts (level wind, bail spring, etc.) if you will, plan to repair a reel.

10. A manufacturer's booklet that was included with a reel.

11. An old, fully functioning rod and reel and one of similar age that does not work.

TEACHING STRATEGIES

Lesson Content Outline	Classroom Procedure
	If you plan to go into extensive detail for this lesson or if you do have the students performing maintenance and repair activities, it would be advisable to have assistance. If assistance is not readily available, demonstration only is suggested. With younger students, if they can be made aware of the importance of proper maintenance and know how to make minor repairs, you will have been successful. With older students, more emphasis on actual repair and modification techniques will be of great interest.
	1. Introduce class to the lesson objectives.
I. Tackle Maintenance A. Rods B. Reels C. Lures D. Accessories	2. Introduce students to the importance of maintenance by asking them to compare the two old fishing outfits that you brought. After they have seen that one works and the other doesn't, indicate that the major difference is the maintenance that the functioning one received.
	3. Compare the maintenance of fishing tackle to the importance of maintaining something else of importance to the students such as a bicycle, car, toys, or perhaps tools.
	4. Ask the students to indicate why proper maintenance could be important. Lost fish, broken line, and many other reasons can be given. Discuss several simple ways that tackle can be maintained and cared for. Use the old nylon and show them how to check guides for rough spots that can damage line. Using the wet rag; show them how to wipe the rod and reel clean after use. Take the reel apart and show students how to wash it, as this is especially important after fishing in salt or brackish water. Show them the demoisturizing spray and how to protect the fishing line while it is being used. These are all simple maintenance procedures that can be performed by anyone.
II. Tackle Repair A. Rods B. Reels C. Lures	5. Take the cover off the reel and show where to use the reel oil and grease. Show the manufacturer's book and the expanded diagram of the reel and show where it states the recommended oil and grease points. Grease and oil the reel with the students observing.
	6. Discuss the care of lures and how to organize hard plastic lures in tackle boxes. Also discuss that only soft plastic lures of the same colour should be stored together since the colours will "run". They should also be made aware of the need to leave a tackle box open after fishing so that wet lures can dry to prevent rusting.

7. Using the line, demonstrate how to check for abrasions by running the line between your fingers. The line is the only connection with the fish, and worn line should be cut off or old line replaced. Using one of the tackle outfits, demonstrate how to replace line on the reel.

8. With more advanced students, demonstrate how to replace a guide by first removing the old guide and then wrapping on a new one. If possible, each student could practise on a rod that they had brought to the class. Also demonstrate the procedure for replacing a broken tip runner, by heating the old one for removal and then placing a new one on the rod. Trim wrap can also be added to finish the process. Show students how to use the colour preserver and varnish to protect the new wrappings.

9. Again, with older students, dismantle a reel and demonstrate how to keep the parts in order for reassembly. Egg cartons work very well for this. Replace one or more bad parts on the reel. If students brought a reel and spare parts, assist them while they make minor repairs.

III. Tackle Modification

10. Discuss how lures can be modified, by adding skirts, new hooks, spraying a different colour, adding glitter, or reflective tape. Demonstrate some of these techniques on an old lure using the materials you brought. Care must be taken that the purpose of the lure is not radically changed with these alterations.

IV. Tackle Repair Field Kits

11. Show your tackle repair kit to the students and suggest that they carry a similar kit or an extra rod and reel while on fishing excursions. Reel tools, oil and grease, cleaning tools, and minor spare parts can save a fishing experience from disaster. It is essential for the angler to have extra tackle, not a luxury.

12. Encourage students to maintain their fishing tackle so that it may serve them well for many years of fishing pleasure. Many books on the subject are available, but most major repairs can be avoided by proper care and maintenance.

INTRODUCTION

Most students are very interested in fishing tackle. This lesson provides the opportunity to help them learn how tackle works and why it must be maintained properly. It also allows an opportunity for the students to bring their own tackle for examination and to discuss future equipment purchases. The condition of their equipment can be evaluated with adjustments and repairs being made for students needing special help.

Rather than being a difficult task, tackle maintenance and repair is easy, fun, enjoyable in the off season, and beneficial by providing smoothly working tackle. While all lures are designed to catch fish, modifications may improve them under certain local conditions or special fishing situations. Modifications are made to meet a need in making a lure better, not just for the sake of change.

This lesson provides a time to work with students on a one-to-one basis. It also allows an opportunity to bring in local talent to discuss these subjects and to show lure modifications that work well locally.

NARRATIVE

General

The care, maintenance and repair of tackle are necessary for long-term use. Rather than being difficult, tackle maintenance and repair are relatively easy. It is also fun, and for most fishermen, is best done during the off season. Proper maintenance involves not only cleaning and checking, but also the proper storage and use of equipment.

Tackle Maintenance

Rods should be used for the tasks for which they are designed, for casting, trolling, and fighting fish. They should not be used as a boat pole, nor as a lure retriever to push a lure from a bottom snag, or for other reasons.

Rods must be stored properly on a boat or at home. On a boat, rods should be placed in a rod rack. They should not be allowed (particularly graphite rods) to bang against the boat or to bounce against a boat seat. At home, they should be kept in cases or in a rack designed to store them vertically or horizontally. After each trip, rods should be wiped, especially if used in salt or brackish water. Guides and guide wraps should be periodically checked for damage or wear and replaced. This should also be done at the end of each season.

Reels should be spooled with line appropriate to their size and use. Thus a small reel should be spooled with light line, with heavy line used on larger reels. Set the drag for a reel at the beginning of each trip, and after each trip, back off the drag to preserve the soft drag washers and to keep the drag working properly. If a hook becomes snagged, do not pull the line with the reel since this could cause spool damage.

After each trip, the spool should be removed and the reel washed, especially if used for salt water fishing. Protect the line and spray the reel with a demoisturising agent for added protection. The reel should be oiled and greased periodically, in accordance with the manufacturers instructions, with attention given to parts emphasized in the reel manual, such as rollers, bail joints, level winds, handles, and shafts. Some reels have oil ports for this purpose.

At the end of the season, the reel should be sent to a reel service centre, a good service oriented tackle shop or a service centre listed with the literature received with the reel, or dismantled for cleaning. Take the reel apart carefully, following service manual instructions, and keep parts in order for reassembly. Use an egg carton, biscuit tin or other box with small compartments for holding parts for easy reassembly. Carefully check all small parts and order replacements if necessary. Lubricate following the manufacturer's instructions and reassemble. Each time that the line is changed, the reel should be carefully

cleaned and polished to prevent corrosion and damage. While fishing, the angler should check the line for abrasions and cut them off when they occur. Line should be replaced frequently or whenever it becomes stiff, kinked, twisted, or otherwise in less than good condition.

Lures are best stored in tackle boxes, but placing too many lures in each compartment will allow hooks to scratch other lures. Also, soft plastic lures such as worms, salamanders, vinyl skirts, rubber and plastic skirts, grubs, lizards and the like must be kept separate from metal and hard plastic lures since the different plastics will react and harm the lures. Soft lures should be separated by colour as colours can migrate from one lure to another and cause discolouration. If lures become wet from fishing, the tackle box should be stored open to dry out its contents. Lures which become damaged or have broken or bent hooks should be removed for repair or replacement. Hooks should always be kept sharp and checked before and during fishing.

Accessories also require care. Nets should be checked for holes, gaffs must be kept sharp and safely stored, and rubber fishing boots should be kept in a cool, dark place, preferably hanging or folded in a plastic bag to prevent ozone damage. Tackle boxes must be periodically emptied, cleaned and dried.

Tackle Repair

Proper care of tackle will prevent many repair problems, but accidents do happen. Some suggestions for simple repairs include the following: rods often have guide problems; guides are held in place with thread wraps, which can be cut off and replaced. All guides are wrapped the same way, regardless of rod type. Tip tops must be heated carefully to remove and can be replaced with a new tip top of the same size. NOTE: care must be taken to protect the rod material from heat damage while heating the metal tip guide. A trim wrap similar to a guide wrap is usually placed at the tip. After adding any replacement wraps, it is necessary to protect them with colour preserver, to keep the thread colour from changing, and with a varnish or epoxy rod finish. Only the wrap need be protected this way. Butt caps can also be removed and replaced. More extensive repairs involving broken rods, ferrule replacement, loose reel seats and damaged handles are best left to tackle service centres.

Reels can develop problems with bail springs, lost nuts and bolts, bad gears, damaged handles, and deformed drag washers. The replacement parts can be ordered from the reel manufacturer. While dismantling a reel, keep all parts in order for reassembly. Remove the damaged part(s) and replace, carefully following the manufacturer's schematic drawings included with the reel. Lubricate the reel during this process.
Lures can be repaired if the damage is slight. Most soft plastics can't be reused but can be saved to be melted down and moulded into new lures, per instructions in Lesson 13. Replace hooks on other lures with new ones of the same style and size, using the same lure hook hanger or a split ring to hold the hook if the hook hanger is moulded in and not removable.

Plugs or crankbaits that run off to one side can be adjusted by shaving the lip or slightly bending the line eye (on the opposite side to which they run) to correct any imbalance. Worn paint can be replaced by painting with lure paints now available for hard-bodied plugs and jig heads. Spinners and metal spoons can be polished with steel wool and coated with a clear finish for protection.

Other tackle can also be repaired. Tackle box latches and hinges will sometimes break and replacement parts are usually available from the manufacturer. Rubber fishing boots can be repaired using puncture repair kits available at any convenience store or supplied with the boots. Nets with holes can be repaired using net twine, available from craft stores. To reweave the damaged mesh, a special net knot similar to a sheet bend is used.

Tackle Modification

Rods can be modified in several ways. A long spinning rod can be made into a baitcaster "flipping" rod by removing the large guides and replacing them with casting rod guides. A long rod can be made into a short, stiffer rod by cutting off some of the tip section and replacing the tip guide with one of a larger size.

Reels are more difficult to modify and require manufacturer's replacement parts to do so, but some simple things are possible. The simplest modification is the choice of the arbor, which is supplied with most casting and some spinning reels today. These allow the use of the full spool for large line capacity or an arbor with less line capacity. Handles can be replaced with those of a longer or shorter shaft. Special attachments make it possible to make older style casting reels more comfortable through the addition of a flexible fitted cap, a slip on thumb bar style casting lever, a screw on line cutter, or other accessories.

Lures can be modified, but care must be taken so that the purpose of the lure is not changed by radically altering the action, colour, and hooks. Refinishing lures is easy and involves polishing metal parts and painting metallic and non-metallic parts. Thus, a spinner blade could be cleaned to its original finish, sprayed a different metallic finish or painted a new opaque colour. Permanent felt tip markers in various colours are also good for slight shading of metallic surfaces. Special paint kits just for lures are also available.

Additions to lures are also possible. Tape can be added to lures and works best on relatively flat surfaces with simple curves. Glitter tape, coloured tape, tape-cut outs, reflective tape, and glow-in-the-dark tape are all available. Tails and skirts are additions that can be added to many lures including jigs, plugs, spinners, spinnerbaits, buzzbaits, trolling lures, and spoons. Skirts are usually added to the hooks. Finally hooks are easily changed on most lures. A plug with a treble hook can be modified with a double hook to make it more weedless or as a single hook for easier unhooking of toothy fish such as tailor or mackerel.

Tackle Repair Field Kit

A tackle repair field kit makes it easy to repair tackle in the field but should not be considered a substitute for regular care and maintenance. Such a field kit is best for long trips or vacations where help might be far away or extra tackle might not be available.

To make such a kit, assemble the following along with a small lure box to store these parts: reel tools that are supplied with the reel, along with tiny screwdrivers and wrenches for reel cleaning, adjustment, and repair. Also include a small pair of pliers and split ring pliers, oil and grease for oiling and lubrication of reels. Store in a small bag to prevent leakage. Include cleaning tools, pipe cleaners, cotton tip swabs and similar items to remove grit and grime from tackle, especially reels. Spare parts such as the small set of replacement parts included with most reels should be added. Take these along with a spare guide or two, and tip guides in several sizes, binding thread and epoxy glue. For lures take spare hooks, and split rings.

LESSON 13

LURE MAKING AND RELATED ACTIVITIES

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LESSON 13

Lure Making and Related Activities

Lesson Objectives

Following this lesson students will:

1. Know how to make simple lures.

2. Know how flies and floating bugs are made by hand.

3. Know how to wrap a guide and basic rod building techniques.

4. Be able to take good outdoor and fishing photographs.

5. Comprehend taxidermy basics.

6. Understand how fishing can be enjoyed while canoeing, boating, picnicking, camping and backpacking.

Materials for the Lesson

1. Examples of homemade lures and parts for making simple lures.

2. Fly tying materials including a fly tying vice, hackle pliers, materials, hooks, etc.

3. A rod blank, guides, and other parts necessary for building a fishing rod.

4. Examples of good and poor fishing and outdoor photographs.

5. Several mounted fish, if they are available.

6. A taxidermy kit.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
I. Related Hobbies A. Photography B. Taxidermy C. Canoeing D. Camping E. Picnicking F. Backpacking	A great deal of diverse material is covered in this lesson. You might wish to consider which is the most important to cover or which is of highest interest to the greatest number of students. Other alternatives are to extend the lesson time to cover all aspects of the lesson or to invite local specialists to cover certain topics, dividing the class into interest groups for several extended class periods.
II. Tackle Making A. Lures B. Fly Tying C. Rod Building D. Rod Racks	This lesson plan assumes that you will introduce the topics only during the planned class time. If enough interest is shown in one or more of the subjects, experts in the subject area(s) can be called upon to teach an extended class.
	1 .Introduce students to the lesson objectives.
	2. Discuss areas that have become hobbies for many outdoor, fishing enthusiasts. Include photography, taxidermy, fly tying, rod building, and lure making in this discussion.
	3. Discuss how fishing can be enjoyed as part of other outdoor activities including picnicking, camping and backpacking. Ask students to relate personal experiences during this discussion.
	4. Discuss lure making, fly tying, rod making, taxidermy, and photography in detail. Show examples and allow students to participate in selected simple experiences in each area. Much can be done by demonstration. (They will not become accomplished in any area during the class. However, their interest may be expanded to the point that they would participate in an additional class.)
	5.Have students relate personal experiences with camping, canoeing, backpacking, and picnicking when they have also enjoyed fishing. Discuss the types of tackle used and why, what was caught, and how the catch was utilized.
	6. Ask students if they would like advanced lessons in any of the special areas covered by this lesson. If there is an adequate number in any area, tell them that you will locate an instructor and arrange a time for them to begin.

INTRODUCTION

This lesson should promote a high degree of interest among most students since it is a "hands-on" lesson involving fishing-related hobbies. Since craft tools and materials are involved, one MUST instruct students in the safe handling of such tools and materials. In this regard, instructors that are completely familiar with the topics are important for the success of this lesson.

NARRATIVE

General

Lure making, rod building, and fly tying, are all excellent high interest, fishing-related hobbies. They expand the interest, knowledge and understanding of fishing, while providing hobbies that can be carried out in the off-season and throughout life. In addition, related interests such as outdoor photography, taxidermy, canoeing, picnicking, camping and backpacking also can have a direct tie with fishing.

The related interests of canoeing, camping, and backpacking allow fishing to be expanded to other family members who might be too young or lack the interest of serious anglers. The hobbies of lure making, rod building and fly tying also have definite advantages. These include reducing the expenditure for tackle (although serious hobbyists often spend a great deal), allowing the making of tackle that is not available commercially, and providing fun when fishing is not possible.

Lures

Making lures is a direct, high interest way to relate to fishing. Lures can be made and immediately used to catch fish. The parts and tools necessary to make any type of lure are available from tackle shops and mail order houses. Different types of lures require different skills. Spinners are among the easiest to make since they require no finishing or art/craft skills, but are merely assembled from the various parts such as shafts, blades, bodies and beads, and hooks. The parts are assembled by placing each part on the shaft in order, adding the hook and bending an eye with a small pair of pliers. Soft plastics can be moulded easily on the kitchen stove, using a low heat to melt the plastic and prepared molds to form the soft plastic lure. Worms, grubs, and bait fish are commonly made. To make these soft plastics, liquid plastic is melted in a pan, colour added (old soft lures of the same colour can also be added at this point), and the resulting liquid plastic poured carefully into a mould and allowed to cool. Moulds can be constantly rotated as the soft plastic lures are removed from the mold. Use care in handling moulds and plastics since students will be working with hot materials on a stove at a temperature of approximately 190^{o} C

Plugs can be made in several ways. Plug bodies can be purchased and hooks added with split rings to make finished lures. Some plug bodies require painting, others come finished.

To make plugs from scratch, begin with a block of wood of suitable size. Cedar, beech, pine or moranti are suitable timbers. Make a template of the shape of the plug to be carved and trace that outline on block. Some may need a different template for the sides and the back of the lure, depending upon its shape. For a cigar shaped plug, one template can be used for all four sides of the block. Draw the template lines on the block and carve away the wood. After carving, rasp the wood in shape and finish with successively finer grades of sandpaper. Add hook hangers and line eyes and paint the lure. Once the paint (several coats or one coat) is dry add the hooks using hook hangers, screw eyes or split rings.

Jigs can be moulded or purchased already moulded on hooks. The best way to start is to buy pre-moulded heads and use fly tying techniques to tie on the tail material. An exception would be those jigs designed to take a soft plastic tail, not a fur or feather tied on tail. Tie the tail on by wrapping thread around the collar of the head and around the tail materials. Then finish wrapping the tail, tie off and paint the head and wrapped

area by dipping. Hang up to dry. Extreme care must be used in moulding jigs with two part moulds as the lead must be heated to approximately 315^{o} C for pouring. To do this, heat the lead, preheat the mould (so that the cavities in the mould fill properly), add the hooks and pour the lead through the sprue hole. Allow the mould to cool and carefully remove the moulded heads. Follow as above to finish. When working with a group, absolute discipline must be maintained and everyone must adhere to good working methods to ensure proper safety. Sinkers can also be produced by the same methods.

To make spoons, the spoon blades can be purchased, but old stainless tea and table spoons can be used by cutting off the handle and drilling holes for the line and hook. In either case, finish the spoon as desired (paint, metallic spray or clear finish) and add the hooks with split rings. Add a split ring as the line tie to prevent the line from being cut on drilled or rough holes.

Fly Tying

Most experts agree that one of the reasons for the high interest in fly fishing is due to the fact that many anglers tie their own flies. Fly tying requires some tools such as a fly tying vice, hackle pliers, and a thread bobbin, although one can start without these. A pair of locking pliers or two large washers clamped in a workshop vice to hold a hook will suffice.

The basics of fly tying are simple. They involve wrapping materials around a hook shank with thread. Begin by clamping the hook securely; and wrap the thread around the hook shank, crossing over previous wraps to secure the thread. Once this is done, materials can be tied to the hook shank and wrapped in place. A standard procedure for a simple fly is to tie the thread behind the eye of the hook, then tie a body material of wool or chenille. The body material is wrapped along the hook shank and back, where it is tied with the thread. The excess body material is cut, a wing of feathers or fur tied with the thread, the excess cut, and the head completely wrapped and tied with half hitches. Naturally, variations of flies and tying techniques can be used in addition to this basic method.

Varying the above tying instructions can make variations in simple streamer flies (as above). Dry flies are designed to float, so use light, water resistant materials along with stiff tail fibres and a stiff collar of hackle to make the fly ride high in the water. Wet flies and nymphs are just the opposite, using soft webby materials for a life-like appearance underwater. Streamer flies are tied on long shank hooks, using long wings to imitate long insects and minnows.

Bass bugs and saltwater poppers are made on hard foam or cork bodies designed to float high in the water. Tails are tied on, but the main body is cork or foam. Hard-to-tie hair-bodied bugs are also tied, packing quantities of hollow deer hair on a hook shank, which is then trimmed to size.

Rod Building

Rod building is relatively easy and involves nothing more than assembling the handle parts and wrapping the guides in place. Tools for rod building are available, but are not needed for the beginner. For example, a simple way to wrap guides includes placing a spool of thread in a teacup and running the thread through a phone book (between two sheets of writing paper to keep it clean) to maintain the tension needed.

The parts necessary to build a rod include the rod blank, line and tip guides, handle reel seat, butt cap, thread, glue, and finish. Begin by gluing the handle parts (cork rings, preformed grips or synthetic grips) onto the rod blank. Glue the reel seat in place, shimming the space between the rod and the reel seat, and add the foregrip.

Once the glue is dry, wrap the guides in place. File the guide feet to make for a smooth transition of the thread on the guide, and tape the guides in place. Begin the wrap on the blank by crossing over the thread as the blank is rotated and wrap the threads tightly against each

other. Wrap up over the guide foot, wrap over a loop of thread, and continue to the end of the guide foot. Cut the thread, tuck into the loop and pull the loop to secure the thread. Cut the excess and repeat on each guidefoot. Variations of the above include the type and positioning of the reel seat and handle parts and the type of guide wrapped in place. Heavy rods require heavier thread and a double wrap.

Related Hobbies - Photography

Pictures help to remember good fishing trips, companions, fish caught, fun on-the-water, and vacations. Good photos require an understanding of photographic composition, regardless of the camera used.

Most cameras today automatically set the proper exposure. A good picture involves the effective use of lighting and composition. Use front lighting (light falling on the subject from the back of the photographer) for simple photos such as record catches or photographs of friends. Use side lighting or back lighting for dramatic photos of scenery, dawn or dusk photos, and other simple subjects.

Composition involves the placement of elements in the photo. The most common error is to take a photograph too far away, so that not only the subject, but also much surrounding area is included. In any photograph, examine the subject as well as the surrounding area. Be sure that the subject fills the frame. Also, guard against distracting backgrounds that will conflict with the subject.

Placement of the subject is also important. Subjects such as boats, fishermen, and hikers should face into the photo rather than out of the photo to sustain viewer interest. To obtain good fishing pictures, take a variety of shots from different angles, distances and of different subjects. Include scenic shots, detail shots of tackle, views of friends fishing and with fish, and pictures of fish being landed.

Taxidermy

Taxidermy involves preserving fish and other creatures so that they can be remembered and also can serve as a "trophy." Taxidermy kits and courses are available, and any taxidermy method takes time to accomplish. Unlike rod building, fly tying, and lure making in which the results can be seen immediately or in a few days, taxidermy usually takes weeks of careful work. Fish stuffed by skinning and preserving seldom last long. A better method is to make a two-part mould of the fish, laying the fish on a fine sand base, making sure that the sand border follows the centreline of the fish exactly. Pour smooth plaster of paris into the mould and allow to cure overnight. Turn the fish over, remove all the sand, add vaseline to the mould parts and pour a second layer of plaster. Allow to cure, remove the fish, cut an opening or sprue hole on the back side and fill the mould with epoxy or liquid boat-builders resin. Allow to harden, remove, and add a glass eye and paint after covering with a filler primer or base coat. Use book illustrations for proper paint patterns.

Taxidermy done this way requires some skill but can be accomplished. It does take time, so students with a high degree of interest should be encouraged to try it and report their progress weekly until their fish is complete.

Related Outdoor Activities

Many activities can be enjoyed with fishing. Canoeing, boating, picnicking, camping and backpacking are just some of them. Boating and canoeing are naturals, even if the main purpose of the trip is not to fish. Enough of the appropriate fishing tackle must be taken along in either case so fishing can be enjoyed during a break or lull. When boating, store all tackle so as not to damage the equipment when it is not being used.

When canoeing, carry only minimal tackle since canoes are limited in available space. This becomes even more critical if on a canoeing/camping

trip, but even then, minimal lightweight tackle can be carried along.

Picnicking allows a family and large groups to gather. When picnicking near water, there is no reason why tackle cannot be carried along for fishing. Trips like this can also be used to present fishing to those lacking an interest in the sport.

Camping and backpacking are both ideal when fishing is an adjunct. When camping, be it by tent, trailer, RV or motor home, tackle is easily carried for each family member. Backpackers are often reluctant to take fishing tackle since weight is a problem. The solution is to carry only one light rod (pack type spinning or fly rod) strapped to the frame of the backpack, with a reel and small box of flies or lures in an outside pocket. This way, the tackle can be used at each evening stop, as well as for breaks.

LESSON 14

LOCATING FISH

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LESSON 14

Locating Fish

Lesson Objectives

Following this lesson students will:

1. Understand the necessity of evaluating "reading" different types of water to locate fish.

2. Recognise the value of simple maps and charts and their use with a compass.

3. Be aware of visual sightings and the methods involved for relocating good fishing spots.

4. Know what types of fish are most likely to be found in specific types of structure.

5. Recognise types of structure in fresh and salt water and their importance in finding fish.

6. Recognise the importance of using temperature, oxygen, shade, pH, and water clarity in locating fish.

7. Understand that electronic fishing aids are useful in finding fish.

Materials for the Lesson

1. A map or a chart of a popular local fishing area. One showing contour lines, if possible.

2. Photocopies and overhead transparencies of the graphics from the appendix.

3. An electronic fish finder unit or other type of electronic aid for locating fish.

4. Paper run through an electronic graph unit on a fishing boat or slides of the screen of an LCD unit.

5. If possible, see if a local fisherman with a fully equipped boat will bring it to the class and discuss the use of the electronic equipment.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
I. Introduction	1. Introduce students to the lesson objectives.
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II. Reading Water A. Still Water B. Running Water C. Saltwater-Inshore	2. Conduct a discussion with the students about the importance of being able to eliminate water conditions where not to fish. They will want to fish where they will have a good chance of catching fish. These locations will vary with the species sought, and also on available food, oxygen, temperature, pH, light, structure, and schooling tendencies. Learning to understand the special needs and preferences of a species is critical to angling success. Experience is perhaps the best teacher, but even without the use of electronic aids, there are some things that every angler can do to increase his/her chance of success. 3. Ask the students to suggest ways how they can determine a good place to fish even though they have not been there before. Answers can include looking at the bank steepness, type of soil or rocks, trees sticking up out of the water, lily pads or other aquatic vegetation, boat docks, points, and drop-offs etc. are possible answers. These all refer to some type of structure. At nearly any time of year, many species of fish will be attracted by structure of some type. Hence, fishing those spots that are visible is a good idea.
III. Charts and Maps A. Using Maps B. Using Charts C. Using a Compass	4. Utilize transparencies of the maps showing locations during different seasons of the year and even during stages of the tide. Distribute photocopies to the students. Select one and ask the students to tell where the fish are. In all of the photos, the fish are near some type of structure. Some of it is not visible without a map or a piece of electronic equipment. However, explain to the students that there would be several obvious places for them to fish without any additional assistance other than what they could see. Ask them to name them or point them out on the screen.
IV. Structure A. Fresh Water B. Salt Water	5. Choose the maps or charts of a popular local area with the students. Explain the contour lines and show that, when they are close together, the bottom drops away rapidly. Use the map or chart and have the students suggest places to begin fishing on their next trip there. Suggest others if they miss some obvious places. 6. With the same map or chart, show the students how to use a compass to find those places. Start from the boat dock, aligning the map to magnetic north as indicated on the compass. Have the students tell you what they would do to get to the good fishing spots that they have identified.

V. Electronic Fishing Aids

A. Flashers
B. Graph Recorders
C. LCD Depth Finders
D. Colour Metres
E. Oxygen Metres
F. pH Metres
G. Temperature Metres

7. Inform the students that many advanced anglers use several electronic aids to help them locate fish. Use the transparencies from the graphics section to explain these briefly. If you were able to have a boat owner come with his boat, have him/her explain how he uses these items. Have him explain the recordings made by his graph recorder, pointing out fish and underwater structure not visible to the human eye. Have the angler explain how he uses pH temperature, oxygen, and structure to locate popular local fish. If you are near the ocean or large bodies of water, it would be worthwhile to discuss the use of GPS to relocate a specific fishing area. Tell the students that they will have time to look at the boat and its instruments in a few minutes.

VI. Sightings

A. Methods
B. Triangulation
C. Visual

8. Explain to the students that, on smaller bodies of water where shore can be seen, it is possible to return to a good fishing location by using triangulation. Use the transparency and photocopies of the graphics to explain this concept. Basically it involves lining up two landmarks in different locations, as much as possible at right angles to each other. That makes it possible to follow out on a line from one landmark until you reach a point that intersects a line from the other landmark.

9. Discuss the fact that it is possible to become a more successful angler by eliminating much water by visually selecting places to fish or by using maps and charts.

INTRODUCTION

This lesson is designed to acquaint students with the fact that fish are not uniformly distributed through any water system, be it pond, lake, river, stream, or ocean. In fact, much of these areas are devoid of fish most of the time. Knowledge of aquatic communities and of fishing depends on understanding that habitat will vary with the fish species, feeding habits, temperature range, and oxygen tolerances.

NARRATIVE

General

Fish are not randomly scattered through any body of water, be it a pond, lake, large reservoir, stream, river, ocean, bay or estuary. Fish are always found in specific areas. These areas will vary with the species of fish and the environment in which they live, but are based on typical factors that involve every living thing - food, oxygen levels, temperature, pH, light levels, structure and schooling tendencies. While all fish will be affected by the availability of food, oxygen, and temperature range, some species vary as to their need for structure, schooling tendencies, pH, and light levels.

Learning to understand the special needs and preferences of a species is critical to locating fish in any body of water. Thus, the biology of a given species determines just where and how it will live. Facts learned about each species indicates where to look for it. Examples would be the freshwater species, which inhabit rivers or follow oxygen and temperature levels in lakes; bass, which will relate to structure, near food and migration paths; and catfish, which usually do not relate to structure but forage or graze on the bottom. There are fine differences between related species, such as the mangrove jack's preference for wood as structure, while fingermark prefer gravel, rock or stony bottoms.

Reading Water

Much can be learned by carefully recognizing how to decipher what is underneath the water's surface. Often fishermen call this "reading the water". It simply means utilizing knowledge and experience to determine the best structure and currents, and where a given species might locate in relation to these currents, depths and structure types. This helps the fisherman to know when, where and how to present a bait or lure to these spots in the hope of hooking a fish.

Still water is the most difficult to interpret since the calm surface gives no indication as to the depth, or any other features that might be found. Often the best way to read a body of water is to examine the surrounding landscape. With the exception of man-made changes, the steepness of the shoreline, type of bottom (rock, soil, etc.) will be the same as that found above water in the same area. Water plants such as lily pads and shoreline plants such as reeds often indicate shallow areas. With man-made impoundments they often have their deepest part located where the wall is constructed.

Running water is far easier to read. Current gives indications of the water depth and any underwater structures. Underwater rocks and boulders make surface swirls. The size of these swirls is relative to the size of the rock and also its depth under water. Rocks and boulders are also important to note, since each rock or obstruction (island, bridge, piling, dock, pier, or buoy) will make a cushion of water around it, that allows fish to rest in comfort, yet still be close to any food that might move by. Thus, these are ideal places to fish for bass, trevally, mulloway, barramundi, and mangrove jack.

These buffers, or comfort zones, are important in both fresh and salt water fishing for the same reason. Both inshore currents and bay and estuary tidal flows

will cause the same strong currents that run in rivers. These tidal currents will vary with the force of the tide since the tide will reverse itself daily. Often the best places to fish around obstructions or currents are on the down current side where fish can lie in protected water, yet easily reach food that is sweeping by. The down current side of any obstruction or structure will reverse each time the tide changes.

Charts and Maps

In addition to becoming experienced in reading water, the angler will find that maps and charts are also helpful. Maps and charts are different. Maps, by definition, are drawings of a land area that often include rivers, lakes and ponds. Some of the most useful maps show the area of a man-made lake before the lake was built. Thus, the contours shown, roads, creeks, old building foundations, and railroad beds, are all indicated and, when these features are superimposed on a new map showing the man-made lake (which will usually show only the water surface), they can become a valued fishing aid. Map makers and publishers are beginning to realize this and many maps show bottom depth (numbers or contour lines), bottom structure, bottom type, fishing spots, and man-made objects which attract fish.

Charts, which map the specific water area, show only superficial features of the adjoining land. Charts are usually made of large bodies of water and are available for all of the saltwater coastline, as well as for the Great Barrier Reef. These indicate bottom depth, structure, reefs (natural or man made), courses (compass readings to run from ports to fishing spots), channels, and piers.

To use a map or chart, the angler must orient it properly by using a compass to line up the magnetic north as shown on the compass with the north as indicated on the chart or map. (Corrections for the difference between true north and magnetic north are indicated.) By doing this, one can obtain directions to fishing areas from the dock or launch ramp and can follow these courses with the compass using a reckoning as to time and distance to arrive at the fishing area. Maps or charts are very useful in locating potential fishing areas prior to fishing.

In using maps and charts, it is important to correlate the information of the species being sought. Look for shallow areas, stump fields, standing timber, underwater structure, hummocks and humps, weedy shoreline areas, breaklines (a sharp difference between one level and a sharp drop off), creek beds and similar areas. For coastal salt water species, look for comfort zones where fish can hide, such as pilings, bridge abutments, docks, shoals, bars, buoys, and reefs, or follow depth contour lines for free swimming ocean species. For the migrating fish such as mackerel, fish the open water areas while trying to locate the bait on which these fish feed.

Structure

Structure is nothing more than something unusual on the bottom, or in the water around which fish gather. Normally, it has to be unusual or atypical structure or noticeable structure to be a good fishing area. In a whole shoreline littered with stumps, bass could be likely found but would not be attracted to one stump as opposed to any others. A barren shoreline with a small area of several stumps would tend to concentrate fish and make for an excellent fishing structure.

The same would apply to rivers where one large boulder might concentrate a number of fish. A pool lined with a number of rocks could hold fish, but without the tremendous fish attraction of the single boulder. Similarly, a patch of rocks or gravel on the soil bottom of the ocean can create structure for snapper or red emperor. On a lake with a mixed rocky and mud bottom, catfish are more likely found over the mud since these fish relate to the forage found in soil or sand. It is important to know not only the structure, but also the structure desired or preferred by the target species. In salt water, structure can be anything that will attract fish - oyster bars, shoals, pilings, docks, piers, bridge abutments, buoys, old wrecks, and reefs. Ocean fish such as

dolphin are attracted to a floating structure thus offering an opportunity for ocean trolling anglers to troll past any spotted flotsam.

Electronic Fishing Aids

A number of electronic fishing aids is available to help anglers find fish. Some are simple and inexpensive, while others are very expensive and necessary only for fishing from large fishing boats. Depth finders are sonars, which read the bottom and show what is down there. These began as "flashers" with a small light rapidly rotating around a dial indicating the water depth. With experience, it is possible to determine the type of bottom and also the presence of snags or other structures.

Chart recorders are similar except they record on paper, the depth, including structure, snags, fish and the bottom for a permanent record and easier interpretation. Newer technology in depth finders includes those with a liquid crystal display (LCD) screen (similar to the screen on many digital watches) displaying a picture similar to the chart recorder. The picture constantly changes and is not retained as is a chart picture. The picture is shown in small black blocks or pixels. Some models do have a memory to "hold" pictures for later review and analysis. Many are extremely sophisticated with computer chip technology and thousands of range possibilities. With advanced models, objects 5cm apart can be seen as separate objects on the screen. These days most use a LCD screen.

Colour meters (really light meters) measure the amount of light and visibility of certain colours. This helps the fisherman choose a lure with the most visible colours in different types of waters and at different depths, presumably so that more fish will see and strike it. Several different brands are available, and all work on the general principle of a photographer's light meter. Charts to indicate the best coloured lure are included with these. Many lure companies now make lures in these special colours.

Oxygen meters also are helpful in determining the oxygen levels of water. Oxygen requirements of different species vary, with some species requiring much higher levels of dissolved oxygen than other species. The meters help to find these levels and also indicate areas in a lake, pond or river where low oxygen might preclude any significant fish populations.

pH is measured on a scale of 0-14. pH meters measure pH (acidity or alkalinity) in water and help determine if the best range of pH is available for fishing. Best fishing is usually found close to the neutral range of 7.0. Water that is too acid (less than 7.0) or too alkaline (more than 7.0) is detrimental to fishing and the chance of success.

Temperature meters measure the temperature of the water. Surface temperature meters are built into some boats, but some include a small thermocouple on the end of a wire to allow recording of temperatures at various depths. The importance of measuring water temperature is to determine seasonal migrations of fish such as mackerel, or to locate water at a temperature preferred by free swimming fish such as tuna and marlin.

One of the most sophisticated instruments is GPS (Global Positioning System), which provides a reference point on the water to be registered as a series of coordinate numbers for future reference. To return to the same spot, these numbers can be stored in the memory. Later the GPS can designate a course to reach the same location and indicate when it is reached. Some are coupled with the boat steering mechanism so that specific locations can be found automatically.

Sightings

The use of available information in terms of visual sightings, depth soundings, triangulation, and time/distance charts can assist anglers in returning to good fishing locations without the use of expensive electronics.

The simplest way to mark a location is to take sightings of two landmarks in two separate locations. For best results, these lines should be as close to right angles as possible. As an example, two pine trees on shore in line with the spot and two telegraph poles at right angles in line with the same spot will give accurate sightings. Then it is possible to follow one line of markers, the pine trees, for example, until the line made by the second two markers, the two telegraph poles, is intersected. This is sometimes called triangulation since the lines form the two legs of a triangle.

Depth soundings, through a measured weighted line, much like old-time sailors used, can be a substitute for a depth finder if the bottom being sought varies, such as over a hump or in a creek channel.

With a compass, readings can be taken of a fishing location and a timed course can be run to reach the spot, based on previous information. It is important to run these courses at the same boat speed each time under the same water conditions, or to make adjustments for any differences.

In some cases, sightings can indicate fish. Diving birds indicate the presence of baitfish which are being eaten by predator fish. Lines of debris on the surface often indicate current or tide lines. Some fish will actively feed on the surface and can be spotted by the white water and jumping fish.

Using Total Information to Find Fish

All information concerning structure, oxygen, pH, temperature, food, comfort, and protection from current and migration paths must be considered in finding fish. A beautiful piece of structure with a good temperature is no good if the area is devoid of oxygen. Plenty of oxygen around some structure with plenty of available food may not be good if the temperature is too high or too low for the species sought. Most areas include the necessary physical characteristics for good fishing, but constant monitoring is necessary for consistent success.

LESSON 15

PRESENTATION TECHNIQUES AND SPECIAL TACKLE

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LESSON 15

Presentation Techniques and Special Tackle

Lesson Objectives

Following this lesson students will:

1. Know how to present a lure, fly or bait to fish.

2. Know how to fish in many types of water.

3. Know why and how to vary lure retrieval.

4. Understand trolling techniques.

5. Be aware of the role of line planers, side planers, downriggers, outriggers, and trolling sinkers.

Materials for the Lesson

1. Photocopies and overhead transparencies prepared from the graphics in the appendix.

2. Examples of trolling aids such as trolling sinkers, dodgers, planers, etc., if used in your area.

Much of this lesson, if not all of it, could be taught at a swimming pool and accomplished by demonstration. A regular classroom can be utilized with the graphic aids, but the use of a pool would allow the students not only to visualize different presentations and see how lures react to different retrieves but also to practice different techniques.

TEACHING STRATEGIES

Lesson Content Outline	Classroom Procedure
I. Introduction	1. Introduce class to the lesson objectives
II. Presentation A. Natural Bait B. Lures	2. Discuss why proper presentation of a lure or bait is necessary in enticing a fish to strike. Fish strike baits that look and act natural or those that appear to be injured. Therefore, the presentation of a bait or lure in a natural way can increase success. Also, retrieving a lure in a way that makes it appear impaired, can also entice a fish to strike
III. Retrieves A. Natural Bait B. Lures	3. Ask students for suggestions on how to present bait. Beginning students may have few suggestions. But "correct" answers could include: 1) attempting to cast so the bait lands softly in the water, not with a big splash, 2) using a float to suspend bait so that it appears to be floating, 3) in moving water, casting up current and allowing the bait to flow with the water, 4) using a light weight so the fish can't "feel" any unnatural movement or weight, 5) moving bait slowly, not rapidly, 6) hooking live baits so that they can still swim. Other ideas are in the text material. 4. Artificial lures must also encourage the fish to strike. Many have a built-in action when they are retrieved, but others don't. Ask students for examples of both types and list them on the chalk-board or whiteboard. Those that have built-in action could include: any type of hard-bodied lure, spoons, spinnerbaits, buzzbaits, etc. Those that don't have action of their own, where the angler must manipulate them are: jigs, plastic worms, some top water lures, flies, and fly rod bugs. If you are utilizing a pool, demonstrate the differences. Let students practice with the different types of lures. 5. Stress that, to be most effective, they must understand the fish and its ability to catch and strike a lure. If they are not sure, encourage them to fish the lure slower, rather that faster. Some fish swim very rapidly, while others don't and if the water temperature is cold, most fish move more slowly. Also, if fishing in current, the angler will find that the current may provide all the action necessary. 6. With a diving bibbed lure, demonstrate that a lure will swim more deeply if the rod tip is held lower to the water. This can help if the fish are deeper than the lure normally runs. However, with spinnerbaits and buzzbaits, it may be necessary to hold the rod tip up to keep the lure on or near the surface of the water. With spoons, rod tip up will cause the lure to skip on the surface, rod tip down will keep the lure under water.

7. Demonstrate methods of varying the retrieval of a lure. Stop and go cranking, moving the rod from side to side, and lifting it up and down slightly. Suggest that they experiment. What works one day, may not work another.

IV. Trolling
A. Basic
B. Specialized and Advanced
C. Trolling Aids

8. Ask students if they have ever trolled. Ask them what trolling is. In its simplest form, it is nothing more than trailing a lure behind a moving boat. One big advantage to trolling is that several anglers, using lures that travel at different depths can locate fish rapidly. Trolling a new area permits the angler to cover a wide area of the water in a short time. Many anglers troll until they locate fish and then utilize casting and/or still fishing to continue fishing in the same general area.

9. Trolling is used by anglers in many parts of the country, both for salt and fresh water fishing. For young or inexperienced students you may not wish to continue beyond #8 except to explain that there are many aids available for trolling. These aids include downriggers, outriggers, wire and lead core line, heavy sinkers, flashers, planers, and side planers, and teasers. Each of these aids has a specific purpose in assisting the angler in catching fish. All are used to present the lure or bait to the fish in a way and in a location that will encourage it to strike. With advanced or older anglers the special techniques for the use of these aids can be discussed at length for both salt and fresh water.

INTRODUCTION

Proper presentation of a lure or bait is necessary to be a successful fisherman. To make a proper presentation, the fisherman must make a careful approach and select a bait or lure appropriate for the fish and conditions. The lure must appear natural, and there must be no appreciable resistance to the water (called drag and caused by the line attachment) to alarm the fish.

Baits and lures are presented differently with special retrievals to make them attractive to the fish. A correct retrieval can make an appreciable difference in the speed, depth, action and attractiveness of the lure to the fish.

Trolling is an important, yet often underrated and poorly understood method of fishing. Trolling involves trailing a lure or bait behind a boat so that the bait or lure is constantly moving in new water. It is an excellent way to explore quickly an area to locate concentrations of fish.

Trolling can be a highly sophisticated skill involving a number of fishing aids, such as teasers, side planers, downriggers, outriggers, motor plates, kites and similar gear. All of these aid in getting the lure or bait to the fish. Trolling speeds and patterns are often overlooked, yet are an important facet of trolling. Trolling speed must be matched to the fish species and fishing area, while trolling patterns make it possible to work an area systematically without gaps or overlapping.

NARRATIVE

Presentation

Both baits and lures must be presented naturally to prevent the fish from becoming suspicious or being scared away. Naturally, it is important to know where fish are. Approach must be considered a part of presentation since a poor approach will scare fish even before a lure or bait is offered.

When fishing from a boat, an angler must approach likely areas stealthily so as not to scare the fish. This means eliminating loud noises, such as dropping an oar, scraping a tackle box along the hull, or stamping feet. Such noises are easily transmitted through the boat hull. Loud talking or noise transmitted through the air, seem to have little effect on fish, despite the admonishment of some anglers to whisper while fishing.

Similarly, a boat engine should be stopped and the boat allowed to drift into place or be moved into place with a quiet electric motor, paddle, oar or boat pole. Consideration of currents, tides or winds may allow the boat to drift into fishing spots.

When fishing from shore (see Lesson 7), use similar caution and walk softly along the banks to diminish noisy vibrations in the water. Also avoid bright clothing that might be spotted by close-in fish. Fish are attracted to baits, but proper presentation is still necessary. A bait must be cast delicately so as not to throw the bait off the hook. In still water, this often means casting beyond the spot where the angler suspects the fish, allowing the bait to sink, then slowly reeling the bait to that spot or until a bite or nibble occurs.

When fishing current, tidal or running water, the angler should cast up current or uptide, so that the bait will wash into the area where fish are suspected. The deeper the water and the faster the current, the further upstream or up current the bait must land to drift deeply and naturally.

Baits are best fished with the least possible weight so that they will appear natural and present no danger to the fish. While a snug line is a must to feel the bait, a tight line may signal something unnatural. For this reason, many bait anglers use a "fish finder" rig, in which a sinker holds the bait on the bottom with the sinker sliding on the line, yet the bait can be taken freely by the fish, the line sliding through the sinker.

In running water, drift baits are often fished without sinkers so that the bait floats naturally. Often a highly held rod helps keep the line from creating an unnatural drag and also allows the angler to feel any pickup or bite. For this reason, many lure and bait anglers cast up current, reeling in just enough line to keep contact with the bait, but not enough to cause the lure or bait to drift unnaturally. Use just enough sinker to get the bait down to the fish.

Lure presentation is as important as bait presentation since fish cannot usually smell or taste a lure. Lures are usually moved, either by trolling, retrieving, or drifting the lure in a current. Careful casting to place the lure in the right spot is an important part of the presentation.
Fish are almost always startled by anything that lands closely behind them or falls too close. One general rule is to cast far beyond or in front of a fish so that the lure will intersect the movement or location of the fish. This can be accomplished in still water by accurate casting and in fast current by casting up current of the fish and allowing the lure or bait to drift. If the fish is not moving, casting to one side or forward of the fish, then slowly and carefully bringing the lure or bait past the fish, may cause a strike.

Fish will approach a bait or lure because they are hungry or by instinct, which many feel is the reason for strikes on fast lures by mackerel and similar fish on long spawning runs.

Retrievals

Bait Retrievals - Retrievals of bait are almost always far more passive than those of lures. First, bait is natural food and the fish does not have to strike it immediately, but can take time to investigate, smell and taste it without becoming unduly suspicious. Second, any rapid movement of a bait will usually make it seem unnatural.

Exceptions include trolling surface baits consisting of gar, mullet, large baitfish, strips of bait that look like baitfish, or other swimming creatures such as squid. In this case, the movement of the bait by the slow moving boat is enough to make the strip bait appear live and normal. For fresh water trolling, baits are usually trolled deep or at least under the surface. But again, the purpose is to make the bait appear live and attractive to any fish and to expose the bait to the maximum fishing area.

Another exception is casting baitfish, strips of bait, and other lures that are also designed to look like moving fish. Worms, bloodworms, pippies, insects, crayfish, mussels, dough balls, corn, cut bait, and yabbies must be fished slowly or allowed to drift without any movement imparted by the angler.

Some exceptions occur with the combination of bait and lures, such as a baitfish added to a jig or a belly strip added to a spoon, but these are still lures with the bait as an added attraction. A variation of this might be with a heavy unpainted jig head holding a yellow tail scad, mullet, gar or similar live bait and the lead head being the vehicle to get the bait down to the fish. In this case, the lure is secondary since the fish are going to be attracted to the bait.

The key to bait retrievals then, is to allow them to move or to drift naturally so they appear to be alive and an easy meal.

Lure Retrievals - Lures, as artificial attractors of fish, must be manipulated to entice fish and to provoke strikes. Many lures have a built-in action. These include plugs, spoons, sonic lures, poppers, spinnerbaits, buzzbaits, spinners, and in-line spinnerbaits. Lures that do not have built-in action, when action must be imparted by the angler, include jigs and bucktails, some lead slugs, plastic worms, other soft plastic lures, some top water lures, flies, and fly rod bugs. In all cases, the degree of action varies. Some top water plugs are cigar shaped and, if retrieved evenly, come through the water with no more action than a stick. Others have propeller blades, which create action through the spinning of the propellers, or various lips and plates that cause the surface lure to wobble and dance on the water. .

Spinnerbaits, spinners and buzzbaits have no built-in action except the movement of the propellers; sonic lures have a tight, fast vibrating wiggle; plugs have a built-in, undulating action, and spoons have a wobbling back and forth action. Lures such as jigs, soft plastic worms, other soft plastic lures and some (vertically fished) spoons have no action at all, except for that given them by the angler.

Expert anglers and all lure manufacturers agree, however, that erratic retrievals and movement of a lure - including those with built-in action will do much to increase strikes and catches. Even without working a lure erratically, there is much that can be done to make a retrieval effective. First is an understanding of the fish and its ability to strike a lure. Bass, for example, can turn rapidly to catch a widely ranging, wildly erratic lure. Mackerel, which can not make quick side moves, require the use of a less wide-ranging lure and a straighter tracking retrieval.

Second, it is necessary to retrieve at the right speed. The fish species, the water temperature and the water conditions control this. A fish in cold water has a slower metabolism and thus requires a slower retrieval than a fish in warmer water. The cold water also necessitates slower wobbling, less erratic lure action so that sluggish fish can easily catch the lure.

Some fish are also faster than others. It is impossible to keep a lure from a barracuda if it really wants it, while a lure for yellowbelly is generally retrieved slowly because the fish do not move fast.
Water conditions can also affect retrieve speed. When fishing in running water with a cross stream cast, no retrieve is required initially since the lure moves rapidly as a result of the water current and line drag. The lure is moving and attracting fish, but the angler is not retrieving it.

Rod angle also greatly affects another aspect of the retrieval, the depth at which a lure runs. plugs, designed to run deep, will not run as deep with the rod held at a high angle as when the rod is held with the tip down or touching the water. Some anglers go to the extreme of using long, (usually 2.1m), stiff rods held straight down in the water to gain extra depth.

Depth of a lure is also affected by line size. Everything being equal, a lighter line will have less water resistance and run deeper than a heavier line. This applies to casting, drifting and trolling.
This does not necessarily mean that a low rod angle is always good, while guiding these and other lures around surface obstructions since a high angle helps to hold up a spinnerbait or buzzbait. Also, when using a top water or shallow running lure, a change in the rod angle during the retrieval will help the lure maintain constant action and depth. Thus, a high rod is necessary at the inception of the retrieval, with the rod gradually being lowered as the lure comes closer.

Erratic retrievals can be made easily by working the rod, varying the turn of the handle on the reel, or a combination of techniques. Flyrodders can do the same thing, twitching

the rod tip or carefully, yet erratically, stripping in line with the line hand, or doing both at once.

Most retrievals are best when a number of different techniques are used, varying the motion, speed and movement of any lure with twitches, pauses, jerks, short constant retrievals, or several repeated jerks. The technique is not one that is programmed or formulated, but based strictly on experience and judgement.

Most anglers make larger lure movements than optimal and also retrieve lures too fast. A wide sweep with a rod moves a jig a metre or more in the water and completely away from a curious fish. A tiny twitch of the rod, however, will move the same jig only a few centimetres, often causing a strike. This type of very slight movement is particularly important when working those lures that have no intrinsic action such as flies and bugs, some structure spoons, top water lures, soft plastic worms, other soft plastic lures, and jigs.
The type of movement best used is easily seen when working top lures in calm water. Also, with the decreased stretch in line and increased stiffness and sensitivity in rods today, delicate movements to create the best action become even more important.

Some lures require a regular rhythmic retrieval for best results. An example is seen when working a jig down a rock cliff or series of rock piles or when working a plain cigar-shaped stick bait on the surface. For the former, a high rod with a short jerk interspersed with a short retrieval of line works best. For the latter, the same type of retrieval with the rod held horizontally or at a low angle works best.

Lure retrieval must also be dependent upon the natural bait that the lure is imitating, when such imitation is clear. A flyrodder’s nymph might be fished in a stream with only minimal movement so that the nymph imitates an emerging (rising through the water to the surface) insect in a natural state. A sonic imitation cast to schooling bass must be moved rapidly and erratically to imitate properly the nervous movement of schools of bony bream that the bass feed upon. A crayfish plug must be worked along the bottom in a slow deliberate, hopping movement that will simulate the backward movement of a crayfish.

Drag: Drag is the unnatural movement of a lure in the water, resulting from resistance, pressure, or drag of the line against the water and resulting in slowed, fast or unnatural lure movement. This drag occurs when fishing in running water or current and is caused by the running water "bellying" the line and pulling the lure unnaturally.

The only way to cope with drag is to avoid it by casting upstream or downstream to avoid the pressure against line stretching across the current. Drag, or line pressure, can destroy a good presentation since it makes an otherwise good imitative artificial bait appear unnatural. Often a rod held at a high angle will help reduce the line drag when casting across current. Fly anglers can master and use a "lazy S" cast that throws slack line in the cast that will wash out before the current affects the fly or bug.

Trolling

Basic Trolling - Trolling in its simplest form is nothing more than allowing a lure to trail behind a moving boat. Trolling can be used for any fish that will actively strike a lure in both fresh and salt water.
Trolling can involve bait or lures, with the lures consisting of trolling spoons, plugs, skirted lures, soft plastic lures, bucktails, and flies in single or multiple rigs. Baits generally include gar, slimy mackerel, yellowtail scad, pilchards, small tuna, squid, and cut fish such as belly strips.

In trolling, the baits or lures generally run straight off the rods. To keep the lures or baits from tangling, different lengths of line are played out and/or varying sinker weights are used to keep the lures or baits separated.

Trolling is best in areas that are known as fish producing areas by making regular, systematic runs to cover the area thoroughly. Fresh water trolling involves fishing deep, while in much salt water trolling, the lure is kept on the surface for sharks, wahoo, sailfish, marlin, dolphin and similar ocean fish.

For simple deep trolling, a number of methods are used. Sinkers can be used on the line for extra depth with mono or GSP braided line. In these cases, the sinkers are generally rigged in one or two ways. One is using a drop rig in which a sinker is dropped from a short (30 – 60 cm) line off a three-way swivel between the line and long leader. The other is using an in-line sinker between the line and long leader. Often in-line sinkers are keel shaped to prevent line twisting by the lure or bait. Depending upon the depth, line test and boat speed, sinkers can vary from a few grams to almost a kilo.

Since trolling depth is often controlled by the length of line out, many anglers will mark the exact length of line that is to be played out with a given rod and lure combination. They use tape, felt tip markings, tight knotted rubber bands, dental floss or other markers on the line.

Fish often hit when turns are made, presumably as a result of the fluttering action or slowed action of the lures during this manoeuvre. Care must be taken, however, to make slow wide turns so as not to tangle lines or lures.
For slow freshwater trolling, particularly for yellowbelly, a method of running the boat backward is used to slow the action. The surface area of the stern slows the boat and allows a very slow action and movement of the lure along the bottom. Towing a couple of buckets on short ropes is another method of slowing a boat down for very slow trolling.

Specialized and Advanced Trolling

Motor Plates - These fit onto the lower unit of most inboard/outboard or outboard engines. They are usually spring loaded and hinged to further slow the boat, yet flip out of the way at high speeds not to impede cruising speed.

Wire Line and Lead Core Line - These lines are difficult to handle, yet do allow the deepest possible trolling with any lure. The wire line is made of single strand wire. Lead core line will also go deep and is made of a lead centre (like fuse wire) covered by a braided core of nylon or dacron for strength.

Planers - Planers are designed to dive and take a lure down. They come in different sizes and styles. All have a mechanism by which the diving angle is changed when a fish hits. This allows comfortable playing of the fish. Planers are tied to the end of the line with a long leader (3 to 15 m) running from the planer to the lure or bait. When using these or trolling sinkers, the angler must land the fish by pulling in the line by hand for the length of the leader.

Teasers - Teasers originally were large, skirted, noisy surface lures or strings of smaller lures designed for offshore trolling to attract large ocean fish. They make splashes and flashes of light at just behind the boat.

Side Planers - These greatly expand the trolling area of a boat. They work just like planers, only floating on the surface and planing to the side of the boat. As a result, many more lines can be run than would be normally possible.

Downriggers - These specialised trolling aids are widely used in many areas for light tackle, deep water fishing. Basically, they consist of a reel of heavy wire cable mounted on the gunnel or transom by which a heavy lead weight can be lowered to any depth. Extension poles allow these downriggers to be placed to the side of the boat or off transom and clear of any motor or prop.
Special clips that allow the release of line are fastened to the weight or cable, the fishing line clipped into these devices. The whole device-weight on the cable with the line clips holding the fishing line and lure is lowered to the desired depth. When a fish hits, the fishing line is pulled from the line clip.

Outriggers - These consist of poles, usually one on each side of the boat. They are primarily used on larger offshore fishing boats, but smaller sizes are available for smaller boats. Lengths range from 4 to 6m. They are hinged at the boat so that they can be stored vertically for docking or at a 45 degree angle for fishing. A continuous loop of line runs from the pole tip to the boat so that release clips can be run to the end of the pole or to any intermediate point. The fishing line is fastened to the release clip and run out the pole. This allows the spreading of the baits or lures over a much wider area from the boat than would be otherwise possible and also allows the use of surface baits much further astern.

Kites - Kites are used in much the same way as are outriggers, but can be used for both trolling and still fishing or drifting. The release clips are attached to the kite line and run up the line to place a lure or bait far away from the boat. Often live baits are fished this way since the bait can be kept on the surface where its frantic struggles help to attract game fish. When the fish hits, the line is pulled from the release clip.

LESSON 16

FISHING FROM BOATS

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LESSON 16

Fishing From Boats

Lesson Objectives

Following this lesson students will:

1. Be aware of the advantages of fishing from boats.
2. Know the types of fishing boats available and which ones are best suited to different types of water.
3. Be familiar with propulsion methods.
4. Understand proper methods for the safe towing and launching boats.

Materials for the Lesson

1. Overhead transparencies and photocopies of graphics on boat hulls.
2. A boat equipped with both petrol and an electric trolling motor, if possible.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
	1. Introduce class to the lesson objectives.
I. Why Fish from Boats	2. Begin by discussing the advantages and disadvantages of fishing from boats and writing students responses on the chalkboard.
II. Types of Boats A. Canoe B. Skiff C. Cathedral hull D. Deep V E. Punts F. Bass or Barra boats	3. Using the overhead transparencies and the photocopied material, lead a discussion of the various types of boats, their advantages and disadvantages, costs, and uses. These are fully explained in the text material and some of the students or their parents may own one or more of them.
III. Propulsion Methods A. Outboards B. Inboards C. Inboard/Outboard D. Electric motor E. Paddles and oars	4. Discuss the different methods of boat propulsion and the advantages, disadvantages, and particular uses of each of several types. 5. If one or more boats are available for use, have the students attempt to categorize the hull, based on the class discussion. Discuss its best use and the type of water for which it is best suited. Point out storage areas and how the boat is arranged for its intended use and equipment, and tackle storage. Discuss the petrol and electric motors and their size and use in relation to the size of the boat.
IV. Boat Maintenance and Storage	6. Discuss maintenance of the boat(s) and how it (they) should be stored.
V. Safe Towing	7. Explain the differences of towing a boat, which requires additional driving skills and safety precautions, to everyday driving. Refer to the Queensland Transport Maritime Division Queensland Recreational Boating Safety Handbook. Discuss the important features and legal requirements involving the towing vehicle, trailer and weight of boat. Where possible have a boat on a trailer for practical demonstrations of the features. Discuss factors for safe towing of a boat. Discuss vehicle driving hints for reversing a boat trailer in the direction you want it to move. Demonstrate or show by transparencies the tie down straps, the light connection, boat safety chain and the motor support to be removed at the preparation area. Discuss the safety features to be observed, such as bungs fitted, safety gear on board and all other gear for the fishing trip, which is to be loaded at this point, and not on the boat ramp. . Discuss having a boat retrieval rope ready after launching. Discuss boat ramp courtesy when leaving and coming back to a boat ramp.

INTRODUCTION

Boats greatly expand the area available for fishing. In their purest and simplest form, they are nothing more than a platform upon which to stand while fishing. Without a boat, an angler's range is limited by his ability to wade shallow waters or by available bank space.

Since anglers fish water conditions and areas that may not normally be used, for pure boating or recreational pleasure, boats for anglers must be built for specific water types and fishing conditions. In addition, propulsion methods must vary. In some cases, the best propulsion is by paddle, oar or pole, while in others a high horsepower outboard or inboard/outboard (I/0) is a must to cover a lot of distance. In addition, boat styles for fishing are constantly evolving and being improved. The bass boat of 15 years ago is not at all like the modern bass boat manufactured for serious fishing today.

Anyone with a boat, or using a boat, must have respect for the craft, its maintenance and proper storage. In addition, many boats are towed on a boat trailer, and the knowledge and skills required are different from everyday driving. The maintenance of the trailer requires special attention.

NARRATIVE

The best boat for a fishing experience depends upon a number of factors, including the size of the body of water, the water conditions, the type of fishing, the number of anglers, budget and individual preference of boat length, hull style and method of propulsion. An offshore big game fisherman requires a large offshore 10m or larger fishing craft capable of travelling 100 or more kilometres, trolling all day and returning to dock. A shallow river bass fisherman is satisfied with a canoe or river-style punt for drifting currents and eddies. A bass fisherman in a dam needs a larger boat with an outboard engine. A serious tournament type bass fisherman wants a specialty bass boat. Sports fishermen might require a larger launch type boat that caters for up to four anglers and can be fitted with multiple rod racks and downriggers.

Boat Types

Types of boats suitable for fishing include:

Canoes

These are truly ideal for fishing rivers, streams, ponds, and small lakes. A well built canoe is different from the often depicted tipsy craft that does not have the room of other boats and craft. Canoes range from short 4m versions to 6m freight and "war" canoes, with most anglers opting for 4 to 5m craft, an ideal size for two anglers. Most canoes do not have storage compartments and are best propelled by paddles, a pole, or a very small outboard. For any type of motorized propulsion, special brackets are made for double-ended canoes, although for those using this propulsion extensively, square stern models are available for mounting a motor.

Canoes are best for quietly and thoroughly exploring fishing water at close range, not for wide range fishing over large lakes. Also, while extremely seaworthy when controlled by an experienced canoeist, they should not be used on big water or water susceptible to sudden weather changes or rough waves.

Skiffs

The term skiff is often used for any small boat or craft with a pointed bow, square stern or transom, and a relatively flat bottom. They are commonly termed rowboats, and are used for rowing or propelled with small outboards. They range from about 2.5m to 6m long, with most in the 3.5 to 5m range. Most are fairly flat bottomed, although they may be slightly rounded. Skiffs, which are often found in rental fishing and marina operations, are designed for two to three anglers fishing in quiet water at short distances from the dock. They can be made of wood, fibreglass or aluminum, (often called tinnies), commercially manufactured or home made for dam and river fishing. Their main advantage is that skiffs are roomy and inexpensive.

Cathedral Hull Boats

These boats have two or three distinct hull sections. They are often called cathedral hulls since viewed from the bow to stern out of the water, the one arch, made from the two separate hull sections, resemble a cathedral; similarly the two arches made from two side and one centre hull section resemble two cathedral openings. These boats are stable even at rest, are wide for optimal fishing or recreational use, and soft riding, and planing on the froth in the cathedral archway, thrown up by the hull sections.

These boats are made for high horsepower, get up on plane, and ride on a cushion of air and foam trapped between the hulls. They often require two motors to drive them. This makes them more expensive to set up and to run. Most of these boats come in 5m to10m lengths with 6m craft the most popular. Most are driven by outboard motors although Inboard/Outboard are also popular. As a result of their relatively square shape made possible by the use of the unique hull, they have room for anglers, rods, tackle boxes, and accessories.

Deep V Boats

These are boats that have single hulls. The hull is shaped in a "V" for cutting through rough water and for high speed operation. Because of this, they have a double hull (the hull in contact with the water, and the level deck upon which one walks) making them safe as well as often placing the deck above the water line. Because of the deep V and pointed bow, which is flared, they are "dry", even in rough water.

They are designed as planing hulls, riding on top of the water on a small pad of hull forward of the transom. Because the deep V hull construction is less stable when the boat is at rest, they are not as comfortable for drift or anchored fishing in rough water. They can be as small as a 5m, as in a centre console or half cabin design, or up to the largest offshore boats. Smaller ones can be outboard powered, but all the larger ones are inboard powered, usually with twin engines for maximum manoeuvrability.

Punts

Punts, also known as John boats are simple, usually wood or aluminum boats that range from 3m to 5m with a simple, square bow and almost rectangular hulls. As such, they provide maximum fishing space, contain room for fishing tackle and accessories and have a shallow draft. Small outboards, electric motors, poles, paddles or oars usually propel them. Because of the square bow, they will not take, nor should they be used in, rough water, nor on extensive bodies of water. They are stable and are ideal for dams, estuaries and rivers.

Bass and Barra boats

Bass/barra boats are basically pointy nosed punts. While primarily for bass or barra fishing, they are also ideal for other freshwater fishing and some light tackle, inshore saltwater fishing.

They are designed for high horsepower motors and range from 4.5m to 6m in length. Most are fully equipped with live wells, rod lockers, dry storage, built-in docking lines, pedestal seats, high horsepower outboards, bow mount electric motors, depth finders, night fishing lights, and consoles. They are deigned for big water and can run long distances in river type situations.

Specialty Boats

In addition to the general categories above, there are also specialty craft designed for fishing. These include very small fishing boats, usually only 2.4m to 3m long, with a blunt bow, minimum space, designed for one or two anglers to be propelled by very small outboard or electric motors. They are ideal for small, quiet water, are inexpensive and easy to haul on a car top, but cannot take any kind of rough water.

Fold-down boats are also ideal for recreational vehicle fishermen carrying their gear into remote places. These boats fold flat or into small packages for easy

storage. They are seaworthy with small engines and suitable for much fresh water fishing.

Boat Hull Style

The intended use of the boat governs the best boat hull style by the size and type of water, the number of anglers and the type of fish. Usually water type is the main governing factor. Small streams, shallow rivers and ponds can be handled effectively by punts, small skiffs and canoes. Larger areas of water that might develop rough waves require the use of larger skiffs, bass boats, and perhaps even larger deep V or cathedral hull boats.

In addition to the hull design and length of the boat, fishing boats are often characterized by interior fittings specifically designed for the sport. An extreme example of this is in the fittings and interior compartments that come with a specialty bass boat. Another example is the large cockpit and wide gunnel boats designed for big water and holding downriggers that are used for offshore trolling.

Motor plates for slow trolling downriggers, outriggers, side planers, depth finders in graph, flasher or liquid crystal display (LCD) style, temperature meters, live wells and built-in lure or tackle storage, can be added to many boats. Some larger boats even have specialized refinements such as tuna towers to spot fish, flying bridges for extra control when fighting a fish, and GPS to return to fishing locations.

Methods of Boat Propulsion

To be effective, boats must be capable of being moved. High horsepower engines or a simple paddle, pole or oar can accomplish this.

Outboards

Outboard engines range in size from tiny 0.7kW/1hp kickers to giant engines of over 183.9kW/250 hp. The maximum size used on each boat is controlled by the recommendation for that boat, found on a BIA plate on the boat. Outboards have the advantage in that they are portable and can be used on almost any boat including rental boats, are easy to operate, and offer instant power. Sizes are available for canoes and small punts. Small outboards are usually controlled and run with a combination throttle/steering handle while larger outboards are controlled by cable operated steering wheels at a console.

Inboards

Inboard engines are found only on larger boats and consist of a regular marine engine mounted inside the hull of the boat with a propeller shaft running at a slight angle from the engine through a watertight seal in the hull to the propeller.

Many larger boats have two inboard engines, running two propellers, each with a separate control, for maximum boat control in steering, backing up and docking. Diesel engines are preferred to petrol motors, as there is a much lower risk of explosive fuel fumes collecting in the bilges

Stern Drives

Inboard/outboard engines are combinations of an inboard engine driving through an outboard leg mounted on the stern. Inboard/outboard engines combine the features of both types of propulsion. The engine is mounted in the boat, usually immediately forward of the transom. The power goes through the stern of the boat and into an angled, outboard-like lower unit that holds the propeller. It has the advantage of offering higher horsepower performance in less space and less draft than the prop from a true inboard engine. The lower unit can also be lifted with a power lift, making it better for shallow water application or to trailer the boat.

Electric Motors

Electric motors are designed for either stern or bow use. For large horsepower boats, they are used on the bow as a controlling or fishing motor once the fishing area is reached. The small electric motor, which runs on battery power, allows enough control to move the boat

into fishing positions, something not easily accomplished with the larger and noisier outboard engine.

Stern mounted electric motors are used for the main propulsion of small boats and in those waters where gasoline operated outboards are not allowed. Electric motors can be operated by a handle, as with a small outboard, or by a foot or electronic operated control that allows the hands free for fishing when in a bow mount configuration. Electric motors are housed in a watertight lower unit, with the controls operated from the top, and power supplied by 12 or 24 volt batteries. For best results, most manufacturers recommend "deep cycle" batteries that sustain a continued electric drain.

Paddles or Oars

Paddles are primarily used for canoeing, but a paddle, or set of oars, is required in many states as part of a safety emergency package. Oars are used primarily in skiffs where they are an effective, but slow means of propulsion.

Poles

A pole - sometimes called a setting pole - is primarily used in river fishing with a canoe or punt. In shallow water a pole offers better and quicker control than either a paddle or oar. A pole is also widely used in some saltwater fishing as in sight fishing (fishing to sighted fish) on the flats.

In all fishing boats, care must be taken with the accessories, occupants and occupants' gear to distribute it carefully so that the boat is not unbalanced. Imbalances make the boat difficult to handle in any water and can be dangerous.

In all situations, boating safety must be observed. (See more on this in Lesson 17 - Boat And Water Safety). This means limiting the boat to the recommended weight, contents, and number of passengers and engine size. Information on the recommended weight and passengers and the maximum kilowatt/horsepower engine can be found on a "BIN" plate on all boats. This plate includes recommendations of the Boating Industry Association, a self regulatory boating industry body formed, in part, to keep boating safe.

Safe boating also means knowing all the boating regulations, rules of the road, safety procedures, not operating a boat while under the influence of alcohol, not allowing anyone to ride on the bow, and wearing a PFD at all times the boat is operating under power.

Boat Maintenance and Storage

Boats and equipment must be maintained and stored properly. Proper maintenance includes a careful inspection of the boat on a regular basis, preferably after each trip. The hull, engine, and accessories should be checked for wear or damage. Fibreglass and aluminium boats require little maintenance. Aluminium boats should be checked for cracks, severe dents, loose rivets, and signs of leaking and structural strength of the ribs and stringers.

Fibreglass boats should be checked for leakage or spiderweb cracks in the hull. Wood boats must be checked extensively and regularly for soundness of the wood, loss of caulking, and tightness of screws and fasteners.

Boat engines are supplied with an owner's manual to indicate the checking, maintenance, and lubrication schedules. These should be carefully followed, with logs kept of the boat’s use, since boat engine maintenance scheduling is based on hours of use. Of particular importance is the change of lower unit lubrication or grease since lack of lubrication can ruin an engine quickly.

When not used, boats must be stored. Boats kept at a boat slip or dock must be tied, taking into consideration sufficient slack to allow for tidal changes in saltwater areas. Boat fenders should be used to protect the boat. Towed boats must be fitted to a trailer so that the hull is supported adequately. Car-topped boats must be carried with sturdy racks and adequate tie-downs. At home, car top boats must be stored with sufficient

support, based on the type of hull design. As a general rule, most small boats are best stored upside down on saw horses or on similar racks.

Towing your Boat

Towing a boat is very different from everyday driving skills and safety precautions. As a driver, you have a legal responsibility to other road users and yourself when towing a boat to drive to suit the conditions. The towing vehicle, trailer and boat must meet all the legal and safety requirements. The first step is to ensure that the vehicle, trailer and load are suited.

The Queensland Recreational Boating Safety handbook published by the Queensland Transport Maritime Division sets out all the safety requirements for safe towing. The principle features are the;

- Legal requirements for the vehicle and trailer to comply with all relevant standards for registration,
- Compliance with the regulations for safe towing by the towing vehicle such as vehicle suspension, suitable type tow bar and coupling, light sockets for trailer lights connection, suitable braking connections,
- Tow bars to be properly designed and have the suitable towing capacity,
- Braking system to meet the regulations depending on the Gross Trailer Mass (GTM) of the weight on the trailer's axle when coupled to the vehicle.
- Safety Chains to meet the safety regulations and the length of the chain/s must prevent the trailer's drawbar from hitting the ground if the boat trailer becomes detached from the towing vehicle.

Safe towing procedures must be observed on the highway. Any car and trailer combination requires far more time and clearance when passing another vehicle.

Backing a boat trailer up at a boat ramp is easy, provided that a simple rule is followed. That rule states that the driver should move the car wheel in the same direction as the trailer needs to go. Another simple rule suggests holding the steering wheel at the bottom and turning it in the direction the trailer must go. Both of these tips accomplish the same thing; they are just different ways to think of the same basic concept. The best launching involves lining the car and trailer up straight with the ramp to avoid any difficult turns.

As a boat ramp courtesy before moving onto the boat ramp, park in the designated preparation bay away from the boat launching activities. Load the boat completely with all fishing tackle accessories, boating gear, and life preservers. Check that the bungs are fitted tight, remove the boat safety chain, tie down straps and motor support. Have a rope ready on the bow to hold after the boat is launched in the water, so the boat can be pulled back to the shore. Then the boat is ready to launch and your time on the busy boat ramp is minimal and allows others a quicker access. Once the boat is launched, the car and trailer are driven away to the boat trailer park.

On return from a fishing trip look at the ramp to see if there are boats waiting to be taken out of the water and those that are being launched into the water. Boat ramps can be very busy indeed, and tempers easily raised. But they can be controlled if everyone follows the simple rules. Take your turn to be pulled from the water. When coming in to the ramp, look at the row of waiting boats and place yours at the next position in turn. Have the boat held so that the car and trailer can be brought down near the ramp. In that way you can be ready to reverse onto the ramp when your turn comes. The boat handler keeps moving the boat closer to the ramp as the other boats are taken out of the water. Allow for the other people launching a boat to have a spot to hold their boat while the car and trailer are parked.

LESSON 17

BOAT AND WATER SAFETY

Return to Contents

Boat and Water Safety

Lesson Objectives

Following this lesson students will:

1. Understand how to operate a boat safely.

2. Know what agencies are available for assistance in time of trouble.

3. Know what should be included in a boat readiness checklist.

4. Be familiar with basic boating equipment and safety gear, and how to store it on a boat.

5. Know how to cope with basic boating emergencies.

6. Be able to recognise severe or dangerous weather and know how to handle a boat in such conditions.

7. Understand the need to wear a regulation Personal Flotation Device (PFD) while boating.

Materials for the Lesson

1. A chart showing a coastal channel, underwater contours or depths, and navigational aids.

2. Free materials from the Boating and Fisheries Patrol, Air Sea Rescue, St John's Ambulance, Coast Guard, or state boating agency.

3. A simple compass and a chart for use by the students.

4. A tide table to teach tides, if needed in your area.

5. Several types of Personal Flotation Devices (PFDs) .

6. A sample trip record card.

7. A localised, individualised boating checklist.

8. Examples of anchors, anchor chains, and lines.

9. Examples of fire extinguishers, horns or whistles, V sheets, flares and other emergency equipment.

TEACHING STRATEGY

Lesson Content Outline	Classroom Procedure
I. Introduction	Much of this lesson is suited to teaching on a boat moored at a wharf, marina or coastguard location. If this is not possible, a second meeting should be explored to follow up on the concepts presented and to provide an opportunity for the students to experience and practise safe boating techniques. Also, this lesson lends itself to the use of one or more qualified boating instructors as resource people. 1.Introduce class to the lesson objectives. 2. Begin with a discussion of the need for proper and safe boat handling and safety on the water. For anglers, learning how to use a boat safely is just as necessary as knowing how to operate a bicycle or car in a safe manner. The national statistics on drowning indicate that it is the second leading cause of accidental death for people up to 44 years of age; second only to automobile accidents. Hundreds of people drown each year and most of these are very close to safe facilities. Safety is paramount.
II. Basic Boat Handling A. Rules of the Road	3. Discuss boat handling and how boats differ from land-based vehicles in speed control, steering, starting and stopping. Boating and speed in restricted/protected areas must be included as well as respecting the rights of others to share the resource. 4. Just as there are rules for driving a bicycle or car, there are some basic "rules of the road" on water. Use the photocopied graphics from the appendix to discuss these basic rules. Include approaching, overtaking, and right-of-way for sailboats. Horn signals, found in booklets from Queensland Transport or the Fishing and Boating Patrol and others will be helpful here.
B. Navigation	5. Just as automobile drivers use maps to navigate, boaters navigate by using key checkpoints on the shore, sophisticated electronics equipment, or by using charts and a compass.
III. Boat Readiness Check A. Trip Record Card B. Check List 1 .Registration 2. Boating Licence and Fishing Permits 3. Fuel	6. A written record card should be left in the event of an emergency or if the angler does not return on time. The trip record should include boating destination, return time, course on the water, and the ultimate destination. With a map or chart, discuss a specific trip record with the students. Trip record cards are available from any Department of Transport agency and Volunteer Coast Guard.
4. Fire Extinguisher 5. Lights and Torches 6. Flares, V Sheet, Signal Mirrors 7. Battery	7. Ask the students what they think should be included in a boat readiness checklist for angling in your area. As the list develops, discuss why each of the items is important. Stress how the use of a checklist can help the boater remember needed items before an emergency arises.

8. Ropes and Anchor
9. Paddle/Oars
10. PFDs
11. Bilge Pumps, Bailing Buckets
12. Water Bottles
13. Compass, Charts of the Area - Smooth Water Limits?

IV. Coast Guard, State Police, Local Police

8. Discuss the role of the Queensland Boating and Fisheries Patrol, Water Police, and other agencies, in the enforcement of boating regulations and in ensuring that bodies of water remain safe.

V. Storms
A. Lightning
B. Wind and Waves
C. Fog

9. Ask the students if they have ever been caught on the water during a storm, if they were afraid, and how the situation was handled. Stress the importance of leaving the water, if possible, before a storm strikes. Discuss in detail what to do in the event of lightning, strong wind and waves, and fog. An experienced boat person, Coast Guard or Air Sea Rescue representative would be a good resource.

VI. Equipment Storage
A. Boating Equipment
B. Fishing Tackle

10. No matter how large the boat, it seems that there is never enough room. Discuss the importance of boat storage, along with safety aspects of an uncluttered boat and knowing where needed items are in the event of an emergency. The location of petrol cans and batteries, PFDs, and fire extinguishers, along with rods and reels and other fishing tackle is crucial to a pleasant boating and fishing experience.

VII. Anchors
A. Types
B. Uses

11. Utilize the graphics in the appendix and a prepared overhead transparency or photocopied handouts to discuss boat anchors, their uses (including emergency situations), and types popular in the area. Include the use of "sea anchors".

VIII. Maps, Charts, Compass

12. Discuss the importance of using a compass in conjunction with a chart for water travel. With a young class, include just a basic discussion. With an older group or if angling is done on large bodies of water in your area, expand the discussion so that all students would be able to navigate.

IX. Tool Kits, Tools, Parts

13. Discuss the importance of carrying tools and spare parts on a boat. The boat and accessories will determine the type and amount of tools. Suggest what is necessary for a large boat in comparison to a small boat.

X. Emergency Procedures
A. Capsizing
B. Alcohol
C. Person in the Water

14. Emergencies on the water can be terrifying experiences. They can occur from unsafe handling of the boat, from drinking alcoholic beverages, or from unknown hazards. Discuss emergency procedures including the use of PFDs and the concept of reach, throw, row, go to save someone in trouble in the water. It is important that students understand that they swim out to save someone only if they are trained in lifesaving. All other methods of lifesaving should be tried first.

XI. Security

15. Ask students how they or their parents ensure the security of their boats and fishing equipment. Many of the items on and in boats are a temptation to thieves and these must be secured to prevent loss.

XII. Courtesy

16. With the tremendous pressure on our water resources, courtesy is extremely important. Ask the students to make a list of the ways they can be courteous on the water. The Golden Rule is a good way to lead into this discussion

INTRODUCTION

Learning how to use a boat safely is as necessary as learning how to ride a bike or to drive a car safely. Boat handling and safety is dependent upon an understanding of boat operation and "Rules of the Road" which regulate boat traffic. Navigation skills are also important, especially in larger boats in open water.

Just as the local and state police help on the road, the Water police, the Boating and Fisheries Patrol, and the Coast Guard are there to assist any boat in emergencies.

Storms can make boating very hazardous. Boating should be avoided in these situations. Heavy rain making vision difficult, a lightning strike from the storm and rough seas generated by the high winds are the dangers to life and the boat.

Since boats rock and bounce in the water, proper storage of both boating and fishing equipment is a must, both to prevent injury to passengers and damage to the equipment. Each piece of equipment should have a special storage area, making that equipment easy to find and use.

Boating also requires knowledge of anchors, anchoring, PFDs, maps, charts, mooring, emergency procedures, and security. Especially important is the realisation that while boating is fun, alcohol and boating do not mix. There are severe penalties for drink driving in a boat, with the loss of both the boat and the motor vehicle licence.

NARRATIVE

Basic Boat Handling

Operation of a boat is similar to, yet very different from, the operation of a car. The two basic controls are control of speed (acceleration or deceleration) and control of direction (steering), along with braking when necessary. Larger boats are controlled by a steering wheel and smaller boats by turning the throttle handle on the outboard or by using oars, paddles or pole. There are no brakes on a boat. The accelerator is usually in the form of a lever operator throttle, although some boats are now being equipped with foot controls, not unlike those used on cars.

The steering wheel works the same way, but a boat will react differently to a car. In a car, steering is controlled by the turning of the front wheels, with the rear of the car following almost the same course as the front wheels. In a boat, steering is controlled by turning the propeller (as in an outboard or stern-driven boat), or turning a rudder (as in an inboard boat). Thus, a boat will swing widely to the stern since the control is at that point. This basic difference is important for manoeuvring in tight places, such as docking and mooring.

Since there are no brakes, all boats will drift to a stop, with water resistance rapidly slowing the boat. For emergencies, a boat can be placed in reverse to slow and stop it.

To prevent accidents and make boating enjoyable and safe, several rules of the water must be observed. Refer to the Queensland Recreational Boating Safety Handbook An operator is considered in violation of boating laws if these rules are not followed. Negligent operation

includes speeding, operating a boat in protected, swimming water or slow speed areas, and skiing too closely to swimmers or fishermen, thereby causing waves to other boats or docking areas.

Taking the right of way from a sailboat, anchoring in a shipping channel, overloading beyond the weight or number of passengers recommended by the boat manufacturer, and lacking proper boating equipment or safety gear, are also dangerous. Operating at night without proper lights, overpowering the boat with an engine exceeding that recommended by the manufacturer, and operating under the influence of alcohol can also lead to serious accidents.

Basic operation includes knowing how to operate the boat and observing safety rules. These rules of the road include: boats approaching each other must stay to the right of the other boat at all times. Overtaking another boat can be done on either side of the boat but must be accomplished at reduced speed. Any boat off the starboard bow (right side) from a point directly ahead to a point just aft of amidships has the right of way; just like two cars at an unmarked intersection, when the car on the right has the right of way.

In most cases, there are a series of standard horn and whistle signals for these meetings so that the other boat will know the intentions. These regulations and others are found in the Queensland Recreational Boating Safety Handbook available at any Department of Transport agency.

Navigation is important in all boating and involves ways to go from one point to another on open water. Navigation methods include; visual means following beacons which identify channels and directions, sophisticated electronics, such as the Global Positioning System (GPS), or radar. All these methods allow the boat skipper to reach the destination safely or to locate an exact spot on the water; using charts and compass headings, or coordinate plots from the GPS or Radar systems. The latter types are very expensive. The visual sighting method is the most common type used.

The best navigation is accomplished using charts and compass (more about this later), orienting the chart to a starting position, and following certain compass courses to reach a destination. For this a good, properly mounted boat compass is a must, along with basic navigation skills, such as running time-distance courses, which will place the boat at a certain spot based on running speed and the time taken to get there.

Trip Record

Queensland transport has introduced a reusable Trip Record Card. The purpose of the card is to inform family or friends where you are going to be should there be a need for urgent contact or for rescue. The card is plasticised so that details can be filled in with a waterbased pen and reused after every trip. Trip details of the card show time of departure, date, where you leave from, return and estimated time of return, and number of persons on the trip. On the reverse side of the card is the permanent record of the boat's details, radio and registration, as well as your trailer and vehicle registration numbers. Queensland Transport suggests that the card should be left with family or friends or even with a volunteer rescue group. In the event of an emergency all the necessary information is available for people to find you.

Boat Readiness Check

Check lists for a boat are also important and allow for easy checking of a boat before any trip. While a check list can be comprehensive, certain basics should be included. Also Queensland Transport regulations specify that certain accessory equipment be carried on boats of certain lengths. Be sure to check the regulations. A possible check list might include:

Registration
Boats must be registered. In some states all boats, including competition white water kayaks, must be registered. In others, only larger boats or boats with engines or engines over a certain kilowatt/horsepower rating are registered. In all cases, the boat must be numbered

and a registration certificate carried with the boat at all times.

Insurance

The boat owner and/or operator is legally responsible for damage or injury that might be caused while boating. Thus, insurance is recommended, and the appropriate information should be carried with the boat.

Fishing Licences

These must be carried onboard in all fishing situations, in accordance with state laws.

Fuel

Fuel tanks must be topped up for boating excursions. They must be commensurate with the boat and engine size and adequate for the trips planned. Larger boats have built-in tanks, although portable tanks can be used to supplement these.

Fire Extinguishers

All boats should be equipped with an approved extinguisher. They should be of a type to deal with electrical or petrol fires. They are required in smaller boats in some states and areas. They are required on all larger boats.

Lights

Boats that are to be used at night require a minimum of red (port) and green (starboard) light and a 180^{o} white light. You need to check the regulations in the Queensland Recreational Boating Safety Handbook for your size boat's requirements.

Flares

Boats operating outside smooth water limits must carry flares. The type of flare and their expiry date need to be checked. Refer to the Queensland Recreational Boating Safety Handbook.

Sound Signalling Device

Larger boats are required to carry a horn or whistle that is hand, mouth or power operated.

Personal Flotation Devices (PFDs)

Personal Flotation Devices (PFDs) are required on all boats. Generally wearable type (PFD Type I, II, or III) are required, along with Type IV (throwable) for larger ocean going boats. Refer to the Queensland Recreational Boating Safety Handbook.

Paddles and Oars

Boating regulations require that boats be equipped with an alternate form of propulsion, such as paddles or set of oars for emergency use. Refer to the Queensland Recreational Boating Safety Handbook.

Ropes

Ropes are not legally required but are necessary for docking, anchoring, mooring, and boat-to-boat contact. Other devices in a checklist for a boat can include spot lights, boat poles, fishing tackle, first aid kits, anchors, anchor chains, anchor ropes, sea anchors, and spare props. The drain plug or bung must also be checked before launching a boat.

Boating and Fisheries Patrol, State Police

The Boating and Fisheries Patrol and the Water Police have jurisdiction over coastal and inland waterways and other navigable water. In other areas, the state has jurisdiction, although local interests might control specific water supply reservoirs and waterways. Police have the responsibility to enforce boating regulations and can stop boats to check boat registration, number and condition of PFDs, and fishing licences.

Storms

Storms can be devastating on the water. Lightning is particularly dangerous since it will often strike the highest point, and usually a boat is the highest point. The best solution is to get off the water if there is a possibility of lightning or storms. No boating or fishing trip is worth the danger. If a storm comes up suddenly or lightning strikes are close, place all rods in the bottom of the boat, including rods in rod holders if these point the rods up. Also remove or store radio antennas, out-riggers or any other vertical structures. Stay low, lying down in the boat if necessary and ride out the storm or, if possible, get to land. Once on land, stay low, do not gather fishing rods or gear and do not wait out the storm under trees, lighthouses, or other high objects. If necessary, lie in a ditch or open field.

Storms are often accompanied with high wind, which is dangerous, but waves also make boating and boat operation difficult. Again, get off the water at the first sign of a storm to avoid high waves. This also applies to dams, impoundments and open rivers, because small craft and punts used on these waters are not suitable for rough water.

When it is not possible to get off the water before the storm hits, boat operators must be most alert and skilful to prevent waves coming in over the transom or the boat broaching in a wave trough. The best method is to run the boat at an angle to the seas (quartering into the waves) to ride over each wave, even if this requires a tacking course to get to shore. Courses straight into seas are hard on boats, equipment and passengers and make control of the boat very difficult. Courses directly away from seas (following seas) are very dangerous since a loss of boat power or hesitation by a boat operator can result in waves crashing into the boat over the transom.

If a person must ride out a storm, use a long anchor rope and a heavy anchor (if there is a choice). If the anchor drags, be sure that the boat is not being pulled into rocks, shallow water, or rough water that is even more dangerous. If an anchor is not available and one has a dead engine or cannot proceed, use a sea anchor. A sea anchor is like a parachute and will not hold a boat stationary but will hold the bow into the current or wind better to ride it out. Lacking a proper sea anchor, use anything that floats, such as spare PFDs (surplus to passenger requirements, of course), an esky or an empty fuel tank.

Fog is also very dangerous since it reduces visibility. It is best to avoid fog situations. If that is impossible, use an audible signal to indicate boat position to other boats. Fog conditions require that a five second audible blast or signal be given each minute. When it is necessary to boat in a fog, use a compass and chart to navigate properly since visual navigation will be impaired.

Storage of Equipment

There is never enough room on a boat for equipment. However, with good planning, storage of equipment is possible and will prevent dangerous cluttering situations. Boats should not be overcrowded or cluttered. Life preservers should be instantly available and stored where they can be instantly reached. Fuel tanks should be placed in the rear or away from tackle and food. Anchors should be stowed in the bow, in anchor chocks or in lockers with the anchor rope coiled neatly for instant use.

Fuel tanks and batteries should be clamped in suitable brackets or held down with bungee cords. All gear should be stored so that it does not blow out when underway. Boat hooks should be stored in special clips out of the way or racked so that they do not roll around. Often boat fenders can be stored in lockers, as can much other spare gear.

Fishing tackle poses unique problems for storage. Fishing rods are best stored in a rod rack. These can include racks for big game rods in the cabins of large boats, vertical rod racks in medium size boats and horizontal racks in small boats. If possible, all rigged rods should be held in these racks, both to prevent damage to the tackle and injury to passengers.

Landing nets and gaffs should be stored in special racks, also, by using special clips available for these accessories. Tackle boxes should be tied down or wedged in place.

Anchors and Anchoring Equipment

Every boat needs an anchor. An anchor is the "parking brake" that allows the boat to stay in one spot. There are many different types and sizes of anchors for various size boats. It is important to have the right anchor and proper length rope. The rope should be a soft rope, which can be easily fastened to the cleats. This length of rope, called an "anchor rope", when out, will help to hold the boat securely. The Queensland Recreational Boating Safety Handbook states, as a safety obligation, that boats must carry the correct weight anchor and the proper length of rope to suit the boat size. It is recommended to have a minimum of 2 metres of chain fitted with shackles between the anchor and the anchor rope. The chain allows the anchor to dig in, and hold in place when wave action lifts the boat. The ratio of 3:1 recommended in the safety book means, for example, that in 2 metres of water depth, 6 metres of rope must be let out.

Anchor types and their uses include:

Danforth Type

This has two flat metal flukes that dig into the bottom and hold very well. It is also very light for its size and holding power. Sizes are available for all boats and they work best in most hard (but not rock) bottoms.

Mushroom type

This type looks like an upside-down mushroom and holds small boats well in sandy or muddy bottoms. It is available for small boats and has less holding power than a Danforth. It does not hold well on hard marl, or rocky bottoms.

Navy type

This is a heavy anchor with flukes that dig in and works similar to the Danforth. Other types of anchors and variations of the above are also available. Often anchors are developed for specific purposes and unique water conditions and may be regionally popular. Reef anchors are suitable only for anchoring to catch fish and not be relied upon to hold the boat in an emergency

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Maps, Charts and Compass

Maps are seldom used in boating since, technically, a map shows land areas. Also, a map shows where to go through roads and trails. Charts are used for water travel, and do not indicate land characteristics. Charts are different from maps because they do not indicate where to travel, only dangerous areas to avoid. Charts also have a good compass rose (drawing of a compass and degrees). Many charts also have bearing courses from given launch or marina areas to destinations or popular fishing spots.

A chart must be used with a compass, with the chart oriented to a compass reading and courses taken from the chart and compass for effective navigation. Since a compass will not show the way to go, but will only indicate north, proper use requires taking compass readings throughout a boating trip so that a reverse (180°) course can be taken for the return trip to the dock.

Tool Kits, Tools, Parts

The need for a tool kit and spare boat parts is dependent upon the size, complexity, and use of the boat. A canoeist fishing in a river may carry no tool kit or parts. An offshore fishing boat is well advised to carry a complete mechanic's kit (like that of a car mechanic) along with spare parts including plugs, points, spare hoses, and other fittings or engine parts. Those running a small outboard are advised to carry spare plugs, hoses, engine props, and shear and cotter pins for on-the-water repair.

Mooring

To come alongside a wharf or jetty, mooring a boat requires a skill, just like parking a car. As with parking a car, it is often feared by beginners. Mooring

varies markedly with different types of wharfs and jetties, size of boat, and weather conditions, but the basics are all the same. The boat must be slowed and under control. On larger boats, fenders should be placed alongside to cushion any impact with the wharf or jetty. In calm water, allow the boat to drift into the dock, using power only to control the boat movement or to back it off slightly, if required. If working in current or waves, take the boat into a dock by working into the current or wind for maximum steering control. If this is impossible, hold the boat in reverse and allow the boat to drift slowly into the dock.

When mooring, ensure both stern and bow lines are used. With a permanent mooring "spring lines" must be used to hold the boat properly, to prevent undue rubbing of the boat against the wharf or jetty pilings and, if necessary, to allow for tidal flow.

Emergency Procedures

Emergencies require immediate attention. Boating emergencies are rare, but their possibility must be considered at all times. Capsizing or sinking is perhaps the most feared emergency. These can be caused by excessive speed, negligent boat operation, damage to the boat, high seas or storms, unsafe turns, overloading the boat, improper engine trim (angle of engine to boat transom), and striking an underwater object.

Operate all boats safely and avoid those conditions that cause sinking or capsizing. The captain of a sinking or capsized boat only, can make sure that all passengers get into PFDs, that radio may-days have been transmitted, and that other boats are alerted visually with flags, waving of arms, and bright clothing.

Man overboard is another emergency that requires immediate attention. In this case, do not go overboard for the rescue - instead throw a PFD (the reason for the required throwable PFD on larger boats), slow the boat, and bring the boat to the person safely, slowing or killing the engine when approaching alongside. One boat passenger should keep the person in view at all times.

Fire requires immediate extinguishing. A fire extinguisher should be carried on all boats and must be of an approved type, rated for electrical and fuel fires. It should be fixed in a position that makes it instantly accessible.

Security

All boats and engines should be kept secure at all times to prevent theft. Special locks are available to lock outboard engines on boats, to lock boats on trailers, and to lock trailer tongues shut on vehicle hitches. There is no substitute for constant checking of boats and boating equipment, and storing equipment and boats under maximum security. All electronic equipment should be removed from boats when not in use. This equipment is a constant temptation to thieves.

Courtesy

Common sense and courtesy will make everyone's day on the water safer and more enjoyable. Individuals go boating to have fun and that fun can only come if everyone's rights are respected and, if all the rules of boat and water safety are obeyed.