



Making In-line Spinners

Allen Fannin¹ and Ronald A. Howard Jr.²

Objectives

Participating young people and adults will:

1. Practice safe use of spinner making tools and materials
2. Demonstrate proper sequencing in application of materials
3. Demonstrate decision making in lure construction
4. Select and make lures useful for intended species and conditions
5. Demonstrate ability to successfully build spinners
6. Have fun while learning.

Youth Development Objectives

Participating young people and adults will:

1. Develop and enhance fine motor skills
2. Practice critical thinking and decision making
3. Increase organization of work processes
4. Practice practical problem solving skills
5. Enhance spatial and color perception
6. Practice teamwork and cooperation

Roles for Teen and Junior Leaders

1. Organize tools and materials prior to activity
2. Assist other youth as needed
3. Demonstrate techniques and sequences
4. Evaluate efforts of youth with eye to improvement
5. Encourage youth having difficulties

Best Time: Any time, excellent off-season activity

Best Location: Well lighted workbench or work table area

Time Required: 45 to 90 minutes per session

Equipment/Materials

stainless spring wire spinner blades
 clevises bearing beads
 assorted spinner bodies body beads
 treble or single hooks red plastic tubing
 bucktail squirrel tail
 tying thread bobbin
 head cement or epoxy lacquers
 powder paint hackle feathers
 toaster oven if powder paint is used

Safety Considerations

Safety glasses advised when cutting wire
 Exercise normal caution with hooks
 Keep finished lures in boxes
 Use spinner making tools carefully to avoid pinches or cuts.

References

Modern Tackle Craft. C. Boyd Pfeiffer
Luremaking. 1994. A. D. Livingston. Ragged Mountain Press, Camden, ME

¹ Instructor, New York State Sportfishing and Aquatic Education Program, PO Box 62, Westdale, NY, 13483

² Professor and Extension Specialist, Texas Agricultural Extension Service,

Potential Parental Involvement

1. See "Roles for Teen and Junior Leaders" above
2. Act as "learners" to reinforce youth learning
3. Arrange for or provide work area
4. Arrange for or provide materials
5. Arrange for or provide transportation
6. Arrange for or provide refreshments
7. Observe teamwork and cooperation

Lesson Outline

Presentation

- I. Some definitions
 - A. Spinners
 1. Rotating blade on a shaft or snell
 - a. Blade design variable
 - b. Body or lack thereof
 - c. Hook or hooks
 2. Clevis in most styles
 - a. Eases rotation of blade
 - b. Usually against a bearing bead
 3. Uses
 - a. Flash to attract fish to bait
 - b. Lure suggesting fish
 - II. Making a French spinner
 - A. Components
 1. Wire shaft
 2. Spinner blade on clevis
 3. Bearing bead
 4. Body
 - a. Brass body part(s)
 - b. Attractor bead
 5. Hook (treble or single)
 - a. Plain
 - b. Dressed with squirrel tail
 - c. Dressed with red plastic tubing
 - B. Selecting components
 1. Wire size
 2. Blade size, style and color(s)
 3. Clevis size and type
 4. Body parts
 - a. Bearing bead
 - b. Forward body
 - c. Rear body part(s)
 5. Hook type and style
 - a. Short shank, round bend treble
 - b. Plain, tube or hair tail
 6. Closure
 - a. Twisted closure on both ends
 - b. Tucked closure on rear of hook
 - 1) Simple, parallel shank
 - 2) Bent and locked shank
 - C. Making the spinner

Instruction sheets with spinner making tools

Evaluation Activities/Suggestions

1. Observe changes in skill level and confidence
2. Observe interactions of youth and/or adults
3. Observe attention to detail and pattern
4. Observe attention to sequence in construction

Application

DEFINE spinners and **DISCUSS** their use in angling. **NOTE** that the primary element that distinguishes these lures and attractors is the presence of a rotating blade on a shaft or snell that is in line with the fishing line. **POINT OUT** the main components of spinners on some examples or illustrations.

PASS AROUND some examples of clevises and discuss their use in spinner making. **DISCUSS** the importance of a bearing bead to ease rotation.

SHOW some examples of various spinners or Atrolls® used in fishing locally.

LAY OUT the components for a French spinner for each participant. **DEMONSTRATE** the process of making the lure and set the completed lure where it is accessible as a model.

NOTE that the body parts are selected to balance the blade and the use of the spinner.

SUGGEST that a plain hook or one with a bit of red tubing is easier until fly tying skills are developed.

NOTE that components must be balanced to each other. Wire size, blade size, body parts, and hook size and style influence the balance and fishability of the lures.

DISCUSS the use of a short-shanked, round bend treble hook in this model, noting that single hooks or dressed hooks may be substituted if desired.

ILLUSTRATE or **DEMONSTRATE** the types of closures used in spinner wires.

1. Bend closed loop on one end of wire
 - a. Spinner maker method
 - 1) Bend free end of shaft out
 - 2) Form loop
 - 3) Bend free end out again
 - 4) Oppose free ends and spin to close
 - b. Round-jawed pliers method
 - 1) Bend free end of shaft outward
 - 2) Grasp free end behind bend it around the pliers in a tight loop
 - 3) Bend the free end at right angles to the shaft
 - 4) Hold loop with round-jawed pliers
 - 5) Grasp free end with needle-nose pliers
 - 6) Wrap free end tightly around shaft
 - 7) Carefully twist or break off excess
2. Slide front bearing bead in place
3. Place blade on clevis, convex surface forward
4. Slide clevis and blade onto shaft
5. Slide bearing bead into place

6. Slide front body onto shaft
7. Slide rear body or bead onto shaft
8. Bend open rear loop behind body parts
 - a. Either type of tool works well here
 - b. About same size as front loop
9. Dress hook if desired

10. Slide hook into rear loop
11. Measure free side of shaft against body
12. Close rear loop
 - a. Closed loop method - see above
 - b. Open loop method
 - 1) Cut free shaft barely overlapping rear of body when fully forward
 - 2) Work free shaft into rear body
 - 3) Work body back over both shafts

III. Making a Swiss Swing (C.P. Swing) spinner

- A. Components
 1. Closed loop wire shaft
 2. Swiss blade and clevis
 3. Bearing bead
 4. Two tapered bead bodies
 5. Treble hook with or without dressing
- B. Component selection
 1. Size the lure to use
 2. Match components to spinner blade
 3. Select hook to purpose and size
- C. Making the lure
 1. Form a closed loop on the wire shaft

DEMONSTRATE making a closed loop with the tools available to the participants or **PROVIDE** a closed loop shaft as a starting point.

NOTE that twisting or bending the excess wire to break it off leaves a smoother, less sharp end on the wire, reducing the probability of being cut off by contact of line and lure.

REINFORCE the need to have the convex side of the blade forward.

STRESS the importance of the bearing bead for free rotation of the spinner.

DEMONSTRATE forming the rear loop and bending it back along the shaft of the spinner.

NOTE that the hook is most easily dressed before it is placed on the lure.

DEMONSTRATE clipping the short arm of the loop and tucking it under the body before working the body back over the paired shaft parts.

PASS AROUND a sample of the Swiss swing spinner that is being made.

LAY OUT the components needed for the spinner at each work station.

DISCUSS the reasons behind the selection of the components for this lure, stressing utility in local fisheries.

2. Place blade on clevis
3. Slide clevis and blade onto shaft
 - a. Convex side forward
 - b. Back up with bearing bead
4. Build body
 - a. Small end forward on first bead
 - b. Large end forward on second bead
5. Form rear loop
6. Slip treble hook on loop
7. Close loop using either method

IV. Making ripple blade (Shyster) spinner

A. Components

1. Open loop shaft
2. Dressed treble hook
3. Painted body sized to blade
4. Blade matched to body
5. Clevis and bearing bead

B. Making the lure

1. Dress hook with desired materials
2. Form open loop wire
 - a. Short arm slightly longer than body
 - b. Long arm about 1 inch longer
3. Slide hook onto wire loop
4. Slide body onto both wires
 - a. Slotted end forward
 - b. Lock in place - bend short arm in slot
5. Apply bearing bead (s)
6. Apply ripple blade on clevis
7. Form front eye
 - a. Allow about c inch free space
 - b. Form line attachment eye
 - c. Close with 3 or more wraps of wire
 - d. Trim excess wire closely

V. Making an in-line (Panther Martin) spinner

A. Components

1. Closed loop wire
2. Blade and bearing bead
3. Body painted as desired
4. Treble hook with dressing

B. Making the lure

1. Form closed loop on wire
2. Slide blade onto wire shaft
3. Slide bearing bead onto shaft
4. Slide body onto shaft
5. Form open loop at rear
 - a. Slide body forward
 - b. Bend open loop
 - c. Trim short arm of loop - 3/4 inch
6. Slip treble hook onto tail loop
7. Close loop by applying tying thread

START the assembly by forming a closed loop on a wire shaft or by using a closed loop shaft as provided.

HANG the blade on the clevis and slide the clevis onto the wire. **REMEMBER** to place the convex side of the blade forward (toward the closed loop) and to back it with a bearing bead.

ASSEMBLE the two body elements by placing the beads so the lure tapers down to both ends.

FINISH as was done previously.

LAY OUT and **DISCUSS** the components for a ripple blade spinner.

CONSIDER using pre-dressed treble hooks for youngsters with minimal tying skills.

DEMONSTRATE making an open loop shaft with both arms of nearly equal length.

NOTE that this lure is constructed most easily from the hook to the eye, rather than in the fashion used in the previous examples.

REMINDE participants to keep the slotted end of the body forward so it can be locked in place by bending the short shaft.

NOTE the importance of the bearing bead(s) in keeping the blade from lodging against the body for better action.

DEMONSTRATE and supervise forming a closed eye on the front end of the lure.

NOTE that in-line spinners differ in that the blade is designed to ride on the spinner shaft rather than on a clevis. This free-spinning type of lure has an excellent fish catching reputation.

PASS OUT the components used in this lure to participants at each workstation.

ASSEMBLE the lure through the lure body as in the previous several spinners. Where a teardrop body is used, place the heavy end to the rear, and slide the body forward tightly against the blade and front eye.

DEMONSTRATE forming an open loop at the rear of the body, leaving a small piece of the shorter end of the shaft near the start of the loop, trimming the end carefully.

- a. Wind over both shafts
- b. Smooth even wraps
- 8. Apply long, soft hackle over rear loop
 - a. Attach close to loop
 - b. Wind hackle forward
 - c. Bind down and trim hackle
 - d. Whip finish and trim thread
 - e. Apply head cement or epoxy
- 9. Slide body back over base of wraps

VI. Making a bait drifting spinner

A. Components

- 1. Leader material (matching use)
- 2. Plastic or glass beads as desired
- 3. Bearing bead
- 4. Spinner blade of choice
- 5. Clevis as needed
- 6. Bait hooks (3)

B. Making the rig

- 1. Snell a bait hook in the usual manner
- 2. Carefully snell two additional hooks
 - a. Watch hooks when snelling
 - b. Space appropriately
- 3. Slide beads onto snell in front of hooks
 - a. Select size and color for purpose
 - b. Enough to keep blade clear of hook
- 4. Slide bearing bead onto snell
- 5. Slide clevis with blade onto snell
- 6. Apply a forward bearing bead
- 7. Tie a loop or attach a swivel to snell
 - a. Perfection loop
 - b. Surgeon's loop
 - c. Kreh loop knot

ATTACH a plain treble or single hook, then **CLOSE** the eye by binding the two shafts together with several layers of tying thread.

CATCH the loop in a vise, and **BIND** in a long, soft hackle that matches the lure color. **WIND** several turns around the shaft and **BIND** off the hackle.

WHIP FINISH and **TRIM** the thread before applying several drops of head cement or epoxy and sliding the lure body back against the hackle.

NOTE that many species can be caught using a trolled, cast or drifted bait with a spinner as an attractor in front of the bait.

GIVE each participant the components to make a bait-drifting spinner that is appropriate to the area. **ALLOW** some freedom in selecting spinner blade style, color and size as well as bead color and size if possible.

DEMONSTRATE the snelling process for the hooks. For younger or less skillful participants, consider having pre-snelled hooks available on lone leaders so they can simply assemble the beads and spinners.

STRESS the role of the beads in keeping the spinner blade(s) away from the bait or other blades.

PLACE the bearing bead and clevis with blade on the snell, adding a forward bearing bead if desired.

TIE a strong loop knot (like any of those suggested) to complete the rig.

COMPARE this rig to the cowbells or daisy chains of spinners often used in trolling for salmon, lake trout and other fishes.

ENCOURAGE participants to develop their own specialized spinners, e.g. Erie rigs, tail spinner lures, horse head jigs with spinners, etc. **NOTE** that the processes are quite similar to those already learned.

Summary Activity

Lead the participants in comparing their lures to similar ones manufactured by lure companies or the instructor. Have them critique each lure and discuss ways of improving their models or the skills that they learned and the ways they devised to meet challenges posed by each lure type.

Lesson Narrative

A Few Caveats

These activities are relatively simple to moderately complex. They involve a series of common skills that translate among the types of spinners being made. Commercially available components are best used with beginners, but more advanced participants could even attempt to modify those components or make their own. You, the leader, need to determine the skill level of the kids, the challenge level they can handle, and the amount of the lesson to be covered. Simply making one spinner by observing a commercially available lure and copying it may be all the challenge they need. On the other hand, they may want to create and test

a design that they develop for a particular species, body of water and condition. We strongly advise maintaining central control over components, however. There is a strong tendency to get very “creative” and make lures that consume large amounts of material without having much potential for productive use. These creations are unlikely to be productive and they increase the cost of the project immensely. Controlling inventory is a critical issue, particularly if you are purchasing materials on a limited budget.

Any part of this process may be interrupted without appreciable impact on the ultimate product, but satisfaction is greater if the kids are able to complete a lure within the time frame available to them. Approximately an hour will permit completion of any of the lures contained in this lesson, and faster kids may complete several. You may wish to break the lesson up into a series of sessions in which one or two lures are featured in each session.

Small groups or a high leader to learner ratio are strongly advised. Teen or junior leaders are among the most effective once they have mastered the processes themselves. For rank beginners, a ratio of 1:1 or 1:2 is recommended. Once they gain some experience, that ratio can be increased to as much as 1:5 or even 1:10.

Spinners

Spinners are lures or attractors featuring rotating blades on shafts or snells. They are attractive to a wide variety of game fishes either on their own or in combination with flies, spoons, plugs or live baits. As their name implies, they feature a spinning or rotating blade that creates both vibration and flash or movement to attract fish. Many styles and types are commercially available. Nearly all of them share several elements - a shaft or leader, a rotating blade, and a hook. Many of them include a lure body of some type.

The rotating blade is the primary attractant in spinners. Blades may be designed to rotate directly on the shaft or leader like the in-line blades or junebug style blades; but most of them are designed to be used with a clevis, a loop of metal or plastic that rides on the shaft and permits the blade to rotate around it. Blades are available in a wide variety of shapes and finishes. Their shapes influence their fishing characteristics like normal depth on retrieve, ease of rotation at various current or retrieve speeds, amount of flash and vibration, and rotation rates. Broad blades, like Colorado or Idaho blades, are relatively heavy; but they rotate easily and have high drag levels. This makes them ride fairly high in the water and may cause them to plane upward in heavy current. On the other hand, they will turn at very low retrieve rates, and they provide a large reflective surface for lots of flash. Very slim blades, like willow leaf blades, will lie closer to the shank, run deeper, rotate more slowly, and have less mass for their size. Indiana blades, with their narrow egg shape, and swing blades with their long oval (elliptical) shape are intermediate between these extremes. Some blades, like the French blades, feature a raised portion designed to create an attractive vibration as the blade rotates. A similar claim is made for rippled blades.

Some simple spinners have only the bare essentials - a shaft connecting line to hook, a bead or two to allow the blade room to rotate, and a blade on a clevis. These may be used as a lure or as an added fish attractor with trailing bait. More complex lures involve variations in blade size, shape and color, variations in body mass, shape and color(s), and dressings of the hooks. These added features can enhance the performance of the spinner as a stand-alone lure. We will be making examples of several of the more commonly used spinners.

Spinner Making Tools and Materials

Spinners can be made with only a few basic hand tools, or they can be made with specially designed wire forming tools. At a minimum, a spinner maker should have a set of cutting pliers, needle-nosed pliers and round-jaw pliers or a suitable form to aid in forming the eyes on the wire. Specialized wire forming tools range in cost from about \$10 to over \$100. They can speed construction significantly, but would not be worth the cost unless a considerable number of spinners were being made. Expansion from the basic set might include flush cutting pliers (end-cutters), diagonal cutting pliers, or even flat-jawed pliers; but there is no need to be overly expensive.

While some types of bodies can be cast from lead or suitable substitutes, most of the brass bodies are beyond the skill or interest level of beginning spinner makers. Thus, brass body parts should be selected

and purchased either plain or with a finish already applied. Spinner blades likewise could be made, but for consistency and proven performance buying quality blades is recommended. Modifying them with paints, dips or other treatments is clearly acceptable, although a nearly limitless array is available from tackle crafting catalogs at very moderate cost. Beads, whether part of the body or as bearings can be purchased in quantity very inexpensively. Two primary types of clevises are readily available - stirrup and folded. Both types are adequate for in-line spinners. Stirrup clevises are somewhat more expensive and less likely to get fouled or deformed. Folded clevises are fine for most spinner applications and less expensive. Both of them are available in a variety of sizes, often in brass or chrome finishes. The appropriate sized clevis should allow the blade to turn freely while letting the tip of the blade clear the shank of the lure while spinning. Excessive size and mass should be avoided.

Nearly any treble hook or straight shanked, ringed eye single hook can be used in spinner making. Our preference is for round bend, short shank trebles on most of these lures. Simply match the hook size to the rest of the lure for maximum effectiveness. Hooks can be dressed in many ways with hackle, hair, flank feathers, tubing, or skirts of one type or another. Stainless steel spring wire in sizes from about 0.020 to 0.045 should meet nearly all requirements for spinner shafts.

Making a Basic French Spinner

Components - The spinner being constructed here requires a closed eye, wire shaft, a silver or brass French blade, a clevis, a bearing bead (a small bead right behind the clevis), a set of body components, an attractor bead, and a hook. The body parts should conform to the size of the spinner blades being used. Blades in sizes 00 to 1 are commonly used for small trout, smallmouth bass in rivers, yellow perch, and similar fishes. Sizes 1 and 2 are often used in fishing for walleyes, bass, larger trout, pickerel and small pike. Sized 3-5 are more often used for largemouth bass, pike and similar fish on heavier tackle.

From an instructional point of view, having a limited array of parts, controlling access to them, and making a consistent product is easiest and it limits the costs involved as the beginner learns spinner making skills. The wire should be stiff, but thin enough to pass through the hole in the attractor bead when doubled. (about 0.24 to 0.35 inch stainless). Pick the blade size and color for the type of fish being sought and the water conditions in your area. Once the blade is picked, select a clevis, forward body, rear body, and attractor bead (if desired) to match the blade. A bearing bead and a suitable sized treble hook complete the lure. If a dressed hook is desired, either add a small piece of scarlet tubing or a bit of squirrel tail to the hook.

Lay out a set of tools and materials for the spinner at each work station, and be prepared to supply additional clevises and bearing beads if necessary.

Making the Lure - Start with either a closed loop wire form or a piece of wire on which a closed loop can be formed. With a spinner maker, use the rotating pins to form a loop by bending the wire outward about 1/2 inch from the end of the wire. Then bend the end around the stationary pin with the movable one. This forms an open loop. Place the loop over the endpin on the frame of the tool (aligned with the rotating head). Place the wire in the head with the short end up, and rotate the head while pressing it toward the frame. This will form a tightly wrapped closed loop.

If round-jawed pliers are used, bend the end outward, and then form an open loop with the pliers. Note that the location on the jaws controls the size of the loop. Once the open loop is formed, keep the round-jawed pliers in the loop, grasp the short end of the wire with the needle-nose pliers, and wrap it tightly around the shaft. Bend or twist any remaining wire to break it off. This provides a cleaner and less sharp edge on the wrapped wire.

Place the blade on a clevis, and slide the clevis and blade onto the wire shaft, making sure that the convex side of the blade is facing forward (toward the closed loop). Next, slide a bearing bead on the shaft behind the clevis. Follow the bearing bead with the front and rear body parts, orienting them as they are in the model. If desired add a bright attractor bead behind the rear body element. Slide all these parts forward and form an open loop as you did on the other end of the shaft. With the body elements against the forward eye, clip the free end of the wire so it just slightly overlaps the rear of the attractor bead. Slide the hook in place, and then press the cut end down until it snaps into the hole in the attractor bead. Slide the bead down

to the base of the loop and let the body parts fall into place. Your French spinner is complete. If desired, a closed loop may be formed on this end as well.

Making a Swiss Swing Spinner

This lure approximates the well-known C.P. Swing spinner. It consists of a fish-scale finish blade, clevis, bearing bead, two tapered body parts resembling stacked beads, and a treble hook. As with the previous lure, the components of this one should be selected for utility in the local fisheries.

Making the Lure - Start by forming a closed loop on the wire or selecting a spinner shaft with a closed loop already formed on one end. Place the blade on the clevis with the convex side forward and slide the clevis and blade onto the shaft. Add a bearing bead behind it to assist in rotation. Place a pair of body elements resembling three stacked beads each on the shaft. The first one should have the small end forward. The second should have the small end to the rear, giving a double tapered effect. Form the rear loop, slip the treble hook onto the loop, and close it using either the open or closed loop method.

Making Ripple Blade Spinner

This model resembles the Abu-Reflex or (Shyster) style spinners. They feature very heavy brass bodies and rippled blades that are reputed to produce a fish-attracting vibration when retrieved. The bodies are usually painted on the commercial models, and any painting that is to be done should be accomplished before the lures are assembled. If a dressed treble hook is desired, the feathers or hair should be attached before the hook is placed on the lure. This spinner making process uses an open-loop shaft and starts from the rear of the lure, working toward the front. As before, all components should be selected to match and to be useful in local fisheries.

Making the Lure

Start by painting the body, if desired. Combinations of red, white, yellow, orange and black with one color being the ground color and the other arrayed in spots on the body are commonly effective. Scale patterns can also be used (see the painting lesson for techniques). If a dressed treble hook is desired match the colors in the body with dyed duck breast feathers, attaching them streamer style around the hook. The dressing should look the same from all sides. Once these painting and hook dressing activities are completed (it could be done in an earlier activity or as an exercise by more advanced participants), the lure is ready for assembly.

Start by forming an open loop wire with both ends of the wire slightly longer than the body, and one end about an inch longer than the other. Slide the dressed hook onto the loop first. Note that one end of the body has a small slot cut in it. This is provided so the short arm of the shaft can be locked in place. Slide the painted body onto the paired wires, keeping the slotted end forward. Bend the short shaft into the slot, and trim it closely.

Next, apply a bearing bead or beads to keep the clevis away from the body. Place the ripple blade on the clevis with the slightly convex side forward, and slide it onto the wire. Leaving about 1/4 inch of space in front of the clevis, begin to form a closed eye as was done previously. Close that eye with three or more turns of wire and trim the end closely. Your ripple blade spinner is ready for some action on the water.

Making an In-line Spinner

Some spinners are made with blades that do not require a clevis. They ride on the wire shaft, with a design that makes them rotate very freely. The Panther Martin spinners are among the popular lures of this type. They can be constructed using a closed loop wire, a blade and bearing bead, a tear-drop shaped body painted in the desired color(s), a treble hook, and some long, soft hackle as a dressing. The hackles can compliment or contrast with the body materials, and they are applied to the rear of the shank, not to the hook itself.

Starting with a closed loop shaft, slide the blade onto the shaft with the primarily convex side forward (note that there is a concave area right around the hole in the blade. Slide a bearing bead onto the shaft immediately behind the blade. Slide the body onto the blade behind the bearing bead. If it is a teardrop shaped one, the small end goes forward. Form an open loop at the rear of the shaft, leaving about 3/4 inch

of the shorter arm. Slip the treble hook onto the open loop and place the bend of the loop in a tying vise. Apply several wraps of tying thread over the paired wire shafts, binding them smoothly in place. Add a drop or two of head cement, C-A glue or epoxy to each layer as it is applied. Bind in a long, soft hackle of the desired color just ahead of the rear loop, and wind several turns in place. Slick it back slightly and wrap over it in a smoothly cone-shaped "head." Whip finish and trim the thread, applying additional finish to the thread wraps. Slide the body back against the thread, and the spinner is complete.

Making a Bait Drifting Spinner

Drifted or trolled baits can be presented with a spinner in front of them to increase their attractiveness. In this situation, the spinner or spinners are applied on the snell or leader for the rig. These rigs are useful in both fresh and saltwater situations for species like walleye and summer flounder. Similar arrangements, often consisting of multiple spinners on a long leader can be used in trolling lures for species like lake trout or salmon. In that situation, the Acowbells® may be trailed by a spoon or plug attached to a longer leader behind the flashers.

Since ours is a bait rig, we require a length of fairly stout leader material, an assortment of plastic or glass beads, small bearing beads, a clevis and spinner blade of choice, and a set of bait hooks in an appropriate size. For a worm harness, three hooks is about right, while those used to troll minnows or strip baits may use only two and a leach bait may need only a single hook. A sleeve may be used to keep the blade and beads away from the front hook or to separate multiple spinners when they are used.

Making the Rig

Using a snell knot (see Knots lesson), attach an appropriate sized bait hook to one end of a piece of monofilament leader approximately 18 inches long. Once that knot has been cinched down and trimmed, repeat the process by spacing two additional hooks on the leader about two inches apart. Be careful around the hooks already attached when snelling these additional hooks. It is often easiest to control the distance between the hooks by drawing the previous hook up against the one currently being snelled and leaving enough material in the open loop of the knot to properly position the hook when it is snugged down. Experience is the best teacher here, and the placement of the hooks need not be precise as long as they engage the front, middle and back of the bait being used (e.g. a nightcrawler or strip bait). Slide a few beads on the leader in front of the last hook, selecting their sizes and colors for the desired effect but making sure that they allow adequate clearance for the spinner blade. If small beads have not already been applied, place a bearing bead on the leader immediately prior to attaching the clevis and spinner blade. Making sure the spinner blade is properly oriented, slide the clevis and blade combination onto the leader; and follow it with an additional bearing bead in front of the clevis.

Finish the rig by either attaching a swivel to the leading end of the rig with a Palomar knot or improved clinch knot or forming a loop in the monofilament. Note that in rocky terrain where hang-ups are common omitting the swivel can reduce the cost of lost tackle by a bit. On the other hand, they do an excellent job of controlling line twist and allow easy attachment of the line to the terminal tackle. If a loop knot is used, consider using a perfection loop, surgeon's loop or Kreh loop to complete the rig.

To control the rig until it is ready to use, attach it to a hook holder/stretcher; or coil it carefully and wrap it in a small square of aluminum foil or place it in a very small plastic bag. Bagging the rig allows quick reference to the characteristics of the rig, but hook points frequently penetrate the bag material. Wrapping it in foil requires labeling to indicate the content of each package, but tends to be more secure with respect to hooks. Stretchers seldom have enough attachment points to handle the hooks and often expose the rig to oxidation.

Among my favorite uses for these rigs is drifting nightcrawlers for walleye. Add enough weight to maintain contact with the bottom under the current conditions. Cast up and across the holding area, and allow the spinner to tumble and rotate as it precedes the crawler through the lie. Be prepared for a "rider" as the fish grabs the bait and swims along with it.

Creating Other Spinner Rigs

Using the techniques learned in this lesson, you can create your own rigs and lures. Erie rigs are a type of

weight forward spinner with a lead head, followed by beads and a spinner blade. Either a bait hook or a lure of some type follows it. Tail spinner lures can be cast, painted and equipped with an appropriate spinner to attract fish that tend to live deep in the water column. Horse head, pony head or stump jumper type jigs with spinners rigged to a bottom swivel are also outstanding lures for many species. Similarly, spinner baits or buzz baits can be created with the combination of flash, color and vibration to attract local gamefish. The principles are all the same as those used in in-line spinners with relatively few modifications or extra considerations. Those interested in making the latter lures may wish to follow up with the lessons on spinnerbaits and buzzbaits.

Exhibit or Sharing Suggestions

1. Create an exhibit showing the steps in making an in-line spinner of your choice. Label each step with a simple description of the task being performed in that step. Exhibit your work in an appropriate location.
2. Experiment with various spinner components (bodies, blade sizes and styles, bearing beads) and record your observations. Discuss the influence of the components on lure performance and speculate on the factors that might be contributing to the observed differences. Share the results of your experiment in an appropriate setting.
3. Create a series of spinners and display them appropriately. Discuss their uses, advantages and disadvantages for various fishing situations. Exhibit your display in an appropriate location or setting.
4. Create a series of spinners and test them under local conditions. Record their performance and their success rate on various fishes under a variety of conditions. Attempt to determine the factors that may have made some of them more successful than others, e.g. size, amount of flash, weight of the body and blade, color, rotation rate and angle, and any other items you think might be important. Exhibit your work in an appropriate setting.

Community Service and "Giving Back" Activities

1. Show other youth how to make spinners as an after-school or youth center activity.
2. Prepare spinners that can be used in a local sportfishing program or introductory angling program in your locality. Make sure the spinners you make will be attractive to the fish being sought.
3. Lead a spinner making class for a community education program or senior citizens day. Bring along some friends who know how to make spinners and assist the others in making their own.
4. Consider making and selling spinners as a fundraiser for your local 4-H club or another worthy cause.
5. Conduct a program on spinner making and spinner fishing for a local angling club or similar organization.

Extensions or Ways of Learning More

There are many ways to extend your learning in spinner making. Try making your own blades using various sizes of shim stock or other metals. Compare the rotation rates and angles of various types of spinner blades and of various sizes and weights within a particular style of blade. Compare the spinners at slow speeds, fast retrieves, in heavy current or in the slack waters of lakes. Compare blade colors under a variety of weather conditions. Record your observations and attempt to compare them using simple statistics or visual comparisons like bar graphs or pie charts. Observe fish and their reactions to spinners of various types, shapes, sizes, colors and weights. Attempt to relate your observations with the fish catching ability of the lures and use those observations to design your own for testing.

Links to Other Programs

Links to the rest of the sportfishing program are clear and obvious B particularly to angling skills. Note that the skills learned can be used to assemble some types of arts and crafts, e.g beadwork or jewelry

construction. The application to aquatic ecology is clear in relating the behavior of fishes toward the lures and the relationship that holds to the behavior and feeding habits of the fishes being observed. Of course, anything that leads into aquatic ecology relates to water quality and watersheds as well. Environmental education as a whole is approachable from this viewpoint. Illustrated talks, demonstrations and much more can be created from the processes, and leadership is easily applied when the young person leads in community, club or other service activities. Remember that the primary thing young people learn from our programs is how to interact socially with other people. Concentration and observation skills are enhanced, and positive family time are also intentional by-products of the learning.