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4-H Bulletin 134.3A

Fish, Fun, and Fellowship

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4-H - Youth Programs

Cooperative Extension Service Michigan State University

Fish, Fun, and Fellowship

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Illustrations adapted from the following sources:

- What Fish Is This? by Al Lopinot, Division of Fisheries, State of Illinois.
- Land, Water, and Fishing by R. W. Eschmeyer, Sport Fishing Institute, Washington, D.C.



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Section I Let's Go Fishing

You CAN go fishing, because no matter where you live in Michigan, there is a body of water within 6 miles of your home that has some kind of fish in it; and fishing can be done year-round. You and your friends can have the fun of catching and, if you like, cooking and eating these fish, if you will take the time to learn about fish and fishing, and to persuade an adult you know to help you.

But first, see the safety guide on the back cover of this bulletin.

Locate a body of water near your home. This body of water may be a stream, a river, a lake, or a pond on a farm, in a city park, in a golf course, or in a residential development. If you do not know where there is a nearby body of water, ask your friends, parents, relatives, teacher, Extension agents, 4-H leader, or a conservation officer to help you.

The water that you locate may be on private property. If it is, ask an adult to go with you to ask the landowner if you may enter his property and fish in his water. Also ask if you may bring your friends with you for one special fishing day. If the landowner agrees to let you use his property, be certain to tell him that you will call him every time you want to use his property, and that, as his guest, you will not litter or damage any of his property. Also, ask him what rules he wants you to obey. Don't forget to thank him!

ACTIVITIES

- A. Visit the body of water you have located. If necessary, ask an adult to go with you. Your entire family may wish to go and have a picnic as well!
- B. What kind of body of water have you located

(lake, river, pond, etc.)?_____

C. Feel the water. Does it feel very cold, like ice water, cool, like water from a faucet, or slightly

warm? If you have a thermometer, take it with you and measure the temperatures of the water. What

is the temperature? _____. What month

of the year is it? _____

D .What color is the water? Clear _____; Muddy

____; Cloudy ____; Green ____; Other

E. Do you think the water is polluted? _____. (Fertile water may be green in color but not necessarily polluted.) Are any sources of pollution

visible? _____.



Section II What Is a Fish?

Some people might say, "I don't want to learn anything about fish. I just want to catch 'em." Most fishermen agree, however, that the best fisherman and the fisherman who enjoys fishing the most knows more about fish than most people. Let's learn something about fish so that you can become a better fisherman and enjoy fishing more.

A fish is a vertebrate. People, birds, mammals, reptiles, and amphibians are also vertebrates. What do vertebrates have that invertebrates (insects, worms,

crayfish) do not have?_____ If you cannot figure out the answer, look up the word "vertebrate" in the dictionary or ask an adult to help you.

A fish is cold-blooded. That means that the body and blood of a fish stay at the same temperature as its surroundings, or environment. Warm-blooded animals are different because their body and blood temperature remains almost the same, even if it is different from the temperature of the surroundings.

Name some warm-blooded animals.____

_ (Think of

some animals that feel warm when you touch them.)

A fish breathes by means of gills. A fish needs oxygen to breathe, just as you and most other animals need oxygen to breathe. You and other animals get oxygen from the air through your lungs, but fish get oxygen from water through their gills as water passes over the gills.

A fish has fins instead of arms, legs, or wings. Some kinds of fish that lived long ago and whose offspring are alive today do not have fins, such as the lamprey.

Name the parts of this fish. Use the following words: tail fin, scales, anal fin, dorsal fin, eye, lip and mouth, pectoral fin, pelvic fin, gill, and gillcover.



Section III Kinds of Fish

The following drawings are some of the kinds of fish that live in the waters of Michigan. Name each fish, and color it.







Section IV Biology and Ecology of Fish

What Every Good Fisherman Knows

A good fisherman knows about both fish and water. Fishermen who catch the most fish can inspect a body of water and can tell which fish are most likely to be there, where the fish are and even what they are eating. They then use this knowledge to catch the fish. You can learn to do this, too.

A fish is completely dependent on water and the amount and condition of the water is dependent upon the land under and around the water. The body of water contains the things fish need: oxygen to breathe, food to eat, and cover in which to rest, hide and lay eggs. The temperature of the water determines the temperature of the fish. Thus, the water and the things in it and around it make up the habitat of the fish.

The amount of oxygen in water for fish depends upon many things. In general, slow-moving, warm and polluted water has less oxygen than fast-moving, cold and clear water. Some fish need more oxygen than others. As a result, different kinds of fish live in different kinds of water. List different kinds of fish in each kind of habitat below. Places that sell fishing licenses have a leaflet that will help you.

The chemicals in water are important to fish because they affect the amount of food and, indirectly, the amount of oxygen in the water. Important chemicals are nitrogen, potassium, and phosphorus, and are called nutrients. If water has just the right amount of nutrients, then small plants, called algae, live in the water and use the nutrients to grow and reproduce. Algae make oxygen for the fish and are food for microscopic animals. These tiny animals are eaten by small animals such as insects, crayfish, etc., which are eaten by small fish. Small fish may also eat the algae and microscopic animals, and some kinds of large fish also eat the algae and microscopic animals. In general, however, small fish are eaten by larger fish. This system, called a food chain, is how nutrients in the water become food for fish. It is important that you remember that the amount of nutrients must be just right. If the nutrients are lacking, fish will not grow; if nutrients are too plentiful, fish may be killed because the extra nutrients permit too much algae and too many other plants to grow. Too many plants can use more oxygen than they produce and, thus, use up all the oxygen in the water. If certain chemicals are even more abundant, they become pollutants which may harm the fish.

Fish that	usually live in a cold- water habitat	Fish that usually live in a warm- water habitat	Fish that can live in warm, still and polluted water
Example:			
	brook trout	bluegill	carp
	·		

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Label the above diagram of a food chain. Use these words: nutrients, algae, microscopic animals, small animals, small fish, and large fish.

The following tells what kinds of food fish usually eat:

Fish feeding mostly on small plants or small animals – Small fish of many kinds (minnows, baby fish), yellow perch, bluegill, sunfish, rock bass, bullhead, brook trout, brown trout, whitefish.

Fish feeding mostly on small fish – Northern pike, muskellunge, largemouth bass, smallmouth bass, crappie, walleye, garpike, brook trout, brown trout.

Although a body of water may be good for fish to live in, it also must have a place for the fish to reproduce if it is to be good fish habitat. Even if the adult fish can live in water, if there is no place for them to reproduce, when they die, the fish will be gone.

When fish mate and lay eggs, it is called spawning. Each kind of fish spawns in a special place. Bluegills spawn in round, shallow sand or gravel beds on the edge of lakes and rivers. Largemouth bass spawn in gravel in the shallows of lakes and rivers. Catfish spawn in natural cavities, such as hollow logs, in shallow water. Trout spawn in gravel beds in shallow streams. Northern pike and carp spawn in shallow grassy or weedy areas in sloughs or marshes.

Fish spawn many eggs. For example, a single female largemouth bass may lay 125,000 eggs in one year; a bluegill may lay 50,000 eggs in one year; a walleye may lay 200,000 eggs. Fortunately, most of the eggs and young fish, called fry, die or are eaten by larger fish and other animals. If they didn't die, all of our waters would be choked with fish. Sometimes, however, too many eggs and fry live, and the fish do not grow well. They become stunted because there is not enough food. Sometimes, however, too many eggs and fry die, perhaps due to pollution, and then there are **too few** fish.

Your job as a fisherman is to help protect land and waters, to obey fish laws, and to share with others the fun of catching fish.



Color the Following Diagrams

Remember, use the correct colors – eroded soil is brown; polluted water is brown, gray, pale blue, or a combination of colors.



Poor Farming – Poor Fishing

Good Farming – Good Fishing



Poor Forestry – Poor Fishing



Good Forestry – Good Fishing



Untreated Sewage - Poor Fishing



Proper Treatment – Good Fishing

ACTIVITIES

A. Visit again the place you plan to fish. Using your answers from page 3 and what you have learned about fish, try to guess what kind of fish might live there. List them below. Make a small net from a screen or an old nylon stocking and sweep it through the shallow water to catch some of the things fish might be eating. Make a list of what you find. Is there much algae in the water? Yes _____ No _____.

- B. Sit quietly by the edge of the water for at least 15 minutes. Try to see what the fish are feeding on. Can you see fish swirling at the top of the water or even jumping out of the water as they catch insects? ______. Can you see ripples on the surface of the water caused by big fish chasing little fish? ______. Can you see smaller fish feeding on small animals and vegetation in the shallow water? ______. Look in the shallow water and see what the fish might find to eat.
- C. As you inspected the water, did you see any spawning beds? (Round spots of cleaner sand or gravel)

What kind of fish made the beds? _____

Section V Methods of Fishing



There are many ways to catch fish. Commercial fishermen use nets, but sport fishermen like yourself

use equipment called tackle. Tackle is a hook and line, usually with a pole or rod.

Kinds of Tackle

Hand Line -



A hand line is the simplest form of tackle. It consists of a strong string to which a weight and hook are attached.

Pole and Line -



The pole and line consists of a pole - often a cane or bamboo pole - to which a line and hook are attached. It can be used to catch many kinds of fish. Beginning fishermen like this tackle because it is easy to use.

Fly Tackle -



Fly tackle is a long slender pole with a reel that holds heavy line. A very thin, monofilament line, called a leader, is attached to the heavy line. A hook with hair, thread and feathers, looking like an insect or small fish and called a fly, is attached to the leader. The heavy line is used to carry the very light leader and fly out toward the fish. This tackle is best used on fish such as trout when they are feeding on insects.

Spinning Tackle -



Spinning tackle has a shorter pole with a reel that holds a thin monofiliment line. Small or large artificial baits and small or large live baits with hooks are attached on the line. This tackle is used to catch fish when they are feeding on small fish and other animals.

Bait Casting Tackle -

Bait casting tackle has the shortest pole and light line. Big artificial lures and heavy, live bait with large hooks are attached to the line. This tackle is used for large fish feeding on other fish and animals.

If your parents, brother or sister, or someone you know has fishing tackle, ask them to teach you how to use it. If you do not know anyone with fishing tackle, then you will have to buy some. Here is what you will need and how much it will cost (1975 prices):

Hand line (about 30 feet long)\$.25
Package of number 6 hooks with	
plastic leaders already attached	.50
Two ¼-ounce lead weights (sinkers)	.10
One medium-sized plastic float (bobber)	.25
_	

\$1.10

If you wish, you may be able to find a pole or cut one from a tree branch or a young tree. If you cut your pole from a tree, be sure you have permission from the owner of the tree (DO NOT CUT A POLE FROM TREES ON STREETS OR IN PARKS). Sometimes stores that sell rugs will give you a bamboo pole. In any case, be sure your pole will bend without easily breaking. Remember, you do not need a pole. You can hold one end of the line in one hand and toss the other end in the water with your other hand.

You may wish to purchase different sizes of hooks and sinkers, depending on where you fish, how you fish and what kind of fish you want to catch. The following chart will help you.

KINDS OF FISH Large — bass, pike Medium — perch, crappie Small — bluegill, sunfish Trout	4 or 5 6 or 7
FISHING CONDITIONS	SIZE OF SINKER
If water is swift or if you need to cast far If water is calm or if	¹ / ₂ ounce or larger
you do not need to cast	. ¹ / ₄ ounce or smaller

Do not use much weight for trout in streams. Small weights called split shot, or just the weight of the bait, are all that is necessary. Let the bait drift with the current.

How to Attach Hooks, Weights and Bobbers

Never tie a hook, lure or weight on your line with a knot. Knots weaken a line and cause it to break. Use the clinch method listed below. Clinches will not come undone.

On the end of a line:



wrap end around line





For fishing on the bottom - carp, bullheads, suckers and many other fish.



For fishing off the bottom - sunfish, crappie, perch.

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Kinds of Bait

Artificial -

If someone can teach you how to use flies or lures, you may choose to try these methods.

Live Bait -

If you do not know anyone who has artificial bait and can teach you how to use it, use one of the following kinds of live bait:

Earthworms – many kinds of fish

Minnows - perch, pike, walleye, crappie, trout, bass, catfish Crayfish - bass, large trout, perch, walleye Crickets - sunfish, bluegills Grasshoppers - trout, sunfish, bluegills Insect larvae (grubs, nymphs, worms) many kinds of fish (used especially in ice fishing)

Corn, doughballs - carp

How to Hook Bait



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CRICKET OR GRASSHOPPER

Ice Fishing

Catching fish through the ice in winter can be great fun and a good group activity. However, never go by yourself; always go with an adult who has experience in ice fishing. Ice that is too thin is dangerous.

Ice fishing requires very warm clothing, and some kind of portable heater feels good. So does a portable seat. In addition, something is needed to cut a hole in the ice and to dip ice out of the hole.

Some special equipment and special tackle is used in ice fishing, but the following tackle is very helpful:

• Small bobbers – Use the lightest possible bobber necessary to hold the hook just off the bottom.

- Small weights Use just enough weight to carry the hook close to the bottom. The larger fish require the use of heavier weights.
- Tear drop lures These brightly painted, weighted hooks are very attractive to fish, especially when baited with insect larvae. Weights are usually not necessary with these lures.

In winter, most fish bite very lightly, so you will have to watch your bobber very carefully and hook the fish as soon as it bites. Some good baits are insect larvae and minnows. Larger fish and perch are usually found in deeper waters, over 12 feet. Smaller fish, such as bluegills, are found in shallower waters.

ACTIVITIES

- A. Practice rigging and using your tackle. Ask an adult to help you. DO NOT PUT A HOOK ON YOUR LINE WHEN YOU PRACTICE. USE A WEIGHT ONLY. WITH FLY TACKLE, USE JUST LINE AND LEADER.
- B. If you plan touse live bait, catch some. Worms can be dug from almost any moist soil or caught in grass at night after a rain or heavy dew. Minnows, crayfish and insect larvae occur in or along most streams. Look for insect larvae and crayfish under rocks; you will need a net or screen to catch minnows. Crickets may be found under boards or rocks in grass. Grasshoppers can easily be caught in nets similar to butterfly nets.
- C. Go fishing. Ask an adult or older person to take you. Try to get your entire family to go and try to help each one of them catch a fish. If you cannot find an adult to go with you, be sure to go with a buddy. The best times to fish, in general, are very early in the morning or in the evening before dark. These are the times when fish are most actively feeding.

Special Fishing Activity

Ask an adult to help you organize and conduct a fishing trip or a fishing day for any youngsters in your community. Here are some ideas:

- A. Ask your parents, your leader, or your Extension agent to introduce you to a member of a local Michigan United Conservation Club (MUCC) organization. If there is no MUCC organization in your area, try one of the following organizations:
 - 1. Other sportsmens clubs Izaak Walton League, Trout Unlimited
 - 2. A civic organization Jaycees, Lions Club, Kiwanis, Ruritans, Rotary, Big Brothers
- B. Ask the organization member if his organization will sponsor a fishing activity for youngsters in your community. If they agree, give them a copy of Supplement I.
 - 1. Things the sponsoring organization may wish to do:
 - a. Locate a body of water for fishing convenient to youngsters in the community; don't overlook the possibility of ice fishing.
 - b. Arrange to transport youngsters to the fishing place (if necessary).
 - c. Arrange to stock the body of water (if necessary and desirable).
 - d. Arrange to provide prizes for a fishing contest if you want; but remember, fishing should not be a competitive sport. Competition may spoil fishing by causing crowding, over-fishing, habitat destruction, greedy behavior, etc.

Note: DO NOT AWARD A PRIZE FOR THE MOST FISH OR LARGEST POUND-AGE OF FISH CAUGHT. Better choices are for largest of each kind of fish, smallest, first caught, last caught, youngest to catch fish, oldest to catch fish, etc.

- 2. Things you and your friends or your club can do:
 - a. Assist the sponsoring organization; ask them what they want you to do.

- b. Publicize the fishing event so that every youngster in your community hears about it and wants to participate:
 - make posters and ask to put them in schools, store windows, community centers, etc.,
 - 2) mimeograph notices and distribute them to every adult you know who will read them to youngsters; scout leaders, teachers, etc.,
 - ask radio and television stations to announce the event,
 - 4) ask your local newspaper to advertise the event.
- c. Arrange to have a special area at the body of water set aside where you, your friends, teen leaders and adult volunteers will teach youngsters how to fish, and provide hand tackle and bait for youngsters who do not have any. Be sure to publicize this special event. Give every non-member participant a copy of Supplement II.
- d. Arrange to have a special area where your 4-H club can recruit new members and where the sponsoring organization can recruit new members.
- e. If you desire, your club, your sponsoring organization, or other organizations may wish to sell food and refreshments. Local 4-H home economics clubs, scout packs, or armed service units may be willing to put on demonstrations on how to cook fish at home or in the field. In addition, your club or your sponsor may wish to conduct special events, such as a casting contest, a fish identification contest, or a fly tying or fly judging contest.
- f. Clean up all the litter in the fishing area before and after the event. Do not "clean up" bushes, branches, logs, etc. in or near the streams. This destroys fish habitat.

Section VI Cleaning, Cooking and Eating Fish

If you give one dead, dirty, and smelly fish to the cook in your family and say "Please cook this for me," the answer will be "NO!" But if you give the cook a clean, dressed fish ready for cooking, or freezing until you have enough for an entire meal, then the person who does the cooking will be happy to prepare the fish.

First, rinse the fish with water. Then remove the scales, except for trout and catfish. Open up an old newspaper, lay it on the ground, and place a board on the newspaper.

Lay the fish on the board, grasp its head, and scrape all of the scales off the body by pulling a fish scaler from the tail to the head against the scales. If you do not have a fish scaler, you can make one by fastening 2 soft-drink bottle caps (not twist-off caps) to a flat stick approximately 1 inch wide, 1 inch thick and 8 inches long. Wear old gloves to protect your hands. Be careful of the dorsal fin. On some fish, this fin has sharp spines that can stick you.

It is not necessary to scale trout. Catfish need to be skinned.

When skinning catfish, ask an adult to help you, especially when using a knife. Drive a nail in the

board and hook the lower jaw of the catfish over the nail. Make a circular cut with a knife behind the head all the way around the neck. Grab the skin with a pair of pliers and pull it off toward the tail.

Second, cut off the head and tail of the fish with a knife. Ask an adult to help you. Then cut the belly of the fish open from the throat to the anal fin. Remove the insides of the fish.

Third, rinse the fish off again, and put it in a pan. Pick up the board and scrape all remains on the newspaper. Roll up a few pages of the newspaper and put it in the trash can.

Your fish are now ready for cooking or freezing. If the fish are to be frozen for future use, wrap them tightly with aluminum foil, plastic wrapping, or freezer paper. Freeze immediately. If you plan to cook the fish soon, they should be stored in the refrigerator until mealtime. Fish may be fried, baked, broiled, boiled, or even roasted on an open fire, but the following recipes are the easiest; anyone can follow them. There are many delicious recipes which you or the cook in your family may wish to try.

METHODS OF COOKING	INGREDIENTS	DIRECTIONS
FRIED	2 lbs. of cleaned fish or fillets 1 cup of flour or cornmeal 2 teaspoons of salt ½ teaspoon of pepper	Rinse and dry fish. Roll fish in mixture of flour or cornmeal and salt and pepper. Cover bottom of fry pan with cooking oil or melted shortening. Fry fish at low to medium heat until flesh flakes easily.
BOILED	2 lbs. of cleaned fish or fillets 2 teaspoons of salt ½ teaspoon of pepper 1 onion, grated	Rinse and dry fish. Add salt, pepper and onion to pot of water and bring water to boil. Add fish to water and boil gently until flesh flakes easily.
BAKED	2 lbs. of cleaned fish or fillets 1 teaspoon salt ¼ teaspoon pepper 2 tablespoons of lemon juice 1 teaspoon of grated onion 4 tablespoons of melted butter or shortening	Rinse and dry fish. Salt and pepper both sides. Dip fish in mixture of lemon juice, onion, and butter. Pour remaining mixture in greased baking pan, add fish, and bake in medium oven (350°) for 25-30 min- utes or until flesh flakes easily.

Make The Best Better

Yourself

Have you changed, now that you have completed this project? Hopefully, you have. Now you know something about a kind of wild animal called a fish. You know something about this wild animal, what it is, how it lives, and where it lives. You know that this wild animal lives in special kinds of habitat, and that people can destroy this wild animal if they do not conserve it and its habitat. You have also learned how much pleasure and enjoyment wild animals can bring to people. Wouldn't you like to learn to enjoy more about wild animals and about different kinds of wild animals? There are many 4-H fish and wildlife projects to help you. You may wish to enroll in some of these other activities. Finally, and most important, don't you think you should share your new knowledge and the fun you can have with many other boys and girls? A continuing program sponsored by your community will help you do this.

Your Community

The Fish Division of the Michigan Department of Natural Resources will assist communities in establishing a recreation fishing program using existing bodies of water. Write to: Great Lakes Specialist, Fish Division, Department of Natural Resources, Mason Building, Lansing, MI 48933, and request information about the program. Then, if you can convince your community to consider trying the program, a state specialist will meet with your leaders and explain the program in detail. At the same time, you should try to get as many people as possible in your community to consider the program and, if they favor it, to express their support to your community leaders. The organization that sponsored your special fishing activity should be able to guide and help you. Be sure to ask for their guidance and cooperation.



A Safety Guide for Beginning Fishermen

- 1. Always tell your guardian where you are going when you go near water.
- 2. Always take a friend with you, preferably an adult.
- 3. If you are going to fish from a boat, pier, breakwater, or any place in or over deep water, be sure you have some kind of life preserver with you. In Michigan, boat laws require you have an approved life preserver. Wear it!
- 4. Be careful with hooks. Remember that they can hook you, too! Do not cast your hook and line when someone is near you. If you do get a hook in your skin, DO NOT PULL IT OUT. Break or cut the line off near the hook and ask an adult to take you to a doctor immediately.
- 5. Be careful with knives. Always ask an adult to help you with a knife.
- 6. Beware of the dorsal fins on some fish and the pectoral fins on catfish. These fins have sharp points and can stick you.
- 7. Beware of the mouths of pike, walleye, and muskellunge. These fish have sharp teeth and can bite.