

Take a Kid Fishing

Beginner's Unit
Leaders' Guide

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Developed by:

Ontario Ministry of Natural Resources

Ontario Federation of Anglers & Hunters

Ontario 4-H Council

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Take a Kid Fishing Project Welcome!



It has often been said that, "Volunteer 4-H club leaders are a blend of friend, teacher and parent." That's a big order to fill! But you will discover that you have many talents as a 4-H volunteer. Having an interest in young people and their development and being willing to take up the challenge of 4-H leadership is the first step to success.

This project focuses on the many different aspects of fishing. However, the development of members as individuals is your real goal. You will get to know the club members and where their interests lie very well. Use this knowledge, as well as your own expertise and imagination to plan a fun, interesting and challenging club program for your members. Enjoy being a 4-H club leader!

Before the project begins leaders will:

- familiarize yourself with current provincial and local 4-H policies;
- attend a leader training session (if scheduled);
- advertise the project and organize a club with a minimum of six eligible members and one volunteer leader per club except in cases deemed to be unique and approved by the local 4-H Association; and
- review available resources and begin planning the club program.

During the project leaders will:

- attend each meeting and the Achievement Program
- assist members in planning and presenting the club program

- provide a FUN atmosphere in which members can learn and make new friends
- ensure the club membership list is completed and membership fees are collected - forward these to the designated person in your area before the second meeting
- order awards and project and name plates once membership list is completed
- help each member to set and achieve goals for personal development
- encourage members to work together as a group
- provide guidance in choosing and completing an Achievement Program
- evaluate the club program and share the results with the 4-H Association

4-H Club Program Planning

A successful 4-H club doesn't just happen! Careful planning is necessary and very important. As a 4-H leader, you have a responsibility to do the best job you can in providing a fun, learning experience for the 4-H members. Planning will make this a reality.

The 4-H Volunteers' Handbook has lots of valuable information to help you and your members plan a successful club program. Refer to "The 4-H Meeting" section of your handbook for tips on planning successful meetings, effective communication, games, judging and special events. The chart on page iii can be used to record your plans.

4-H Club Program Planning Chart

(copy as many as required for each year)

Meeting or Event	Date	Topic, Activity or Task	People Who Could Help	Presentation Ideas To Consider

What Is An Achievement Program?

An Achievement Program is:

- an opportunity for members to share the knowledge and skills they have gained during this 4-H project
- each member should be involved in some way
- informs the public about the purpose and goals of the 4-H program

Achievement Program ideas specific to this project are suggested below, and on pages 185-186. Involve club members in selecting a suitable idea and making the necessary preparations.

Achievement Ideas

There are lots of things that you can do to help your members celebrate their accomplishments in the Take a Kid Fishing Project. Because an achievement program is required in order to complete this club, you will want to make sure that you put a lot of thought into making it fun, rewarding and interesting for everyone involved. Your members will be looking to you for guidance, but some of them will have good ideas. Here are some ideas:

- put up an educational booth at a fair, plowing match or community event that explains what your club does, and gives information on fishing and fish ecology and biology
- create and produce an educational video which will promote fishing and looking after our water resources

The First Meeting

- Build an internet website for your Take a Kid Fishing club.
- Set up a display in a shopping mall, outlining the purposes of 4-H and showing your club's activities

Objectives

To have members and leaders get to know each other

To have all 4-H members understand the structure and format of the 4-H club meeting

To elect a club executive who will be responsible for the business portion of the meetings

To have members understand what is expected of them for club completion requirements

In your first meeting with each club, include the factsheet "Take a Kid Fishing Welcome" and the activities listed in this section.

Welcome and Get Acquainted

- Welcome the members and conduct an ice breaker to help members and leaders get to know each other.

Getting Started (10 minutes)

- Begin with the **4-H Pledge**. Post a copy so everyone can see it.
- Complete the **membership list**.
- Outline the **opportunities** members have such as taking part in the local fairs and shows, "4-H Go For The Gold," 4-H Members' Conference, etc.
- Distribute "4-H Club Member Lives Here" and 4-H "Club Project" **signs** if available.
- Distribute the **Take a Kid Fishing Project Welcome** factsheet.
- Discuss the members' **requirements** for the project (see Welcome factsheet). Outline any expectations you have of the members.
- Briefly discuss the **Achievement Program** – type, date, time, location.

The Last Meeting

A Road Map to Good Meetings (20 minutes)

- It is important for everyone to become familiar with the basics of running a good meeting. Review with members the purpose of an agenda and the executive's responsibilities. Have the club members elect an executive and complete the chart in the factsheet.
- Refer to the 4-H Volunteers' Handbook and the OMAFRA Factsheet, *Procedures for Meetings* (96-009).

A Certificate of Completion and a Project Summary have been included in this Guide, pages xii and xiii. Your signature on either of these indicates you feel the member has completed the project to the best of his or her ability. Space is provided for you to add some individual comments to offer encouragement to the member. The Project Summary sheet also asks for written feedback from the member and his or her parents or guardians. (The questions on this sheet have been selected from the informal evaluation sentences, listed below.) Select whichever sheet best meets your needs and make copies for the members.

It is recommended that the certificates not be awarded until the Achievement Program. If you give them out before this time, some members mistakenly assume that they don't need to participate in the program.

Informal Evaluation

Take a few minutes at the last meeting to do an informal evaluation with members. One way to do this is to ask them to complete one or all of the following sentences.

- I joined this club because ...
- I really enjoyed ...
- I didn't enjoy ...
- I had a hard time ...
- My favourite meeting activity was ...
- My least favourite meeting activity was ...

- If I was to take this project again, I would change ...
- I learned ...
- I've changed ...
- I'm glad ...

It Worked For Us!

Your experience in leading this club would be helpful to another leader in your area. You are encouraged to make some comments about the project, what resources you discovered locally and the members' feelings about the project and pass this information on to your 4-H Association and to the Ontario 4-H Council is interested in your comments too. Their address is below under Feedback.

Special Notes For This Project

- Remember to refer to your 4-H Volunteers' Handbook. You will find many useful tips and ideas covering topics such as program planning, successful meetings, parliamentary procedure, and effective communication and presentation methods. Refer to your Volunteers' Handbook as you plan meetings. If you do not have a handbook, please contact your 4-H association.

Feedback

The Ontario 4-H Council reviews and evaluates 4-H resources. Comments and suggestions about 4-H manuals and guides are always welcome. They may be sent to the following address.

4-H Resource Development
Ontario 4-H Council
R. R. #5 Guelph, Ontario
Phone/Fax: 1-800-937-5161
Email: lduke@ntl.sympatico.ca
Website: <http://www.4-HOntario.ca>

Kids Help Phone

Kids Help Phone is available to over 7 million children and teenagers throughout Canada. It is a national, bilingual, confidential, toll free helpline staffed by paid, trained professionals. In response to the problems and concerns of our youth, Kids Help Phone provides a listening ear, emotional support, counseling, information and referrals. Children and teens from anywhere in Canada can call anonymously 24 hours a day, 365 days a year.

Children and teens can call about anything that is bothering them including – abuse; drugs; alcohol; conflicts with parents, friends or teachers; pregnancy; sexuality; suicide; or parental separation and divorce.

Please mention this number to your members and explain what it is for. Make sure they know that it is free and they don't have to give a name or address.

The Kids Help Phone gets 1000 calls a day ... 2000 more get a busy signal. If you or your club or someone you know would like to make a donation to the Kids Help Phone, call 1-800-268-3062.

**Thank You for
Being A Volunteer
4-H Leader!**

Take a Kid Fishing

Welcome to Members

The Ontario 4-H Program provides opportunities for the personal development of youth.

The 4-H Pledge

"I pledge
My HEAD to clearer thinking,
My HEART to greater loyalty,
My HANDS to larger service,
My HEALTH to better living,
For my club, my community and my
country."

General Requirements for Members

- attend 2/3 of the meetings
- complete the project to your leader's satisfaction
- attend the achievement program

Members Meeting Schedule

	Date	Time	Place
Meeting One			
Meeting Two			
Meeting Three			
Meeting Four			
Meeting Five			
Meeting Six			
Achievement Program			

PROJECT SUMMARY – Take a Kid Fishing

(complete at the end of the project)

A. Member Comments:

I joined this club because _____

I really enjoyed _____

I didn't enjoy _____

If I was to take this project again, I would change _____

I learned _____

I'm glad _____

B. Parent/Guardian Comments:

C. Leader Comments:



Take a Kid Fishing Project

*Congratulations on successfully completing
this 4-H project.*

Date

Club Leader's Signature

WELCOME TO *TAKE A KID FISHING!*

Fishing is an activity with both environmental and social benefits that can also become a lifelong passion. Fishing can link people and our aquatic resources in a fundamental and practical way, a way that can generate caring, responsibility and action to protect, rehabilitate or enhance those resources. It can also generate memories which will last a lifetime.

Research shows that the sooner you can “hook” someone on fishing, the longer, on average, they will fish. We designed this **Take A Kid Fishing** Program with that in mind. It is full of hands-on, discovery-based activities and fishing opportunities that not only teach fishing skills, but also introduce kids to fish identification, biology, ecology, management and personal responsibility. We want to “start ‘em young and start ‘em right”, so that they will care for the resource as long as they fish.

The program will eventually contain three units: beginner, lake fishing and stream fishing. These units will be designed to capture young people at any level of fishing ability, as well as provide a graduated approach that will take kids with little or no experience and turn them, over time, into anglers of some sophistication – anglers who realize that fishing is far more than filling the freezer.

The Beginners Unit

The goal of this program is to develop a new generation of anglers who:

- understand aquatic ecology;
- are aware of and appreciate Ontario’s precious and diverse aquatic resources;
- feel a sense of responsibility and stewardship toward those resources; and
- not only understand how to catch and selectively release fish, but how to do it in a safe, ethical and responsible manner.

To accomplish this goal, the Beginners Unit is organized into five Meetings and a Fishing Trip. The meetings are designed to answer, in order, the following questions:

What will I catch?
Where will I catch it?
What will I catch it with?
How will I catch it?
How will I treat it?

Each meeting incorporates three themes which will receive more or less emphasis depending on the question:

Fish Biology/Aquatic Ecology
Personal ethics & responsibility/Safety
Techniques/equipment

The unit will focus on the individual angler – what they need to know, what effects they have on the resource, and how they should behave in relation to that resource. Kids will observe and handle fish beginning in Meeting One, and will be fishing by Meeting Three. They will have the opportunity to apply what they've learned during an extended fishing trip at the end of the Unit.

We have done our best to provide you, the leader, with an active, enjoyable, thought-provoking program. We wish you the best in getting out and using it, and look forward to any thoughts, comments and ideas that you may have as a result. Together, we can make this program grow.

Ethics and personal responsibility

Creating ethical anglers may be *the* most important goal of the program, and of this Unit. While ethics are directly addressed in Activity 1.3 and throughout Meeting 5, they cannot be limited to only those areas. “Actions speak louder than words” is nowhere more true than here – how you as a leader behave toward the resource, and how you direct the behaviour of your members, will to a large degree influence their approach to fishing for years to come.

Building a proper angling ethic may therefore be the most important, and difficult, task facing you as an instructor. It must start at the beginning of this unit, and will continue throughout this unit, and following units, but only if you keep it uppermost in your mind, and encourage your students to do likewise.

In order to provide some direction in this area, the following discussion on ethics has been adapted, with permission, from the *New York Sportfishing and Aquatic Resources Education Program (SAREP)*. Research, plus years of practical application in this excellent program, provide useful insights into how to build fishing ethics. Please apply these insights whenever you can.

There are some **common threads** weaving through effective ethics education methods. Keep these in mind as you approach ethics in your program:

- building a sense of community and family, and using this group identity to nurture prosocial behaviour;
- the role of a leader is to guide, not to dictate;
- developing a climate of mutual respect;
- building group consensus and ownership in group norms, including codes of behaviour;
- using peer teaching, counseling and support;
- building all these elements into a sustained, long-term effort over a significant period of time.

The outcome of your ethics education efforts should be a youngster who can logically think through an ethical situation, choose the right course, and act on his or her convictions. You get the youngster to this point by giving them:

- the tools of critical thinking and moral reasoning;
- frequent opportunities to actively use these tools in a setting that is emotionally safe and respectful;
- experiences in seeing you and others behave appropriately in numerous fishing settings, over time;
- experience in developing ethical guidelines, so they have some ownership; and
- the social support of the group, family and community.

In addition to setting a good example, you need to help your kids to fish right and feel good about it. This can be done through:

- observing others in ethical situations, and helping members see the ethics involved in the choices made;
- demonstrating appropriate and inappropriate behaviour through modeling and role-playing, using the scenarios suggested in Lesson 5 as a basis for discussing and practicing angling ethics, and dealing with ethics violations;
- encouraging members in making the sometimes difficult choices where no single action is necessarily wrong or bad, all choices may be right, and they must choose what is most right; and
- reinforcing and rewarding positive ethical behaviours when your members demonstrate them. Let them know *you know* they've done right. Be sure to involve the rest of the group in this recognition process. Peer support is a very powerful thing.

In determining what is “most right”, consider the following questions:

Will the action benefit the aquatic resource, now or in the future?

Will the action be good for fishing, now or in the future? Will people watching think positive things about fishing, and anglers, as a result?

Does the action fit your personal values related to fishing? Will it benefit, or at least not harm, other anglers? other people?

If, by the end of the Unit, you have your members pausing to reflect on their actions, you will have made a good start.

How to use this unit

Leadership. The Beginner's Unit is designed to be lead by a team made up of a 4-H program leader and an experienced angler with an interest in youth and youth fishing. For that reason, there is not a lot of detailed information on fishing, although much of the basics can be found either within the lessons or in the *Take A Kid Fishing Guides* provided for each member. At times, this "team" may be one person, if you have experience in both areas. If not, and you do not know any anglers who can provide help, check with a local angling club. If there are no clubs, contact the Ontario Federation of Anglers and Hunters (705-748-6324) to determine if there are members in your area who may be able to help.

Equipment. We cannot provide rods and reels. They do, however, seem to multiply in garages, and a local club may be able to coordinate an old equipment drive to provide useable gear. Gear may also be available on loan from a local *O.F.A.H Tackle Share*® outlet such as a Provincial Park, Conservation Authority, library or Big Brothers office. If all else fails, Activity 3.3 provides a cheap alternative to get things started.

Unit flow. There are lots of activities and options here for you to choose from. We have tried to create a mix of active simulations/role plays, discussion & decision making, skills training and practical fishing experiences. While we feel that the progression of Meetings and activities is a good one, you may wish to be selective in choosing activities or options based on the age of your group, their prior fishing experience, the time available, or the accessibility of reasonable fishing locations. Limited water access, for example, may necessitate combining several waterside sessions into one. We are, however, after a balance of fishing skills, biological understanding and angling ethics. **If at all possible, we would like you to include Activities 1.2, 1.3, 2.5, 5.2 and 5.3 in your program.**

In this design, actual fishing does not take place until Meeting 3. There are good reasons for this, but in this world of fast food and immediate gratification, it may be hard to rein in the desire to get out there and fish. Good anglers know what they're fishing for, know how to fish for it, know the regulations, and know where the fish are found. All these things precede putting lines in the water, unless you want to trust to luck. The activities which introduce these things are fun, involve your members with the resource from the first activity, and reinforce the importance of knowledge and ethics before they ever begin to fish. One way to avoid pressure to fish immediately is to begin the Unit in the early spring before it warms up significantly and becomes attractive for fishing. A number of the "inside" activities could then be combined and done before the motivation to fish gets too high.

You may be thinking about doing this unit in one day, particularly if water access is a concern. **We do not recommend this option**, for the following reasons:

- the desire to fish will be extremely high, and the anticipation may overwhelm any introductory activities that you run.
- "iffy" weather or "iffy" fish may dampen the entire experience.

- there is no opportunity for reflection, reinforcement, learning more and trying again.
- while fishing ethics can be modeled or reinforced in this setting, building ethics through discussion and reflection is very difficult.
- one major strength of quality youth fishing programs is having ongoing, in-depth experiences shared by kids and adults. This requires a fairly long-term commitment and regular involvement with a caring adult.

Consider instead several land-based sessions built around one or two major fishing outings.

Safety

Running a safe program is paramount. A fishing program has particular challenges: sharp things (hooks, fish spines, knives), flying objects (sinkers, practice plugs), potentially slippery areas (steep banks, rocks) and water. Lots of water, perhaps even cold water. These safety issues are highlighted or reminders given at appropriate places throughout the Unit, and a basic introduction to safety can be found in the *Take A Kid Fishing Guide*, page 18. Key issues are also addressed below.

Hooks. Hooks *must* be sharp. Awareness of hooks, then is critical, and is described in Activity 3.3. For safety reasons alone, consider barbless hooks, or mashing down the barbs on the hooks used with a pair of pliers. A few additional fish may be lost, but the additional peace of mind may be worth it. If you do decide to use barbed hooks and one gets buried beyond the barb, *get medical attention*. Do *not* attempt to get the hook out yourself.

Knives. Paradoxically, sharp knives are less dangerous than dull ones. They require less force to cut, and knife control is easier. Minimize knife use. Nail clippers are much better for cutting line, and parts of the fish cleaning process can be easily done with scissors, although a good knife is required for filleting.

Spines. Make members aware of the fish that have spines, and where (usually dorsal and anal fins), especially the sunfish that they are likely to catch. Demonstrate how to bend the spines back as you grab the fish with wet hands. If you catch catfish, make a particular point of the pectoral fin spines, since few other fish have them. Treat spine injuries like any other puncture wound.

Flying objects. Casting safety requires constant reminders, since members must think of three or four things at once, and safety may not be a top-of-the-mind issue until they are more practiced. Stay away from any power lines. However, in spite of your best efforts, a power line may reach out and grab some terminal tackle. If it does, cut away the tackle and forget it. Under no circumstances attempt to remove the tackle, even if it contains your favourite lure.

Water. There are two approaches to working around water. The easiest and safest is to insist that everyone, including leaders, wear Coast Guard approved floatation gear at

all times. The alternative is to require gear based on participants' age, ability to swim, water and air conditions (temperature, wind), near shore conditions (shallow vs. deep), steepness of the banks and/or presence of slippery rocks. While the latter approach increases the risk slightly, this may be outweighed by the value of discussing why floatation is used in some cases and not others, and how to make safe decisions. If gear is used at all times and without discussion, some members may shed it at first opportunity and without consideration of the safety of doing so. If there is any doubt, however, use it.

Choosing safe water (fairly shallow, no casting obstructions, no current, minimum bank slope, few nearshore rocks) will minimize safety concerns, but not eliminate them. However, good fishing locations may contain some additional risk. At all times, have a reaching pole and a throwing ring & line at hand, as well as towels and blankets.

Fishing from boats is not recommended for this Unit. **Under no circumstances should you fish near power plant intakes, dams or weirs, or quickly flowing water.**

MEETING ONE: WHAT WILL I CATCH?

What will the group learn? They will be able to identify common Ontario fish species, explore some special adaptations that fish have made in order to survive and flourish, recognize fish behaviors, and explore the link between accurate fish identification and regulations.

Objectives

1. To increase awareness, understanding and knowledge of the external adaptations of fish, how those adaptations allow fish to live successfully in water, and how to apply that knowledge to fishing.
2. To develop skills related to fish identification, and linking identification with information useful in angling for various fish.
3. To create an understanding of the value and benefits of fishing regulations, the link between accurate fish identification and regulation, and the difference between rules and ethics.

In a nutshell

<i>Up Close and Personal</i>	45 minutes
<i>Who's Who?</i>	30 minutes
<i>Rules 'n Regs</i>	45 minutes
Total Time:	120 minutes

From a Perch Eye's View

Get ready to identify and explore the different types of fish inhabiting Ontario's lakes and streams.

What makes a rainbow trout different from a catfish? Why is a pumpkinseed so round with bright spots? The answers lie in exploring the relationship between a fish's key traits and their homes, or habitat. Each fish has adapted its body shape and habits (lifestyle) to its habitat. For example, the pumpkinseed lives in quiet waters around thick vegetation; consequently, it is the shape of your palm so it can easily maneuver through the cover, and its color allows it to hide in areas with light and shadow. For an angler or observer, knowing which adaptation belongs to which fish adds an additional measure of satisfaction to their hobby. This knowledge is also the key to knowing where and when to fish and obeying the regulations.

Identifying fish is easy if you know which traits are the "keys" to unlocking a fish's identity: the absence or presence of certain structures, body shape, the location of body

parts (like the mouth), relative size and shape of body parts, and counts of scales, fin rays or spines. In most cases, fish can be identified just by examining these features, but sometimes internal structures also need to be examined. Identification keys, illustrations, and descriptions that are based on these traits are often used to help identify plants and animals. Once you accomplish the skill of using a key, you'll probably be able to identify any fish that comes your way!

You may wonder why colour and size are not more widely used. One reason is that they vary among individuals of the same type of fish, depending on age, sex, season, and maturity. Another reason is that color fades rapidly after death, and size can be affected by water quality or population structure.

Kids have a natural curiosity about these special traits of fish and animals. In order to learn about those traits and their relationship to the environment, one needs to touch, smell, see, and explore. The program encourages this "hands on" (experiential, or "learn by doing") approach to learning. As a leader, you'll conduct this great hunt for knowledge and understanding of these relationships as they relate to Ontario fish.

Identification and Regulation

Back when there were very few people in Ontario, and a whole lot of fish, taking some here or there was no big deal. But as our use of aquatic resources grew, habitats and fish populations, in some cases, shrank. It became easy to take more fish than a particular lake or stream could support. Some fish, like the Atlantic salmon, disappeared. Others, like the lake trout, almost did in some areas. It became necessary to "manage" fish populations, that is protect and assist them where necessary.

People quickly learned that it is generally easier to manage impacts on fish rather than the fish themselves. In order to manage recreational fishing, managers developed fishing regulations. And since each fish species reacts differently to impacts, regulations must reflect both local impacts and individual species responses. Anglers, then, must not only be able to identify their catch, but be able to locate local limits and exceptions.

That skill, however, is useless, unless the angler in question is motivated to follow the rules. Management is everybody's task, if there are to be fish left for future generations. Each new angler must understand the need for regulations and choose to follow them if their enlistment is to be a benefit to the angling community and to the resource.

Up Close and Personal

Purpose: To make direct contact with either living or dead fish, and through that contact, learn something of fish structure, adaptations and behaviour, and how that applies to fishing.

Outcomes: Members will be able to describe the basic external adaptations (shape, fins, eyes, gills, scales) that allow fish to live successfully in water.

Concepts: 6.2, 6.4, 6.5

Group size: 6 - 30

Site: Waterside or meeting room; aquariums or counter space required to examine fish.

Time: 45 minutes

Supplies: minnow trap(s) (opt.), large jars, fishbowls or small aquaria (opt.), at least one pump with airstone (opt). Live bait fish or dead sport fish.

Before the Meeting: If you are using a minnow trap, it should be set for 4 - 12 hours. Bait it with bread or dry dog food, and mark it with your name and address. Scout the shoreline carefully to see if there are good spots for fish observation by small groups. If you are not trapping fish, arrange for purchase from a local baitfish dealer. Even if you are trapping, you may want to have dealer fish for backup and comparison. Make sure any dead fish are thawed.

A QUICK LOOK:

One of the first questions a young angler will ask is, "What will I catch?" The short answer, of course, is, "fish!" In this introductory activity, that driving curiosity is aimed at either the small baitfish you can catch yourself, or buy live from a baitfish dealer. The question to be answered is, "What can I find out through close observation of these small fish?" That information may then be applied to sport fish. If you cannot acquire live fish, dead fish can be examined through the use of *Resource Sheet 3*.

The important thing is to get involved with real fish from the very beginning. It is also important that the shore area and any fish caught or even used when dead be treated with respect. That will set the tone for development of personal ethics and proper behaviour that may last a lifetime. And what *you* do will indeed speak far louder than anything you might say in the course of this unit. You may wish to review the information on ethics and personal responsibility found in the **WELCOME** section of this unit.

If you do not collect and return baitfish with your group, you may have time to do part of *Resource Sheet 3*. Any dead sportfish can be used in support of Activity 1.2, *Who's Who?*

READY, SET, GO!:

Waterside option. If you have set minnow traps and will pull them with the group, spend a little time exploring along the shore, looking for small fish. Explain that fish can be 'spooky', and they may need to approach the shore carefully and quietly. If you have a large group, divide the shore into sections and assign each section to 3-5 members. Have each group watch carefully. If they are still, the fish should quickly resume normal activity. Have the groups consider the following questions. Are the fish together or separate? Are they found out in the open or near plants, rocks or docks? What do the fish do if you move suddenly, or wave your arms? How is this behaviour useful to the fish? How might onshore behaviour affect the success of nearshore fishing?

Have the group pull in the minnow trap(s) and place the fish in a bucket for transport, or directly into large jars or fishbowls, and move them to a location where you can sit and observe. They should move quickly, but with care and minimum stress on the fish.

Live fish observation option. Each group of 3-5 should have a jar or bowl with 1 to 5 or 6 fish (but don't overcrowd). Have the groups quietly observe while the fish settle down. Note: there may be considerable differences between trapped fish and fish from a dealer, which may settle down more quickly and react less to motion.

Pass out *Resource Sheets 1* and *2*, and have each group identify the major parts indicated, as well as general shape, eyes and scales. *Sheet 2* shows the major features of trout, salmon and whitefish, and is more similar to the smaller minnows, dace and shiners than *Sheet 1*. If they have different kinds of fish, have them figure out the best ways to tell them apart. Note: identifying individual baitfish, or even baitfish from non-baitfish is not important at this level. What *is* important is that they begin to develop an eye for differences in fish, and how to tell fish apart.

Look more closely at how the fish use their fins. Challenge each group to determine how fishes move forward or backward, stay in one place, go up or down, stop, or turn.

Have them closely watch the action of the mouth and gills. Use the following questions to guide their observations: are the movements of mouth and gill cover related? Do they open at the same time, or one after the other? Do the rate of these motions change if the fish is at rest, or if it moves around a lot? Note the closeness of the gills to the mouth area, and the importance of avoiding damage to the gill area if fish they catch are to be returned to the water.

Returning fish. If you trapped your fish, carefully return them to the *same* location where they were caught. This is important to do with the group if at all possible, even if

it takes time from the rest of your program. You are modeling behaviour that shows respect for living things, even (especially!) for those things that might end up on the end of your hook some day. However, **do not put baitfish from a dealer into a local waterbody**. They may not be found in those waters, and could upset the balance and interactions of the local fish (see Activity 5.4). Dumping baitfish like this is **illegal**. Indicate to the group that you will use them to fish or return them to the dealer.

Dead fish option. Provide one fish (cold but not frozen) to each group of 3-5 members. Have as many different kinds of native or naturalized Ontario fish as you can catch, beg or buy (since the drawing is of a yellow perch, perch would be a useful, but not essential, fish). Encourage each group member to pick up and handle their group's fish at different times throughout the activity, as well as compare their fish to those belonging to other groups. At minimum, the activity can be done with whatever whole fish are available from the market.

Provide *Resource Sheets 1-3* to each member. Group members should work together as they each complete *Sheet 3*. Circulate and respond to individual and group questions. Each member should wash their hands with soap and water when the examination is complete.

Leader Resource Info sheets are available for background.

OTHER IDEAS:

- **Gyotaku**, or Japanese fish printing, uses whole fish to create designs on paper or cloth. Directions can be found in arts & crafts books.
- For younger members, compare a simple body outline with that of a fish. Match or draw lines between parts with similar functions, e.g. legs and caudal fin, nose and nostrils (used only for 'smelling' by fish), lungs and gills.
- Create "superfish" based on particular environmental challenges, e.g. go extremely fast, survive beneath Niagara Falls, survive being out of the water part of the time.
- Experiment with small plastic bottles to determine the function and best placement of fins. Cut some fins from a bottle or other thin plastic and attach them using a hot-glue gun. Attach a string to the lid, add some water so it doesn't float, but doesn't sink quickly, and test its stability in a small, nearby stream. Compare it to a finless bottle.

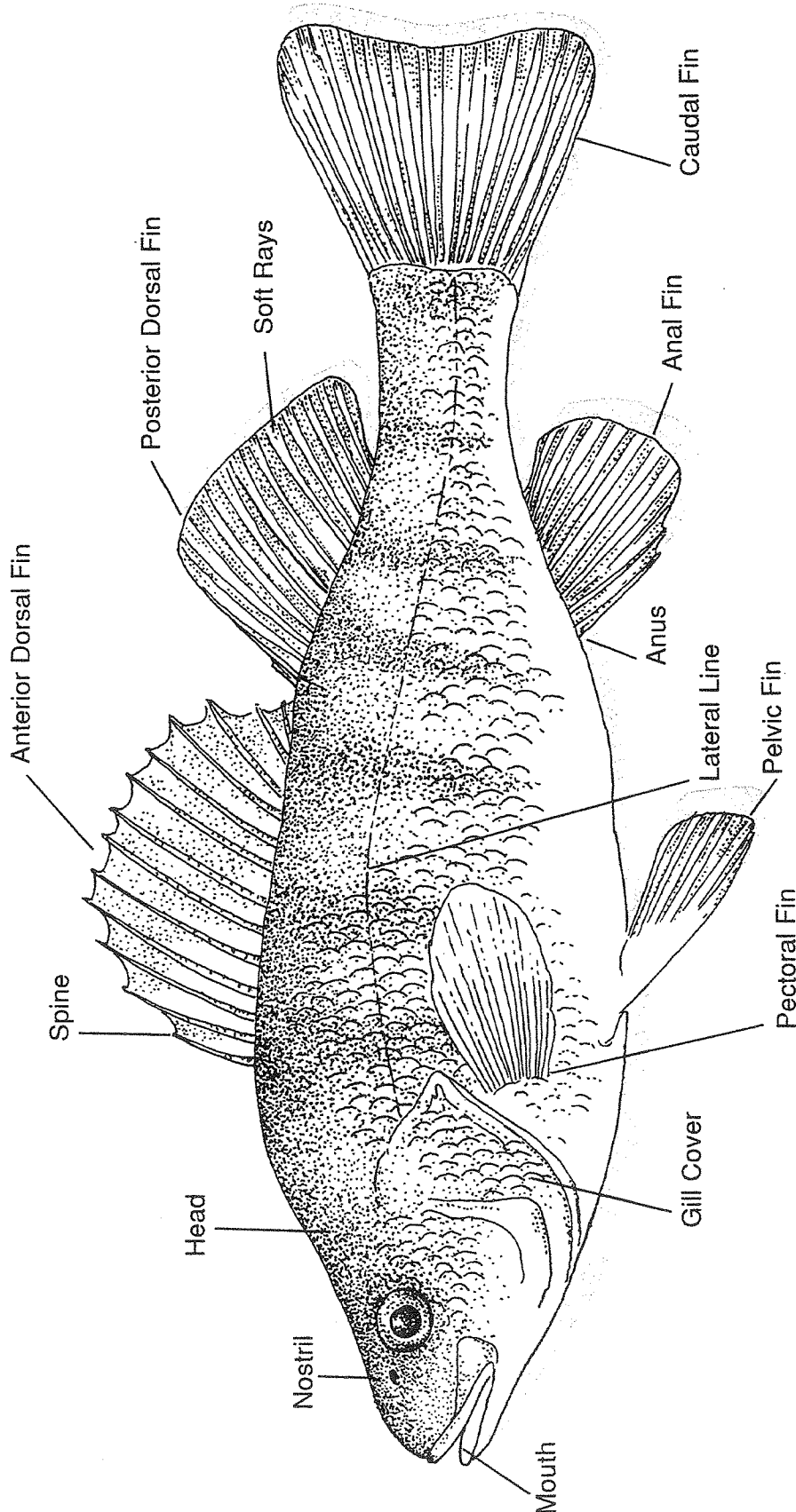
HANDOUT MASTERS:

Resource Sheet 1 *Ins and Outs of a Yellow Perch*
Resource Sheet 2 *Features of Salmon and Trout*
Resource Sheet 3 *Up Close and Personal*
Resource Sheet 4 *Shape Relationships*
Leader Resource Info *Up Close...*



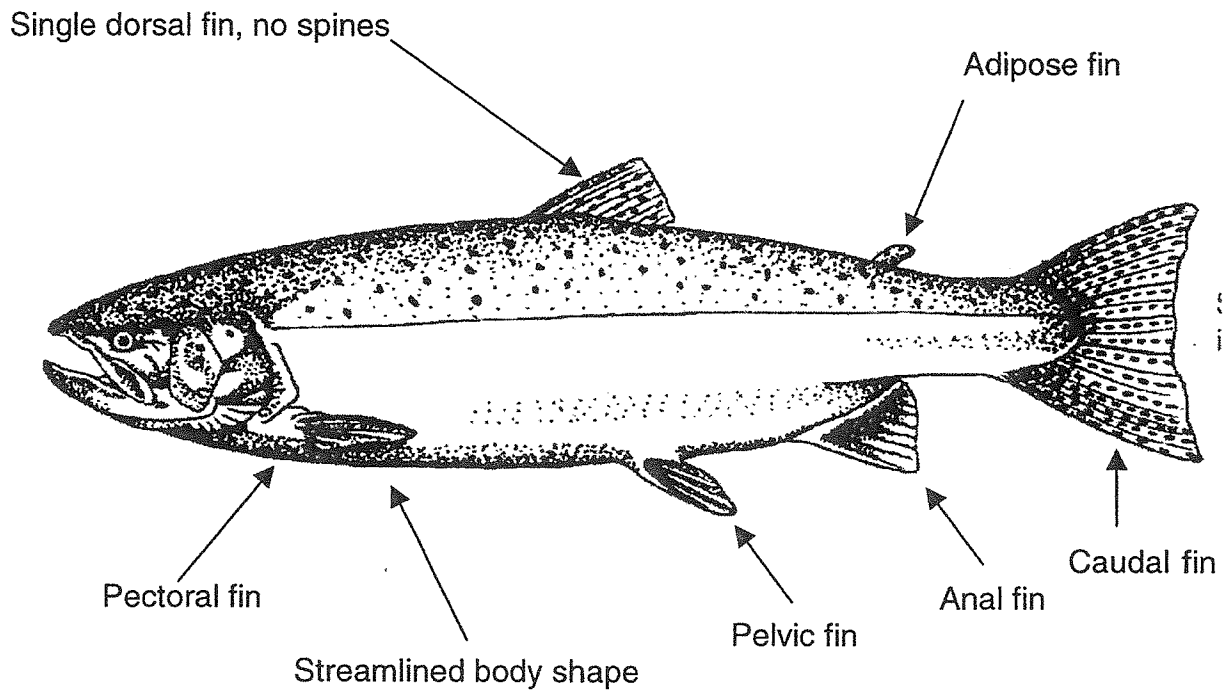
STUDENT RESOURCE SHEET 1

The Ins and Outs of a Yellow Perch



RESOURCE SHEET 2

Features of Salmon and Trout



RESOURCE SHEET 3

Up Close and Personal

Fish live in water. Before you say, "Duh!", think about what it would mean to live in water all of the time. Could you walk? Run? How would you eat? Listen to music? Dance? Fish have figured out how to live in water. In fact, fish are so good at it that they are found almost anywhere there is water. And they have been there more than 100 times as long as we've been around on land. How do they do it? By answering that question, you will find out more about fish. And the more you know, the easier it will be to find, catch and successfully release them.

General shape. Take a good look at the shape of your fish. Without worrying about details like fin shape, draw the general outline of your fish when you look at it from the side, from the top and from the front:

Side view

Top view

Front view

What else can you think of that is shaped something like your fish? _____

Why are all these things shaped the way they are? _____

Hint: Think about running through chest-deep water. What is a better way of moving through it, and why?

Not all fish shapes are exactly the same. If other groups have different fish, look at their shape for a minute. Are they fat, thin, rounded, eye-shaped? These shapes can tell you something about how fish move, and even where you might find them. Get a copy of *Resource Sheet 4* and look at your fish again. Which general shape does your fish resemble? _____ What kind of movement is it good at? _____
Where might you find it? _____

Fins. Using *Resource Sheet 1*, identify all of the fins on your fish. Pull them out and look at them with a large pin or dissecting needle. Be CAREFUL! If your fish has spines they may be sharp. Why might a fish have sharp spines? _____

If you don't have a perch, compare your fish's fins to the drawing. Are there any differences in shape, size or location? _____

Think about live fish you have seen, or even fish in movies/TV, and write down how you think they use each fin:

- dorsal: _____
- caudal: _____
- pectoral: _____
- pelvic: _____
- anal: _____

As soon as possible, find a live fish and try to check your answers.

Eyes. The size and location of eyes can tell you something about how and when to fish for that fish. Look at the size of the eye in relation to the size of the fish. Fish with relatively large eyes can see well at twilight, or in deeper or murkier water. Does your fish have large eyes? _____ Would it be more or less active near shore during the day? _____.

Look at your fish both head-on and from the top. Draw where the eyes are:

head-on

top-view

Compare the placement of the eyes with other kinds of fish if you can. Are the eyes of your fish more to the middle of the side or more to the top of the side? _____

Looking down on the fish, can you see some of the eye, or just the eye covering? _____

Looking head-on, can you see some of the eye, or just the eye covering? _____ Can your fish see well to the front? _____ to the side? _____ to the top? _____ Where is the best place to put bait or a lure for it to be seen by this fish? _____

Colour. Become a predator, and describe the colour of your fish

- from below: _____
- from above: _____
- from the side: _____

What kind of background would you see the fish against

- from below: _____
- from above: _____
- from the side: _____

Why do you think your fish is coloured they way it is? _____

Why do some anglers use dark lures after sunset? _____

Scales. Lightly run your fingernails over your fish from head to tail. Now do it from tail to head. How is it different? _____

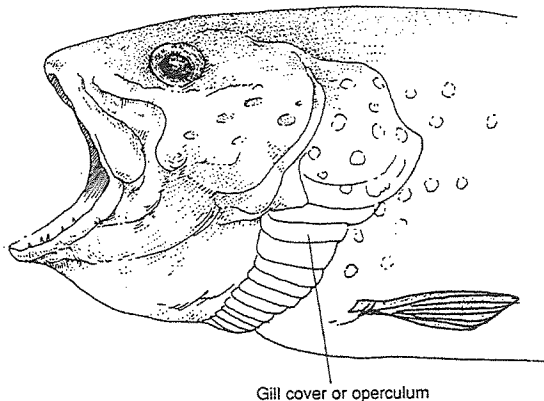
Look closely at your fish as you bend it from side to side. What happens? What two things do scales do for a fish? _____

Now rub your fingers together. What do they feel like? _____

Like scales, this slippery **mucus** helps the fish. How might it help? _____

How would careful handling help fish that you are releasing? _____

Gills. Fish 'breathe' by taking oxygen out of the water with their gills. Look closely at your fish, and figure out how the water must move over the gills. Show water movement on the diagram below. Open the gill cover and look carefully at the gills.



Gill cover or operculum

Would it be easy or hard to damage them? _____ How would you not hold a fish you wanted to return to the water? _____

Why? _____

RESOURCE SHEET 3

Up Close and Personal (Leader's)

Fish live in water. Before you say, "Duh!", think about what it would mean to live in water all of the time. Could you walk? Run? How would you eat? Listen to music? Dance? Fish have figured out how to live in water. In fact, fish are so good at it that they are found almost anywhere there is water. And they have been there more than 100 times as long as we've been around on land. How do they do it? By answering that question, you will find out more about fish. And the more you know, the easier it will be to find, catch and successfully release them.

General shape. Take a good look at the shape of your fish. Without worrying about details like fin shape, draw the general outline of your fish when you look at it from the side, from the top and from the front: **Answers will vary, e.g.:**



Side view



Top view



Front view

What else can you think of that is shaped something like your fish? submarines, race cars, airplanes, boat hulls or bottoms, whales, missiles, bombs

Why are all these things shaped the way they are? to slip easily through air or water

Hint: Think about running through chest-deep water. What is a better way of moving through it, and why?

Not all fish shapes are exactly the same. If other groups have different fish, look at their shape for a minute. Are they fat, thin, rounded, eye-shaped? These shapes can tell you something about how fish move, and even where you might find them. Get a copy of *Resource Sheet 4* and look at your fish again. Which general shape does your fish resemble? _____ What kind of movement is it good at? _____

_____ Where might you find it? _____

Fins. Using *Resource Sheet 1*, identify all of the fins on your fish. Pull them out and look at them with a large pin or dissecting needle. Be CAREFUL! If your fish has spines they may be sharp. Why might a fish have sharp spines? to threaten other fish; to keep from being eaten (spines can lock in place and make fish difficult to swallow)

If you don't have a perch, compare your fish's fins to the drawing. Are there any differences in shape, size or location? _____
 Think about live fish you have seen, or even fish in movies/TV, and write down how you think they use each fin:

dorsal: helps fish stay upright; protection (if spiny)

caudal: helps fish move forward

pectoral: helps fish to steer and slow down

pelvic: helps with balance, some steering and to slow down

anal: helps fish stay upright; protection (if spiny)

As soon as possible, find a live fish and try to check your answers.

Eyes. The size and location of eyes can tell you something about how and when to fish for that fish. Look at the size of the eye in relation to the size of the fish. Fish with relatively large eyes can see well at twilight, or in deeper or murkier water. Does your fish have large eyes? _____ Would it be more or less active near shore during the day? larger eyes, less active

Look at your fish both head-on and from the top. Draw where the eyes are:

head-on

top-view

Compare the placement of the eyes with other kinds of fish if you can. Are the eyes of your fish more to the middle of the side or more to the top of the side? _____
 Looking down on the fish, can you see some of the eye, or just the eye covering? _____
 Looking head-on, can you see some of the eye, or just the eye covering? _____ Can your fish see well to the front? _____ to the side? _____ to the top? _____ Where is the best place to put bait or a lure for it to be seen by this fish? _____

Colour. Become a predator, and describe the colour of your fish

from below: generally lighter

from above: generally darker; colour will vary; may have bands or spots

from the side: top half darker than bottom half

What kind of background would you see the fish against

from below: light sky through surface

from above: darker bottom, perhaps with plants or rocks

from the side: lighter towards the surface, darker towards the bottom; sun and shadow will lighten top half and darken bottom half

Why do you think your fish is coloured they way it is? camouflage

Why do some anglers use dark lures after sunset? to increase the difference (contrast) be-tween the lure and the darker sky

Scales. Lightly run your fingernails over your fish from head to tail. Now do it from tail to head. How is it different? feels rougher going tail to head - catches scale openings

Look closely at your fish as you bend it from side to side. What happens? What two things do scales do for a fish? scales move and open slightly, allowing fish to flex;

scales help protect fish, while allowing movement and flexibility

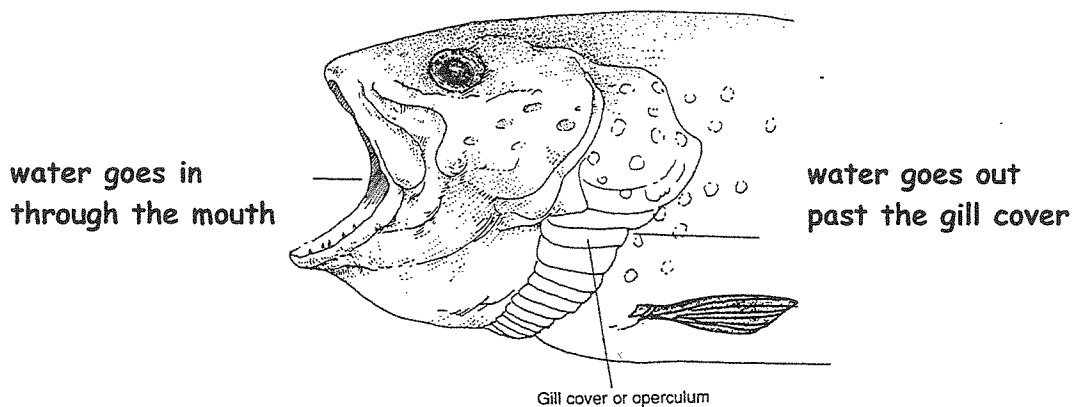
Now rub your fingers together. What do they feel like? slippery

Like scales, this slippery mucus helps the fish. How does it help? hard to hold on to;

protection against bacteria and dirt among scales How would careful handling help

fish that you are releasing? keeps scales and mucus in place

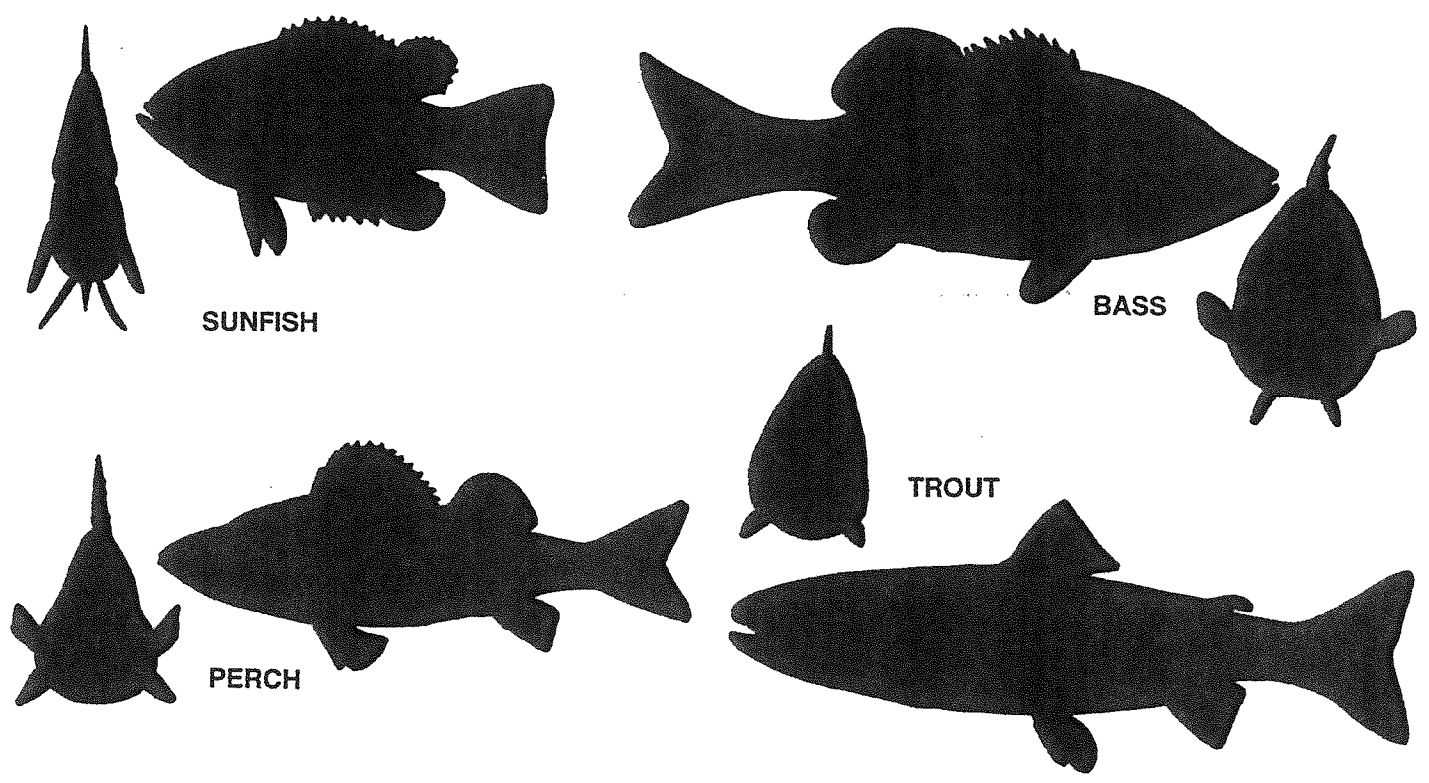
Gills. Fish 'breathe' by taking oxygen out of the water with their gills. Look closely at your fish, and figure out how the water must move over the gills. Show water movement on the diagram below. Open the gill cover and look carefully at the gills.



Would it be easy or hard to damage them? easy How would you **not** hold a fish you wanted to return to the water? hooking fingers under gill cover Why? would easily damage gills

RESOURCE SHEET 4

Shape Relationships



FISH	HABITAT	BODY SHAPE Side; head on	MOVEMENT	COMMENT
Sunfish type	weedy or rocky shallows	rounded; thin	quick turns in rocks & weeds	rounded shape and spiny fins make it hard to swallow
Bass type	weedy or rocky; fairly shallow	fairly robust but not as rounded as sunfish; narrow oval	some quick turns, some short, straight bursts	has compromise shape
Perch type	some open water, some weedy	somewhat elongated; oval	some open water swimming, some turns among weeds	compromise, but more open water than bass
Trout type	open lakes or fast-flowing streams	streamlined/elongated; oval	prolonged/high-speed swimming, often against current	muscular body designed for open-water swimming

LEADER RESOURCE INFO

UP CLOSE....

Fishes live in water. This rather obvious statement underlies a wide range of adaptations that fishes have in order to live in aquatic habitats. The following adaptations can be explored.

General shape: Water is hard to push through. Just think of trying to run through chest-deep water. As a result, most fishes orient themselves head-on to their normal direction of movement, much as we must to swim. They are also more or less streamlined to reduce drag and slice through the water. Faster fishes are sleeker and more streamlined than slower ones.

Fins: One advantage of water is that you can push against it to move or orient yourself. As a result, practically all animals that move through water have webbing or at least projections between fingers and/or toes to make that pushing more efficient. Compare the ease of swimming with and without fins. Fish fins represent an extreme in this type of adaptation, and fishes use their fins for little else. Note how the smaller fins used to turn and orient fishes can fold against the body, reducing drag during fast swimming.

Fins are thin membranes supported by a framework of either hard bony projections called spines, or soft, flexible bones called rays. Fins have three main functions – locomotion, stability or balance, and steering.

The **caudal** fin, or tail, helps to propel fishes forward by flipping from side to side. Fishes without caudal fins, however, move through the water by moving their bodies from side to side in S-shaped curves. The pressure of their bodies against the dense medium of water results in propulsion.

The **dorsal** (back) fin and **anal** (bottom) fin help fishes to stay in an upright position. The spiny dorsal fin found in some species may also serve as protection against predators. **Note:** Dorsal fins on some fish are not like perch (see the key, Activity 1.2); the small fin near the tail on the backs of salmon and trout (adipose fin) is *not* part of the dorsal.

The **pectoral** fins at the sides of fishes' bodies help them steer. They allow fishes to go up, down, left or right, or to slow down.

The **pelvic** fins on the underside of fishes' bodies help with balance, and may be used to hold them in one place. Some fishes have other fins, such as the **adipose** fin, which is small and composed of fatty tissue without bones or rays.

Eyes: One reason we have eyelids is to blink them and keep our eyes wet. Fishes have no need to blink, and have no lids. The size of the eye will vary, depending on the fish's behaviour. Fishes that are particularly active at twilight, in deeper water or in

turbid water will have larger eyes than other fishes. The walleye and rock bass are good examples of such fishes.

Gills: Fishes must breathe air, or oxygen, but they must get it from air that has been dissolved in the water (a few fishes, our carp among them, can get some of their oxygen from the air under extreme circumstances). Not much air can dissolve in water (there is 26 times as much oxygen in air than in well-oxygenated" water), so gills are much better at extracting it from water (they take out about 80%) than lungs are in extracting it from air (25%). Students should understand that the water enters the mouth and then moves over the gills before exiting through the slit at the rear edge of the gill cover. The water is *not* swallowed.

Swim or Air bladder: Most fishes (bottom-dwellers excepted) must have some means of remaining neutrally buoyant, so that they don't have to use up energy trying to keep from either floating up or sinking down. Many fishes use a swim or air bladder to do this, slowly adding or removing air as they rise or fall, in order to compensate for pressure changes. Students can see if it's easier to float or sink with their lungs full of air, or more or less empty. Scuba divers use buoyancy compensators (fancy life jackets) to do the same job as these bladders.

Scales: The epidermis (skin) of fishes, as on all animals, is a thin layer that is a defense from disease and other potentially hazardous elements in the environment. Embedded in the skin of most fishes are hard bony scales, overlapping from the head towards the tail, which help minimize friction in water and provide a protective covering. These scales help protect fish from small predators and from injuries caused by rocks and obstacles. Scales are translucent and allow the natural skin colour of fishes to be seen. They continue to grow throughout the life of fishes and are replaced when lost through injury.

Scales represent a basic compromise between speed and protection. By sliding over one another, scales allow fish to remain flexible enough to turn and wriggle through the water. Fish with larger scales, however, give up some flexibility, and therefore speed, to gain added protection. Larger scales also create more friction between the fish and the water, and the fish must use more energy to move.

Mucus glands are located throughout the skin cells. These secrete a slippery substance that lubricates and heals the skin, as well as helping to protect fishes against infestation from parasites. It is this slipperiness that makes fishes so hard to hold, thus helping many fishes escape from predators and enabling them to slip through the water with minimal effort.

Members can observe live fishes to note the positioning and arrangement of scales. They may use a preserved fish to examine more closely the scale arrangement and distinct surface features.

Who's Who?

Purpose: To introduce and sharpen fish identification skills through use of a fish key.

Outcomes: Members will become familiar with fish identification traits and keys, be able to identify common Ontario fish families using a key, and link identification to fish behaviours and angling techniques.

Concepts: 6.2, 6.3, 6.6

Group Size: 5-30

Site: Outdoors (shaded area) or Indoors (meeting room)

Time: 30 minutes

Supplies: Pictorial Key to Some Common Ontario Fish Families (page 27); Common Ontario Fish Cards (pages 29 - 36); Resource Sheet 1 from "Up Close and Personal"; Take A Kid Fishing Guides (one per member); Fish of Ontario Poster; Common Ontario Warmwater and Coldwater Sportfish cards; whole fish or a mount (optional); fishing licence and/or MNR permit¹ (needed for whole fish demonstrations)

Before the Meeting: Copy enough of the pictorial key and the fish cards without the information on the back to give a set to each small group. (Note: The common name, family, key traits, habitats, and fishing tips are on the back of the master sheet for your information at this point; make up a set/group with the information if you plan to play Fish Jeopardy – see OTHER IDEAS.)

A QUICK LOOK:

In this activity, you will review identifying traits (external) of fish with the group, using Resource Sheet 1 from "Up Close and Personal". If desired, use a whole fish or a mount to help review these traits. Next, you will demonstrate how to use the pictorial key. Everyone will then use the key to identify fish commonly found in the area using the Common Ontario Fish Cards.

Leader's Note: This key is an *artificial* key, which means it was designed only for the families that are found in it. This makes it simpler than most keys, and easier to use for beginners. However, if you try to key out fish that aren't in these families you will end

¹ You can obtain a free "Licence to Collect Fish for Scientific Purposes" from your MNR District or Area Office. Discuss with staff biologists the best types of local fish to capture, and methods for capturing them.

up on the wrong track. For example, white bass ends up with the perches using this key.

READY, SET, GO!:

Ask the question, "Why do we need to know the names of the fish we catch, anyway?" (this could be played up a bit if you wish to take on the role of devil's advocate). List and discuss all answers the members come up with. Some key reasons:

- Different kinds of fish have different seasons and limits. Knowing your catch may keep you from unknowingly breaking the law.
- Knowing your catch will help you determine whether it is safe to eat.
- Different fish are found in different places. If you know what fish are in an area, you can focus on the places they are most often found.
- Different fish react differently to bait or lures. If you know what fish are in an area, you can present the bait or lure in ways that give you a better chance of success.
- It is just part of the fun to be able to name your catch.
- It makes it easier to talk (or brag) to other anglers about fishing.
- It's a lot easier to answer the question, "What'd you catch?"

Indicate that certain traits, or characteristics, are used to help identify fish. Refer to Resource Sheet 1 from "Up Close and Personal". Using a whole fish or a mount, show the different fish traits and explain each of their functions:

- overall shape of fish (pan, torpedo, flat)
- location and shape of mouth
- presence or absence of scales, barbels, and adipose fins
- differences between and counts of fin rays and spines
- shape of tail fin
- location and shape of pelvic and anal fins
- length, structure, and shape of dorsal fin
- features unique to certain fish
- lateral line location
- location of gill cover
- colour (may fade or change once fish is dead)

Show how to use the pictorial key using a mount, whole fish, or picture. Explain that keys help unlock the identify of plants and animals by giving you choices, based upon traits. Each time you make a choice, you move one step closer to learning its identity. (Traits in the pictorial fish key are based upon the characteristics you just reviewed.) Work step by step to reach the correct family identification--you might want to practice this ahead of time.

Break everyone into groups of four or five. Give each participant a pictorial key and a fish card. (Select cards which highlight the species most likely to be caught during the fishing time.) They will try to identify the fish on the cards using the pictorial key. Move from group to group helping participants locate fins, determine tail shapes, etc. Groups will probably make a few wrong choices at first. That's okay--just help them get back on the right stream.

By now you've probably noticed that fish in the same family (i.e., northern pike and muskie) will often have similar traits, just like members of a human family. Use your fish cards to reinforce these fish family similarities and differences. This is a good time to explain how these traits relate to the habitat where they live and how they act.

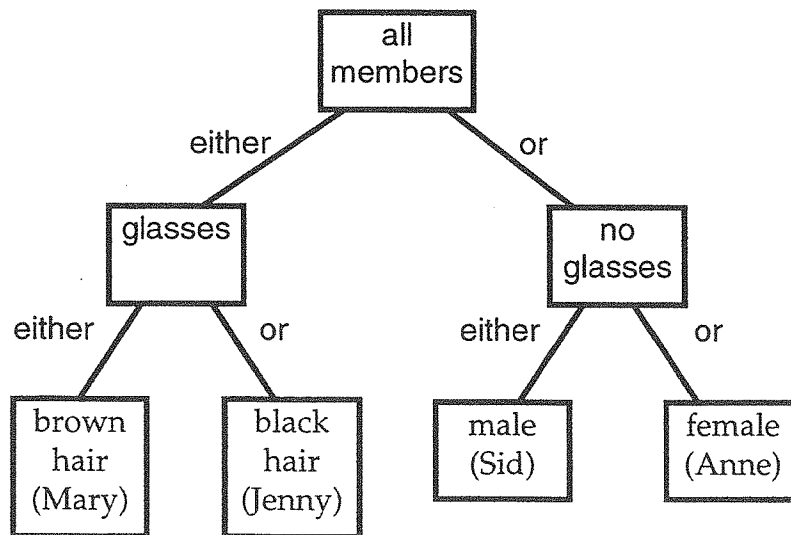
Continue working until group members fully understand how keys work, and can describe the key identifying traits of fish. Let the groups try to identify as many of the fish cards as they can in the time available.

Once they are good at using the key, display the *Fish of Ontario* poster. Emphasize that, while fish can be identified from the poster, using the key first helped them understand family and group relationships and features, and what to concentrate on when they are identifying a fish. Often, they can then place a fish in a group, e.g. sunfish, even if that particular fish is not on a chart or in a guide. Pass out both *Sportfish* cards as aids for them to use whenever they are fishing.

OTHER IDEAS:

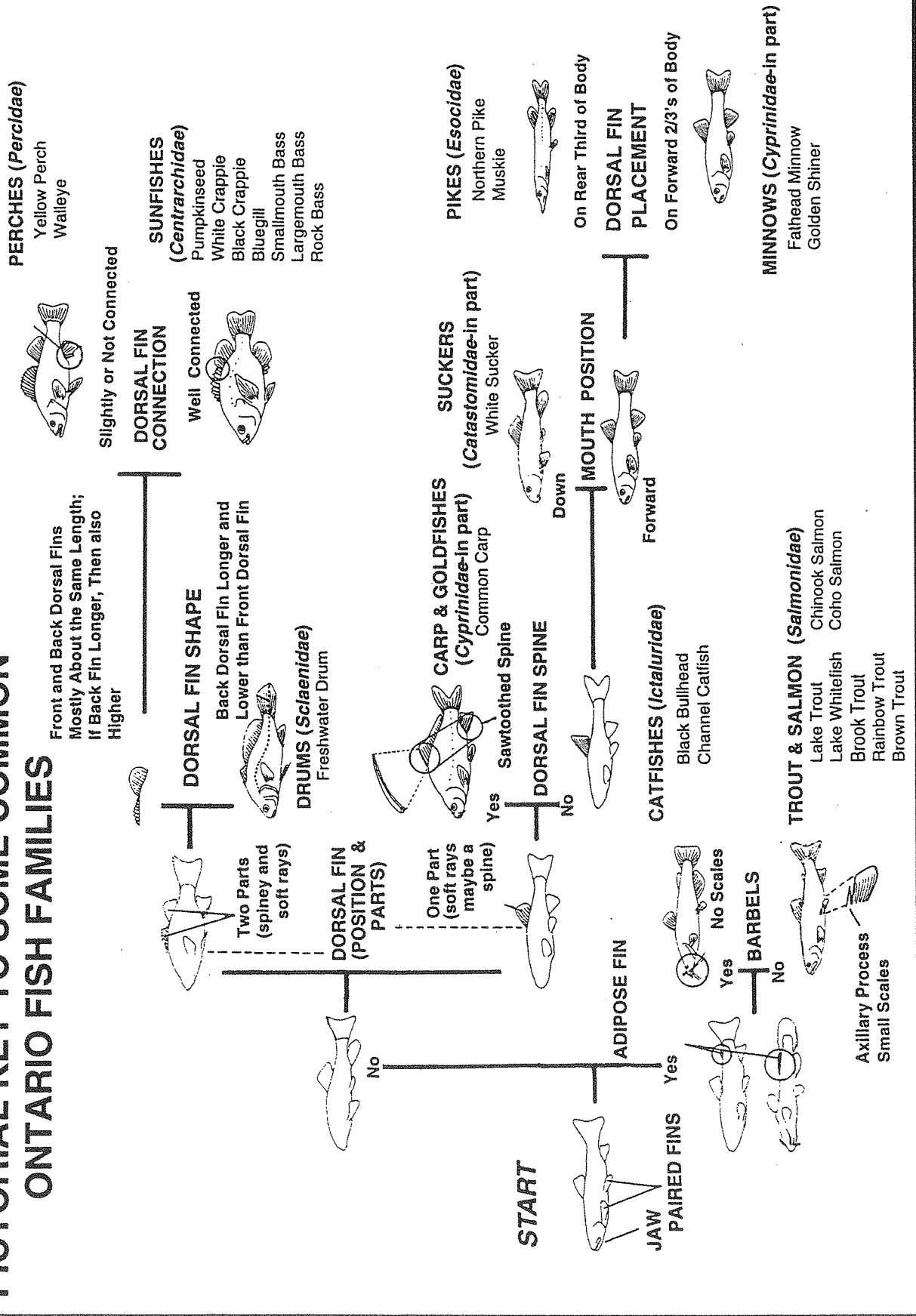
- The key provided is good only to the level of families. Older members can create additional keys that will take each family down to individual species.
- If the group finds doing the key difficult, try having the group make their own key by using the traits of the kids themselves. For example, boys/girls, glasses/no glasses, blonde/red/brown hair, etc. This could also be done with shoes, coats, etc. Try to use characteristics that divide each group and resulting sub-groups roughly in half, until you get down to individuals.

For example:



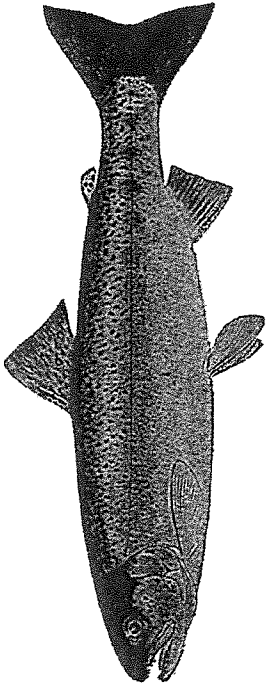
- Create groups of 5-6 and hand out sets of cards with the information on the back. Indicate that at the beginning of the next meeting, they will play a “Fish Jeopardy” game, using questions made up from the information on the cards. Categories will be by fish groups (sunfish, perch/walleye, catfish, trout, and salmon), so they might want to have “experts” on these fish in their groups. You will identify a group by holding up a picture of a fish in it. Teams can then “Buzz in” and identify the fish. If they are right, they get to answer (in the form of a question) statements based on card information from that group, e.g.: “how to catch bluegill” --> “What is still-fishing with a worm?”? “where to catch largemouth bass” --> “What are weedy lakes?” Assign points based on correct identification and proper questions. Subtract points for mistakes. Provide a suitable reward to the winners.

PICTORIAL KEY TO SOME COMMON ONTARIO FISH FAMILIES

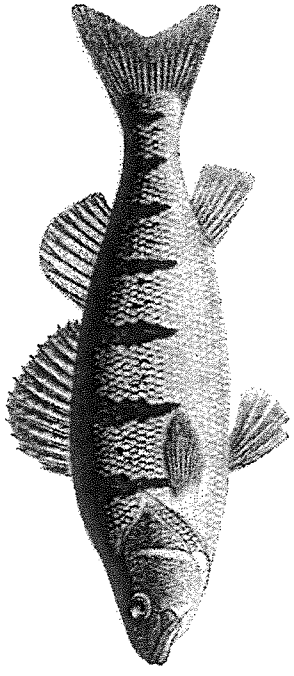


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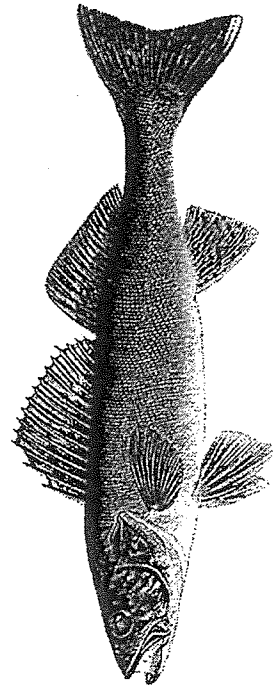
Common Ontario Fish Cards



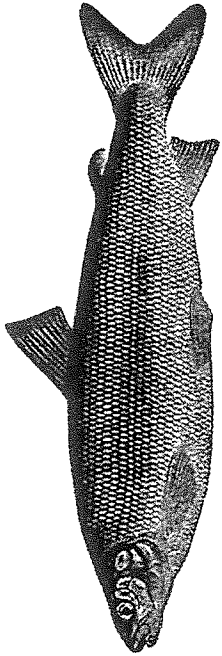
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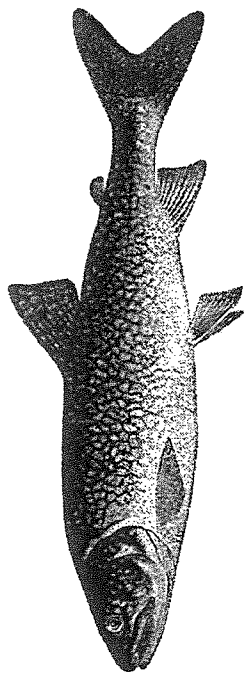
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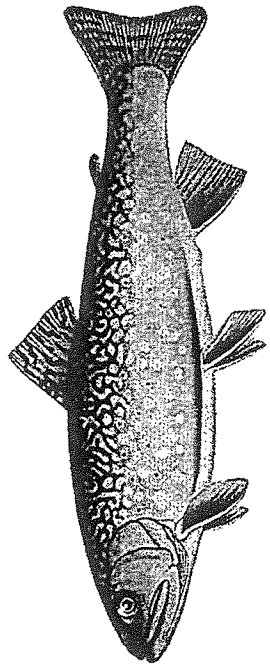
F



A



B



C

Activity 1.2

D. RAINBOW TROUT (introduced)

Family: Trout and Salmon
Shape: Stubby torpedo
Mouth: Medium and forward
Fins: Adipose fin; Dorsal even with pelvic; Slightly forked tail
Scales: Small
Colour: Bluish/olive above with silvery sides and pink lateral stripe
Habitat: Cool, clear lakes and streams below a line running roughly northwest to southeast near the north shores of the Great Lakes (oligo/mesotrophic)
Habits: Hardest of the trout; Sight feeder; Very active during insect hatches
Food: Small fish, insects, fish eggs, and worms
Tackle: 4-8 lb. line; Flies, spinners, or live bait slightly off the bottom in rivers; crankbaits & spoons in lakes

E. YELLOW PERCH

Family: Perch
Shape: Stocky torpedo
Mouth: Small and forward
Fins: Two part dorsal with spines; Dorsal even with pectorals; Forked tail; Anal spines 2
Scales: Medium
Colour: Pale yellow to bright orange; 6-7 vertical bars on side
Habitat: Rocky, vegetated, fairly deep lakes and rivers across Ontario except for Hudson and James Bay Lowlands (oligotrophic to large mesotrophic)
Habits: Swim in large schools
Food: Small fish, zooplankton, insects, snails, leeches, and crayfish
Tackle: 4-6 lb. line; Jig/fly/live bait in open water

F. WALLEYE

Family: Perch
Shape: Torpedo
Mouth: Medium and forward with teeth
Fins: Two part dorsal; Dorsal even with pectorals; Forked tail; Anal spines 2
Scales: Medium
Colour: Dark olive brown to black; Black spot at rear base of dorsal; White margin on lower part of tail
Habitat: Rocky/vegetated lakes and open/deep pools in streams across Ontario (mesotrophic)
Habits: Migrate up streams to spawn; Feed at night; Loose schools
Food: Yellow perch, small fish, insects, snails, leeches, and crayfish
Tackle: 6-10 lb. line; Spoons, crankbaits, jigs, and live bait fished on or near bottom; Evening/dusk/dawn best

A. LAKE WHITEFISH

Family: Trout and Salmon
Shape: Deep-bodied torpedo
Mouth: Small and forward; Snout overhangs lower jaw
Fins: Adipose fin; Dorsal even with pelvic; Forked tail
Scales: Small
Colour: Iridescent sides with dark olive brown back
Habitat: Cool, deep, clear lakes across Ontario (oligotrophic)
Habits: Sight feeder; Very active during mayfly hatch; Winter at bottom; Spring at surface
Food: Snails, clams, mayfly, and caddisfly
Tackle: 4-8 lb. line; Flies, small spinners, and jigs best during hatch

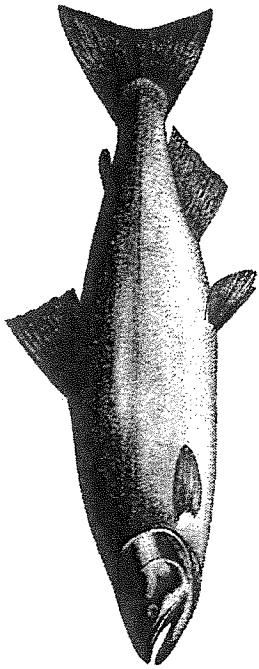
B. LAKE TROUT

Family: Trout and Salmon
Shape: Deep-bodied torpedo
Mouth: Medium and forward
Fins: Adipose; Dorsal even with pelvic; Deeply forked tail
Scales: Small
Colour: Grey, green or olive background with white spots extend into the dorsal
Habitat: Cold, deep, clear lakes with rock and bolder shores across Ontario, except for Hudson and James Bay lowlands (oligotrophic)
Habits: Spring/fall shallows; Rest of time deep water; Range over a 30 mile area
Food: Small fish, insects, and freshwater shrimp
Tackle: 4-8 lb. line; Spoons/spinners on downrigger or at river mouth; Sunset or stirred-up water best

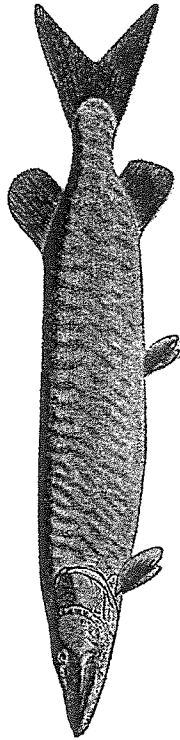
C. BROOK TROUT

Family: Trout and Salmon
Shape: Stubby torpedo
Mouth: Medium and forward
Fins: Adipose; Dorsal even with pelvic; Square tail
Scales: Minute
Colour: Dark green to silver with red spots; Back with worm-like pattern; Anal and tail with white margins
Habitat: Cold, clear, spring-fed streams and brooks across all but far northwest Ontario (oligotrophic)
Habits: Often wait below watercross feeding on items swept downstream
Food: Small fish, insects, and worms
Tackle: 4-6 lb. line; Spinners or flies at dusk; Worms off the bottom

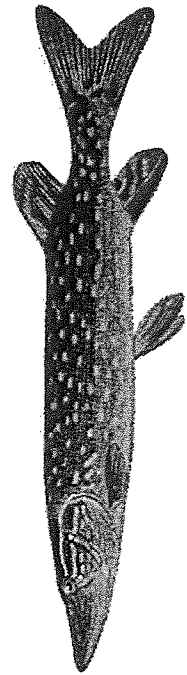
Common Ontario Fish Cards



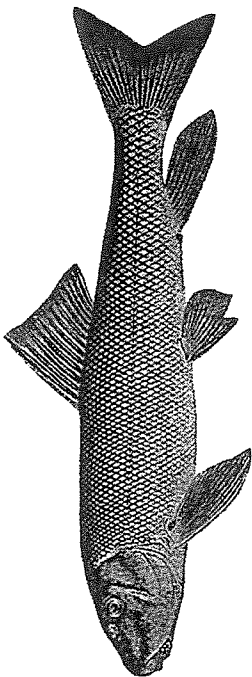
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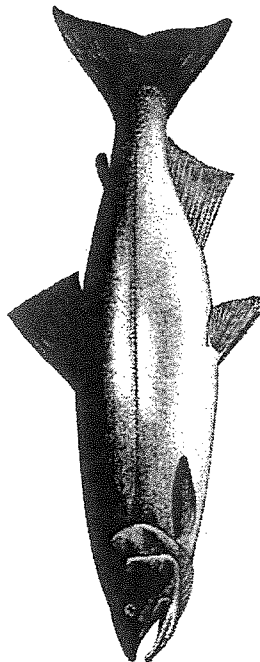
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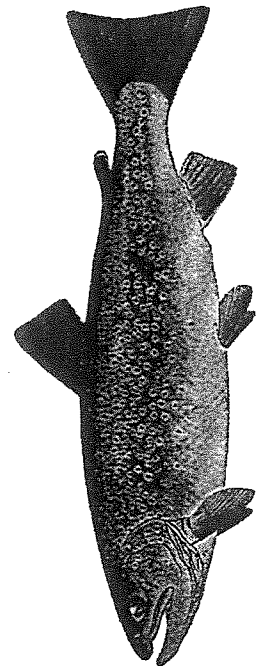
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G



H



I

Activity 1.2

J. CHINOOK SALMON (introduced)

Family: Trout and Salmon
Shape: Deep-bodied torpedo
Mouth: Medium and Forward
Fins: Adipose; Dorsal even with pelvic; very shallowly forked tail
Scales: Small
Colour: Back, head & upper sides green to blue-green with black spots; Lower sides silvery; all fins with at least a few black spots
Habitat: Great Lakes in deep water
Habit: Open water near thermocline; near river mouths and up rivers in fall
Food: Alewife, cisco, smelt
Tackle: 6-12 lb. line; spoons or crankbaits downrigged near thermocline in Spring or Summer; roe, spinners in rivers late Summer/Fall

K. MUSKIE

Family: Pike
Shape: Long torpedo
Mouth: Duckbilled with lots of canine teeth; 6-9 pores on bottom side of each lower jaw
Fins: One part dorsal; Dorsal even with anal; Forked tail
Scales: Normal
Colour: Silvery to greenish or brown; Markings variable but when present dark bars or spots on a light background.
Habitat: Clear vegetated lakes and large rivers in south, central, eastern, near northeastern and Lake of the Woods to Lac Seul areas (large oligotrophic to mesotrophic)
Habit: Sedentary "lone wolf"; Ambush feeder
Food: Small to medium fish
Tackle: 10-12 lb. line with wire leader; Fast retrieve of heavy active crank-, spinner- or jerkbaits/spoons or foot-long white suckers in fall; slow retrieve jigs with big twister tails

L. NORTHERN PIKE

Family: Pike
Shape: Long torpedo
Mouth: Duckbilled with lots of canine teeth; 5 pores on bottom of each side of lower jaw
Fins: One part dorsal; Dorsal even with anal; Tail forked
Scales: Normal
Colour: Greenish above and white below; Light spots on a dark background
Habitat: Vegetated quiet or slow-moving lakes, rivers, and streams across Ontario (oligotrophic to large mesotrophic)
Habit: Sedentary "lone wolf"; Ambush feeder
Food: Small and medium fish
Tackle: 8-10 lb. line/wire leader; Spoons, crank-, spinner- or jerkbaits, jigs, minnows, and foot-long white suckers in spring or fall

G. WHITE SUCKER

Family: Suckers
Shape: Slender, cylindrical
Mouth: Downward, sucker shape on blunt snout
Fins: One part stubby dorsal even with pelvic; No spine
Scales: Front of body small; Back of body large
Colour: Black with rosy band other times grayish white; Variable during spawning
Habitat: Clear lakes and small rivers across Ontario (oligotrophic to large mesotrophic)
Habit: Bottom schooling
Food: Bottom insects, plants, algae, and crustaceans
Tackle: 6-8 lb. line; Worm fished off bottom of pools and riffles during spawn

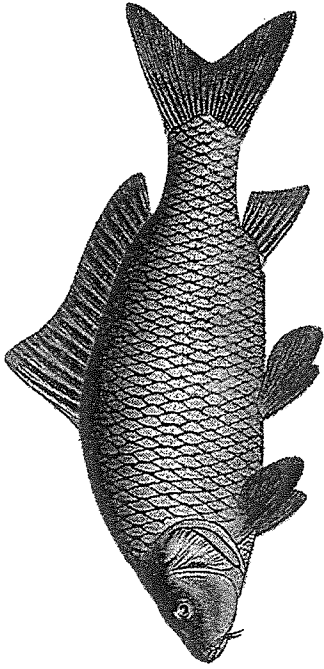
H. COHO SALMON (introduced)

Family: Trout and Salmon
Shape: Deep-bodied torpedo
Mouth: Medium and forward
Fins: Adipose; Dorsal even with pelvic; slightly indented tail
Scales: Small
Colour: Steel-blue to green on head and back, silver sides; small black spots above lateral line, base of dorsal fin, and upper lobe of caudal fin
Habitat: Great Lakes in deep water
Habit: Open water near thermocline; near river mouths and up rivers in fall
Food: Alewife, cisco, smelt
Tackle: 6-12 lb. line; spoons or crankbaits downrigged near thermocline in Spring or Summer; roe, spinners in rivers late Summer/Fall

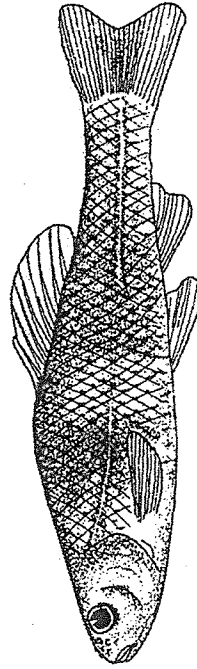
I. BROWN TROUT (introduced)

Family: Trout and Salmon
Shape: Stubby torpedo
Mouth: Medium and forward
Fins: Adipose; Dorsal even with pelvic; Square tail
Scales: Small
Colour: Brown back & silver sides, with haloed black spots on back, sides and head; pink to rusty red spots on sides; black spots on adipose & dorsal fins; vague caudal spots
Habitat: Cool, deep lakes and streams in southern and eastern Ontario (oligotrophic to mesotrophic)
Habit: less sensitive to pollution and siltation than brook trout
Food: Insects, crayfish, molluscs, frogs, small fish
Tackle: 4-8 lb. line; Flies, spinners or live bait slightly off the bottom in creeks; spoons and long, thin crankbaits in lakes

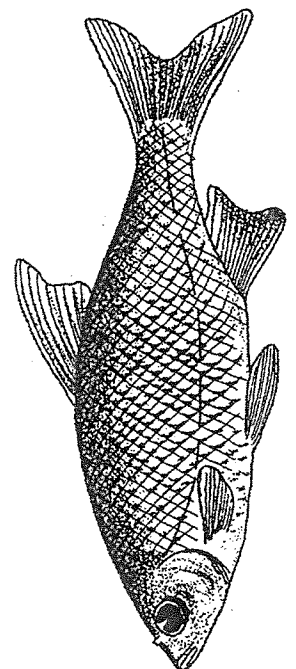
Common Ontario Fish Cards



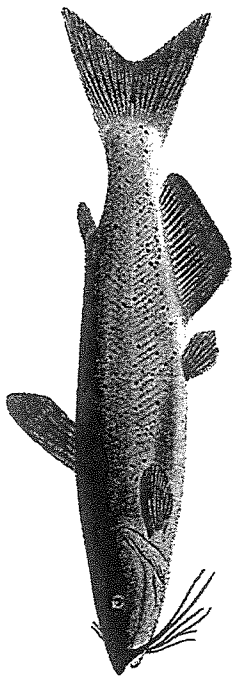
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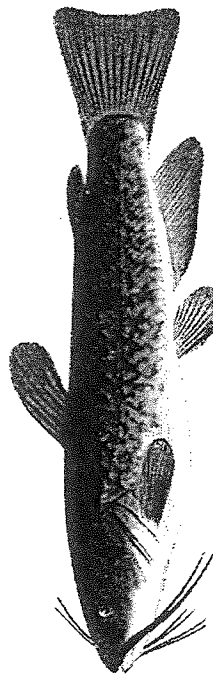
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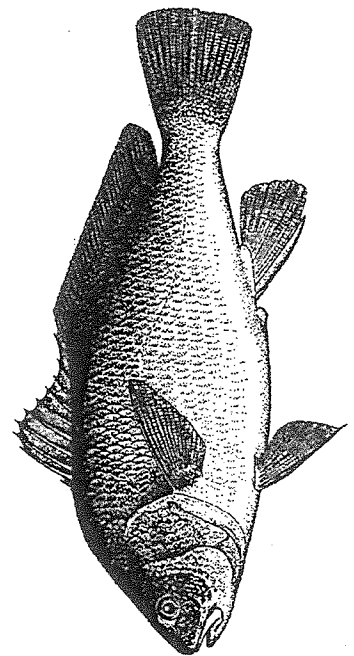
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M



N



O

Activity 1.2

P. COMMON CARP (introduced)

- Family: Minnow
Shape: Chubby football
Mouth: Sucker like with a barbelle at each side
Fins: Dorsal and anal with a saw-toothed spine; Dorsal sickle shaped and even with pelvic
Scales: Large
Colour: Brassy to olive back with gold sides
Habitat: Warm, shallow, mud-bottom lakes, streams, and rivers in southern and central Ontario, spreading north (eutrophic)
Habits: Very adaptable to wide range of conditions
Food: Insects, crayfish, plant roots/shoots, and seeds
Tackle: 6-10 lb. line; Canned corn, worms, doughballs fished off bottom

Q. FATHEAD MINNOW

- Family: Minnow
Shape: Chubby slab-sided football
Mouth: Small and forward on a blunt rounded snout
Fins: One part dorsal even with pelvic; Dorsal with black bar across middle; Tail forked with dark spot at base
Scales: Crowded anteriorly
Colour: Normally drab brown or yellowish-olive; Male during breeding black with two vertical bars and back and snout with bumps
Habitat: Silty ponds, ditches, and shallow lakes across Ontario (eutrophic)
Habits: Survive low oxygen levels; School in mid-water or near bottom
Food: Algae, plankton, worms, and insects (mosquitoes)
Tackle: Seine or minnow trap; Used as bait for other fish

R. GOLDEN SHINER

- Family: Minnow
Shape: Deep-bodied, compressed; Belly behind pelvic fins keeled
Mouth: Small upturned
Fins: One part dorsal even with pelvic
Scales: Normal with none along keel; Lateral line strongly curved downward
Colour: Greenish-gold tinge that fades rapidly
Habitat: Vegetated quiet water lakes, ponds, and sloughs in southern, central, eastern, and near northeastern Ontario, as well as below a rough northwest to southeast line touching the top of Lake Superior (small mesotrophic to eutrophic)
Habits: Tolerant of low oxygen and nutrient enrichment; Loose aggregated schools
Food: Plants, snails, and terrestrial insects
Tackle: 4-6 lb. line; Dry flies; Seine or minnow bucket; Used mainly as bait fish

M. CHANNEL CATFISH

- Family: Catfish
Shape: Slender light bulb
Mouth: Wide and flat with bristle teeth; Barbels present; Lower jaw protrudes beyond upper
Fins: Adipose fin; Forked tail with slender base; Spines in dorsal and pectorals; Anal rounded
Scales: None
Colour: Blue-gray with scattered black spots on back and sides (large fish often loose spots)
Habitat: Clear, swift, rocky riffles/deep pools streams of south, central and eastern Ontario, as well as the Lake of the Woods area (eutrophic)
Habits: Locates food by taste/smell
Food: Small fish, insects, crayfish, snails, and clams
Tackle: 8-10 lb. line; Fish rifles/shallows off bottom at night with "stink baits", crayfish, worms, or minnows; Fish pools or cover during the day or after a rain

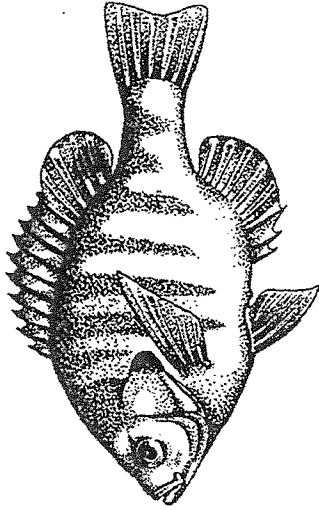
N. BROWN BULLHEAD

- Family: Catfish
Shape: Short and heavy
Mouth: Wide on a short broad head; Bristle teeth; Dark brown to black barbels
Fins: Adipose fin; Dorsal and pectoral fins with spines; Squarish tail with rounded tips
Scales: None
Colour: Yellowish brown to black with yellow to white belly
Habitat: Clear, shallow, vegetated, mud/sand/gravel/rock bottom lakes and slow streams in southern, central and eastern Ontario, as well as near northeast and Lake of the Woods (small mesotrophic and eutrophic)
Habits: Very hardy; Locates food by taste/smell; Indicator of better water quality
Food: Insects, crayfish, minnows, or almost anything dead or alive
Tackle: 6-8 lb. line; Still-fishing with worms; Fish on or close to the bottom

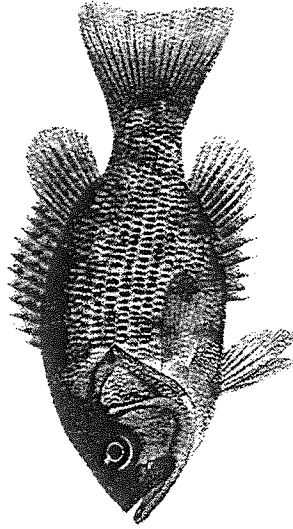
O. FRESHWATER DRUM

- Family: Drum
Shape: Elongated, deep-bodied, hump-back
Mouth: Medium slightly turned down on blunt rounded snout
Fins: Separated two part dorsal; long rear dorsal; Diamond shaped tail
Scales: Rough edged; Lateral line through tail
Colour: Gray back, silver sides, and white belly
Habitat: Clear to muddy shallow lakes and rivers in Great Lakes/St. Lawrence drainage, except for Lake Superior (eutrophic areas)
Habits: Stays near bottom; Make croaking or booming sounds with swim bladder
Food: Worms, insects, minnows, crayfish, clams, and snails
Tackle: 6-12 lb. line; Fish live worm/crayfish/small minnows or artificial spinners/flies off bottom; Mid-May to late June and again mid-September to late October

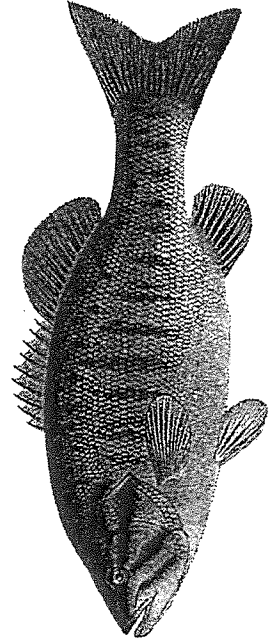
Common Ontario Fish Cards



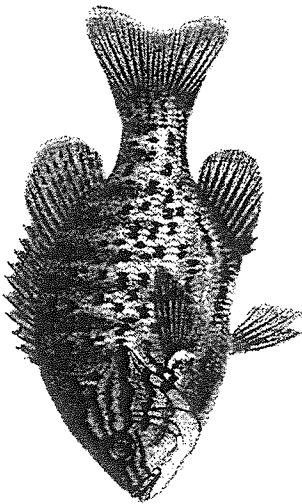
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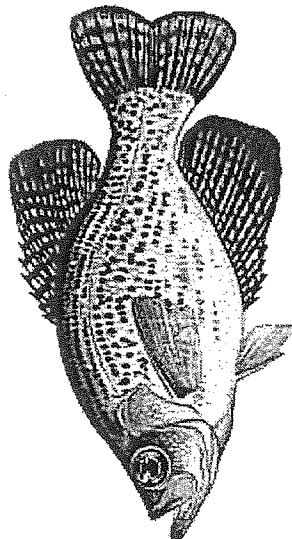
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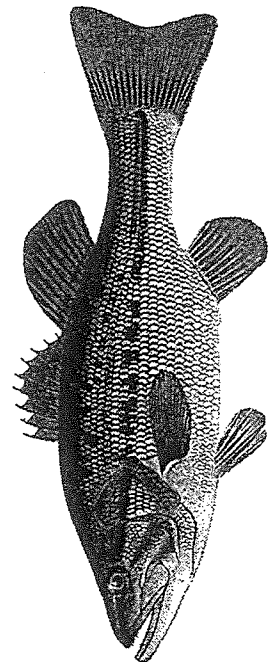
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S



T



U

Activity 1.2

V. BLUEGILL

Family: Sunfish
Shape: Flat, round pan
Mouth: Small "o" shape
Fins: Well-connected two part dorsal with a spot at base; Dorsal even with pectorals; Long pointed pectorals
Scales: Normal
Colour: Olive purplish tinge with orange to blue belly; Solid black gill-flap. Vertical bars on sides. Varies with sex, age, and between individuals
Habitat: Heavily vegetated, clear warm lakes/streams/rivers of southern, central and eastern Ontario, as well as the Quetico/Rainy River areas (small mesotrophic to eutrophic)
Habits: Travels in loose schools; Day in pool or shade; Dusk/dawn moves into shallows; Suck insects from the surface; Nibble on bait
Food: Small fish, insects, snails, and zooplankton
Tackle: 4-6 lb. line; Still-fishing or slow retrieve of a worm/crickets/grasshopper/small jig/fly; June best

W. ROCK BASS

Family: Sunfish
Shape: Heavy-bodied and stout
Mouth: Large, extending past middle of the eye
Fins: Well-connected two part dorsal; Dorsal even with pectoral
Scales: Normal; Each scale with a black spot
Colour: Brassy with distinct black spots; Distinct reddish eye; Change pigmentation to surroundings
Habitat: Shallow, weedy, slow-moving, soft bottom lakes and streams in southern, central, eastern and northeastern Ontario below the Lowlands, as well as below a rough northwest to southeast line touching the top of Lake Superior (mesotrophic areas)
Habits: Travels in schools; Daytime feeders; Sedentary and secretive
Food: Insects, snails, crayfish, and small fish
Tackle: 4-8 lb. line; Worms/grasshoppers/small crankbaits/spinners/flyes slightly off bottom; Mid-June to -July best

X. SMALLMOUTH BASS

Family: Sunfish
Shape: Slender streamlined shoe box
Mouth: Large; jaw extending to near front of eye
Fins: Connected two part dorsal with a deep notch
Scales: Normal
Colour: Dark green with golden-yellow/green sides with white belly; Black vertical bars; Colour intensity varies with habitat
Habitat: Moderately shallow, rocky and sandy areas of lakes and rivers across Ontario below a rough, east-west line touching the north shore of Lake Nipigon (large mesotrophic)
Habits: Ambush sight feeder; Most active morning/evening; Very territorial
Food: Small fish, bluegill, crayfish, and frogs
Tackle: 4-10 lb. line; Slow retrieve of jigs/frogs/minnows/spinner- and crankbaits/spoons/topwater plugs

S. PUMPKINSEED

Family: Sunfish
Shape: Flat, round pan
Mouth: Small "o" shape
Fins: Well-connected two part dorsal; Dorsal even with pectorals; Long pointed pectorals
Scales: Normal with scattered orange spots
Colour: Speckled greenish with yellowish-orange belly; Blood-red edge of gill-lab; Iridescent blue radiating lines on the cheek
Habitat: Vegetated, clear, quiet waters of southern, central, eastern, and near northeastern Ontario, as well as the Lake of the Woods/Lac Seul areas (small mesotrophic to eutrophic)
Habits: Spawn with bluegill; Congregate beneath cover; Feed on surface
Food: Aquatic insects, snails, and small fish
Tackle: 4-8 lb. line; Worms, grasshoppers, small spinners around vegetation; June cast to spawning beds; July-August cast to plant bed edges

T. BLACK CRAPPIE

Family: Sunfish
Shape: Flat, deep, round pan
Mouth: Large with paper thin lips
Fins: Well-connected two part dorsal; Dorsal even with pectorals; 7-8 spines in dorsal (white has 5-6 spines)
Scales: Normal
Colour: Greenish on top; Silvery to lighter green sides with irregular mosaic of black blotches; black vermiculation on fins
Habitat: Warm to cool rivers, backwaters, mostly in south (meso-/eutrophic)
Habits: In loose aggregates around cover such as docks, fallen trees, brush
Food: Small fish and invertebrates
Tackle: 4-6 lb. line; when still-fishing keep bait slightly above fish; or slow retrieve of small minnows/worms/crankbaits/spoons/jigs; Flyes only in late evening; Winter and spring fishing best

U. LARGEMOUTH BASS

Family: Sunfish
Shape: Slender streamlined shoe box
Mouth: Large; jaw extending beyond eye
Fins: Connected two part dorsal with a deep notch
Scales: Normal
Colour: Dark green with silvery-yellow/green sides with white belly; Black lateral stripe; Varies with habitat
Habitat: Clear to turbid, weedy, quiet, sand/mud bottom lakes and streams in southern, central and eastern Ontario, as well as below a rough northwest to southeast line running between Superior and Lake Nipigon (small mesotrophic to eutrophic)
Habits: Ambush sight feeder; Most active morning/evening; Very territorial
Food: Small fish, bluegill, crayfish, and frogs
Tackle: 6-10 lb. line; Slow retrieve of plastic worms & jigs/frogs/minnows/spinner- and crankbaits/spoons/topwater plugs in vegetation

Rules 'n Regs

Purpose: To introduce the *Ontario Recreational Fishing Regulations Summary*, and have members leave the activity comfortable with its use.

Outcomes: Members should understand the value and benefits of fishing regulations, the link between accurate fish identification and regulation, and the difference between rules and ethics.

Concepts: 4.5, 6.1, 6.3

Group size: 6 to 30

Site: Outdoors (picnic tables or grassy area) or indoors (class- or meeting room)

Time: 45 minutes

Supplies: *Ontario Recreational Fishing Regulations Summary* (1 each or per small group)

Options: Resource Sheet 1, *Some Ontario Fishing Rules*
Resource Sheet 2, *Using Your Ontario Recreational Fishing Summary*
Resource Sheet 3, *Scavenger Hunt*

A QUICK LOOK:

This activity focuses on the practical “how to’s” of the *Ontario Recreational Fishing Summary*. Skill in it’s use is as important as skill in casting. However, the intent here goes much further, introducing the value of fishing regulations and the role of ethics in fishing. While there is a focus on the *Summary*, don’t lose sight of this larger picture. It might be useful to review the section on ethics found in *Welcome to Take A Kid Fishing!* at the front of this Unit.

READY, SET, GO!:

Discuss rules in general, and why we have them. List examples of rules that members follow, and why they think each rule is a good idea. Refer back to the “rules” everyone followed during the first two activities, particularly ones that ‘protected’ living fish.

Ask if anyone knows any *fishing* rules - things you must or must *not* do when fishing. Accept and list all answers, e.g. only fish at certain times; only catch so many fish; only catch bigger (or smaller) fish; must have a licence.

Depending on the ability levels of your group, choose one of the following options:

- a) Hand out Resource Sheet 1 to the group, pointing out the rules for fishing in Ontario. (The rules on this sheet have been taken from the *Ontario Recreational Fishing Regulations Summary, 2000*)
- b) Create groups of three to five, and hand out a copy or copies of the *Summary* to each group. Give each group one rule-related question from the *Scavenger Hunt* and have them find and post the answer. When they are done, have them find other examples of fishing rules from the front of the summary.

Compare the rules from the Resource Sheet or the *Summary* with the group's initial list, and try to think of reasons why these rules exist, e.g.:

- **Closed seasons:** to protect fishes while they reproduce; to reduce overall fishing pressure.
- **Size limits:** to let fishes get big enough to reproduce in some cases; in others, to protect fish of prime spawning size.
- **Catch limits:** to leave enough fish for others to catch; to let fishes fulfill their role in the environment.

If you haven't created groups of three to five, do so now and pass out the *Summary* and Resource Sheet 2. Indicate that it is not enough to know the general rules. They need to know when they can fish and what they can keep in their area and at their specific fishing spots. The Resource Sheet will help them do this. Have each group work through the Sheet on their own, answering the questions as best they can. Work with each group individually, responding to questions they may have. Go over the Sheet as a large group to ensure that each small group got the right answers.

Emphasize the importance of knowing your catch to the proper functioning of seasons and limits. Challenge each group to come up with a season or limit for several fish, using only pictures of those fish, e.g. the fish cards from Activity 1.2. This could be done in a "game show" format, with points for first right answer and prizes for the winners.

FOR DISCUSSION:

Q: What could happen if people break the fishing rules and are caught?

A: Lose their licence, lose their fishing equipment and/or boat, pay a fine, go to prison (see under "Fishing Laws" near the front of the summary).

Q: Are there other reasons not to break the rules?

A: Basically, so there are fish for the future. This may be viewed very selfishly ("I want there to be fish for me") or very altruistically ("Fish deserve to live, too"), or even ecologically ("Fish are important to a healthy, functioning ecosystem.") The

important thing here is that awareness of some other reasons begins to move people away from following rules because they *have to*, to following them because they *want to*. It can also shape their behaviour in ways that go beyond just following the rules to how they interact with fish and their aquatic environment. This changes the discussion from one of laws and legal consequences to ethics and codes of behaviour. While this will be addressed again in Lesson 5, members should be aware of behaviours and consequences in each lesson and activity.

OTHER IDEAS:

- Have each group develop a question about fishing in their area, using the Summary. Swap questions among the groups and have them answered.
- Hand out Resource Sheet 3 (Scavenger Hunt). Have each member complete it prior to the next meeting.
- Have the whole group discuss the need to set rules or a code of behaviour for themselves.

HANDOUT MASTERS:

Resource Sheet 1: Some Ontario Fishing Rules (from FW C16, *Gone Fishin'*)

Resource Sheet 2: Using Your *Ontario Recreational Fishing Summary*

Resource Sheet 3: *Ontario Recreational Fishing Summary* Scavenger Hunt



STUDENT RESOURCE SHEET 1

Gone Fishin'

SOME ONTARIO FISHING RULES

Sport Fishing Licences

If you live in Ontario, you must have a fishing licence to fish unless you are:

- under 18 or 65 years of age and older;
- disabled;
- a status Indian fishing on your own reserve, or where treaties allow.

You **must** carry the licence when fishing.

Fish Sanctuaries

There are special places set aside, called "fish sanctuaries", where no fishing is allowed. Look for warning signs, or call your local Ministry of Natural Resources District or Area Office to see if there are any sanctuaries where you live.

Fishing Seasons

Some fishes can only be caught during part of the year. Each area of Ontario has its own seasons for each kind of fish, and one stream or lake may be different from another. A book of rules (*Ontario Sport Fishing Regulations Summary*) tells you these things.

How Many Fish?

For some fishes, you can catch and keep as many as you want. For other fishes, you can catch and keep just so many each day that you fish. The number for each fish is different in different parts of Ontario. See your book of rules.

Size Limits

For some fish species, you can only keep fish that are longer, or sometimes shorter, than the size limit. The size for each fish may be different for different parts of Ontario. See your book of rules.

Telling What You Have

Unless you are fixing fish to be eaten right away, you have to keep some of your fishes so that a Conservation Officer can tell what kind they are (leave a patch of skin on), how big they are (if there

is a size limit for that species), and how many you have (put only one fish or 2 fillets in each package).

Fishing Gear

There are some limits on how you fish, and some ways of fishing are not allowed at all.

1. You can only use one line when sport fishing in open water.**
2. A fishing line must not have more than four hooks on it. In some areas, only **barbless** hooks are allowed.*
3. A fish must be hooked in the mouth, and not snagged in some other part of the body. You must let snagged fish go.
4. You cannot use spear guns.
5. Dynamite is not allowed.
6. You cannot use lights unless they are part of a fishing lure.

Bait Fish

There are some limits on how you use bait fish:

1. Anyone with a fishing licence can catch bait fish for their own use. There are some limits on how many (no more than 120 fish in the summer or 18 kg in the winter) and the size of the nets or traps used to catch them.
2. Bait fish can **only** be let go into the lake or stream where they were caught.
3. Bait fish (and other types of live or dead bait) cannot be used in some places.

Other means of fishing

In **some** places and at **some** times, you can catch certain kinds of fishes using dip-nets, seines, bow and arrow, or spears. See your book of rules.

* A treble hook is considered one hook if part of a lure, but *three* hooks if part of a live bait rig.

** 2 lines, if fishing from a boat in most of Lakes Erie and Ontario; see your regulation exceptions.

RESOURCE SHEET 2

USING YOUR ONTARIO RECREATIONAL FISHING SUMMARY

Step 1. Look at the small map on page v. What area will you be fishing in? _____

Step 2. Find that map in the summary, using the table under # 3. Is your fishing area on that map? _____

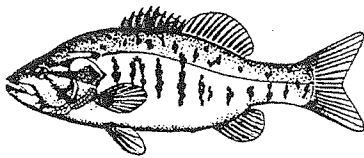
2a. If it is **not**, find the correct map, and then continue with 3. Correct map: _____

Step 3. Your fishing area will be inside a blue boundary, or line. Look at the blue number inside that line. That is your **division**. Your division is: _____

Step 4. Look at the *Division/Species* table that comes right after the map. Find your division number in the band across the top. Look down the column and across from each fish to find out when seasons are open.

When can you fish for **northern pike** in your division? _____

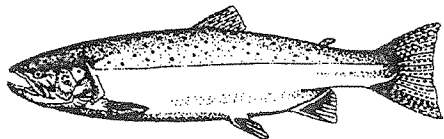
When can you fish for this fish:



Step 5. The same table will tell you how many fish of each kind you can catch and keep in one day. It will also tell you if there is a size limit for each kind of fish.

How many **walleye** can you keep in your division? _____ What if you had a *Conservation Licence*? _____ What is the size limit? _____

How many of this fish can you keep?



Step 6. Finally, you need to know *exactly* where you want to fish and find out if there are any special rules for that spot. Look under *Exceptions to the General Regulations*, which follow any *Additional Fishing Opportunities*. The streams and lakes are in alphabetical order, following some more general exceptions. Check both tables.

Is your fishing spot listed under the *exceptions*? _____

If so, what is the exception? _____ (over)

Why is all this so complicated? Each lake or stream in Ontario is just a little bit different from any other. To protect the fish so that they are still there when you grow up, we may need to treat each area differently. Where there are lots of fish you can keep more. Where there are fewer, or more anglers, you can keep less, or only ones of a certain size, or fish on fewer days of the year.

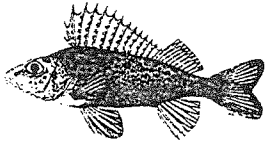
RESOURCE SHEET 3

ONTARIO RECREATIONAL FISHING SUMMARY SCAVENGER HUNT

There's lots of useful, interesting and important information in your *Fishing Summary*. See how many of the following items you can find by scavenging around in it. Most of the information can be found in the first 18 pages, but for a few items you will have to look deeper!

1. Are fish sanctuaries always marked with signs? _____
2. You do **not** need a Resident Fishing Licence if you are: _____
3. Is it ok to dump aquarium fish into Ontario lakes and streams? _____
4. What is a key identifier for **walleye**? _____
5. Can you keep a fish that has been snagged? _____
6. When is *Take A Kid Fishing Week*? _____ Are fishing licences required? _____
7. Name one fish you can spear somewhere in Ontario: _____. Can any fish be speared in or near your division? _____
8. If you see a poacher, what number should you call? _____
9. What is the date of this year's *Ontario Family Fishing Weekend*? _____
What is special about this weekend? _____
10. What phone number can you call to get a lost licence replaced? _____
11. Is it legal to fish with salamanders? _____
12. If you don't like rock bass in your lake and you catch one, can you throw it into the woods? _____
13. If you have a Conservation Licence, how many muskie can you keep? _____
14. What is the phone number of the nearest MNR office? _____
15. Can you take a live bass you caught and put it in a lake nearer your house? _____
16. How many lines can you have in the water? _____ How many hooks? _____
17. In what NW division do lake trout get Christmas Eve off? _____

18. Can divers have a spear gun when they dive? _____
19. How many bait-fish can you have year-round? _____ Can you sell them? _____
20. Are fish eaten as shore meals counted as part of your daily catch limit? _____
21. How many bullfrogs can you possess on June 28? _____
22. What *is* this? What should you do if you find one? _____



23. How big was the largest yellow perch caught in Ontario? _____
24. Do you require a permit to camp on crown land? _____
25. Are sculpins bait-fish or coarse fish? _____
26. Does a Conservation Officer need a warrant to inspect a vehicle if he or she reasonably believes that conservation laws are being broken? _____
27. What is one thing you have to do when going home with your catch? _____
28. Is it legal to try to catch fish when their season is closed, if you are going to release them? _____
29. How far north are rock bass found? _____
30. Can you fish with one single hook and one treble hook on your line? _____
31. Name one Division where only artificial flies are allowed as bait in some waters.

32. When can you use live bait fish in Algonquin Park? _____
33. What can sinkers be made of, besides lead? _____
34. Does "possession" include fish in your freezer at home? _____
35. Is an Outdoors Card a fishing licence? _____

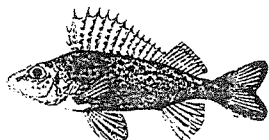
RESOURCE SHEET 3

ONTARIO RECREATIONAL FISHING SUMMARY SCAVENGER HUNT Leader's

There's lots of useful, interesting and important information in your *Fishing Summary*. See how many of the following items you can find by scavenging around in it. Most of the information can be found in the first 18 pages, but for a few items you will have to look deeper! *Note: page references based on 2000 Recreational Fishing Summary.*

1. Are fish sanctuaries always marked with signs? no (5)
2. You do **not** need a Resident Fishing Licence if you are: under 18/over 64 (1)
3. Is it ok to dump aquarium fish into Ontario lakes and streams? no (12)
4. What is key identifier for **walleye**? white tip on lower tail fin (14)
5. Can you keep a fish that has been snagged? no (9)
6. When is *Take A Kid Fishing Week*? August 1 - 7. Are fishing licences required?
yes (iv)
7. Name one fish you can spear somewhere in Ontario: carp, sucker, n. pike (9-10).
Can any fish be speared in or near your division? (9-10)
8. If you see a poacher, what number should you call? 1-800-222-TIPS (vi)
9. What is the date of this year's *Ontario Family Fishing Weekend*? varies - early July. What is special about this weekend? don't need a fishing licence (vi)
10. What phone number can you call to get a lost licence replaced? 1-800-387-7011 (3)
11. Is it legal to fish with salamanders? no - changed for 2000 (7)
12. If you don't like rock bass in your lake and you catch one, can you throw it into the woods? no (5)
13. If you have a Conservation Licence, how many muskie can you keep? none (3)
14. What is the phone number of the nearest MNR office? (96-7)
15. Can you take a live bass you caught and put it in a lake nearer your house? not unless you have a special licence (6, 12)
16. In most cases, how many lines can you have in the water? 1(open) (5); generally 2 (ice) (6) How many hooks? four (5)

17. In what NW division do lake trout get Christmas eve off? 24 (77)
18. Can divers have a spear gun when they dive? no (11)
19. How many bait fish can you have year-round? 120 (7) Can you sell them? no (8)
20. Are fish eaten as shore meals counted as part of your daily catch limit? yes (21)
21. How many bullfrogs can you possess on June 28? none (8)
22. What *is* this? What should you do if you find one? ruffe contact your Invading
Species Hotline 800-563-7711 (13)



23. How big was the largest yellow perch caught in Ontario? 1.0 Kg./2.25 lb. (18)
24. Do you require a permit to camp on crown land? no (12)
25. Are sculpins bait fish or coarse fish? bait (7)
26. Does a Conservation Officer need a warrant to inspect a vehicle if he or she reasonably believes that conservation laws are being broken? no (4)
27. What is one thing you have to do when going home with your catch? leave skin, wrap separately or leave head & tail where limits apply (16)
28. Is it legal to try to catch fish when their season is closed, if you are going to release them? no (5)
29. How far north are rock bass found? Lake Abitibi (14)
30. Can you fish with one single hook and one treble hook on your line? yes (5)
31. Name one Division where only artificial flies are allowed as bait in some waters.
18 or 21 (5)
32. When can you use live bait fish in Algonquin Park? never (45)
33. What can sinkers be made of, besides lead? clay, tin, bismuth, steel, putty (7)
34. Does "possession" include fish in your freezer at home? yes (5)
35. Is an Outdoors Card a fishing licence? no (1)

MEETING TWO: WHERE WILL I CATCH IT?

What will the group learn? Individuals will be able to name the four basic habitat needs and describe various habitats used by fish and humans. They will also be able to see plants and animals as part of a food web, and understand that these plants and animals are dependent upon each other and their habitats for survival. They will also understand that negative impacts such as water pollution can enter and follow these food web pathways, eventually reaching both sport fish and the anglers who eat them.

Objectives

1. To increase awareness, understanding and knowledge of fish habitats, including the basic needs that are met by those habitats, and the typical community members found in at least one habitat.
2. To create an understanding of aquatic food webs, and how pollutants can follow pathways within those webs.
3. To develop skills in using the *Guide to Eating Ontario Sport Fish*, and the motivation to do so.

In a nutshell

<i>Habitat Lab Sit</i>	15 minutes
<i>Water Habitats Site Study</i>	45 minutes
<i>Would You Drink this Water?</i>	20 minutes
<i>Food Web Tag</i>	30 minutes
<i>To Eat or Not to Eat</i>	20 minutes
Total Time:	130 minutes

Habitat - A Closer Look

Food, water, cover, and space are the four basic habitat needs of all living organisms--from bluegill to songbirds to humans. A bluegill spends its day trying to meet all its needs--feeding, drawing oxygen from water, hiding from predators, and finding enough space to move around in small, loose groups. If all these needs are regularly met, then the bluegill has found a welcomed habitat--a safe and thriving home.

Food. Sometimes, a single area doesn't fill all of an organism's needs: food in a lake, pond, or stream might be limited; too many fish that prey (feed) on smaller fish may be present and limit their food supply; large numbers of bass might eat all of the bluegill in a pond leaving none to reproduce and thus eliminating one of their food supplies.

People, also, may face food shortages. Sometimes these food shortages affect large human populations; sometimes they affect individual families.

Water. Water, as you might have guessed, is critical to a fish's survival. Quantity alone won't ensure a thriving fish population. The quality of water often decides which species, if any, can live in a given lake, pond, or stream. Water quality also affects where people can swim.

Cover. Aquatic plants, rocks, fallen trees, and other items form cover. Each type of fish uses cover for different reasons. Small fish stay in cover to avoid being eaten, while larger fish may use cover as camouflage to ambush unsuspecting prey. Both may use it for spawning. Humans also need cover to protect them from the rain, snow, and tornadoes!

Space. Space is the final critical need of any animal or plant. The amount of space available directly affects the number of plants and animals in that area. Some fish like minnows need very little space and will swim in schools. Others like catfish need more space and tend to be loners. Many animals have individual space needs. Humans also don't do their best in places where their personal needs for space are not met.

Only a limited number and size of fish can be supported in a lake or pond by these habitat components--this is the water body's carrying capacity. Carrying capacity is the total size and number of an organism that an area can support without damaging the individual organism or the area. When fishing, we should keep this in mind and not expect to catch what the system can't produce.

Food Webs

Food is one of the most limiting habitat components. Organisms need fuel to carry out their activities. To get this fuel, organisms transfer energy by feeding on each other. This energy flow can be represented by a food web. So, how is a food web spun in a pond, lake, or stream?

From the arctic to the tropics, the sun and nutrients are the source of energy for food webs. The sun and nutrients help plankton (microscopic plants and animals called food producers) grow. The plankton are eaten by minnows and insects (food consumers). The minnow is swallowed whole by a perch (food consumer), which is then chased and eaten by a northern pike (food consumer). The pike is dinner for a human family of four (food consumer). Finally, organisms such as bacteria (food decomposers) break down dead or waste materials into nutrients. These nutrients then provide future fuel for producers. But wait! The pike also eats minnows, and the people also eat perch, and the perch might be hungry enough to feed directly on the plankton. Now we've got a web.

Water, Water, Everywhere

Water is an essential part of habitat for all living organisms. Bluegill, pumpkinseed, northern pike, and crayfish all depend on water. But will all water sustain life? Or does water need to have a certain level of quality to be used by certain fish?

We impact the quality of water when we add things that don't belong there. Point-source pollution enters water from a single source, such as an outflow pipe or an oil spill. Non-point source pollution emerges from numerous sources; it can't be pinpointed to one origin. Chemicals or plant and other organic runoff from feedlots, lawns, urban areas, etc., are all sources of non-point pollution. These pollutants alter water, sometimes making it undrinkable or unusable, or even killing fish. This altered water must then be cleaned and filtered to make it fit to use again.

Water quality can also be altered by nature. Erosion (the wearing away and moving of dirt from a surrounding area) can be caused by rain, ice, wind, or water running overland (called surface runoff). This moving dirt and soil is often deposited in a stream or lake. Too much soil in the water can reduce the clarity (clearness) and increase sedimentation (the buildup of dirt and soil in a body of water). Erosion is a non-point source of pollution, that can be accelerated by human activity being done in the surrounding area (watershed).

Water quality affects where fish live, how they behave, and whether they survive. If water clarity decreases, a fish (who feeds by sight) may have trouble finding prey (because it is harder to see). If oxygen levels in a lake drop due to too many nutrients, some fish will die. Also, fish living in polluted waters can contain mercury, PCBs, and other contaminants (pollutants) that are harmful to people if eaten in the wrong amounts. It is essential that anglers understand how these contaminants accumulate within aquatic food webs, how they can ensure that the fish they eat is safe, and how they can work to reduce the contaminant levels in the fish that they catch.

We need to maintain and restore high water quality to our lakes, streams, and ponds. Stewardship of our environment means taking care of our waters...and our very future!

HABITAT LAP SIT[©]

Purpose: Through a physical demonstration involving the whole group, members will come to understand some of the interrelations among habitat elements and the fish they support.

Outcomes: Members should understand the concept of habitat, be able to name the four basic habitat needs of fish, and understand that fish and humans have a lot of needs in common.

Concepts: 1.1

Group Size: 12 to 30

Site: Outdoors (grassy area) or Indoors (gym or meeting room)

Time: 15 minutes

Supplies: Resource Sheet 1: Habitat Needs Master; mounting paper/ cardboard/tag board; scissors, string, clear contact paper (optional); Resource Sheet 2, Hooray for Habitat! (optional)

Before the Meeting: You will need to make enough Habitat Needs cards for the group. Habitat Needs cards are made by copying the master and cutting out the four needs. Mount each need to a piece of stiff paper and cover with clear contact paper. Make a hole in each of the top corners and thread the string through them. Adjust the string and cut it so that the card hangs around the neck and can be slipped over the head.

A QUICK LOOK:

This activity demonstrates the four basic habitat needs of fish. Group members become cover, food, water, or space and then form a circle, sitting on each other's lap. The leader will remove one of these needs, and watch the circle crumble.

READY, SET, GO!

The game begins by asking the group, "What are the four basic needs of fish?" To help them answer, ask them what they need to survive (answers will range from potato chips to video games). You can prompt them to place their needs into the four broad categories--food, cover, space, and water--in order to arrive at the correct responses. Some answers (such as video games) are not real needs--they're wants. You can

discuss this difference with the group. Once you get the correct responses, point out that all animals (including humans) share basic habitat needs.

Hand out a Habitat Needs card to each person and have them put it on. Try to end up with an equal number of each basic need. Form four groups, one for each need, and let groups discuss briefly why their need is important to fish. Bring the groups back together, and let them share their ideas with the others.

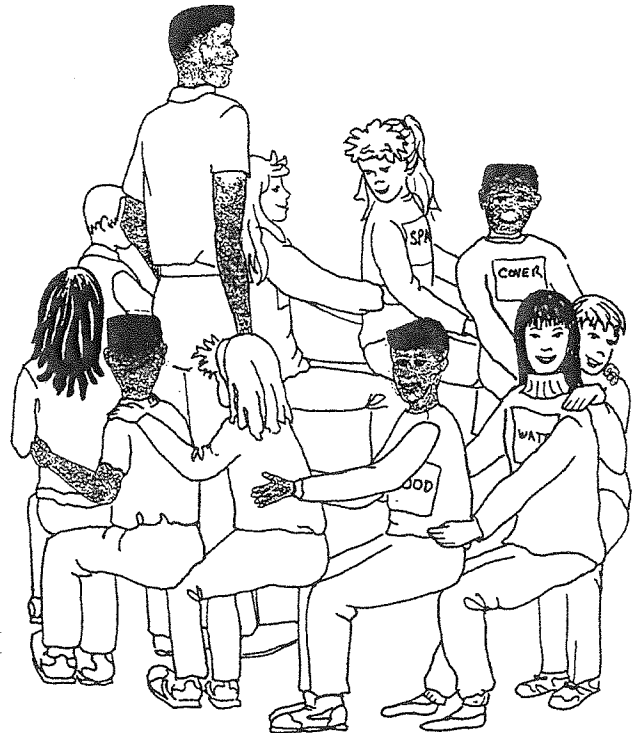
The group now forms one large circle by alternating cover, space, etc. They should stand shoulder to shoulder and face inward. Next, the group should turn to the right and take one large step toward the center. They should be close to one another and be looking at the back of the person in front of them.

Now stand in the middle of the circle. You are a fish in this lake--swim around a bit. (What do you look like? A perch? A walleye?) Tell the group members that they're responsible for keeping you alive! They need to balance the habitat by keeping the circle intact.

Participants should place their hands on the hips of the person in front and listen. At the count of three, everyone should sit on the knees of the person behind them, keeping their own knees together to hold the person in front of them up. Your group might be reluctant to sit on each others laps. If so, try having them make a two tier pyramid or just hold hands and lean sideways. and may need to be modified to meet your Remember, this is a beginner activity groups needs.

Recite "shelter, space, water/oxygen, and food in proper balance are the four basic needs of fish." At this time, if the circle has been disrupted by someone falling, discuss how the balance of the ecosystem is dependent on all of it's parts, big or small!

Try the circle again, this time simulating a disruption. For example, you might say "Pollution has affected the amount of oxygen available in the water. The oxygen available can't support the types of fish present." Remove the water/oxygens, and watch the circle collapse. Try other variations.



FOR DISCUSSION:

- Q. If we take lily pads away from the pond, which habitat part are we influencing?
- A. Cover--hiding places lost; Water/Oxygen--plants produce oxygen; Food--plants are producers and homes for many insects that fish eat; Space--more open areas and fewer hiding places.
- Q. Do you think that a fish's needs are the same in the winter and summer? Why or why not?
- A. Yes and no. Food needs change as the water temperature changes--above 80 F or below 50 F fish eat less and don't grow as much. Cover, space, and water (oxygen) needs stay pretty much the same, although they are met differently during these times. In fact, fish (like you) don't always get all their habitat needs from one area. Fish often go to different areas to fill their needs, depending on season, time of day, and weather.
- Q. What are the four basic needs of people? Are any of them ever affected by shortages?
- A. Food, Water, Shelter and Space. Yes (expand on each basic need--you can use a globe for this. Spin the globe, pick a country, and talk about shortages that the group knows about in that area).

OTHER IDEAS:


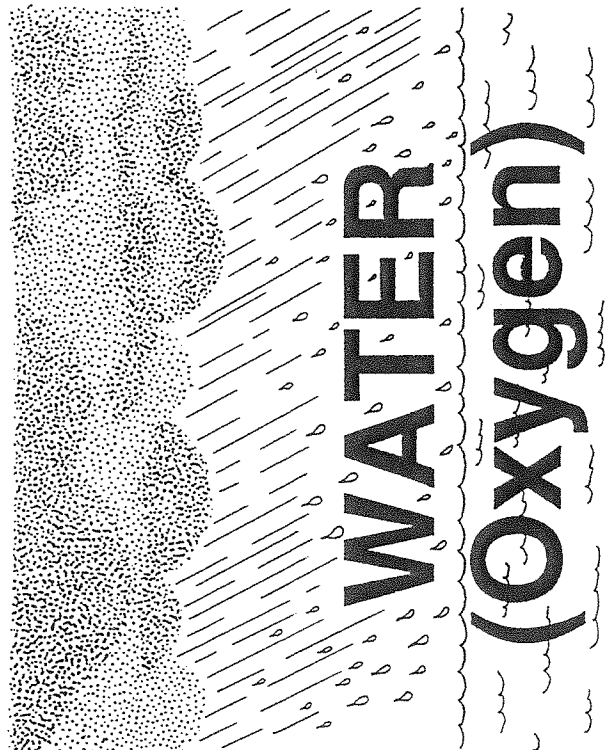
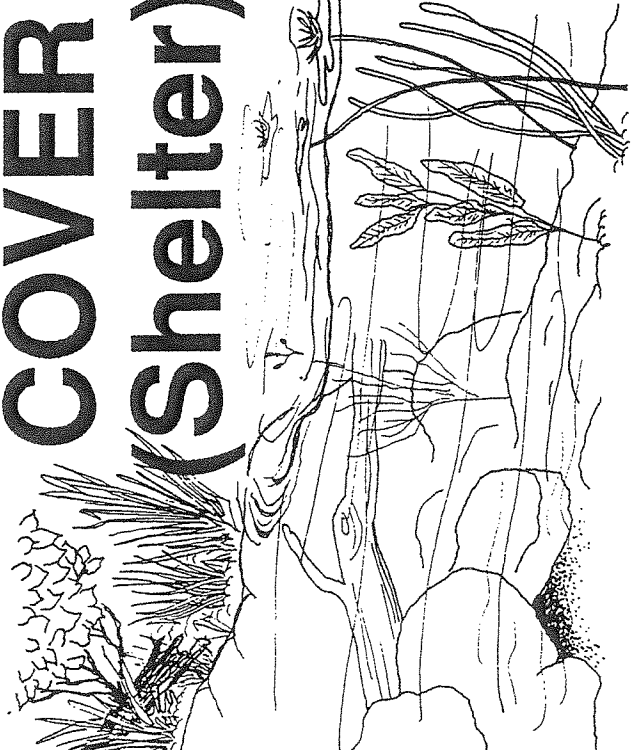
- Complete Resource Sheet 2, *Hooray for Habitat!*.
- Fish strive to meet their needs. So do people! Much of North America was settled with habitat needs in mind. Early immigrants and First Nations settled near water or where game (animals) and other food items were abundant. You might want to discuss this "historical habitat perspective" with your group. Ask them about their ancestors and how they lived and filled their habitat needs. Compare this historic environmental philosophy with that of today. Let them tell stories about their forefathers.

HANDOUT MASTERS:

Resource Sheet 1: *Habitat Needs Master*

Resource Sheet 2: *Hooray for Habitat!*

Resource Sheet 3: *Hooray for Habitat!* cut-outs

<p>SPACE SPACE SPACE SPACE SPACE SPACE SPACE SPACE SPACE SPACE</p>	 <p>FOOD</p>
 <p>WATER (Oxygen)</p>	 <p>COVER (Shelter)</p>

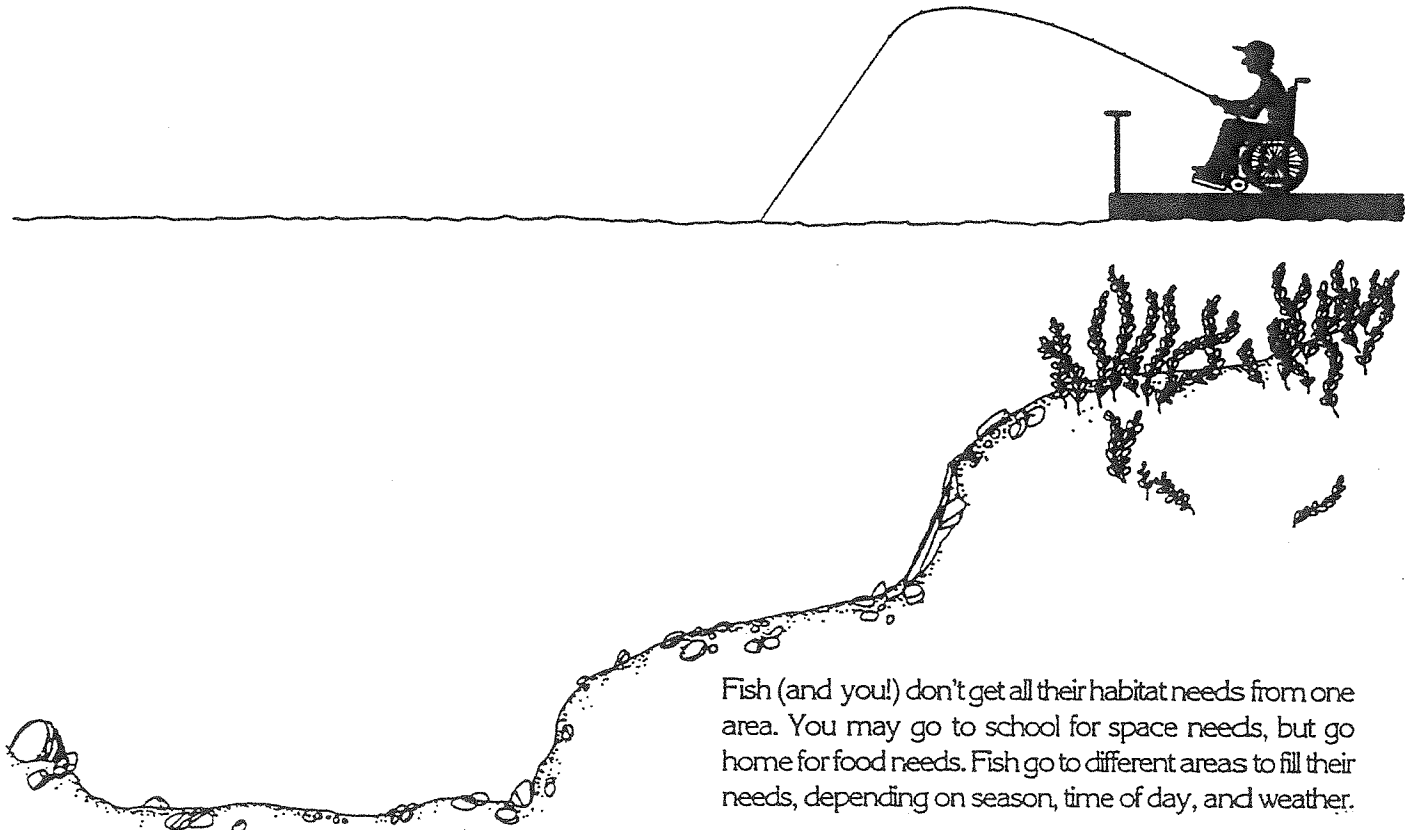
Hooray for Habitat!

All animals (including you!) need four basic items to live. These are: **water, shelter, food, and space**. Together they make up your **habitat**—the place where you live. If a habitat is missing one of these four things, then the animal who lives there is in trouble! A bass couldn't live in a lake without food. A worm couldn't live without drops of moisture from the soil. You couldn't do your best without a home for shelter.

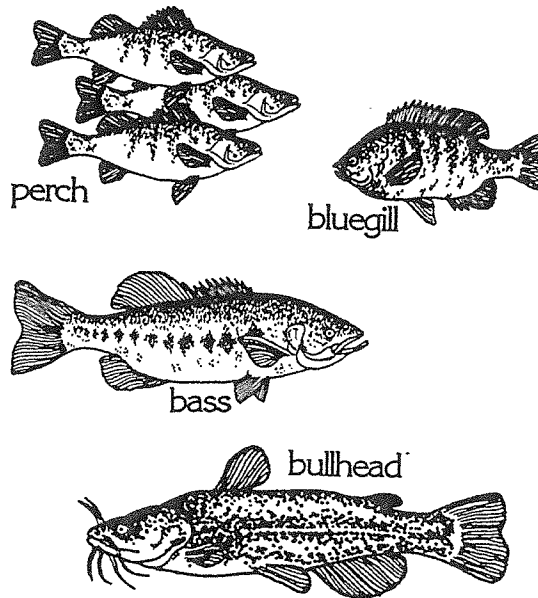
Here are some basic habitat needs of four common Ontario Fish. On the next page you will find pictures of these fish. Cut the fish out and paste them on the picture below. Be sure to match the fish to its summer habitat!

SUMMER HABITAT NEEDS

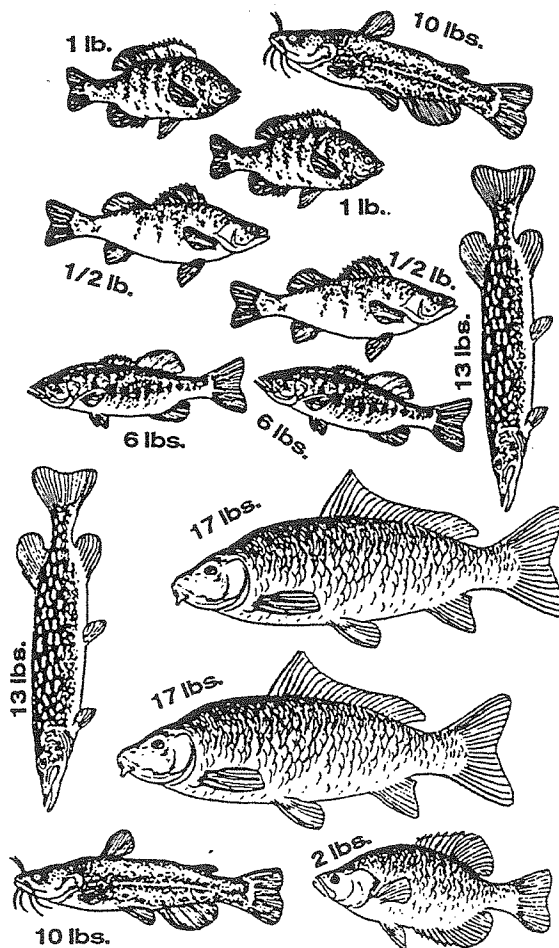
	PERCH	BLUEGILL	BULLHEAD	BASS
WATER	cool	warm	warm/cool	warm
SHELTER	open water schools	plants	holes	ledges
FOOD	minnow	insect/worm	worm	frog
SPACE	middle/deep water	shallow, near bank	bottom	shallow/middle water



Hooray For Habitat cutouts (Activity 2.1):



Living Room cutouts (Activity 2.4):



WATER HABITATS SITE STUDY

Purpose: Through a hands-on exploration of a local water habitat, members will better understand the support system for the fish that they catch.

Outcomes: Members should be able to identify common aquatic plants, invertebrates, and fish from one habitat; identify the four basic needs of fish (and people); construct a food web; and understand the concepts of food webs.

Concepts: 1.1, 3.5, 6.1, 7.5

Group size: 5 to 25

Site: Outdoors (lake, stream, etc.) or Indoors (classroom)

Time: 45 minutes

Supplies: Resource sheet 1, Water Habitats ID Sheets; paper, pencils; a hard surface to write on study plates (coffee can lids or the bottom of the gallon jugs); pantyhose (one leg for each net); coat hangers (one for each net); plastic gallon jugs (one for every net; use white jugs if bottoms are used for study plates); waterproof glue, duct tape, garden rake, large shovel, simple 10X magnifier; fishing license and/or MNR permit¹.

Before the Meeting: Choose your site carefully, based on safety, space, amount of structure, vegetation and variety of bottom types. Scout the shoreline to see if there are good spots for fish observation by small groups. If possible, secure 1 leader/group. Consider having the members gather the net supplies and construct the nets at home **prior to this meeting**.

A QUICK LOOK:

This activity allows individuals to explore a local water habitat and its inhabitants. Each individual will make a dip net and use it to collect aquatic animals. Participants will also select samples of plants and other animals to sketch by sorting through muck (dug by you from the bottom of the lake) and vegetation (harvested by you with a garden rake). Using the identification sheets, the group will try to identify the specimens and make a large food web using their sketches. This activity can be done indoors; however, you will need to collect the specimens a few hours prior to the event. For proper **transportation collection, and disposal procedures and regulations** check with your local Conservation Officer or MNR resource biologist.

¹ You can obtain a free "Licence to Collect Fish for Scientific Purposes" from your MNR District or Area Office. Discuss your location, sampling needs and limitations with staff biologists.

Background on good fish habitat is available on the Leader's Resource Information Sheet.

READY, SET, GO!

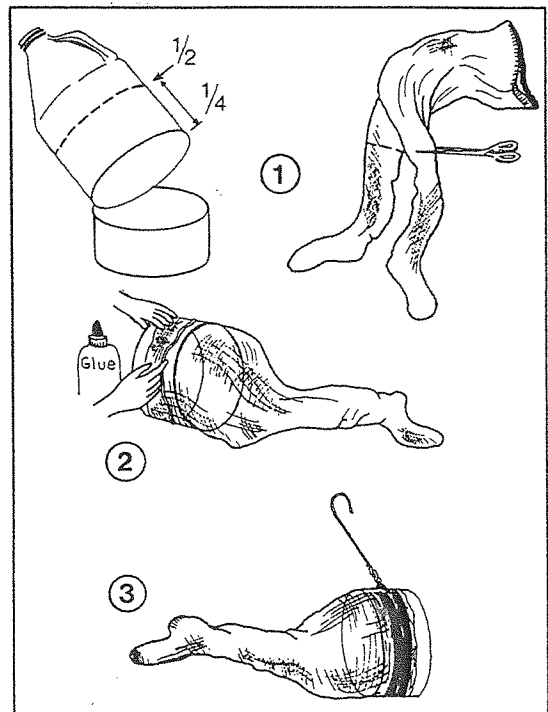
Collect enough materials for the program and to make the dip nets. Encourage members to bring what they can find from home. A simple dip net can be made indoors (before going to the site), outdoors in a sheltered location, or at home prior to the meeting by following these instructions.

Step 1. Collect enough coat hangers, pantyhose, and plastic bottles for each net you plan to make. Prepare the bottles and pantyhose as shown. The bottoms of the bottles can be saved and used as study plates (use white bottles; rinse bleach bottles well).

Step 2. Insert the middle section of the plastic bottle into the top of the pantyhose and attach with waterproof glue.

Step 3. Make a handle by bending the wire coat hanger to fit around the bottle. Secure the hanger to the bottle by wrapping duct tape around it a few times.

After your group has constructed the nets, you're ready to go explore. Divide them into three working groups and assign an adult instructor and/or helper to each group. Give the instructors/helpers copies of the *Water Habitats ID Sheets*. Give each youth a pencil, paper, and a hard surface to write on.



Note: If you did not do the waterside option of Activity 1.1, *Up Close and Personal*, consider doing it before you begin collecting.

Group number one will use the dip nets to collect three animals on or below the water's surface. This should be done from a gentle sloping bank or off a fishing pier. Areas with or near aquatic plants work best. Have them put their specimens on the available study plates while they study and draw them on their paper.

Group number two will sift (with bare hands) through the mud and muck that you have brought up with your shovel. There will be lots of "YUCK'S", but they should be able to find a dragonfly nymph or a worm. They should find three "mucky" insects or

invertebrates (organisms without a backbone, like a worm). Have them place their specimens on the available study plates while they study and draw them.

Group number three will sort through the plant samples you have collected with the rake. Let them select three different plants to draw. Have them place only a small piece of each plant on the available study plates while they draw them.

Rotate the groups until everyone has collected and drawn three animals, three plants, and three bottom critters. (Indoors, they will identify the items collected.) Alternatively, have each group collect and draw only one type of organism, and share their results with the other groups.

Work with the group to minimize your impact on the sample area by taking small amounts of what you need, and cleaning up the site after the activity. In areas of known exotic plants, be careful not to fragment any of these nuisance plants during harvest or leave them spread them along the shore. When transporting and disposing of your samples, make sure that you follow the current regulations and obtain any other required permits. Contact your local Conservation Officer or MNR resource biologist.

Now bring your budding biologists back together to share their discoveries. Using the Water Habitats ID Sheet, or through group processing, help them identify the animals and plants. Make sure that all items are correctly identified--if you can't agree on the specific species of plant, insect, or animal, agree on the type--for example, an amphibian or fish, a tree or bush, etc.

Let everyone help create a food web by arranging the drawings in the centre of the group's circle so that the various forms of life are connected by touching corners. Explain the food web and discuss the four basic needs that these organisms need to survive.

FOR DISCUSSION:

Q. What are the four basic needs of aquatic animals? Can you name some examples that you found?

A. Food, water, cover, and space (expand on each need). Examples might include: food--worms; cover--lily pads; water--lake; space--frogs not found in groups together, but spaced apart in their habitat.

Q. Do any fish use the items you collected for cover? If so, name the item and the fish that uses it for cover.

A. Pondweed (or almost any plant in the water) is used by bluegill and crappie for cover. Bass and trout use trees for cover (no, they don't hide on shore--they use overhanging roots and limbs).

- Q. How could biologists or other people use your findings to help this lake, pond, or stream?
- A. They could determine the quality of the water from the type of aquatic life that is present. Some organisms can survive in polluted waters while others can't. Other people, like anglers, can use the data to better understand where to fish.

OTHER IDEAS:

- “Step back” from this activity and view either this or another water body through the eyes of a seasoned angler. Use a group leader, or bring in another angler willing to share their habitat assessment abilities with your group. Have the angler check the site for good fishing spots, and relate the features, characteristics and reasons for their selections. Review the basic habitat needs of fish, and make the connection between good fish habitat and good fishing spots. Note: could be done as either a lead-in or conclusion to this activity.
- A comparison could be made between good and poor fishing spots as to amount of vegetation, available cover, variety and density of food (invertebrates and small fish), etc.

HANDOUT MASTERS:

Resource Sheet 1: Water Habitats ID Sheets

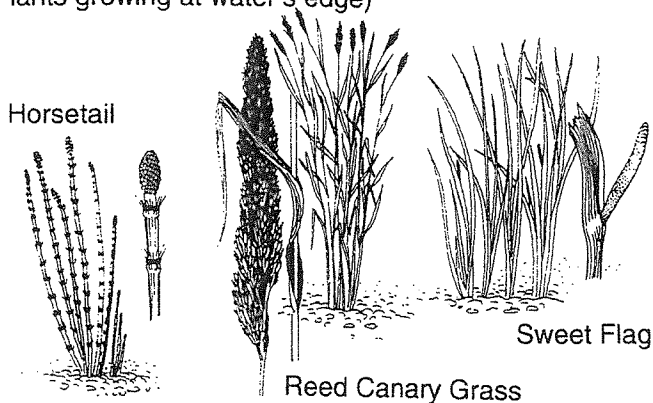
Leader Resource Sheet: Habitat Site Study

RESOURCE SHEET 1

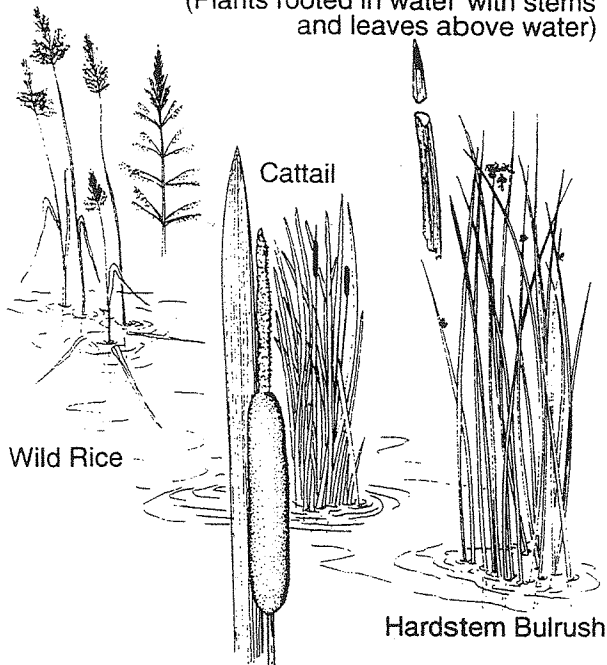
Water Habitat ID

WATER HABITAT ID SHEET

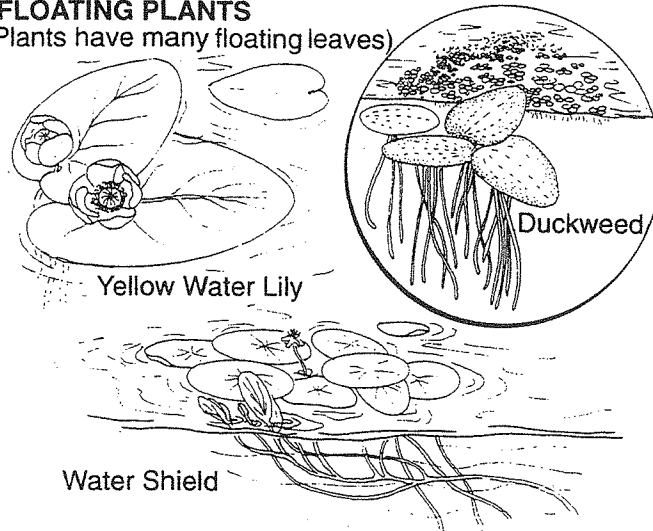
SHORELINE PLANTS (Plants growing at water's edge)



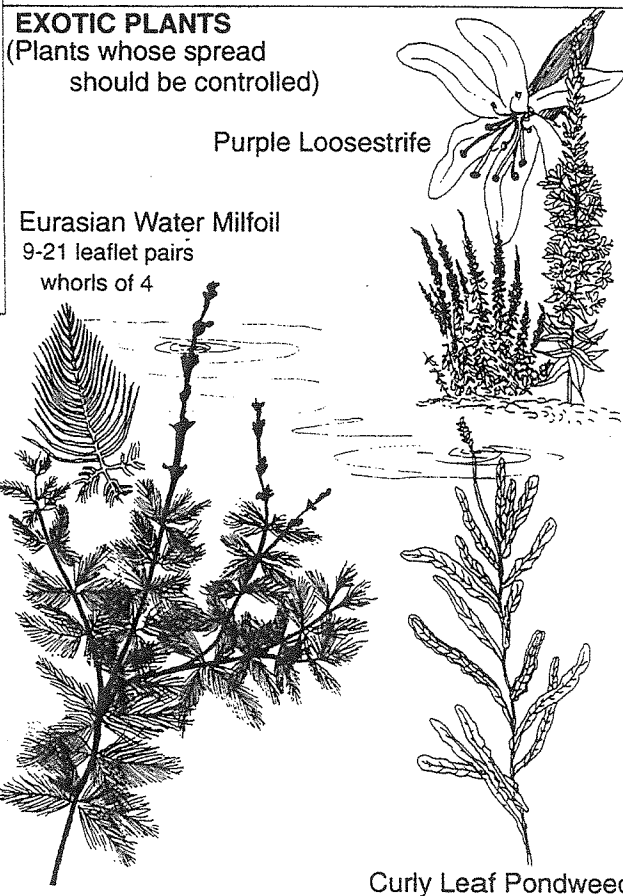
EMERGENT PLANTS (Plants rooted in water with stems and leaves above water)



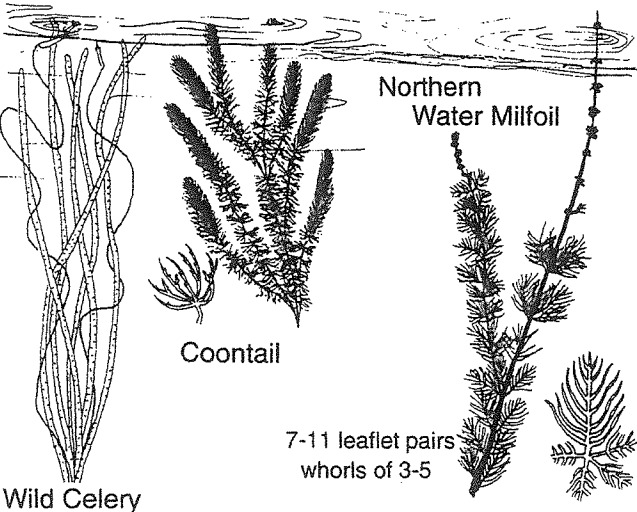
FLOATING PLANTS (Plants have many floating leaves)



EXOTIC PLANTS (Plants whose spread should be controlled)



SUBMERGED PLANTS (Plants completely under the water or nearly so)



RESOURCE SHEET 1

Water Habitat ID

WATER HABITAT ID SHEET **AQUATIC INSECTS**

The sheet features detailed line drawings of various aquatic insects. At the top left, a Mayfly nymph is shown with its characteristic feathery gills, and next to it is a Mayfly adult with its wings spread. To the right, a Dragonfly nymph is depicted with its long, segmented body and three pairs of legs, alongside a Dragonfly adult with its large, patterned wings. Below these are three beetles: a Giant Water Bug with its large, rounded body and prominent legs; a Predaceous Diving Beetle with its long, curved mandibles; and a Whirligig Beetle with its distinctive rounded, metallic-looking shell. To the right of the beetles is a Water Strider with its extremely long, thin legs. In the center, a Mosquito adult is shown with its long proboscis, and to its right is a Mosquito larva with its feathery gills. At the bottom, a Stonefly nymph is shown with its long antennae and gills, next to a Stonefly adult with its large, veined wings. Finally, at the bottom right, a Caddisfly nymph is shown with its segmented body and gills, and next to it is a Caddisfly adult with its long, thin body and wings. A scale bar at the bottom center is marked from 0 to 3.0 inches.

Mayfly nymph Mayfly adult Dragonfly nymph Dragonfly adult

Giant Water Bug (1-2") Predaceous Diving Beetle (1/8-1/2") Whirligig Beetle (1/4-1/8") Water Strider

Mosquito adult Mosquito larva

Stonefly nymph Stonefly adult Caddisfly nymph Caddisfly adult

0 0.5 1.0 1.5 2.0 2.5 3.0

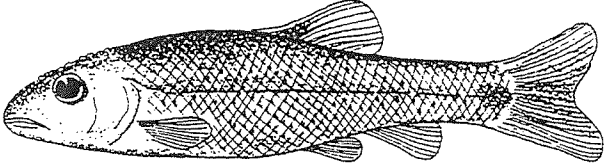
RESOURCE SHEET 1

Water Habitat ID

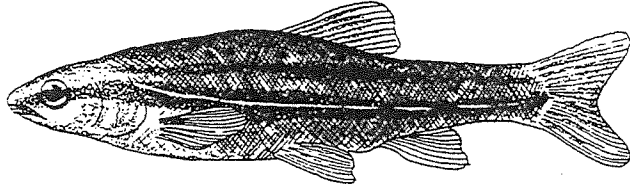
WATER HABITAT ID SHEET

MINNOWS

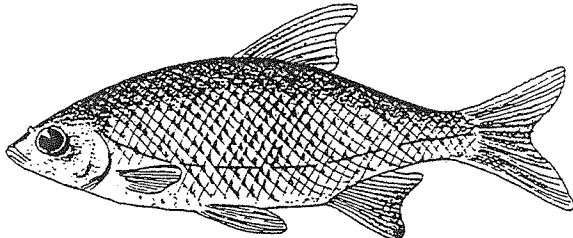
Creek Chub (10")



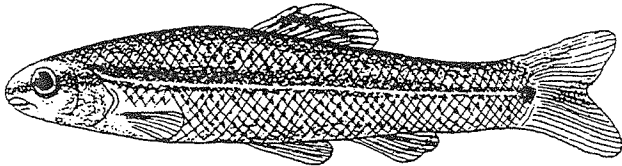
Northern Redbelly Dace (3")



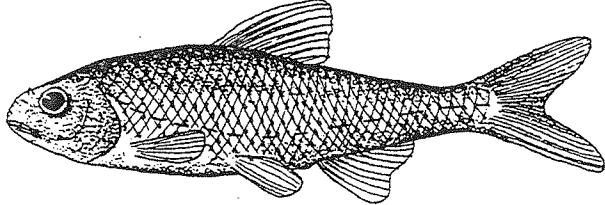
Golden Shiner (8")



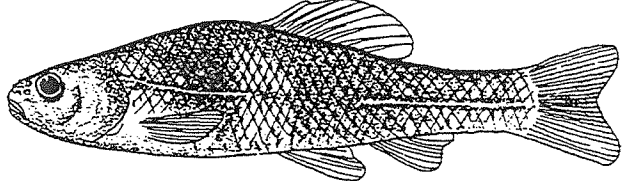
Bluntnose Minnow (3")



Common Shiner (4-12")

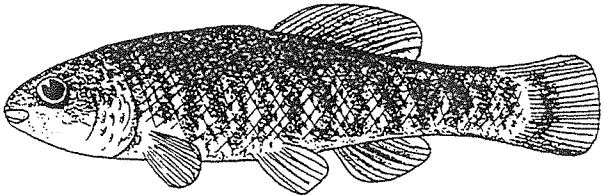


Fathead Minnow (2-3")

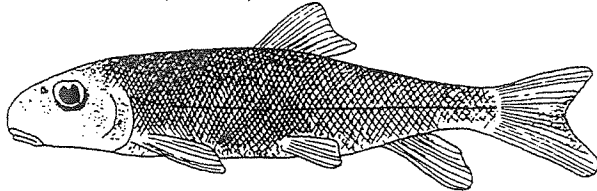


OTHER SMALL FISH

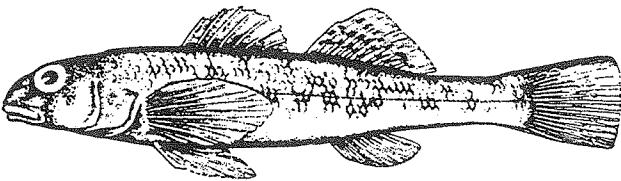
Mudminnow (4-7")



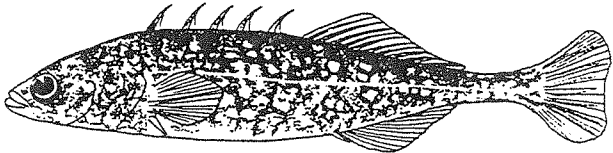
White Sucker (12-17")



Johnny Darter (2.5")



Brook Stickleback (3")



NOTES:

LEADER RESOURCE INFO

Habitat Site Study

One good way to increase members' awareness and understanding of the lives and value of fishes is to visit and examine the environment in which fishes live. The practical knowledge of local experts can be combined with the student's own assessment of the habitat to produce a habitat profile for locally important sport fish. Field trips should be well planned in advance.

Important physical characteristics of **coldwater streams** include patterns in stream velocity and topography. These factors affect where plant and animal species live in the water.

The velocity of a stream is an indicator of its ability to carry particulate material. The faster the flow, the more materials will be carried in the current. As water slows, particularly around curves or against obstructions, the water cannot carry heavy particles and so they are deposited on the bottom; this explains sand bars and materials deposited on the bottom of pools in streams. Students can test to see in what parts of a stream the water moves fastest. In any section of a stream, the water at the edges is slower than at the centre and water at the surface is faster than at the bottom.

Pools, shallow riffles, runs or flats are important in combination, and can be discovered by observing the depth and general shape of a stream. A riffle is a shallow, swift-flowing section of stream where the water surface is broken by gravel, rubble or boulders. Water depths range from less than 1 cm to 20 cm. A pool is a deep, slow-moving body of water. Runs are deep and swift-flowing and floats are shallow, slow-moving sections. These areas are important for certain species of fishes for shelter, food and nursery habitat.

The most typical native fish in these streams is the brook trout, but their lower reaches have also been colonized by rainbow and brown trout. Migratory spawners such as coho and chinook salmon will come to reproduce and spend the early stages of their life cycle. Abundant aquatic and terrestrial invertebrates are eaten directly by even the larger trout, or form food for sculpins and other smaller fish which, in turn, are consumed by trout and other large fish predators.

Good-quality **warmwater lakes, rivers and streams** usually have extensive areas of shallow water which warm quickly in the spring and stay consistently warm throughout the summer and early fall. These waterbodies are rich in nutrients and highly productive, with dense populations of both phyto- and zooplankton supporting large and sometimes diverse fish communities.

High rates of organic production and decomposition lead to an abundance of soft bottom deposits. Rooted aquatic vegetation is plentiful in these deposits, and provide food and other habitat requirements for aquatic invertebrates. These invertebrates in turn serve as food for fish. Stumps, logs, docks and other structures also supply shelter in the shallows and are colonized by invertebrates, thereby providing fish with both food and protection.

Although not essential to a warmwater fish community, rock rubble areas add diversity, attract their own invertebrate populations, and will be used, when food is available, by species such as rock bass and smallmouth bass. These fish may also spawn among the rocks, which can also provide protection for young smallmouth bass. These rocky areas are, however, essential spawning grounds for walleye, a cooler-water fish that has been introduced into many warmwater fish communities.

Along the shore, good warmwater fish habitats commonly have a significant buffer strip of natural shoreline vegetation, including semi-submerged, marshy areas. These areas contribute to natural river productivity, and at the same time keep excess nutrients and silt from washing into the water and increasing the nutrient load beyond its natural capacity.

Basses, sunfishes, rock basses and crappies are adapted to live around cover such as vegetation, stumps and logs, and are often abundant in warmwater habitats. Bottom-feeding fishes such as catfishes and suckers may also be plentiful. Numerous species of minnows usually form an important part of the food base. In some areas of Ontario, pike, perch, and walleye are also found.

Would You Drink This Water?

Purpose: To demonstrate the limited nature of the freshwater component of fish habitat, and how that water may be impacted by pollution.

Outcomes: members should know how much fresh water is on the earth, be able to define renewable and non-renewable resources, understand that pollutants are often invisible, and know how to use all their senses before labelling a substance polluted.

Concepts: 2.1, 2.2, 2.3

Group Size: 4 to 30

Site: Outdoors (no wind; near drinking water) or Indoors (classroom)

Time: 20 minutes

Supplies: ice cream pail with 1 gallon (4 l) of water; clear plastic cups (a set of six for each group and one extra); eyedropper, water, green food colour, powdered coffee creamer, peppermint extract (or other easily smelled but clear substance), onion extract, salt, blindfolds (separate set of two for each group), *Would You Drink This Water Log* (Resource Sheet 1)

Before the Meeting: Just prior to the lesson fill your bucket with 1 gal. (4 l) of water and mark a cup with a 1/2 cup (250 ml) line. Next, prepare your "polluted" water samples for each group. Fill six glasses 3/4 full of water and label them one to six. Pollute five individual glasses with one of these substances: green food colouring, onion extract, coffee creamer, salt, and peppermint extract). One glass should be left as water only. The plain water, onion, salt, and peppermint extract should appear clear. The food colouring and coffee creamer will be cloudy. Place these six glasses out of sight for use later in the activity. **Make sure to use clean, unused blindfolds and sterilized cups for each group.**

A QUICK LOOK:

In this activity, you will describe the water cycle, demonstrate how much fresh water is available for use, and define renewable and non-renewable resources. In the second part, the group(s) will use their senses of sight, smell, and taste to examine six water samples (five "polluted") and decide which they would drink.

READY, SET, GO!

Water is an obvious, but absolutely vital, component of fish habitat. Explain that earth is a "water planet": 75% is covered with water (or someone can volunteer this figure). This amount is simulated by a one(U.S.)-gallon bucket (3.8 l) of water.

Ask everyone how much of the water in the bucket they think is freshwater. Measure 1/2 cup (250 ml) of water from the bucket. This represents all the freshwater on the earth--the rest is salt water in oceans. Less than 3% of all water on earth is freshwater--found in lakes, rivers, underground, frozen in ice, etc.

Ask the group how much of the water in the cup they think is available for animal, plants, and human use. Remove one drop of water from the 1/2 cup. This is ALL the freshwater available for use! The rest of it is frozen in icebergs and at the poles.

Review the water cycle illustration (pg. 70) with your group. Explain that the water on earth today is the same water that has been here for aeons. Dinosaurs slurped the same water that comes out of the kitchen tap! No new water is ever made. Water circles in the hydrologic cycle--precipitation to transportation to storage to evaporation. Discuss ways that water could become polluted in this cycle (runoff, air pollution) and how it is cleaned (infiltration, humans).

Explain to the group that wise conservation (including recycling) of non-renewable resources, such as oil, minerals, and water, needs to be stressed and practiced by all of us. Once these items are used, they do not regenerate. Renewable resources, like fish and humans, can replenish themselves as long as their habitat needs are met. But just because a resource is renewable doesn't mean it will never be used up or that misuse won't occur--point out some examples of extinct or endangered species. Misuse and natural disasters have often required that we manage our limited resources. For example, droughts world-wide have caused us to manage the crop supply through rationing. Sometimes it is only through management that we can guarantee that we will have something left for future needs.

Polluting our Waters

Now you're ready to demonstrate pollution. As a large group or in smaller groups of four or five, assign someone to record responses (one for each group) and give them the "Would You Drink This Water?" log. Next, select two volunteers to be the "samplers" and give them each a new, clean blindfold (don't reuse blindfolds for additional groups).

From a distance, let the group(s) visually decide which water they would drink and record it on their log. Now, you should blindfold the volunteers. Explain that the water won't make them sick. One will taste (small sips only!) and the other will smell the samples. (If doing this activity with more than one group, use a clean glass each time for tasting the substances.) Remind the audience and volunteers to keep their

reactions secret until each of them has had a chance to try the liquid and they are asked to respond by the recorder. Mix the order of the glasses up so that the blindfolded volunteers won't know which one they are sampling.

Bring the groups back together. Have them compare the differences between the sight, smell, and taste preferences and which ones they thought were fit to drink. Share with them the contents in each of the samples and share how these could represent real situations: For example, green food colouring as algae, onion the smell of an oil spill, coffee creamer as turbid water, and the peppermint a substance that can be tasted but not seen or smelled.

FOR DISCUSSION:

Q. Are all pollutants visible?

A. No, for example, the onion and peppermint extract weren't visible. Likewise, pollutants such as mercury and PCB's may not be visible in our water supply.

Q. Are substances that we see or taste in the water always unhealthy?

A. No, some just look bad, like the green food colour. Algae tastes bad and can be unsightly, but it is not always unhealthy.

Q. Name three types of pollution that you have seen in or near water.

A. This will vary greatly, but includes--litter, fertiliser/pesticides, oil from cars, soil from erosion, etc.

Q. What effects might pollutants have on fish and their habitat?

A. This question is developed further in the next activity. Accept and list answers, and come back to this issue then. Possible answers: Pollutants can accumulate in fish to make them unhealthy to eat. Pollutants can cause components of habitat to be destroyed which causes stress on the fish which leads to diseased and eventually dead fish.

Q. What if there are pollutants that you can't see, smell or taste?

A. These might be the worst, because it is harder to tell that they are there, and that they might be causing problems. Sometimes you can't see, smell or taste them because they have dissolved into lots and lots of water. This leads to the phrase, "the solution to pollution is dilution." But just because something disappears into the water doesn't mean it goes "away". The next activity will demonstrate what sometimes happens to it.

OTHER IDEAS:

- Ask group members where in their neighbourhood or city have they seen pollution problems. Discuss what might be the source of these pollutants, what effect they have on the habitat, and what effect they have on the fish that we catch and eat.

- Make a list of the "good" and "bad" sites or facilities and select a few of each to visit. Contact the owner or Public Relations Department to get permission to visit the site or set up a tour of the facility. Have the tour guide explain where they collect the water, what they use it for, if they clean it, how it is disposed, and what other programs they do to help protect our resources. After the tour, ask group members what they, the owner, or the company might do to help make the process less polluting or expand their good efforts to other areas.

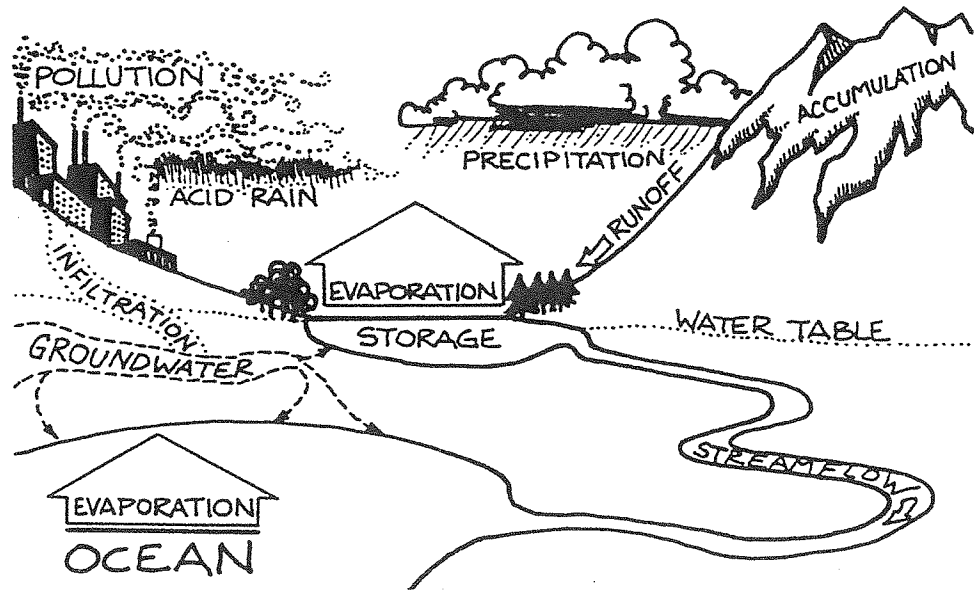
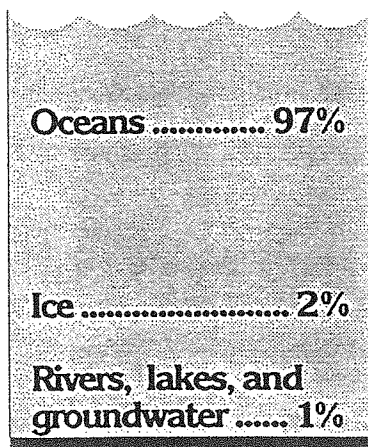
HANDOUT MASTERS:

Resource Sheet 1: *Would You Drink This Water?* Log

The Hydrologic Cycle

The water you drink today is the same water that dinosaurs slurped. It's also the same water that your great-great-great grandchildren will drink! Water goes round and round in the **hydrologic** (hi-dro-LAH-jik), or water cycle. If we pollute our water, then we have to make it clean again. We can't make new water.

Earth's Water Supply



RESOURCE SHEET 1

Would You Drink this Water?

WOULD YOU DRINK THIS WATER?
Which glass of water would you drink based on your senses of sight, smell, and taste? Place an "X" in each column if you would drink this water sample.

	Sight	Smell	Taste
Glass 1	_____	_____	_____
Glass 2	_____	_____	_____
Glass 3	_____	_____	_____
Glass 4	_____	_____	_____
Glass 5	_____	_____	_____
Glass 6	_____	_____	_____

WOULD YOU DRINK THIS WATER?
Which glass of water would you drink based on your senses of sight, smell, and taste? Place an "X" in each column if you would drink this water sample.

	Sight	Smell	Taste
Glass 1	_____	_____	_____
Glass 2	_____	_____	_____
Glass 3	_____	_____	_____
Glass 4	_____	_____	_____
Glass 5	_____	_____	_____
Glass 6	_____	_____	_____

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	Sight	Smell	Taste
Glass 1	_____	_____	_____
Glass 2	_____	_____	_____
Glass 3	_____	_____	_____
Glass 4	_____	_____	_____
Glass 5	_____	_____	_____
Glass 6	_____	_____	_____

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	Sight	Smell	Taste
Glass 1	_____	_____	_____
Glass 2	_____	_____	_____
Glass 3	_____	_____	_____
Glass 4	_____	_____	_____
Glass 5	_____	_____	_____
Glass 6	_____	_____	_____

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	Sight	Smell	Taste
Glass 1	_____	_____	_____
Glass 2	_____	_____	_____
Glass 3	_____	_____	_____
Glass 4	_____	_____	_____
Glass 5	_____	_____	_____
Glass 6	_____	_____	_____

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	Sight	Smell	Taste
Glass 1	_____	_____	_____
Glass 2	_____	_____	_____
Glass 3	_____	_____	_____
Glass 4	_____	_____	_____
Glass 5	_____	_____	_____
Glass 6	_____	_____	_____

NOTES:

Food Web Tag

Purpose: In this active simulation/role play, members become elements of the food web in order to illustrate both population dynamics and the biomagnification of pollutants in top predators and, potentially, anglers.

Outcomes: Members will understand the carrying capacity of water bodies, predator/prey relationships, food webs, and the transfer of energy, and pollutants, through the web.

Concepts: 1.1, 2.1, 2.2, 4.4, 4.7, 4.13, 6.1

Group Size: 8 to 30

Site: Outdoors (lots of open space) or Indoors (gym)

Time: 30 minutes

Supplies: 3 - 4 gallons (10 – 15 l) of popcorn¹, Food Web Critter Tags Master (Resource Sheet 1), sandwich bags, permanent marker, masking tape, hula hoops or rope loops (2 or more)

Before the Meeting: Copy the Food Web Critter Tags Master and make enough of the tags to do each of the fish population scenarios you want to demonstrate.

Identify the boundaries of the "lake" where the game will be played (about the size of a basketball court). Spread "plankton" (popcorn) randomly about the surface of the lake. Mix different coloured popcorn in with the regular popcorn to simulate pollution in the lake. One colour can signify mercury, another PCBs (polychlorinated biphenyls), etc. Let the fish feed on all colours of popcorn – don't tell them that some is "polluted".

Mark the sandwich bags (fish stomachs) with a permanent marker to indicate fill levels: the fill level of a minnow will be 1/3 of the bag; the perch will be 2/3; and the northern pike will be a full bag. Note: Other fish can be substituted to match the common species in your area. Make sure that you have the food web order right--a bluegill won't eat an adult largemouth bass, but that bass will eat the bluegill.

¹ Alternatives to popcorn include different varieties of pasta, bread bag tags, marbles, coloured beads.

A QUICK LOOK:

In this activity, people act out and observe a food web in action by becoming minnows, perch, and walleye. The primary energy source driving the lake is plankton, represented by popcorn! Each species feeds on the popcorn and/or each other to fill their stomachs (sandwich bags) with food. Different population ratios or combinations are tried in an effort to balance this lake.

READY, SET, GO!

Explain that food webs are the basic building block of all life. The sun and nutrients are the beginning of all food webs. They fuel the production of plant life and plankton, which in turn are food for other animals. This process continues up the food web and eventually reaches humans. All these organisms are interrelated by their habitat needs and their dependence on each other's role in the food web. The maximum number of animals that can be supported by a habitat without causing harm is called the carrying capacity. Carrying capacity can vary from season to season or year to year. It is also affected by other things like weather and nutrients.

Put two hula hoops or rope loops into the "lake". Tell the youth that these items simulate cover and act as safe places for the prey (minnows and perch) to hide in from predators (perch and northern pike). Instruct the youth who are prey that they may stay in the hoops/loops for only 5-10 seconds at a time.

Start with a lake containing only minnows. Tape a picture of a minnow on everyone's back. Then, let the minnows "feed" on the "plankton" by filling their bags (stomachs) with popcorn. Let the feeding occur for 1 year (about 5 minutes). How many of them fill their bags to the necessary line? How long could they feed before they ate all of the food? Are we at the lake's carrying capacity for minnows? Does the lake need something to help balance it--like a predator?

Introduce predators: let some people now become perch to feed on the minnows and plankton. Other predators will be northern pike that feed on minnows and perch. Make sure that the youth change the signs on their backs to reflect their new roles. (An approximate ratio of 6 minnows/3 perch/1 northern pike make a balanced lake.)

Predators need to tag their food source. If tagged, the captured fish must empty their stomach contents into the stomach of the predator. (No one else can tag a fish while transferring food until that process is done.) The tagged fish is now dead and must sit down and wait for the bacteria (decomposers) to recycle them back into nutrients.

Select a few participants to become bacteria. They are responsible for removing the dead fish. They must escort the dead fish to the bottom of the lake (north end of your lake) where they recycle the fish into nutrients for fuel to grow new plankton. Use this

stock of dead fish to periodically add to the population of minnows, perch and pike (e.g., any fish that gets a full stomach is successful, and can “reproduce”).

For more advanced youth, select a few dead fish to become reborn as anglers (there is a certain justice here, isn't there?). Anglers must first get their fish bait, by tagging a minnow. While holding hands, the minnow and angler can catch a perch or pike, one at a time, by having the minnow tag that fish (perch and minnows can use the hula hoops as safe spots from the anglers; pike are too big). The angler will then escort this fish to the shore. If your lake is experiencing over-fishing, enforce regulations. For example, make anglers hop on one foot to catch fish, or limit their catch.

Near the end of the game, stop the action and assess the level of contamination in each type of fish and in the anglers. Which type of fish have large amounts of coloured popcorn and why (the *amount* is important here, not the proportion – fish will keep and accumulate pollutants over time)? Fish with a “significant amount” of coloured popcorn (successful pike) are unhealthy and are now demonstrating unusual behaviours. Assign these youth a different means of movement (skip, walk, crawl) to finish the game.

Now look at the survivors of the lake. Depending upon how balanced your lake is, you might have a good mix of perch, minnows, and northern pike. Are the numbers of fish left representative of the lake's carrying capacity for each of these species? Or is the lake headed for trouble? For example, if you had more northern pike than the carrying capacity would allow, they might be the only fish left or on their way to eating themselves out of “house and home”. How long could they last without a food supply?

Point out that some fish in certain lakes and streams live with high levels of mercury, PCB, and other contaminants in the fatty portions of their bodies. These fish can be harmful for human consumption, especially if they are eaten on a regular basis (note coloured popcorn in angler's bags). People who eat a lot of fish can reduce their risks of contamination by following the various guidelines outlined in the *Guide to Eating Ontario Sportfish* (see next lesson).

If time permits, try different populations of fish to try and balance the lake, or start with a different combination of the same fish.

FOR DISCUSSION:

- Q. What would happen if the plankton supply was reduced in a lake or pond?
- A. A basic link in the food web would be lost. The web would unravel since there would be no basic source of food (energy) for the fish.
- Q. What would happen if all the northern pike and most of the perch were overfished by anglers from the lake?
- A. If the northern pike were overfished, there would be few predators left to eat the perch. The perch population would increase until they depleted the minnows. If the

perch were overfished, the northern pike would be affected because their food source would diminish. The northern pike population in this case might start to decline, fish could become very skinny, or they might not grow any larger than a hammer's handle.

- Q. Can you name any needs that aren't met in your life? (Think of the four parts of habitat). Are there any needs in your life that are met every time?
- A. Answers will vary greatly. Examples--food might be limited, if the family is large or the economy is tight. Space might be limited, if personal needs for privacy are not met.
- Q. High levels of pollutants can occur in some fish, even when the levels of those pollutants in the water are very low. Why is that?
- A. Some pollutants are taken in by members of the food chain, but they do not get rid of them very quickly (a lot are stored in fat cells). These members slowly accumulate the chemicals over time. When these members are eaten, much of their accumulated chemicals are then stored in the predator, which accumulates the chemical more quickly with each prey eaten. Each step up the chain increases the amount and rate of accumulation.
- Q. If each water flea contains one bit of pollution, and a pike eats ten walleye which ate ten perch which ate ten minnows which ate ten water fleas, how many bits of pollution are transferred to the pike?
- A. 10,000, if no pollution is lost.

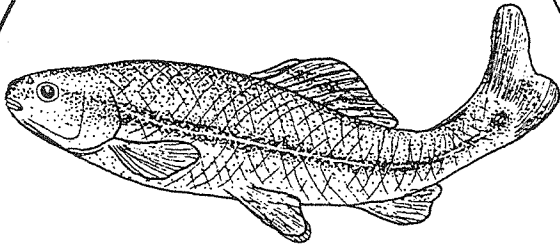
OTHER IDEAS:

- Do **Resource Sheet 2: *Living Room***

HANDOUT MASTERS:

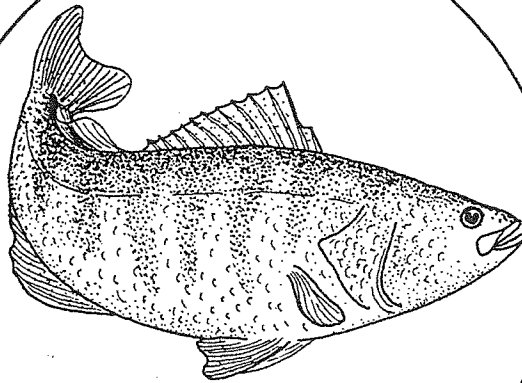
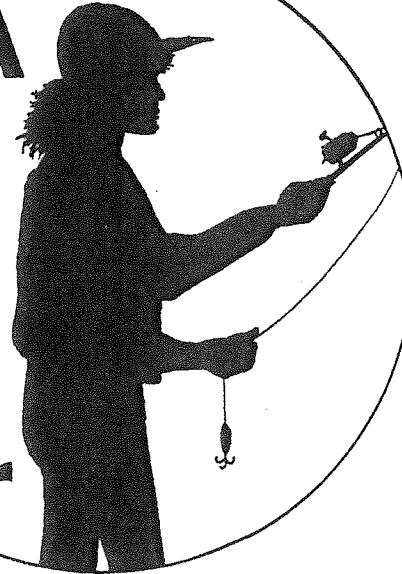
Resource Sheet 1: Food Web Critters

Resource Sheet 2: Living Room

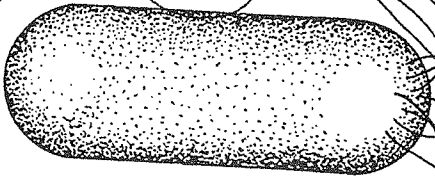


Minnow

**A
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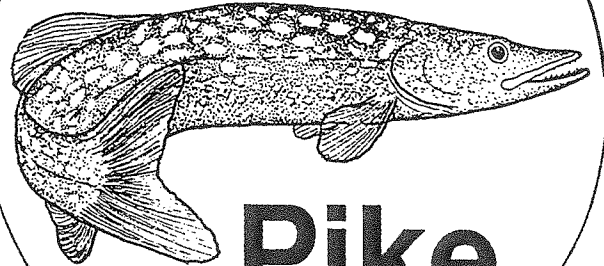


Perch

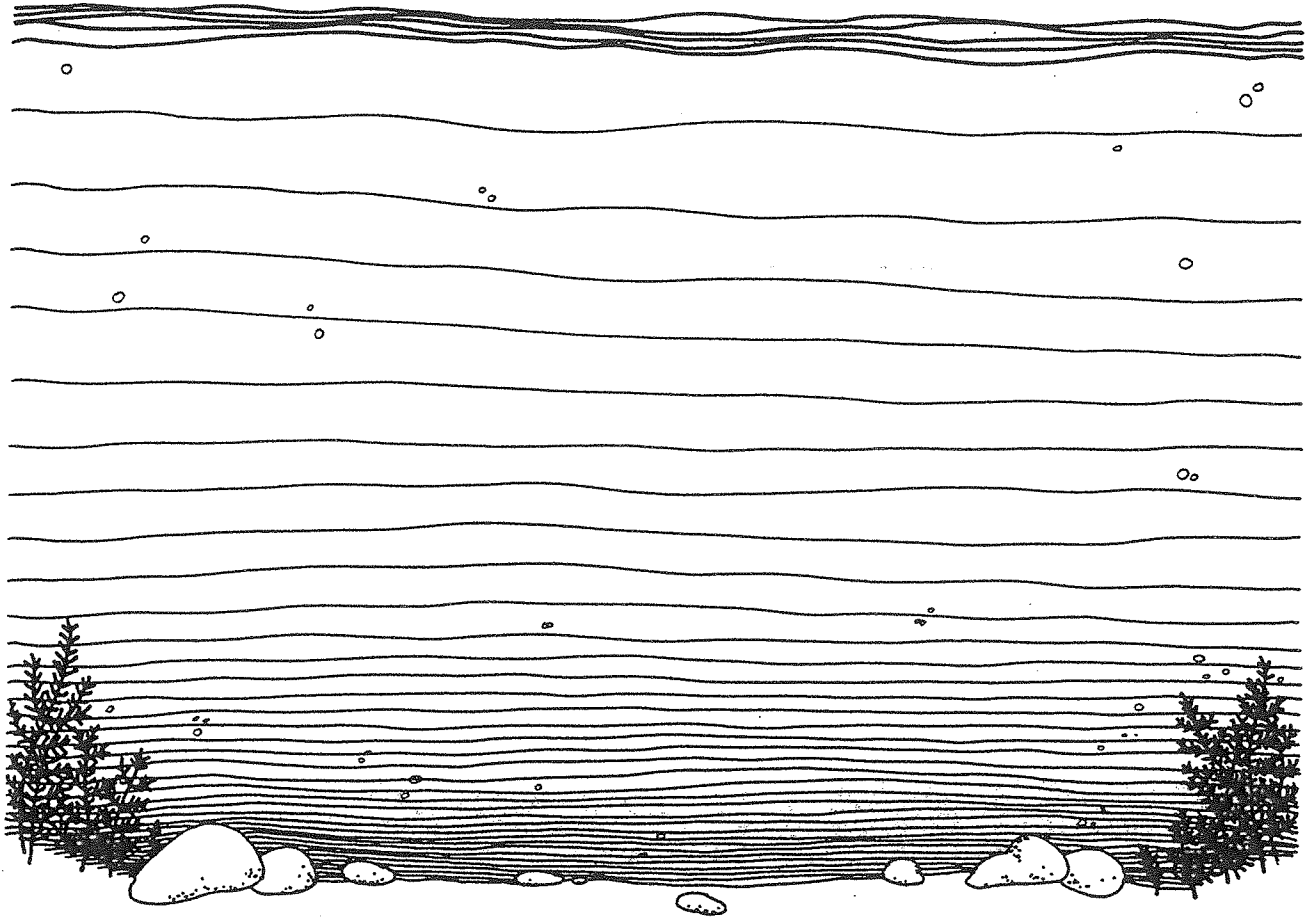


Bacteria

Northern



Pike



This 1/5 acre (.08 ha) pond has enough food, oxygen, shelter and space to support 60 pounds (27 kg.) of fish. Cut out the fish found at the end of *Activity 2.1*. Choose the ones you would like to catch if you went fishing and glue them into this pond. If you put less than 60 pounds in the pond, draw some small fish and mark their weight. Don't put in more than 60 pounds of fish or some will not survive.

The weight of fish that a pond will support is called its **carrying capacity**. If the carrying capacity of a pond is exceeded (if too many eggs hatch and too many fish live in too small an area), then the pond may suffer.

The earth has a carrying capacity for people. Many experts think that the earth can support about 12 or 13 billion people without destroying the environment. Right now, there are about 6 billion people.

Estimate the carrying capacity of your meeting room. This is the number of people that can easily be seated or work in the room without crowding or harming the people in it.

My meeting room's carrying capacity: _____

"To Eat or Not to Eat"

Purpose: To introduce the group to the *Guide to Eating Ontario Sport Fish* through active, guided exploration and fact finding.

Outcomes: Group members will be able to determine how many meals/month of a particular fish from a particular waterbody are safe to eat.

Concepts: 2.2, 2.6 (ext.), 4.13

Group size: 6 - 30

Site: Outdoors (picnic tables or grassy area) or indoors (class- or meeting room)

Time: 20 minutes

Supplies: *Guide to Eating Ontario Sport Fish* (1 each or per small group);
Resource Sheet 1: *Using your Guide to Eating Ontario Sport Fish*

A QUICK LOOK:

This activity addresses the basic question coming out of the previous activity: "How do I know if a fish is safe to eat?" Fortunately, Ontario has an easily available resource for answering that question, the *Guide to Eating Ontario Sport Fish*. Unfortunately, however, with more than one quarter million lakes, untold kilometers of streams and many edible fish, coverage is limited to the more popular species and locations, or locations with known concerns. If you cannot find your fishing spot, a nearby lake or stream will be covered. Base your inquiry there. If for some reason you think your location might differ significantly from surrounding ones, call the Ministry of the Environment at 1-800-820-2716.

All the information required for this activity can be found either in the *Guide* or Resource Sheet 1. The front of the *Guide* contains considerable background information on common contaminants, their sources, and their effects on fish, as well as tips on how to use the tables. It also reviews changes in contaminant levels (and in some cases virtual elimination) over the years. Use the *Guide* as leader background. Older members may wish to read it as well. Resource Sheet 1 provides similar direction in a step-by-step format that each individual or group can follow for themselves.

READY, SET, GO!

Refer the group to the substances that were added to the water in Activity 2.3. Ask if all were visible in the water. Remind them that some pollutants are not only invisible, but cannot be smelled or tasted, either.

Review the results of Activity 2.4. Ask if all the contaminated fish acted strangely. If they didn't, and if the fish did not smell or show visible signs of contamination, how did they know what was safe to eat? What if they could buy glasses that made contaminated fish glow – would they buy them?

Indicate that there are no such glasses, but there is something they can use that is almost as good, and its *free*. If you haven't established groups of 3-5, do so now. Make sure that younger members have older ones to help them. Pass out a copy or copies of the *Guide* and *Resource Sheet 1*. Have each group work through the Sheet on their own, answering the questions as best they can. Work with each group individually, responding to questions they may have. Go over the Sheet as a large group to ensure that each small group got the right answers.

Encourage them to share their copy with their families, show them how it works, and use it whenever they fish.

OTHER IDEAS:

- Instead of just sitting back and responding to the problem of contaminants in fish, encourage your group to get out and *do* something about it. Trout Unlimited and the Canadian Department of Fisheries and Oceans are partners in *The Yellow Fish Road*, a neighbourhood awareness program that encourages people not to dump waste down storm drains, which are most often directly connected to local rivers and streams. Your group would mark drains with a yellow fish as a visual symbol, and distribute information on what it means and how people should respond. Contact Trout Unlimited at 1-800-909-6040 for more information and materials.
- Some people are now concerned that lead sinkers can cause lead poisoning in some waterfowl. These birds pick up old sinkers when they get small stones for their crop. These stones help grind up food before the birds digest it. Other birds such as loons may swallow lead when they eat fish with hooks, sinkers or jigs attached. Even if only small amounts of lead are absorbed, birds may get ill or even die. Other people feel that lead poisoning from this source is of limited or no concern. Research this question. Find out more on both sides of the issue, what alternatives are available to anglers, and whether you think those alternatives should be used.

HANDOUT MASTERS:

Resource Sheet 1: Using Your *Guide to Eating Ontario Sport Fish*

RESOURCE SHEET 1

USING YOUR GUIDE TO EATING ONTARIO SPORT FISH

Introduction. Fish is a nutritious, low-fat alternative to chicken, beef and other meat. And it tastes good, too! Most Ontario sport fish are also safe to eat. However, fish live in water, and if that water gets polluted, then the chemicals or metals from that pollution can end up in the fish. Since sport fish are often at or near the top of the food chain, even low levels in the water may be concentrated as they are passed up the chain, until the amounts in sport fish may be a problem for us.

In Ontario, the Ministries of Environment and Natural Resources cooperate to sample and test fish for chemicals and metals that are harmful to people. The good news is that levels of most of these harmful things are decreasing, and some no longer are a problem. The bad news is that some hang around in the environment a very long time, and we still need to watch out for them. In addition mercury, a very poisonous metal, occurs naturally in many areas of Ontario, and will always be a concern. In fact, natural mercury is the *only* problem in most inland lakes and streams.

The results of this testing can be found in the *Guide to Eating Ontario Sport Fish*. This book is produced every two years, and anglers should get and keep the current copy around so they can make sure that the type and amount of fish they eat are safe.

How to use.

Step 1. Find your lake or stream. Look under **Contents** for the *Location Index*. Go to the *Index* and see if your lake or stream is there. If it is, put the name and page # here: _____ . If it is not (Ontario has just too many waterbodies to sample every one), search for a lake or stream nearby that is in the book. Results for that waterbody will probably be similar to yours. Put the name and page # here: _____¹.

Step 2. Go to the page you have found in the tables. A full explanation of these tables can be found under *Key to using the guide tables* which is towards the front of the book.

Step 3. Check the location, which is underneath the name. Some lakes and streams have the same name, so make sure this one is yours. The numbers give you latitude and longitude, which can be found on many maps, including the *Ontario Official Road Map*, or you can tell from the township, district or county names. If the lake or stream is yours, go on to Step 4. If it isn't, go back to Step 1 and find a nearby waterbody.

¹ If for some reason you think your lake might differ significantly from surrounding lakes, call MOE at 1-800-820-2716.

Step 4. Find the fish you caught, or will likely catch. If it isn't there, compare it with a similar fish that is (pumpkinseed with rock bass or bluegill; perch with walleye). Place the name of the fish here: _____.

Step 5. Find the size of the fish you caught, or will likely catch. Sizes run across the top of the table and represent total length. Look at the symbol in the box for your fish at that size, and place it here: _____.

Step 6. The symbol above will tell you how many meals/month you can have of that fish. Use this key:

fish outline	8 meals
④	4 meals
②	2 meals
①	1 meal*
black fish	no meals

*children under 15 and women involved in childbearing should not eat any

How many meals/month can you have of that fish? _____.

Eating different fish. You may want to eat different kinds and sizes of fish. Following the *Key to using the guide tables* in your Guide is a section called *Consuming fish from several locations or consumption categories*. Read the description and example, and then answer the following questions:

If you eat one fish from ②, how many fish from ④ can you eat? _____.

If you eat three fish from ④, how many "fish outline" fish can you eat? _____.

MEETING THREE: WHAT WILL I CATCH IT WITH?

What will the group learn? The participants will be able to link food chains and live bait, and discover bait sources in their own back yards. They will learn to tie knots, make fishing rigs from pop cans or rig and cast a closed face (spin-casting) rod and reel, be able to select fishing locations and use the baits they have found to catch fish.

Objectives

1. To create an understanding of common Ontario food chains leading to major Ontario sport fish, and how commonly found live bait represent or mimic chain members.
2. To develop skills in casting with either pop can or spin-casting gear, and in rigging that gear with terminal tackle.
3. To apply the above understandings and skills to a real fishing experience.

In a nutshell

<i>Guess Who's Coming to Dinner?</i>	20 minutes
<i>Live Bait Hunt</i>	40 minutes
<i>Pop Can or Spin-cast Option</i>	30 minutes
<i>Try it Out!</i>	30 minutes
Total Time:	120 minutes

Food for fish, food for thought

In the previous lesson, members were introduced to the concept of food webs. Here, further exploration of this concept focuses on food for sport fish, which often represent at least middle and often top predators in local food webs or chains. Food chains are simply a single series of links, from producer to top predator. Focusing in on "fish food" enhances the value and importance of smaller aquatic critters, directly identifies some potential bait, and suggests other possibilities (e.g. earthworms) that may be easier to find and maintain. Collecting some of these baits is the first step toward assembling the basic equipment required to actually go out and catch fish.

Fishing fundamentals

Fishing is a way of bringing people into their natural environment. Youth who are exposed to fishing as a skill can learn patience, build self-esteem, gain time for reflection, and problem-solving. Fishing is also a way to build family bonds and friendships. To be a good angler, one must utilize the concepts taught in the previous

chapters: habitat, observation, measurements, water quality, stewardship, and fish identification.

In Ontario, there are over 250,000 fishing lakes, countless kilometers of fishing streams and more than 150 fish species. There is a lot of opportunity to explore fishing. Angling doesn't have to be expensive and sophisticated to be enjoyable. Equipment can be made from pop cans and bait can be found in your own backyards. Part of the adventure of fishing is understanding how truly simple it can be. This lesson teaches people the very basic skills in needed to venture out to their ponds, lakes, and streams for either a day of adventure or fishing. Or both.

Note: *Activity 3* offers two options, Pop Can or Spin-cast, depending on the availability of equipment. Lack of equipment should be no deterrent to beginning anglers!

Guess Who's Coming to Dinner?

Purpose: An active tag game will introduce members to the importance of food chains, and some of the things eaten by up to three common Ontario sportfish.

Outcomes: Members will be able to explain the concept of food chains, including the sun as source of all food energy; name at least one member of a food chain related to an Ontario sportfish; and place that fish in its correct habitat.

Concepts: 1.1, 6.1, 7.3

Group size: 5 to 36

Site: Open field or large indoor space.

Time: 20 minutes

Supplies: Resource Sheets 1 and 2 (optional); Leader Resource Sheets 1, 2 and 3; Leader Resource Information Sheet; clear plastic for lamination (optional).

Advance Preparation:

1. Copy Resource Sheets 1a-1e so that the same images, when cut out, appear on both sides. Use a different colour of paper for members of each food chain (see Leader Resource Information Sheet). Cut out each food chain card. Optional: laminate pictures or put in freezer bags to ensure multiple use.
2. Copy Resource Sheet 2, and cut into individual strips. Each strip should refer to only one animal. (optional)
3. Adjust the chains to match numbers of students by repeating some or all of the chains. If necessary, balance the chains by removing the top predator or another food chain member (see "Adjusting the Chains" in Leader Resource Information) or by having two of one animal, already linked together (try to pick an animal that swarms or schools, e.g. minnows).

A QUICK LOOK:

Students will role-play members of up to three aquatic food chains in an active tag game, simulating how energy gets passed through three different aquatic environments. The emphasis in this case is on the types of food that sportfish depend on. Members should understand that these food types are important to them for at least three reasons:

1. Without this food, or other parts of the food chain, there would be no fish to catch.
2. Knowing what a fish eats can help them decide what to use for bait (i.e. the same or similar things).
3. Knowing what a fish eats can help them find lures that mimic that food.

READY, SET, GO!

Introduce or review the concept of basic needs: food, water, shelter/space and others of its kind. Try introducing a visual focus such as an apple (representing food - a need) and a doll (representing a plaything - a want), to stimulate discussion of the differences between needs and wants.

Indicate that you're going to look at one of those needs more closely; the need to eat.

- a) with younger members, go over each food chain, and what each animal is. Then go on to b).
- b) with older members, begin by passing out individual food chain cards to each member, and have them become that animal. Ask them to figure out, from what it looks like, how it might move, and have them move that way. Where might it live?

Introduce the game.

- a) Tell the members that they are getting very hungry, and have them look at what they eat on the bottom of the card. But ... something also eats them. Have them look at the top of the card to discover their predator. Indicate that those without predators are too big and aggressive for anything else in the water to eat them. They only have to worry about finding food (and avoiding humans). Pair members, and have each explain to their partner who they are, what they eat and who eats them.
- b) explain that when the game starts, each member must run and find their food by looking at all the other cards, which are held up in front by all the animals. To make things a bit easier, their food will have the same colour of card. But ... they must avoid being eaten by their predator if they can.
- c) each animal must tag (not tackle!) their food above the waist.
- d) when one animal tags another, they join together, with the animal tagged in front, and the "tag-er's" hand on his or her shoulder. They then continue to hunt for the food of the front animal, and avoid being caught by the predator of the rear animal. When the pair catches its prey, or is caught, a chain of three forms, and so on until all chains are complete. Demonstrate chain formation with an actual chain of three students. Random pairs could also practice running in tandem.

Play the game.

- e) scatter members at random across the playing area (gym, outdoor play area or field). Be sure to define the boundaries so that the game is contained within a reasonable space.
- f) demonstrate again how to hold up their cards, and start the game.
- g) allow the game to proceed until all chains have formed.
- h) at this point, the beginning animals in each chain will still be looking for plants. When the chains are complete, stand in the middle of the area with your hand in the air and announce, "I am a plant!". Each chain should then run and grab onto you. Point at the sun with your raised hand, and explain that it's the sun that gives you energy, which then gets passed on, through the chain, all the way to the top predators at every end. Do a roll call with one or two chains, to make sure everyone's in the right order.

- i) switch cards and play again.

Display the chains (Leader Resource Sheets 1, 2 and 3) on a bulletin board or spot where everyone can see, and explain the type of habitat each chain lives in. Have the children draw pictures of lakes, warm-water streams and cold-water streams, and post them around the chains.

OTHER IDEAS:

- Have students create a “weird water environment” and develop a food chain that fits it.
- Play a number of “team quiz” games to assess how well students remember their chains:
 1. Name the habitat that each animal belongs in.
 2. Name the animal from the clues used to discover it’s habitat.
 3. Given an animal, name what it eats and/or what eats it.
- Pass out the clue strips to each animal (Resource Sheet 2). Have them read what their animal likes and needs. Together with the rest of their chain, have them try to figure out where they all live.

HANDOUT MASTERS:

Resource Sheets 1a-1e: Food Chain Cards

Resource Sheet 2 (optional): Habitat Clue Cards

Leader Resource Sheet 1: Coldwater Food Chain

Leader Resource Sheet 2: Warmwater Food Chain

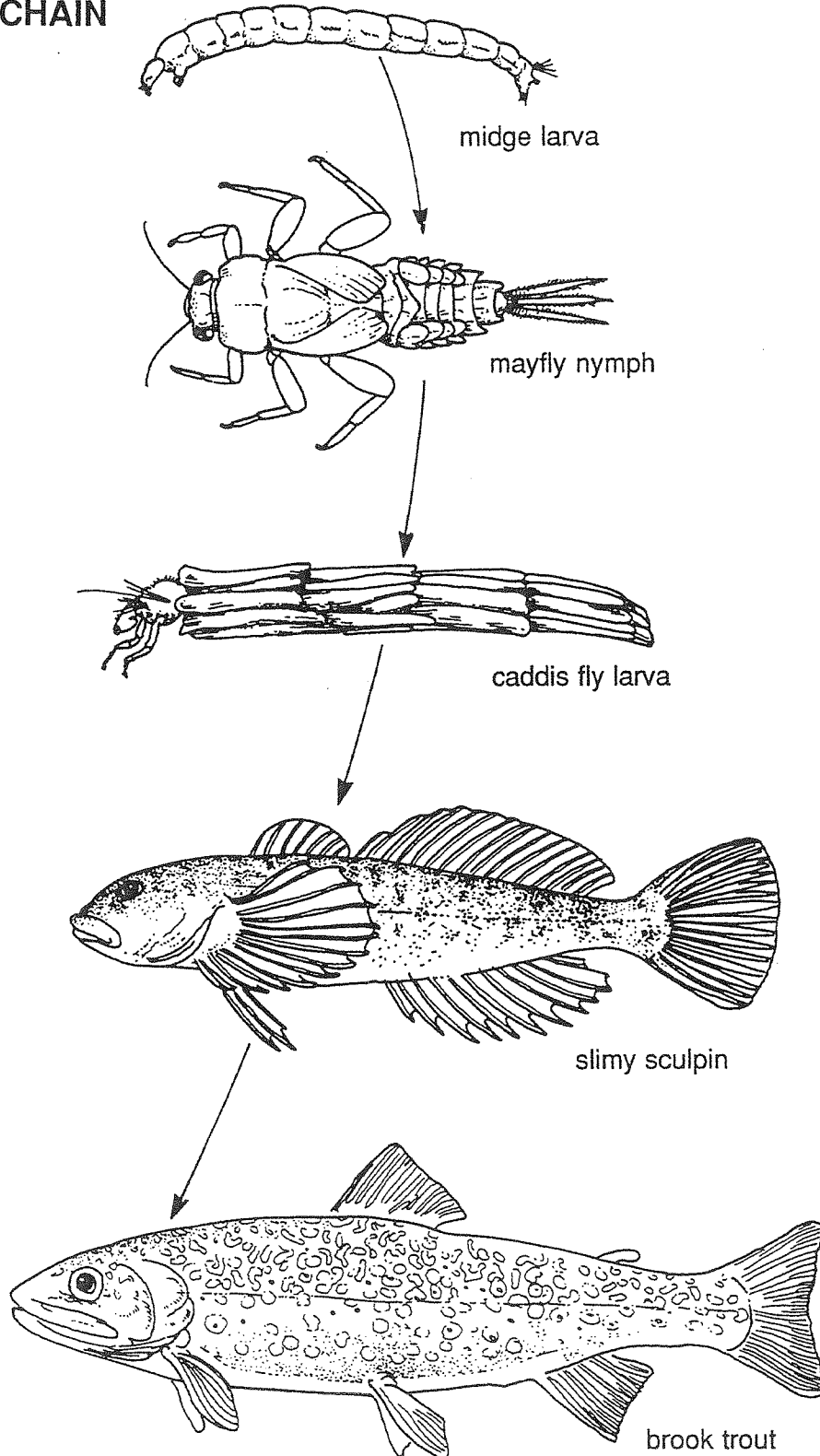
Leader Resource Sheet 3: Deepwater Food Chain



TEACHER RESOURCE SHEET 1

Guess Who's Coming to Dinner?

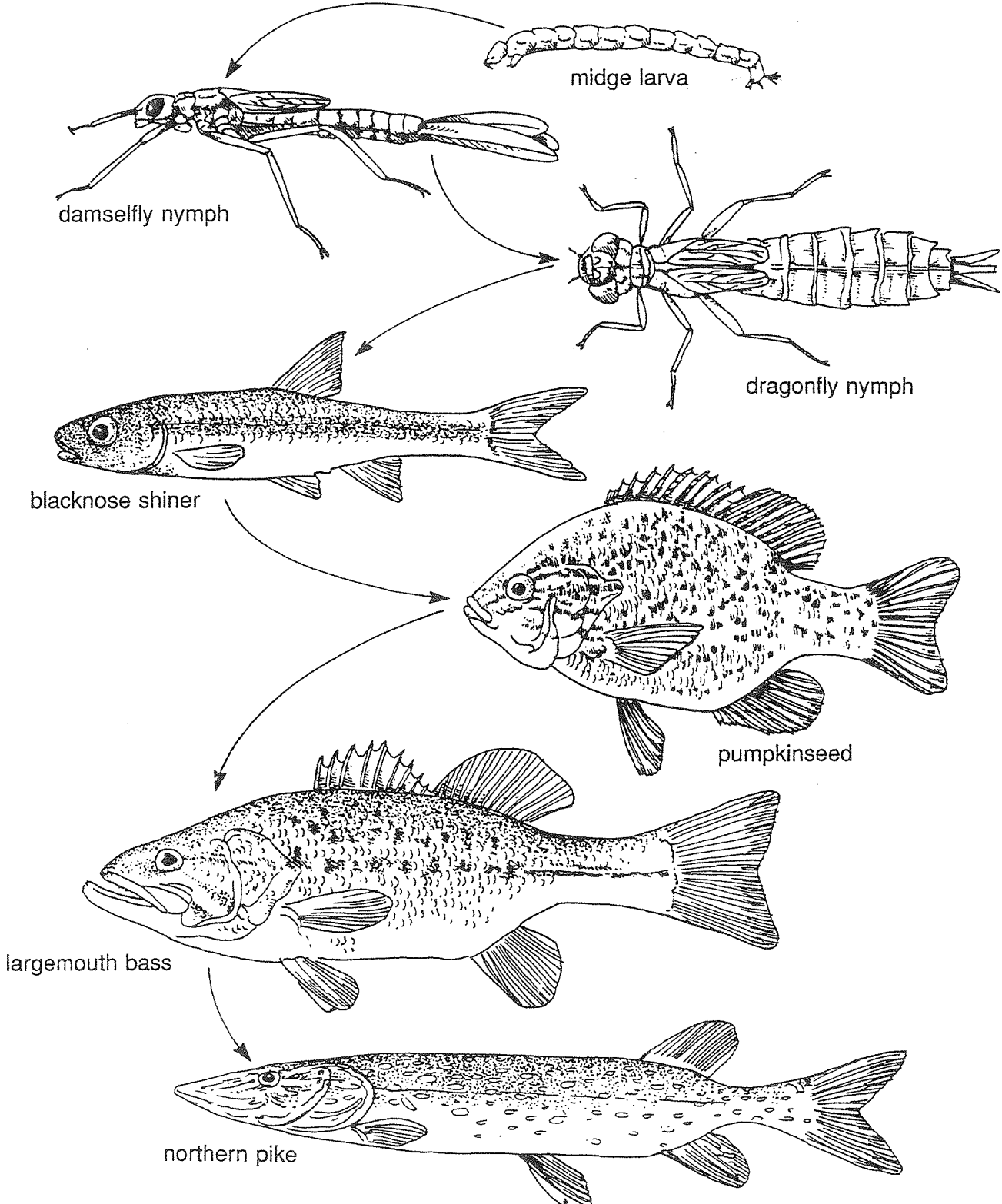
COLD-WATER FOOD CHAIN



**TEACHER
RESOURCE SHEET 2**

**Guess Who's Coming
to Dinner?**

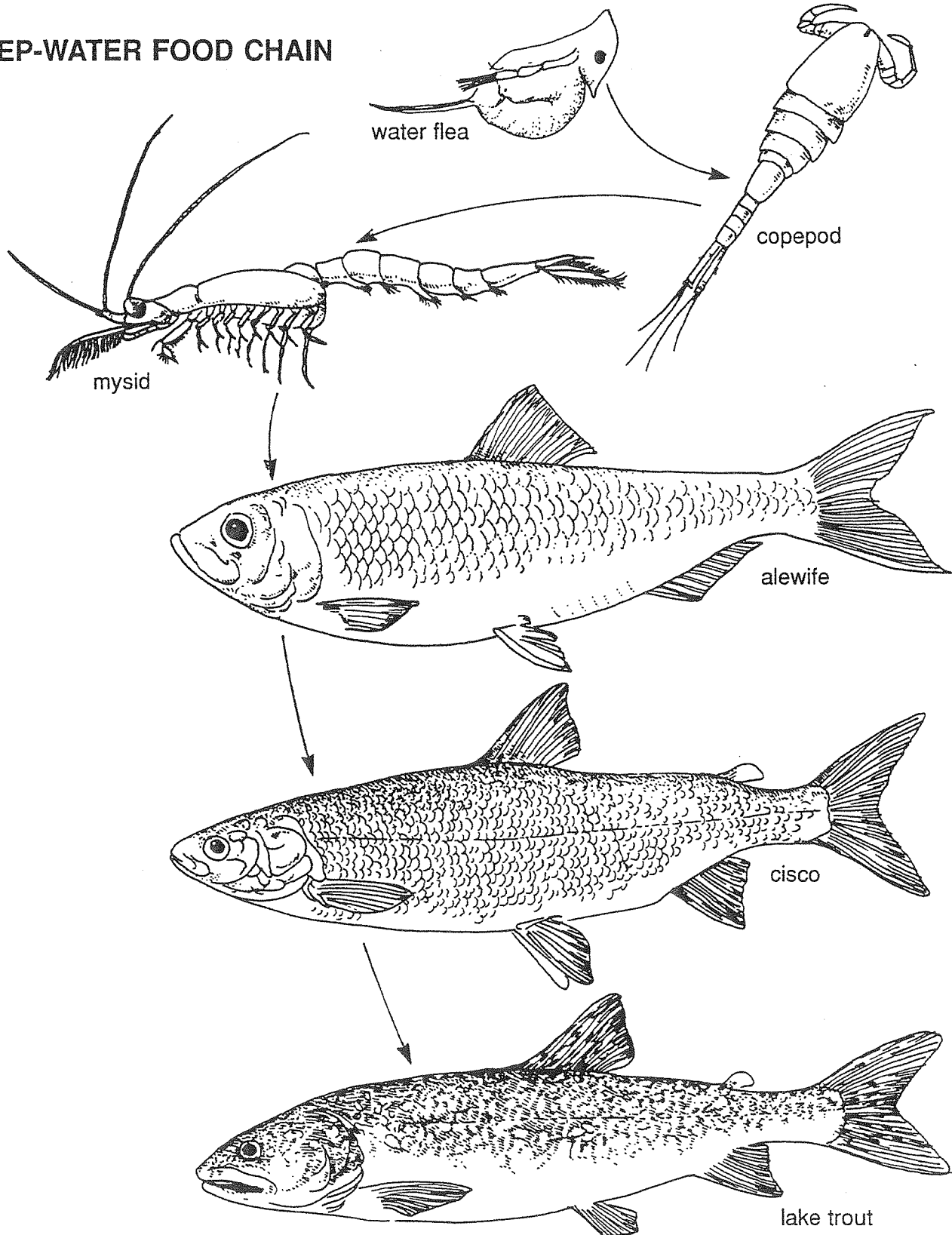
WARM-WATER FOOD CHAIN

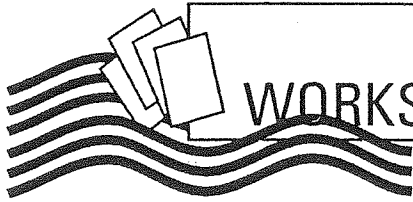


**TEACHER
RESOURCE SHEET 3**

**Guess Who's Coming
to Dinner?**

DEEP-WATER FOOD CHAIN

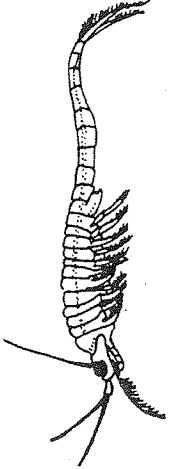
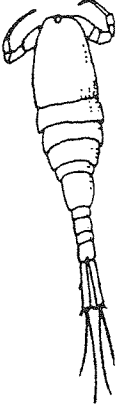





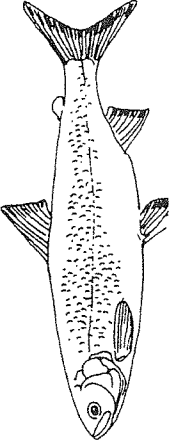
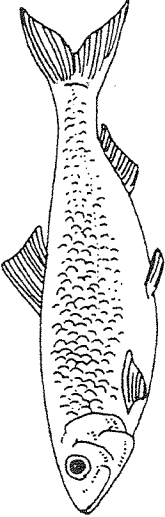
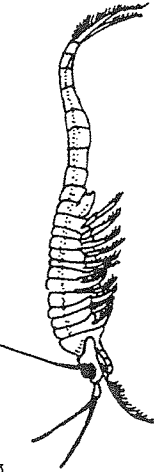




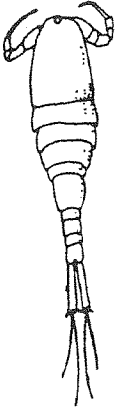

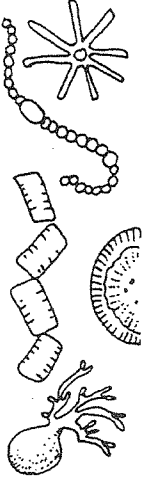

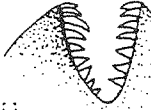
STUDENT WORKSHEET 1A-1

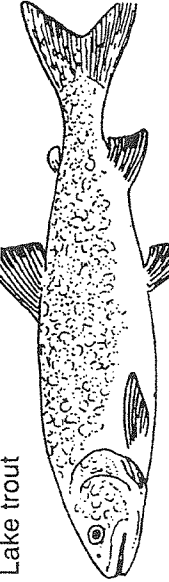
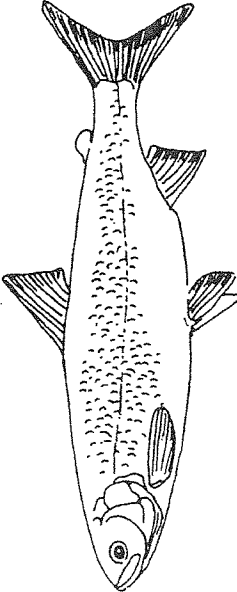
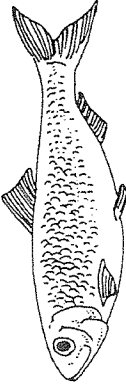

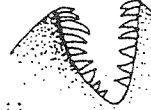
Guess Who's Coming to Dinner?

DEEP-WATER FOOD CHAIN CARDS

 <p>Mysid</p>		 <p>Water flea</p>
 <p>Watch out for:</p>	<p>I am: Copepod</p>	 <p>I eat:</p>

 <p>Cisco</p>		 <p>Mysid</p>
 <p>Watch out for:</p>	<p>I am: Alewife</p>	 <p>I eat:</p>

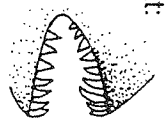

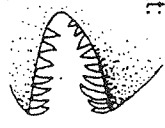

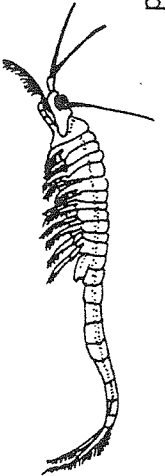
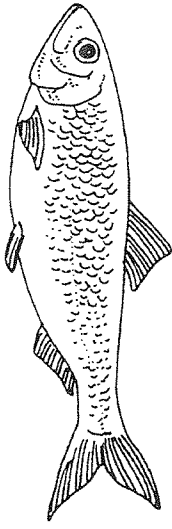
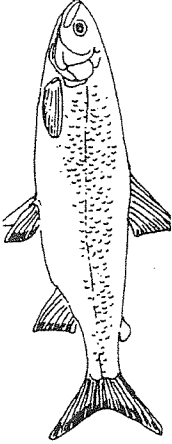
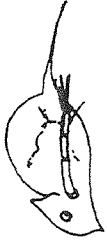
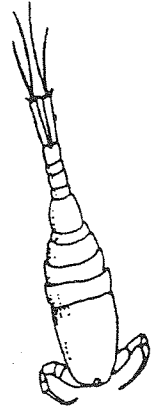
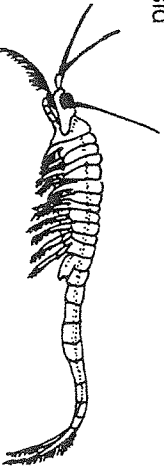
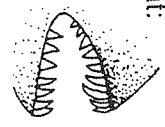

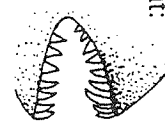

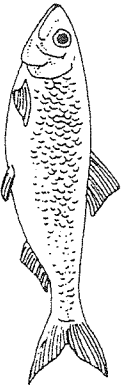
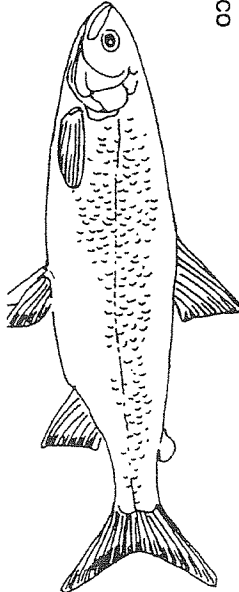
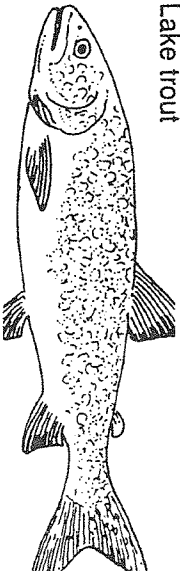
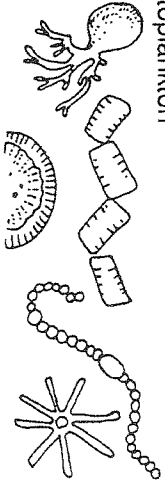
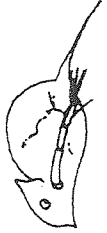
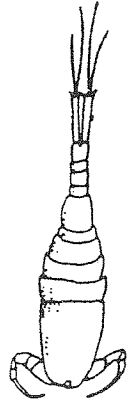
 <p>Copepod</p>		 <p>Phytoplankton</p>
 <p>Watch out for:</p>	<p>I am: Water flea</p>	 <p>I eat:</p>

 <p>Lake trout</p>		 <p>Alewife</p>
 <p>Watch out for:</p>	<p>I am: Cisco</p>	 <p>I eat:</p>

STUDENT WORKSHEET 1A-2

Guess Who's Coming to Dinner?

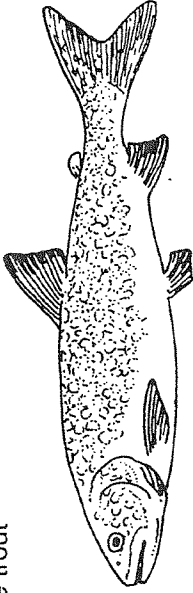
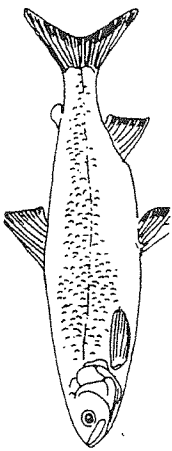
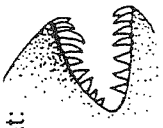





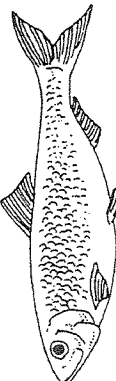
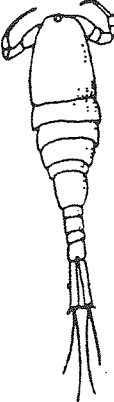
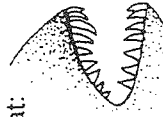
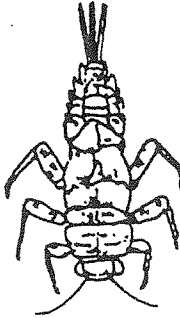



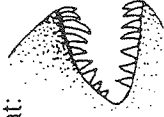
DEEP-WATER FOOD CHAIN CARDS

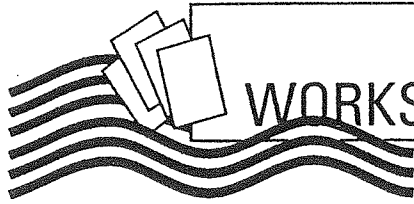
<p>I eat:</p> 		<p>Watch out for:</p> 	<p>I eat:</p> 	<p>I am: Copepod</p>	<p>Watch out for:</p> 
<p>Mysid</p> 		<p>Cisco</p> 	<p>Water flea</p> 		<p>Mysid</p> 
<p>I eat:</p> 		<p>Watch out for:</p> 	<p>I eat:</p> 	<p>I am: Water flea</p>	<p>Watch out for:</p> 
<p>Alewife</p> 		<p>Lake trout</p> 	<p>Phytoplankton</p> 		<p>Copepod</p> 

STUDENT WORKSHEET 1B-1

Guess Who's Coming to Dinner?

DEEP-WATER/COLD-WATER FOOD CHAIN CARDS





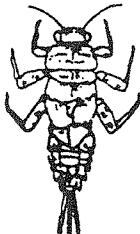
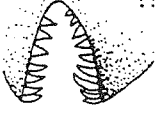
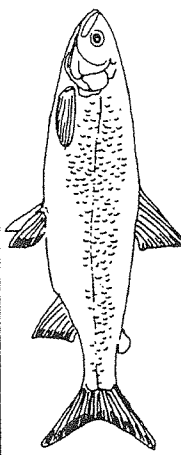
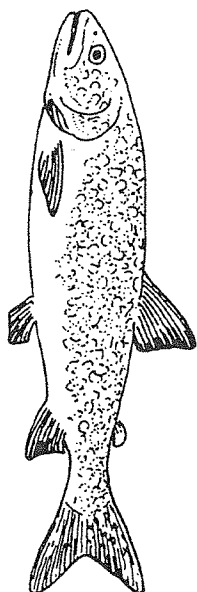

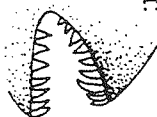

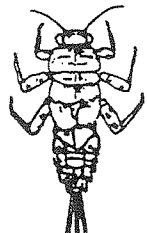



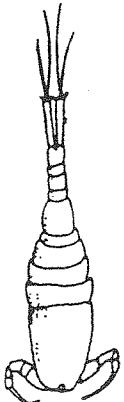
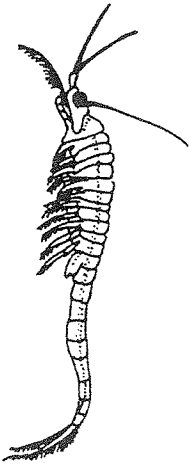

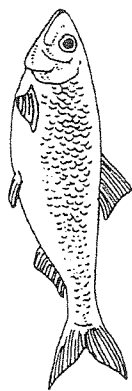
	<p>Watch out for:</p> <p>I am: Lake trout</p>		<p>I eat:</p> 	<p>Mayfly nymph</p>			<p>Plants</p>
	<p>Watch out for:</p>	<p>I eat:</p>	<p>Watch out for:</p> <p>I am: Midge larva</p>		<p>Watch out for:</p>	<p>I eat:</p>	
<p>Alewife</p> 	<p>Watch out for:</p> <p>I am: Mysid</p>		<p>I eat:</p> 	<p>Caddis fly larva</p>			<p>Midge larva</p>
	<p>Watch out for:</p>	<p>I eat:</p>	<p>Watch out for:</p> <p>I am: Mayfly nymph</p>		<p>Watch out for:</p>	<p>I eat:</p>	

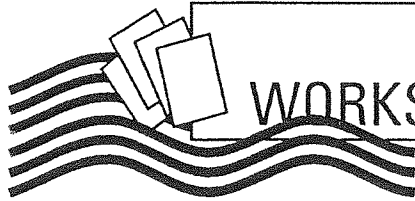


STUDENT WORKSHEET 1B-2

Guess Who's Coming to Dinner?

DEEP-WATER/COLD-WATER FOOD CHAIN CARDS

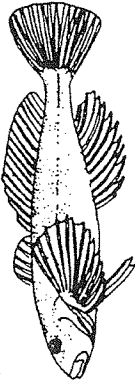

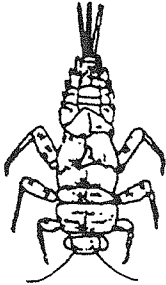
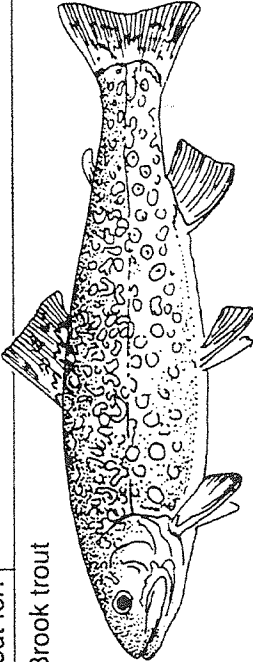
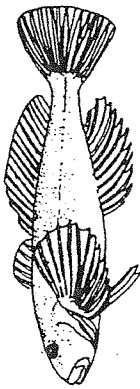

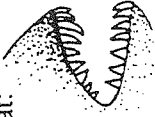

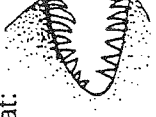
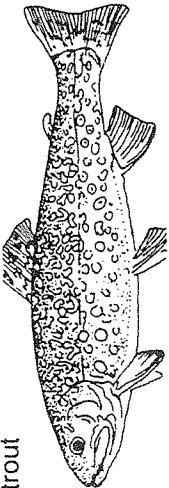
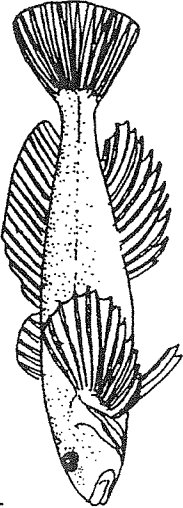

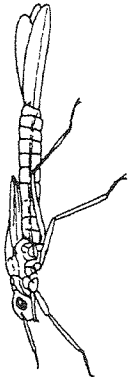


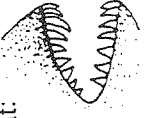

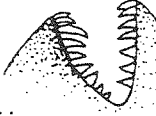

<p>I eat:</p> 	<p>Plants</p> 	<p>I am: Midge larva</p> 	<p>Watch out for:</p>  <p>Mayfly nymph</p> 
<p>I eat:</p> 	<p>Cisco</p> 	<p>I am: Lake trout</p> 	<p>Watch out for:</p> 
<p>I eat:</p> 	<p>Midge larva</p> 	<p>I am: Mayfly nymph</p> 	<p>Watch out for:</p>  <p>Caddis fly larva</p> 
<p>I eat:</p> 	<p>Copepod</p> 	<p>I am: Mysid</p> 	<p>Watch out for:</p>  <p>Alewife</p> 



STUDENT WORKSHEET 1C-1

Guess Who's Coming to Dinner?



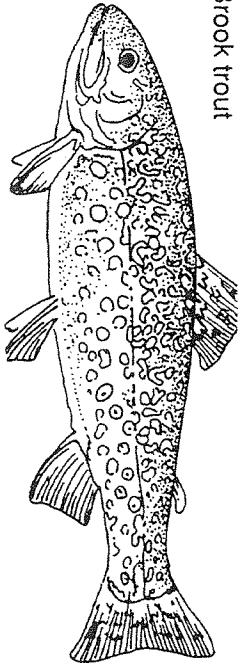

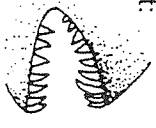



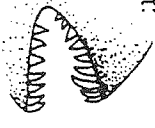



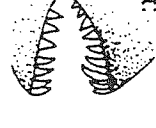

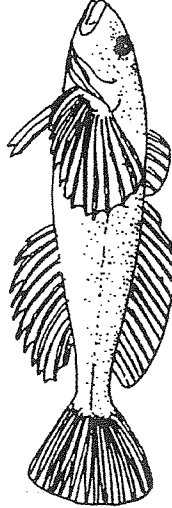

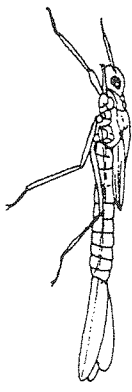
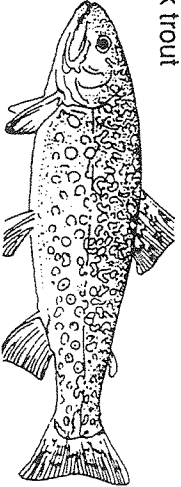
COLD-WATER/WARM-WATER FOOD CHAIN CARDS

 <p>Slimy sculpin</p>	 <p>I am: Caddis fly larva</p>	 <p>Mayfly nymph</p>	 <p>I am: Brook trout</p>	 <p>Slimy sculpin</p>
 <p>Watch out for:</p>		 <p>I eat:</p>	 <p>Watch out for:</p>	 <p>I eat:</p>
 <p>Brook trout</p>	 <p>I am: Slimy sculpin</p>	 <p>Caddis fly larva</p>	 <p>Damselfly nymph</p>	 <p>I am: Midge larva</p>
 <p>Watch out for:</p>		 <p>I eat:</p>	 <p>Watch out for:</p>	 <p>I eat:</p>
				 <p>Plants</p>

STUDENT WORKSHEET 1C-2

Guess Who's Coming to Dinner?

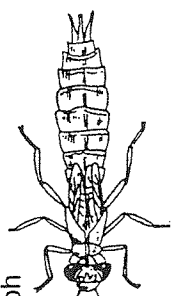
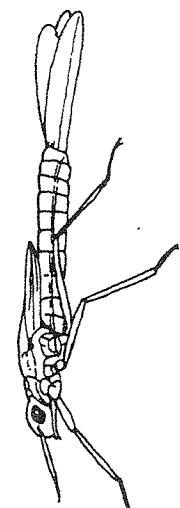


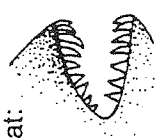
COLD-WATER/WARM-WATER FOOD CHAIN CARDS

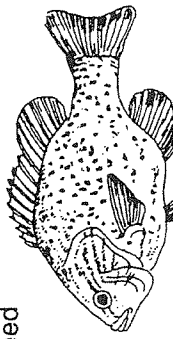
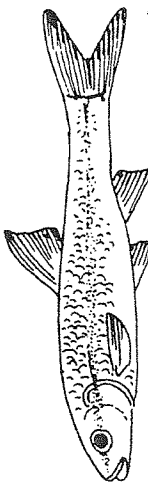
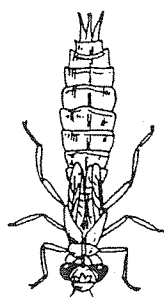

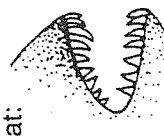
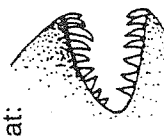
<p>I eat:</p> 	<p>Slimy sculpin</p> 	<p>I am: Brook trout</p> 	<p>Watch out for:</p> 
<p>I eat:</p> 	<p>Mayfly larva</p> 	<p>I am: Caddis fly larva</p> 	<p>Watch out for:</p> 
<p>I eat:</p> 	<p>Plants</p> 	<p>I am: Midge larva</p> 	<p>Watch out for:</p> 
<p>I eat:</p> 	<p>Caddis fly larva</p> 	<p>I am: Slimy sculpin</p> 	<p>Watch out for:</p> 
			<p>Nymph larva</p> 
			<p>Brook trout</p> 

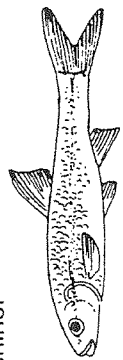
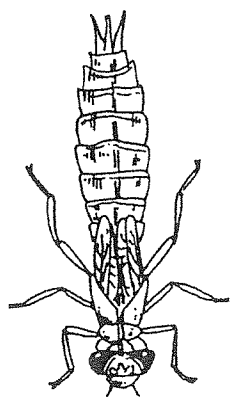
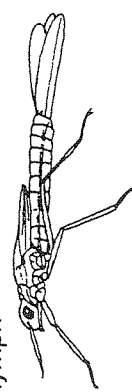

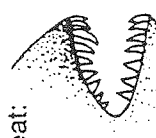
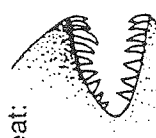
STUDENT WORKSHEET 1D-1

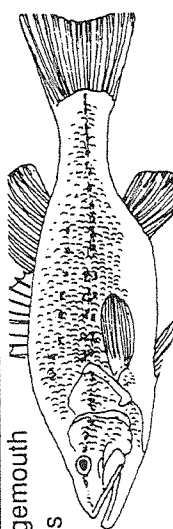
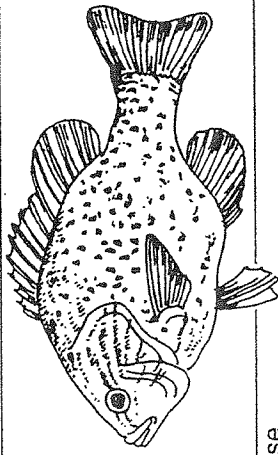
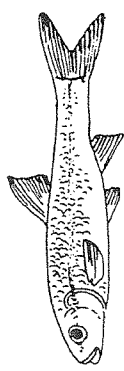

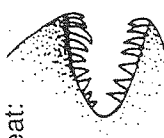
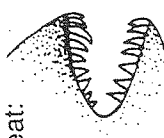
Guess Who's Coming to Dinner?

WARM-WATER FOOD CHAIN CARDS

 <p>Dragonfly nymph</p>	 <p>Damselfly nymph</p>	 <p>Midge larva</p>
 <p>Watch out for:</p>	<p>I eat:</p> 	

 <p>Pumpkinseed</p>	 <p>Blacknose shiner</p>	 <p>Dragonfly nymph</p>
 <p>Watch out for:</p>	<p>I am: Blacknose shiner</p>	
<p>I eat:</p> 		<p>I eat:</p> 

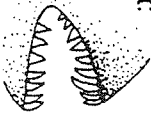
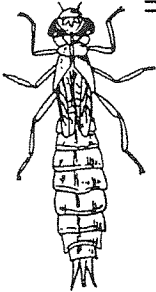

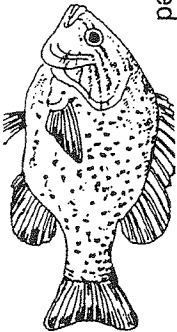
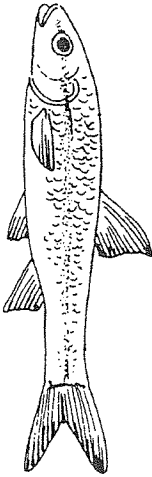
 <p>Blacknose shiner</p>	 <p>Dragonfly nymph</p>	 <p>Damselfly nymph</p>
 <p>Watch out for:</p>	<p>I am: Dragonfly nymph</p>	
<p>I eat:</p> 		<p>I eat:</p> 

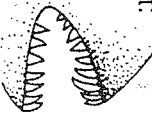
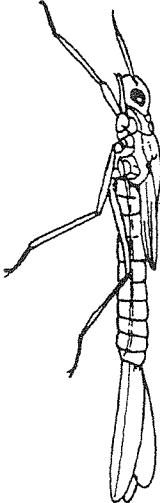

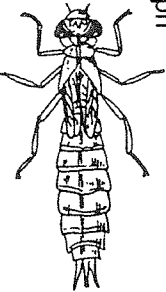
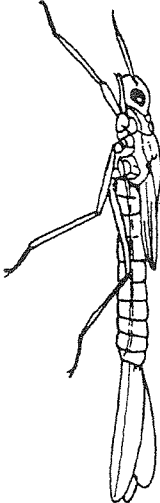
 <p>Largemouth bass</p>	 <p>Pumpkinseed</p>	 <p>Blacknose shiner</p>
 <p>Watch out for:</p>	<p>I am: Pumpkinseed</p>	
<p>I eat:</p> 		<p>I eat:</p> 

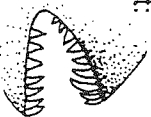
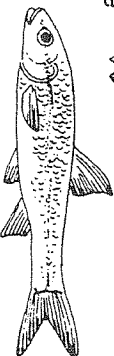

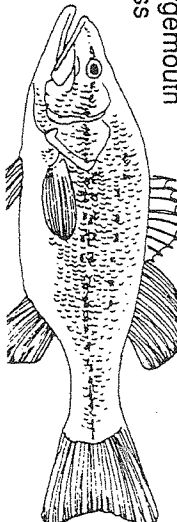
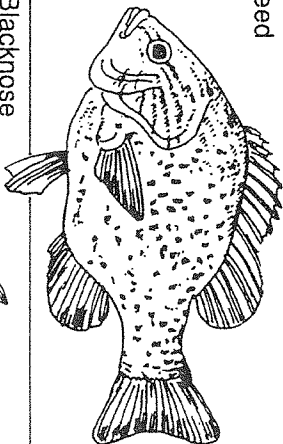
STUDENT WORKSHEET 1D-2

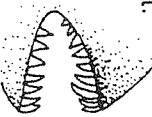
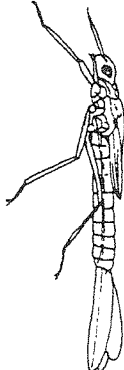

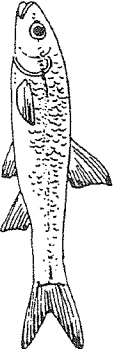
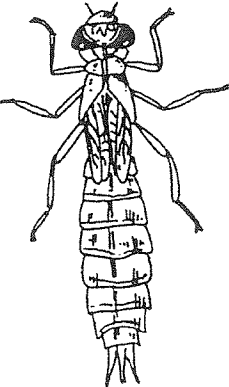
Guess Who's Coming to Dinner?

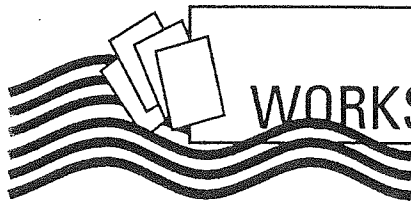
WARM-WATER FOOD CHAIN CARDS

<p>I eat:</p> 	<p>Dragonfly nymph</p> 
<p>Watch out for:</p> 	<p>Pumpkinseed</p> 
<p>I am: Blacknose shiner</p> 	

<p>I eat:</p> 	<p>Damselfly nymph</p> 
<p>Watch out for:</p> 	<p>Dragonfly nymph</p> 
<p>I am: Damselfly nymph</p> 	

<p>I eat:</p> 	<p>Blacknose shiner</p> 
<p>Watch out for:</p> 	<p>Largemouth bass</p> 
<p>I am: Pumpkinseed</p> 	

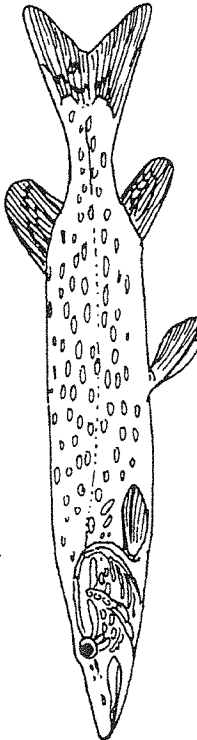
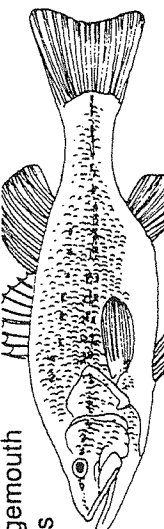


<p>I eat:</p> 	<p>Damselfly nymph</p> 
<p>Watch out for:</p> 	<p>Blacknose shiner</p> 
<p>I am: Dragonfly nymph</p> 	

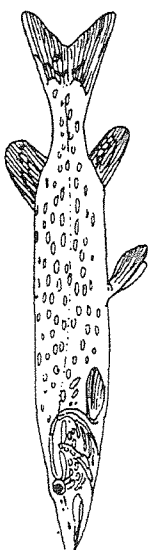
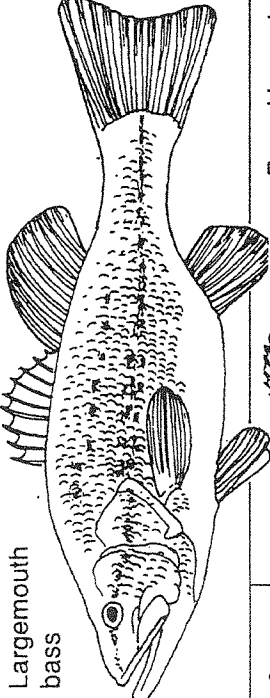





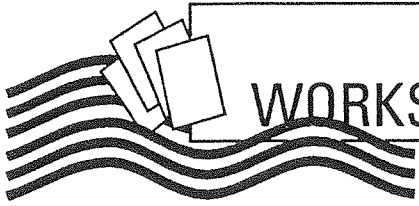
STUDENT WORKSHEET 1E-1

Guess Who's Coming to Dinner?

WARM-WATER FOOD CHAIN CARDS

		
 Watch out for:	I am: Northern pike	 I eat:


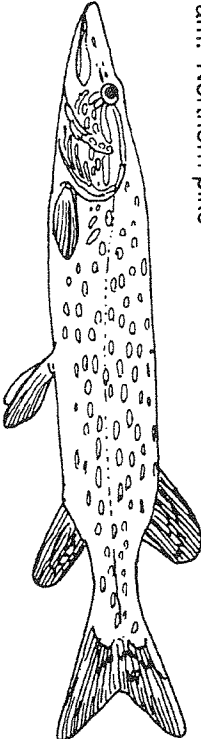

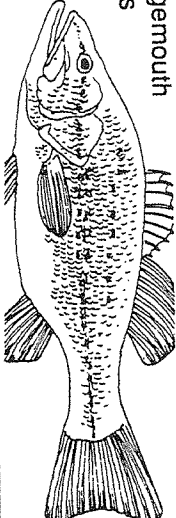
		
 Watch out for:	I am: Largemouth bass	 I eat:

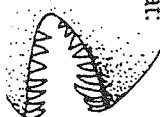
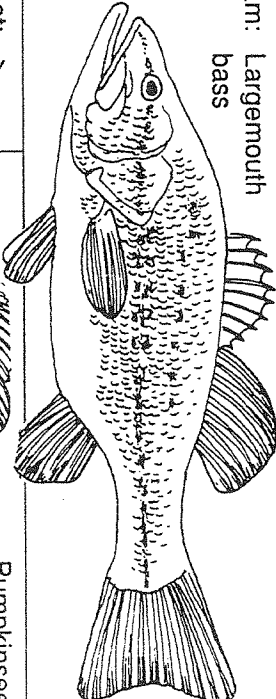

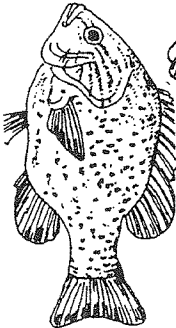
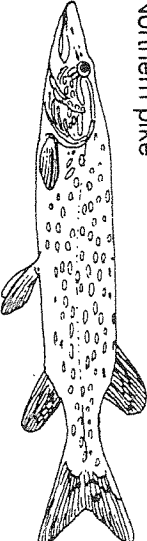


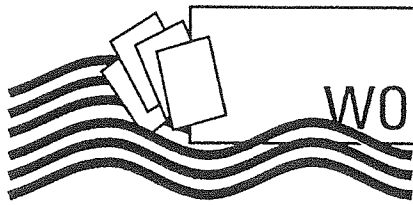
STUDENT WORKSHEET 1E-2

Guess Who's Coming to Dinner?

WARM-WATER FOOD CHAIN CARDS

<p>I eat:</p> 	<p>I am: Northern pike</p> 	<p>Watch out for:</p> 
<p>Largemouth bass</p> 		

<p>I eat:</p> 	<p>I am: Largemouth bass</p> 	<p>Watch out for:</p> 
<p>Pumpkinseed</p> 		<p>Northern pike</p> 



STUDENT WORKSHEET 2

Guess Who's Coming to Dinner?

HABITAT CLUE CARDS

Deep-water:

- Lake trout: I like to stay in cold water (below 10°C).
- Ciscoe: I stay pretty deep most of the time.
- Alewife: I need lots of room for my large schools.
- Mysid: I go deep during the day and come up near the surface at night.
- Copepod: I can swim, but I'm so tiny I get pushed around when the wind and sun make the water move.
- Water flea: I eat tiny floating plants that can grow far from shore.

Cold-water:

- Speckled (brook) trout: I like clear, cool water (24°C and below).
- Slimy sculpin: I slither along the bottom over pebbles and rocks.
- Caddis fly larva: I crawl around and catch insects for food. Some of my cousins spin nets, and catch bits of food that float by in the strong current.
- Mayfly nymph: My strong, hooked legs let me hang on tight to rocks and plants.
- Midge larva: I can even be found in splashing, bubbly water, down in the cracks between rocks.

Warm-water:

- Northern pike: I like to hide and then dash out quickly to catch my food.
- Largemouth bass: I like to be pretty close to the surface.
- Pumpkinseed: Like you, I don't like to be cold in the summer.
- Blacknose shiner: I like clear, quiet water and get pretty nervous out in the open.
- Dragonfly nymph: I don't like strong currents.
- Damselfly nymph: I'll crawl around on plants to catch my food.
- Midge larva: I eat plants and will eat my way into them to hide.

The need for food is universal among animals. Some animals eat plants, others eat the plant eaters, and are themselves prey for even larger predators, and so on until the top predator, one with no known natural predators as an adult, e.g. large muskellunge. If you trace a single series of links from plant to top predator, you have a food chain. Nature, however, is not so simple, and chains simply illustrate one path that energy can take. Most animals eat, and are eaten by, several different things. If you trace all the links you have a food web. In this activity, however, the focus is on chains, to show as clearly as possible the connections, through food energy, in any community.

This activity also highlights the three major aquatic habitats in Ontario. Representative food chains are provided for large lakes, warmwater streams and ponds, and coldwater streams. These chains are presented visually on Leader Resource Sheets 1-3, and described in some detail below. It is important to emphasize that all chains are dependent on plants, and ultimately the sun, for their food energy.

LARGE LAKES

Large lakes are generally deep, and have a lower layer that remains cold most of the year. They contain fishes such as lake trout that need cold water. The animals used in the food chain are described briefly below:

Lake trout: "Lakers" are the top native predator in deepwater lakes. Once common enough in the Great Lakes to support a commercial fishery, fishing pressure, pollution and parasitism by sea lamprey have reduced populations to a fraction of their former size. Preferring temperatures at or below 10 degrees centigrade, they live only in relatively deep lakes in the south, but in the north they inhabit shallower lakes and rivers. Highly predacious, lakers feed on just about anything that moves, and some things that don't (freshwater sponges). Ciscos (lake herring) appear to be a preferred, native food, but the introduced smelt and alewife are now the most important prey for Great Lakes lake trout populations. Large lake trout have no natural enemies, but their eggs will be eaten by other fishes, and small lake trout will at times be eaten by large ones.

Cisco: growing to 20-30 cm, ciscos, or lake herring, are most commonly found in large schools at mid-depth in large lakes. They prefer cooler water and will move deeper during the summer. Once occurring in incredible numbers in the Great Lakes, populations collapsed around mid-century, perhaps due to competition from the introduced alewife and rainbow smelt. Ciscos eat primarily plankton and insect larvae, but large ciscos will eat alewives and other small fishes. In turn, ciscos are food for many larger fishes, including lake and rainbow trout, burbot, yellow perch and walleye.

Alewife: are actually a marine fish species that use streams for spawning, and are native to the Atlantic Coastal Drainage. They are now "landlocked", spending all their lives in fresh water - the Great Lakes and many other inland lakes. Exactly how alewives were introduced is a matter of some debate, although they may have entered by way of the Erie canal system in the 1860's. They were abundant in Lake Ontario by the late 1800s, and slowly spread through the upper lakes during the first half of the 1900s. Alewives spend most of their time in open lake waters eating mostly zooplankton, tiny animal "drifters" that move with the lake currents. They are food for many larger fishes, including lake trout, coho salmon, eels and rainbow trout.

Mysids: a shrimp-like crustacean, mysids range up to 2.5 cm in length and represent one of the larger plankton organisms in large lakes. They are common in offshore waters, occurring near the bottom during the day and rising into the upper layers at night. They eat algae and other zooplankton, and are in turn eaten by alewives, ciscoes, smelt and other planktivores.

Copepods: make up another small (0.8-1.2 mm) crustacean group that contains many carnivores and omnivores. They feed in part on other zooplankton, including water fleas, generally in offshore waters. They are eaten by larger plankton (mostly mysids) and planktivorous fishes.

Cladocerans: often termed "water fleas", due to their superficial resemblance to parasitic fleas, these small (0.5-2.00 mm) crustaceans are almost entirely herbivorous, grazing on floating algae. They are eaten by other zooplankton and planktivorous fish.

COLDWATER STREAMS

Coldwater streams are commonly referred to as "trout" streams, and often include the headwaters (often spring-fed) and upper reaches of river systems. These streams are usually narrow, shaded in part and cool. They contain small waterfalls or rapids where the water splashes around and is oxygenated, as well as pools and deeper channels (runs). The bottom ranges from sandy to larger pebbles and occasional boulders. Fishes here, such as those below, like and need cool water with lots of oxygen.

Brook trout: is the native Ontario stream trout species. Brook trout require clear, cool, well-oxygenated water, usually at or below 24 degrees celcius. They are widely distributed where such conditions exist. Averaging 25-30 cm, they are highly prized by anglers. Although fairly small, they are still the top predator in their preferred small-stream habitat, although they are preyed upon by fish-eating birds. Brook trout will themselves eat worms, leeches, aquatic and terrestrial insects, spiders, mollusks, fish, amphibians, mice and shrews.

Slimy sculpin: these small (7.6 ca or 3") bottom-dwelling fish prefer deeper lake waters and cooler streams, and their presence is a good indicator that a stream will support brook trout. They are eaten by both lake and brook trout, among others, and

are a favoured baitfish for brook trout. They eat invertebrates off the bottom of their habitat, particularly aquatic insect larvae.

Caddisfly larva: are a large group of flying insects closely related to moths and caterpillars. All larval forms are aquatic, and most construct cases or tubes of sand grains or bits of vegetation in which they live. They are found on the bottom in almost any freshwater habitat. Some spin nets to catch and eat floating debris and plankton. Others, such as the giant (2-4 cm) case maker pictured on Teacher Resource Sheet 1, are predacious, and will eat other insect larvae.

Mayfly nymph: Mayflies are another large group of flying insects that live and grow as nymphs in a wide range of freshwater habitats. Although most mayflies eat plants and bits of once-living material (detritus), a few, such as the nymph pictured here, will eat other insects. They are often found in swift-running streams, crawling around the rocks or clinging to vegetation.

Midge larva: midges are close relatives of sand flies, black flies and mosquitoes. Often seen flying in dense swarms, they do not bite. The larval forms are extremely common in fresh water, with various species inhabiting all aquatic habitats from mountain streams to marine estuary and tidal systems. They even invade sewage lagoons and are important to the lagoons' proper operation. The midge pictured on Teacher Resource Sheet 1 inhabits mostly cold, northern streams and eats both plants and detritus.

WARMWATER STREAMS AND PONDS

Warmwater streams are the wider, meandering, lower parts of river systems. The bottom is sandy to muddy, and will support aquatic vegetation, particularly along the river margins. Except along margins, they are open to the sun and warmer than trout streams.

Northern pike: are the most common top predator in warm-water systems, preferring shallow, heavily vegetated areas of slow rivers and lakes. Growing to well over 1 m and 10 kg, large pike need only fear humans. They will eat whatever vertebrate prey is available. While fishes form a large part of their diet, they will also take amphibians, crayfish, small mammals and birds.

Largemouth bass: share the warm, weedy habitats with the northern pike. Although large bass are not uncommon, growing to 3-6 kg, they are still occasional prey for pike. Depending on size, they will eat plankton, fish, crayfish, insects and frogs.

Pumpkinseed: These 18-23 cm brightly coloured fish are the common sunfish for most of Canada, living among the submerged weeds and brush of warmer waters. Insects make up a large part of their diet, but they also eat fishes and other vertebrates (e.g.

larval salamanders). Pumpkinseeds are in turn eaten by bass, walleye, yellow perch, northern pike and muskellunge.

Blacknose shiner: Widely distributed throughout much of Ontario, blacknose shiners prefer clear, vegetated waters, and are often sold as bait in southern Ontario. Often found in large numbers, they can form an important link between the algae and invertebrates that they eat and the larger fishes of their habitat that consumer them.

Dragonfly nymph: large and often brightly coloured, adult dragonflies can be one of the most evident waterside insects. Although nymphs are found in a wide range of aquatic habitats, they are most common in warm, shallow, weedy habitats. The nymph shown on Teacher resource sheet is that of the common green damer, which will actively stalk other aquatic insects, small fishes and tadpoles among the vegetation of lake sand slow streams. They are among the larger invertebrates (3-5 cm) and are eaten mostly by fishes.

Damselfly nymph: damselflies are closely related to dragon flies, but generally smaller (2-3 cm) and less robust. As a consequence, they will be eaten by dragon flies as well as fishes, and will stalk slightly smaller prey.

Midge larva: the midge shown on T-R sheet 2 is more common in warm-water systems, but performs the same role as that described under cold-water streams.

Adjusting the chains:

please note that a number of animals in these chains eat not only one level down, but one level (or more) below that. For example, pumpkinseeds eat not only small fishes, but the insects that the small fishes eat as well. You can, then, adjust the chains to match student numbers by removing the "middle" animal, in this case, the blacknose shiner., Other animals that could be removed include:

- (warmwater) damselfly or dragonfly nymph, largemouth bass or pumpkinseed
- (coldwater) slimy sculpin, mayfly nymph, caddisfly larva;
- (deepwater) cisco or alewife, mysid, copepod.

Cutting and pasting can be used to create cards with appropriate predators and prey. In this activity, students will begin to see the connections that exist among the animals in aquatic environments, and how animals relate to each type of environment.

Live Bait Hunt

Purpose: The need for and collection of bait for fishing will create a better understanding of where to find bait, and the habitat needs that are met in those locations.

Outcomes: Members will be able to identify several common insects, invertebrates, and small aquatic amphibians used for bait, know their habitats, and be able to store them successfully.

Concepts: 1.1, 7.3

Group Size: 2 to 30

Site: Outdoors (Spring, Summer, or Fall before snow)

Time: 40 minutes

Supplies: dip nets (see Activity 2.2); storage containers for specimens; bait storage instructions (at end of activity); Water Habitat ID Sheets (see Activity 2.2); current Ontario Fishing Regulations; fishing license or special MNR permit; leech trap (optional); crimper or pliers (optional); minnow trap with name and address label (optional); beef kidneys, fish heads, dog food, bread (optional).

Advance preparation: Prior to the program, construct the leech and minnow traps. You can construct a leech trap from a coffee can (see Bait Storage instructions). Crimp the top shut so that the bait doesn't float away. Place the labelled trap in water where currents move gently, so that the smell of the bait can be dispersed. Be sure that sunlight doesn't penetrate the water to your trap, or leeches will abandon it. For best results place it out the night before the event. A minnow trap is made of wire mesh (see bait storage). Labelled minnow traps can be set out a few hours before the program.

Select a nearby area where your group will be able to hunt for insects, invertebrates, frogs, etc. Take time to review the Ontario Fishing Regulations for bait collecting, transportation, and disposal laws. If you have any questions, contact your local Conservation Officer or resource biologist.

Reference: Current Ontario Recreational Fishing Regulations Summary.

A QUICK LOOK:

In this activity, everyone will explore the habitats where one can find potential live bait used for fishing (frogs, worms, crickets, etc.). They will then get a chance to try and catch their own bait to use later on when fishing.

READY, SET, GO!

Assign 4-5 members to an adult helper or youth leader. Work with your group to minimize your impact on the area by taking only small amount of what you need, and cleaning up the site after the activity. Under the supervision of the adults, let the members collect as many of the different types of bait as the time will allow:

Earthworms: Earthworms are usually found from ground level to two feet below the surface. In winter or during hot weather, they will burrow deeper. Search for earthworms in areas moist and rich in organic material. Turning over logs and rocks in wooded areas that feel bumpy underneath (the bumps are hardened castings of worms) should yield these squiggly treasures. Worms also will leave their burrows during heavy rains. During this time, they can be easily collected from sidewalks or roads.

Insects: Aquatic insects in their larval or nymph forms generally make excellent bait. Turn over rocks in shallow water to collect caddisfly cases, stonefly nymphs, and other insect larvae. Near shore, gather mud, leaves, and sticks, and sort through the materials to find insects such as dragonfly nymphs. Look for water worms in mud and leaves downstream from fallen trees. Adult crickets and grasshoppers are also excellent baits.

Frogs: Frogs prefer marshy areas and edges of streams or creeks. Certain species of frogs prefer to live near plants in deep water. During warm summer days, frogs can be chased and caught by hand or with nets. *Please note that bullfrogs are not legal bait.* Please also review frog issues under *Other Ideas* before catching frogs as bait.

Leeches: Ribbon leeches live in lakes and ponds without fish except for a few minnows. They are flat, black to brown invertebrates that have sucking disks at both ends of their bodies. The smaller disk is the mouth and the large disk at the tail is used to cling to objects. Most leeches eat dead material. Leeches can be collected from spring through early summer. They prefer ponds with an abundance of shoreline vegetation, such as cattails. You are less likely to catch leeches in a pond with game fish.

Minnows: Minnows are easily trapped in most areas throughout the year. Have members examine the trap you set earlier to see what types have been caught, or let them collect their own using dip nets (Water Habitats Site Study, Activity 2.2).

After collecting, reassemble the group and have them share the types of bait they caught and describe the habitats where they found them.

Use the Bait Storage page to discuss ways to store the various bait. All bait needs to be kept cool and moist in a refrigerator, cooler, or shade. Minnows and leeches also need clean, fresh water (do not use chlorinated water) to survive over long periods of time. While fishing, many anglers store their minnows and leeches in a flow-through

container in a shaded part of the lake or stream. For best survival, it is important to change the water or check the bedding at least once a day.

FOR DISCUSSION:

Q. Why do you find so many insects under rocks?

A. Because dark, moist areas are where many insects prefer cover and can be their habitat.

Q. Could you live in a pond? Would there be enough things to keep you alive?

A. Responses will vary, but probably not. The winter would be too cold, and food sources would be limited.

OTHER IDEAS:

- Research and discuss raising bait at home. Show samples of equipment needed. Items like worm food and bedding can be purchased at bait and tackle shops. Raising worms is a positive way to recycle selected food items into compost for your lawns and gardens.
- Scientists have documented a world-wide decline in the populations of frogs and other amphibians. The U.S. government has even created a special task force to investigate the disappearance of frogs. In Ontario one frog, Blanchard's cricket frog, can no longer be found. Deformed frogs have also been found by school groups and others in both Canada and the U.S. Possible causes include the thinning ozone layer, climate change, pollution and disease. Investigate this problem. Are there fewer frogs in your area than there used to be? Decide whether you should still use frogs as bait, or leave them alone until frog populations are in better shape.

HANDOUT MASTERS:

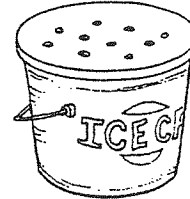
Resource Sheet 1: Bait Storage

BAIT STORAGE



STYROFOAM PAIL

MINNOW PAIL



Use fresh (non-chlorinated) water and keep in a cool, shaded spot.
(Letting water sit overnight will dechlorinate it.)



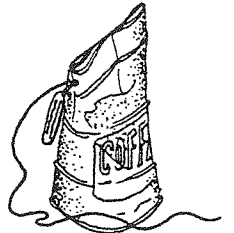
WORM PAIL

**WORM
BAIT BOX**

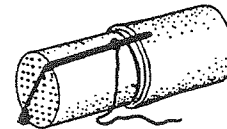


Use moist soil or worm bedding and keep in a cool, shaded spot.

**LEECH
TRAP**



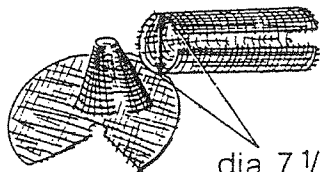
**FLOW-THROUGH
LEECH CONTAINER**



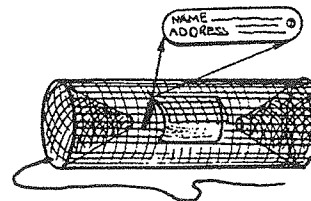
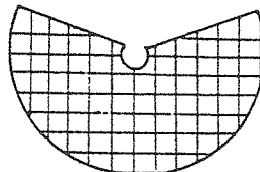
1. Squeeze can shut by bending in the top rim.
2. Bait with fish heads, red meat, or liver.
3. Place in shallow water and tie to a spot on shore or use a marker float.

Place in water and tie to a spot on shore.

MAKING BAIT TRAPS



dia. 7 1/2"



1. Use a piece of 1/4" inch mesh 25" x 16" to make a cylinder.
2. Fasten ends together by bending cut ends around other edge.
3. Cut a door. Use a piece of wire to hook door shut.
4. Cut out and make two cones using scaled drawing as a guide (1 square = 1 inch).
5. Insert a cone into each end of cylinder and fasten as above.
6. Place a metal tag showing your name and address on the trap.
7. Bait with bread or dog food.
8. Place in shallow water and tie to a spot on shore or use a marker float.

Pop Can Casting (option)

Purpose: To provide each member with the opportunity to create their own simple, inexpensive fishing gear, and practice the basics of casting with that gear.

Outcomes: Members will be able to tie a palomar knot, make a fishing rig from a pop can, accurately cast a line, associate these techniques to a fish's habits and habitats, and fish independently in the future.

Concepts: 1.1, 7.3, 7.4, 7.7

Group Size: 2 to 30

Site: Outdoors (large open space) or Indoors (gym)

Time: 30 minutes

Supplies: Make Your Own Casting Rig directions; Take A Kid Fishing Guides; 1/4" nylon cord or rope (36" or 1 m lengths; 1 per member); small scissors, large binder clips, coffee cups or anything else that can mimic the eye of a fishing hook, one per member; sinkers, bobbers, #6 or #8 hooks, empty pop cans, casting plugs or heavy washers, needlenose pliers, 1-2 fingernail clippers, 1-2 rolls of masking tape, clear container (plastic pail or aquarium) with water, 2-3 spools of monofilament fishing line (6- to 8-lb test), construction paper (optional - to make cover props such as lily pads, stumps, docks, rocks)

Before the Meeting: If you don't have casting plugs, make some by taping three large washers together, with the centre one raised a bit so that line can be tied to it. A fair amount of loosely-wound tape will provide a cushioning effect should the "plug" land somewhere it shouldn't.

Reference: Take A Kid Fishing Guide

A QUICK LOOK:

In this activity, the group will learn how to tie a palomar or clinch knot and how to make a pop can rig. They will practice casting using hula hoops with simulated cover. The final step is rigging the pop can with hooks, bobbers, and sinkers in preparation for the fishing trip and learning the "signs" that tell you that you are about to catch a fish.

READY, SET, GO!

TYING KNOTS

Begin by teaching the group how to tie a palomar knot (teach the clinch knot if you prefer). This knot is important because it links your hook to the line. Without a sturdy set up, you're likely to lose your fish!

Refer the group to their *Take A Kid Fishing* guides and turn to page 16. Using a pair of scissors or coffee cup, show your group how to make a palomar knot as shown. Now break into groups of 5. Help each person tie a knot to their pair of scissors or other object. Encourage those youth who can tie the knot to help others learn while they are waiting for the next step. Make sure everyone has mastered this knot before going on to make a pop can rig.

Your group is now ready to construct a pop can rig as shown in the *Make Your Own Casting Rig* instructions. These pop can rigs take the place of a rod and reel. Yes, you CAN and WILL catch fish with these reels! Set up the empty pop cans, masking tape, fishing line, clippers, and casting plugs at tables that give everyone enough room to work. Have everyone follow the steps in the instructions. At this time, change step four to attaching only a casting plug or tape-wrapped washers so they can use the pop can rigs for casting practice.

CASTING FOR COVER

Discuss the importance of casting close to cover. For instance, largemouth bass will wait in the shade of a lily pad for its prey. Our lure imitates prey when we go fishing. If we can fool the bass, then we'll have a bite!

Demonstrate to the group the proper technique for casting a pop can rig (page 2 of the directions). With any group, it's important to emphasize safety when casting. Make sure that everyone is several feet apart from each other. Remind everyone to look around them for people, obstacles, and overhead wires, branches, etc. before casting.

Have each group practice casting to their hula hoops. Start about 10 feet (3 m) from the hoop, and have each person step back three steps and try again after successfully landing their plug in the hoop.

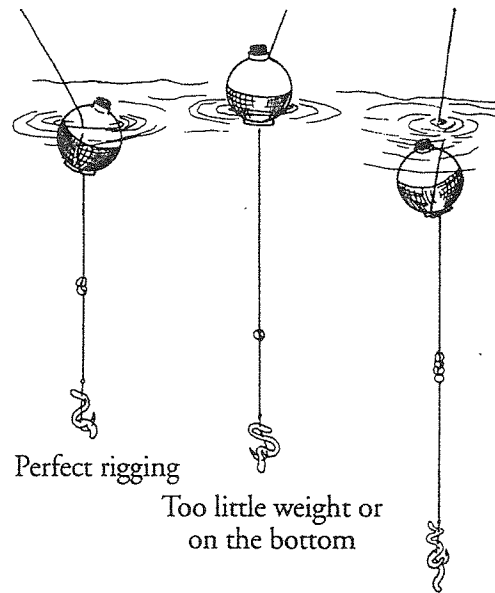
RIGGING FOR FISHING

Now that everyone is an expert at casting have them return to their work station to rig the pop can for fishing. Remove the casting plug and give everyone a hook, sinker, and bobber. Since this is the first time members will have and use hooks, go over the key points of hook safety:

- hooks are *sharp* – that’s the “point”!
- always hold a hook by the shaft or end, not by the point
- don’t hand hooks to others; place each hook down so they can pick it up
- don’t leave hooks lying around
- don’t leave hooks on rods or cans unless actually fishing
- no horseplay with or around hooks
- if a hook gets stuck in you or your clothes, find a leader – *don’t* try to remove it yourself

Have them follow the directions on page 11 of their guide. (Note: If you plan to practice catch-and-release, the barbs can be bent down. This will make the fishing more challenging, further reduce fish mortality and make things safer.) Help everyone rig their pop cans. As individuals finish rigging, let them test each rig in a plastic or glass container to see if it floats at the correct level.

Review or show the group at this time the "signs" the bobber gives when you are about to catch a fish.



FOR DISCUSSION:

Q. What is the most important step when rigging your fishing rod?

A. The knot.

Q. Where would you cast your line to catch bluegill or crappie?

A. Near shaded cover, such as docks or vegetation.

Q. What does it mean when your bobber is laying on its side in the water?

A. It can mean that you don’t have enough weight on your line, that your bait is sitting on the bottom of the lake, or that you have a fish on the line! A perch or crappie will not necessarily take the bait down with them. Instead, they may stay right where they are and feed, or swim horizontally for awhile.

OTHER IDEAS:

- To practice casting and to reinforce picking a fishing spot based on habitat, set up a pop can casting course. Place hula hoops or rope loops on the ground for targets. Set up a series of stations in a golf-course form with each station representing the habitat of a different fish. For example, put paper "lily pads" around one hula hoop to represent good largemouth bass habitat. Then let the group "cast for cover" from

about 15 to 20 feet (5 to 6 m) away from the hula hoop. Allow everyone at least three tries at each station before having to move on to the next station. Once a person casts inside the hula hoop they should identify the type of fish they would have caught and move on to the next station of their choice. Watch the group and help as needed.

- Introduce live bait (see Activity 3.2, *Live Bait Hunt*) and test it in the clear containers. Have your group experiment with putting bait on a hook and observing how different bobber and sinker sizes affect the bait. For example, try four split-shot sinkers and a worm versus a bobber, one-split shot sinker, and a worm. Which might be better suited for a catfish lying on the bottom of a swift moving river? Which is better for a bluegill only a few feet under the surface of a lake?

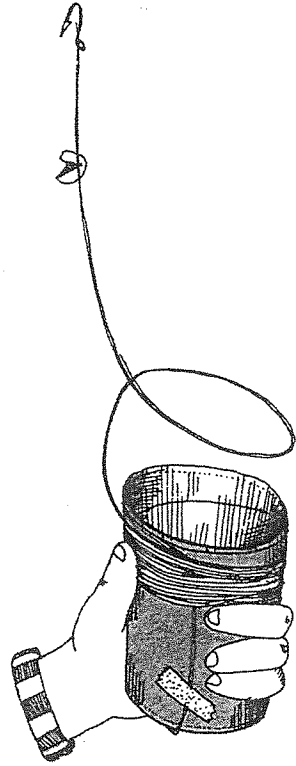
MAKE YOUR OWN CASTING RIG!

If you don't have any fishing gear, it is still cheap and easy to start fishing and catch fish. In fact, you can be fishing for a lot less than \$5.00! Just follow these easy steps.

Materials. Collect scissors, adhesive tape, a tin can (normal soup cans work well), a rubber band, 10 m (30') of 6 lb. (3 kg.) test fishing line, a #10 hook and a small split-shot sinker (a few extra hooks and sinkers are a good idea).

Making your rig.

1. Make sure the can has no sharp edges by covering the open end with tape.
2. Tape one end of the fishing line to the can near the closed end. Run the line toward the open end, and tape it again part way down the can.
3. Carefully wrap the line around the can toward the open end, trying not to overlap it. Too many overlaps spoil the cast.
4. When all the line is wound, tie the hook to the end and attach the sinker (see your *Take A Kid Fishing* guide, pg. 11 & 16).
5. Slip a rubber band over the hook to hold the line in place.

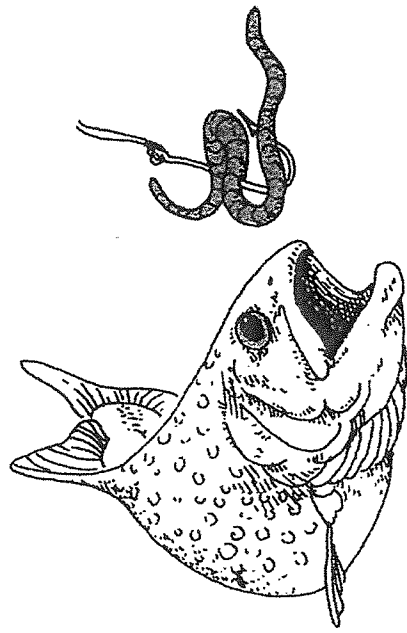


Trying it out. You can do this on an actual fishing trip, or practice in your backyard. If it's the back yard, take off the hook and tie on several washers, a nut, or add more sinkers.

1. Take off the rubber band, and hold the end of the line in place with your thumb. Try not to touch the line with the rest of your hand.
2. Swing your arm as if you were throwing a ball under-handed, like a softball pitcher.
3. Let go with your thumb when you would release the ball. Remember to put your thumb back on the line after the cast so extra line doesn't come off and tangle.
4. Try aiming at an aluminum pie plate. They make a satisfying *bang* when hit.
5. Don't forget to rewind the line as you're pulling it in, even if you've got a fish. If you need two hands to pull, give the can to someone else.

It's a start... While your rig gets you fishing, there's no doubt that a rod and reel is easier to use and allows you to do more. Look for used gear at yard sales, or save up for something new. Check your *Guide* for tips on what to buy.

Good luck, and good fishing, from your Ontario Ministry of Natural Resources!



Spin-cast Rod and Reel (option)

Purpose: To provide each member with the opportunity to examine and rig a basic spin-cast rod & reel, and practice the basics of casting with that gear.

Outcomes: Everyone should be able to tie a palomar knot, cast and rig a spin-cast rod and reel, accurately cast a line, associate these techniques to a fish's habits and habitats, and fish independently in the future.

Concepts: 1.1, 7.3, 7.4, 7.7

Group Size: 2 to 30

Site: Outdoors (large open space) or Indoors (gym)

Time: 30 minutes

Supplies: Take A Kid Fishing Guides; 1/4" nylon cord or rope (36" or 1 m lengths; 1 per member); small scissors, large binder clips, coffee cups or anything else that can mimic the eye of a fishing hook, one per member; sinkers, bobbers, #6 or #8 hooks, spin-cast rods & reels with monofilament line, casting plugs or heavy washers, needlenose pliers, 1-2 fingernail clippers, 1-2 rolls of masking tape, clear container (plastic pail or aquarium) with water, 2-3 spools of monofilament fishing line (6- to 8-lb test), construction paper (optional -- to make cover props such as lily pads, stumps, docks, rocks)

Before the Meeting: If you don't have casting plugs, make some by taping three large washers together, with the centre one raised a bit so that line can be tied to it. A fair amount of loosely-wound tape will provide a cushioning effect should the "plug" land somewhere it shouldn't.

Reference: Take A Kid Fishing Guide

A QUICK LOOK:

In this activity, the group will learn how to tie a palomar knot and rig a spin-cast rod and reel. Participants will practice casting using hula hoops or rope loops and simulated cover. The final step is rigging the rod with hooks, bobbers, and sinkers in preparation for the fishing trip and learning the "signs" that tell you that you are about to catch a fish.

READY, SET, GO!

TYING KNOTS

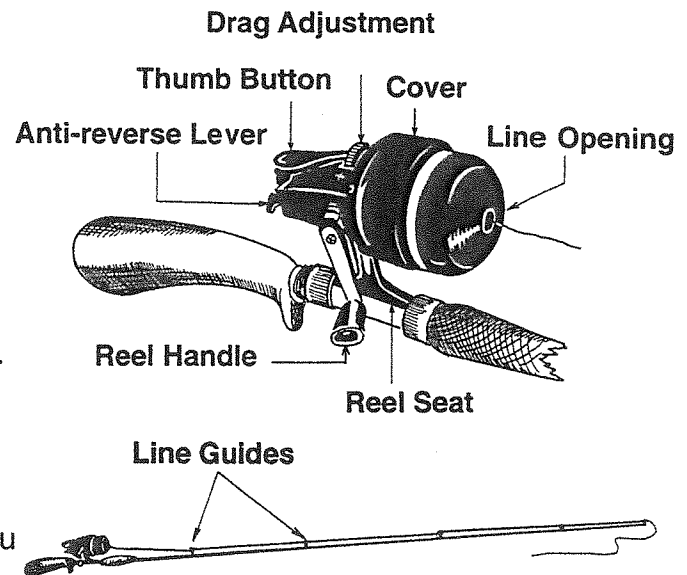
Begin by teaching the group how to tie a palomar knot (teach the clinch knot if you prefer). This knot is important because it links your hook to the line. Without a sturdy set up, you're likely to lose your fish!

Refer the group to their *Take A Kid Fishing* guides and turn to page 16. Using a pair of scissors or coffee cup, show your group how to make a palomar knot as shown. Now break into groups of 5 or 6. Help each person tie a knot to their pair of scissors or other object. Encourage those youth who can tie the knot to help others learn while they are waiting for the next step. Make sure everyone has mastered this knot before going on to rig a spin-cast rod.

RIGGING

Now show everyone how to rig their rod.

Start by locating the line on the reel (if necessary, take the cover off). The line should come out of the cover at the line opening. Push the thumb button to release the line. Gently pull the line from the reel, threading it through the line guides. Turn the reel handle once to secure the line. Check the drag adjustment on the reel. Tie the line to something sturdy. Move the drag adjustment lever so the line comes out pretty easy. Gradually lift the rod until it bends, tightening the drag adjustment as you increase the tension on the line. Now jerk the rod as if setting the hook. The drag should slip slightly. If it doesn't, loosen the drag until it does. At this time, attach only a casting plug or washers so they can use the rigs for the following casting practice.



CASTING FOR COVER

Discuss the importance of casting close to cover. For instance, largemouth bass will wait in the shade of a lily pad for its prey. Our lure imitates prey when we go fishing. If we can fool the bass, then we'll have a bite!

Demonstrate to the group the proper technique for casting their spin-cast rigs (page 16/17 of their guides). Make sure the line isn't wrapped around the top of the rod! With

any group, it's important to emphasize safety when casting. Make sure that everyone is several feet apart from each other. Remind everyone to look around them for people, obstacles, and overhead wires, branches, etc. before casting.

Have each group practice casting to their hula hoops. Start about 10 feet (3 m) from the hoop, and have each person step back three steps and try again after successfully landing their plug in the hoop.

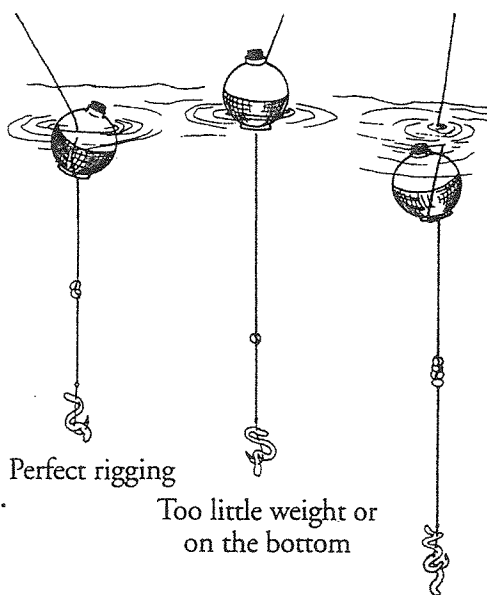
RIGGING FOR FISHING

Now that everyone is an expert at casting and handling fish, have them return to their work station to rig the spin-cast combo for fishing. Remove the casting plug and give everyone a hook, sinker, and bobber. Since this is the first time members will have and use hooks, go over the key points of hook safety:

- hooks are *sharp* – that's the "point"!
- always hold a hook by the shaft or end, not by the point
- don't hand hooks to others; place each hook down so they can pick it up
- don't leave hooks lying around
- don't leave hooks on rods or cans unless actually fishing
- no horseplay with or around hooks
- if a hook gets stuck in you or your clothes, find a leader – *don't* try to remove it yourself

Have them follow the directions on page 11 of their guide. (Note: If you plan to practice catch-and-release, the barbs can be bent down. This will make the fishing more challenging, further reduce fish mortality and make things safer.) Help everyone rig their pop cans. As individuals finish rigging, let them test each rig in a plastic or glass container to see if it floats at the correct level.

Review or show the group at this time the "signs" the bobber gives when you are about to catch a fish.



FOR DISCUSSION:

Q. What is the most important step when rigging your fishing rod?

A. The knot.

Q. Where would you cast in a stream to catch rainbow or brook trout?

A. Near shaded cover, such as tree roots, under bank side bushes, or in fast-moving, shallow water.

Q. What does it mean when your bobber goes under the water?

A. It means either that you have a fish, or your split-shot sinkers are too heavy for the bobber you have chosen.

OTHER IDEAS:

- To practice casting and to reinforce picking a fishing spot based on habitat, set up a pop can casting course. Place hula hoops on the ground for targets. Set up a series of stations in a golf-course form with each station representing the habitat of a different fish. For example, put paper "lily pads" around one hula hoop to represent good largemouth bass habitat. Then let the group "cast for cover" from about 15 to 20 feet away from the hula hoop. Allow everyone at least three tries at each station before having to move on to the next station. Once a person casts inside the hula hoop they should identify the type of fish they would have caught and move on to the next station of their choice. Watch the group and help as needed.
- Introduce live bait (see Live Bait Hunt) and test it in the clear containers. Have your group experiment with putting bait on a hook and observing how different bobber and sinker sizes affect the bait. For example, try four split-shot sinkers and a worm versus a bobber, one-split shot sinker, and a worm. Which might be better suited for a catfish lying on the bottom of a swift moving river? Which is better for a bluegill only a few feet under the surface of a lake?
- Discuss what to look for when selecting fishing equipment. Remember to include cost, quality, styles, and matching it to the fish they are seeking. Emphasize that one doesn't have to have a lot of expensive gear to catch a fish; simple and inexpensive can be just as effective as long as you practice the concepts learned about habitat, fish identification, stewardship, and ethics.

Try it Out!

Purpose: To apply rigging and casting skills to a real fishing experience.

Outcomes: Members will be able to identify likely fishing spots, safely cast near cover, describe what happens when a fish takes the bait, and demonstrate general care in handling caught fish.

Concepts: 6.3, 6.4, 6.6, 7.4, 7.7

Group size: 5 kids per leader is optimum; try to have no more than 6-8 per leader. If there are too many kids per leader or for the area, pair kids up with one rod or can, and have them alternate every 5 minutes. Have each leader and their sub-group fish one general sub-area.

Site: Waterside, preferably a location known for active panfish which is relatively shallow and safe.

Time: 30 minutes

Supplies: Live bait from Activity 3.2, terminal tackle, pop can or spin-cast gear, safety equipment: life jackets for each child, first-aid kit, cellphone, sunscreen, insect repellent, camera.

Before the Meeting: Choose your site carefully, based on safety, space, amount of structure, known panfish activity, and ease of access. If it makes sense, use the same area where you did the Habitat Site Study, and review the good places to fish, and why. If it is a new location, ensure that reasonable fishing spots are available for the whole group, and that all spots can be adequately supervised (in visual range) by available supervisors. Review proper release procedures found in your Ontario Recreational Fishing Regulations Summary.

Reference: Ontario Recreational Fishing Regulations Summary

A QUICK LOOK:

By this point, kids should be really eager to fish. This session gives them the opportunity to experience fishing first-hand, perhaps for the first time, but only for a *short* time. It is a chance to try the skills that they have just learned in an environment where action is likely. There is still lots to learn, and they should know that. Get them to focus on what they do, and what happens as a result. The action of a bobber when a fish takes their bait. What happens if they pull on their line as soon as the bobber begins to tremble, if they wait a few seconds, or if they don't pull at all? If they lose a

fish, what was happening at the time? Was their line taught or slack, rod tip up or down? This is a problem-solving exercise – there may be more to learn from losing a fish than from landing one. The hardest thing for you as a leader will be to *not* do or say too much. Try to lead them but not direct them.

Two areas which *will* require direction, however, are safety and ethics/responsibility. Decide if the site, type of group and time of year requires a personal floatation device (pfd). If so, ensure that each member has one and knows how to wear and use it. Review the safe use of hooks, the space needed to cast (particularly if they are in pairs) and the need to always look behind them before casting. Discuss the need to treat their fish, bait, other group members, and other anglers with respect. Within each small group, have a leader properly handle and release the first fish landed, and then guide each member through that process. Have them handle fish with wet hands, keep them in the water as much as possible, and cut away any hooks that are deep-set. Discuss any requests to keep fish – are they big enough? Can someone at home clean and prepare them properly? Would a picture do instead? If fish are to be kept, see Activity 5.2, Resource Sheet 3 (Leader's) for tips on killing and temporary storage.

Remember, this is just an introduction. Leave them wanting more.

READY, SET, GO!:

When you arrive, quickly go over the site with the whole group. Point out any safety concerns and reinforce their responsibilities as ethical anglers. Get them to indicate good potential fishing locations, and why. Remind them that fish can be spooked by motion, shadows, noise or vibration. Indicate that this may be their first try at fishing, that they are here to experiment and learn, and that anglers get good by identifying problems, and solving them.

Divide the group by locations and assign leaders. If they are in pairs, explain the alternate fishing arrangement. Allow anglers, as much as possible, to pick their own fishing spot, within the geographic limits you have established.

If you have collected a variety of live bait, make sure a number of different baits are used to start. Demonstrate the proper way to hook each type of bait (see *Resource Sheet 1*). Reinforce hook safety. If fish seem to be hitting a particular kind of bait, let anglers change to that type if they want.

Before they cast, reinforce the need for space, clearance from overhangs, and checking behind them.

Allow them to fish, and see what happens. Try to reinforce their observations. If they get a nibble, ask, "how did it feel?" Get them to describe the difference between a nibble and an actual strike. Is there a connection, i.e. was there nibbling just before the strike? Comment and encourage, but don't direct.

When the first fish is caught, demonstrate how to handle it properly and with respect. Anglers should then be able to land, remove hooks, and release their fish.

Wrap up at the appointed time, or sooner if action is slow and attention is starting to wander. Have group police the area, leaving it better than they found it.

FOR DISCUSSION:

Q: What happened? What did you learn about fishing? What didn't work very well?

A: This type of open-ended questioning should allow members to reflect on their experiences, reinforce any discoveries and identify areas for additional learning and practice. Indicate that they will have the opportunity to learn about, and practice, some of the things they were trying out in the next lesson: setting the hook, retrieving the line, and landing the fish.

OTHER IDEAS:

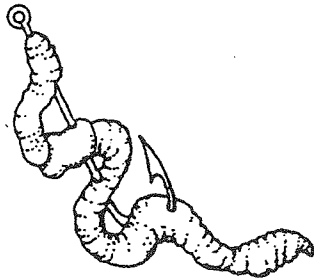
- Have members maintain leftover bait, or collect new bait, for fishing activity in the next lesson.
- Consider dressing and storing some fish for Lesson 5, particularly if badly hooked or bleeding. This will require a cooler with some ice.

HANDOUT MASTERS:

Resource Sheet 1: Bait Tales.

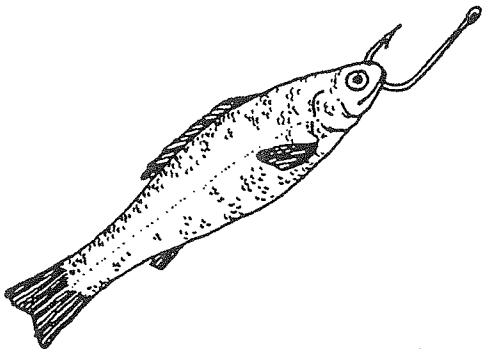
Fish like to eat things that live by or in the water. Fish especially enjoy eating meals that move and wiggle. They also like to see what they're eating, so be sure to keep moss and muck off of bait. To keep your bait alive, be sure to keep it cool and moist.

You can try:



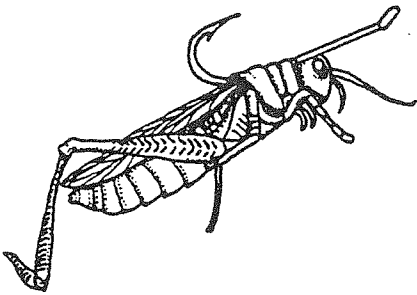
A worm. If you offer a fat nightcrawler to a crappie, you're sure to get a bite! You can dig worms in your neighborhood. Look for worms in wet, dark soil, and hook it like this.

A minnow. You can scoop these up yourself in a lake, or buy them from a bait store. They should be about 3 inches long. Hook the minnow through the lips.

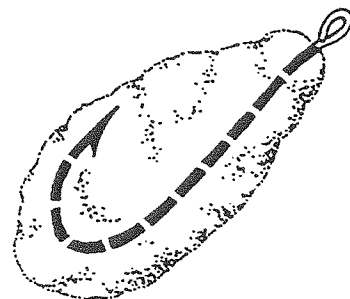
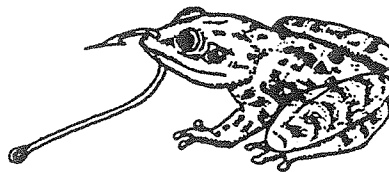
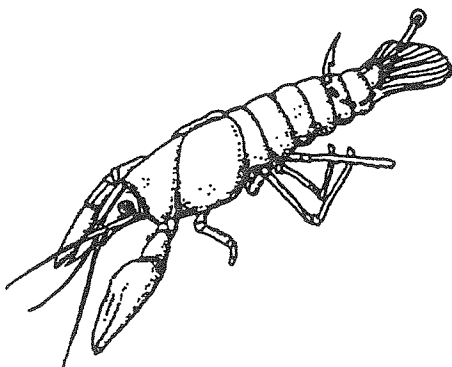


A grasshopper or cricket. Slip the hook through the collar that is behind their necks; this will keep them alive.

Crayfish and small frogs are good bait to use, too, and they are fun to catch! Crayfish find shelter under rocks in the water. Hold them along the back, so that they don't pinch you, and hook them through the tail. Hook the frogs through the lips.



A doughball. Some fish, like carp, are junk food eaters—they search the lake floor for whatever food they can find. Carp eat artificial bait like doughballs. You can make doughballs from flake cereal or bread dampened with water and honey. Press them into tight little balls, and then put the doughballs onto your hook. Be sure to take your bobber off and use a big split-shot sinker to catch a carp!



MEETING FOUR: HOW WILL I CATCH IT?

What will the group learn? Members will be able to describe basic lure types and their use; experience methods for hooking, playing and handling fish; apply those methods during a short fishing session; and understand the advantages and disadvantages of both bait and lures.

Objectives

1. To increase awareness, understanding and knowledge of fishing lures, including their action and attractiveness to various fish, as well as the costs and benefits of their use, compared to live bait.
2. To develop skills in the actions of fishing: presentation of lures and bait, setting the hook, landing the fish and proper handling of the fish once it is landed.
3. To apply the above skills and understandings to a real fishing experience.

In a nutshell

<i>Alluring Lures</i>	25 minutes
<i>The Play's the Thing</i>	40 minutes
<i>Try it Out! II</i>	30 minutes
<i>The Great Debate</i>	25 minutes
Total Time:	120 minutes

Fundamentals, part two

Hopefully, the fishing experience at the end of the last lesson just whetted some appetites, and created a desire to learn more. Members may have found out that it takes more than gear to make a consistently successful angler. Use that motivation as you take the group through both lures and the basics of presentation, hookset, retrieval and fish handling. You can be a bit more directive here since they are learning and applying skills, not discovering that they need them.

Coach and encourage them through their second fishing experience. While fishing, you can use the time to teach how artificial lures mimic parts of the food web. Why would a largemouth bass chase a fluorescent, dancing, spider jig? Why is a rainbow trout lured into eating cheese? Above all, you can leave those you teach with your enthusiasm for the sport or out-of-doors. It will leave a lasting impression.

As you swing into the "debait", remember that fishing is about choices, and about problem-solving. Here is an opportunity to go a bit overboard in exploring and choosing. The trick is to generate enthusiasm for *both* sides in *everyone*.

Alluring Lures

Purpose: This activity will introduce a variety of lure types and explore their action and uses.

Outcomes: Members will be able to identify 3-5 major lure types, describe their use and suggest potential target species.

Concepts: 6.6, 7.3

Group size: 5-30, in subgroups of 5

Site: indoor meeting room; outside, waterside or poolside for lure demonstrations

Time: 25 minutes

Supplies: minimum of one to maximum of six of up to five different types of artificial lures: topwater plugs, spinners/spoons, medium to deepwater plugs, soft plastic (any depth) and jigs; lure catalogs (optional); child's wading pool (optional); Resource Sheet 1.

A QUICK LOOK:

This activity begins with an examination of artificial lures. You will need a minimum of five lures, one of each kind. In this scenario, small groups of 5 will examine each lure in turn, and attempt as a group to fill in some of the blocks on *Resource Sheet 1*. They will then go on to the next lure. Alternatively, each small group of five could have one example of each lure type, and examine each in turn. If you go with only five lures, you may want to have a few additional lures to show some variety within each type. Alternatively, provide some lure catalogs and point out particular lures. Remember, however, that this is only an introduction – do not overwhelm them with a kazillion lures.

Pose questions to the groups, but avoid telling them directly how the lure acts or is used. Safety is *critical* here, as they will be handling lures with lots of sharp hooks. Consider covering the points with pieces of plastic tubing, small Styrofoam balls or pieces of cork.

Next, if at all possible, demonstrate the action of at least some of the lures in a child's wading pool (stiff-sided, not inflatable!), a swimming pool or at waterside, preferably along a low dock. Emphasize the need to create motion which helps fool the fish – that this is the challenge, and the fun, of fishing with lures. The demonstration should help them fill in more of the sheet. It is not essential that they complete the sheet during this activity – they can take it home and complete it by talking to other anglers, looking at and reading about lures at a tackle shop, or talking to a salesperson there.

READY, SET, GO!:

Divide the group into subgroups of five, and have each gather around from 1 to 5 lures of different types. Indicate that they are going to discover something about fishing lures by looking at and handling them.

Stress the need for hook safety, and point out the large number of dangling hooks, and hook points, on some of the lures. Establish one firm rule: put each lure *down* before someone else picks it up. There will be no chance that wayward points catch skin in a handoff.

Pass out a copy of *Resource Sheet 1* to each member, and encourage them to jot down some ideas in pencil, in case they want to change them later. They should ask themselves the following questions, among others (you may wish to post these on a board), about each lure:

- What kind of animal does it look like?
- How heavy is it? Do you think it would float, or sink?
- What might happen if you pulled it through the water? Why?
- How could you make it act like the animal it looks like? An *injured* animal?
- Is it soft or hard? Could a fish tell it from something live right away if it bit down?

Demonstrate several lures. Pull each steadily through the water, then vary your presentation and ask what method might look more life-like to a fish. Give each group a chance to add points to their sheet. Indicate that they should complete it before the next session. Suggest that they may get to try out some of these lure presentations during the next activity.

FOR DISCUSSION:

Q: Does the level where the lure is fished tell you something about what it might catch?

A: Yes, surface lures would catch surface feeders, such as bass, pike and sunfish, while deeper-running lures might tempt walleye as well. Bottom feeders need bait or lures on the bottom. Some fish will be found at different levels at different times of the day or year, and part of the fun lies in finding them.

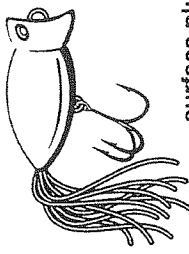


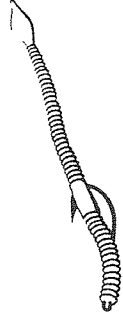
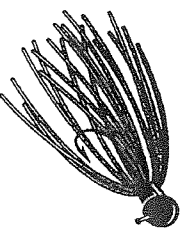
OTHER IDEAS:

HANDOUT MASTERS:

Resource Sheet 1: Alluring Lures

RESOURCE SHEET 1

Alluring Lures

Lure type	Looks like	Area Fished	Presentation	Target Fish
 surface plugs		top middle bottom		
 spinners/spoons		top middle bottom		
 crankbaits		top middle bottom		
 soft plastic		top middle bottom		
 jigs		top middle bottom		

RESOURCE SHEET 1

Alluring Lures

Lure type	Looks like	Area Fished	Presentation	Target Fish
surface plugs	frog, insect, baitfish	<u>top</u> middle bottom	Steady to erratic retrieval; pull/stop, pull/stop, especially if shallow-diving.	Bass, larger sunfish, pike, muskie
spinners/spoons	baitfish	top <u>middle</u> bottom	Steady or pull/stop retrieval.	Walleye, smallmouth bass, sunfish, perch, lake trout, salmon
crankbaits	baitfish	top <u>middle</u> bottom	Steady retrieval; or steady to depth, then more erratic or pull/stop.	Walleye, smallmouth bass, pike
soft plastic	varies; could be worms, frogs, crayfish, insects, leeches or indeterminate (twister tails)	<u>top</u> middle <u>bottom</u>	Varies, e.g. slowly along bottom (worm), erratic along surface (frog), but always requires some motion.	Bass, sunfish, perch, pike, muskie.
jigs	baitfish, insects, leeches	top middle <u>bottom</u>	Bounce off bottom by slowly reeling in, then occasionally jerking the rod tip up and slowly dropping it again.	Bass, sunfish, perch, walleye.

The Play's the Thing

Purpose: This dry land simulation will focus on the action of fishing: the presentation of lures and bait, setting the hook, landing the fish and proper handling of the fish once it is landed.

Outcomes: Members will be able to properly present at least one lure, and effectively handle a fish from strike to creel.

Concepts: 6.4, 7.3, 7.7

Group Size: 2 to 30

Site: Outdoors (large open space) or Indoors (gym)

Time: 40 minutes

Supplies: Take A Kid Fishing guides; 4-6 hula hoops, rope loops or simulated cover; pop can or spin-cast rigs¹, blindfolds, casting plugs or heavy washers, 1-2 rolls of masking tape, construction paper (optional – to make cover props such as lily pads, stumps, docks, rocks)

Reference: Take A Kid Fishing guide pg. 23-26

A QUICK LOOK:

In this activity, the group will simulate fishing in order to learn how to present live bait and artificial lures, set their hook, land their fish and properly care for it.

This activity links directly to both *Alluring Lures*, the activity directly preceding it, and *Try It Out!*, the opportunity the group had to fish at the end of Lesson 3. Here, they can practice the lure presentations that they have just seen. They can also reflect on some of the things that happened while they were fishing (What did the strike feel like? What were they doing when they lost a fish?), practice the proper way to set the hook for lures and live bait, and play their fish.

You will need leaders or volunteers to play the role of fish. They will need to “hit” the casting plug appropriately (nibble, then take for bait; fast strike for lure). The angler will have to react properly (wait a bit for bait or soft plastic; immediate hookset for lure) or the volunteer will release the plug. Practice a bit with your “fish” if they have limited

¹ Loaner spin-cast rigs may be available from the OFAH Tackle Share[®] program.

fishing experience. Set up 4-6 hoops or rope loops and have groups of anglers cast to each. If you have a large group, pair anglers up on each pole or can.

READY, SET, GO!

Reinforce the importance of casting close to cover. Place hula hoops or rope loops on the ground for targets. Let each small group "cast for cover" from about 15 to 20 feet (5 - 7 m) away.

PRESENTING THE LURE AND SETTING THE HOOK

Anglers will begin by practicing lure presentations. Each must identify the type of lure they are simulating, and reel appropriately. Leaders circulate and help individuals. Make sure everyone has a chance to try at least one lure type.

Stop the groups and indicate that they will now practice setting the hook and retrieving their fish. Demonstrate a proper hard-bodied lure strike, using a volunteer fish. Set the hook quickly, having the "fish" hang on; then show what happens if you delay the set (fish lets go). Demonstrate again, only this time simulate live bait or soft-bodied lures. Stillfish, and have the fish nibble and then take the bait. Show what happens if you set too soon (fish lets go) or wait a bit (fish hangs on).

Hand out blindfolds. Have anglers put them on after they have cast, and indicate "lure" or "bait" to the fish. The fish should hit the line appropriately, and hold on or let go depending on the response from the angler. Try to run the exercise until every angler has a successful set on both "bait" and "lure".

LANDING AND HANDLING A FISH

Demonstrate landing a fish by using volunteers as a bass and an angler. Let the fish "swim" near cover (hula hoops). Using a casting plug, the angler gently casts the plug into the cover. The appropriate fish takes the bait (by holding with their hands). Talk the angler through the landing of this fish. For example, is the fish diving for the bottom? Keep tension on the line, and slowly feed some line to the fish to avoid breaking the line. Is the fish swimming towards you? Reel your line in quickly! Remind the angler to keep the rod tip up (unless they have a can) and let the spring in the rod help to tire the fish. Demonstrate this a few times. Remind the group not to drag the fish across the ground to get it landed.

Using a replica (felt cutout, mount, etc.) or a real fish, show the proper way to hold the fish in order to remove the hook. When handled gently, quickly, and with a few precautions, fish have an excellent chance of surviving if released. Some handling tips can be found both in the Regulations Summary and on page 25 of the Guide. Emphasize that if the fish caught is not going to be used for a meal or the occasional trophy mount, it should be released immediately and unharmed back into the lake to

give you or someone else the opportunity to catch it again. This voluntary recycling of fish helps maintain Ontario's quality fishing.

Give each angler the opportunity to play and land at least one fish.

FOR DISCUSSION:

Q. Where would you cast your line to catch bluegill or crappie?

A. Near shaded cover, such as docks or vegetation.

Q. What does it mean when your bobber is laying on its side in the water?

A. It can mean either you don't have enough weight on your line, that your bait is sitting on the bottom of the lake, or that you have a fish on the line! A perch or crappie will not necessarily take the bait down with them. Instead, they may stay right where they are and feed, or swim horizontally for awhile.

Q. How should one handle a fish?

A. Quickly and gently and by keeping them in the water. If the hook is swallowed, don't try to remove it, just cut the line.

NOTES:

Try it Out! II

Purpose: To apply casting, hookset, retrieval and fish handling skills to a real fishing experience.

Outcomes: Members will be able to identify likely fishing spots, safely cast near cover, set the hook appropriately when a fish takes the bait or lure, play the fish properly and demonstrate general care in handling caught fish.

Concepts: 6.3, 6.4, 6.6, 7.3, 7.4, 7.7

Group size: 5 kids per leader is optimum; try to have no more than 6-8 per leader. If there are too many kids per leader or for the area, pair kids up with one rod or can, and have them alternate every 5 minutes. Have each leader and their sub-group fish one general sub-area.

Site: Waterside, preferably a location known for active panfish which is relatively shallow and safe.

Time: 30 minutes

Supplies: Live bait, some lures if possible, terminal tackle, pop can or spin-cast gear, safety equipment: life jackets for each child, first-aid kit, cellphone, sunscreen, insect repellent, camera, Ontario Recreational Fishing Regulations Summary.

Before the Meeting: Choose your site carefully, based on safety, space, amount of structure, known panfish activity, and ease of access. Use the same area where you did Trying It Out I, or somewhere new. If it is a new location, ensure that reasonable fishing spots are available for the whole group, and that all spots can be adequately supervised (in visual range) by available supervisors. Review proper release procedures found in your Ontario Recreational Fishing Regulations Summary.

A QUICK LOOK:

This session gives members a chance to apply the skills that they have just learned to real fishing action. Get them to focus on each step, any bait/lure differences they need to keep in mind, and what happens as a result. They will be consolidating skills, and may need some reminders in the middle of the action. Again, try to lead them, but a bit more concrete instruction may help.

Highlight safety and ethics/responsibility. Decide if the site, type of group and time of year requires a personal floatation device (pfd). If so, ensure that each member has

one and knows how to wear and use it. Review the safe use of hooks, the space needed to cast (particularly if they are in pairs) and the need to always look behind them before casting. Discuss the need to treat their fish, bait, other group members, and other anglers with respect. Within each small group, have a leader supervise the proper handling and release of each fish landed. Have them handle fish with wet hands, keep them in the water as much as possible, and cut away any hooks that are deep-set. Discuss any requests to keep fish – are they big enough? Can someone at home clean and prepare them properly? Would a picture do instead? Consider a brief cleaning demonstration if appropriate fish are available. Have ice on-hand for storage.

Remember, this is *still* just an introduction. Leave them wanting more.

READY, SET, GO!:

When you arrive, quickly go over the site with the whole group. Point out or reinforce any safety concerns and review their responsibilities as ethical anglers. If the site is new, get them to indicate good potential fishing locations, and why. Remind them that fish can be spooked by motion, shadows, noise or vibration. Indicate that this is their first opportunity to apply some of the skills they have learned to catching fish. If they get excited and forget something, you will be there to help.

Divide the group by locations and assign leaders. If they are in pairs, remind them of the alternate fishing arrangement. Allow anglers, as much as possible, to pick their own fishing spot, within the geographic limits you have established.

If you have a variety of live bait, review the proper way to hook each type of bait (see *Resource Sheet 1, Try it Out! I*). Reinforce hook safety. If you have some lures, try to get your members to try one for at least a little while. Review and reinforce presentation skills as each lure is used within your small group.

Before they cast, reinforce the need for space, clearance from overhangs, and checking behind them.

Allow them to fish, and see what happens. Try to reinforce and refine their skills.

When fish are caught, anglers should be able to land, remove hooks, and release their fish properly and with respect.

Wrap up at the appointed time, or sooner if action is slow and attention is starting to wander. Have the group police the area, leaving it better than they found it.

FOR DISCUSSION:

Q: What happened? What skills were you successful at? What didn't work very well? Were there any surprises?

A: This type of open-ended questioning should allow members to reflect on their experiences, reinforce any discoveries and identify areas for additional learning and practice. Indicate that they will have the opportunity for more practice during their fishing trip.

OTHER IDEAS:

Consider dressing and storing some fish for Lesson 5, particularly if badly hooked or bleeding. If fish are to be kept, see Activity 5.2, Resource Sheet 3 (Leader's) for tips on killing and temporary storage. This will require a cooler with some ice.

HANDOUT MASTERS:

Resource Sheet 1: Bait Tales. (from *Try it Out! I*)

NOTES:

The Great Debait

Purpose: This activity will use a debate format to compare the use and value of lures and live bait.

Outcomes: Members will be able compare the advantages and disadvantages of lures and live bait.

Concepts: 3.5, 4.5, 6.2, 6.3, 6.5, 6.6, 7.3

Group size: 5-30, in subgroups of 5

Site: Indoor meeting room, or outside tables (requires writing surface)

Time: 25 minutes

Supplies: Ontario Recreational Fishing Regulations Summary, Resource Sheet 1, Take A Kid Fishing Guide.

A QUICK LOOK:

The key to any debate is to get people going without going too far. Encourage a bit of dramatics and salesmanship, but don't be afraid to step in if things start to get too serious and true feelings begin to show (or get hurt).

At first, it may be difficult for a true beginner group to come up with a lot of ideas. If necessary, do a bit of guiding. Ask them to think about their experiences with live bait and lures, and the potential of the lures they have only seen. Have them consider things like ease of use (especially for new anglers like themselves), cost, convenience, reusability, regulation (see "gear restrictions" section in the *Fishing Summary*), potential for spread of non-native species (see "bait" section in the *Fishing Summary*), possible effects on live release (see "Tips on Live Release" in the *Fishing Summary*), fish 'attractability', impact of gear loss and amount of action required of the angler. Some of these aspects may have positives *and* negatives. See the Leader's Guide to *Resource Sheet 1* for additional ideas. They may also want to look at pp. 12-13 of their *Take A Kid Fishing Guides* for some initial advantages and disadvantages.

After the vote, praise the debaters, but emphasize the importance of individual choice and the benefits of both methods. Make sure they understand the following:

- *Gear restrictions*, particularly *no live bait*, are in place for two possible reasons. First, the fish may be under a lot of angling pressure – more than the fish population can withstand given normal methods. Allowing only lures

may make it harder to catch fish, and so fewer are taken without restricting fishing *per se*. Also, fish that are released may have been less deeply hooked, and so have a better chance of survival (see below). Second, the lake community may be sensitive to “bait bucket introductions”, and could change for the worse if new fish are introduced (see below).

- Depth of hookset is not a big issue if you plan to keep most of your catch. However, if you release a lot of fish, more deeply hooked fish have less chance of survival, defeating the purpose of live release. In this circumstance, consider lures. As well, you can mash or file down the barbs on your hooks, making it easier to remove even some deepset hooks and creating smaller wounds to begin with. It can also be more of a challenge to play and land fish on barbless hooks, and you don't have to worry about barbed hooks imbedded in skin.
- Ontario is blessed with a tremendous aquatic resource – more than a quarter million lakes and countless kilometers of streams. Particularly in the north, we also have lakes which have not been impacted very much by people. These northern lakes are also not very productive – natural fertilizers are at minimum in the lakes and surrounding soil. As a result, there are very simple food webs containing native species only. Introducing a new species of fish can really disturb this simple web, and the balance of life in the lake may be altered for the worse. This may be true even if that new fish is “native” to other lakes in the area. While “bait bucket introductions” are possible, they can be avoided if anglers take care never to dump extra live bait (particularly “minnows”), or the water they came in, into a waterbody that they didn't come from. This should apply to *all purchased bait*.

READY, SET, GO!

Announce that it is now time for the Great Debait! Anglers have been arguing for years over the virtues of live bait vs. lures, and now it is time to settle it once and for all! Divide the group in half, and have each one come up with all the good things about bait and bad things about lures, or vice versa. Divide the group in half, hand out *Resource Sheet 2*, and encourage them to fill in the two columns on *Resource Sheet 1* that support their side (i.e. advantages of one and disadvantages of the other).

Pick a good speaker from each group, and have them extol the virtues of their chosen method for up to one minute. Each then has one minute to slam the opposition. Encourage them to make their opponents advantages into disadvantages. Members should keep track of good points on their sheets. Step in at the end and indicate that, while most anglers will vary their method depending on the type of fishing or behaviour of the fish, some anglers (e.g. some flyfishers) just won't do anything else. Also, if you get two anglers together, they can usually find *something* to debate about!

FOR DISCUSSION:

Q: Is fishing just about catching fish?

A: No – debate should have demonstrated that both methods provide activities that are fun in themselves, stimulating and/or relaxing, and which may or *may not always* lead to the catching of fish.

Q: Is there a *better* way to fish?

A: No – there are just *different* ways to match different interests, needs and experience levels.

OTHER IDEAS:

- Instead of a general debate, pull some of the older or more experienced members out of the *Alluring Lures* activity and have them prepare the debate. Stage the debate in front of the rest of the group, and have them vote for lures or bait based on the presentations.
- Before dividing the group for the debate, ask if anyone thinks that they would prefer lures or live bait. If possible, have those people in groups arguing *against* their preference.
- If time is limited, introduce the resource sheet, but have them fill it out before the next meeting.

HANDOUT MASTERS:

Resource Sheet 1: The Great Debait

NOTES:

RESOURCE SHEET 1

The Great Debate

Lures		Live	
Advantages	Disadvantages	Advantages	Disadvantages

RESOURCE SHEET 1

The Great Debate

Lures		Live	
Advantages	Disadvantages	Advantages	Disadvantages
<p>Can be used again. Creating action part of challenge & fun. Mastering hookset part of challenge & fun. Choosing successful lures part of challenge & fun. Fish often not deeply hooked. Must be used in some parts of Ontario. Don't have to worry about having bait stolen. Don't have to worry about rebaiting hook. Making lures can be part of the fun. No chance of spreading introduced species. Can focus on particular species & size. Action may encourage fish to bite that aren't hungry. Never satisfied - always something new to try. Can cover area more quickly.</p>	<p>Costly, especially if lost. Harder for beginners to master presentation. Harder for beginners to master hookset. Some lures may be designed to catch more anglers than fish. Most have no built-in scent - additional cost if added. Always have to be <i>doing</i> something. May be attractive to a narrower range & size of fish. Never satisfied - always something new to try.</p>	<p>Cheap. Easy to use. Finding them can be fun. Natural scent attracts. Natural action if live. Can <i>sometimes</i> be used again. Stillfishing allows you to relax & enjoy surroundings. <i>Only</i> good approach to some fish, e.g. carp, catfish. Attractive to a broad range & size of fish. Doesn't require fancy rods. Can be added to lures if you <i>really</i> want to catch something!</p>	<p>Deep hooksets more likely. Stillfishing is <i>boring!</i> Bait is <i>gucky!</i> Can introduce non-native species. Cannot be used in some parts of Ontario. Bait can be stolen by small fish. Have to rebait hook often. Less problem-solving required - learn less about fish & fishing. Have little to fill tackle box with. Have to find, buy or maintain live bait be-tween trips.</p>

MEETING FIVE: HOW WILL I TREAT IT?

What will the group learn? Participants will gain respect for fish “from the inside” by trying on some of the challenges that fish face. They will then learn to physically apply that respect to either keeping or releasing their catch, and understand the factors which go into making that decision. Respect then broadens into ethics as members consider their values and actions as responsible anglers, particularly in relation to the dispersal of introduced invaders.

Objectives

1. To create an appreciation of the challenges faced by fish, and respect for the fish that meet those challenges.
2. To apply that respect to decisions around keeping or releasing fish, and to develop enough understanding to make those decisions appropriate ones.
3. To review and participate in methods for both releasing and keeping fish, including skills development in cleaning, filleting and cooking fish.
4. To develop concepts of resource stewardship, and apply those concepts, through members' personal ethics, to a variety of simulated situations.
5. To apply ethics to the problem of introduced species, and how individual anglers can help limit their impact and spread.

In a nutshell

<i>A Day in the Life...</i>	30 minutes
<i>To Keep or Release?</i>	45 minutes
<i>Management and Ethics</i>	45 minutes
<i>Mussel Mania (optional)</i>	30 minutes
Total Time:	150 minutes

Introduction

This is the one question that may not spring to mind in the beginning angler. However, it is in some ways the most important question to be asked and answered if the sport, and the resource, is to benefit from the addition of these particular anglers.

This is also perhaps the hardest topic to teach. To work, it must run through the entire Unit, which is why we introduced respect and consideration in the first activity of the first lesson. To work, you as a leader must reflect the actions that you are trying to instill. If these things have not been done until now, it is probably too late – actions indeed speak louder than words. Even if they have, review the ethics discussion under

Welcome to Take A Kid Fishing!, and focus on those principles in this meeting.

A trout's eye view

Fish have a tough life. Out of thousands, or millions, of eggs, perhaps only one or two, or at most a handful, will survive to reproduce. And that's under *good* conditions! In addition, fish now have to put up with human impacts on their habitat and fishing pressure. The fish you catch are survivors. Not only from a single hatch, or year class, but as a member of a recognizable group (bony fish) that has a history well over 100 times as long as our own. However, it is hard for us to imagine what they go through, even if we try to put ourselves in their place, as in Activity 5.1. Push your members a bit. Get them to see beyond the physical challenges of the activities, and feel what it would be like to have to live in that way. It is a start towards care and respect.

Fisheries management and you

Why manage our environment? Isn't it enough to just let our ponds, streams, or lakes take care of themselves? After all, government regulations and conservation groups weren't in existence hundreds of years ago, and our waters didn't dry up. Our bass and trout did not die. In fact, the environment seemed to get along just fine without us.

People pressures and demands on the environment have created a need to manage our resources. Imagine a lake without fish for eager anglers, an urban area without a wetland, or land so over paved that it can no longer soak up the rains.

There are a lot of players in the pool. Natural resource agencies, conservation groups, legislators, and others get involved in managing our waters. You may have noticed that we don't say a lot here about formal management: surveys and data collection, fish population manipulations (stocking, restrictions on fishing), habitat protection and enhancement, research and education done by resource agencies such as the Ontario Ministry of Natural Resources and their partners. That will come in later Units. Here, the emphasis is on the role of individual anglers – their potential impacts and what they can do to mitigate those impacts and leave the resource even better than they found it. Links are made where appropriate, mostly through regulation.

There are, and will be, however, lots of personal decisions to be made, even within the bounds of law and regulations. And for the most part, no one will be looking over their shoulders as they make them. Here, members have the opportunity to discuss decisions and “try on” ethics in a supportive environment. Don't be afraid to reflect your own judgments and principles, but be ready to accept their ideas and reasons. Just be sure that they understand the consequences of their actions to themselves and to the environment.

The payoff is resources that are truly renewable. As our population continues to grow, it will become more and more important for all of us to practice and live by the principles of stewardship, wise use, and sustainability. Our waters are counting on us.

"A Day in the Life..."¹

Purpose: Through active simulations and role play, members will come to appreciate the challenges faced by fish, and come to respect the fish they catch for meeting those challenges.

Outcomes: Through first-hand involvement, members will gain some feeling for the difficulties faced by migrating (Part A) or spawning (Part B) fish, be able to list at least two human impacts that threaten these activities, and explain how each can be eliminated or avoided.

Concepts: 1.1, 1.6, 4.4, 5.3, 6.1, 7.5

Group size: 6 - 30

Site: Field or large indoor space.

Time: 30 minutes

Supplies:

Part A – School playing field; 2 skipping ropes; 8 sponge or "nerf" balls; 1 plastic pail (5L); 10 hula hoops or rope loops; 2 rolled up newspapers or tubes from rolls of wrapping paper; piece of string (300 m); 2 large envelopes; 4 pylons; 2 small boxes (about 40 cm x 30 cm x 15 cm); 7 pieces of string (2 cm each); Teacher Resource Sheets 1, 2 and 3; flagging tape (optional).

Part B – at least 25 to 30 pebbles per bass nest; 6 - 8 foam or paper balls.

Before the Meeting:

Part A –

1. Make six "Spawn" cards, and one copy of each of "Happy Birthday" and "Congratulations" cards for each fish. (Number of fish equals number of students minus 10).
2. Prepare two large envelopes, marked "Happy Birthday" and "Congratulations".
3. Set up the playing field (approximately 50 m x 50 m) according to Teacher Resource Sheet 2. You may use flagging tape to outline the water's edge to avoid confusion.

Part B – In an open field or large indoor space, place pebbles in small, piles, leaving about 3 - 4 metres between piles. Cluster the piles rather than stringing them out.

¹ Adapted with permission from "Hooks and Ladders". Project WILD Activity Guide, Ottawa, Ontario: Canadian Wildlife Federation, 1990.

A QUICK LOOK:

It is a big step from becoming aware of something and understanding it, to generating the internal motivation necessary to act on that understanding because you *want* to, not just because you *have* to. This lesson deals with the actions anglers take to treat their fish, and their aquatic resources, with respect. Basically, you are trying to create a caring attitude, not a casual one, or one resigned to “following the rules” only because they might get caught and fined. In this activity, members see the world through a fish’s eyes, learn some of the challenges that fish must overcome just to make it to the end of their fishing line, and in the end, leave with a greater respect for fish.

In Part A, students actively involve themselves in the spawning migration of rainbow trout (or any other fish that migrates to specific spawning habitat, e.g. salmon, walleye) by taking on the roles of predators, anglers, hazards and the trout struggling to reach their spawning grounds and return to their deep-water homes. As described, this obstacle course requires 9 - 10 members or leaders to function, plus at least one leader to make sure all goes smoothly, and at least 6 - 8 fish. If you have lower numbers, consider taking out portions and omitting some roles, e.g. egg predators in Area E, since egg predation is also covered in Part B. If you have limited fish numbers to start and no one finishes, discuss the problems of trying to rebuild stocks that have gotten extremely low in number.

In Part B, some members take on the role of male bass guarding their eggs from predators (other members). In addition to introducing this interesting and somewhat unique behaviour, members will be able to observe (and help create!) the effect angling has on nesting bass. Try to ensure that as many members as possible get to see life from the bass’s point of view.

READY, SET, GO!:

Part A –

Discuss with members the life cycle of the rainbow trout. Explain their task as rainbow trout - to go upstream, lay their eggs and return downstream to the safety of the lake. Discuss obstacles, hazards and stream improvement activities. Assign roles to students: some will be hazards (two anglers, four shallow rapids and four predators) and the remainder will be fish.

Take students out to the playing area and explain the game rules on Teacher Resource Sheet 2.

Area A: Two members are anglers in boats on the lake. They are avid anglers and can move around the lake but they must keep dry by keeping one foot in a box at all times while they try to tag the trout. The trout must mature in the lake before entering the stream. They start on a line between Areas A and B, and must go back and forth across the lake two times and pick up one “Happy Birthday” card

the first time and then one "Congratulations" card on the second crossing. Cards are to be given to the leader, and placed in the appropriate envelope after each crossing. If fish are tagged by the anglers, they must start over. Each successful fish is given ten spawn cards by the leader. Each card represents 10,000 eggs. Upon completion of these tasks they may then enter the stream!

Area B: Four members in the stream represent shallow rapids that fish must try to get through. Each pair has a skipping rope, and pairs are about 4 m apart. Fish try to run through both turning ropes. The ropes may be altered a little in speed, but should not be turned overly fast. If fish are hit by a rope, they cannot survive. They must go to the fish ladder in Area D. If they survive, they continue upstream to Area C.

Area C: Two members are predators. They each have two sponge balls, which they throw at fish swimming through the area. If fish are hit by a ball below the waist, they cannot survive and must go to the fish ladder. If they survive, they continue upstream. The predators must stand still.

A Safety Zone is marked by pylons, where fish can relax before going over the ladder.

Area D: This is a steep waterfall where the fish that couldn't survive make a fish ladder by squatting down one in front of the other about 0.75 m apart; the surviving fish must leap-frog over them. Successful fish advance to the spawning ground.

Area E: Each successful fish drops their cards one at a time in the spawning ground, being sure to spread them out. They then start their journey downstream. Meanwhile, at the spawning ground, there are two predators that could destroy the eggs. They enter the spawning grounds, take one spawn card and return it to the pail located 5 m away from the spawning ground. They must walk. They repeat this, collecting as many cards as possible, but only one at a time. They continue until all but the last two trout reach the deep water.

Area F: This is an area of habitat obstructions reflecting the need for a stream improvement project to clear up the log jams, broken glass and garbage in the stream. If the fish step in a hoop, they will die from contaminants. If they touch a string, they will be injured by the debris or logs. Two of the four rope turners act as Conservation Officers, sending out fish that touch an obstacle. If caught, fish go to Area H as anglers.

Area G: This is an open area that has been cleared as an improvement project by a local community group. The two anglers from Area A act as birds of prey (herons, osprey). They must stand still, and try to hit fish gently below the waist with their rolled up newspapers. If hit, fish go to Area H as anglers.

Area H: The fish are now ready to enter the lake and seek protection in the deep water, but in the shallow water of the lake there are more anglers wading (the other two rope-turners from Area B), whom they must swim around. These anglers do not walk around, but can reach for the fish. Any fish who are caught become anglers. Fish from the ladder also became anglers in the lake when all fish have passed through the ladder.

Have students play the game. To start, have the hazards place themselves in the appropriate areas. When everyone is in position, the trout begin their journey. When game is complete, have students sit down and report on their experiences.

Collect data. Determine how many fish survived and how many reached the spawning grounds. Calculate the number of eggs deposited. See how many spawn cards were removed from the spawning grounds.

Play the game again and change the roles of the students. Compare the results of the two games.

Part B –

Lead the group over to the bass “spawning grounds”. Show them the egg piles and choose one member in six (start with those who were *not* fish in Part A) to be male bass. Each male bass must guard “his” eggs from predation (the other students).

Indicate that everyone else is a predator (crayfish, dragonfly and diving beetle larva, golden shiners and various sunfish). Their job is to dart in and grab **one** egg at a time, which they must bring over to an “eaten” pile by your feet. They then go back for more eggs. Each bass tries to tag the predators, who must then drop any egg, retreat, and start again.

Run the game for a while. If your bass are good, they will only lose a few eggs. Stop the action, and explain that you (or another leader) is an angler. Using Styrofoam balls or balled-up paper, the angler tries to hit the bass. If the bass is hit, “he” must run over to, and around, the “eaten” pile of eggs before returning to his nest, simulating the time any caught bass is away from his nest, even if he is quickly and properly released. Observe what happens when the bass is away from “his” nest.

Continue until time is up or everyone has a chance to be a bass.

FOR DISCUSSION:

Part A –

Q: How did you feel as a fish? Do you think life as a fish would be easy? (applies to Part B as well)

A: Answers will vary. The important thing is to get them thinking and remembering from the fish's perspective, and with some sympathy.

Part B –

Q: Largemouth bass lay up to 100,000 eggs (4400 to 15,400 per kg. of female). Why do they need so many?

A: So that some can survive predation when they are very small.

Q: Nesting male bass are very aggressive and easy to catch, attacking lures even when they are not hungry. Is it a good idea to fish for them at this time, even if you are going to release them?

A: No. Even if they are gone for only a short while, the eggs or very young fish are left defenseless in the face of hungry predators. That is why bass season starts **after** spawning season is over. In fact, it is illegal to fish for bass out of season, even if you release every one. If you start catching bass at this time of year, stop fishing, or move somewhere else. Sometimes, if spring is very late or cold, males will still be on the nest on opening day. While it is legal to catch these bass, *you* will have to decide if it is ethical.

HANDOUT MASTERS:

Leader's Resource Sheet: "A Day in the life..."

Part A:

Rainbow trout mature in lakes or large rivers (generally at 3-5 years of age) and migrate up small streams to spawn, mostly in spring. They face many dangers (such as predators) as they migrate to the spawning grounds, and again as they return to the lake. The condition of the habitat may also inhibit successful spawning. A stream could have an ideal spawning bed of fine gravel, but various natural hazards can make it less suitable or even inaccessible. Erosion of banks may cause very shallow areas that may warm up (potentially harmful for fish), or trees may fall in the water, blocking the passage of the fish.

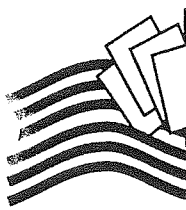
Humans also introduce numerous hazards such as pollution, fertilizer runoff, impassable dams, sewage waste and construction projects. Pollution and siltation are of particular concern to eggs and young, which are more sensitive to these impacts than adults. Although the Ministry of Natural Resources (MNR) restricts fishing of many fish species during their spawning seasons, poachers may still pose a threat to certain species.

The MNR and concerned citizens groups help protect, rehabilitate and restore streams to increase the rate of spawning success.

Part B:

Members of the sunfish family (centrarchids) such as large- and smallmouth bass, rock bass, pumpkinseeds and bluegill all produce nests which are then defended by the male fish. Other fish in Ontario which show this type of behaviour include catfish and sticklebacks. The strategy here is to spend less energy on producing large numbers of eggs and more energy on protecting what you produce. While bass can produce up to 100,000 eggs/female, this number pales before the more than 2 million that can be produced by the unprotective lake sturgeon.

The space required for nesting varies by species and size. Typically, largemouth bass require a space about 9 m in diameter around each nest, somewhat more than that suggested in this activity. Spawning occurs from late spring to mid-summer in a nest swept clean of debris by the male (centrarchid nests are often easy to spot as a group of light-coloured patches in fairly shallow water; close inspection will reveal the males hovering over or near the nest). The male will guard the eggs, protecting them from predation and fanning them to ensure enough oxygen. They will hatch in three to five days and often remain together, protected by the father, for up to a month.



**TEACHER
RESOURCE SHEET 1**

Let's Migrate



HAPPY BIRTHDAY

You are now half grown!



CONGRATULATIONS

You are now ready to journey
to the Spawning Grounds
Good Luck!



SPAWN

10,000 eggs



SPAWN

10,000 eggs



SPAWN

10,000 eggs



SPAWN

10,000 eggs



SPAWN

10,000 eggs



SPAWN

10,000 eggs



Let's Migrate

SUMMARY OF AREAS ON PLAYING FIELD

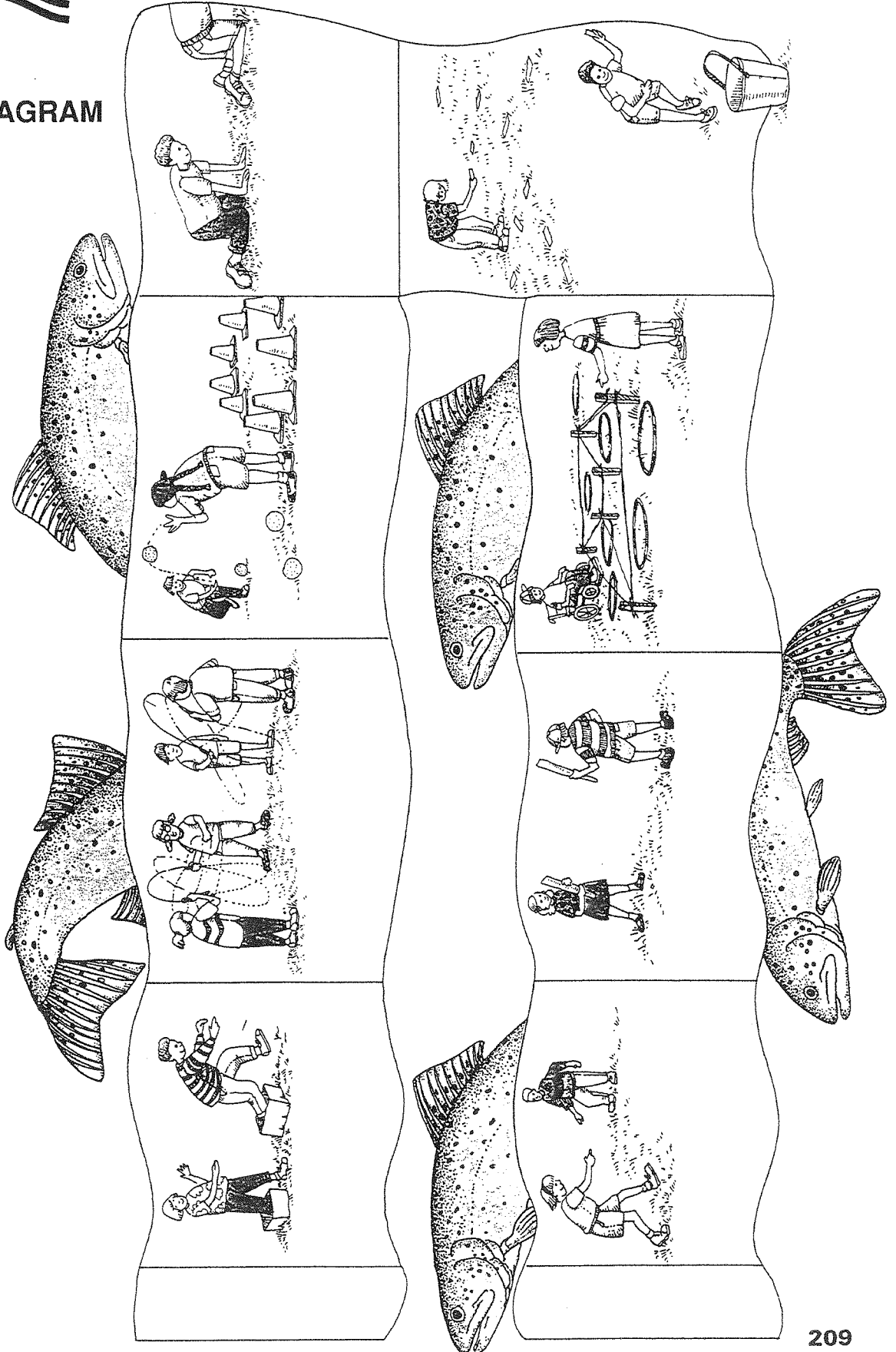
- Area A: Lake** – two anglers in boats with foot in box try to tag fish.
Fish cross lake twice
- first crossing collect one "Happy Birthday" card
 - second crossing collect one "Congratulations" card
- (Anglers in boats become predators in Area G when finished.)
- Area B: Shallow Rapids** – two sets of rapids represented by student pairs with skipping ropes.
Fish must get through rope without being touched.
- Area C: Predators** – two students with sponge balls. Fish try to swim through without getting hit.
Predators to aim only below the waist.
Predators cannot move.
Use cones or markers to make a safety area.
- Area D: Fish Ladder** – made of caught fish who squat to form a ladder
Successful fish leap-frog over the ladder.
- Area E: Spawning Grounds** – two students act as hazards for the eggs, collecting spawn cards one at a time and putting them in the pail 5 m outside of spawning area. Fish swim through and deposit their spawn cards (spreading them out).
- Area F: Habitat Obstructions** – obstacle course of hoops and ropes. Fish swim through but must avoid obstacles. Two Conservation Officers police area.
- Area G: Wide Clear Area** – two students with rolled up newspapers act as predators. They cannot move.
- Area H: Shallow Water of Lake** – anglers in waders (made up of 2 rope turners from Area B, and all caught fish, including the ones from the ladder when they are finished) try to catch remaining fish. They cannot move.



TEACHER RESOURCE SHEET 3

Let's Migrate

SCHOOLYARD DIAGRAM



To keep or release?

Purpose: To examine reasons for either keeping or releasing fish, and to review and participate in methods for doing both, including filleting and cooking fish.

Outcomes: Members will be able to explain under what circumstances they would either keep or release fish, and why; they will also be able to explain the steps and procedures involved in both keeping and releasing their catch.

Concepts: 4.5, 4.7, 6.1, 6.2, 6.3, 6.4, 7.4, 7.5, 7.7

Group size: 6 - 30

Site: Requires cooking facilities (frying or barbecuing); tables for cleaning and/or filleting fish.

Time: 45 minutes

Supplies: Fish from previous outings; additional fish if required, particularly fresh, whole (not gutted) fish (optional); sharp knives (optional); barbecue or stove and fry pan; milk or eggs; seasoned bread or cracker crumbs); Resource Sheets 1-3.

Before the Meeting: Defrost any stored fish immediately before lesson, and keep on ice with additional not gutted fish. Prepare or purchase seasoned crumbs. If crumbs are home made and seasoned, print and copy the recipe for distribution.

A QUICK LOOK:

At some point in any fishing experience, success brings with it a decision. "Shall I keep my fish, or put it back?" Members first need to be aware of the thinking that goes into that decision, and to decide, for themselves, when they would, or would not, keep their catch. Since they now have some experience, and models, to go by, they need some latitude in generating lists and making their decisions. The key here is flexibility – within certain legal parameters, this is a matter of individual choice, with few choices being absolutely right or absolutely wrong. Try to allow, and generate, considerable discussion within each small group and the group as a whole. Get out and examine as many reasons as you can. Play devil's advocate if you have to. Just make sure that each member understands that, as long as it is legal, the choice is *theirs*, it may vary with each specific circumstance, and it is OK. The *Leader's Guide to Resource Sheet 1* provides a beginning list of reasons to keep or release fish.

Once that choice is made (even before, if release is an option that needs to be considered), certain skills come into play which all anglers should be aware of, and which have been introduced, in part, during other lessons and activities. The opportunity exists here to focus on those skills and ensure that everyone understands the basics of handling fish, whether they are to be kept and eaten or released. By filling in the gaps on *Resource Sheets 2* and *3*, each member will have an outline of main points to refer to related to these important skills.

You also have the opportunity to carry kept fish forward to their logical conclusion: filleting, preparation, and a delicious fish fry or barbecue!

READY, SET, GO!:

Indicate that all along, they as anglers have been making decisions: what kind of bait, bobber or bottom fishing, where to cast, what type of lure to use and how to present it. With success comes another decision: whether to keep your fish or not.

Divide the large group into groups of 5 and hand out copies of *Resource Sheet 1*. Have each group brainstorm reasons to keep and release fish. Circulate and prompt groups with questions or observations. At least one person per small group should record all ideas.

Once each group slows down, bring the whole group back, and compile a general list by taking ideas at random from each group. See if the larger group can spin out any additional reasons. Mark legal reasons in some way. Have each member highlight or mark down the key reasons they would want to keep or release fish. See if some people have more reasons in one column than in the other. Indicate that some people only fish if they have a good chance of keeping their catch, and others only fish if they have a good chance of releasing their catch, and that both ways are Ok.

Point out that once the decision is made (or even before), they need to do things and handle the fish in ways that lead to, in the long run, either successful releases or successful meals. Some of these have been touched on during other activities or during actual fishing, but now they have the opportunity to put together all the required steps in each process.

Hand out *Resource Sheet 2*. Have members work in pairs to try and fill in as many decisions and activities as they can at each step related to releasing fish. If they want, they can refer to the proper section in their *Fishing Summary*, but see first if someone in the group comes up with that idea before asking broadly if they have resources which may help. Additional information is also available in the *Take A Kid Fishing* guide (pg. 25). Compile the proper answers in the large group. If it hasn't been done previously, model proper handling with a mount or paper fish cutout.

Hand out *Resource Sheet 3*. Remind them of the steps demonstrated on previous outings (may have been holding on a stringer or in a basket, killing, temporary storage

on ice, and cleaning). If no fish were kept at any time, have and demonstrate the use of baskets and stringers, the proper method of killing fish (sharp blow above the eyes), and how to clean a fish.

If you have enough whole fish, have members clean one individually or in pairs.

Demonstrate filleting, and then have members fillet their fish. One method is provided in the *Take A Kid Fishing* guide (pg. 34).

Collect the fillets and demonstrate preparation for cooking. Use a good seasoning or batter recipe, and distribute it when you are done.

Cook over a fire, stove, or on a barbecue. Simply dip the fish in beaten eggs or milk, then in flour or bread crumbs, and fry in cooking oil, butter or margarine. For the fire or barbecue, place in a flat wire holder so the fish won't stick to the grill. Don't overcook – the fish is done when the flesh turns white and can be easily flaked apart. Provide samples to those who wish to try them.

OTHER IDEAS:

- Create keep or release scenarios, and have groups discuss their decisions and why.
- Create a group recipe book of the best fish recipes from parents or other anglers.
- Set up a fish smoker on site, or bring in home-smoked fish to sample.

HANDOUT MASTERS:

- Resource Sheet 1** *Keep or release?*
- Resource Sheet 2** *Live Release*
- Resource Sheet 3** *Keeping your Catch*

TEMPURA PANFISH

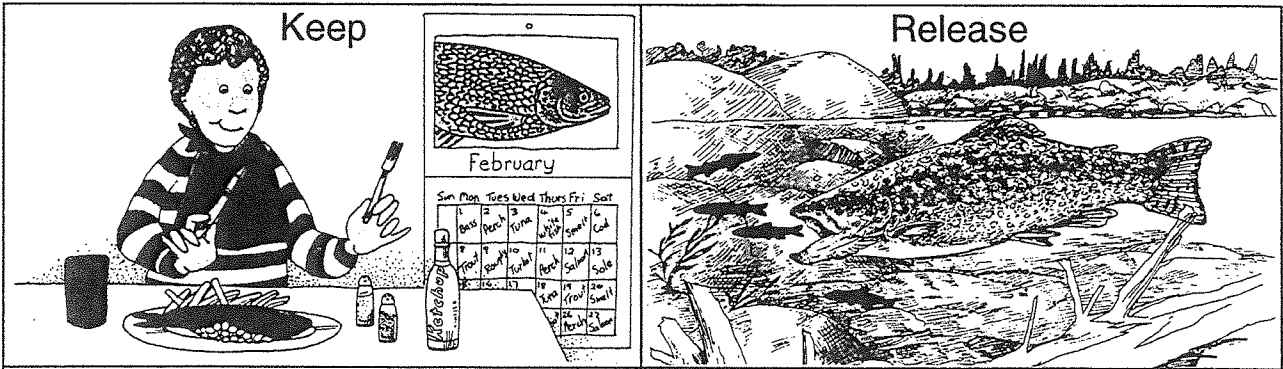
1½ cup flour	1/8 – ¼ teaspoon garlic powder
1½ cup yellow corn meal	1 teaspoon dried basil
1 teaspoon salt	1/8 – ¼ teaspoon paprika
¼ teaspoon pepper	1 egg, beaten
Milk, buttermilk or water	

In a shallow pan blend flour, corn meal, salt, pepper, garlic powder, basil and paprika. Beat egg with ½ cup liquid, and add to flour mixture. Mix well. Gradually add additional milk, stirring constantly. Mixture should coat fish, but not be too thick or thin. Keep batter very cold. Dip fish pieces in batter and pan or deep fry.

NOTES:

RESOURCE SHEET 1

Keep or Release?



RESOURCE SHEET 1

Keep or Release?

Keep	Release
<p>Most fish taste good.</p> <p>Most fish are good for you.</p> <p>There are fish I love to eat!</p> <p>I can share them with others I care about.</p> <p>They are a good eating size.</p> <p>They are within any legal size limits.</p> <p>They are within any legal catch and possession limits.</p> <p>I can keep them fresh until they can be cleaned, eaten, or frozen.</p> <p>They are too damaged to release.</p> <p>Taking some fish can help maintain good-sized fish (too many fish in some areas can stunt populations).</p> <p>Taking some less-popular fish can reduce the pressure on more popular ones, and give them some "living room".</p> <p>I can buy less food.</p> <p>This is a 'once in a lifetime' fish - I want a mount so I can remember it.</p>	<p>It feels good to release them and watch them swim away.</p> <p>Putting back prime breeders will help maintain a good population.</p> <p>They are too small (or big - see above).</p> <p>They are outside legal size limits.</p> <p>They are outside legal catch or possession limits.</p> <p>They are out of season.</p> <p>I have no way to keep them fresh.</p> <p>I know there aren't many of this kind in these waters.</p> <p>I know there is a lot of angling pressure on these fish (often the average size will be getting smaller).</p> <p>I don't like the taste of fish.</p> <p>They are in good health.</p> <p>They may have too many contaminants to be safe to eat.</p> <p>This type of fish is more fun to catch than good to eat.</p>

RESOURCE SHEET 2**Live Release**

Step	Decisions or Actions
Gear	
Retrieval	
Landing	
Handling	
Revival	
Release	

RESOURCE SHEET 2**Live Release**

Step	Decisions or Actions
Gear	Do not use ultra-light tackle. Consider lures over live bait; hard lures over soft plastic. Consider barbless hooks; file off or mash down barbs.
Retrieval	Do not play fish to exhaustion. Reel fish in steadily, allowing for size and the fight in the fish. After setting the hook, try not to jerk the line in a way that would promote tearing; maintain even pressure.
Landing	If you have a net, use it. Keep the fish in the water as much as possible. Do not drag the fish onto shore.
Handling	If possible, remove hooks while fish is still in the water. If you take the fish out of water, handle it with wet hands, support it with both hands (guide photo pg. 24) and hold your breath. Avoid the gill area; fish can generally be held behind the gills. Remove hook quickly and without tearing; leave deep-set hooks. Place, don't throw, fish into water.
Revival	Hold fish upright in the water. If fish does not move or struggle, move water over its gills by moving the fish forward in a broad figure-eight pattern (not back and forth).
Release	Let go when the fish begins to move.

RESOURCE SHEET 3**Keeping Your Catch**

Step	Actions
Holding fish alive	
Killing fish	
Temporary storage	
Cleaning fish	
Filleting fish	
Freezer storage	
Cooking	

RESOURCE SHEET 3**Keeping Your Catch**

Step	Actions
Holding fish alive you wish to keep	Use bucket if fish are small; change water frequently. Use wire basket in water. Use stringer; clip through lips, don't run through gills (fish will live longer). Use live well.
Killing fish	Use hatchet or hammer handle. Give a sharp rap along the midline of the fish, just above the eyes.
Temporary storage and transport	In ice-filled cooler. Wrap in damp paper or cloth, and place in cool spot out of sun. Minimize storage time. Package fish so they can be counted. Leave a patch of skin on so they can be identified.
Cleaning fish	Clean as soon as possible. Insert thin knife at vent (anal opening) and slit belly forward to head. Open belly and remove organs, cutting at throat. Scrape away dark red kidney (along backbone) with spoon. Scrape tail to head with spoon or back of knife to remove scales. Rinse under running water.
Filleting fish	See <i>Take A Kid Fishing</i> guide pg. 34.
Freezer storage	Place in water and freeze in solid ice block (avoids freezer burn). Use freezer bags or double-wrap with heavy foil.. Minimize time in freezer. Defrost immediately before cooking, in refrigerator(18-24 hr. per lb.) or under cold running water. Do not refreeze.
Cooking	Many methods can be used. Do not overcook. Fish is done when flesh goes from translucent to white, and flakes apart.

Management and Ethics

Purpose: To reinforce concepts of stewardship, and develop and apply personal ethics to a variety of situations.

Outcomes: Members will be able to make ethical decisions in ambiguous situations, and explain their rationale for those decisions.

Concepts: 5.3, 6.1, 6.2, 6.3, 7.5

Group Size: 3 to 30

Site: Outdoors (out of wind and shaded) or Indoors (classroom)

Time: 45 minutes

Supplies: Angler Situation Cards (pages)
Note Cards

Clear contact paper (optional)

Ontario Recreational Fishing Regulations Summary

Before the Meeting: Make two sets of situation cards: for the leader's paste the situation and the answer on a note card; for participants paste only the situation on the cards. You can cover the cards with clear contact paper or in freezer bags to make them waterproof.

A QUICK LOOK:

In this activity, participants will role play situations relating to fishing and environmental regulations and/or ethics. They will need to make decisions about their behaviours. Some of their decisions are regulated by Ontario provincial laws which they need to understand, know where they apply, and how they work.

READY, SET, GO!

Refer to or hand out copies of the current Ontario Fishing Regulations. Review some of the regulations, such as limit and seasons, quizzing your group about different regulations (for example, how many walleye can you keep?) and having them use the book to look up the answer. Keep this review short.

Explain to the group that it is the responsibility of every person to know the rules and regulations that apply to fishing and protecting our resources. In order to manage the fish populations and food webs of our waters, biologists need all of us to follow and

support these rules. Fishing regulations are not just made up. They are the product of research (like you've collected in previous activities). As well as paying close attention and following the regulations, it is also our responsibility to encourage others to do so, too.

Ethics, on the other hand, are "unwritten laws" that govern one's behaviour. Good ethical conduct results in respect for oneself and others. Have the group generate a list of *ethical actions* that they feel are important when they or others go fishing. Some ethics to consider:

- obtaining permission to fish on any private land in advance,
- avoiding behaviour that interferes with the enjoyment of others,
- releasing a portion of the allowable catch,
- harvesting only enough fish for immediate needs,
- avoiding littering, and
- treating the area with respect.

An ethical person realizes that the future of our resources depends on the respect we have for ourselves, others, and the environment.

Break into smaller groups of two to three members. Make sure younger members are spread among older ones. Give each group an Angler Situation Card. A person within each group should read the situation aloud. The group should discuss the responses; record which ones, if any, are illegal; and select the most ethical response. Participants should use the regulations book as needed. Once they agree on an answer, have them prepare a skit based on their situation to act out to the entire group.

After a period of time, bring the small groups back together. Each group should take turns role-playing their situation. After each skit, let the group vote on the correct response. Did they come up with the same response as the small group. If yes, why was this the best response. If no, have them explain why they chose the answer they did to that situation.

Continue doing this activity with other situations as time permits.

FOR DISCUSSION:

Q. Do you think all anglers are ethical? Why or why not?

A. This question will have a variety of responses.

Q. Why don't we just let everyone fish the way they want to fish? Why do they need to obey regulations?

A. Fishing regulations protect fish populations and lake/stream ecology.

Q. Do you think that most people are ethical about their use of the environment? Why or why not?

A. This question will have a variety of responses.

OTHER IDEAS:

- Have the group develop and adopt a code of conduct for their coming fishing trip. The discussion on angling ethics in this activity should provide a basis for such a code. As well, Resource Sheet 1: *Good Angler Permit* provides some starter ideas. Try to come to a *consensus*. That is, everyone feels that their ideas have been heard, and everyone can live with the final results. Include a discussion on how the members *themselves* will police the code during the trip.

HANDOUT MASTERS:

Angler Situation Cards

Resource Sheet 1: Good Angler Permit

ANGLER SITUATION CARDS

SITUATION 1:

You are at a lake roller skating and you see a group leaving pop cans, drink boxes, fishing line, bait packages, and other trash behind. Would you:

- ask them nicely to pick up their litter and offer to help
- wait for them to leave and pick up the litter for them
- remember what they look like and report them to a police officer
- pick up the trash in front of them, while they are still there

ANSWER TO S1:

Answers will vary. You might like to point out that littering is illegal and isn't very respectful.

SITUATION 2:

You are fishing at an isolated lake and you've caught and kept four walleye during your first day at the lake, putting them on ice in the cooler. On the second day, the fishing is so great that you catch three walleye in the morning. All of these fish are bigger than the previous day's fish. Ontario law allows you to possess six walleye, so you:

- keep them all, but look around a lot for Conservation Officers
- give away one of the smaller fish from yesterday
- eat one of the fish you caught today for lunch
- release the last walleye you caught immediately
- keep fishing for walleye, but practice catch and release

ANSWER TO S2:

Once you have caught and kept your limit of fish you can continue fishing for that type of fish, but cannot have more than the limit in your possession. Fish eaten as a shore lunch or given away that day are still in your possession. It is also illegal to cull fish (release a fish already on a stringer or in a live well and replace it with another fish), so the seventh fish you catch must be released, even if the others appear healthy.

SITUATION 3:

Your friend's dad has a freezer full of fish from last summer. His dad caught a daily limit on many different days and froze them to eat throughout the winter. Would you:

- ask him for some fish to take home
- tell him that Ontario law says he can only have one limit of each type of fish in his possession (freezer)
- say nothing and change the subject
- ask him where his dad goes fishing and how he catches so many fish

ANSWER TO S3:

The possession limit means you can only keep one limit of fish at a time. You can report a violator to Crime Stoppers (1-800-222-TIPS) anonymously.

SITUATION 4:

Your mom is changing the motor oil in her car. She usually throws the old oil from the car away at the gas station, but today she is in a hurry. She asks you to run across the street to the park and dump the oil onto the ground near a pond. Would you:

- do what your mom asks, because she still owes you this week's allowance
- tell her that the oil is pollution, and will eventually wind up in the pond
- tell her to empty the oil herself--you're not willing to break the law
- offer to take the oil to the gas station yourself

ANSWER TO S4:

Oil must be dumped at oil recycling centres. All businesses that sell oil will know where the centres are located.

SITUATION 5:

You and a friend are steelhead fishing along Lake Superior's North Shore. The fishing has been quiet, and neither one of you has caught a fish all morning. Just before lunch your friend lands a six-pound steelhead that she accidentally hooked by the belly. Would you:

- tell your friend to release the fish
- look around for other people watching, and then put the fish in your ice chest
- eat the fish for lunch

ANSWER TO S5:

This fish was foul hooked (fish hooked/snagged in any location other than the mouth). It would be illegal to keep. This law protects fish from intentional snagging.

SITUATION 6:

Its June and you are fishing with your uncle and your friend at Lake Simcoe. While fishing, your uncle puts two lines in the water, saying "You'll catch more fish faster this way." You and your friend each have just one line in the water. Would you:

- add another line of your own to the water
- tell your uncle it's against the law to have more than one line in the water
- take your line out of the water and announce you're leaving
- look around for other people, put another line in the water, and move several feet away, pretending it's not your line

ANSWER TO S6: During the summer on Inland Lakes of Ontario you can only fish with one line. During winter ice fishing, a person can generally use two lines.

SITUATION 7:

You are fishing for largemouth bass on Rice Lake . Your luck is tremendous, and the first fish you land is a three-pound largemouth bass. You decide to keep this fish. Within ten minutes, you have caught another three-pound largemouth bass. Do you:

- keep the fish and mount it--after all, how many good days do you get?
- keep it and keep angling, but release it if I catch a bigger fish
- put this and other "trophy" fish of the day back, in order not to over-harvest the lake
- use the lake data information to determine which size of fish to keep

ANSWER TO S7:

Legally, you can keep this fish, unless there are special regulations prohibiting this on the particular lake. However, you may wish to return the fish so that it grows larger. The lake data information can give you clues to which fish to keep. For instance, if the entire bass population is composed of three-pound fish, it's probably not going to hurt the population to harvest a few.

SITUATION 8:

You are fishing and catch a carp (an under-utilized or rough fish species). This is not one of the fish that you were fishing for that day (a non-target species) . What should you do?

- throw it up on the shore
- release it back into the lake
- decide to take it home
- throw it in the garbage

ANSWER TO S8:

As long as it is a legal species of fish to harvest, you may take it home. However, if the fish is not going to be eaten or you plan to just throw it away, you should release it back into the lake. Good angler ethics include catch and release of all fish. To dispose of this fish in other ways, such as throwing them up on the bank or leaving them on the ice, is considered littering and is a terrible waste of the resource. Only in certain management situations does a fish population need to be "thinned" (overpopulation, stunting, etc.). When this occurs it is beneficial not to return a fish to the lake but use it instead for other purposes. By the way, carp taste pretty good.

Draw yourself in the space at right. Using an inkpad, place your thumbprint in the space provided.

Read the rules below out loud, then make up your own fishing rules. Be sure they show caring and sharing. Then you'll earn your good angler permit.

I am a good angler

Permit

Name: _____

thumb print

1. Good anglers (people who go fishing) respect others' privacy and territory. They fish quietly so they don't frighten fish or bother people. They don't crowd other people out of a fishing spot.
2. Good anglers always practice safe fishing. They are careful when casting. They pick up all fish hooks and fishing lines so animals don't get caught in the lines and people don't step on the hooks.
3. Good anglers know the size and number of fish that are legal to keep (called the limit). Limits provide more chances for more people to catch fish.
4. Good anglers release fish back into the water right away if they don't plan to eat them.
5. Good anglers clean their lines and equipment before they leave a fishing hole. They don't move exotics from place to place.
- 6.
- 7.
- 8.

Mussel Mania[©]

Purpose: Through an active simulation and role play, members will examine some of the problems of introduced species, and discover how they as individual anglers can help to limit their impact and spread.

Outcomes: Everyone should be able to describe how carrying capacity can be affected, identify effects of the zebra mussel on other aquatic organisms, give reasons why zebra mussels are a successful nuisance, exotic or introduced species in Ontario, and list what they can do as individual anglers to limit the spread of zebra mussels and other nuisance species.

Concepts: 3.5, 6.2, 6.5, 7.5

Group Size: 12 to 30

Site: Outdoors (lots of open space) or Indoors (gym)

Time: 30 minutes

Supplies: Tape, chalk or string; 2 hula hoops or rope loops; several sheets of newspaper or scrap paper crumpled into 100+ tight balls

Before the Meeting: Collect enough materials to do the program. Mark off a circle (12 ft./3.7 m diameter) with tape, chalk or string. This area represents a portion of a lake or stream system. In this circle randomly place two hula hoops or rope loops to represent the native clam's habitat (a soft bottom) within this portion of the lake. The rest of the area is a hard bottom. Within these hula hoops, stick a small piece of masking tape.

Reference: OFAH/MNR Invading Species Program (www.ofah.org)

A QUICK LOOK:

This activity demonstrates the effect of a nuisance (exotic or non-native) species on an aquatic ecosystems. Youth become either native clams, zebra mussels (the nuisance), perch, walleye, or plankton movers. The native clams, sitting happily in their habitats (hula hoops) will try to catch plankton (newspaper balls) thrown by the plankton movers. Perch will be introduced to compete for food. Walleye will also be introduced to prey (tag) on the perch. Finally, zebra mussels will find their way to the lake, and will begin to smother the clams and compete for food.

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READY, SET, GO!

Review the four components of habitat with the group--food, water, cover, and space. A body of water has limits on how much of each of these it can provide. The number of animals and plants that can be supported by a habitat without causing harm is called the carrying capacity. Carrying capacity can vary from season to season or year to year. It is also affected by other things like zebra mussels, weather, and nutrients. Everyone in the group will try to meet their needs while being a clam, perch, zebra mussel, or walleye.

Have the group assemble in the circle and mill around. Tell them that they are baby clams trying to find a great place to live (they can't stand still because they are drifting in the current).

Yell "Stop!" Anyone not standing in a hula hoop has to leave the circle. Explain that native clams live in muddy or sandy bottoms, which are ONLY represented by the hula hoops. If there is more than one person inside the hoops, have them mill again, and stop. The person nearest the small piece of tape has found the very best spot and can sit down. Others must leave.

Have the two surviving baby native clams sit down. Over the course of many years they have grown into adult clams and can no longer drift. Emphasize that finding the right kind of bottom at just the right time is very important for the clams, and can limit their numbers.

Identify three youth as plankton movers. They are the currents moving the plankton into the area. They should sit facing away from the circle. They will toss plankton (paper balls) at random over their shoulders into the circle.

The clams must catch the plankton in the air to simulate feeding. Anything missed stays on the ground. (Clams don't have hands to pick things up!) Assign two scavengers to pick up the plankton and return it to the movers. (Later in the game, they will also return plankton to the movers after retrieving it from the tagged perch.)



Add three perch to the circle. Perch are an important fish that feed on plankton. They will move around inside the circle and try to catch plankton in the air, without blocking off the clams. They can also feed from the bottom (pick up stray paper balls).

After a few minutes, add two walleye. They will eat the perch. They can run around the outside of the circle, reaching in (one foot must keep touching the circle) and trying to eat (tag) the perch. Tagged perch must leave the circle and give their plankton to the scavengers to return to the movers. As perch are eaten, add more. Try to maintain at least one perch in the circle at all times.

Begin to add zebra mussels. Explain that zebra mussels compete with native clams for food and with perch for space. Zebra mussels can't live in the soft bottom like the clams, but must live on hard surfaces (anywhere outside the hula hoops). The zebra mussels will feed the same way as the clams.

Gradually add more zebra mussels. Explain that unlike the perch, zebra mussels have few predators that feed on them. This allows the mussels to expand to the limits of their food supply. As it gets crowded, tell the group that since mussels can stick to hard surfaces, they can sit or stand in the hoops as long as they are either touching each other or a clam. Continue until all the clams are smothered with mussels, as well as some of the mussels or until everyone has had a chance to get back into the game. At this time, stop the game and discuss what has happened to the animals.

FOR DISCUSSION:

- Q. From the fish and clams' points of view, what happened as more mussels were added? Was the carrying capacity changed for these species?
- A. Space became more scarce while food became harder to find. Some of the fish and clams may have even starved because they couldn't get any food. The carrying capacity of the lake for fish and clams was decreased as more and more mussels were introduced.
- Q. Were the clams eating at the end, or were they smothered?
- A. This will vary depending on the number of youth playing the game.
- Q. Did the zebra mussels in the activity have to compete with anything else for space?
- A. Zebra mussels compete with each other for space, and may smother each other, but generally they overtake the native clam habitat.
- Q. Do you think zebra mussels would be a problem near water treatment facilities (along water intake pipes--remember the surface)?
- A. Yes, since they adhere to hard surfaces, they will often clog intake pipes. It costs thousands of dollars to have them removed, and they just build up again over a period of time.

Q. What are some ways you can stop the spread of nuisance species like the zebra mussel?

A. To prevent the spread of certain nuisance species, drain and dry boats, minnow pails, and live wells after leaving a body of water. Never release live bait at the end of a trip unless you *know* that they came from the same waters. Empty your bucket *well away* from any lake or stream.

Q. Have you heard of any other invaders affecting Ontario's waters?

A. Other invaders, like Eurasian milfoil (plant), purple loosestrife (plant), and the ruffe (fish) are also spread by people.

OTHER IDEAS:

- Identify other nuisance species and discuss their modes of distribution. Talk about preventative measures that should be followed to slow the spread of nuisance species. Invite a local resource person to talk with your group about managing a lake or stream with a nuisance species. Topics might include zeroing in on the zebra mussel, losing loosestrife, sending the sea lamprey packing, foiling Eurasian milfoil, etc.
- Identify specific invaders for further research. Among the newest are the round goby, ruffe and a tiny crustacean called *Cercopagis pengoi*.

MEETING SIX: PUTTING IT ALL TOGETHER.

What will the group learn? Participants should demonstrate ethical fishing practices, care in handling fish, and competence in fishing techniques in order to pursue fishing as a recreational, educational, and life-skill activity.

Objective

To have members apply previous learnings to a safe, rewarding and enjoyable fishing trip.

In a nutshell

Fishing Trip 3 – 6 hours

Fishing...starting a new habit

After working through this Unit, you should now have before you dozens of eager learners just waiting to put their new knowledge into practice! These learners now know about habitats, food webs, fish identification, water quality, stewardship, and resource management. They've rigged a pole and searched for bait. They're ready to go fishing.

Now is the time for participants to apply the skills and knowledge they've gained to a fishing experience. Before the first cast can be made, however, there are a few final items to review and reinforce, including safety and regulations. During the actual fishing time, activities will include ethical fishing, care in handling fish, and good stewardship.

Look around your fishing area. A fishing trip can be a lot more than just catching fish. It is an opportunity to explore, observe, and identify plants and animals. It's also a good time to watch people, and observe how they interact with their environment.

For some members, this will be their final lesson. For some it will lead to a lifetime of fishing. Others may dabble in it from time to time. All should go forward with the skills, ethics, decision-making ability and motivation required to contribute positively to the sport and the resource.

Let's Go Fishin'!

Purpose: To help members experience a safe, rewarding and enjoyable fishing trip.

Outcomes: Everyone should be able to identify safety items that will be at the program site, select appropriate safety rules to follow while casting and fishing, understand how to pick a safe location to fish, know the relevant fishing regulations, demonstrate good angler ethics and resource stewardship, and have a rewarding time.

Concepts: 1.1, 4.13, 6.2, 6.3, 6.4, 6.5, 6.6, 7.1, 7.2, 7.3, 7.4, 7.7

Group Size: maximum of 5 per adult leader/volunteer, to capacity of site

Site: Outdoors (fishing site)

Time: Up to one-half day or more, depending on conditions, interest, and whether the fish are biting!

Supplies:

Local map

First aid kit

Measuring tape

5 gallon water jug with water and cups

Throwable life cushion or ring buoy with 50 feet of rope

Life Jackets (Personal Flotation Devices-PFD) (optional)

Current Ontario Fishing Regulations

Current Fishing Licenses (for those age 18 and over)

Rigged spin-cast combos or pop cans

Bait containers with bait/lures if available

Basic tackle boxes with hooks, sinkers, bobbers, pliers and line cutters

Landing nets (optional)

Stringers or coolers with ice for keeping fish (optional)

Cleaning and cooking equipment (optional)

Before the Trip: Choose your site wisely. You need a spot that is safe, accessible and loaded with panfish. If at all possible, it should be new to most or all of your group. Just prior to the event, set up the first aid, drinking water, gear, bait, and other activities stations. (If you plan to harvest fish, set up a station to handle this process.) Mark the fishing area boundaries and any safety hazards.

Reference: Ontario Recreational Fishing Regulations Summary; Guide to Eating Ontario Sport Fish

A QUICK LOOK:

We're going fishing! This shore fishing experience will be a major highlight of the unit. This activity begins by reviewing the basics of safety, ethics and regulation. It then provides a brief review of selecting a site, landing and handling the fish for either release or harvest, and fish consumption health risks.

READY, SET, GO!

At the Water's Edge...

In order to encourage participants to go fishing in the future, review with them how you selected this fishing site. Bring along a local map and show how to get to the area by bike, bus, or walking. Stress the buddy system when going fishing by having them name one or two people they could invite to go fishing with them. For the fishing trip, let everyone pick their own fishing buddy for the day.

Point out the types of fish that may be caught at the site, review the regulations that apply and determine if there are any health risks from fish they are likely to catch. Assess the site as a group, and encourage members to identify safe and productive areas to fish along the shoreline. This is the time to reinforce concepts of habitat, fish identification, and stewardship

Discuss whether or not the group will be harvesting or releasing the fish. You can choose to allow harvest as long as the proper handling (transportation, preparation, etc.) and good use (enough for a meal and not tossed in the garbage) of the resource is practiced.

Next, discuss fishing safety. Identify the safety equipment (water station, shade, throwable life cushion and first aid kit) and the adults in charge. Show where these adults will be located during the fishing time. Talk about how a person that is in danger will be helped and what the youth should do to make the rescue go smoothly. Your group should be taught to yell or scream the word "DANGER" to attract the attention of an adult during an emergency. The adults will then put their emergency action plan into progress, which includes calling 911 IMMEDIATELY. A life ring and rope should be used for rescue by adults only.

If required, demonstrate to your group how to wear the various types of life jackets and how to check for proper fit. Point out that it's important to use the right size life jacket for each person's weight and size. You can use a volunteer to show how to fasten snaps and zippers and to make sure they are pulled snug. Or you may wish to have a relay race to give the members a chance to learn how to wear these items.

Review the proper handling of hooks and reinforce casting safety: staying a safe distance apart and looking all around you for other people, or overhanging trees and power lines before casting.

Remind the group of their code of ethics for this trip, and how they agreed to enforce it.

Let's Fish!

Appoint one adult/junior volunteer to each group of five members. Hand out rods and reels, and direct groups to the good fishing spots identified earlier.

Give each adult/junior volunteer a bait container and small tackle box to take with their group. Encourage children old enough to handle hooks to bait their own lines. Throughout the activity, reinforce fishing ethics, fish identification, and habitat/ecological concepts. Be sure to watch for members who appear to be having difficulty. Have the group or yourself help these members.

Not everyone will stay fascinated with fishing for the entire allotted time. Consider setting up another area for alternate activities (such as fish printing, casting contests, exploring for different bait, etc.) and assigning an adult to staff this area.

When participants catch a fish, let them talk about how they were successful, what type of bait worked, where they were fishing, etc. As a group, you can identify the fish. Handle the fish properly so it can be released and have a good chance at surviving. If you are planning to harvest fish, make sure you handle them appropriately to prevent spoilage and prepare them in the proper manner for immediate use or transportation.

Remember that fishing (as with other youth activities) should be a win-win situation. The people who don't catch any fish should still have fun and learn. You can reinforce their success at casting far, baiting a worm securely, identifying plants or birds in the area, etc. Participants should be able to volunteer the one or two things that they think they do exceptionally well--you just need to agree and show support.

At the end of the activity, any loaned rods and reels or equipment should be returned. Remove the bobber and fasten the hook around the lowest guide before reeling in the line and putting them away. And remember stewardship--leave the shoreline in better condition than when you came. The group should pick up any litter in their area, even if they were not the cause. Be diligent in policing for hooks, line and sinkers.

Reassemble the group. Talk to them about other upcoming events that they might want to attend, or other, nearby fishing spots that they may want to try. Thank your group for their efforts throughout the unit, and their participation during the trip.

FOR DISCUSSION:

Q. Name some things you should do before you go fishing.

A. Tell someone where I'm going; see if an adult or older person will go with me; practice safe bicycling/bus skills; pick an area where there are lots of people during the day; get all my equipment together.

Q. What was fun about today, besides actually catching fish?

A. Answers will vary, but the point is to reinforce the total fishing experience, and benefits such as relaxation, problem-solving, social interaction, natural observation and just being in the out-of-doors.

Q. Do you think you'll go fishing again? Why or why not?

A. Answers will vary widely.

OTHER IDEAS:

- Include a fish cleaning and cooking station, and cap off your trip and unit with a barbecue lunch or dinner. Invite parents to share the experience.
- Ontario enjoys two kids & family-oriented fishing events: the Ontario Family Fishing Weekend in early July, and Take A Kid Fishing Week in early August. Plan this event or a future "reunion" event for one of these times. The OFFW would be a good time to encourage family members to come, since for that weekend only, fishing licences are not required.

ACHIEVEMENT PROGRAM IDEAS

- Host an afternoon of fishing education and fun. Organize the event at a local fishing area, and have stations that members of the community, parents, or any invited group could work through. These stations could include demonstrations of waterside safety, how to bait a hook, cleaning & cooking fish, fish identification, a display on fishing ethics, explanations of lures, as well as the opportunity for eligible members of the public to try their hand at fishing. Ensure that members are involved in the planning, and put real thought into the organization of the event. Invite community members and groups, as well as local media.
- Plan the above event for either the Ontario Family Fishing Weekend (July 7-9, 2000) or Take A Kid Fishing Week (August 1-7). If you choose the OFFW, all Ontario residents can fish without a licence. If you register your event (call 1-705-755-2551), we will send you an Event Organizers Package and include your event on our 1-800 OFFW Event hotline. The package includes posters and flyers, an Action Manual and activities for kids, and certificates for volunteers and participants. Call the same number for TAKFW, and we will provide an introduction to fishing package for each kid, which includes a sticker, the warm water fish identification card, a "fish of the year" card describing one fish and how to catch it, the *Take A Kid Fishing* Guide (blue cover), and fishing regulations.
- Develop a display to take to a local fishing show or derby. It could include information on fishing safety, water pests and exotics to look out for, different varieties of lures, fishing ethics, and local places to fish. Members could staff the display and answer any questions. They could also provide activities for the public to participate in, such as a quiz on ethics or safety, or demonstrations of knot tying.
- Plan a dinner for the group's parents and families, or members of their community. The menu would include fish, of course! Members would catch, prepare, cook and serve the fish. They could provide, as entertainment, a skit/debate addressing the advantages and disadvantages of lures vs. live bait.
- We depend on private industry to protect our streams and fish from any waste that they might produce. Contact the owner or public relations department of several local industries to get permission to visit the site or get a tour of the facility. Have their representative explain where they collect water, what they use it for, if they clean it, how they dispose of it, and any other programs or processes they do to help protect our resources. Take pictures if possible. After the tour, decide if any or all of the industries should get a special "fish friend" award, created by your group. If so, prepare the award, and the reasons for it, and present it to them in front of local media.

- Instead of just sitting back and responding to the problem of contaminants in fish, encourage your group to get out and *do* something about it. Trout Unlimited and the Canadian Department of Fisheries and Oceans are partners in *The Yellow Fish Road*, a neighbourhood awareness program that encourages people not to dump waste down storm drains, which are most often connected directly to local rivers and streams. Your group would mark drains with a yellow fish as a visual symbol, and distribute information on what it means and how people should respond. Contact Trout Unlimited at 1-800-909-6040 for more information and materials.
- Create and market a recipe book using fish recipes from parents and friends. Be sure to include recipes for less popular fish such as carp, rock bass and suckers. Include information on keeping our waters clean so we can continue to have fish to eat. Use any profit to purchase fishing equipment for your club.
- Research the impacts of exotic species such as zebra mussels, sea lamprey, Eurasian watermilfoil and purple loosestrife. Invite a local resource person to talk to you about the problems of managing a lake or stream with these exotic or nuisance species in it. Develop and deliver an awareness program to your community highlighting the threats from at least one of these species, and what they can do to help prevent or limit their spread.
- Come up with your own idea! If you do, please let us know so we can add it to this list.

GLOSSARY

Adaptation – changes to living things which make them better able to “fit” within their surrounding environment.

Angler – a person who fishes for recreation with a hook and line.

Carrying capacity – the maximum number (or total weight) of a given species that an area (forest, field, stream) can support without harm to either the area, the species or both.

Community – all *living* things found within a defined area, for example a pond, stream or forest; members of the community interact largely with one another.

Consumer – living things that cannot make food for themselves, but must *consume* it.

Decomposer – a living thing (for example, bacteria and fungi) that get their energy by breaking down parts of once-living things and releasing some of those materials back into the environment.

Ecosystem – an interacting system of both living and non-living things (plants, animals, soil, rocks, climate, etc.) all linked by the flow of energy and nutrients (for example, aquatic or lake ecosystem).

Fin ray – a thin, flexible rod that supports the membrane of a fin.

Fish – plural, a number of fish of the same species or kind.

Fishes – plural, a number of fish of different species or kinds.

Flats – in a stream or river, shallow water with slight to moderate water flow and an unbroken surface.

Food chain – a single pathway of energy and nutrients that links different species in a community, from plants to top predator, through consumption of food.

Food web – different food chains within a community often interconnect, since one living thing eats, and/or is eaten by, several others; the result is a large network, or food “web”.

Habitat – the local environment where a plant or animal lives; includes the food, water, shelter and space necessary for survival.

Invertebrates – animals without backbones, for example, insects, snails and worms.

Management – human activities taken to directly or indirectly protect, maintain or enhance living things and their habitats, communities and ecosystems.

Nonpoint-source pollution – pollution that enters the environment from numerous sources (e.g. lawn fertilizer runoff, pesticides, acid rain) and can be harder to identify and treat than point source pollutants.

Nutrients – organic and inorganic compounds used by plants for growth, and passed to animals through a food chain or web.

Phytoplankton – small, often single-celled producers which drift at the mercy of water currents.

Point-source pollution – pollution that enters the water from a single location, for example a drainpipe.

Population – the total number and characteristics of one kind of living thing in a particular area.

Population structure – all of the age groupings or classes within a population, and their relative abundance.

Pools – those parts of a stream that are deep relative to the size of the stream, and contain slowly flowing water.

Predator – an animal that lives by killing and eating other animals.

Prey – an animal that is hunted by a predator.

Producer – a living thing which can make its own food, usually but not always utilizing the sun's energy through photosynthesis.

Renewable resources – natural resources which, over time, can replace themselves, for example trees and fish. This process is ongoing, unless the resource is used up faster than it can replace itself.

Riffle – in a stream or river, a stretch of shallow, choppy water caused by rapid current flowing over gravel or rock.

Runs – a moderately deep, narrow stream channel with significant current but little turbulence.

Scale – small, thin, often oval to circular plates which come from and are imbedded in a fish's skin. They overlap, with the open end towards the tail, and both minimize water friction and provide protection from bacteria, dirt and some predators.

Structure – in fishing terms, anything in the water that attracts fish, for example rocks, a log, a dock, or a steep drop-off.

Spine – a specialized fin ray that is stiffened and sharp at the tip, and offers support to the fin membrane.

Top predator – the predator at the “top” of a food chain or web; that is, nothing hunts and eats it (for example, large muskie). Sometimes, people become the “top predator”.

Vegetation – a general term for all the plants in an area.

Vertebrates – animals with backbones, for example fish, frogs and people.

Zooplankton – small, sometimes single-celled consumers which drift at the mercy of the current.