Angling Skills
Table of Contents

Introduction to Angling Skills 1

Casting

Can Casting 3
Casting Basics & Equipment 7
Spin-casting 19
Spinning 25
Bait-casting 35

Fishing

Knots for Anglers 46
Planning the Fishing Trip 61
Goin' Fishing 64
Hook Up With Natural Bait 74

Refer to the Sportfishing and Aquatic Resources Handbook and/or the Advanced Sportfishing and Aquatic Resources Handbooks* for additional lessons on the following:

- Fishing Safety
- Terminal Tackle, Line, Baits, Lures, and Accessories
- Locating Fish
- Fishing from Shore
- Fishing from Boats
- Caring for your Catch

Other supplemental information can be found in the "Discover Nature Instructor" and "Introduction to Fishing" guides from the Conservation Education Series printed by the Missouri Department of Conservation.

*Sportfishing and Aquatic Resources Handbooks are available at cost through ASA's Future Fisherman Foundation. Visit http://www.futurefisherman.org/resources.html or call (703) 402-0004.

Introduction to Angling Skills

Fishing is a fun-positive activity that offers tremendous benefits to youth. Through fishing, leaders and parents can assist youth to develop life skills that will help youth live productive lives. In addition, by introducing youth to fishing, you provide them:

- A lifetime activity
- An activity they can do and feel a sense of accomplishment regardless of age, sex, or physical or mental capabilities.
- A time and place to think things out
- An activity they can do with friends and family
- An activity they can do alone without feeling lonely
- A challenge and prestige among peers
- A sense of responsibility and respect for themselves, the community and the environment. (Provided with permission from the Future Fisherman Foundation)

Fishing is a simple activity, but a leader can introduce numerous dimensions into fishing activities. Through the Angling Skills discipline, you will learn specific angling skills:

- safety,
- fishing equipment knowledge,
- casting skills,
- knot tying,
- selection of bait, and

However, to be successful on a regular basis, anglers also need to know how to:

- identify fish, and understand fish behavior
- understand how to make ethical decisions and
- have an understanding of fish management.

Involvement of parents and other individuals within the community are highly encouraged in 4-H Sportfishing programs. Involving parents in the program promotes communication between parents and children. Leaders should encourage families to fish together outside the structure of 4-H. Involving other individuals within your community provides youth with additional role models and helps youth to feel accepted and a part of their community, in addition to understanding how to access the tremendous knowledge base available to them.

Your first angling skills lessons with 4-H participants may be simple casting lessons followed by fishing for a plentiful fish such as sunfish. It seems simple, so how do you develop a multi-year learning program? As we discussed above there are many dimensions to fishing and no matter if you have been fishing your entire life, there is always more to learn. Believe us, if you met every week of the year for 10 years straight, you'd never run out of something "fishy" to do. Of course there is always fishing trips

and you can expose youth to different ways and places to fish. Your participants will learn that as the weather and season's change to does the patterns and behavior of fish. When fish change behavior, an angler has to use his/her critical thinking skills to decide what changes he/she needs to make in his/her fishing techniques. While you're on the water, you can learn about the ecology of the water system. The weeks you can't be on the water, leaves you opportunities to improve casting skills, cook the catch, tie flies, make lures or fishing rods, explore fish folkways, have guest speakers, interview anglers, view video tapes and develop plans (for the next fishing trip). A certain percentage of sessions should be opportunities for the participants to teach what they have learned to others.

Have your 4-H members help plan and organize activities from week to week. It takes pressure off the leaders and provides youth with organizational, decision-making, problem solving and other life skills. Plus, it is their club. They will stay involved longer if they are the ones building the club.

Can Casting

Sharon Rushton [1]

Objectives

Participating youth and adults will

1. **Practice essentials of casting**
2. **Practice using inexpensive fishing tackle**
3. **Practice casting using the can technique**
4. **Practice accurate and precise casting to a target**
5. **Have fun while learning**

Youth Development Objectives

1. **Enhance gross and fine motor skills**
2. **Enhance hand-eye coordination**
3. **Practice goal setting and sequential effort toward them**
4. **Enhance self concept and self-esteem**
5. **Enhance concentration**

Roles for Teen and Junior Leaders

1. **Demonstrate the ease of can casting**
2. **Assist participants in making can casting rigs**
3. **Assist participants in casting with their rigs**
4. **Reinforce and support participants as they progress**
5. **Assist with clean up after the activity**

Potential Parental Involvement

1. **See "Roles for Teen and Junior Leaders" above**
2. **Practice can casting with their kids**
3. **Serve as models for their kids in learning**
4. **Provide praise and encouragement at each learned action**
5. **Provide or arrange for materials**
6. **Arrange for or provide refreshments**

Best Time: Anytime, as a first casting lesson

Best Location: Anywhere, indoors or out where 10 to 20 feet of open area is available

Time Required: 15 to 30 minutes

Equipment/Materials

aluminum soda cans
monofilament line (8-10 pound test)
practice plugs
casting targets – poster board, rope or tape circles, buckets, waste baskets, ...)

Safety Considerations

Be sure that participants are clear of any casting lane so that they are not hit, particularly in the eye, with a casting plug.

Evaluation Activities/Suggestions

1. Observe how the line is tied and wrapped around the can.
2. Observe and adjust the way the can is held in the hand.
3. Observe the development of casting style fitting the participant.
4. Observe the application of the techniques demonstrated and modifications to fit themselves.
5. Observe accuracy in casting to targets.

[1] Formerly Executive Director, Future Fisherman Foundation; currently with the National Shooting Sports Foundation

Lesson Outline

Presentation	Application
I. Relationships to other fishing methods	**ASK** participants to give their views of how a handline is like other tackle.
A. Handlining	
1. Hand held line and line control	
2. Simple and inexpensive	**NOTE** that handlines are simple, effective and inexpensive.
3. Effective fishing method	
B. Spinning	**COMPARE** the can to the fixed spool on a spinning reel.
1. Fixed spool (the can)	
2. Lure or bait pulls line out	
3. Retrieve by wrapping line on fixed spool	
C. Check legality of method in your state regulations	**DISCUSS** the legality of handines in your state to avoid any legal problems for your anglers.
II. Making a can casting rig	**PROVIDE** or have youngsters bring suitable cans or plastic bottles for making their casting rigs. **EXAMINE** each one for possible hazards or problems and **PREPARE** the cans or bottles for making the rig. (Good place to involve parents and youth leaders)
A. Select sound can or plastic bottle	
1. Smooth surface	
2. Free of nicks or sharp edges	
3. Remove pull tab	
B. Select line	**DISCUSS** the choice in lines and the reasons behind that choice.
1. Moderately heavy line for easy handling	
a. 10 to 20 pound test monofilament	
2. Relatively limp line best	
C. Attach line to top rim, if present	**DEMONSTRATE** and have participants **PREPARE** their can casters by attaching the line as indicated and tying and taping it securely in place.
1. Arbor knot or improved clinch on line	
a. Wrap line twice around rim	
b. Tie line securely	
2. Tape line to can	
a. Several wraps of tape	
b. Both ends of line covered	**HELP** the youngsters to determine the handle area and to tape it securely.
c. Duct tape or electrical tape	
d. Mark “handle” area with tape	
D. Wind line onto bottom half of can	**REMIND** them that the handle area should not be wrapped with line when the “reel” is loaded. **DISCUSS** the reasons for winding the line as it lies on the spool and keeping things neat and tight.
1. Leave “handle” clear of wraps	
2. Wind same direction as line comes off spool	
3. Neat, firm wrapping best	
E. Attach casting plug or sinker	**PROVIDE** the appropriate weights for the situation, and prepare to cast.
III. Using the can casting rig	**DEMONSTRATE** the casting methods effective with the can casting rig and **LEAD** the participants in practicing each one
A. Throwing method	
B. Pendulum method	
C. Sling method	End the session with a casting session letting the kids use the type of technique they prefer.

Background
1. How can casting is similar to hand lining
2. How can casting works similar to the spinning reel
3. That it is a legal method of fishing in some states and illegal in others
4. An affordable way to fish

Summary Activity
Give students 10 casts at a target and count how many casts hit the target. Activity can be altered by allowing three casts at each of three targets.

Lesson Narrative

Background
Before getting into a lecture on the different kinds of reels and their applications, begin with a hands on exercise of can casting. This will open up students' minds to the fun and challenge that casting offers.

In many areas of the world, people don't have access to rods and reels. They fish using a hand line where line is spooled in their hand and the line is cast by tossing it out into the water. Once a fish is one the line, they just pull the line in with their hands. Can casting is a similar technique and a few people in the U.S. actually use this technique to fish.

Can casting is similar to spinning. The can behaves as the fixed spool of a spinning reel. The line is pulled off the "spool" by the inertia of the lure or bait, merely unfurling from the stationary spool.

It is always important to check the regulations of the state to make sure that can casting is legal. A few states require the use of a rod in order for it to be considered recreational fishing.

In states where can casting is legal, participants can use this method to fish. Many people have the misconception that fishing takes expensive equipment. This demonstrates that fishing can be accomplished for less than $1.00 (can be recycled from the trash, few cents for fishing line, few cents for a hook, bait can be dug, caught or prepared).

Preparation
If this is your first time to see students, bring enough empty washed out aluminum soda cans for everyone. If you have had students in a prior lesson, ask each student to bring their own can. This shows them how items can be reused.

This lesson is intended to be fun and uncomplicated. So do not try to sneak in all the information you have in your head about tying knots, appropriate ways to stand, etc. This will come later.

Have students attach fishing line onto their can. They can do this by tying any kind of knot or even using tape to hold the end of the line to the can. Once attached have them wind the line around the can putting just a little more line that the maximum length you will be able to cast in your situation.

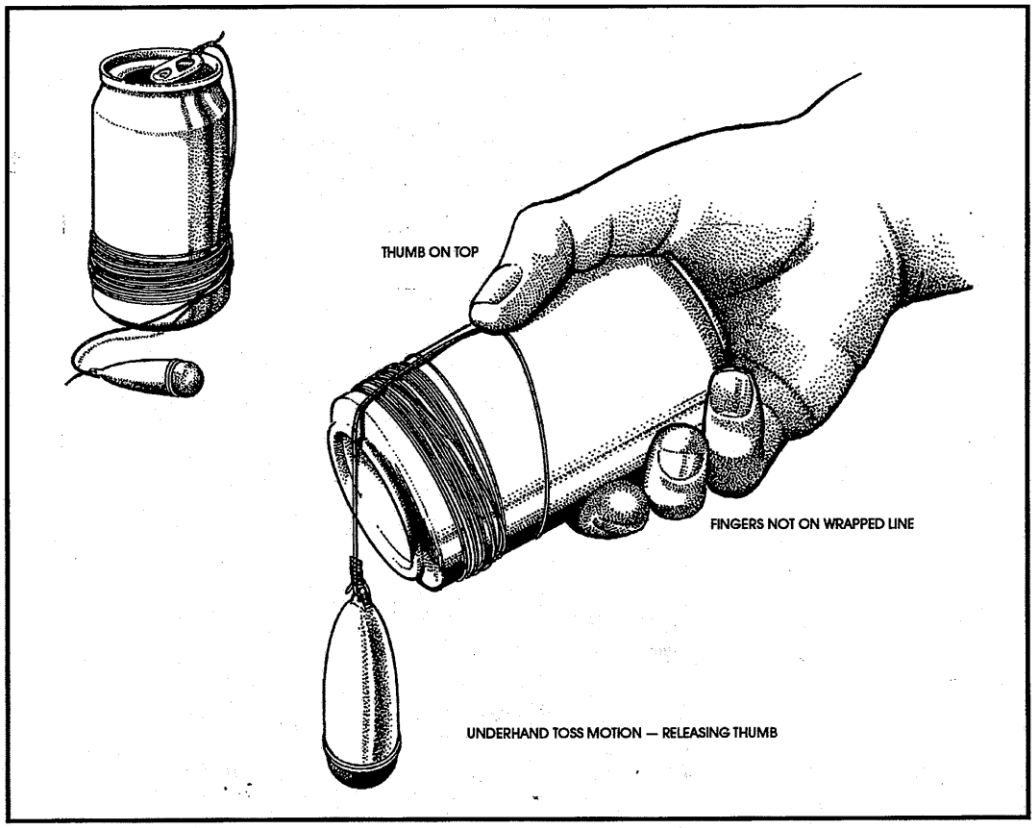
Demonstrate how to tie the casting plug to the line. You can demonstrate one method of tying a knot, but basically you're concerned only that the plug is on well enough so that it is not cast off the end of the line with the possibility of hurting someone.

Let each participant make their own casing outfit, so they have their own and can take it home with them. Be sure to have some assistance on hand in the form of adults or junior leaders to assist kids who need some assistance.

Casting
If you are in a classroom, you may have to limit the number of people who cast at one time. If you are outside, everyone can cast at the same time. Just make sure that participants are not in the "line of fire." You do not want a student to get hit in the eye with a casting plug. Set out the targets to allow each participant to have one. Students should always have a target to shoot for even though many may not use it in the beginning.

Demonstrate how to hold the can. Grasp the can behind the line. Be careful not to cover the line with your hand. There are different techniques and you can let the students experiment. One of the easiest ways is to allow the plug to hang freely an inch or two below the can. Use the same motion that you would use to throw a ball underhand, and let the line spool off the end of the can while you continue to hold onto the can. You may fond yourself following through by extending the can toward the target. A second technique is to hold the plug in the casting hand and simply throw it toward the target. It may not look smooth and articulated, but it works. A third approach is to hold a finger on the line, allow a bit of line to hang from the "reel," and Swing it pendulum fashion toward the target, lifting the finger to let the line run freely. All of them work. Let the kids try them as they wish.

Encourage students to come as close to the targets as possible. Once students get the hang of it, have everyone stop casting. Tell everyone they have 10 casts and everyone counts how many targets they hit. The 10 casts are not intended to be competition, but self evaluation so you do not need to have students announce their scores.



Casting Basics and Equipment

Sharon Rushton [2]

Objectives

Participating youth and adults will:
1. Differentiate types of equipment and their uses.
2. Explain the purposes for each type of equipment.
3. Choose equipment to match angling method and needs
4. Practice tackle selection for various purposes
5. Develop casting skills
6. Have fun while learning

Youth Development Objective

Participating young people will:
1. Enhance hand-eye coordinator and gross motor skills
2. Enhance decision-making and critical thinking skills
3. Enhance science and technology awareness.
4. Practice planning and goal setting.
5. Build relationships with adults and other youth.
6. Enhance self-concept

Roles for Teen and Junior Leaders

1. Assist in demonstrations and casting practice
2. Assist learners in skills development
3. Lead small group discussions
4. Assist with set up and cleanup

Roles for Parents

1. See teen roles above
2. Arrange for or provide equipment
3. Arrange for or provide teaching space
4. Arrange or provide transportation as needed
5. Provide refreshments
6. Teach elements with which they are familiar

Evaluation Activities/Suggestions

1. Observe comprehension of equipment types/uses
2. Observe youth choices in equipment selection exercise
3. Observe participant interactions during the session
4. Observe youth and adult behavior

Best Time: After can casting lesson before other casing techniques

Location: Classroom setting

Time Required: 30-45 minutes

Equipment/Materials:

Cane pole
Spinning rod & reel
Fly rod & reel
Practice casting plugs
Spin-cast rod & reel
Bait-cast rod & reel

Safety Considerations

As rods are passed around and handled, be sure the area is clear to prevent people being hit or poked with a rod. Be alert and prevent rods being damaged in doors, ceiling fans or similar obstacles.

References

Advanced Sportfishing and Aquatic Resources Handbook - American Sportfishing Association/Future Fisherman Foundation
Sportfishing and Aquatic Resources Handbook – American Sportfishing Association/Future Fisherman Foundation
Bass on the Line – L. England and F. Lee; Missouri Dept. of Conservation
All About Fishing Reels – AFTMA, Sportfishing Educational Foundation

[2] Former Executive Director, Future Fisherman Foundation, 4244 S.W. 82nd Terrace, Gainesville, FL 32608 (352) 337-9662

Lesson Outline

Presentation	Application
I. Equipment choices	**LAY OUT** an array of tackle as models of each type being discussed. If desired, have participants **MAKE** a can casting rig and learn how to use it.
A. Simple equipment	
1. Can casting	
a. Inexpensive	
b. Able to reach fish at a distance	
c. Compact and easy to make	
2. Pole and line	**DEMONSTRATE** how to rig a pole and line showing the double line attachment process.
a. Simple and inexpensive	
1) Cane	
2) Bamboo	**ASK** participants to discuss advantages and disadvantages of the pole and line as fishing tackle.
3) Straight tree branch	
4) Telescoping fiberglass	
b. Line a bit longer than pole	
c. Terminal tackle	
1) Hook	
2) Sinker	
3) Bobber or float	
c. Fishing technique	
1) Swing bait into position	
2) Dap bait or lure in likely spots	
3) Lift rod to set hook	
B. Why add reels	**ASK** participants why adding a reel to the outfit might be an advantage. Lead them to **DISCUSS** the assistance the reel can give the angler.
1. More line available	
2. Longer casts – reaching more water	
3. More flexibility in fighting fish	
4. Ability to use wider variety of lures	
C. Types of rods and reels	**ORIENT** the participants to the basic types of fishing tackle with any specialty tackle used in the area. Ask them to **IDENTIFY** the types of tackle being used and to **DIFFERENTIATE** among them on the basis of their components.
1. Spin-cast rod and reel	
a. Closed -face reels	
b. Push-button operation	
c. Easily mastered	
d. Offset handle rods	
e. Reel mounted on top of rod	
f. Excellent for beginners, used by experts	**NOTE** that spin-cast tackle can be well made and suitable for experts as well as beginners.
2. Spinning rod and reel	
a. Open-face reels with fixed spool	
b. Revolving line pick up or bail	Briefly **DISCUSS** spinning tackle and its advantages and disadvantages.
c. Lighter lines and lures or baits	
d. Drag permits spool to turn	
e. Guides and reel under rod	
1) Large guides	
2) Relatively long handles	
f. Casting similar to spin-cast with finger control	
g. Long casts possible	
h. Monofilament lines	**DISPLAY** a variety of sizes of spinning gear if available.

I. Ultra light to heavy saltwater

3. Bait-casting rod and reel

a. Revolving spool reels

1) Spool turns during cast and retrieve

2) Momentum throws line from spool

3) Reduces line twist

b. Handles heavy lines more easily

c. Excellent drag system

d. Durable and rugged

e. Requires more skill in casting

1) Throwing controlled slack

2) Preventing line over-runs

a) Backlash or birds nest

b) "Educated" thumb control

c) Everyone has some over-runs

f. Often choice of serious anglers

1) Precise casting

2) Smooth drag

3) Handle wide variety of lure weights

4) Excellent control of lure and fish

5) Excellent casting characteristics

ASK participants if they note any basic difference between the previous reels and these. **EMPHASIZE** that the spool revolves in bait casting tackle. **NOTE** that it really throws line at the lure once started into motion.

DISCUSS advantages and disadvantages briefly.

NOTE that even experts have over-runs, backlashes or bird's nests from time to time.

4. Fly rods, reels and lines

a. Different in principle

1) Casting the line

2) Heavy line carries light lure

b. Reel functions

1) No function in casting

2) Line storage and extra line

3) Drag/rim combination to control fish

c. Lines from 1to 15

1) Larger number - heavier line

2) Line foundation of selection

d. Line types

1) Floating, sinking or combination

2) Level, double taper, weight forward

e. Rods from about 6 to 14 feet

f. Appropriate for most game fishes

1) Typically thought of as trout tackle

2) Excellent for warm water fishes

3) Growing in saltwater

4) Bluegills to tarpon and sailfish

DISPLAY and **DISCUSS** fly tackle stressing that the major difference is that a heavy line carries a light lure with it when cast.

DISCUSS the role of the fly reel in casting and playing fish. **NOTE** that it is often simply a line storage device.

DISPLAY lines of various types or use diagrams of them to show their differences.

Have participants **INTERPRET** the information on a fly line box.

5. Specialty equipment

a. Saltwater tackle

1) Corrosion resistance

2) Often heavier than freshwater tackle

a) Surf fishing

b) Bay and bottom fishing

c) Pier and jetty fishing

d) Jigging

f) Trolling

3) Sturdily built reels

If saltwater angling is present in your area, **DISCUSS** the differences in freshwater and saltwater tackle. **NOTE** that most freshwater tackle can be used in the salt if washed and lubricated after use.

4) Frequently bolted in place
5) Relatively high line capacity

b. Ice fishing tackle

If ice fishing is done in your area, **DISPLAY** and **DEMONSTRATE** the use of basic ice fishing tackle.

1) Short, fairly light rods
a) Sensitive rods
b) Use of strike indicators
2) Simple to standard reels
3) Traps, tip-ups and tilts
a) Remote bait fishing tools
b) Flag or tilt arm strike signal
c) Hand lining fish

NOTE*: Ice fishing is among the easiest to teach and most effective. Do not pass up a chance to include it in your program if you can do so safely.*

c. Deep trolling tackle

If deep trolling for salmon, trout, stripers, walleye or other fish is done in your area, **INCLUDE** a brief discussion of downriggers and deep trolling with wire or lead core lines.

1) Lead core or wire lines
2) Downriggers with conventional tackle

II. Selecting the right tackle

ASK participants how they would go about selecting tackle and if they find the array of equipment confusing.

A. Wide variety of rods and reels available
1. Rod length and action
2. Reel type, size
3. Bewildering set of choices

B. Select fish species first

SUGGEST starting with the kinds of fish being sought first and **DISCUSS** some of the factors that might enter into the decision.

1. Size and strength
2. Food habits
3. Depth and currents
4. Habitat and cover
5. Fishing technique
a. Bottom jigging vs precise casting
b. Stiff rods for surface plugging
c. Soft rods for gentle bait treatment

C. Matching tackle

DISCUSS matching or balancing an outfit and the reasons that well matched equipment makes fishing easier and more successful.

1. Balance beyond physical balance
a. Comfort and reduced fatigue
b. Matching tackle and fishing situation
2. Starting points
a. Type and size of fish
b. Fishing conditions
3. Next steps

Starting with a fish and local conditions, **DEVELOP** some outfit conditions with the participating youth and adults.

a. Bait or lure size and weight
b. Water clarity, line shyness
c. Structure and fish character
d. Line size and strength
e. Rod and reel type, action
f. Personal preferences

NOTE that personal preferences are important to the angler and his or her success.

III. Casting safety

A. Safety - YOUR business

STRESS that safety is everybody's business but particularly the individual angler's business.

1. Practice plugs and lures
a. Impact can hurt
b. Hooks add to the danger
2. You are responsible for your tackle

a. Know where your plug is
b. Before cast until it is retrieved
c. Be sure entire area is clear
1) Behind
2) Overhead
3) In front
d. Back cast greatest concern
1) Target focus misses people or obstacles
2) Persons walking behind
3) Others in a boat or on dock or pier
f. Forward cast
1) Impact area
2) Overhead obstacles
a) Overhanging trees
b) Power lines
c) Bridges or other structures
3) Other anglers' lines or tackle
3. Fouling lure or practice plug
a. Rod damage or line breakage
b. Launching plug as a projectile
1) Pull away from body and others
2) Do NOT try to catch plug
3) Lure follows line
c. Avoid line cuts
1) Use rod handle as cushion
2) Use glove or towel to avoid cuts

Have participants **OUTLINE** the areas that must be clear when making a cast. **NOTE** that the full arc of the lure or practice plug must be clear from backcast to impact and retrieve.

ASK if anyone has ever seen balls of line with terminal tackle hanging from trees, power lines or bridges. **EMPHASIZE** the presence of overhead obstacles and the need to stay clear of them when casting.

NOTE that etiquette demands that we avoid crowding or tangling other anglers' lines.

DISCUSS the risks of pulling too hard on a fouled casting plug or lure. **LEAD** participants to conclude that caution is needed.

EMPHASIZE that lines can cut like a knife and must be padded to avoid injury when trying to free a fouled lure or casting plug.

IV. Casting basics for all types
A. Importance of skill in casting
1. Part of angling success
a. Ability to hit fish holding spots
b. Ability to reach cover without hanging
2. Combined with knowing fish habits
3. Different types of casts useful

NOTE that both a knowledge of fish and an ability to cast effectively are needed for angling success.

B .Accuracy in casting
1. Importance of accuracy
a. Precise lure placement often needed
b. Multiple casting techniques
c. Line and lure control
1) Distance control
2) Direction control
2. Practicing off the water
a. No distractions
b. Practicing hand-eye coordination
c. NO hooks during practice
d. Use targets
1) Start in the open with large targets
2) Go smaller with skill development
3) Work with obstructions
3. Distance

Have participants **DISCUSS** some reasons they feel that casting accuracy might be important..

Ask them to **DISCUSS** some elements that might be involved in casting accuracy – e.g. consistency, distance and direction control.

ASK why a person might want to practice with a hookless plug where there is no danger of encountering a fish.

a. Distance control
b. Precision in distance control
c. Avoid casting too far for conditions
   1) Long casts to empty water useless
   2) Keep the lure in the strike zone

ASK if it could ever result in catching fewer fish if we could cast a long ways. **NOTE** the importance of putting the lure or bait where the fish are.

3. Versatility
   a. Matching technique to need
      1) Overhand cast
      2) Underhand cast
      3) Sidearm cast – careful!
      4) Pendulum or flip cast
      5) Pitch cast
   b. Matching equipment to needs
      1) Water conditions
      2) Cover and obstructions
      3) Fish species and forage
      4) Feeding behavior
      5) Wind, current and waves
   c. Casting from various conditions
   d. Importance of practice
   e. Cannot learn it from a book - practice!

NOTE that the ability to use various types of tackle and various types of casts can be a distinct advantage to the angler.

NOTE that all of these casts will be taught during the following sessions. If time permits, **INTRODUCE** the casting techniques with simple spin-cast tackle.

Briefly **DISCUSS** matching tackle to the needs and why the ability to use a variety of tackle is an advantage to an angler.

STRESS that casting can only be learned by practice, teaching muscle memory and hand-eye coordination.

Summary Activity
Close the lesson by having the participants cast at targets using anything from can casting equipment to spin-cast tackle. Remind them that they will be learning to use all the other types of tackle as they continue through the program.

Lesson Narrative

Besides hand lining (can casting), there are five basic types of equipment that you can choose to get your bait or lure into the water: pole and line; spin-cast; spinning; bait-casting and fly tackle.

Pole and Line
A pole and line is the most simple and least expensive way of fishing. The pole can be made of cane, bamboo or a straight piece of tree branch. You do not use a reel with a pole. You tie line directly to the end of the pole, and the line is normally a little longer than the pole. Safety pins have been known to be substitutes for hooks. When fishing from the bank in an area that is near fishable cover, the angler uses the rod to swing the baited hook near the cover/structure. Some boating anglers utilize cane poles when they anchor over a fishing spot that usually contains cover/structure.

Why add a reel?
So, what are the advantages to adding a reel to the outfit? A reel stores fishing line and provides the capability of casting bait a greater distance, casting and retrieving a variety of artificial lures/flies, and providing a more efficient way of fighting a strong fish.

Pole fishing is usually limited to natural or prepared bait on a hook or a jig. Reels provide the ability for the angler to retrieve an endless variety of lures at different speeds, and give an erratic movement when desired. With a quality reel an angler can let a hooked fish pull line off his reel. By turning the handle the angler can control slack in the line and retrieve the fish as the line is automatically spooled onto the reel. When you add a reel to your outfit you call the "pole" a rod. There are four basic types of rod and reel combinations: spin-cast, spinning, bait-cast and fly.

Spin-cast Tackle
Spin-casting reels may be described as a "closed-face spinning reel." It has a "nose cone" or "hood" (front cover) that houses the line and stationary spool. On the cast, after the line has been first released from the spool by depressing a lever or "push-button" with the thumb, the line passes from the spool through a hole in the front of the cone. Spin-casting reels are designed chiefly to be mounted on the top of a standard bait-casting or spin-casting rod. A spin-casting rod has small line guides and a straight handle.

Spin-casting tackle is ideal for beginning anglers because it works well and is easy to use. However, spin-casting tackle is not limited to beginners. Spin-casting tackle is used often while fishing for bluegill, crappie and other panfish. Specialized models are utilized by professional anglers for flipping for big bass

Spinning Tackle
Spinning tackle came to this country from France around the time of World War II. Since that time it has become one of the most popular types of fishing tackle for both bait fishing and artificial lures. Spinning reels are often referred to as "open face reels," since the line and spool are exposed at the front of the reel. A line pick up or bail revolves around the spool to retrieve line and flips out of the way to cast. The spinning reel's spool is stationary on both the cast and the retrieve, moving only when the drag is slipping. The momentum of the cast lure pulls line from the spool.
Nearly all spinning reels are designed to be mounted under the rod. Sometimes you'll see people using spinning reels

with the reel on top (Former President George Bush). Today, most reels have handles that are easily changed for left-handed people, but many left-handers prefer to just turn the outfit over with the reel on top. Spinning rods have a straight handle with large line guides that are aligned with the reel seat on the underside of the rod. These large guides collect the spiraling line as it comes off the spool.

Casting with a spinning outfit is similar to using spin-cast equipment. Some people find it just as easy as spin-cast and others just a little more difficult. Spinning rods and reels allow for more line to be quickly peeled off the reel, allowing for casting longer distances. Both spin-cast and spinning can be used with very light line and light lures or baits. Many freshwater spin-cast and spinning reels are limited to 10 pound test line and under. The array of spinning tackle available ranges from ultra-light tackle designed for very light lines and lures, to huge surf casting rigs with rods to 12 or more feet and lines in excess of 30 pound test. Most spin fishermen use monofilament lines, although newly developed lines have increased the choices available. They used to be limited also to monofilament line but new developments in line have given the angler greater choices.

Spinning and spin-cast tackle are preferable to bait-cast tackle for most anglers under windy situations. Since the line is not thrown from the reel by the inertia of the spool, it has less tendency to backlash, a condition where "controlled slack" controls itself around the spool and other wraps of line.

Bait-casting Tackle

Unlike the two types of reels discussed earlier, the casting reel's spool turns during the cast. The revolving spool allows the line to come off the spool on the cast in the same way it went on. This helps prevent twist in the line, a frequent problem with spin-cast and spinning reels. Bait-casting reels handle line tests much higher than either the spin-cast or spinning reel. Because of the durability of bait-cast reels, they are a favorite choice for many serious big fish anglers. The main drawback to bait-casting reels is that they require the angler to control the spool throughout the cast. Over-runs known to almost everyone as "birds' nests" or "backlashes" are common to the inexperienced user and strike even the experienced caster from time to time. Reel designs continue to advance, becoming increasingly more durable and trouble free than ever before and allowing less experienced fishermen to utilize this reel as a choice. Bait-cast reels are an excellent for many types of fishing where stout lines, smooth drags, and precise casting are needed. In spite of the "bait" in bait-casting, these reels are excellent for nearly all types of artificial lures. A well-tuned reel and line combination will out-cast fixed spool equipment of similar design because the line is actually thrown toward the lure, rather than being pulled by the lure's momentum. Jason Lucas described bait casting as the process of throwing controlled slack. In doing so, most anglers need to develop an educated thumb to prevent fouled lines.

Flyfishing

Flyfishing tackle is different from all other types. In flyfishing, you are casting the line that carries the "fly." With other fishing tackle the weight of a bait or lure pulls line from a reel. In flyfishing the reel is only used to store the line or as an aid in playing the fish. The line that is cast is held in the hand, on the deck, on the water or in a stripping basket during the cast and retrieve. Flyfishing is appropriate and effective for nearly all species of fishes from small panfish, like bluegill to tarpon, sailfish and marlin. Although it is widely associated with trout fishing, flyfishing is the technique of choice for many warm water and saltwater anglers.

Specialty Equipment

Saltwater tackle requires special equipment because saltwater will corrode any aluminum, steel or iron parts. If a freshwater reel is used for saltwater fishing, be sure to rinse it thoroughly in fresh water. Many go so far as to wash their tackle in soapy water before rinsing it, drying it and re-lubricating all moving parts. There are reels for surf fishing, bay and pier fishing, trolling, and jigging. . Saltwater reels of all types have a few things in common. They usually are sturdily built, corrosion resistant, have strong drags and hold hundreds of yards of heavy-test line. They are often attached to the reel seats with clamps that are bolted in place to provide a more secure attachment than is commonly used in freshwater.

Ice fishing is a very specialized sport. One-to three-foot rods are most often used. Simple reels are used to hold the line. Since fish maybe sluggish feeders in very cold water, many ice rods are equipped with spring steel strike indicators. Ice fishing can also be done with tip-ups or tilts. Called “traps” in some areas, the tilt or tip-up fits over or into a hole in the ice. When a fish hits and moves either the line or a spool, that movement springs a flag or causes the tilt to drop into the upright position, alerting the angler.

Deep trolling tackle may involve lead core or wire lines or standard spinning or bait casting tackle in conjunction with downriggers. The use of downriggers has become common in many types of fishing, both freshwater and saltwater. The ability to get very deep while keeping lines light and rods supple has made this approach popular with anglers from deep water lakes to the bays and oceans.

Selecting the Right Tackle

Each of the different types of rods listed above come in a variety of lengths and strengths. Reels come in a variety of sizes as well. So how do you choose what is best for you?

Select fish species first – The first consideration in tackle choice is the species of fish sought. The size, food habits, and depth preferred by the species is critical in choosing tackle. In general, large, powerful fish require heavier tackle than small fish or those that fight less vigorously. Where fish are small or line shy, lighter tackle is indicated. Fish that live in obstruction-choked waters may require stronger than normal tackle to extract them without losing large amounts of terminal tackle, while large fish in open water may be subdued even with relatively light tackle.

Cover and habitat are also important considerations in tackle selection. You can use lighter tackle to fish for river smallmouth than fishing for similar size largemouth in brush and long jams. Open-water barracuda can be caught on light tackle while reef-hiding grouper of the same size require heavy tackle so the angler can keep them out of holes in the coral.
Food preferences of fish also determine tackle choice. The preference of trout for mayflies, caddis flies, stoneflies, and small aquatic insects makes the fly rod ideal for stream fishing. Bottom feeding fish caught by still fishing do not require a rod or reel that will cast well as do fish that strike lures presented by casting. Heavy-action rods are preferred for fish that strike surface lures because the stiff rod allows the angler to work the lure properly.

The kind and type of water also determines tackle selection. Ponds and small streams can be fished with light tackle because they usually contain smaller fish. Offshore saltwater fishing requires the use of large, heavy tackle for the much larger fish.

Matching Tackle

Some anglers say that their fishing tackle must be balanced to work properly. A better way of saying this is to use the word "matched." This is because the word "balanced" doesn't mean how well a rod and reel balances on an angler's finger or in a hand, although that is important for fishing comfort. What it really means is that each element of the entire fishing outfit -- rod, reel, line, and lure -- is in proper relation to each of the other elements.

Many anglers choose the rod and reel first and then their lure and line size. It is usually best to work in reverse. The type of fish you seek and the fishing conditions will determine the type and size of the lure or bait. The types of sizes of lures determine what size line should be used. To fish effectively, the line size and the lure weight determine the type and size of reel and the necessary rod length and strength. Therefore, using matched tackle means that the rod you use must have an appropriately sized reel, line, and lure. If your tackle is matched, you'll be able to fish more easily, more efficiently, and more effectively.

Casting

Understanding fish habitat and behavior coupled with effective casting abilities are what separate the successful angler from the angler who occasionally makes a catch. You can be the best caster, but if you don't know the best

target areas to shoot for your skill does you little good. On the other hand, if you understand where fish should be hiding out, but you can't get your bait to that area, again your knowledge does you little good. Becoming an effective caster involves an understanding of the equipment, learning the fundamentals of different types of casts, and practice.

Regardless of what type of equipment you select to fish with, certain skills need to be developed with any that you select. Accuracy is of utmost importance and to become accurate in different situations you must be able to control distance and be versatile in a number of ways.

Accuracy

Accuracy is the ability to cast your lure/bait to the spot where you want it to land. Many times, the best fishing spots are around structure such as trees, brush, boat docks, piers, and rocks. Some situations require you to be able to get your bait within a three-inch area without getting hung-up in the process. Being in that three-inch area or an inch or two outside that area may mean the difference of catching a record fish and not catching a fish at all. Sometimes you have only one chance at hitting the spot because a misplaced lure may spook the fish.

Practice for accuracy does not have to take place on the water. You can do it in a number of places, including your living room. I wouldn't try an overhead cast in your living room but flipping and pitching can be practiced with little danger. Most people practice in their yard. Never practice with hooks. Either use a casting plug or remove the hooks from a crankbait before practicing.

Always practice with a target. A target can be a number of things.... a hula hoop, rope or lawn hose drawn in a circle, wastepaper baskets. Yards normally contain many natural targets... trees, shrubs, and rocks. When first learning to cast with new equipment, place or use a target in an open area until you begin to develop some control and begin hitting your target. Then you can move to more complicated targets like the base of trees and points under the shrubs.

Distance

Many beginning anglers like to see how far they can cast. However, distance without accuracy is useless. Being able to control distance is part of accuracy. You first need to judge how far a target is away and then cast that distance. Most anglers rarely need to make a long cast, but being able to cast for distance is helpful when the fish are feeding a long way out and the long cast is necessary to reach them. When fishing some deep crank baits, making a long cast is important so the lure will stay deeper longer. Usually in this situation, you have figured out how deep the fish are holding, and you will be fishing parallel to the bank so that the lure will stay in that depth the maximum amount of time. .

Be careful not to get caught up in the farther is better notion. Where fish are tight to shoreline cover, making long casts to the fishless zone simply increases the time between strikes. Working parallel to the cover may be much more productive. If the fish may be within five feet of the shore, anglers would be better served by casting right down the shoreline.

Versatility

To achieve accuracy in a variety of situations an angler has to be versatile. An angler may have one favorite rod and reel, but rarely does he/she use the same kind of lure or bait every time they go. You may be in different water conditions or fishing for different kinds of fish and therefore use a variety of pound tests for your line which effects casting. Rarely are the wind conditions the same and even throughout one day of fishing an angler may have to adapt to many changes in the wind. Your casting may be done while you sit, stand, stand on uneven shoreline or rocks, bounce around in a boat, stand in waist deep water, or half bent over under a tree limb.

Versatility can be learned through practice. While practicing in the yard, change the weight of your casting plug, use different pound test line, put yourself into some of the positions that you may encounter on your fishing trips. Practice on windy days and rainy days.

To be versatile also means knowing more than one way of casting so that you can use the best technique for the bait you select and the conditions you are fishing in. Many avid anglers keep more than one rod handy so they can easily switch to match the condition. They may be using an overhand cast to get their crankbait out a good distance, then come along a nice overhanging tree. They may use a underhand cast to slide their lure under the tree. If that doesn't produce they may switch to a soft plastic bait and flip it to the base of the tree.

The key to successful casting is practice!

Casting Safety

Participants need to learn that they have to take responsibility for their actions. Casting plugs can hurt but once hooks are added great pain can be inflected if someone does not get in the habit of paying attention to where there plug is at all times. Anglers need to be aware of their bait/plug from the time they begin their cast until the time it is retrieved. That means looking behind, overhead and in front.

The back cast is the greatest concern. Fishermen get so intense about where they are going to cast to that they sometimes forget to look behind them to see if their back cast is going to hit someone or get hung in a tree. When you are fishing from the bank, someone may come up behind to watch you or just be causally walking by. When in a boat, most anglers know their partner(s) are there, but don't realize that their back cast can reach their partner(s).

On the forward cast most anglers are aware of other people, but sometimes forget about power lines, overhanging trees or even bridges. Be cautious also of throwing over someone else's line. Never cast directly at another person.

Once the cast has been made, the plug can get hung up including during practice. Caution, participants about putting too much pressure to retrieve the snagged plug. Also caution about grabbing the line to pull it free. Monofilament line can cut like a knife through skin and muscle. Instead have anglers wrap the line around the rod handle and use it to pull the line free. Once it comes loose it can shoot back like a bullet and hurt whomever it hits. Alert anyone around you before you begin to pull so they can avoid getting hit if the plug flies free. Finally, pull at an angle to your body, not straight toward yourself. Remember, the lure that becomes a projectile will follow the path of the line.

Summary Activity

Depending upon time and location constraints, have the participants rig their rods and do some casting with basic spin-cast equipment. Once basic overhand casts are learned consider underhand casts, flips and pitches.

Sharing and Exhibit Suggestions

1. Prepare a display of various types of tackle. Consider matching the tackle to the fishing situation in a game or activity for your audience.

2. Prepare a casting safety checklist that can be used by your group in their practice sessions.

3. Experiment with several types of equipment using similar lines and lures to determine the casting distance and accuracy you can achieve with the various types. Share the results of your experiments with your group or some fishing friends.

4. Interview several anglers about their choices in tackle and the reasons they selected it. Record their responses and share them with your group or start a discussion based upon what you learned.

5. Develop a skills game using one or more types of tackle that will challenge the participants in your group. Share it with your leader and try it with the group.

Community Service Suggestions

1. Consider holding a casting and casting safety clinic for other youth at a local park or public fishing area. Provide tackle and leaders to assist young people and their parents in learning about tackle, casting and safety.

2. Offer to teach other 4-H clubs or youth clubs in your area about fishing, casting and casting safety. Organize a group to teach and demonstrate.

3. Do a clean-up at a popular fishing spot, removing all trash, discarded line and similar items and disposing of it properly and safely. Consider the placement of trash barrels on the site if the area managers are willing to work with you.

Ways of Learning More

1. Learn to use at least one type of tackle that you have not used before. Compare what you learned in the process with what you knew about familiar tackle. Discuss it with a leader, parent or friend who shares your interest.

2. Experiment with different lure weights (casting plugs or sinkers may be used) on one of your fishing outfits. Determine the weights that it handles best with the combination of equipment you are using.: which ones are too light or too heavy to get the best performance from the rod, reel, line combination. Try this experiment with several rods if they are available, being careful not to use weights so heavy that they endanger the rod or its users.

3. Discuss tackle with several good anglers in your area, asking them why they use the tackle that they do and how they change it for different fishing conditions. Record your findings in a notebook and summarize them in a report for your club.

4. Keep a fishing diary or journal, recording everything that happens on fishing trips or fishing related activities. Review your comments from time to time to see if you are becoming more observant and learning from your observations.

Connections to Other Programs

Clearly casting basics is a major part of any angling program, and it provides an entry into exploring fish anatomy, behavior and ecology. It relates to tackle crafting in lure selection and use and is at least tangentially connected to people and fish through the ethical decisions that must be made on disposal of line, etc. and through the recording or other anglers' beliefs, preferences and inevitable stories. Leadership and community service activities directly related to the project are common and fruitful. Other connections will come from the interaction with adults and other youth in the sharing process.

Spin-casting

Sharon Rushton

Objectives:
Participants will:
1. **Learn about the spin-cast equipment**
2. **Learn to hold a spin-cast outfit**
3. **Learn to safety considerations**
4. **Learn to cast using a spin-cast rod & reel**
5. **Have fun while learning**

Youth Objectives:
1. **Develop a skill**
2. **Develop self-esteem and confidence**
3. **Develop coordination**
4. **Develop responsibility**

Roles for Teen and Junior Leaders
1. **Demonstrate spin-casting skill**
2. **Assist younger youth in the activity**
3. **Provide encouragement and moral support**
3. **Assist with clean up after the activity**

Potential Parent Involvement
1. **Accompany child to project meetings**
2. **Assist at meeting(see Roles above)**
3. **Provide or arrange for equip & materials**
4. **Practice spin-casting at home with child**
5. **Serve as role models in learning**
6. **Arrange for or provide refreshments**

Best Time: This lesson can be taught as the first lesson on casting. Depending on the age group and time you have available, you may want to start with the Can-Casting Lesson, followed by the Equipment and Casting Basics.

Best Location: Large enough open area to spread the number of kids out that you want casting at one time. Park, playground, a parking lot that has been marked off from cars.

Time Required: 30 to 45 minutes

Equipment/Materials
1. A spin-cast rod and reel (filled with line) for each participant (If there are not enough rods and reels to go around, split the kids into groups and have them take turns.)
2. Casting plugs (no hooks)
3. Some kind of targets- hula hoops, backyard bass, buckets, etc.
4. Encourage students to wear glasses or sunglasses

Safety Considerations:
A flying casting plug is the greatest safety consideration particularly if it should hit someone's eye. A casting plug hitting someone on the body can also cause a bruise. The ends of rods can also poke into someone if participants are not careful. Have participants follow safety rules.

Evaluation:
1. Can participants on a regular basis cast with a spin-casting reel with little effort?
2. Can participants cast close to a target?

Lesson Outline

1. Spin-cast Equipment
2. Grip
3. Drag
4. Getting the hang of it
5. Underhand Cast
6. Two-Handed Grip
7. Safety Considerations
8. Two-handed Overhead Cast
    a. Stance
    b. Cast
    c. Retrieval
9. Other Casts

Summary Activity: Have participants practice the underhand and overhead casts casting at a variety of targets.

Lesson Narrative

Spin-Cast Equipment
Spin-casting reels may be described as a "closed-face spinning reel." It has a "nose cone" or "hood" (front cover) that houses the line and stationary spool. On the cast, after the line has been first released from the spool by depressing a lever or "push-button" with the thumb, the line passes from the spool through a hole in the front of the cone. Spin-casting reels are designed chiefly to be mounted on the top of a standard bait-casting or spin-casting rod. A spin-casting rod has small line guides and a straight handle.

Spin-casting tackle is ideal for beginning anglers because it works well and is easy to use. However, spin-casting tackle is not limited to beginners. Spin-casting tackle is used often while fishing for bluegill, crappie and other panfish. Specialized models are utilized by professional anglers for flipping for big bass.

Grip
The first step in casting is properly gripping the rod and reel. If you are right handed, grip the rod handle with your right hand with the forefinger in front of the rod handle trigger. Rotate your hand counterclockwise so that the reel handle is on the top.

Most people have a tendency to have the reel handle to the side and the button on top. With the handle on top it puts you in a position to have more flexibility at your wrist. This position is less tiring for your wrist and provides better accuracy.

Drag
All reels have an adjustment called a drag that controls how easily the line is pulled off the reel. The drag on a spin-cast reel can be located in different positions depending on the brand. Some drags are just ahead of the thumb button, some are between the reel handle and the reel itself. Follow the directions that come with your reel to set the drag correctly.

Your drag should be set loosely while in storage, so when you pick up the rod for the first time it will be important to adjust the drag. When practicing, it is good to have the drag set so that you can pull the line out with a little tug. If you are using actual targets like Yard Sharks, participants will learn quickly to adjust their drags or they will not be able to reel in their catch.

When fishing, you need to adjust your drag according the line size, to the type of fish you plan to catch, and the environment that you are in. If you are fishing with light line, you may need your drag set a little looser than you will with heavier line. If you are fishing for a fish where you have to set the hook solidly, then you'll need a tighter drag set than fishing for fish such as bluegill or trout.

With experience, you'll learn how to adjust drag setting for different situations.

Getting the hang of it
Everyone's reel should be equipped with line, appropriately threaded through the line guides with a casting plug tied to the end of the line. If the equipment is not set up, have participants assist in threading their own line and tying on their own casting plug.

The following activity can be done to start to help participants get the feel of the button and to assist them with the coordination of when to depress the button.
Step 1: Have everyone depress the button and hold it down.
2: Release the button. (casting plug should fall to the ground)
3. Turn the handle until the casting plug is within four inches of the guide.
(Repeat 1, 2)
4. Turn handle until the casting plug is within three or four feet of the guide.
5. Hold rod in dominant hand, to side of body, rod parallel to ground.
6. Swing casting plug in a pendulum from body straight out
7. When plug is away from the body, push and release the button.
8. Once casters are able to release the button when the plug is out in front of them, increase the distance the lure is released. (Similar motion to can-casting).

Underhand Cast
There are a variety of ways to do an underhand cast. Before you go into great detail on any technique, just allow participants to become comfortable with the pendulum and release. Provide detail below appropriate to age level.

Appropriate Stance: Quarter body to the right so that left shoulder is pointed toward the target and weight is shifted to the left foot. The casting hand should be held forward above hip level so the rod is parallel with the water surface. Rod and forearm should form a straight line.

McClane's Secrets of Successful Fishing gave the following procedure for making an underhand or flip cast:

"Begin the underhand cast by making an upward lift with the rod keeping a stiff wrist and forearm and pivoting on the elbow. When the tip reaches should level, reverse the direction immediately with a crisp, downward push so that the rod returns to its starting position and stops abruptly. The weight of the lure will cause the rod tip to flex down and in toward your feet. As the rod recovers from its bend and begins upward, release the line (or release thumb pressure on bait-cast). The lure will snap outward in a low arc. Do not attempt to push the rod forward. When the underhand cast is executed properly by the angler, the casting bend of the rod itself will provide sufficient velocity to the lure."

The Basic Fishing Aquatic Skills Series from the Missouri Department of Conservation suggests that you use only the wrist. They suggest the following procedure:

"The back cast in the flip cast is actually a down cast. The entire casting motion is accomplished by using only the right wrist. The arms do not move during the entire cast. Moving the arms is

the most common error made by beginners. Arm action defeats the action of the rod and spoils the cast. The right wrist provides all the motion and the left hand acts as a fulcrum.

"To begin the cast, [release the line] and hold it, raise the rod tip about 12 inches with the right wrist, the immediate snap the rod *tip* down sharply; this serves to bend or load the rod. Next as the rod begins to straighten, release the line. The action of the rod cast the plug, the arms do not. The secret to this cast is timing. The [line must be released] at the precise moment the rod begins to straighten."

Purpose of Underhand Cast (Flip Cast): The underhand cast provides versatility allowing you to cast in a wide range of situations, including under obstacles. The lure or bait also makes a softer entry than an overhand cast. Can be used with any kind of rig, but particularly recommended for rigs where the lure cannot be reeled to within 6" of the tip of the rod (rigs with floats, bobbers, Carolina Rig)

Two-handed Grip

Place the right hand as directed above. Now place your left hand just ahead of the reel and take the line lightly between your thumb and index finer. Depress the thumb stop and let the weight of your plug take the line out. Feel it slip through your thumb and finger? Do it again, and this time use the same thumb and finger to slow the line down a bit. Now one more time -- only this time stop the line completely: at a foot; midway; just as the plug touches the floor. Practice until everyone has a good feel for it. Have participants apply this ability to control distance while doing the underhand cast.

Safety Considerations Before the Overhead Cast

Participants need to learn that they have to take responsibility for their actions. Casting plugs can hurt but once hooks are added great pain can be inflected if someone does not get in the habit of paying attention to where there plug is at all times. An angler needs to be aware of where his/her plug behind, overhead and in front.

The back cast is the greatest concern. Fishermen get so intense about where they are going to cast to that they sometimes forget to look behind them to see if their back cast is going to hit someone or get hung in a tree. When you are fishing from the bank, someone may come up behind to watch you or just be causally walking by. When in a boat, most anglers know their partner(s) are there, but don't realize that their back cast can reach their partner(s).

On the forward cast most anglers are aware of other people, but sometimes forget about power lines and overhanging trees. Be cautious also of throwing over someone else's line.

Once the cast has been made, the plug can get hung up including during practice. Caution, participants about putting too much pressure to retrieve the snagged plug. Once it comes loose it can shoot back like a bullet and hurt whomever it hits.

An activity to utilize to get casters to remember to look for obstacles or people is to have them make a safety circle. Take hold rod parallel to the ground, and make a circle with the rod. This reminds them that there may be people or other obstacles behind them.

Two-handed Overhead Cast

Stance

Assume a casual, sure-footed stance before the target, your body angled so that your "pitching arm" takes the lead, and your right foot is aimed at the target. Now lift the rod until its tip is just above the target (10 o'clock). Note that your elbow and upper arm should be close to, but not against the body; that the forearm parallels the angle of the rod.

The Cast

a. To start the cast, bend your casting arm at the elbow, raising your arm with a smooth, accelerating motion of the wrist that puts your hands at eye-level. Stop the rod at approximately 1 o'clock, allowing the momentum of the lure to flex the rod tip backward.
b. Without hesitation, commence the forward stroke with a quickly accelerated motion of the wrist and forearm. Follow exactly the same path as you took on the upstroke. At about 11 o'clock, release the thumb stop to set the lure in flight. The wrist motion in spin-casting is very similar to that used in throwing a dart.
c. Follow through by lowering the tip of the rod to flow the flight of the lure.
Note: If the lure goes straight up into the air, you released the line too soon; if it takes a nose-dive at your feet, you let go too late.
d. As the lure nears the target, begin to apply pressure to the line with the thumb and index finger of your line hand. This braking or "feathering" action allows pinpoint accuracy by bringing the lure to a slow gentle stop. More precise than relying on the thumb stop, it also prevents the line from back-looping inside your reel.

Retrieval
Retrieval is simply a matter of turning the crank handle. There's no need even to switch the rod to the other hand, for your "other" hand has been there from the beginning. Let the line flow through the thumb and index finger of this hand on its way back to the reel. It's a trick that serves to maintain tension on the pick-up mechanism, cleans the line and assures no loops are taken into the reel for another trouble-free cast.

Other casts

The overhead cast can be done with one or two hands. See which is most comfortable for yourself. The overhead cast cannot be used in all situations and anglers are encouraged to learn

a side cast, flipping, and pitching. You utilized the same grip as explained in this lesson, but the stance and arm action are the essentially the same for all types of casting and spinning gear. See other casts under the Bait-Casting Lesson for advanced casting methods.

Tips for adjusting Distance

To adjust the distance of your cast with a one-hand cast while your plug is in the air; depress the button to slow the plug. To stop the plug completely, fully depress the button and allow the plug to drop on the target.

References

Basic Casting from A to Z booklet developed by Zebco.
Sportfishing and Aquatic Resources Handbook

Spinning

Sharon Rushton[3]

Objectives

Participating young people and adults will:

1. Identify spinning tackle parts and uses
2. Practice using spinning tackle
3. Practice proper stance, grip and technique with spinning equipment
4. Practice safety in using spinning tackle
5. Demonstrate basic spinning casting skills
6. Have fun while learning.

Youth Development Objectives

Participating young people will:

1. Enhance hand-eye coordination
2. Enhance casting skills and angling knowledge
3. Enhance self-esteem and confidence
4. Practice personal responsibility and safety skills
5. Practice acquiring new skills through observation, following directions and practice
6. Practice communication and listening skills

Roles for Teen and Junior Leaders

1.Demonstrate uses of spinning tackle and various casts
2. Assist with set up and clean up
3. Assist learners as needed with technique or problems
4. Assist in tying on or freeing fouled casting plugs
5. Critique casting form positively to help learners.

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching space
3. Arrange for or provide equipment
4. Arrange for or provide transportation
5. Arrange for or provide refreshments
6. Discuss personal experiences with spinning tackle

Best Time: Generally best after teaching casting basics and spin-casting techniques

Best Location: Open area with adequate room for the group and the casting distances anticipated, e.g. park, playground or barricaded parking lot

Time Required: 30 to 45 minutes

Equipment/Materials

one spinning outfit for each pair of kids
plastic casting plugs or light bell sinkers
targets (hoola hoops, buckets, tape circles, garbage can lids or similar items
sunglasses or safety glasses

Safety Considerations:

Be sure to orient participants to safety considerations – flying casting plugs, moving rod tips, potential for line cuts, jerking on plugs hung in the grass, keeping the casting area clear of other people and obstructions, avoiding power lines and other local conditions.

Evaluation Suggestions

1. Observe development of casting skills.
2. Observe interpersonal communication
3. Observe improvement in casting accuracy
4. Observe improvement in casting distance
5. Observe adherence to safe casting principles

References

Basic Casting from A to Z , Zebco.
McClane's Secrets of Successful Fishing Sportfishing and Aquatic Resources Handbook., American Sportfishing Association/Future Fisherman Foundation

[3] Executive Director, Future Fisherman Foundation

Lesson Outline

Presentation	Application
I. Introduction to spinning tackle	**DISPLAY** an array of spinning tackle useful in your area from ultralight to relatively heavy tackle. **NOTE** the similarities in the tackle except for size and **DISCUSS** its relationship to spin-cast tackle used previously.
A. Rod	
1. Range in size and power	
a. Ultralight to surf tackle	
b. Lines from 1-40 pound test	
c. Lures from 1/64 ounce to 4 or 5 ounces	
2. Relatively large guides	**NOTE** the relatively large guides, particularly the butt guide or gathering guide.
3. Reel seat and guides below blank	**POINT OUT** the location of the reel seat on the relatively long handle and the positioning of the reel and guides below the blank as it is in the casting hand.
4. Relatively long handle	
5. Reel nearly centered on handle	
B. Reel	
1. Fixed, exposed spool	**POINT OUT** the features of the reels being used in the lesson with emphasis on the location and operation of the bail and the positioning of the reel handle.
2. Line pick-up or bail	
3. Right or left hand reeling	
4. Most manually opened for casting	
5. Most close by turning the handle	
6. Adjustable drag	**ASSIST** the participants in making drag adjustments using the rule of thumb or about half the breaking strength of the line. **STRESS** the importance of proper drag adjustment under fishing conditions.
C. Line	**DISPLAY** and **DISCUSS** lines for spinning with an emphasis on the process used to select the line used in the lesson.
1. Primarily monofilament lines	
2. Very light (1-2 pound test) to heavy (up to 30 or 40 pound test)	
D. Applications	**NOTE** some advantages of spinning tackle, including handling light lines, long casts with light lures or baits, fishing for line-shy species, and sporty handling of relatively small fish.
1. Casting relatively light lures	
2. Long casts without revolving spool learning curve	
3. Light lines for line-shy fish or clear water conditions	
II. Basic casting safety considerations	**LAY OUT** or have the participants **DISCUSS** safety with casting. Be sure to **STRESS** potential for line cuts with light monofilament and the potential dangers from flying plugs, either when being cast or when trying to free a fouled one.
A. Personal responsibility	
1. Control of rod and casting plug	
a. Clear area for casting	
b. Clear impact area for plug	
c. Caution with fouled plugs	
B. Your safety	
1.Watch nearby casters	
2. Avoid jerking on fouled plugs	**LEAD** participants to voice some of the hazards them might encounter and must be careful to avoid. If needed use questions to direct their attention to possible problems.
3. Watch for overhead hazards	

C. Care of your tackle
1. Potential to break rod
2. Damage to the line

NOTE that excessive whipping of the rod can result in breakage and may cause line fraying as well.

III. Fundamentals of spinning
A. Basic grip and hand position
1. Reel down
2. Reel foot between middle two fingers
3. Fingers around handle
4. Thumb on top of grip

DEMONSTRATE or have teen leaders demonstrate the basic grip used in spinning, allowing all participants to mimic the grip.

NOTE that placing the thumb on top of the grip tends to help in stopping the back cast abruptly before the forward cast.

B. Finger control of line
1. Line held on tip of index finger
2. Open bail prior to casting
3. Release line by pointing finger
4. Feathering line with finger on spool

DEMONSTRATE and have participants **PRACTICE** holding the line on a fingertip and releasing it by pointing the finger.

Although it is an advanced technique, **DEMONSTRATE** feathering the spool with the casting finger.

C. Casting similar to spin-cast technique
1. Rod loaded with sharp back cast
2. Forward cast immediately

EMPHASIZE the importance of casting in a nearly continuous motion, loading with an abrupt stop and starting the forward cast immediately. **COMPARE** the techniques with those already learned on spin-cast tackle.

3. Troubleshooting similar also
a. High arc - release too early
b. Arc too low – release too late

EQUIP participants to troubleshoot their casting technique and self-coach toward improvement.

D. Overhead cast
1. Stance
a. Square to target area
b. Rod in casting hand
c. Line held on finger - bail open
d. Lure about 6 inched from tip
2. Starting position – rod pointed toward target
3. Raise rod sharply
a. A bit beyond vertical
b. Power from elbow and wrist
4. Stop abruptly and let rod load
5. Immediately snap wrist and forearm downward toward target
6. Point finger to release line
7. Follow through toward target

Have teen or junior leaders **DEMONSTRATE** each step in the casting process. Then work your way through the process steps with teens or parents coaching the steps. **AVOID** over coaching!

NOTE that the casting movements of the arm are very similar to driving a nail, pivoting on the elbow, but providing a snap with the wrist at the end of the power stroke.

Allow participants to **PRACTICE** on targets with coaching advice for those who are in need of some assistance.

8. Live bait modifications
a. Concern for damage to bait
b. Soften direction changes
c. Widen power stroke for longer acceleration

DISCUSS changes in casting technique when delicate live baits are being cast – lengthening the arc of the rod strokes, softening all direction changes and sacrificing some distance for a gentle treatment of the bait.

E. Underhand cast
1. Advantages
a. Low, quiet entry

LEAD participants in discussing possible situations where an underhand cast or a flip cast with spinning tackle would be preferred. **ENCOURAGE** parents or teen leaders to share their use of this type of cast in fishing..

b. Slack line entry -quick sinking

2. Stance similar except

a. Leave more line beyond tip

1) 12 to 24 inches

2) Nearly rod length

b. Rod may be outside body frame rather than in line with shoulder

3. Starting position about same

4. Casting process

a. Nearly all wrist movement

b. Drop rod tip swinging lure back and loading rod downward

c. Snap tip upward with wrist

d. Follow through toward target

5. Pendulum cast - similar

a. More line extended (rod length)

b. Full arm movement from shoulder

F. Sidearm cast

1. Control much more challenging

2. Flat trajectory

a. Cheats wind well

b. Good for low cover situations

3. Overhand cast rotated 90°to side

4. Precise release control essential

5. Hazards to others much greater

IV. Spin fishing

A. Setting up to fish

1. Gear selection for purpose

2. Setting drag for best performance

a. Start about ½ line strength

b. On rod with partner holding line

c. Reduce drag on long runs

B. Line twist

1. Problem

a. Snarls or loops in line

b. Cuts casting distance

c. Weakens line

DEMONSTRATE all facets of the underhand cast.

NOTE the nearly exclusive use of the wrist in making this cast. **COMPARE** with the wrist and shoulder movements in the similar pendulum cast.

USE you discretion on introducing the pendulum cast. If you elect to do so, this is an excellent time, since it is very similar to the underhand cast and suitable for some similar situations.

Leader discretion is important in teaching this cast. For very young participants or those with minimal hand-eye coordination, it may be a frustrating experience with potential for practice plugs flying in nearly all directions. If taught the following is suggested.

DISCUSS the advantages of the sidearm cast as well as it challenges.

NOTE that this cast is simply an overhand cast rotated 90 degrees to the casting arm side.

EMPHASIZE the increased risk to others when using this type of cast.

CONSIDER setting up a decision making exercise where different conditions and species are posed and the members select from an array of tackle options.

LEAD members in setting their drags appropriately. If available, use a spring balance to demonstrate the real pressure on the terminal end of the line relative to perceived pressure on the rod.

DISCUSS the challenges posed by twist in spinning lines, including the causes and some possible cures. **NOTE** that prevention is much better than trying a cure after the fact.

2. Twist sources
    a. Fish pulling line against drag
    b. Movement of lures or bait in fishing
3. Prevention
    a. Proper spooling of line
    b. Swivels
4. Cures
    a. Water movement
        1) Drag line only behind boat
        2) Free line drift in current
    b. Strong pull against ball bearing swivel

C. Prudent anglers kit
1. Extra bail springs
2. Tools to handle bail screws
3. Keep moving parts lubed, dirt free
4. Inspect for nicks, rough edges

DISCUSS reel lubrication and maintenance and suggest a reel maintenance kit, including at least spare bail springs.

Summary Activity

Have participants practice the overhead cast casting at a variety of targets. Or use an "Olympics" approach with tackle selection, distance casting, casting for accuracy and use of various casting techniques at selected targets. If this approach is used, have some small, fun awards for those who do well in specific areas. Always include casting for distance as well as for accuracy to let every youngster shine in areas where their abilities are well developed.

Lesson Narrative

Spinning Equipment

Spinning reels are often referred to as an "open face reels," since the line and spool are exposed at the front of the reel. The spinning reel's spool is primarily stationary on both the cast and the retrieve, except that it does oscillate up and down as the bail turns allowing the line to wind evenly on the spool rather than piling it up in one spot. The momentum of the cast bait or lure pulls line off the spool.

Spinning reels are properly mounted under the rod. Sometimes you'll see people using spinning reels with the reel on top., but the rod is designed to have the line suspended under the rod. Today's spinning reels are designed almost entirely to allow quick and simple switching from left hand to right hand retrieving, so there is no need to use one in the upside-down mode. Some anglers who prefer to reel with the right hand prefer to turn the outfit over with the reel on top. This does require a counter-clockwise retrieve rather than the clockwise motion used when the reel's handle is switched to the opposite side of the reel.

Spinning rods range from ultralight models as short as 4 or 4.5 feet up to surf rods of 11 to 14 feet, with reel sizes to match them. They all tend to have relatively larger guides than do spin-cast or bait-casting rods, particularly near the butt of the rod. The first guide or gathering guide is quite large, and the guides step down progressively to the tip top. Spinning rods have a straight grip, and the reel is generally suspended somewhere toward the center of the handle -- from approximately ¼ to ½ way back from the forward end of the handle. Many types of reel seats are available from metal or graphite screw-type mounts to sliding rings on a cork grip.

Rod types and actions are designed to work best with a range of line weights (as are reels). In general, ultralight rods are from about 5 to 6 ½ feet in length for use with lines from about 1 or 2 pound test up to about 6 pound test. Light action rods are usually from about 6 to 7 feet in length balancing with 4-8 or even 10 pound test lines. Medium action rods range from about 6 ½ feet to 7 feet in length and handle lines from about 8 or 10 pound test up to about 17 pound test. Some light to medium rods may be extremely long, e.g. plunking or drifting rods may be in the 8-10 foot range yet designed for lines of 6-12 pound test. These specialty rods are designed for presenting light baits or lures at long distances with great sensitivity. Heavy rods may be short (6-7 feet) , but they can be as long as 12-14 feet. They are usually designed for lines in the 12 to 30 pound test classes.

Spinning lines most often are monofilament or co-filament lines. Some reels are designed to handle "super lines" made of polyester materials as well. Generally lines are available in two-pound increments from about 2 to 14 pound test, then in three to five pound increments up to approximately 40 pound test. Generally relatively soft lines with good abrasion resistance are preferred for spinning. Line color and fluorescence are matters of considerable debate and advertising. Many anglers prefer a clear, fluorescent line for a combination of visibility in the air and low visibility in the water. Others prefer yellow, brown, green or even camouflage lines. The best advice is to find combinations that work well for the areas, species and techniques you like to use and to stick with them.

D. Applications

1. Casting relatively light lures
2. Long casts without revolving spool learning curve
3. Light lines for line-shy fish or clear water conditions

Basic Safety Considerations – As in any other type of activity, participants in casting have some basic responsibilities for their own safety and that of others. Being struck by a rod or a casting plug can be painful and it could cause serious injury, particularly to eyes. Adding hooks to the equation increases the potential for injury, pain and trip ruining accidents. Any angler needs to be aware of the entire area covered by his or her rod and terminal tackle from the start of the cast to the end of the retrieve.

In this session and whenever he or she is casting, the caster must assume personal responsibility for control of the rod and the casting plug or sinker (or other terminal tackle). That involves checking the area behind, overhead and in front of the caster and making sure that it is safe to cast, no person or other living thing is endangered by the casting plug., line or rod.

The back cast is the greatest concern. Anglers can get so intense about where they are going to cast to that they sometimes forget to look behind them to see if their back cast is going to hit someone or get hung in a tree. When you are fishing from the bank, someone may come up behind to watch you or just be causally walking by. When in a boat, most anglers know their partner(s) are there, but don't realize that their back cast can reach their partner(s).

On the forward cast most anglers are aware of other people, but sometimes forget about power lines and overhanging trees. Be cautious also of throwing over someone else's line.

Participants need to learn that they have to take responsibility for their actions. Casting plugs can hurt but once hooks are added great pain can be inflected if someone does not get in the habit of paying attention to where there plug is at all times. An angler needs to be aware of where his/her plug behind, overhead and in front.

Once the cast has been made, the plug can get hung up including during practice. Caution participants about putting too much pressure to retrieve the snagged plug. Once it comes loose it can shoot back like a bullet and hurt whomever it hits.

Casting with Spinning Tackle

Casting with a spinning outfit is similar to using spin-cast equipment. Some people find it just as easy as spin-cast and others just a little more difficult. Spinning rods and reels allow for more line to be quickly peeled off the reel, allowing for casting longer distances.

Line is freed for casting when the bail wire is opened, either mechanically or manually. After making a cast, turning the reel handled normally trips the bail and allows the line to be retrieved. If turning the handled does not engage the bail, you can trip in manually.

Spinning rod and reels permits the casting of lighter lures, further, with less effort. Many freshwater spin-cast and spinning reels are limited to 10 pound test line and under. They used to be limited also to monofilament line but new developments in line have given the angler greater choices.

Spinning and spin-cast are preferable over the bait-cast in windy situations.

Drag

All reels have an adjustment called a drag that controls how easily the line is pulled off the reel.
The drag on a spinning reel can be located in different positions depending on the brand. Some drags are on the spool head, others are on the back or underneath the reel toward the back of the reel. Follow the directions that come with your reel to set the drag correctly.

Your drag should be set loosely while in storage, so when you pick up the rod for the first time it will be important to adjust the drag. When practicing, it is good to have the drag set so that you can pull the line out with a little tug. If you are using actual targets like Yard Sharks, participants will learn quickly to adjust their drags or they will not be able to reel in their catch.

When fishing, you need to adjust your drag according the line size, to the type of fish you plan to catch, and the environment that you are in. If you are fishing with light line, you may need your drag set a little looser than you will with heavier line. If you are fishing for a fish where you have to set the hook solidly, then you'll need a tighter drag set than fishing for fish such as bluegill or trout. With experience, you'll learn how to adjust drag setting for different situations.

Grip and Getting the Hang of It

Everyone’s reel should be equipped with line, appropriately threaded through the line guides with a casting plug tied to the end of the line. If the equipment is not set up, have participants assist threading their own line and tying on their own casting plug.

1. The first step in casting is properly gripping the rod and reel. Place the reel stem between your second and third fingers. Your thumb should be on top of the handle and your forefinger extended to touch the spool cover. Left-handers may prefer to just turn the outfit over with the reel on top. Spinning rods have a straight handle with large line guides that are on the bottom.

2. With your other hand, rotate the reel's cowling until the line roller is directly beneath your extended forefinger.

3. Pick up the line in front of the roller with your forefinger. Hold the line with a relaxed finger, but do not hold it against the rod handle.

4. Open or cock, the reels bail with your other hand. Some reels have a lever so you can grasp the line and open the bail in one motion.)

5. Using the techniques learned in spin-cast lesson, use the pendulum swing (underhand cast) to become comfortable with releasing line. Begin by releasing line when the swing of the line is furthest from the body (very little distance but understand how easy it is to make a cast). Increase distance of underhand cast while providing participants with information below.

Underhand Cast

There are a variety of ways to do an underhand cast. Before you go into great detail on any technique, just allow participants to become comfortable with the pendulum and release. Provide detail below appropriate to age level.

Appropriate Stance: Quarter body to the right so that left shoulder is pointed toward the target and weight is shifted to the left foot. The casting hand should be held forward above hip level so the rod is parallel with the water surface. Rod and forearm should form a straight line.

McClane's Secrets of Successful Fishing gave the following procedure for making an underhand or flip cast:

"Begin the underhand cast by making an upward lift with the rod keeping a stiff wrist and forearm and pivoting on the elbow. When the tip reaches should level, reverse the direction immediately with a crisp, downward push so that the rod returns to its starting position and stops abruptly. The weight of the lure will cause the rod tip to flex down and in toward your feet. As the rod recovers from its bend and begins upward, release the line (or release thumb pressure on bait-cast). The lure will snap outward in a low arc. Do not attempt to push the rod forward. When the underhand cast is executed properly by the angler, the casting bend of the rod itself will provide sufficient velocity to the lure."

The Basic Fishing Aquatic Skills Series from the Missouri Department of Conservation suggests that you use only the wrist. They suggest the following procedure:

"The back cast in the flip cast is actually a down cast. The entire casting motion is accomplished by using only the right wrist. The arms do not move during the entire cast. Moving the arms is the most common error made by beginners. Arm action defeats the action of the rod and spoils the cast. The right wrist provides all the motion and the left hand acts as a fulcrum.

"To begin the cast, [release the line] and hold it, raise the rod tip about 12 inches with the right wrist, the immediate snap the rod *tip* down sharply; this serves to bend or load the rod. Next as the rod begins to straighten, release the line. The action of the rod cast the plug, the arms do not. The secret to this cast is timing. The [line must be released] at the precise moment the rod begins to straighten."

Purpose of Underhand Cast (Flip Cast): The underhand cast provides versatility allowing you to cast in a wide range of situations, including under obstacles. The lure or bait also makes a softer entry than an overhand cast. Can be used with any kind of rig, but particularly recommended for rigs where the lure cannot be reeled to within 6" of the tip of the rod (rigs with floats, bobbers, Carolina Rig)

Overhead Cast

The overhead cast is a basic cast that can be used at all times, unless branches or other obstructions are in the way, or someone/something is directly behind you. Greater distance can usually be obtained with the overhead cast as compared to most other casts.

Stance
The most comfortable stance for a right-handed caster is to face the target, take a quarter turn to the left, so that your right shoulder is pointed toward the target. Place your right foot slightly ahead of your left with the weight on your left foot. When casting, your body weight should be shifted to the right foot. Reverse the procedure for a left hand caster.

The Cast

a. Hold the rod so that the tip is at eye level with the shaft centered on the target. Center the rod on target with tip at eye level. Your elbow should be close to, but not touching your body; your forearm, in line with the rod.

b. With a smooth upward motion, start the cast by raising the hand almost to eye level, pivoting at the elbow so that the forearm and rod come to a vertical stop.

c. When the rod reaches the vertical position, the weight of the lure will cause the rod to bend to the rear. As it does, bring the rod immediately forward in a crisp down stroke with the forearm, applying only the slightest wrist emphasis.

d. Line is released from the forefinger at the starting point (or between 1 and 2 o'clock). The correct release does take some practice. If the lure goes straight up into the air, you released the line too soon; if it takes a nose-dive at your feet, you let go too late.

e. Follow through by lowering the tip of the rod slightly as the lure takes flight and the line flows through the guides.

f. As the lure nears the target, you can slow the speed to prevent overshooting the target by bringing your forefinger back toward the spool to create friction against the uncoiling line. This is called feathering. To stop the lure completely, touch the spool rim with your finger.

Retrieval

Even if you make a perfect cast it is important to place your finger on the edge of the spool and lift the rod tip as you turn the handled to engage the line pickup. This will help prevent slack line build-up on the spool. When fishing with a buzzbait that you want to keep on the surface, you may want to stop the lure by turning the reel handled to engage the line. This way you can begin your retrieve automatically and the buzzbait does not sink. However, be sure you do not get a loop in the line as it winds on the reel.

Unlike bait-casting, you do not switch hands, but use the hand that is already free to make the retrieval.

When you retrieve your bait, you have the choice of having the anti-reverse in lock or unlock position. The lock position immobilizes the crank handle, except when you want to take line in. The unlock position, allows you to take line in but also allows you to reel backward and let line out. Many people prefer to leave it in the lock position and let the drag do all the work when they get a fish. However, fish that can make a quick dart or turn such as a

smallmouth or silver salmon will often times break the line. A good angler can anticipate the pull and backwind as the fish makes its move. You have a much greater chance of catching a large fish on light tackle using this method. However, if you get an extremely large fish and you lose control of the reel handle, the loose handle can do some damage to your hand.

Other Casts

The overhead cast can be done with one or two hands. See which is most comfortable for yourself. The overhead cast cannot be used in all situations and anglers are encouraged to learn a side cast, flipping, and pitching. You utilized the same grip as explained in this lesson, but the stance and arm action are the essentially the same for all types of casting and spinning gear. See other casts under the 'Bait-Casting Lesson' for advanced casting methods.

Avoiding Line Problems

Follow the steps as you close the bail on your cast. However, a loose loops may slip by anyway. Therefore always keep an eye on your spool for any loop and remove immediately. Leaving the loop in will result in a major snarl later on if you don't. To remove the loop, open the bail, pull line off until you reach the loose loop, and then straighten the line. If you can cast your line out to an area that won't get hung up, you can cast downwind. Rewind, using your thumb and forefinger to apply tension.

Drag slippage from fighting fish or hang-ups can cause twists in your line which will eventually cause your line to continually loop. If you are fishing from a boat, you can take your lure off your line, open the bail and trail 50 to 75 yards of line behind the boat for about five minutes. This will straighten the line.

Bait-Casting

Sharon Rushton[4] and Shag Shahid [5]

Objectives
Participating young people and adults will:
1. Identify bait-casting equipment
2. Practice handling bait-casting tackle
3. Practice safe casting principles
4. Practice basic casting with bait-casting tackle
5. Have fun while learning

Youth Development Objectives
Participating young people will:
1. Practice patience and sequential learning
2. Enhance self-esteem and self-confidence
3. Enhance both gross and fine motor skills
4. Practice exercising personal responsibility
5. Practice interpersonal communication skills

Roles for Teen and Junior Leaders
1. Demonstrate casting techniques
2. Assist in setting up equipment and putting it away
3. Assist participants with casting technique
4. Assist in managing backlashes and bird's nests

Potential Parental Involvement
1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching equipment
3. Arrange for or provide teaching location
4. Arrange for or provide transportation
5 Arrange for or provide refreshments

Evaluation Suggestions
1. Observe casting form for any needed corrections.
2. Observe reductions in the instances of backlashes.
3. Coach young people on improving form with the tackle.
4. Observe casting accuracy and distance

Best Time: Any time; intermediate or advanced lesson.

Best Location: Open area large enough to safely hold the number of kids casting at one time (park, playground, closed parking lot)

Time Required: 30 to 45 minutes per group

Equipment/Materials
bait-casting rod and reel – 1/participant
practice plugs
casting targets (trash can lids, hula hoops, buckets, etc.)
safety glasses or sun glasses
line clippers swivel snaps (about size 7)

Safety Considerations: Flying casting plugs and fast moving rod tips are the greatest safety considerations. Using some form of eye protection and keeping kids well separated will reduce the probability of injuries significantly. particularly if it should hit someone's eye. Line cuts are also a possibility if young people are tying lines or pulling excessively hard on lines for hung plugs. Beware overhead electric lines, plug-eating trees or similar hazards. Lawn areas are much easier on lines than are paved areas, but they may also have pests like chiggers, ticks, or stinging insects like yellow jackets or fire ants. Scout the area to avoid such problems.

References
Basic Casting from A to Z. Zebco.
Bassmaster Casting Kids
McClane's Secrets of Successful Fishing
Sportfishing and Aquatic Resources Handbook

[4] Former Executive Director, Future Fisherman Foundation

[5] Professional Angler, Panama City Florida

Lesson Outline

Presentation	Application
I. Bait-casting equipment A. Reels 1. Revolving spool 2. "Throwing" line from the reel 3. Reel parts a. Foot b. Frame c. Level wind and pawl d. Free spool button or lever e. Handle f. Drag adjustment (star drag) g. Friction adjustment	**POINT** out and **DISCUSS** the parts of a casting reel, using either a functional reel or a large diagram as a teaching aid. If possible, have participants **LOCATE** the parts on the reels they will be using in the lesson.
B. Lines 1. Monofilament 2. Copolymer 3. Braided a. Dacron or nylon b. "Super" braids	**DISPLAY** and **DISCUSS** the variety of lines that can be used on bait casting tackle. For advanced groups consider discussing the advantages and disadvantages of each type and appropriate applications for them.
C. Rods 1. Off-set handle rods a. Traditional casting rod b. Similar to spin-cast rods c. Reel in line with guides 2. Straight handle rods a. Popping, pitching or flipping rods b. Longer grips front and rear c. Larger guides d. Similar to stout spinning rod	**SHOW** a variety of bait-casting rods, illustrating their features and **DISCUSSING** their uses.
II. Safety considerations A. Personal responsibility 1. Casting requires personal responsibility a. Personal safety b. Safety of others c. Safe execution of cast and retrieve	**STRESS** the responsibility of the casters to make sure they can safely make a cast before starting. **INCLUDE** a recommendation for sunglasses or safety glasses.
B. Casting 1. Watch back cast 2. Watch for hazards a. Overhead power lines b. Trees or other obstacles c. Other people and their lines	**ASK** participants to name some safety considerations for a person casting. **REINFORCE** their statements and **ADD** any that may be overlooked.
C. Retrieving 1. Plugs as projectiles a. Excess stress on line b. Jerking to free snagged plug or lure c. Possible damage to rod, line or people	**NOTE** that a lure jerked loose from a snag may become a well armed projectile that can inflict injury.

III. Casting mechanics

A. Drag adjustment

1. Purpose of drag
   a. Prevent line breakage
   b. Provide pressure on fish
   c. Stronger as line is taken from spool
   d. Maximum about ½ to _ line strength
2. Star wheel or drag knob
3. Adjust to desired amount of drag
   a. Have partner hold line
   b. Adjust until line slips at desired pull
   c. Adjust to fishing conditions
      1) Lighter for open water, fast fish
      2) Heavy for dense cover, obstructions
   d. Adjust to angler strength and stamina

DEMONSTRATE proper drag adjustment and **DISCUSS** the reasons for setting the drag in the manner and at the tension discussed.

NOTE that the drag adjustment should change with the fishing conditions. **ASK** why one might use a lighter drag on fast, open water fish. [***Remember drag force increases and line is stripped from the spool, and drag on the line from the water also increases it.***]

B. Free-spool adjustment

1. Purpose
   a. Control rotation speed on spool
   b. Reduce line over-runs, backlashes
2. Spool tensioning device or inertial dampening
3. Adjustment
   a. Tighten adjustment fully
   b. Reel lure to just below rod tip
   c. Release free-spool
   d. Hold rod level with ground
   e. Gradually loosen tension until lure slowly pulls line off reel
4. May be set lighter as proficiency grows
5. Set slightly heavier casting into wind
6. Adjust every time lure weight changes

DISCUSS the free-spool adjustment or spool tensioning device and its purposes. **NOTE** that using it properly supports learning to cast with bait-casting tackle.
NOTE that older reels may use an inertia block to dampen changes in spool speed.

DEMONSTRATE and **DISCUSS** the adjustment of the spool tensioning device. Have the participants **PRACTICE** the process and **SET UP** their tackle with the practice plug.

DISCUSS changing the set up with changes in proficiency, wind direction or lure weight. Consider **POSING** scenarios for such adjustment and letting kids choose how to adjust.

C. Grip

1. Comfortable grip on rod handle
2. Forefinger extended, wrapped around trigger on rod if present
3. Place thumb on the spool
4. Turn hand palm down, reel handle up (right-handed casters)
   a. Handle down (left-handed casters)
   b. Allows free wrist movement
   c. Spool axil rests on one bearing
   d. Minimizes friction, eases casting
5. Grip firm but relaxed
   a. Excessive pressure increases fatigue
   b. Excess pressure reduces quickness
   c. Reduces cast length and accuracy

DEMONSTRATE and have participants **PRACTICE** taking a proper grip for their casting. **TRY** to maintain ambidextrous instructions, e.g. casting arm, off arm, casting arm foot...

NOTE that the reel handle up or down presentation is essential for the best casting distance because it minimized spool friction. **STRESS** keeping the reel clean and well lubricated.

EMPHASIZE the need for a firm, relaxed grip to offer control, quickness, reduced fatigue, longer distance, and better accuracy.

D. Positioning lure

1. Important factor in bait-casting
   a. Heavy lures approximately 1 inch from tip top
   b. As lures get lighter, further from tip
      1) _ ounce lure - about 3 inches

DISCUSS lure positioning and its impact on accuracy and distance in casting.

2) ¼ ounce lure - 4 - 6 inches

E. Overhead cast

Most basic cast

1. a. Most casting situations

b. Exceptions

1) Overhead obstructions

2) Objects or persons behind caster

2. Stance

a. Critical to executing good cast

b. Solid, comfortable standing position

c. Body angled slightly toward target

1) Casting arm shoulder toward target

2) Off-side foot slightly behind casting-side foot

d. Weight nearly equally distributed

1) Slight shift to back foot on backcast

2) Slight shift to forward foot for forward cast and follow through

e. Properly gripped rod splits target

3. Casting mechanics

a. Continuous motion, explained in steps

b. Release free-spool

1) Push free-spool button

2) Place thumb on bottom edge of spool

a) Touching line and edge of spool

b) Controlling spool and line

c. Hold casting arm at about 35°angle

1) Rod tip about eye level -2 o'clock

2) Handle above hip level

3) Casting arm elbow clear of body

4) Forearm in straight line with rod

d. Sweep rod back to slightly beyond vertical by raising forearm and elbow

1) Casting hand about eye level

2) Minimize wrist bend for accuracy

3) Reel handle toward face or target

e. Stop just beyond vertical

1) Precision - stop rod at same position

2) Tip pulled back by lure inertia

3) Loading rod fibers for cast

4) Provides majority of casting power

5) Butt essentially vertical

6) Avoid letting rod drift back

f. Start forward cast immediately

1) No hesitation after stop

2) Move arm forward, down sharply

3) Snap wrist forward to boost speed

4) Follow path of backcast

5) Avoid over throwing cast

a) Reduces distance

DISCUSS the overhead cast and it utility. **DEMONSTRATE** (or have a teen leader or parent do so) one cast. Then break the cast into parts for instruction.

Have each participant **STAND** comfortably. **NOTE** the position of their feet and that this is about right for the cast.

Have each participant **ASSUME** a casting position with a common target. **ADJUST** their positions as required.

NOTE that a shift in weight from toward the rear foot on the backcast and toward the front foot on the forward cast imparts a bit of extra power (like a batter stepping into a pitch).

STRESS that the casting process is one continuing set of motions, not a series of steps, even though it is discussed in step-wise fashion.

DEMONSTRATE pressing the free-spool button and proper thumb position on the spool and line. Have each participant **PRACTICE** it one or more times.

Have each participant **EXECUTE** each of these steps in sequence and slowly. Then attempt to put them together to make a cast. [***Using an open area where obstructions are absent and no danger of catching a fish is present makes this lesson easier on the learner.***]

ASK participants in they feel the rod loading when the stop the rod on the backward arc at the vertical. **NOTE** that this is the real power that casts the lure, not the strength of their arms, shoulders or wrists.

NOTE that trying to "muscle" the cast results in shorter, less accurate casting rather than increasing distance and accuracy.

EMPHASIZE the timing of the release and the need for practice to develop a feel for it.

b) Reduces accuracy
g. Ease thumb pressure at 11 o'clock
1) Rod still splitting target
2) Rod still moving forward
3) Control spool with thumb pressure
h. Continue forward movement of rod
1) Rod tip in line with flight of lure
2) Increase thumb pressure
3) Stop spool as lure hits target
I. Practice to educate thumb
1) Beware frustration
2) Everyone gets some backlashes
3) Pick 'em out and keep casting

DEMONSTRATE a proper follow through with the rod after the line is released.

STRESS that only practice can educate the thumb to apply the proper amount of frustration and **DISCUSS** the process of picking out backlashes, including your practice in that area.

DISCUSS the impacts of early or late release on the trajectory of the lure and line. **COACH** the participants to use observations of that trajectory as a teaching element to help get their timing down.

F. Trouble shooting casts
1. Relatively flat trajectory desired
a. Less wind influence
b. Less slack in line
2. Observe arc of line
a. High arc - release too early
b. Low, short cast - release too late
3. Practice developing rhythm
a. Makes it look easy
b. Effort educating thumb worth it

NOTE that the overhead cast is used for most situations, but that other types of casts are used frequently by anglers.

IV. Other casts
A. Value of other casts
1. When overhead cast cannot be used
2. Matching cast and situation

DISCUSS the pendulum cast or flipping, including its uses and execution.

B. Flipping or pendulum cast
1. Utility
a. Short, accurate cast
b. Gentle entry into water
c. Precise casting in tight cover
2. Casting process
a. Start with 2 rod-lengths of line
b. Engage reel
c. Point rod toward target
d. Look directly at target
e. Grasp line with non-casting hand
f. Pull in excess line
1) Extend the arm away from body
2) Pull arm back
g. Raise rod tip at same time swinging lure back toward body
h. Lower rod tip then flip it upward toward target
I. Release line with free hand
j. Follow lure to target with rod tip
k. Can use longer lines
1) With practice
2) Limp, well-behaved line
3) No obstructions to entangle line

DEMONSTRATE a pendulum cast or flippin', explaining the process as it is repeated several times.

Have each participant **PRACTICE** several attempts at this cast, using a small bucket or ring as a target.

DISCUSS preferences in flipping tackle and the situations in which it may be most effective.

3. Flipping equipment
   a. Long rod preferred - 7½ to 8 feet
   b. Quality reel
   c. Heavy line
   d. Lures to match fish and conditions
      1) Inactive fish in heavy cover
      2) Bass
         a) Soft plastics
         b) Jig and "pig"
      3) Trout
         a) Live bait most common
         b) Small marabou or bucktail jigs
         c) Sponge or yarn flies with shot

NOTE that trout fishermen frequently use this technique for fishing live baits or small jigs in tight cover.

C. Pitching
1. Position lure about rod-length from tip
2. Disengage free-spool and thumb line
3. Hold lure carefully
   a. By bend of hook in free hand
   b. Hand about level with waist
4. Lower rod tip
   a. Keep line tight
   b. Force rod to flex at tip slightly
5. Swing rod tip quickly forward and up toward target
6. Release lure at same time
7. Release thumb pressure as lure passes under rod tip
   a. Continue upward, outward thrust
   b. Control with light thumb pressure
   c. Lure should arc to target
8. Careful adjustment of free spool needed

RELATE pitching to flipping, noting that it is similar except for the use of the reel.

DEMONSTRATE the technique one or more times, then have the participants **CAST** themselves. Be sure to **CAUTION** them about using this approach with any lure having multiple hook points.

D. Underhand or flip cast
1. Excellent under obstacles
2. Delicate presentation possible
3. Made from nearly any stance
4. May be used back handed across body
5. Mechanics
   a. Address target with rod
      1) Rod nearly parallel to water
      2) Rod straight toward target
   b. Loading
      1) Lift rod to about shoulder height
      2) Bring tip down sharply
      3) Stop at starting point
   c. Release line as rod starts to straighten
   d. Follow though toward target
6. Easily learned by practice, difficult to describe verbally

NOTE that the underhand or flip cast is an excellent choice under obstacles or in circumstances when a gentle entry into the water is important.

EMPHASIZE that it can be performed even from odd positions or across the body without excessive risk of getting hooked.

DEMONSTRATE the process, and have each participant **CAST** several times until they feel comfortable with the technique.

NOTE that a caster who has mastered the earlier casts will grasp this one quickly, although they may not be able to articulate what they are doing to accomplish it. [***Refer to the narrative for support***.]

E. Sidearm cast

NOTE that the sidearm cast is much like an overhead cast rotated 90 degrees. **DISCUSS** the increased difficulty of achieving good accuracy with this approach and its potential hazards to those

1. Overhead cast rotated 90 degrees
   a. Control of release essential
   b. Dangerous to others on casting side
2. Excellent for cheating wind
   a. Low trajectory
   b. Accuracy challenging for most
3. Good under overhead obstructions
4. More wrist than arm

V. Summary
  A. Applications
    1. Squidding (surf casting) tackle
    2. Jigging tackle
    3. Plunking tackle
    4. Popping tackle
  B. Perfect practice makes perfect
    1. Repetition of process
      a. Basic skills
      b. Self-critique and work on skills
    2. Quality tackle, well-maintained
    3. Once learned, easily applied
  C. Exercise patience with yourself

around you, as well as the utility of the cast in some situations.

DEMONSTRATE the cast safely, and have the participants **DISCUSS** both the processes used and the safety considerations they should apply. Have each one **ATTEMPT** a cast or two using this method.

DISCUSS some of the applications of these bait-casting techniques to surf, boat, river and inshore saltwater fishing, **NOTING** that the differences are mostly of scale, not function.

REINFORCE the notion that skill with revolving spool reels takes time and effort to learn, even with modern, well-maintained reels. **DISCUSS** picking out backlashes and learning by doing.

Summary Activity
Set up a casting tournament or casting course with a variety of targets at varying distances. Have the participants work their way through the course, selecting the type of cast they would use and attempting to hit all of the targets. Be sure to include at least one situation where simply casting for distance is the requirement.

Lesson Narrative

Bait-Casting Equipment
Unlike the fixed spools on spin-cast and spinning reels, casting reels have a revolving spool. Once the inertia of the spool builds up, it literally throws the line off the spool toward the lure. That process produces long casts. The revolving spool allows the line to come off the spool on the cast in the same way it went on, helping to prevent twist in the line. And that feature works even when a fish pulls line off the spool against the drag. Drags on casting reels are designed to take the punishment of large fish and heavy lines, and they are often smoother than drags on the fixed spool reels. Bait-casting reels handle heavier lines with less sacrifice in casting efficiency than do fixed spool reels, and they are able to adapt to a wide range of lure weights. These factors and their durability has made these reels the prime choice of bass, inshore saltwater, and pike or musky anglers. The main drawback to bait-casting reels is that they require the angler to have an educated thumb to control the spool throughout the cast. If the spool is allowed to over-run the progress of the lure, the result is a backlash or "bird's nest." Many anglers give up before learning how to use casting tackle because they tire of the involved process of picking out the loose loops of line and getting them to lay on the spool neatly after a few of these challenges. One author stated that baitcasting was the "art of throwing controlled slack." One of my fishing buddies referred to his casting skill by stating that the "slack seems to have controlled itself around the spool and done a nice job of it." Never fear, everyone gets a backlash from time to time, even with today's easy-to-use reels.

Reel designs continue to advance, becoming increasingly more durable, trouble free and user friendly. This allows less experienced fishermen to use them as a matter of choice. Where heavy lures or baits are involved or where

control of the bait is critical, these reels excel. They are excellent for crank-baits, spinner-baits, plastic worms, jigs, poppers or bait under a popping cork. The fact that they can be teamed with a rod that has more backbone than most light spinning gear also aids in hook setting where hard-mouthed fish may need to have plenty of force to get the hook home. As line weights get into the 15 to 20 pound range, revolving spool reels take over the majority of the action among experienced anglers.

Bait casting rods come in two major varieties. Traditional rods have an offset handle that brings the line in direct line with the guides. Usually these rods have relatively small guides and are in lengths of about six to seven feet. Straight grip rods usually have larger guides and paired gripping surfaces. Usually they have a long handle behind the reel and an shorter one in front of it. They may or may not have a "trigger" or finger grip. While they come in a wide variety of actions, most bait-casting rods are a bit stiffer than spinning or spin-cast rods of similar length, but the main difference between them is the label applied by the manufacturer. Flippin' sticks, pitching rods, squidding rods, plunking rods, and popping rods are all bait-casting rods that will find some interchangeable use with an angler who has one.

Safety Considerations Before the Cast
Participants must take personal responsibility for their actions when learning to cast. They are in control of the rod and reel. They determine when and where they will make the cast or its components, and only they can determine if it is safe to do so. Learning that from the beginning is essential. Getting swatted with a casting plug can hurt, but once hooks are added both pain and serious injury can be inflected if someone does not get in the habit of paying attention to where there plug is at all times. An angler needs to be aware of where his/her plug behind, overhead and in front.

The back cast is the greatest concern. Fishermen get so intense about where they are going to cast to that they sometimes forget to look behind them to see if their back cast is going to hit someone or get hung in a tree. When you are fishing from the bank, someone may come up behind to watch you or just be causally walking by. When in a boat, most anglers know their partner(s) are there, but don't realize that their back cast can reach their partner(s). On the forward cast most anglers are aware of other people, but sometimes forget about power lines and overhanging trees. Be cautious also of throwing over someone else's line.

Once the cast has been made, the plug can get hung up (this can happen during practice too). Caution participants about putting too much pressure to retrieve the snagged plug, particularly pressure applied by the rod. If the lure or practice plug comes loose it can shoot back toward the angler or others like a bullet. Caution in attempting to dislodge a hung lure or practice plug can prevent injuries.

Casting Mechanics and Preparation
Each reel should be equipped with well-laid line, and the rod and reel should be rigged with the guides threaded and the casting plug tied to the end of the line. A large swivel snap may be used if desired to prevent line twisting from the rolling of the practice plug on retrieve. If the equipment is not set up have the participants assist in threading their own line and tying on their own casting plug.

Drag Adjustment – Nearly all modern bait casting reels have drags that can be adjusted to slip under very light pressure or tightened down to a fully locked spool. The pressure is usually adjusted by turning a knob or star-shaped wheel known as a star drag. Basic physics dictates that the drag gets stronger as the amount of line on the spool decreases. The drag should be adjusted to no more than about ½ to _ of the breaking strength of the line. Adjust the drag by having someone hold the line at least a rod-length away, applying pressure on the line with the rod, and adjusting the drag until the line slips under the amount of pressure you can comfortably apply. Some fishing conditions may call for a very tight drag, while others may need a drag set much more lightly.

Free Spool Adjustment – Since bait-casting reels throw the line off the spool toward the lure, they are often the reel of choice for throwing moderately heavy lures a maximum distance. Their advantage can become a problem if the

lures are too light for the casting style of the angler, as the reel over-runs and throws the excess slack into a backlash or "bird's nest." To combat that problem reels are equipped with a spool tensioning device that controls the inertia of the spool. Adjustment of that devise is important, particularly to the beginning bait-caster, every time the weight of the lure being cast is changed. To make the adjustment, tighten the tension adjustment fully. Reel the lure up to just below the rod tip. Depress and release the free-spool button (usually located somewhere that is easily reached by your thumb) or throw the free spool lever so the reel is in free spool mode. Holding the rod level with the ground and gradually loosen the tension until the practice plug slowly pulls line off the reel. As you become more proficient, you can back off the tension a bit to lengthen your casts. If casting into the wind, however, you may want to increase that tension just a bit to compensate for the wind's influence on the lure. Remember to adjust the free spool tension every time you change lure weights.

Grip – Having a proper grip is the first step in casting well. Grip the rod by its handle with forefinger extended and wrapped comfortably around the trigger on the rod. Place your thumb on the spool and turn your hand so your palm faces down and the reel handle is up (for right-handers) so it stares you in the face. Left-handers holding the reel in a similar fashion will have the handle under the reel. Holding the rod and reel in this fashion allows free movement of the wrist while causing the spool to rest on only one of its bearings, minimizing friction for easier casting. The grip should be firm but relaxed. Excessive pressure on the handle fatigues the caster quickly and reduces the quickness required for good casting.

Positioning the Lure – Lure position relative to the tip of the rod is vitally important in bait-casting. Heavy lures should be within about an inch of the top. As the lures get lighter, they should be positioned progressively further from the tip. For example, a _ ounce lure should be about 3 inches from the top guide and a ¼ ounce lure should be 4 - 6 inches below the tip.

Overhead Cast

The overhead cast is the most basic cast. It can be used most of the time unless obstructions are in the way of the cast or something or someone is directly behind the caster. The stance is important to executing a good cast with accuracy, and casting mechanics handles the process of getting the lure to the position desired.

Stance – Stand firmly and comfortably with your body angled slightly toward the target so that your casting arm's shoulder is now pointed toward the target and your off-side foot is slightly behind your casting-side foot. Body weight should be nearly equally distributed as the cast is initiated, but it will shift to the back foot then the forward foot as the cast is made. Holding the rod with the proper grip, position it so it splits your view of your target.

The Cast – The dynamics of the cast will be explained one step at a time, but they are carried out as a single fluid set of motions.

1. Push the free-spool button and place the thumb of the casting hand on the bottom edge of the spool, touching the line and the edge of the spool. An "educated" thumb is what keeps the reel from over-running while allowing a maximum distance cast. Always keep the thumb on the spool, feathering the spool until the cast is complete.

2. Hold the casting arm to about a 35° angle. This will place the tip at eye level (2 o'clock position) and the rod handle above the level of the hip. The casting arm elbow should be clear of the body, slightly above and in line with the forward hip. The forearm should be in a straight line with the rod, making the rod an extension of the arm.

3. Sweep the rod back to slightly beyond the vertical by raising the forearm and elbow bringing the casting hand to about eye level. For best casting accuracy, minimize the amount of wrist bend on the backstroke and bring the rod and reel up with the handle facing you (or facing away from you) squarely. Precision is achieved by always bringing the rod to the same position. Stop the rod at the vertical position -- the reel handle still toward (or away from) you and about eye level. The rod will continue back under the inertia of the lure or practice plug, loading the force of the backcast into its fibers. This loading of the rod provides the majority of the casting power. The rod should remain on a direct line toward or away from the target throughout the cast and the butt of the rod should

remain essentially vertical. Avoid letting it drift back over the shoulder, since this actually reduces the power in the cast.

4. Without hesitation and as soon as you stop on the backcast, start the forward cast. Bring the arm forward and down sharply, allowing the wrist to snap forward for increased speed. Follow the same path as was follows in the back cast. Shag Shahid suggests assuming the tip of the rod is the end of your arm and the plug is a baseball. Simply throw the tip of the rod as though it were a baseball; but like throwing a baseball, avoid throwing too hard and losing control. The rod will do the work without too much effort on the casters part.

5. As the rod reaches the 11 o'clock position, ease off on the thumb pressure. (The rod should still be splitting your target and moving foward.) This will send the lure in flight. Control the spool speed with your thumb while continuing the forward cast. This will lower the rod tip to follow the line of flight of the lure. Increase the pressure on the spool with the thumb as you follow through with the cast, stopping the spool as the lure hits the water at its final destination. Even with the assistance of a free-spool adjustment, the only way to learn to control the line for both long casts and freedom from backlashes is to practice until the thumb becomes educated. Even experienced casters will encounter an over-run from time to time, usually at the worst possible moment. Do not allow yourself to become too frustrated if the first few attempts require a bit of untangling.

Practice also will reduce the arc of the outgoing line, thus reducing the influence of wind on your accuracy. If the line arcs high, the release point was a bit early. If the lure or practice plug powers into the ground or water in front of you, the release point was a bit late. With practice you will develop a rhythm that will seem almost second nature. Only you and other casters adept with bait casting tackle will know the effort required to educate your thumb.

Other Casts
Since the overhead cast cannot be used in all situations, anglers are encouraged to learn a side cast, flipping, and pitching. You use the same grip as explained in this lesson, but the stance and arm action are the essentially the same for all types of casting and spinning gear.

Flipping (Pendulum Cast)
The pendulum cast (more popularly called flippin') is used when a short, accurate cast is called for. To aim, hold the rod in direct line with the target and look directly at the target. To learn the cast, start with about two rod-lengths of line beyond the rod tip. The reel should be engaged for this cast. Grasp the line with the non-casting hand and extend the arm away from the body to pull in about a rod-length of line. At the same time, raise the tip of the rod causing the lure to swing back toward you. When the lure swings back toward your body, lower the rod tip and flip the rod up and toward the target, feeding the remaining line with the free hand. The lure should touch down on target and quite softly. Follow through by keeping the rod tip pointed directly at the target. With practice an angler can become very accurate with this technique, and much longer lengths of line can be handled if there are not obstructions to entangle the line.

Most anglers who flip will use a long rod – seven and a half to eight feet, a quality bait-casting reel or spin-cast reel, and heavy line. Flipping works best on fish that are inactive and holding tight to whatever cover is available. The two most popular lures for flipping for bass are the plastic worm or the "jig and pig," a jig with a pork frog. The lure is eased down into the cover and the angler watches the line for any twitch. Many anglers who fish for trout use a similar technique with monofilament line and a fly rod, allowing them to place a baited hook exactly where they want it without causing too much commotion in the process.

Pitching (Caution, only use this with single hook lure or practice plug)
First, let out enough line to permit the lure to reach to the reel. Hold the lure carefully by the very rear part of the hook with the free hand about level with your waist. Lower the rod tip keeping the line tight and flexing the rod tip slightly. Quickly swing the rod tip forward and up toward the target, letting go of the lure with your free hand. As the lure passes underneath the tip of the rod, release thumb pressure on the line and continue to raise the tip of the

rod. The lure should then fly just above the target and touch down softly 20 feet away. Careful adjustment of the free spool device on your reel is advised for good pitching.

Flip Cast or Underhand Cast

The underhand cast, also known as a flip cast, provides a lot of versatility allowing casts under a wide range of situations, including working under obstacles. This cast can be made from almost any stance, including one that is backhanded or across the body. It starts with the rod approximately parallel with the water and about waist high. As the cast is started, the rod and forearm form a straight line toward the target. The rod is loaded by bringing the tip sharply downward and extending the rod toward the target, releasing the line as the rod straightens. It is easily learned by practice, but a bit hard to describe verbally. Practitioners' descriptions also vary.

A. J. McClane (in ***McClane's Secrets of Successful Fishing***) gave instructions for the cast as follows.

> "Begin the underhand cast by making an upward lift with the rod keeping a stiff wrist and forearm and pivoting on the elbow. When the tip reaches should level, reverse the direction immediately with a crisp, downward push so that the rod returns to its starting position and stops abruptly. The weight of the lure will cause the rod tip to flex down and in toward your feet. As the rod recovers from its bend and begins upward, release the line (or release thumb pressure on bait-cast). The lure will snap outward in a low arc. Do not attempt to push the rod forward. When the underhand cast is executed properly by the angler, the casting bend of the rod itself will provide sufficient velocity to the lure."

In their ***Basic Fishing Aquatic Skills Series*** the Missouri Department of Conservation suggests using only the wrist in the following suggested procedure.

> "The back cast in the flip cast is actually a down cast. The entire casting motion is accomplished by using only the right wrist. The arms do not move during the entire cast. Moving the arms is the most common error made by beginners. Arm action defeats the action of the rod and spoils the cast. The right wrist provides all the motion and the left hand acts as a fulcrum.
>
> "To begin the cast, [release the line] and hold it, raise the rod tip about 12 inches with the right wrist, then immediately snap the rod *tip* down sharply; this serves to bend or load the rod. Next as the rod begins to straighten, release the line. The action of the rod cast the plug, the arms do not. The secret to this cast is timing. The [line must be released] at the precise moment the rod begins to straighten."

As anglers gain experience with fishing situations, all sorts of casting techniques will find a place in their tools. Learning how to handle the basic casting techniques with bait-casting tackle transfers to squidding tackle, jigging tackle, or the use of plunking tackle on steelhead and salmon. Where distance and power are needed, revolving spool reels have numerous applications. Except for trolling , all of them require the angler to know how to cast.

Practice, Practice, Practice

The big difference between a beginner and a skilled bait-caster lies in repetition of correct casting processes. As the beginner learns the basic skills and practices them, their ability to use their tackle increases. Quality tackle, well maintained is very important in helping to develop bait-casting skills. Good luck in learning the art of throwing controlled slack.

Knots for Anglers

Ronald A. Howard Jr.

Objectives

Participating young people and adults will:
1.Practice tying some basic fishing knots;
2.Practice knot selection for various applications;
3.Practice some additional useful knots; and
4.have fun while learning.

Youth Development Objectives

Participating young people will:
- Enhance fine motor skills
- Practice decision making and problem solving
- Enhance self-image and self-concept
- Gain self-confidence
- Increase recreational skills and stress relief; and
- explore practical science

Roles for Teen and Junior Leaders

1. Assist with teaching area set up and break down
2. Deliver demonstrations on knot tying
3. Assist members in learning knots
4. Assist members in knot strength tests
5. Critique knots and aid in improving them
6. Conduct knot choice exercise

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Arrange for or provide teaching space
3. Arrange for or provide teaching materials
4. Arrange for or provide transportation
5. Arrange for or provide refreshments

Best Time: Any time of year

Best Location: Comfortable work area

Time Required: 60-90 minutes

Equipment/Materials

14-17 pound test monofilament* (two colors)
heavy monofilament (30 to 50 pound test)
light cord
fly line pieces
demonstration hook
fly leader tying kit
yardstick or tape measure
nail clipper
reel spool
fly tying vise
pliers or hemostat
barrel swivels
size 1-6 hooks
short dowels with small screw eyes in one end
8-10 # monofilament
* yellow, orange, green, blue**,** clear

References

Practical Fishing Knots, L. Kreh and M. Sosin, 1972. Lyons and Burford, NY.
Practical Fishing Knots II, M. Sosin and L. Kreh. 1991. Lyons and Burford, NY.
McClane's Standard Fishing Encyclopedia. A. J. McClane, ed., 1972. Holt, Reinhart and Winston,
Fishermen's Knots, Fishing Rigs, and How to Use Them, B. McNally. 1993.McNally Outdoor Publications, Jacksonville, FL.
Line manufacturer's literature

Evaluation Activities/Suggestions

1. Evaluate changes in knot tying ability with repeated attempts at each knot selected.
2. Establish a decision making activity to match knots to the application.
3. Review activities for evidence of peer teaching and positive reinforcement.

Safety Considerations

Monofilament fishing line can cause serious cuts. Be sure that the young people use gloves or other protective gear while testing knots or comparing knot strength.

Instructional Outline

Presentation

I. Knots and fishing

A. Essential to make connections
  1. Quality of connection important
  2. Variation in knot strength

B. Importance of good technique
  1. Sound, well-tied knots
    a. Maintain strength of line
    b. Remain secure
    c. Stand up to pressure
  2. Poorly tied knots
    a. Low shock resistance
    b. Tendency to slip
    c. Reduce line strength significantly

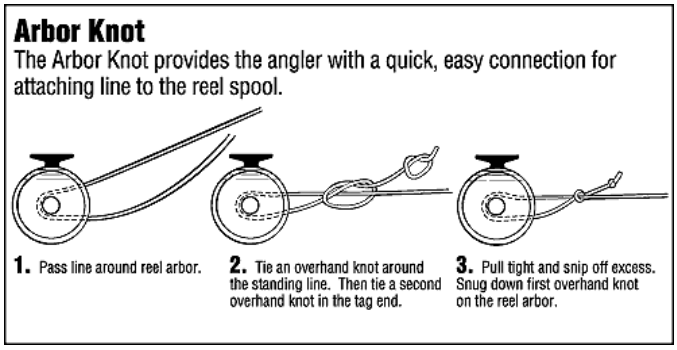
II. Attaching line to reels

A. Arbor knot
  1. Tying procedure
    a. Pass tag end around spool
    b. Tie overhand knot around standing end
    c. Tie another overhand knot beyond first
    d. Pull second knot tight and trim
    e. Draw first knot tight
    f. Second knot should touch first one
  2. Usefulness
    a. Easily tied and simple
    b. Weak connection
    c. Will not hold in monofilament lines
    d. Fine if never "spooled" by a fish

Application

PROVIDE each member with two pieces of monofilament about 8 to 12 pound test. Using gloves or small pieces of dowel to protect their hands, have them attempt to **BREAK** the line by pulling steadily on it. Then tie an overhand knot in the middle of each remaining piece and have them repeat the test. (See fact sheet - ***Testing Knot Strength***) **DISCUSS** the differences in perceived breaking strength. (An overhand knot decreases the breaking strength of the line to about half its normal strength.) **ASK** what made the difference (the knot) and how that could be important to them while fishing. **NOTE** that all anglers need to use knots to connect their lines to their other tackle and to the fish.
DEFINE tag end as the short end of the line and standing end as the line going to the spool or reel.
DIAGRAM the knot and show how it is tied with a dowel as the spool and a piece of moderately heavy cord as the "line."

NOTE that the connection includes two single layers of line and tends to cut itself under heavy pressure.



B. Improved clinch knot

1. Around standing line
   a. Intermediate strength
   b. May slide until a few wraps are made
   c. Weak point if spooled by fish
2. Improved clinch knot around arbor or spool
   a. Much stronger connection
   b. May slide until wrapped
   c. About 90 percent knot strength

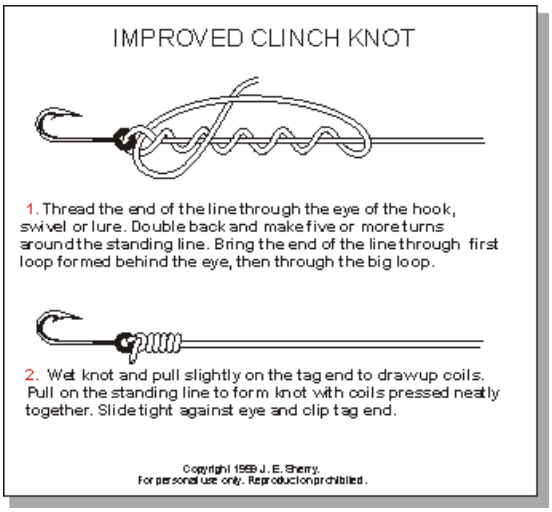
III. Connecting line to terminal tackle

A. Improved clinch knot

1. Designed for monofilament lines
2. Better than 90 percent knot strength
3. Tying procedure
   a. Pass tag end through hook eye (etc.)
   b. Wrap tag end around standing line
      1) 3-4 times in heavy lines
      2) 7 or more in light lines
   c. Pass tag end through opening between tag end and standing line
   d. Pass tag end through loop just formed
   e. Hold tag end
   f. Moisten knot with saliva
   g. Pull steadily on standing end to tighten securely
   h. Trim tag end neatly with clippers
4. Variations
   a. Twice through improved clinch knot
      1) Pass tag end through eye twice to form loop
      2) Proceed as above
      3) Pass tag end though loop and opening between lines
      4) Finish as above
      5) Better knot strength – very light line

Ask participants to **DETERMINE** which of these they would like to use in light monofilament line. Which one would they choose for attaching fly line backing to a spool?

DEMONSTRATE tying an improved clinch knot and have the members **TIE** one of their own using the screw eye and dowel for a "lure". [***Working in small groups with parents or teen leaders as guides and assistants works best.***]



NOTE that moistening the line before it is drawn tight keeps it cool, helps the tier clinch the knot down tightly, and prevents abrasion as the line rubs against itself. All of these things can weaken the line and the knot.

If desired, **DEMONSTRATE** these knots and have the members **PRACTICE** one of their own. Since the procedure is the same, doing these knots reinforces the original one.

b. Double improved clinch knot
1) Double a short section of line
2) Tie a clinch knot with doubled line
3) Better abrasion resistance – light line

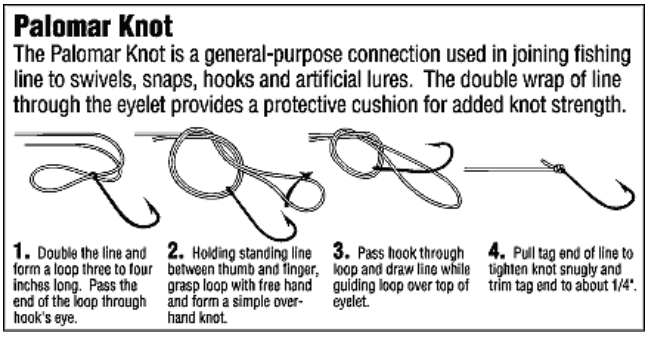
B. Palomar knot

1. Excellent knot strength (nearly 100%)
2. Excellent knot for co-polymer lines
3. Simple, compact knot
   a. Pass doubled tag end through eye
   b. Tie loose overhand knot around standing end
   c. Pass loop over hook, lure, etc.
   d. Hold loop forward
   e. Pull on both ends to tighten

C. Kreh end loop knot

1. Many loop knots for attaching lures
   a. Variable in strength
   b. Some close when pressure applied
2. Strength and loop stays open
   a. Jig and other lures
   b. Better lure action
   c. Proper tying vital
3. Tying procedure
   a. Tie a loose overhand knot in line
      1) About 8 inches from end of line
      2) Pass tag end through hook eye
   b. Return tag end through knot
      1) Keep original knot open
      2) Back through same side
   c. Wrap tag end around standing end
      1) 3-4 turns for heavy line
      2) 5-6 turns for medium weight lines
      3) 7-8 turns for lines 4 pound or less
   d. Pass tag end back through overhand knot
   e. Pull both ends to secure knot

DEMONSTRATE and have members **TIE** one or more Palomar knots. You may want to conduct a relative knot strength test between the improved clinch knot and the Palomar knot. Simply tie each knot on an eyed dowel. Being careful to apply pressure steadily and to avoid putting the line in the gap where the screw eye is closed.



STRESS the importance of keeping all three pass-throughs by the tag end going through the first overhand knot in the same way! This keeps the knot from cutting itself.

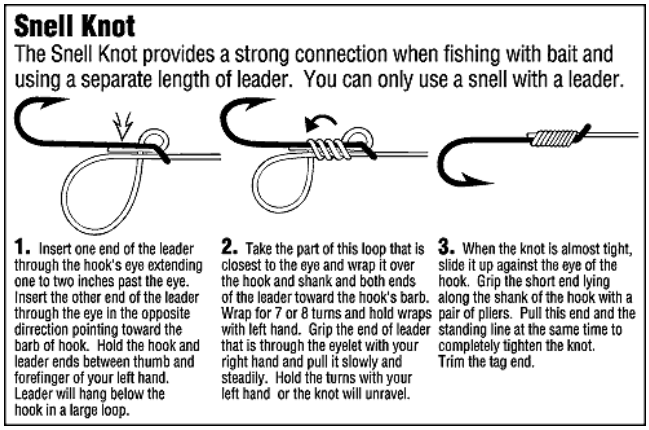
STRESS the importance of drawing the knot down snugly as it is being tied.

NOTE that this knot is much easier to tie than it is to describe.

D. Snell knot

1. Attaching hook to line
   a. Bait hooks
   b. Trailer hooks
2. Strong attachment
   a. Grasp hook in fingers of one hand
   b. Pass line through eye toward bend
      1) May be omitted if desired
      2) Several inches of line needed
   c. Loop the line
      1) Toward eye and back
      2) Tag end near end of shank
      3) Grasp loop near eye
   d. Wrap top strand of loop around shank
      1) Wrap toward bend of hook
      2) 5-7 turns of line
      3) Bottom of loop stays atop shank
   e. Pull standing end to tighten
      1) Forms compact loops around shank
      2) Pull tag end to check
      3) Trim tag end

DEMONSTRATE it with large line and a huge hook, then have the participants **TIE** their own with help from teen leaders and parents. **NOTE** that it can simply be tied around shanks if desired, particularly on ringed eye hooks.



E. Break-away knots

1. Sometimes important for bottom rigs
2. Losing part of a rig to save the rest
3. Usually used with sinkers
4. Options
   a) Lighter line than main rig
   b) Overhand knot above sinker

ASK the group if there is ever a time when they want the line to break. **DISCUSS** situations where breaking the line to a sinker could save the rest of a rig and reduce the time required to get back into action.

IV. Connecting lines of nearly equal diameter

A. Blood knot

1. Nearly line strength
2. Compact
3. Diameter differences up to 0.003-0.005
4. Simple to tie
   a. Cross tag ends over each other

Be sure to **USE** different colors of lines in tying these knots for demonstration purposes, so the members can see the knot develop more easily.

b. Wrap one tag end around other standing end
1) Wrap away from crossing point
2) Minimum of three wraps
3) More wraps with lighter lines
4) Up to 7 or 8 with light lines

c. Push tag end back through starting point

d. Hold tag end

e. Repeat process with other lines
1) Wrap in opposite direction
2) Same number of wraps

f. Insert tag end through opening in knot
1) Same location as first one
2) Opposite direction from first one

g. Moisten

h. Pull standing ends to set knot

i Hold tag ends until tightening starts

j. Trim tag ends carefully

k. Check for security of knot

B. Barrel knot

1. Very similar to blood knot
2. Wraps back toward cross-over point
3. Slightly weaker than blood knot
4. Some find it easier to tie

DEMONSTRATE this knot if desired. **NOTE** that most youngsters have more trouble tying this poorer knot than the better blood knot. May be omitted or merely mentioned at the leader's discretion.

C. Surgeon's knot

1. Finished looks like blood or barrel knots
2. Easy to tie
   a. Overlap lines about 12 inches
   b. Tie one overhand knot in crossed lines
   c. Repeat one or more times
   d. Hold all four lines
   e. Draw all ends tight together
   f. Moisten and pull on standing ends
   g. Trim away excess tag ends
   f. Trim tag ends of both lines

DEMONSTRATE this knot if desired. It is essentially a double or triple overhand knot tied in the tag end of the line with an overlapped tag end of the leader. Properly tied it is a very strong knot.

D. Double nail knot

1. Strong, smooth knot
2. Complex tying process
   a. Cross two tag ends over each other
   b. Lay nail or tube beside one tag end
   c. Wrap 4-6 turns over nail
      1) Toward standing end of same strand
      2) Over other line
   d. Insert line under wraps along nail or through tube
   e. Extract tube, holding loops
   f. Pull standing and tag ends to tighten wraps
   g. Alternate between lines
   h. Pull on standing ends to tighten
      1) Leave no slack between the knots
      2) Snug down firmly
   i. Trim tag ends
   j. Useable joining lines of different diameters

If desired, **DEMONSTRATE** this knot and have participants tie it. One of the best tools for the nail knot is a large gauge needle with point cut off and beveled. A small plastic or brass tube can be used effectively as well. This knot could be tested against the similar blood knot to determine if any difference in knot strength is worth the effort.

V. Connecting line to shock tippets

A. Albright Special knot

1. Two lines of very different diameter
   a. 20-80 pound test leaders
   b. Light spinning lines or leaders
2. Often used in fly fishing applications
3. Simple tie
   a. Bend heavy line back on itself
   b. Pass smaller line up through loop
   c. Wrap 10-15 times toward closed end of loop
   d. Pass tag end of light line through loop
   e. Pull both ends of light line to tighten and lock

DEMONSTRATE tying an Albright Special knot using 8 to 10 pound test monofilament and 40-80 pound test shock leader. Have each participant **TIE** a similar knot with the assistance of teen leaders or parents.

B. Improved blood knot

1. Lines of very different diameter
2. Double lighter line
3. Tie as for blood knot

DEMONSTRATE the improved blood knot. **NOTE** that it is used in the same types of situations as the Albright Special. Lines need to be a bit closer to the same size, e.g. 10 pound test and 30 or 40 pound test, to use this knot effectively.

VI. Knots for fly fishers

A. Nail knot

1. Attaching leader butt to line
2. Tying procedure
   a. Lay nail or tube along tip of fly line
   b. Lay leader material along tube
   c. Wrap tag end of leader material
      1) Around lines and tube
      2) Toward tip of fly line
   d. Insert end of leader material in tube
   e. Hold loops in place
   f. Extract tube or nail
   g. Cinch knot down firmly
      1) Pull alternately on ends of leader
      2) Keep wraps snugly together
      3) Pull until firmly cinched in place
   h. Pull on standing end of leader and fly line
   i. Trim butts of both leader and fly line
   j. Coat knot cement (e.g. Pliobond®) The use of Pliobond® in this text does not imply endorsement of the product or any censure of similar products on the market. It is simply included as a material useful to the angler in forming the knot in question.

If desired, **DEMONSTRATE** the nail knot using a short piece of waste fly line and a heavy piece of leader material. Have each member attempt to **MAKE** the knot with the assistance of adult or teen leaders. **CRITIQUE** each knot and suggest ways to correct any errors in the tying process. Keeping the wraps close together is one of the greatest challenges.

NOTE: that this knot can be tied after passing the leader through the center of the fly line. This is sometimes called a needle knot

B. Perfection loop

1. Loops used in many ways
   a. Connecting two lines
   b. Connecting snelled hook to line
   c. Connecting dropper to dropper loop
2. Tying procedure
   a. Form a loop in the tag end of line
   b. Form second loop over and around first
   c. Pass tag end between two loops
   d. Reach through first loop and pull second one through
   e. Hold loop open
   f. Hold tag end
   g. Moisten and tighten
   h. Trim tag end

DEMONSTRATE the perfection loop and have participants **TIE** one or more until a strong knot is accomplished.

C. Surgeon's loop

1. Easy to tie
2. Strong loop knot
3. Tying instructions
   a. Form loop in tag end of line
   b. Pass terminal end through loop twice
   c. Moisten and pull tight

NOTE: that this is essentially a blood knot or barrel knot tied in an intact line, producing a fixed loop in the leader

D. Dropper loop

1. Used to create a dropper loop
   a. Attach looped dropper leaders
   b. Attach other terminal tackle
2. Tying procedure
   a. Bend line into a loop
   b. Hold single line at bottom of loop
   c. Wrap doubled line around itself
   d. Push loop through opening between doubled lines
   e. Pull tight

NOTE that this is the same knot as the surgeon's knot except that it is tied in an intact line rather than as a way of joining two lines. **DEMONSTRATE** the knot and have members **TIE** one with the assistance and help of teen or adult leaders.

E. Extension blood knot

1. Used to create a dropper
   a. Multiple fly casts
   b. Sinker for deep drifts
2. Tying procedure

Demonstrate the knot and have members tie one under the supervision of teen or adult leaders. Note that this not requires a bit more dexterity than the simple blood knot because the long tag end is a bit more difficult to manage. If necessary, allow the participants to work in pairs to get the knot tied. Make sure the knot is very snuggly tied and that a bit of extra tag is left on the opposite side from the

dropper.

a. Blood knot as above
b. Leave about 8-10 inches of tag end
c. Trim other tag end a bit long

VII. Many other useful knots

A. Fishing knots
1. Bimini twist
2. Duncan loop (uniknot)
3. Jansik special
4. George Harvey knot

B. Boating knots
1. Square knot
2. Bowline
3. Clove hitch
4. Two half-hitches
5. Taut line hitch

If desired, **ADD** these knots to the lesson. For beginning anglers, the previous set of knots in completely adequate and will consume a full lesson.

Summary Activity

Pose a series of scenarios in which the participants must select and tie a knot to suit a situation. Tailor the scenarios to the skill level of the participants and their level of angling experience. A contest or game with teams selected by the instructors and gag prizes might be appropriate.

Lesson Narrative

Knots are an essential part of fishing. Anglers cannot fish without attaching hooks or lures to their lines or lines to their reels. Knots determine the quality of the connection between the angler and the fish. Often, they are the weakest link between the fish and the angler. Since the type of knot determines the potential strength of the connection and the way knots are tied can affect their actual strength, the way the knots are tied is important to the angler's success. Learning to select and tie appropriate knots is a skill all accomplished anglers should achieve. The presence of a mentor or guide in the process is one of the most important factors in that learning process.

Attaching Line to Reels

Whenever reels must be loaded with line, the first knot that must be tied is one that attaches the line to the reel's arbor or spool. A modification of the jam knot often is used to attach a line to the spool. Although it is not a particularly strong one, the **arbor knot** is used to attach a line to the reel. It is bascially a pair of overhand knots tied in the following manner. First pass the tag end of the line through any necessary parts of the reel (level wind mechanism, bail, etc.) and around the arbor. Then tie an overhand knot in the tag end, passing the open loop of the overhand knot around the standing end of the line. Tie another overhand knot in the tag end of the line, pulling it tight. Gentl;y pull on the standing end of the line to draw the knot

around the standing end tight with the other knot down against it. Finish the knot by trimming the tag end of the line short. This knot is likely to break if the angler is "spooled": by a fish, so many anglers prefer a stronger connection.
A much stronger connection can be made by using and improved clinch knot (below) around the standing end of the line and drawing it tight. Some anglers use a clove hitch backed with a couple of half hitches (below) as well.

Knots for Attaching Terminal Tackle

One of the basic knots for attaching terminal tackle is the **improved clinch knot**. This common knot is used for attaching line to terminal tackle, particularly with monofilament lines. Well tied, it has excellent knot strength – exceeding 90 percent. The knot is initiated by passing the tag end of the line through the eye in the hook or other terminal tackle. Wrap the tag end around the standing end of the line an appropriate number of times, 3-4 times for heavy lines and up to 7 or more times for light ones. Pass the tag end of the line back through the opening between the standing and tag ends at the eye, and then through the loop that was just created. Hold the tag end. Moisten the knot with saliva, and pull steadily on the standing end to tighten the knot securely. When the knot is cinched down tightly, trim the tag end to complete it.

In light lines, a variation of this knot can add a bit of knot strength if it is well tied. When the line is passed through the eye, carry it back through the eye to form a complete loop. Complete the remainder of the knot as usual, but pass the tag end through the closed loop and the opening between the lines. Complete the knot by carefully drawing it tight.

Doubling the line before tying the knot produces one with a bit more abrasion resistance, the double improved clinch knot. Like the previous one, this knot can be a bit difficult to draw tight. Remember that knots that slip are the ones that break under pressure.

Palomar Knot – The Palomar knot is both simple to tie and has outstanding knot strength, approaching 100 percent of the line strength. It works well for monofilament, co-polymer and braided lines. The knot lies compactly, belying its strength. Start tying it by passing a doubled piece of line through the eye (or by passing the tag end through the eye then back through it. To start out, give yourself plenty of line to work with. Tie a loose overhand knot around the standing end and the tip of the tag end using the doubled portion of the line. Next, pass the loop over the swivel, hook or lure. Moisten the knot and draw it tight by pulling on both the standing and free ends of the line. If they cannot be pulled tight simultaneously, pull each piece alternately until The knot is tightly cinched down.

Kreh End Loop Knot – Many loop knots have been used to attach lures while allowing them to move freely, having better action. It works well with jigs and is one of the better knots for allowing streamers or bucktails to move freely while using heavy shock leaders or tippets. Most other loop knots either lack knot strength or tend to close when pressure is applied. The Kreh loop knot was designed by Lefty Kreh for this purpose. Properly tied and cinched down, the knot is very strong and will not collapse on itself when pressure is applied. Start by tying a loose overhand knot in the line, leaving about 8 inches of tag end beyond the overhand knot. Pass the tag end through the hook eye, then back through the overhand knot, making sure the tag end passes through the overhand knot in the same way it emerged from it. Make the primary loop fairly small. Wrap the tag end around the standing end of the line above the overhand knot, taking 3-8 turns. Pass the tip of the tag end back through the overhand knot (again being careful to go through the knot in the same way). Moisten the knot and pull both ends to cinch the knot down. The number of turns taken with the tag end is specific to the line strength. Lines in excess of 20 or 25 pounds need only 3-4 turns, medium weight lines in the 6-15 pound class require 5-6 turns, and light lines (4

pounds or less) need 7-8 turns for maximum strength.

Snell Knot – The snell knot is used to attach hooks to a leader or line. It can be used with bait hooks, trailer hooks, or tandem hooks in fly tying. Gang rigs using several snelled hooks on a single leader are often used in fishing live or dead baits, like night crawlers or large bait fish. This knot provides a strong attachment with a straight pull from the line to the hook shank. In some ringed eye hooks, the snell knot is tied around the shank behind the eye without passing through it.
To tie the snell knot, grasp the hook in the fingers of one hand. Pass the line through the eye toward the back of the hook. Pull enough line through the eye to form a modest loop, leaving the tag end along the shank. Grasp the loop near the eye, and start winding the forward part of the loop around the shank, applying 5 to 7 turns toward the bend of the hook. Pull on the tag end of the line to start tightening the loops. Pull on the standing end of the line to finish the process, sliding the loops forward before the final tightening. Trim the tag end closely to finish the knot.

Break-away Knots
On some occasions, an angler wants to tie a knot that will break away. Generally these situations are associated with wanting to sacrifice some portion of the terminal tackle to save the remainder. Where snags are prevalent, anglers may choose to sacrifice the sinker in order to save the rest of the rig and to get back into fishing quicker after a hang-up. Several options are available. One of the more simple ones is to use a lighter line for the dropper holding the sinker. Another is to add to the probability of breaking the line at the desired point by thing a simple overhand knot in the dropper line above the sinker.

Knots for Connecting Lines of Nearly Equal Diameter
Every angler encounters the need to connect one line to another. For those that are nearly equal in diameter, one of the best connections is the blood knot.

Blood Knot – For lines of nearly equal diameter, this knot is compact and retains nearly 100 percent line strength. It is suitable for lines that differ no more than about 0.003-0.005 in diameter, particularly with light lines. Attempting to connect lines of much greater difference in diameter can result in knots that slip or weak knots that do not carry the line strength of either line. This knot is a simple one to tie. Cross about 6-8 inches of the two tag ends, holding them between the thumb and forefinger of one hand. Select one tag end and wind it over the standing end of the other line a minimum of three to 7 turns. Insert the tag end through the crossing point of the lines and hold it out of the way. Repeat the process with the other tag end, winding the same number of wraps in the opposite direction and inserting it through the cross-over point in the opposite direction. Hold the tag ends and pull on the standing ends to start tightening the knot. As it begins to close, moisten the knot and pull firmly on the standing ends to snug the knot firmly. Trim the tag ends closely and test the knot for security. It is critical to have enough turns in the knot for the line diameter or strength – 3-4 turns is adequate for heavy lines, but as many as 7-8 turns may be required for lines 4 pound test or less.

Barrel Knot – This knot is slightly more likely to slip than the blood knot, but properly tied it can be very nearly as strong as the blood knot. Some people find it easier to tie. Start by tying an overhand knot in the two tag ends. Bend the knotted line around to the standing ends are crossed. Wind the knotted middle of the knot around the two standing ends. (Essentially this is a blood knot with the wraps coming back toward the crossover point rather than away from it.) Separate the two standing ends in the middle of the wraps, and poke the knot through the opening. Moisten the knot and pull on the standing ends to cinch it down snugly.

Surgeon's Knot – The surgeon's knot is similar in appearance to the blood knot and the barrel knot, but it is tied in a different manner. Start by overlapping the two lines for about 12 inches. Form a loop by bending them in a circle. Pass one line and the tag end of the other through the loop, then repeat the process at least one or two more times. Holding both the tag ends and standing ends together, moisten the knot and draw all the ends tightly together. Finish by pulling on the two standing ends to form a tight knot. Trim away the excess material on the tag ends. This knot will work even with monofilaments that are a bit more different in diameter than will the previous ones. Properly tied, it is a very strong knot.

Double Nail Knot – The double nail knot is a strong, smooth knot that is essentially each line snelled around the other. The tying process is fairly complicated, and extra hands are helpful until the process is well learned. Because of the process, the knot is useful with both lines of nearly equal diameter and with those that differ significantly. Cross the two tag ends over each other, leaving tags of about 8-10 inches. Lay a nail or thin tube along the standing end of one line. Wind the tag end of that line back toward the standing end and over the nail or tube from 4-6 turns, keeping the turns tightly together and holding them in place. Insert the tag end in the tube and withdraw it with the line from under the loops just formed. Pull gently on both the tag end and the standing end to draw the wraps tightly down on the other line. Repeat the process with the other line. Moisten the knot and pull on the standing ends of the lines to bring the knots together. Alternately pull on the tag ends and the standing ends of each line to cinch the knot down tightly. Once the knot is tight, trim the tag ends to finish the knot. [Note that a large gauge needle cut off and beveled or an extremely small tube (just big enough to pass the line through) makes tying this knot neatly much easier.

Connecting Line to Shock Tippets

Many anglers have occasion to use a heavy monofilament shock tippet of 40 to 80 pounds, connecting it to their normal line or leader. A double nail knot might work with lines that are nearly the same stiffness; but for most real shock tippets, a different approach is essential.

Albright Special Knot – One of the best shock tippet knots for lines very different in diameter is the Albright Special. While it is useful with spinning lines and monofilament shock leaders, it is most often used in fly fishing. It is a simple knot to tie, depending upon the greater stiffness of the heavy shock tippet to form a locked loop. Start by bending the heavier line back on itself to form a loop. Insert the lighter line through the loop and take 10 to 15 turns back toward the starting point with it. Pass the tag end of the light line through the closed end of the loop. Hold both ends of the light line in one hand and both ends of the shock tippet in the other. Moisten the knot and pull of the knot to tighten it. Once the knot is firmly locked, trim the tag end, leaving a small tag.

Improved Blood Knot – The improved blood knot is almost exactly the same as the blood knot. The exception is that the lighter line is doubled before beginning to tie the knot. This results in a knot that will tighten adequately. Although this knot will permit considerable difference in the line diameters, it will not cover differences on the order of the Albright Special.

Knots for Fly Fishers

Fly fishermen encounter the need for a variety of knots, including those above. Others may be used in setting up a cast, attaching a leader, attaching backing to a fly line, or simply repairing a tippet.

Nail Knot – This knot was explored earlier as the double nail knot. Its primary use is in attaching a leader

but to a fly line or attaching backing to the tail of a fly line. Start tying the knot by laying a nail, needle, or tube along the tip of the fly line. Lay the leader material beside the tube with about 10 inches or so of material beyond the tube. Wind the leader around the fly line and tube, laying tight turns back toward the tip of the fly line. Once satisfied with the number of turns, push the end of the leader material back through the needle or tube to emerge where the windings began. Holding the turns of line and the fly line in the fingers to keep everything aligned Pull the needle or tube off the tag end of the leader material. Pull alternately on the tag and standing ends of the leader to begin closing the loops on the fly line. Continue the process until the turns lie tightly together and are bound tightly to the fly line. I usually find that grasping the tag end with pliers and wrapping the butt section around the hand allows adequate pressure to bind the materials down firmly. On the last pull, grasp the fly line and the leader, allowing them to set up in line, then trim the tag ends closely. Finish the knot by putting a drop of Pliobond® or a similar cement on the entire knot, rolling the cement between the fingers to form a football-shaped element that will flow easily through the guides of a flyrod.
The nail knot can be turned into a needle knot by simply inserting the tag end of the leader or backing material through the center of the fly line before tying the knot. This approach has the advantage or being a bit smoother in passing through the guides.

Perfection Loop– Loops are used in many ways by anglers - connecting two lines, connecting a snell to a leader or line, or connecting a dropper to a dropper loop. The perfection loop is formed by forming a small loop in the end of a line. A second loop of about the same size is then formed. Reach through the first loop and pull the second one through it. Retain your grip on the tag end, moisten the material and pull it tight. The resulting loop is nearly round in moderately stiff materials.

Surgeon's Loop– The surgeon's loop is essentially the same as a surgeon's knot tied in a doubled, intact line. It is a strong loop knot that tends to lie a bit closer. Start by doubling the tag end of the line. Bend the end of the line into a loop, then pass the doubled end through that loop at least twice. Moisten the knot and pull it tight.

Dropper Loop – The dropper loop is essentially a barrel knot tied in an intact line. It is used to attach looped dropper leaders to the main leader in building a multiple fly cast, commonly used by wet fly anglers. It can also be used in building bait rigs, combination lure rigs, or attaching other types of terminal tackle. Begin tying the dropper loop by bending the leader material or line into a fairly large loop. Wind one piece of the loop around the other one (you must keep one stable to do this) at least 4-7 times. Push the active loop (the one you are wrapping) through an opening between the wraps on the second line. Moisten the line, hold the loop open with one hand of your lips, and pull on both ends to draw the wraps tight.
Another way to form a dropper is to tie an **extension blood knot**. Simply tie a blood knot as usual, but leave one tag end at least 8-10 inches long as the knot is tightened. This knot may be a bit stronger than the dropper loop, but it does suffer occasionally from being pulled apart. To prevent that from happening, remember to keep the extended tag end as a part of the leader going directly to the main line rather than the end following it.

Other Useful Knots

There are many other knots useful to the angler, some for fishing and others for working with boats or cargo. For offshore anglers, learning the Bimini twist may be important. For anglers who cannot tie the Palomar or improved clinch knots, perhaps the Duncan loop or uni-knot would be a valuable addition. The Jansik special and George Harvey knots are useful as well, as are the turtle knot and others. All of these go beyond the basics and can be learned with a good text or teacher who is willing to share them.

Boaters and packers will find abundant use for some other knots, the square knot is one of the fundamentals that can be used in many situations. Half hitches are useful in taking care of loose line or making a temporary attachment. The bowline is a loop knot that will not slip or close yet is easy to untie when needed. Clove hitches, particularly when backed by a half-hitch or two provide secure attachment for anchor lines or similar items. The sheep shank is a method of shortening a line without re-tying or cutting it. The taut line hitch is very useful in binding down equipment where you need a tight line.
Spend some time learning knots. You will find them both useful and interesting. Learn to test them to see if you have an improvement on one that is old and familiar. Above all learn to choose the right one for the purpose at hand.

Exhibit or Sharing Suggestions

1. Prepare an illustrated talk or demonstration on a selected knot and present it to an appropriate audience.
2. Assist other anglers in learning to tie some of the knots you have learned.
3. Make a photographic essay that illustrates a knot of your choice.
4. Give a demonstration on relative knot strength, discussing factors that make knots break.
5. Make a knot board using heavy monofilament or colored cord, illustrating how to tie some useful fishing knots.

Community Service and "Giving Back" Activities

1. Participate in a National Hunting and Fishing Day celebration or a similar activity, teaching fishing knots to the public.
2. Participate in a youth fishing day or similar activity in your community, assisting young anglers in setting up their tackle and learning to tie good knots.
3. Serve as a teen leader for your club, teaching about knots and knot tying.

Extensions or Ways of Learning More

1. Conduct a series of experiments using potential knots for several purposes and seeing which ones are stronger or more consistent. Share your results with others who are interested.
2. Obtain or check out a book on fishing knots (see references section) and practice those knots on your own.
3. Explore the origins of various knots and the purposes for which they were designed. Share that knowledge with your club or another interested group.
4. Study the origins of various fishing lines and the materials used in making them. Relate the nature of the lines to the knots used in them.

Links to Other Programs

Knots are useful in everything from making a secure package to packing either with a backpack, horseback or by boat or other vehicles. They can be used in making useful items from macrame to nets or hammocks. While many of these things can relate either directly or indirectly to fishing, the skills used apply to other programs as well. Tomato stakes do not help if a useful knot to bind the vines to the stake is not available. Lashing a tarp over other materials requires the use of knots. Making a knot board may require some basic or advanced wood working skills. Knots are useful in many other areas. Think about the applications briefly.

Planning the Fishing Trip

Sharon Rushton

Once participants have developed good casting skills, it is time for the real thing. Depending on the age level, the leaders may want to plan the first trip. However, it is important, that participants learn how to plan the trip on their own. So after, the first trip, turn the planning over to them.

Angling Skills Objectives
Participating young people and adults will:

1. Gather research and information.
2. Determine what options they have for places to fish
3. Determine where the fish are biting the best?
4. Determine which would be the best baits to use.
5. Determine which equipment they will need to take.
6. Determine how they are going to get there.
7. Determine what safety and food considerations need to be considered.
8. Have fun fishing.

Youth Development Objectives:
Participating young people will:

1. Enhance decision making and critical thinking skills
2. Enhance communications skills
3. Enhance relationships with adults and other youth
4. Enhance science and technology awareness
5. Enhance self concept
6. Gain self-confidence
7. Enhance teamwork.

Roles for Teen and Junior Leaders:

1. Assist with Internet searches.
2. Assist with mapping exploration

Potential Parental Involvement

1. Bring maps, magazines and newspapers
2. Bring cell phones
3. Arrange for or provide refreshments at the meeting.
4. Provide transportation.

Evaluate Activities/Suggestions

1. Evaluate the meeting itself, and the communication skills used. Evaluation of the fishing activity will be somewhat self-evident. Did youth catch fish? Did they bring the right equipment? Did they get hungry? Did they have a good time?
2. When they return, have participants evaluate what they will do different next time.

Best Time: Anytime the fishing season is open.

Best Location: Indoors where you have access to a telephone, the newspaper, magazines, maps and possibly the Internet. As part of the exercise, participants will decide the best place to go for the fishing experience itself.

Time Required: One meeting - 30 minutes. Second meeting (actual planning meeting) —60 to 90 minutes. Fishing trip can be variable from a few hours to a day. Follow-up meeting – 30 minutes.

Equipment Materials
Telephones /Telephone book
Computer connected to Internet (optional)
Maps of the area that show fishing locations
Newspaper articles on fishing conditions
Magazine articles discussing type of fishing condition for time of year.
Fishing rods and reels, line, hooks, bait, lures
Ice and Ice Chest

Food and Drink

Safety Considerations
There should be little safety concerns at the planning meeting itself. However, there are many safety considerations that need to be considered in the fishing trip itself.

If there is deep or fast moving water, youth may need personal floatation devices. Water needs to be available to prevent dehydration. All participants should be required to wear glasses and a hat with a bill worn over their eyes. Anglers should be reminded to always be aware of where there line and hook can potentially go when casting. A first aid kit should be available.

Lesson Plan

As an ongoing project, have 4-H members collect magazine articles that would relate to fishing areas near where they live.

Initial meeting: At least a month in advance of the "Planning the Fishing Trip" meeting, have members:

- Call or write to the state fish and wildlife agency to send fishing regulations and any information or maps the agency has on fish or fishing in your section of the state.
- Visit tackle stores and ask about places to go. If they have topographical maps or fishing maps available, purchase a copy if your club can afford it.
- Discuss and research who the anglers are in your area that fish a lot and get their phone numbers.
- Check what license requirements are and make sure anyone who is required to have a license, purchases one and has it on his/her possession while fishing.

This could be a special "pre-planning" meeting or just a portion of another scheduled meeting. Just be sure to start the process at least a month in advance.

Second Meeting: Have participants bring all available information they have located. This meeting should be facilitated by the leader, but not lead by the adult leader. The actions below are for the participants to do. Allow participants to discuss and to make the decisions. For the following to be effective, the actual fishing trip should follow the planning meeting within a few days. Therefore, if your meeting is on a Tuesday, plan the fishing trip for a day after school later that week or on the upcoming weekend.

- Assign tasks to group members and have them report back to group.
- Review the material and maps and list the fishing options available.
- List the kinds of fish found in the waters selected.
- Call tackle stores in the area to find out where the best fishing is currently and find out what types of bait the fish are hitting.
- Call anglers and possibly the conservation officer in the area to see where they are having success. Ask about where they are finding fish in the specific water (i.e. points, shallow coves, drop offs, around cover, etc). Ask what types of baits have been most effective.
- Check sites on the Internet to find local information and general fish behavior information.
- Be sure to involve the whole group in discussions and decisions. Make a decision on where to go and what fish you plan to fish for.
- Check the weather forecast. If there is a cold front or storm coming through, it will change the behavior of the fish from what they have learned from the anglers and tackle stores. However, by

referring to magazines, books, information on the internet, have participants be prepared by having options of baits and a knowledge of where fish may move.

- Utilizing all the information gathered, make a list of the equipment that will be needed for the trip. Consider rod and reel types, size of fishing line, and types of baits to bring. Participants can change their line if need be at the meeting or when they get home. They need to be prepared for the fishing trip.
- When fish are caught, decide whether some will be kept for cooking or whether all fish will be released. If some fish will be taken home, decide who will bring a cooler with ice.
- Discuss safety considerations. Will personal floatation devices be needed? Who will bring the first aid kit? Will sun tan lotion be needed? Have everyone make a checklist to bring and wear glasses and a hat with a brim that can be worn over the eyes. Review casting safety. Review potential hazardous situations at the site you plan to go to and how to do deal with them in a responsible manner.
- Will everyone be responsible for his or her own food or will a group be in charge of it? Make sure there is enough water to prevent dehydration. If a group is put in charge of food, decide what kind and how much.
- How is everyone going to get to the fishing site? Can you walk or ride bikes? If not, have participants make calls to parents that evening to line up transportation.
- Set a time and place for everyone to meet.

Fishing Day: Participants apply what they have learned. Review safety and hazardous things to be aware of again before participants disperse. They are encouraged to use decision-making skills, and adjust to changing situations. The most important thing is that everyone has a good time.

Meeting following the fishing day. Review what participants learned. Were the fish in the areas where they had planned? If not, were they able to locate them? Did it follow the patterns learned from information they had researched? What did they learn about different baits used? What would they do different next time?

Extensions: This is a format that can be used over and over. Fish change behavior as weather and seasons change. The more opportunities the participants have to fish in varying conditions, the more they will learn and the better anglers they will become. Explore fishing for different types of fish. Fish lakes, ponds, rivers… all offer different learning experiences. Fish out of canoes. Fish with adult anglers (maybe with tournament anglers with boats). Invite friends of 4-H members to go on a trip and encourage them to join the club after they find out how much fun they can have.

- Family Fishing Day — families go together. 4-H'ers help those learn who have not been before.
- Take A Friend Fishing Day
- Consider building a group ethical code of fishing prior to the fishing trip.

Goin' Fishing

Rebecca Williams[6]

Objectives

Participating young people and adults will:

1. **Practice rigging tackle**
2. **Practice setting up terminal tackle**
3. **Practice baiting hooks with live bait**
4. **Practice skills in hooking, playing, landing fish**
5. **Practice unhooking fish**
6. **Practice releasing and keeping fish**
7. **Practice cleaning fish**
8. **Have fun while learning**

Roles for Teen and Junior Leaders

1. **Assist with bait collection and preparation**
2. **Assist young people with rigging tackle**
3. **Assist with casting and baiting as needed**
4. **Assist in locating fishing spots and access**
5. **Assist with keeping lines untangled, reel maintenance, tackle problems**
6. **Assist with landing and handling fish**
7. **Demonstrate release or killing techniques**

Potential Parental Involvement

1. **See "Roles for Teen and Junior Leaders" above**
2. **Serve as waterfront observers/safety patrol**
3. **Arrange for or provide fishing tackle**
4. **Arrange for or provide bait**
5. **Arrange for or provide fishing locations**
6. **Arrange for or provide transportation**
7. **Assist with a terminal fish fry**

Evaluation Suggestions

1. **Observe participants for signs of fatigue or frustration**
2. **Observe fishing safety**
3. **Observe growth of independence and confidence**
4. **Observe interactions among youth, teens and adults5.**

Best Time: Any time good fishing action is likely - seasonally late spring and early summer often best; ice fishing also a good bet - best after kids have learned to tie knots and cast

Best Location: spot with numerous small fish that bite readily, e.g. ponds or lake edges with plentiful panfish (bluegills, sunfish, perch); rivers with good access sites (docks etc.), jetties with saltwater panfish.

Time required: 1 ½ hours or more - as much as needed to relax and enjoy the fishing. Keep the age and attention span of your group in mind. Perhaps allow younger youth to leave earlier. Don't force youth to fish if they lose interest, take a break and come back later

Equipment/Material

fishing tackle
appropriate hooks, sinkers or bobbers
live bait suitable for the species sought.

Safety Considerations

Sunglasses or safety glasses to protect the eyes while casting. A hat with front bill (baseball cap) and suntan lotion are also recommended. Use care when baiting the hook. Youths under age 7 or 8 will need supervision around hooks. It is an excellent idea to crimp the hook barb flat to make hook removal from fish (and people) easier.

[6] 1604 M-72 S.E., Kalkaska, MI 49646, Undergraduate, Forestry, Michigan State University

Observe fishing skill development

Lesson Outline

Presentation	Application
I. Going fishing A. Rigging tackle B. Baiting hooks C. Catching fish D. Caring for fish after the catch	As the kids gather for the fishing trip, tell them that this will be a chance to rig tackle, bait hooks, catch fish and handle fish after the catch. **STATE** any safety concerns and procedural items involving safety or behavior. **MAKE SURE** they know who to call or what to do in the event of a problem.
II. Rigging your tackle A. Stringing up the rod 1. Release the line 2. Pass line through the guides 3. Bring free end back to the reel 4. Engage the reel	Start by having each participant **RIG** their own rod. **ARRANGE** plenty of assistance available to keep frustration to a minimum. **SUPERVISE** stringing the line though the guides. **EMPHASIZE** keeping the line straight, avoiding getting it wrapped around the rod. **NOTE** that engaging the reel keeps extra line from getting tangled. **BE SURE** all drags are properly set **BEFORE** the rods are rigged for fishing.
B. Check the line 1. Inspect last few feet carefully a. Kinks b. Nicks or scrapes c. Knots 2. Clip off any damaged line	**DEMONSTRATE** how to check the last few feet of the line for nicks, scrapes or knots. **TRIM** away any damaged line. Have plenty of spare line in reserve.
C. Select a fishing method and rig for it 1. Bobber fishing a. Attach a hook with a Palomar knot b. Pinch on a small shot if needed c. Attach a bobber 1) Set depth for the conditions 2) Clip or tie in place	**PASS OUT** materials as needed for the fishing conditions. **RIG** from the hook to the rod unless a slip bobber is selected. **NOTE** that it would need to be slid on the line first. **NOTE** that the bobber keeps the bait in the feeding zone of the fish and provides a visual indicator when the fish bites. **DEMONSTRATE** how to set the bobber's depth and about how deep to set it. (***Try to keep depths fairly shallow to minimize hooks dangling beneath them during casting***.)
2. Bottom fishing a. Attach swivel to leader with Palomar knot	**DEMONSTRATE** how to build a slip sinker or walking sinker bottom rig, starting with attaching the swivel to a leader about 18 inches long. **NOTE** that the swivel acts as a stop for the sinker and keeps the line from getting twisted.
b. Slide slip sinker onto line c. Attach line to swivel with Palomar knot	**SLIDE** a slip sinker or walking sinker onto the main line and **ATTACH** the main line to the other end of the swivel.
d. Attach hook to leader - Palomar knot	**SELECT** a hook of the proper size and type for the fish being sought and **ATTACH** it to the leader with a Palomar knot or snell knot.
D. Bait the hook, cast and start fishing 1. Select a natural bait	**NOTE** that if tackle is stored rigged, the terminal end of the line

2. Cast to a fishy looking spot
3. Reel the slack from the line
4. Be prepared to set the hook

should be wrapped around the rod with the hook held in the metal portion of one of the guides. **CAUTION** the participants that allowing the hook to ride on the guide rings can damage the guides and lead to line damage.

III. Fishing with natural baits
A. Live baits
1. Worms
a. Night crawlers
b. Leaf or manure worms
c. Garden worms
d. Marine worms
1) Sandworms
2) Blood worms
e. Using them
1) Threaded on the hook
2) Hooked loosely
3) Fished on a worm gang
4) "Sweetening" a jig
2. Minnows
a. Many species and sizes available
b. Using them
1) Hooked through the back
2) Hooked through the lips
3) Hooked near the anal fin
3. Crayfish, crabs and shrimp
a. Sized for effectiveness
b. Whole or in parts
c. Using them
1) Threaded on a hook
2) Hooked through the tail
3) Hooked in the head
4) Hooked in a leg opening
4. Insects
a. Grasshoppers and crickets
b. Hellgrammites (caution, they bite!)
c. Grubs and maggots
d. Aquatic larvae (where legal)
e. Using them
1) Hook through the "collar"
2) Thread on hook
B. Dead or preserved baits
1. Whole or cut baits as above
2. Squid strips
3. Fish roe (eggs)
C. Jigs with natural bait

NOTE that there are many kinds of live bait and that it is readily available by catching it or buying it. **SELECT** bait for the local conditions and species, and **BE SURE** to have plenty of bait available. **DEMONSTRATE** how to put the bait on the hook.

[***Some children are squeamish about handling live bait. Offer to bait their hooks if they will pick up the bait. By the end of the time they should have forgotten their fear and started to bait the hook, particularly if the action is hot!. Another trick is to let them practice with gummy worms, they don't wiggle as much.***]

[***Caution: Hellgrammites can inflict a painful bite! Even though they are an excellent bait for many species, they are not a good choice for beginners. The same thing can be said for whole sandworms or blood worms***.]

NOTE that sometimes dead or preserved baits are excellent fish catchers, as are natural prepared baits like catfish baits, dough balls or even canned corn.

IV. Fishing with artificial baits
A. Usually more difficult for beginners
B. Some combinations acceptable
1. Jigs with soft plastics
2. Jigs when fish are aggressive

[***Artificial lures can be helpful if a child will not touch live bait. Select artificials like jigs with soft plastic tails or similar lures that fish will hold for a few moments to increase the probability of catching something on them. Generally it is wise to avoid artificials until the youngster has learned the basics of hooking***

3. Small soft plastic lures	***and playing fish. y use them if a youth will not participate otherwise***.]
V. Catching the fish	
A. Selecting the site 1. Good fishing water, cover 2. Room for casting 3. Comfortable setting	**HELP** each participant find a spot where they can fish comfortably and with a minimum of difficulty. **POINT OUT** locations that should hold fish, and **MAKE SURE** enough help is available for each one.
B. Casting 1. Putting the bait in a likely spot 2. Waiting for a strike or bite 3. Holding or propping the rod	**STRESS** paying attention to the area behind them as well as to the cover in the water. **REMIND** them to **LOOK BEHIND BEFORE CASTING!** If necessary, **DEMONSTRATE** a sidearm cast to avoid overhead cover. **NOTE** that the rod can be held or propped on a forked stick or other object while waiting for a strike. **SUGGEST** holding the rod, since it aids in attentiveness when the action is slow to moderate.
C. Setting the hook 1. When to set the hook a. When fish pulling on the line b. When bobber goes under c. When bobber moves away d. When you think it is time	**STRESS** that knowing when to set the hook will improve with experience. **SUGGEST** waiting until the bobber goes under the water or moves off purposefully. For bottom fishing, **SUGGEST** waiting until the fish is felt pulling on the line.
2. How to set the hook a. Take up any slack line b. Sweep rod up sharply c. Sweep rod sideways sharply	**DEMONSTRATE** hook setting without line or hook. **START** with the rod pointed toward the "bobber" and show the sweeping motion. **NOTE** that some force is needed to set the hook in the fish's jaw. **COMMENT** that a missed fish requires reeling in and checking the bait, but a hooked fish requires learning to play the fish.
D. Playing and landing the fish 1. Keep rod tip up 2. Reel when you can a. If drag is slipping stop reeling b. If fish is taking line, do not reel 3. Pump and reel if necessary	**DEMONSTRATE** how to play a fish with another person holding the end of the line. **NOTE** that keeping the rod tip up allows the rod to exert pressure and tire the fish.
4. Landing techniques a. Swing small fish onto shore or dock b. Slide fish onto beach c. Using a landing net d. Yell for help with large fish	**DEMONSTRATE** landing techniques appropriate to the fish being taken. **STRESS** calling for help if a large fish is hooked, and have assistants ready with landing nets if the potential for large fish exists. If a fish is a
E. Handling fish 1. Importance of wetting hands a. Protecting fish's slime layer	**DISCUSS** the importance of handling fish with wet hands to prevent damage to the mucous layer (slime) covering their skin. **NOTE** that this layer protects the fish from disease and injury.
b. Avoiding injury to fish	**STRESS** treating the fish carefully -- not squeezing it too hard, bouncing it off objects, dragging it through sand and soil, particularly if it is going to be released.
2. Avoiding injury to angler a. Spines on fins b. Sharp teeth in some species c. Spines or sharp edges on operculum	**NOTE** any potential hazards in handling fish and **DEMONSTRATE** how to hold them as each youngster catches a fish (smoothing spiny fins down from the front, holding behind the

d. Any special considerations in area

head, lifting from the belly). **POINT OUT** any special hazards (e.g. toxic spines) that might be pertinent to your area.

F. Unhooking the fish
1. Backing the hook up
2. Using hemostats or pliers
3. Using a disgorger
4. Cutting the line

Have assistants ready to **HELP** with unhooking fish as needed. **DEMONSTRATE** the process for each youngster, then have them try to unhook their own fish. **NOTE** that cutting the line and leaving the hook in the fish is the best option when a deeply hooked fish is going to be released.

G. Keeping or releasing the catch
1. Keeping the fish

ASSIST young people in making decisions to keep or release the fish they catch. **NOTE** legal requirements -- seasons, minimum or maximum sizes, limits. **REMEMBER** you are hoping to finish with a fish fry.

a. Using a stringer
1) Through lower jaw only
2) Avoid gill damage
3) Poor option in very warm water
b. Using a cooler or ice chest
1) Keeps fish cold and fresh
2) Bulky to carry around
c. Using a live car or bucket
1) Wire basket
2) Net with float ring
3) Perforated bucket
4) Water-filled bucket on shore

DISCUSS ways of keeping fish fresh, and **DEMONSTRATE** the method that will be used for this fishing trip. **STRESS** the importance of keeping fish fresh and undamaged for best eating.

H. Releasing fish
1. Release as soon as possible
2. Return to water gently
3. Return in calm water if strong currents
4. Take pictures before release

DEMONSTRATE proper releasing techniques for the situation. **NOTE** that rough treatment can reduce the likelihood of the fish surviving after the release.

TAKE pictures for the kids if you are not keeping the fish. Inexpensive disposable cameras are fine for the job and the pictures will be useful in many ways.

V. Cleaning fish
A. Fish biology lesson
1. Anatomy
2. Food habits

PLAN a cleaning demonstration if fish are kept. While the demonstration is taking place, **POINT OUT** features of fish anatomy. **EXAMINE** stomachs for food habits of the fish caught. **ASK** how that could help a person become a better angler.

B. Cleaning methods
1. Pan dressing
2. Filleting

DEMONSTRATE several cleaning methods appropriate for the fish taken. **TRANSFER** cleaned fish to the cooking crew as they are finished. Have the fish **PREPARED** in a way that kids recognize and like, e.g. battering and frying, with the accompanying side dishes.

VI. Wrap up the fishing trip
A. Fish fry if possible
B. Encourage story telling
C. Probe for lessons learned
D. Involve parents

FINISH the session with a fish fry (bring some fish as a hedge). **ENCOURAGE** telling about the day's experiences and lessons. Have F**UN** with the kids, parents, and teen leaders. PLAN for the next activity and **ENCOURAGE** fishing on their own.

Lesson Narrative

With the participants able to cast with some confidence and to tie at least a Palomar knot, they are ready for their first fishing experience. Pick a location where the entire group can fish comfortably and where the probability of catching lots of fish is high. Choosing a site where lots of small, cooperative fish are available as opposed to one with fewer larger fish is wise. These kids will want action, and the site should be selected to match that desire. Shore fishing on a pond, lake, river or bay is an excellent way to start kids off in fishing, if the action is hot. Piers and docks also offer some potential. In the latter case, every youngster should be equipped with a PFD as a safety precaution.

The type of fish being sought will determine the type of terminal rig to be used. For shallow water or cover dwelling species like sunfishes, northern pike, pickerel, and bass may be caught using bobber rigs that suspend the bait above the bottom. Bottom feeding fish or those that tend be near the bottom most of the time, like carp, suckers, bullheads, channel catfish, perch (in deep waters), walleye or most saltwater panfishes (porgies, scup, croakers, whiting, or winter founder) are better fished with a bottom rig. The recommended rig here uses a slip sinker or walking sinker above a swivel attached to a leader.

Be sure to scout the area, find the right places to fish, and be prepared with plenty of bait that will be effective. Where it is legal, pre-baiting or chumming an area can be very successful in concentrating feeding fish in the area you plan to fish. Carp and catfish are particularly susceptible to this technique, as are most saltwater fishes. Success in catching fish is very important to the initial experience.

Remember that the kids may get bored quickly if no action takes place or if it is too slow in coming. Be flexible and allow them to enjoy themselves and the experience, even if they end up looking for frogs, skipping stones or doing something else with their "fishing" time. As long as the extracurricular activities are safe, do not interfere with other anglers (either in the group or outside the group), and are adequately supervised, there is no harm in letting the kids do something else. The "serious anglers" in the group will get their attention quickly if they start to catch fish.

Rigging Tackle

Even if the tackle is normally kept rigged, it is a good idea to have the kids rig their own equipment with some help and supervision. Start by stringing the line through the guides and pulling off enough to finish the rigging job. Have them check the last few yards of line for damage or knots, trimming away any worn, frayed, nicked or kinked areas with clippers.

If a bobber rig is used (recommended if suitable, because the kids like to watch them), attach a hook with a Palomar knot. Pinch on a shot about a foot above the hook if needed, and attach the bobber to the line. Using relatively small bobbers is advised, particularly where panfish are being targeted. There are several different ways to attach a bobber, but usually wrapping it around both ends works well. Set them fairly shallowly to prevent wildly swinging hooks during the casting process.

If a bottom rig is being used, start by attaching a swivel to about 18 inches of leader material with a Palomar knot. Next slide a slip sinker or walking sinker onto the main line (a walking sinker should have its convex side toward the reel). Some people like to slip a plastic bead or a bait float onto the line below the sinker. Tie the main line to the other eye of the swivel using a Palomar knot. Finally, attach an appropriate hook to the end of the leader with either a Palomar knot or a snell knot.

The rigging process should be demonstrated, regardless of the method selected. Have plenty of help to assist youngsters who are having trouble with too many thumbs in their hurry to get to the fishing. Caution the kids to be careful when walking with their tackle, keeping the hooks under control to avoid hooking themselves or someone else. Attach the hook to the metal part of one of the guides and hold the rod vertically when walking from place to place. Many leaders like to use barbless hooks or hooks with the barbs flattened. It may cost a beginner some fish, but the hooks are easier to remove both from fish and from clothing or anglers.

Finishing the Preparations

As the primary guide, explain to the young people how and where to fish for best results. Show them the baits that are to be used and demonstrate how to hook them for best results. Demonstrate the hook setting process and give them some instruction on when to set the hook. Using a teen leader or parent, demonstrate how to play a fish once it is hooked, and caution them to leave the drag settings where they are (assuming that you have pre-set all drags properly). Remind the kids that the adults and teen are there to help them if they need some assistance with landing a fish or other things. Reiterate the caution about casting and water safety, plus any features unique to the site. All of this must be accomplished quickly and efficiently, because they are itching to get to the water.

Getting to the Fishing

Spread the kids out safely with adequate assistants and have them select their fishing spots and baits. Natural baits or prepared baits are usually best for beginning anglers. The fish will hold them longer, making it easier to detect bites and hook the fish.

Baiting Up

Be sure to have plenty of bait and to choose baits that work well for the fish being sought. Demonstrate several ways of baiting the hooks with the baits selected. Worms of all kinds can be used whole or broken in pieces and threaded on hooks, hooked lightly through one end or near the "collar." Be sure to use caution with marine worms like sandworms or blood worms, since they can inflict a painful bite. Minnows of the appropriate size and species can be effective for crappies, perch and larger fish. They can be hooked through the back near the dorsal fin, through the lips, or near the anal fin. Crayfish or shrimp can be treaded on the hook, either whole or in parts, or hooked through the head or tail. On shrimp, avoid the dark spot in the head, since puncturing it will kill the bait. Crabs can be hooked through a leg hole and out the back. Insects, like grasshoppers and crickets, are excellent baits for many species. They are either threaded on the hook or hooked lightly under the "collar." Other insects can be hooked similarly. Dead baits can be fished like the live counterparts. Prepared baits, like catfish baits, doughballs, or prepared carp baits should be formed into small balls (between pencil diameter and marble size) for best results. Some effective baits are not recommended for kids. Vertebrates, like frogs, salamanders, mice and similar creatures may be effective; but many people will not use them for ethical reasons.

If the kids will not bait their own hooks, have assistants agree to help them if they will get the bait and bring it to them. If the action is hot, most youngsters will quickly learn to bait their own hooks to save time and get back into the fishing faster.

Playing and Landing Fish

When the bobber goes under or moves off purposefully or when a fish is felt biting on the bottom rig, reel all the slack out of the line with the rod tip pointed at the fish. Sweep the rod tip upward sharply to set the hook in the fish's mouth, and commence to reel the fish in.

Keep the rod tip up when playing the fish. This keeps pressure on the fish and tires it, making it easier to land. Reel in line when you can, but do not reel if the drag is slipping or when the fish is pulling line from the drag. Once the drag stops slipping, reel the fish toward you. If necessary, reel the rod tip down to about a 30 degree angle to the fish, pull the rod upward to bring the fish toward you and repeat the process. This is called "pumping" the rod, and it is very useful with strong fish.

Once the fish is close to the bank, dock or pier, it is time to decide on a landing technique. For small fish, simply swinging them out of the water works well. The rod should be reeled down toward them until about one rod-length of line is out. Then the rod is lifted, swinging the fish like a pendulum toward the angler. For larger fish it may be wise to use a landing net or to beach the fish on the shore. Yell for help if you need it in landing a fish.

Handling Fish

Handling fish properly has three main functions. First, proper handling allows the angler to control the fish so the hook can be removed and it can be released or retained. Second, proper handling minimizes any injury to the fish. Doing so is good for both fish that will be returned to the water and for those that will be kept and eaten. Finally, proper handling minimizes the risk of injury to the angler from spines, sharp gill plates or teeth.

Most anglers wet their hands before handling fish. This minimizes the damage to the slime covering of the fish. This mucous layer protects the fish from disease and injury and makes it slide through the water more efficiently. They also try to minimize the amount of sand or soil on the fish and to keep from dropping it or bouncing it off trees, rocks, or other objects. If handling the fish with wet hands means you need to squeeze it very tightly, it might be wise to use dry hands and minimize the damage from squeezing the fish.

Proper handling helps keep the angler from getting stuck with spines, cut by sharp gill covers or slashed with sharp teeth. Smoothing the fins back with the hand when handling spiny fishes like bluegills or perch minimizes spine wounds. Grasping the fish behind the head or by the base of the tail (caudal peduncle) avoids getting the hands near the mouth in toothy species. Catfishes can be held securely be grasping them behind the spiny pectoral and dorsal fins. In fact, these spines make excellent handles for controlling the fish. If there are any special considerations in your area, like venomous fish, be sure to include them in your introduction.

Unhooking the Fish

Usually unhooking a fish is a simple matter of backing the hook out or twisting it slightly to remove it from the fish's jaw. Hemostats, needle holders or pliers can be very helpful in grasping hooks and extracting them. Hook disgorgers or hookouts can be used on larger fish.

If a fish is hooked too deeply and likely to be injured by removing the hook, simply cut the line as close as possible and release the fish. In most cases the hook will break down and the fish will survive.

Keeping or Releasing the Catch

The catch and release approach to fishing is good management and recognition of the value of sportfishes in most cases, but there is nothing wrong with using fish that are caught for food. Keeping only what you can use immediately is good conservation in most cases. Most fish can be used as part of a healthy diet, and eating their catch connects kids with the ecosystem directly.

Keeping Fish - If fish are going to be kept (assuming that legal requirements are met), they need to be kept as fresh as possible. This is best done by either keeping them alive or on ice. A traditional way of keeping fish alive is to use a stringer made of either metal loops or cord. In either case, the stringer should be passed through the lower jaw only, allowing the fish to move water over its gills and avoiding damage to the gills themselves. Stringers are fine in most cases, but they are a poor choice for fish caught in very warm water.
A better choice for warm waters is the use of a cooler or ice chest. Immediately icing the fish keeps them fresh and in good condition, but the chest or cooler is a bit bulky to carry around.

Live cars are also somewhat bulky, but they are excellent in most situations. These can be in the form of wire baskets, net bags with a float ring or perforated buckets set in the water. Some anglers put their catch in a bucket of water and change the water frequently.

Stream fishermen often use creels made of wicker or canvas to keep fish cool until they reach a car or home. Moistening the fish occasionally allows evaporation to cool them enough for moderate conditions.

Regardless of the method used, fish that are to be kept should be handled carefully. Keeping them alive or on ice is the best approach to excellent eating. Good taste starts when the fish first comes out of the water!

Releasing Fish - If a fish is to be released, it should be handled as little as possible and returned to the water quickly. Take photographs if desired, but keep the fish in the water until you are ready to take the picture. Place the fish gently in relatively calm water, and allow it to swim away when it is ready. After a prolonged battle, a fish may need to be helped by pumping in back and forth in the water until if regains its strength.

Some fishes need a "jump start" when released. Species like lake trout should be returned to the water by throwing them head first. This gets them pointed downward and headed toward cooler waters. While it seems the opposite of what was said above, it helps the fish to survive.

Cleaning Fish
This part of the activity is primarily a demonstration and teachable moment for fish anatomy and food habits. Nearly every kid who fishes has an interest in seeing what fish eat. Opening stomachs and putting the contents in white plastic bowls with a little water can be very instructive. Basic fish anatomy can be taught while cleaning the fish as well. Organs like the gonads, swim bladder, kidney, stomach, intestines, heart and gills are easily observed.

For most of the fishes likely to be taken during this activity, pan dressing or filleting are the cleaning techniques of choice. Plan on having some help to get the fish cleaned quickly, and allow kids who want to try cleaning a fish to do so with lots of guidance. As the fish are cleaned, transfer them to the washing and cooking area in preparation for a fish fry. Note: a wise leader has a few fish stashed in reserve in case the fishing does not go as well as planned.

The activities on making fish prints and taking home a limit of litter are excellent ones as extensions to this session.

Wrap Up
If possible, use a fish fry as a wrap up to the outing. Have the fish they caught (supplemented if necessary)

along with side dishes of choice. Encourage review and story telling about the day's experiences. Probe for lessons learned, and be sure to involve parents and other volunteers in the process. Finish up with a reminder of the next session.

Exhibit and Sharing Suggestions

1. Make a photo exhibit of your fishing trip, and share it with parents and other interested people.
2. Use your photo story in a photography or natural resources exhibit at a fair or other event.
3. Make an exhibit of terminal rigs used in fishing, explaining how the work and when they should be used. Share your exhibit at an appropriate event.
4. Study a fish species or group and techniques in catching them. Share your findings with your club or another interested group.
5. Go on a fishing trip and record your experiences. Note the location, conditions, tackle and bait used, and results. Enter that in your fishing journal and share your experiences with friends.
6. Try some fish recipes and share the results with your friends. Consider entering your fish dish in a foods show or similar event.

Extensions or Ways of Learning More

1. Visit a bait shop and learn about different types of tackle and lures for local fishing.
2. Study a fish species of your choice and the methods used to fish for it.
3. Keep a fishing journal and see if you can find trends in your fishing success. Try to determine the reasons for those findings.
4. Take a family fishing trip or go fishing with some friends.
5. Find someone willing to show you how to fish for a species of your choice. Invited them to participate in the program.

Community Service

1. Take home a limit of litter
2. Organize a clean up day at a local fishing area or park where people fish
3. Demonstrate fishing techniques, rigging techniques or something similar at a National Hunting and Fishing Day event.
4. Help someone else learn how to fish.

Hook Up with Natural Bait

Adapted from and with permission from Michigan's Project F.I.S.H.

Objectives:

Youth will:

1. Become familiar with catching, keeping, and hooking different types of live bait.

Time: The lesson lends itself nicely to six separate lessons of 30-60 minutes each. Total: 2½ - 5 hrs.

Location: Classroom – indoor or outdoor. "Hands On" follow-up at the fishing hole.

Method: Interactive discussion, demonstration, hands-on activities, and observation.

How to Use This Lesson: The Hook-Up with Natural Bait lesson is meant to be an introduction to the different techniques used for capturing, keeping, and hooking natural bait. It is designed to give your students a thorough overview of the most commonly used live-baits such as aquatic insects, terrestrial insects, baitfish, worms, leeches, salamanders, frogs, and crustaceans, and the commonly used non-living natural baits. The Hook-Up with Natural Bait lesson is segmented into six different topic areas

Adaptations:

Classroom:

In a classroom setting the recommended format is to offer one topic area per day (per session) for six consecutive days. This lesson can stand alone as a presentation or be combined with other fishing-related lessons

For a Fishing Clinic:

Any one of the six lessons could be its own clinic. Do all of them or choose the one that best suits your location and audience. In an outdoor setting the suggested format is to set each topic up as a learning station and rotate students through each station every 30-45 minutes.

Materials: Below are the recommended materials for each of the six sections. It's not necessary to have every material for each lesson. Familiarize yourself with the lesson and choose the materials you have readily available, easy access to, or desire to learn about. Remember, the more you can expose the students to, the greater the chance they'll become responsible lifelong anglers.

Leeches and Worms: living samples, preserved samples, or photos of leeches, earthworms, and bloodworms; rubber worms and leeches; hooks; coffee can/s; gunnysack; 25' of 1/4" nylon rope; drill with 3/8" drill bit; copies of Appendix A and B; fiddling stick apparatus; sample worm containers, worm bedding, and worm food; paper towels; salt; zip-lock bags; worm blower.

Insects: copies of Appendix C and D; Virginia Freshwater Fishing Regulations Booklet; living samples, preserved samples, or photos of dragonfly larvae, caddisfly larvae and their cases, water worms, hellgrammites, crickets, grasshoppers, white grubs, mealworms, catalpa worms, tent caterpillars; commercial and homemade containers for keeping aquatic and terrestrial insects; kick seine; dip-net; sampling tray; butterfly net; wool or fleece blanket; uncut loaf of bread; pictures of or real examples of catalpa tree leaves and fruits.

Baitfish: copies of Appendix E, F, and G; Virginia Freshwater Fishing Regulations Booklet; living samples, preserved samples, or photos of the different baitfish; commercial and homemade containers for keeping baitfish; aerator; oxygen tablets; pull seine; one set of pop can and pop bottle fish traps and materials for the students to make them if you choose; cast net; examples of fish foods; rubber fish and hooks.

Frogs and Salamanders: Virginia Freshwater Fishing Regulations Booklet; living samples, preserved samples, or photos of the different kinds of frogs and salamanders; commercial and homemade containers for keeping frogs and salamanders; pull seine; examples of amphibian foods; rubber frogs and salamanders; hook harnesses and hooks.

Crustaceans: copies of Appendix H; Virginia Freshwater Fishing Regulations Booklet; living samples, preserved samples, or photos of the different crustaceans; variety of different crustacean traps; commercial and homemade containers for keeping crustaceans; examples of baits used; rubber crayfish and crabs; hooks.

Non-Living Natural Baits: living or preserved samples of baitfish or photos of cut up baitfish; chicken liver (fresh and mushy); chicken liver paste; bait-holder treble hooks and single hooks; opened clams; various commercial stink and dip baits; various tube baits, dip baits, and sponge baits; ingredients for making stink bait

Instructional Outline:

I. Introduction

A. How many of you have ever used live bait when fishing? Did any of you ever use maggots for fish bait?

B. What's the one distinct advantage that natural baits have over artificial baits? They're alive.

C. There is no artificial bait that perfectly simulates the smell, movements, and texture of its living counterpart. This is why even the best anglers have to fish natural baits when the fish are difficult to catch.

D. Just like we do, fish tend to prefer eating what they are used to. But how do you know what a fish is used to eating?

E. Sampling an aquatic system is one of the best ways to see what foods are available to the fish. Many of the methods used for sampling aquatic systems are also the methods used for catching natural baits.

F. Another way of finding out what the fish are eating is by talking to other anglers and your local bait shop. Chances are they'll know what people are catching fish on.

G. Can you buy all natural baits at your local bait shop?

No, some of the best natural baits cannot be purchased over the counter at your local bait shop. So if you can't buy them then you need to know how to catch them and keep them alive, or make them. Catching and making your own bait can be just as much fun as fishing with it.

LESSON OBJECTIVE:

Today we are going to begin learning about the different kinds of natural baits available to anglers. By the time we are finished you will be familiar with a multitude of different natural baits and the techniques for catching or making them, and for fishing them. Let's begin with leeches and worms!

II. Leeches

A. What are Leeches?

1. Has anyone ever gone swimming and got a leech stuck to you?

2. Does having a leech stuck to you mean that all leeches are man-eaters? What else might leeches eat?

   a) Most leeches are parasitic on snails and mollusks, but some feed on tissue and blood.
   b) All leeches have a sucking disc at both ends. The mouth is located at the head end in the smaller disc. The larger tail disc is used for clinging to objects.

3. Are leeches common in Missouri waters?

   a) Yes, leeches are commonly found in ponds, lakes, and marshes.
   b) Leeches can be found in any freshwater system.

4. Now that you know that most leeches live off of snails and mollusks, where in the water do you think you would find them?

   a) Leeches live along the shorelines where there is lots of aquatic vegetation that provide them with cover.
   b) The vegetation houses the snails, mollusks, and other invertebrates that most leeches feed on.

5. Do you think that some leeches are better to use for bait than others?

   a) There are several kinds of leeches, but ribbon leeches are preferred for fishing.
   b) Ribbon leeches squirm actively when held and put on a hook. They move through the water by undulating like a snake. Other leeches are lifeless in hand and on the hook.

Note: If you or a friend finds a leech on your skin, it is important to not pull it off. The leeches' mouthparts could be left in your skin and cause infection. Infection is more dangerous than the loss of blood. Get out of the water and use an irritant like salt or heat (lighter,

match, hot pin) to make the leech let go and drop away. Then treat the wound. Leeches use an anticoagulant (a chemical that stops the blood from turning jellylike and scabbing) so the wound may bleed a bit.

B. Catching Leeches

1. So, you know where leeches live, and that they're good for bait, but how do you catch leeches?

2. Do you think a coffee can or gunnysack might help?

    a) To use a gunnysack, place dead minnows, beef liver, beef kidneys, or bones in the bottom. Tie a rope around the opening and place it in the shallows with a large bobber or float attached so you can find it. Leeches will penetrate the fabric to reach what is inside. Set your traps late in the afternoon and check them early the next morning. You will need to pull up the traps quickly so the leeches don't escape.
    b) Put bait in a coffee can and crimp the top almost shut to limit light penetration. Leeches will squeeze into the coffee can and remain there until the bait is gone. Put this in the same place you would a gunnysack trap.

C. Keeping Leeches

1. So, now that you've gotten them, how do you keep them? Leeches live in water so naturally it's a good idea to keep them in water. But many of us probably have tap water with chlorine added to it. What needs to be done to tap water before it's ready for leeches?

    a) The water needs to be de-chlorinated. But how do you de-chlorinate water?
    b) De-chlorinate water by adding de-chlorinating drops or tablets, or by letting the water sit overnight. The chlorine will evaporate overnight. De-chlorinating tablets can be purchased at your local pet store.

2. What else do you think needs to be done in order to keep leeches for extended periods of time? How often do they need fresh water or food?

    a) Refrigerate them in any container that will hold water and block light.
    b) Check them every 3-5 days by rinsing them off, discarding sluggish and dead leeches, and changing their water. A regular kitchen strainer works well for holding leeches and rinsing them off.
    c) It's not necessary to feed leeches while you're storing them. They'll shrink slightly, but otherwise will remain in good condition for fishing.

3. Since you should refrigerate leeches to store them, what might you want to do when taking leeches fishing?

    a) Place their container inside a cooler on top of ice.
    b) If you don't have a cooler, check the water frequently. If it starts to get warm, add some ice cubes. Warm water quickens the maturation of leeches. If they mature, they will die in several days, leaving you with no bait.

D. Hooking Leeches

1. Here is a leech for each of you.

2. Leeches will catch any fish that a worm will. The most common fish that leeches are used for are panfish, catfish, perch, walleye, sauger, and smallmouth bass.

3. Lets practice putting leeches on a hook.

III. Worms

A. Earthworms and Bloodworms (marine worm)

1. Most people don't know much about worms except that they are "squirmy." Knowing a little about them will help you to find them, catch them, and keep them for bait.

2. Where do they live and what do they eat?

    a) Earthworms live in the soil and ingest soil to get the organic material (food) it contains.

    b) Bloodworms live in mud flats of intertidal and sub tidal regions and eat other invertebrates and mollusks.

3. How do worms breadth?

    a) Earthworms breathe through their skin.

    b) Bloodworms have gills for breathing located at the end of each parapodia.

B. Catching Worms

1. Has anyone ever caught worms to take fishing? How did you do it?

2. Grabbing nightcrawlers (6”-10”) is easy and fun.

    a) You can find them after a rain on sidewalks, driveways, and streets. After a rain their tunnels are flooded and worms move to the surface in order to breathe.

    b) You can catch nightcrawlers on damp nights (from rain, dew, or watering) by walking lightly over lawns, golf courses, and other mowed areas and spotlighting them with a flashlight. Grab the worm’s head and pull slowly and steadily until the worm comes completely out of its hole

3. Flipping for leaf and garden worms (2”-4”).

    a) You can catch leaf and garden worms by flipping logs and rocks where the soil is damp.

    b) You can also catch them by watering your garden or flowerbed in late afternoon and digging early the next morning.

4. Fiddle for grunt worms (4”-6”) by driving a grooved board or stake into the ground and rubbing a piece of wood or metal over the grooves. The vibrations attract the worms. This is called “Fiddling.” (Appendix B illustrates how to make a fiddling stick.)

5. Dig for bloodworms (2”-15”) in mud flats of intertidal and sub tidal regions. They have fleshy projections called parapodia that it uses for locomotion. They can bite, so it’s good to handle them carefully and quickly.

C. Keeping Worms

1. What are some things that people need to stay alive and healthy?

2. We all need shelter, oxygen, and food to stay alive. When trying to keep worms alive for bait, we need to provide them with these things as well.

3. Let’s start with shelter. A good worm container should?

    a) Be made of a material that allows oxygen to penetrate but keeps water out, such as Styrofoam or fiberboard wood.

    b) Have a tight lid to prevent worms and moisture from escaping.

    c) Be filled 3/4’s full of bedding. Bedding simulates the soil that the worms will live in inside the container.

    d) Should be stored between 45ºF and 65ºF.

4. A good worm bedding should?

    a) Be non-toxic, porous for air circulation, have moisture retention, have odor control, and be moist equivalent to a wrung-out sponge.

    b) Be composed of shredded paper (such as black-and-white newspapers, computer or writing paper, paper bags, or cardboard); peat moss (which increases moisture retention); chopped up straw and other dead plants; seaweed; sawdust; composted animal manure (cow or horse); shredded and decaying leaves; or any combination of these.

    c) Should have at few handfuls of sand or soil to provide grit for the worm’s digestion processes.

5. What type of food should you feed your worms?

    a) Organic waste composed of fruits (no citrus), vegetables, eggshells, tea bags, coffee grounds, and shredded garden waste. These should be distributed in small pieces so that it breaks down easily

    b) Do not feed them foods that contain lots

of grease or oil, grains, citrus fruits, meats or bones, dairy products, fish, tobacco, or pet or human manure.

3. Can bloodworms be stored? Yes, if conditions are kept optimal.

   a) For short periods bloodworms should be refrigerated in salt-water in a container with some vegetation, sand, or mud.

   b) For long periods bloodworms can be kept in a salt-water aquarium or frozen.

      To freeze bloodworms, set the worms on a paper towel and cover them generously with table salt. Fold them up in the towel, put them in a zip-lock bag, and then in the freezer. Frozen bloodworms can be kept for months.

D. Hooking Worms

1. Just about every type of gamefish enjoys a fresh, lively worm. Do you know what fish enjoy what worms?

   a) Earthworms are commonly used to fish for freshwater fish including panfish, walleye, sauger, catfish, trout, smallmouth bass, and largemouth bass.

   b) Bloodworms are used as bait for striped bass, flounder, perch, kingfish, porgies, weakfish, and other marine species.

   c) When a worm doesn't respond to touch or gets soft, replace it with a fresh one.

   d) Before fishing with worms there is something, called conditioning, that you can do to them. Does anybody know what conditioning is or how it is done?

      About 24 hours before you go fishing, put some worms in a small container half full with bedding. Add strips of wet paper above the worms and refrigerate the container for 24 hours.

      Conditioning is a way to make the worms absorb water and expand to almost twice their original size. Bigger worms are more easily seen by fish, which increases your odds of catching them.

   e) A worm blower can also be used to increase the size and visibility of your worm. Anybody know how?

      - A worm blower is used to pump small air bubbles into the head end of your worm. This causes the head end to float above the bottom making it more visible to the fish.

      - Only pump air into the head end of the worm so that the head end can float and give the appearance of a surfacing worm.

IV. Aquatic Insects

A. What are Aquatic Insects?

1. Beside fish, what do you think is one of the most abundant organisms in freshwater systems? Aquatic insects!

   a) Aquatic insects are insects that spend a part of their life cycle living in the water, and there are a lot of them.

   b) Aquatic insects inhabit almost every kind of freshwater system, such as ponds, creeks, rivers, and reservoirs.

   c) Most of the insects that fish naturally feed on are aquatic insects.

   d) Does anybody know the names of

these water bugs?

2. How is an aquatic insect different from a terrestrial insect?

   a) Its egg and immature (larval) stages need to live in the water. The larval stage is what most aquatic insects are in when they are captured for bait or eaten by fish.

   b) Adult stages can be spent on land or in the water. These stages can be used for bait as well, but are harder to catch because most fly and are short-lived.

3. Has anyone ever used aquatic insects for bait? What kind did you use? There are several aquatic insects commonly used for bait.

   a) Hellgrammite larvae prefer the rapids in streams and rivers. Handle them carefully because they can bite with their pinchers. Pick them up by placing your thumb and index finger behind the top of their head and pinching lightly.

   b) Water worm larvae inhabit streams and rivers. They like to burrow below the gravel in the sediment.

   c) Dragonfly larvae prefer slower moving water of streams and rivers and still water of lakes and ponds.

   d) Caddisfly larvae can be found in all habitats of non-polluted freshwater systems. They are often overlooked because the cases they build to live in aren't easily recognized. Cases are made of wood, gravel, sand, or other particles and debris found in the water.

B. Catching Aquatic Insects

1. There are several different ways in which aquatic insects can be caught. The most common techniques are seining, digging, and dip netting.

   a) **Seining:** A seine is nothing more than a net extended between two poles. To seine, one person holds a seine downstream and another person disrupts the substrate by flipping or kicking rocks. The current sweeps the insects into the seine. When you flip rocks, be sure to look on their underside where insects could still be clinging. Also be sure and agitate the substrate well below the smaller gravels.

   b) **Digging:** in mud along banks and through sticks and leaves will often turn up dragonflies, caddisflies, and water worms. Kitchen strainers are extremely useful tools in the pursuit of bankside critters. Simply scoop up some mud and small debris and set it in the sieve, and then strain out the critters by washing with water.

   c) **Dip netting:** Is a one-person operation. Place the dip net on the substrate and agitate the substrate in front of the net. The current will wash the insects into the net.

   d) Collected insects will need to be sorted. To do this, simply dump them into to an observation tray. Pick out those you want to use for bait and return the rest to the water.

C. Keeping Aquatic Insects

1. Selecting the aquatic insects you want for bait brings us to an important question.

2. Besides water, what will you need to keep aquatic insects for bait?

   a) It is difficult to keep aquatic insects for long periods of time. To do so you need to set up an aquarium or cooler with an aerator. Use water from the stream and add aquatic plants for cover and food.

b) Most of the time it is easier simply to collect what you need for a days worth of fishing. Place them in a small container with water and some aquatic plants or moist leaves from the stream and refrigerate them until its time to go fishing.

D. Hooking Aquatic Insects

1. Aquatic insects are primarily used to fish for trout, panfish, bass, and catfish.

   a) Hellgrammites and dragonflies should be hooked under the collar.

   b) Water worms should be tail hooked.

   c) Caddisflies can be threaded on the hook or head hooked.

V. Terrestrial Insects

A. About Terrestrial Insects

1. Who knows what the largest group of animals is? It's insects!

   a. Did you know that there are over 700,000 different species of insects, including aquatic insects?

   b. The neat thing is that fish will eat any of them that fall or wash into the water.

   c. Therefore, they make great bait! So, it's worth our whiles to learn how to catch, keep, and use them.

2. Can you catch terrestrial insects the same way that you catch aquatic insects? No!

   a) First of all, aquatic insects are usually caught in water, while terrestrial insects are caught on land.

   b) Terrestrial insects are found in more varied habitats than aquatic insects, so there are many different techniques used to catch them. For that reason it is easier to discuss how to catch, keep, and hook each insect individually.

B. Bug Bait # 1: Grasshoppers

1. What types of fish like grasshoppers? Grasshoppers are excellent bait for panfish, trout, bass, and catfish.

2. Where do you find grasshoppers? In grassy fields.

3. Any ideas on how you can catch grasshoppers for bait? They can be caught in grassy fields by hand, with a butterfly net, or by two people holding up a fuzzy fleece or wool blanket. Facing into the wind pull the blanket through the field, grasshoppers land in the blanket and get stuck in the fibers.

4. Once you have caught some grasshoppers, how and where do you keep them? They can be kept in commercial insect containers or homemade containers made from coffee cans with mesh covers or screened in boxes. Add some grass for cover and food. Keep the container cool. Grasshoppers can also be frozen for future use.

C. Bug Bait # 2: Crickets

1. What types of fish like grasshoppers? Crickets are excellent bait for panfish, trout, bass, and catfish.

2. Can be caught in grassy fields or woods by turning over boards, stones, or logs or by setting out some type of cricket trap.

3. Lengthwise, cut a loaf of bread in half. Hollow out the inside of each half. On the end of one half cut a small hole about 1 1/2" in diameter. Secure the two halves together with rubber bands. Place it in a grassy field or in the woods and cover it up. Crickets will crawl into the trap at night and you can gather them in

the morning.

4. Burry a coffee can level with the ground. Bait it with bread. Surround the rim of the can with small rocks and then cover the can to keep rain out.

5. Crickets can be kept in commercial insect containers or homemade containers used for grasshoppers. Add some grass for cover and food. Keep the container cool.

6. Can be frozen for future use.

D. Bug Bait # 3: Mealworms and White Grubs

1. They are excellent bait for panfish, trout, bass, and catfish.

2. Mealworms can be caught by digging through piles of rotting grain on farms or at feed mills.

3. White grubs can be caught by digging around in soils where there are rotting logs or pieces of rotting wood.

4. Both catalpa worms and tent caterpillars can be kept in commercial insect containers or homemade containers such as a coffee can. Refrigerated mealworms will last for several months in cornmeal or wood shavings. Keep grubs in the soil you found them in, and keep it damp and cool. They should last for several weeks.

5. Can be frozen for future use.

E. Bug Bait # 4: Catalpa Worms and Tent Caterpillars

1. Does anybody know what this tree is?

2. What do these trees have to do fish bait?

3. Catalpa worms and tent caterpillars make excellent bait for panfish, trout, bass, and catfish.

4. Catalpa worms are easily caught between spring and fall by simply picking them off of catalpa trees. A real easy way to always have catalpa worms available is to plant some catalpa trees in your yard. Adult catalpa moths will find your tree/s eventually and lay the eggs that will hatch into the desired catalpa worms.

5. Another interesting and abundant larva available during the summer are tent caterpillars. You've more than likely seen them as they build their tent-like nests in trees, thus the name tent caterpillars. Just pick the caterpillars from their nest.

6. Both catalpa worms and tent caterpillars can be kept in commercial insect containers or homemade containers such as a coffee can. Just keep them cool and add leaves from the host tree for food and cover.

7. Can be frozen for future use.

F. Hooking Terrestrial Insects: pass out **Appendix D** and go over hooking techniques.

Vl. Baitfish

A. Catching Baitfish

1. Has anybody ever use a fish as bait for another fish?

2. Most people have used minnows or shiners. Has anyone ever used other types of fish like smallmouth bass, sunfish, or trout?

3. Who can tell me why we call certain fish baitfish?

   a) Most people think that the term is applied to fish because of their size. In part that is true. Fish used for bait are smaller then the fish being fished for.

   b) However, a fish earns the title

"baitfish" because it considered being effective bait used for catching another species of fish.

c) Every fish, at one time in its life, can be considered a baitfish for another fish.

4. What are some important factors when selecting baitfish, and why?

a) Probably the most important factor to consider when selecting baitfish is their size.

b) Most predators would rather eat one large fish than several smaller ones. They expend less energy feeding this way. So, when you are catching or buying baitfish, select fish that are on the larger end of the size spectrum. For instance, a 10" smallmouth bass makes effective bait for a 50" musky.

5. Another factor to consider when selecting baitfish is how long the baitfish will stay fresh and alive, both on the hook and in the container they are kept in? Most predators prefer their food to be alive and well. Choose baitfish that are durable.

6. Other factors to consider are the shape of the baitfish, smell, and color. All of these factors will be different depending on the species you are fishing for. For example, muskies and northern pike are long, narrow-bodied fish. As a result, they prefer to eat fish that are long and narrow and easier swallow.

B. Consider this before using baitfish - Rules and Regulations

1. Who knows what the most commonly used baitfish are? Are there rules governing there use?

2. When you go to the bait shop you can usually buy some kind of minnow or shiner? Can you buy a smallmouth bass or a bluegill?

a) No, why not?

Only certain types of fish can be bought and sold.

Fish categorized as "gamefish" such as bass and bluegills cannot be sold. So does this mean you can't use a smallmouth bass for bait?

b) Any game fish can be used as bait if it is caught via hook and line, and meets the regulations for keeping that species.

c) Since most bait shops can't sell every kind of baitfish it's important to know how to catch the ones you can't buy.

C. Catching Baitfish

1. There are many methods used to catch baitfish. Does anybody know what the most common ones are?

a) **Trapping** baitfish is probably one of the easiest methods for catching baitfish.

The most common traps are commercial traps, pop can traps, and two-liter or three-liter bottle traps.

Traps are set in the shallows of lakes, rivers, ponds, or streams in the evening and checked in the morning.

You can bait most traps with crackers or bread, but soda can traps don't require bait to catch fish.

b) **Seining** baitfish is another way to collect baitfish.

As you can see, a seine is

composed of a nylon or cotton net 4'-25' in length and 2'-4' in height. It has weights on the bottom to keep the net down so fish cannot get under it, and floats on the top to keep the net afloat and fish from escaping over it. On each end there is a pole attached for handling the seine. These can be purchased fairly inexpensively at your local tackle shop.

Seining is quite easy. It requires two people moving parallel to each other from deeper water toward the shore. Once they have gone far enough or reached the bank they lift up the net and collect your baitfish.

Seining is most productive near shorelines where there is a soft bottom. Rocky bottoms will cause the seine to get caught and have openings where fish can escape.

c) **Fish herding** is another method of seining. Can anybody guess how this technique might work? It's very much like herding cattle.

Fish herding requires 4-6 people.

Set the seine up at one end of a pool in a stream or one side of an area in a river, lake, or pond. Have one person man each end of the seine. Have the other people start at the other end of the pool or area and walk toward the seine splashing and making noise. This will spook the fish into the seine. Once the herders have gotten close to the seine, lift it up and collect your baitfish.

d) **Cast netting** for baitfish.

- Is anybody familiar with these big round nets? What does their name imply?
- Cast nets are nets that are thrown on to a school of fish that are near the surface.
- This is a somewhat difficult method to master, but after some practice you'll reap the rewards.
- Let's do a little casting.

e) Fishing is the most enjoyable method of catching baitfish.

- The hook and line method is nothing more than going fishing for your baitfish with a rod and reel or hand line.
- Remember that most baitfish are small, so small hooks, small lures, and light tackle are the best tools.
- Bait your hooks with corn, worm pieces, grubs, dough balls, and other small baits that will help you catch the appropriate baitfish.
- Whatever method you decide on to capture baitfish, just remember to take a container to keep your baitfish in.

D. Keeping Baitfish

1. We've all seen baitfish in aquariums at the local bait shops. What are some of the factors that bait shop owners and anglers have to consider when keeping baitfish?

   a) Fish require oxygen, so it's important to keep them in oxygenated water. What can you use to help ensure that the water is oxygenated?

- You can use aerators or oxygen tablets. Aerators send a stream of air bubbles into the water. Oxygen tablets dissolve in the water and release oxygen over time.

- Flow-through containers can be floated in the water next to the boat, dock or shore where you are fishing. They allow water to flow through them naturally, replenishing the oxygen supply. These containers can be purchased commercially or made by punching holes in a large coffee can and covering it.

- Changing the water frequently is an easy way to keep oxygen plentiful if you don't have an aerator, oxygen tablets, or a flow-through container.

- When fish start surfacing is the sign that the water is warm and getting dangerously low on oxygen.

b) Temperature is an important factor for successfully keeping baitfish.

Fish require less oxygen in cool water, and cool water holds more oxygen than warm water.

Refrigerate baitfish or store them where the water is cool and moving. Add some ice cubes if the water starts to get to warm.

Temperatures for Keeping Baitfish
> 75F
most baitfish will die
65 - 75F

shiners, minnows, madtoms (catfish), sunfish, bass, carp
40 - 65F

trout, pike

If you use tap water make sure it is dechlorinated.

c) Feed baitfish commercial fish food, breadcrumbs, oatmeal, corn, or insects.

d) Baitfish do not need a lot of space. They should be put in a container at a ratio of 12-18 small-medium fish for every gallon, or 6-8 larger fish for every gallon.

E. Hooking Baitfish

1. Why do fisherman go to the trouble or expense of getting live bait like baitfish?

a) Fish typically prefer live food, and food that is a normal part of their diet.

b) By feeding them what they are used to eating, our chances of catching them are significantly enhanced.

2. Since fish prefer their food fresh and lively, it only makes sense to hook them in a fashion that allows them to swim freely and look natural. If this is the case, is it important to know how to hook baitfish? Why?

a) You want to be able to hook them in a way that does not injure them and that helps present them naturally to the fish. They should be able to swim about in the water.

b) There are a couple of techniques.

Back hook the baitfish through the back below the dorsal fin when you are bobber fishing. This allows the fish to swim naturally under the water.

Lip hook the baitfish through both lips from top to bottom

when you are using a moving rig. This way the baitfish will be presented swimming in the normal direction, forward.

VII. Frogs and Salamanders

A. Catching Frogs and Salamanders

1. Who can tell me how frogs and salamanders are similar to earthworms?

    a) Frogs and salamanders, like earthworms, absorb oxygen and moisture through their skin.

2. Where would you find salamanders and frogs?

    a) In warm weather, salamanders and frogs can be found in cool, damp places like under logs and rocks or in the water.

    b) In cold weather, salamanders and frogs that live on land burrow into the soil, while those that live in the water dig into the muddy bottom.

3. How might you catch them once you have found them?

    a) Seine along shores with soft bottoms and little vegetation.

    b) Net frogs and salamanders that are visible in the water.

    c) Lift logs and rocks to expose cool, damp areas.

    d) Dangle a small fly, size 8-12, in front of a frog or salamander. It will grab the fly and hook itself.

    e) Set out a light of some kind after dark. This will attract insects, which in turn attracts frogs and salamanders.

4. Can you catch as many frogs and salamanders as you want? **NO**, there are regulations governing the capture, possession, and use of certain frogs and salamanders. Because the regulations change, you had better familiarize yourself with what they say each year so you are not breaking the law.

B. Keeping Frogs and Salamanders

1. How you keep frogs is different from how you keep salamanders. Does anybody know what those differences might be?

    a) Frogs should be kept in a container that provides fresh water, fresh food, ample space, and places for drying, resting, and hiding. Feed them live insects. Hiding, resting, and drying places can be provided with boards and bricks.

    b) Salamanders should be kept according to where they live. You can feed them live insects, worms, or minnows.

        Salamanders that live on land should be kept cool in a container with moist soil, moss, or leaves. Cover it securely but make sure air can get in.

        Salamanders that live in the water should be refrigerated in a container half filled with water. Add some plant debris for cover. Change the water weekly or more frequently if needed.

C. Hooking Frogs and Salamanders

1. What fish do you use frogs and salamanders to catch? Are there any drawbacks to using them?

    a) Frogs and salamanders are very effective bait for panfish, walleye, sauger, catfish, northern pike, smallmouth bass, largemouth bass, striped bass, and muskie can all be

caught using salamanders and frogs.

b) Frogs and salamanders are soft bodied and therefore aren't as durable as other baits. Excessive casting usually kills or damages them. So you need to be especially careful when hooking and casting them.

2. Because of the delicate nature of using frogs and salamanders for bait, there is a special rig that can be used for fishing with frogs and salamanders. It's called a hook harness.

   a) Hook harnesses are popular rigs for nose hooking salamanders and frogs. A hook harness helps keep the bait on the hook.

   b) Hook harnesses are easy to make. Just tie a large rubber band onto the hook right below the eye. Use rubber bands that are from 1" - 4" long. Use smaller rubber bands for smaller frogs and salamanders and bigger rubber bands for larger frogs and salamanders. Picking the right one takes some practice and experimenting.

3. Salamanders can also be hooked just in front of a back leg or through the back.

4. Frogs can also be hooked through a hind leg.

5. No matter what hooking technique you choose, try to ensure that the frog or salamander is uninjured and able to move freely and naturally.

VIII. Crustaceans

A. Catching Crustaceans

· Who can tell me some of the interesting characteristics of crustaceans?

  o Crustaceans range from microscopic crustaceans like water fleas to large lobsters and crabs.

  o They have external skeletons (shells), two pair of antennae, jointed legs, and breathe through gills.

  o They grow by molting, which is the shedding of their shell. When they first molt they are very vulnerable to predation by fish.

  o Some have claws that can pinch and cause injury, so it's a good idea to handle them carefully. Hold them from the back, away from the snapping claws.

· Are there regulations that govern catching and using crustaceans?

  o Crayfish regulations are listed in **Appendix I.**

  o Recreational crabbing and fishing regulations can be found in **Appendix J**.

· We all know that the crayfish is one of the most common crustacean used for bait in freshwater. But what other kinds of crustaceans are commonly used for bait and how are they caught?

  o **Crayfish** are found in almost every freshwater environment.

    · They can usually be found around debris on the bottom or around vegetation.

· Color and size varies with species, diet, and age. Most are red; some are green, brown, tan, or blue with black or orange markings in various combinations.

    · They average between 2"-4", but some can exceed 8" if the conditions are right.

    · The easiest ways to catch

crayfish are by flipping rocks and picking them up individually or baiting a minnow trap with any type of meat. Set traps late in the afternoon and check them the next morning.

- **Crabs** are excellent bait for many inshore and offshore species of fish.
  - The crabs most commonly used for fishing are hard-shelled blue crabs and fiddler crabs.
  - Dip-netting is an easy way to catch crabs clinging to piers, bulkheads, and pilings.
    - Scoop down, alongside, under and up with a long-handled dipnet.
    - Chasing after crabs in shallow water with your dip-net is also an exciting way to catch crabs.
  - Crab traps work well off of piers, bulkheads, and pilings with little effort and little expense.
    - There are various kinds of crab traps but they all work fundamentally the same way.
    - Lower the trap into the water until it hits bottom. When it hits bottom the sides open to allow the crabs to enter the trap. When the rope is pulled, the sides are pulled up and any crabs inside will be trapped.
    - Bait the crab trap with fish heads, chicken necks, or eel and check them daily. Secure the bait to the trap with monofilament.
- **Sand fleas** are small crustaceans, averaging 1" in length.
  - They are found on the beach, at the surf line, digging to disappear before the wave recedes and leaves them high and dry.
  - Dig for them in the sand where you see them. They are usually abundant where one or two are seen.
- **Shrimp** of any kind can be used as fish bait in freshwater and saltwater.
  - Shrimp can be gathered around structure or in shady areas of lagoons, shallow tidal flats, irrigation ditches, and in the middle of the bay.
  - Seining is a popular method for catching shrimp. Seine for shrimp just like would for baitfish.
  - Hand netting is also a popular method for catching grass shrimp.
    - Scoop vegetation with a small fine mesh hand net and dump it into some kind of container of floating box.
    - Shake the container and the vegetation will float and the shrimp will go to the bottom.
    - Remove the vegetation and transfer the shrimp into a bucket or cooler of water.

B. Keeping Crustaceans

- Since crustaceans have gills like baitfish,

how might they be kept over time?

- The techniques on keeping live crustaceans are the same as for keeping live baitfish. Refer to the "Keeping Baitfish" section.
- Crayfish and shrimp can be frozen . Freeze them in plastic bags.
- Feed crustaceans the same things you use as bait when catching them.

A. Hooking Crustaceans

· Knowing what you know about hooking, worms, leeches, insects, and baitfish, what do you think is the most important factor to consider when hooking crustaceans?

- Like other live baits, it's important that crustaceans be able to move around when hooked alive.

· What types of fish have you used crustaceans as bait for?

- Whole live crayfish are great bait for panfish, trout, smallmouth bass, largemouth bass, pike, muskie, striped bass, white bass, and catfish.
- Dead crayfish and shrimp, as well as crayfish and shrimp tails are good bait for catfish.
- Crabs, shrimp, and sand fleas are great baits for striped bass, flounder, perch, kingfish, porgies, weakfish, and other marine species

· **Appendix H** illustrates how crustaceans should be hooked.

- Crayfish should be hooked through the tail whether they are alive or you are just fishing with the tail.

• Shrimp can be tail hooked or head hooked, but avoid putting your hook through the dark spot atop their heads, that will kill them.

- Peeling and shelling shrimp and crayfish leaves you with a piece of shrimp or crayfish meat for bait.
- Crabs should be hooked through the bottom and out the top shell at the point of the shell on either side or in one of the back leg openings and out the top of the shell. Removing their claws makes them easier to handle and more desireable to fish.
- Sand fleas should be hooked from the bottom and out the top shell near the back or threaded on the hook the length of their body. They don't live very long on the hook, but that doesn't seem to bother most of the fish you are after.

VIII. Other Natural Baits –Non-living

· So far, we have only discussed living natural baits. However, there are many kinds of natural baits that are non-living. Who knows and has used some non-living natural baits?

- Who has ever used cut-baits or knows what they are?
  - · Cut-bait is fish that are cut into pieces.
  - · The best fish for cut-baits are oily baitfish such as alewives and shad because their oils give off the strongest scent. But any fish can be used for cut-bait.
  - · There are several ways to cut fish for bait and certain parts of a baitfish that make exceptional cut-bait.
    - Ø Slice baitfish into 1" chunks and use it to bottom fish with. This type of cut-bait is used to fish for striped bass, catfish, and a variety of

marine species.

- Ø The throat tissue of panfish, sauger, and walleyes is very effective bait for crappie, sauger, walleye, white bass, rock bass, and yellow perch. Slice the trailing end to give it action.

- Why would someone use chicken liver to fish with?
  - Chicken liver is one of the top catfish baits. But there are some techniques for using it effectively. Does anyone know of any?
    - Keep it on ice. Never let chicken liver get warm. When it does it will get mushy and impossible to put on a hook.
    - Treble hooks hold chicken liver much better than single hooks.
    - Mix chicken liver with some kind of flaked cereal, breadcrumbs, corn meal, or oatmeal in a blender. This forms a paste that can be easily put on to a bait-holder treble hook. The paste is easier to store and neater to handle than fresh chicken liver.

- **Clam** meat is ideal bait for sunfish, catfish, blowfish, kingfish, porgies, black sea bass, striper, tautog, winter flounder, and in chum mixtures.
  - Clams can be purchased or caught in freshwater and saltwater.
    - You can catch clams by hand in shallow water where their tracks are visible in sandy bottoms, or by digging for them.
    - In deeper water feel for them with your feet and dive to retrieve them.
  - Keep clams for 2-3 days in a bucket of water out of the sun.
  - Remove the meat from the clam.
    - The firmer clam snout is the toughest part of the clam and stays on the hook the best.
    - The softer meat can be cut up and added to the hook in addition to the firmer meat. You can also wrap thread around the softer meat to help it stay on the hook.

- **Stink Baits and Dip Baits** are essentially the same type of bait.
  - Does anyone know what stink baits and dip baits are used for?
    - Both are designed to have strong odors for catfish to scent on.
  - Most use cheese, chicken liver, oily baitfish, or fish blood as the source of their odor.
  - They are usually solid in nature but some come in paste form.
    - Solid baits should be rolled into balls and put on bait-holder treble hooks.
    - Dip tube baits, dip-worms, or sponge hooks into the paste form baits. Some paste baits can be squeezed into hollow plastic lures with holes so the scent can escape.

Stink Bait or Dip Bait Recipe

- One pound of chicken livers.
- One pound of Limburger cheese.
- Small box of Life cereal,

Wheaties, or Corn Flakes.

In a plastic container, mix the chicken livers and the Limburger cheese until they are mushy. Add small amounts of cereal until you have the desired consistency. Seal the container and set it out in the sun for 2-4 days. If the consistency of the bait is solid, roll it into ball and use bait-holder treble hooks. If the bait is in paste form, use dip tube baits, dip-worms, or sponge hooks

IX. Conclusion

Overall, we learned that there's more to natural bait fishing than just putting a worm on the hook and tossing it in the water. Our goal was to learn how to catch, keep, and hook living and non-living natural baits.

How many of you think you reached the goal?

Remember, to be successful at natural bait fishing an angler needs to know how to catch bait, keep it alive, and put it on the hook.

Let's go fishing!