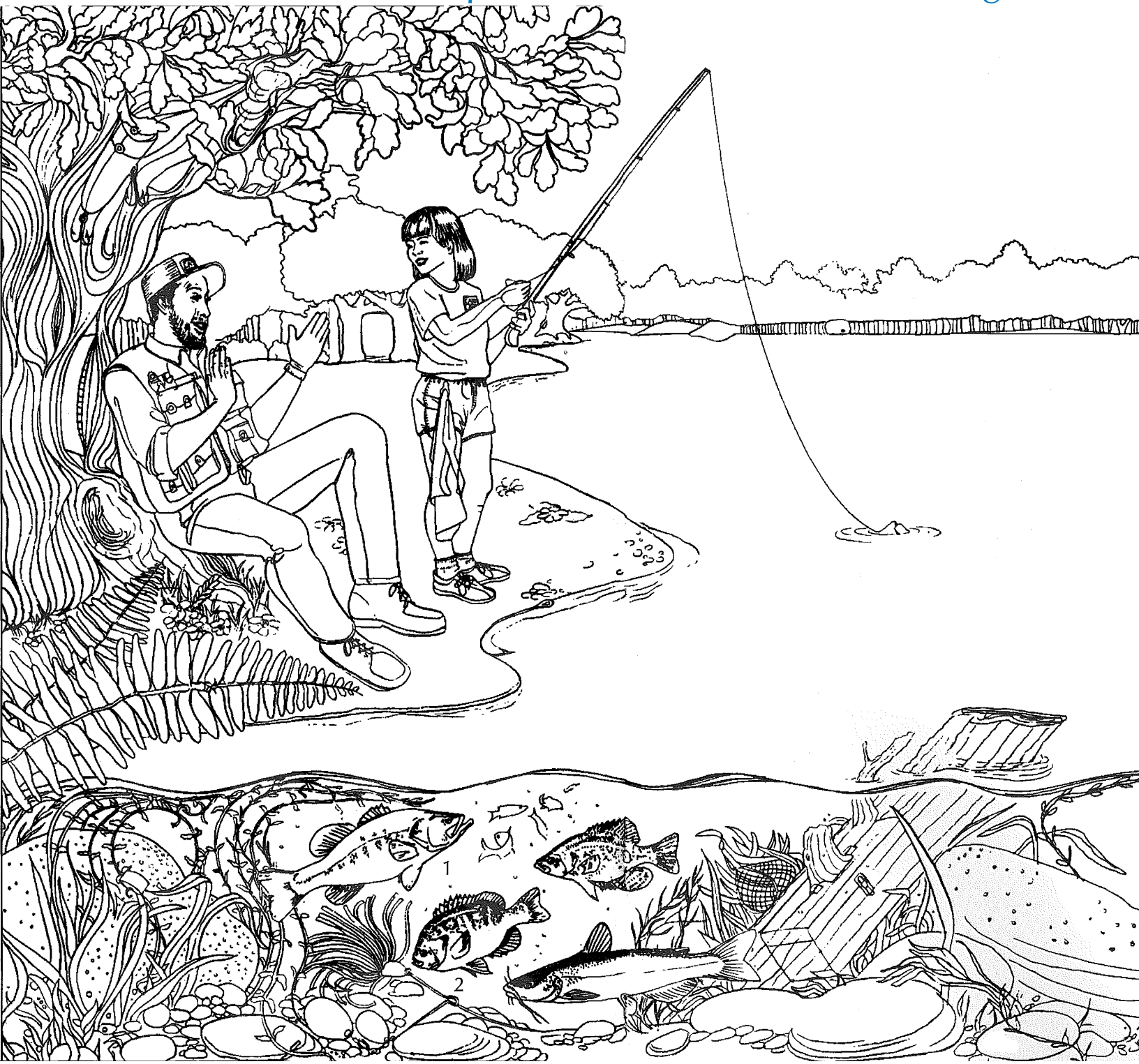
CATCH

Aquatic Resources Education Program



Student Workbook

name _____

CATCH
STUDENT WORKBOOK

This manual is written for school students who are involved in CATCH and is designed for use only in supervised instruction as part of the aquatic resources education and youth fishing program sponsored and facilitated by the North Carolina Wildlife Resources Commission. The North Carolina Division of Marine Fisheries assisted with the development of these materials. For more information contact:

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Contents

*All blue words throughout this workbook are defined in the Glossary.

Fish And Their Habitats

Have you ever been fishing? Do you know someone who has? Even if it's not your first time, you can look forward to the exciting sights and sounds of this outdoor sport. You will be outdoors enjoying the weather and the changing seasons. You may hear a stream, a river or the ocean waves. Most likely, you will see wildlife.

Fishing is fun, even if you don't always catch fish. If you do catch a fish, you can release it unharmed or take it home to cook. Fish are good to eat and good for you.

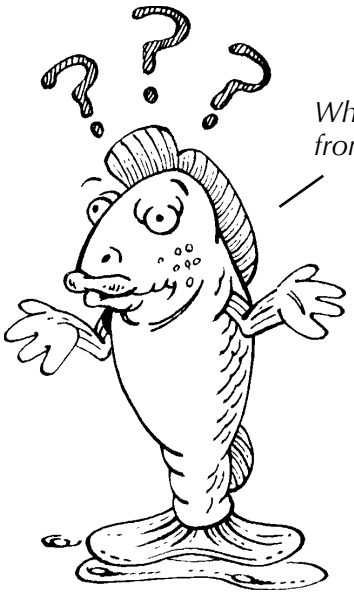
This book will teach you about fish, what they need to live, where they live, what they eat and how to catch them. The more you learn about fishing, the more you will like it.

Hi!, My name is Finlee Fish. I will be your guide throughout the CATCH Student Workbook.

Fish Are Different!

What makes a fish different from other animals? Look at List A and compare it to List B. What is the major difference between the two lists? Write your answer in the provided space below:

List A		List B	
- a cat	- a dog	- a fish	- a dolphin
- a cow	- an ostrich	- a whale	- a sea turtle
- a deer	- a bear	- a water beetle	- an otter
- a zebra		- a salamander	



What makes me different from other animals?

Compare your answer to ours:

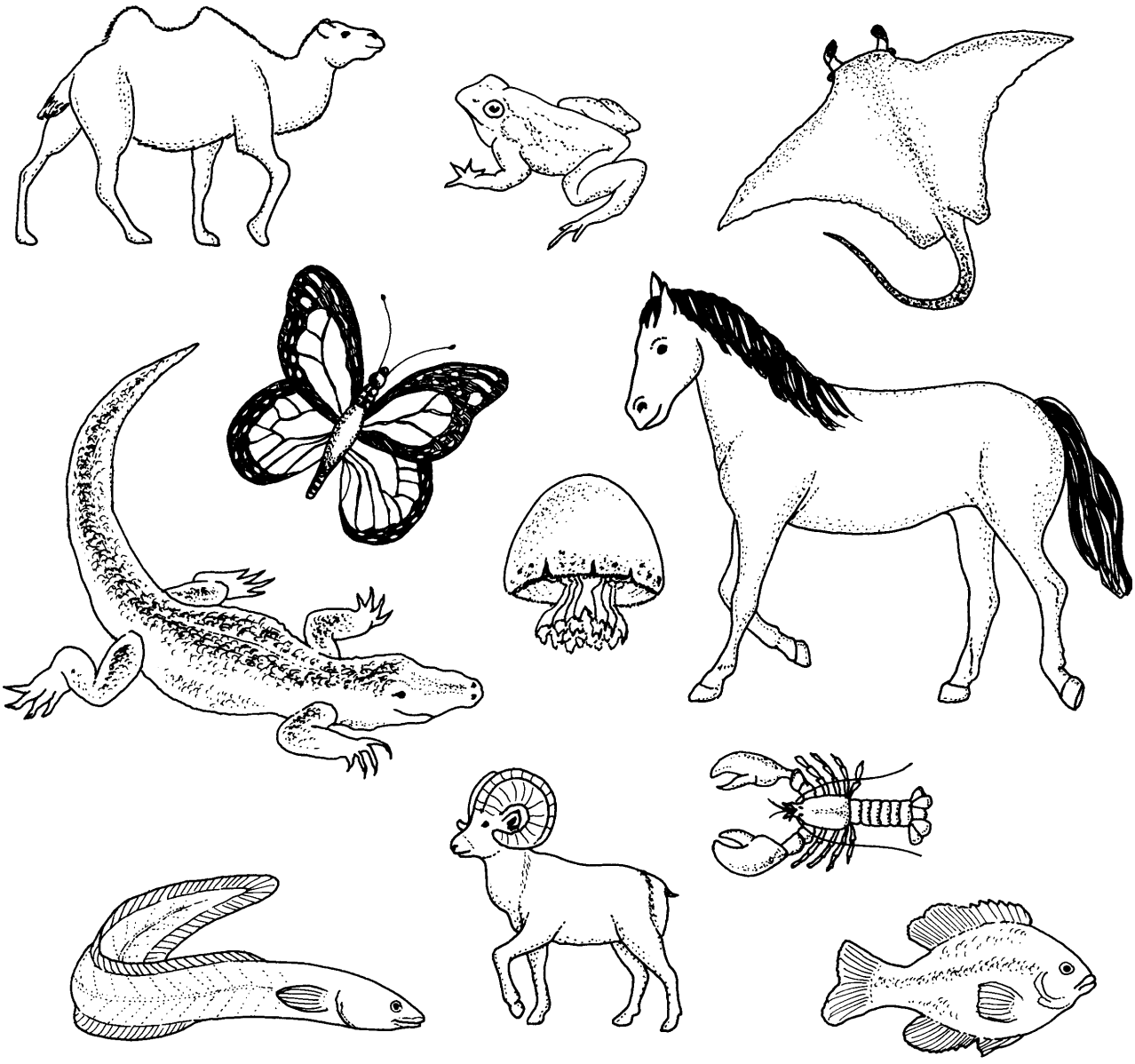
All the animals in List A live on land. All the animals in List B live in water.

Fish and other animals that live in water are called **aquatic** animals.

Animals that live on land are called **terrestrial** animals.

A Is For Aquatic!

Below are animals that live on land or in the water. Draw a circle around each animal that is **aquatic**, then color these animals.



(Answers in the Instructor's Guide)

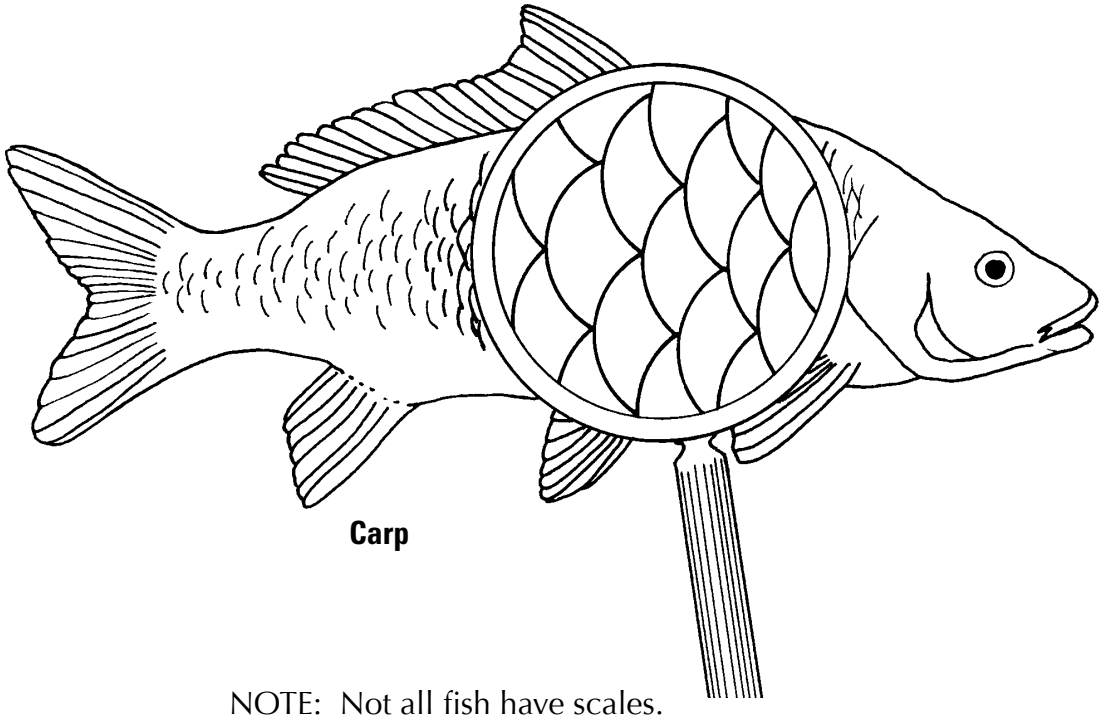
A Fish Is A Fish Because

Fish live in water. What else makes a fish a fish? Do fish breathe? Can they hear? Can they smell? Yes, fish breathe, hear, smell, see and move about, but not as we do. Fish have developed special **adaptations** that allow them to live in water, just as we and other terrestrial animals have developed special adaptations to live on land.

Scales

Ducks have feathers, bears have fur, and we wear clothes to protect our skin. But what about fish? Most fish have **scales** that protect their skin. Scales are different sizes depending on the size and **species** (type) of the fish. Carp have very large, thick scales while trout have scales so small they are hard to see. The scales are covered with a protective **slime**. The slime helps to protect the fish from diseases and parasites.

Scales cannot protect a fish from varying temperatures, as clothes do for us. Fish are cold-blooded. In winter when the water is colder, fish become more sluggish and require less oxygen and food. However, in the summer when the water is warmer, fish become more active and require more oxygen and food.

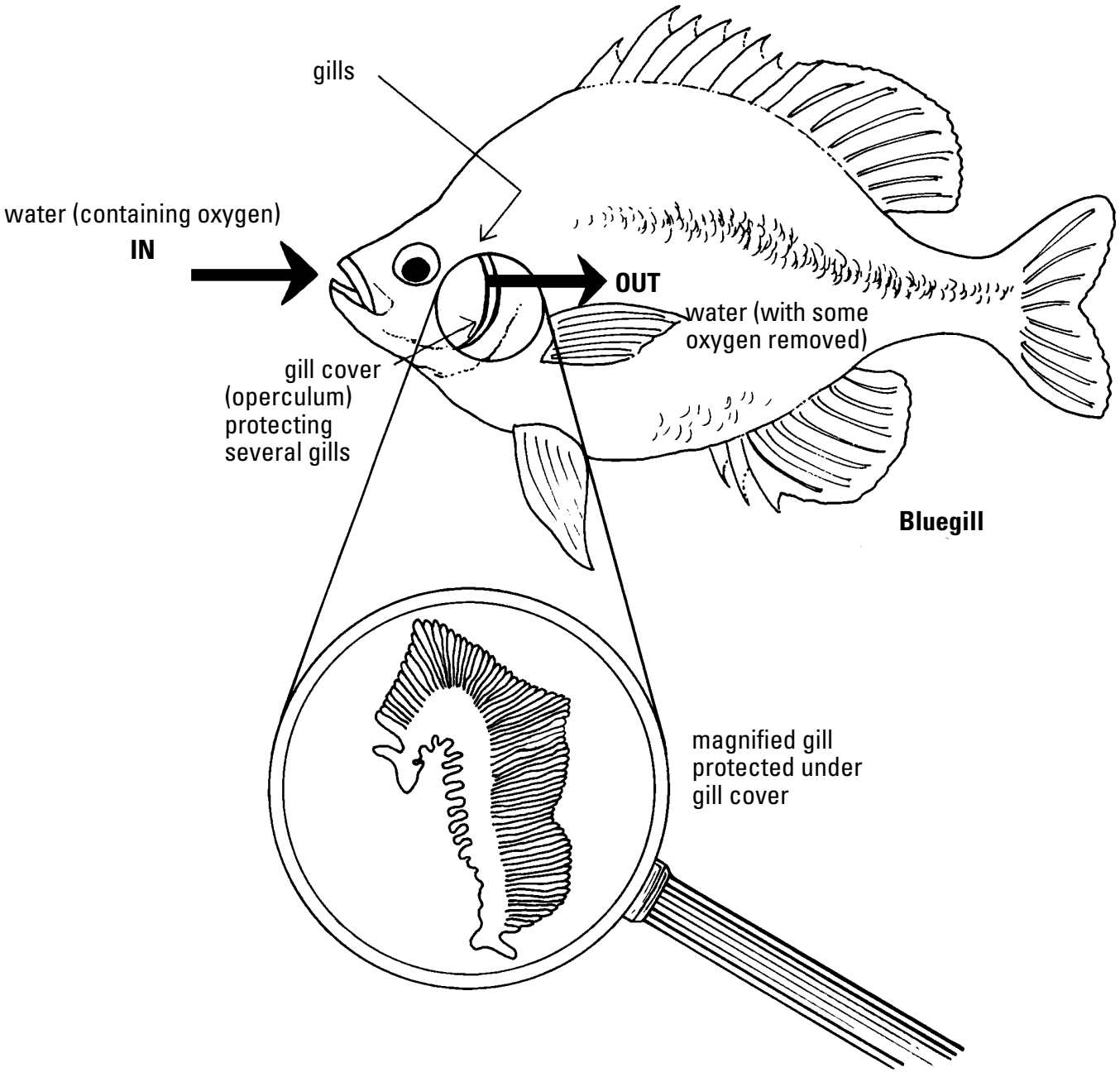


Carp

NOTE: Not all fish have scales.
Some species like catfish have only skins that help protect them.

Gills

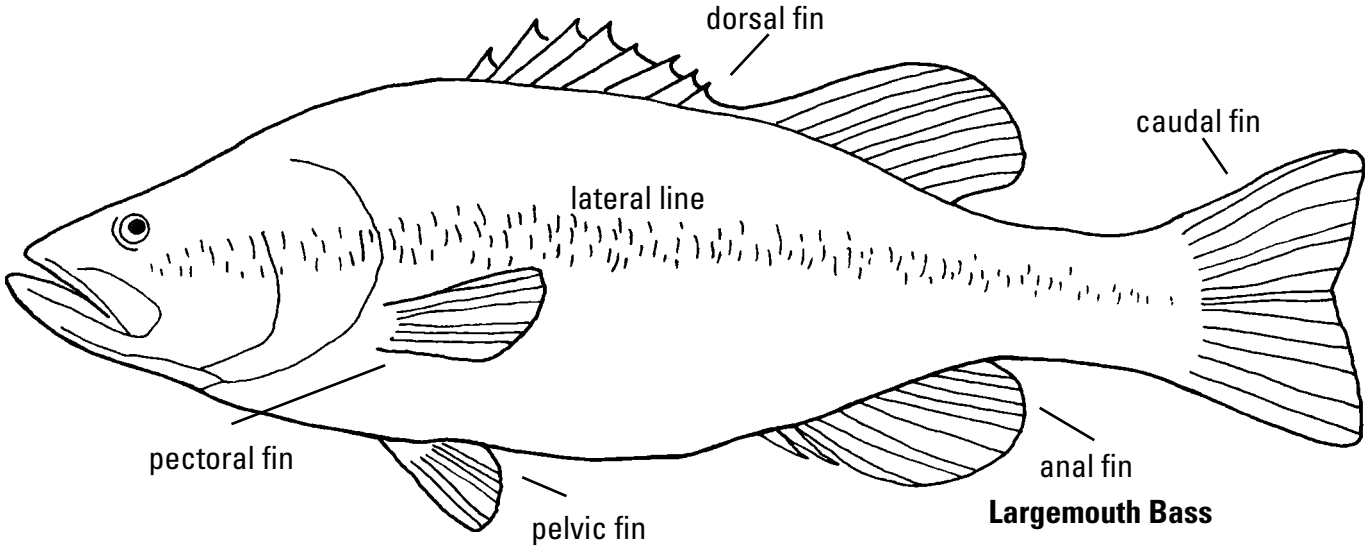
Fish have **gills** that allow them to breathe in water. The gills remove oxygen that is present in the water. Water is drawn into the fish's mouth and passes out through the gills. A fish's gills are red because of the large amount of blood they contain, which allows the small amount of oxygen in water to be absorbed into the fish's blood-stream. Water constantly moves over the fish's gills, allowing the fish to "breathe" in much the same way our lungs allow us to breathe.



Fins

Let's look at another difference between fish and other animals. Instead of arms and legs, fish have **fins** to help them move and maintain their balance in the water.

Each fin has a special function. In general, fins on the back and stomach keep the fish balanced. These fins include the paired fins (**pectoral** and **pelvic**) and the unpaired fins (**dorsal, anal, caudal**). The tail fin, known as the **caudal fin**, propels the fish forward.



Largemouth Bass

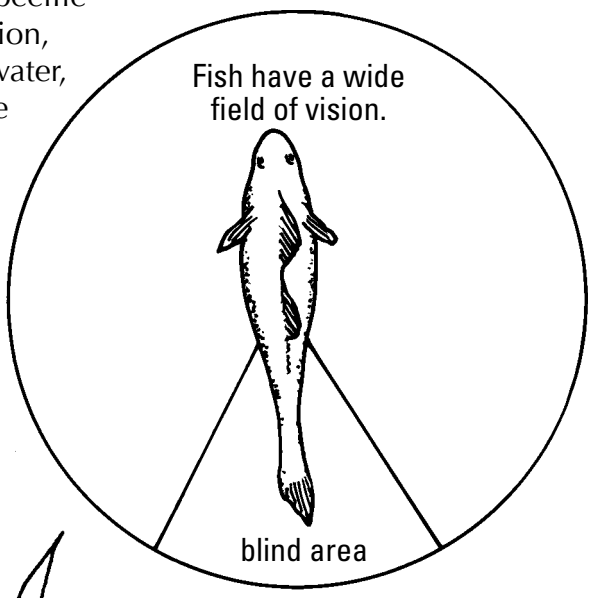
Hearing

Fish have a special adaptation along their sides known as a **lateral line**. This series of enlarged cells senses vibrations similar to the way your eardrum senses vibrations and allows you to hear. The lateral line helps a fish sense or "hear" movements of other fish it may feed on or other animals that may harm it. The lateral line may also allow fish to swim consistently in schools, changing directions and speeds quickly, without colliding.

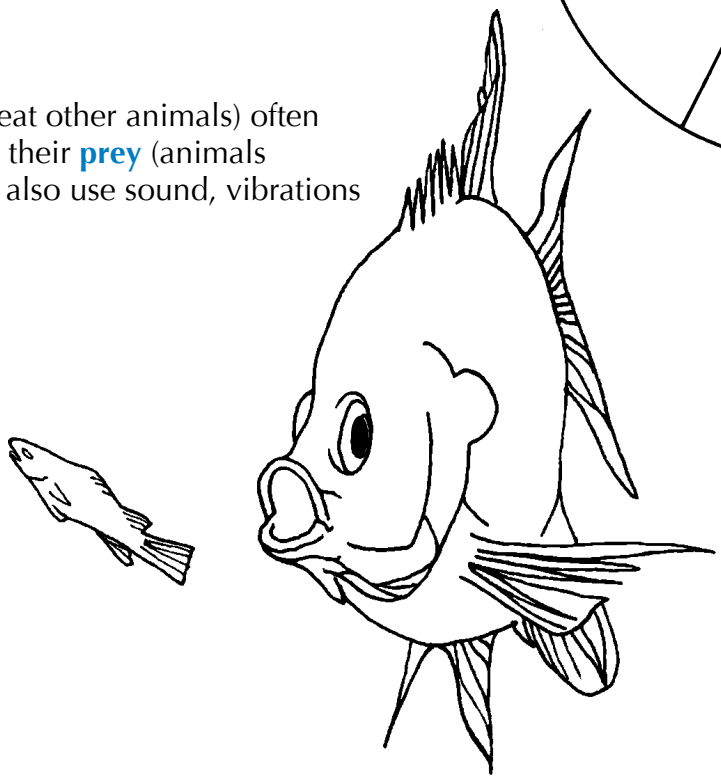
Fish have internal ears (**otoliths**) that are buried beneath the skin on either side of the head behind the brain. There are no outside openings. Instead, the sound waves reach the ears through the skin and flesh of the fish.

Vision

You can look at almost any part of a fish and discover some specific adaptation to water. For instance, most fish have excellent vision, especially at close range. If you have ever tried to see under water, you will notice that you have to keep turning your head to see around you. Fish do not have to do this, because their eyes are round and project from their heads. Fish can see all around them without moving, except for a blindspot directly behind their tails.



Predator fish (fish that eat other animals) often rely on sight to capture their **prey** (animals they eat), but they may also use sound, vibrations or smell to locate prey.



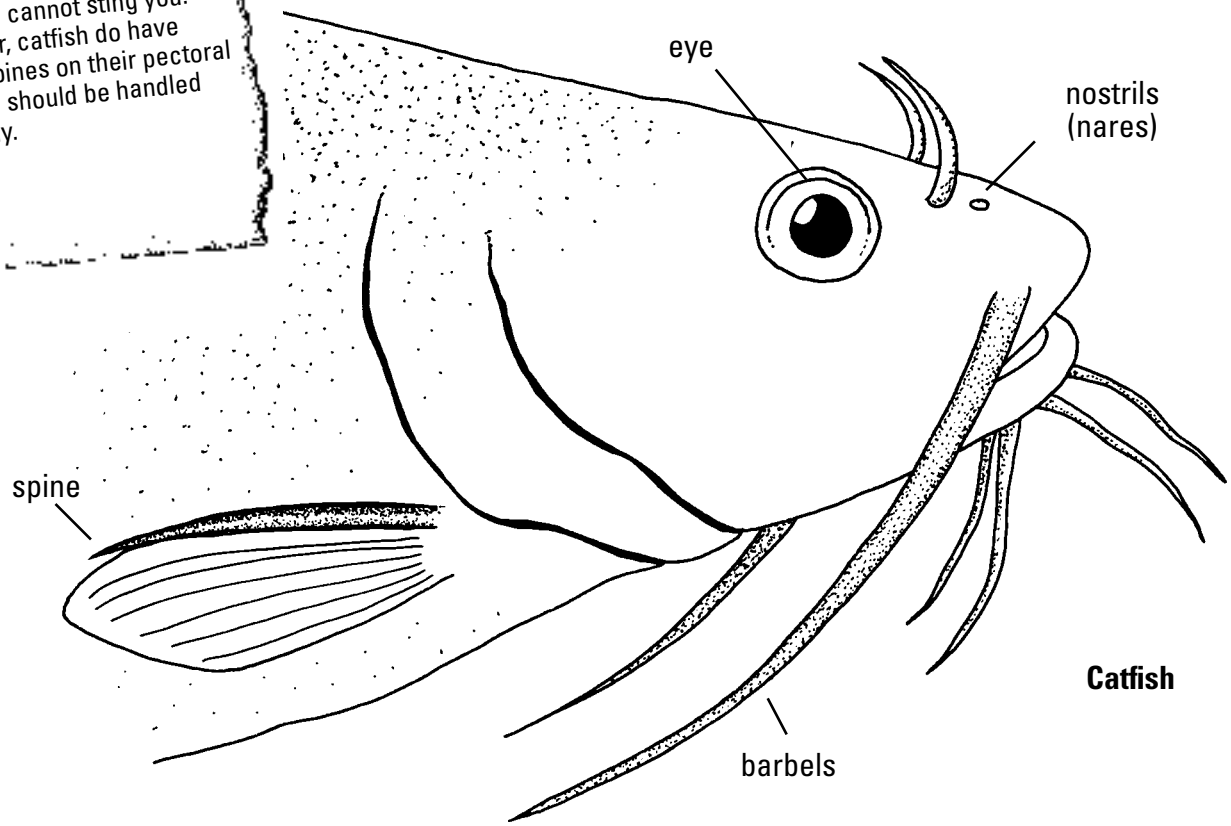
Smell

Smell is an important sense to a fish. Most fish have a much better sense of smell than people. Fish don't exactly have noses, but they do have nostrils (nares). Some fish have four nostrils, but all fish have at least two. Fish use their sense of smell to locate food and to warn them of danger. By using their keen sense of smell, some fish will return to their place of birth to **spawn** (to reproduce). This return is known as **migration**. Migration can take years and may cover thousands of miles.

TIP
Can catfish sting you with their barbels? Although many people think they can, the answer to this is NO. The barbels are used to sense food and cannot sting you. However, catfish do have sharp spines on their pectoral fins and should be handled carefully.

Taste

Imagine for a moment that you are a hungry catfish. The water is muddy, restricting your vision, and you don't hear anything that sounds like food. As you move along the bottom of the river, your body rubs against some small round objects that "taste" like fish eggs, a favorite food, and you start to eat. Because you are a catfish, you have external taste buds all over your body, including your **barbels** (whiskers). You find this sense especially useful in muddy water. Not all fish have external taste buds; some are internal. This sense is important to some species in locating and selecting food.



Catfish

Something's Fishy

Compare the fisherman to the fish. In the blanks provided, write the names of the fish parts that have similar functions to the listed human body parts.

hair _____

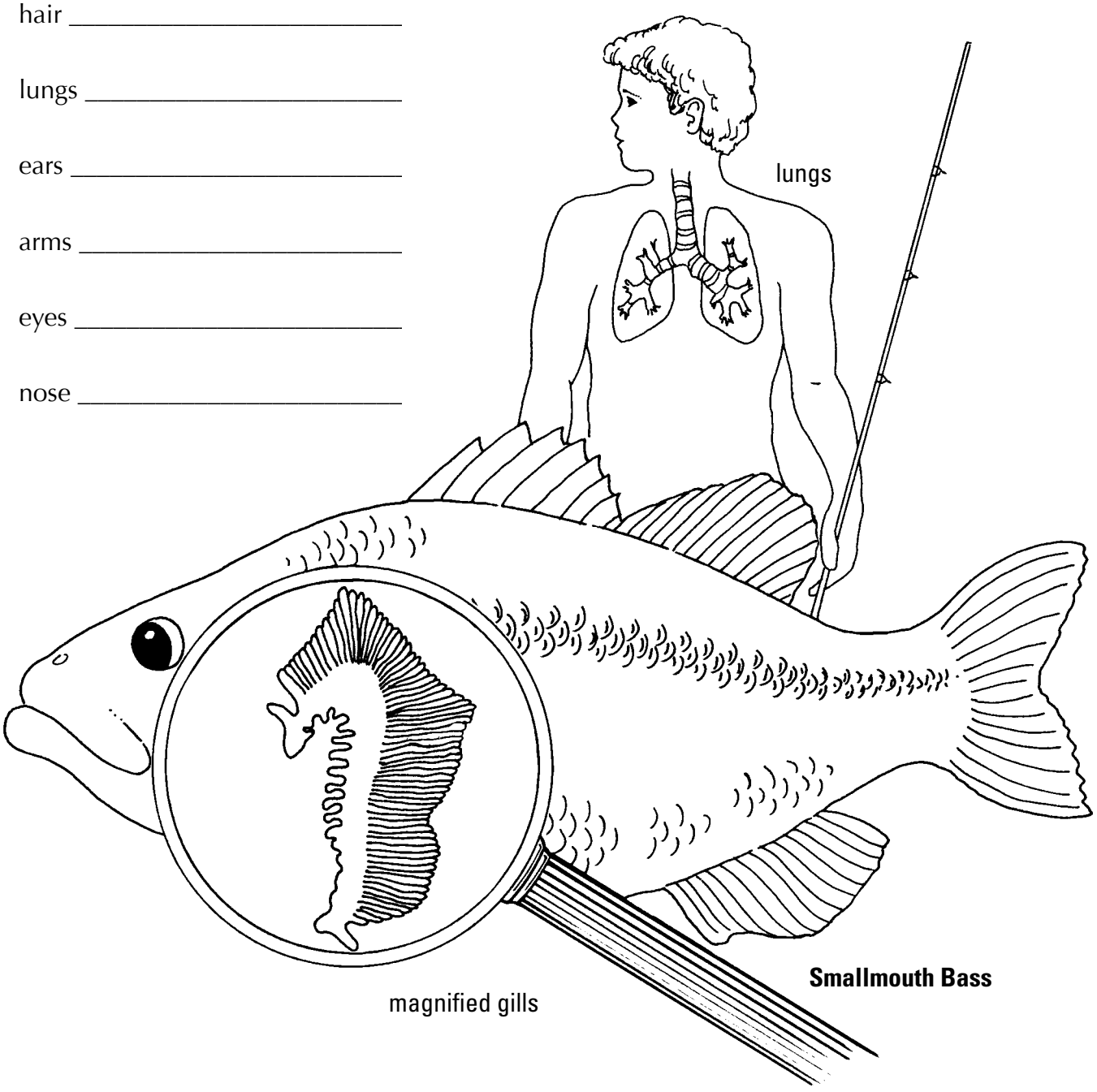
lungs _____

ears _____

arms _____

eyes _____

nose _____



(Answers in the Instructor's Guide)

TIP

While some species of fish live in open water, most fish prefer the cover and protection of piers, weeds or grass beds, and downed trees. Larger fish move in to feed on the smaller fish making these areas a good place for you to test your fishing skills.

Body Shape

Besides gills, fins, scales and specially adapted senses, fish have other adaptations for living in water. Their body shape is important. Fish such as trout living in fast-moving streams have long, thin bodies that allow them to move easily through swift currents.

Crappie live in the calm, still waters of lakes and ponds. Their body shape gives them the speed and quickness to catch small minnows. However, crappies are not shaped for long distance swimming.

Catfish can live on the bottom of rivers, lakes, sounds and even the ocean. Their wide, relatively flat body shape is better suited to slow-moving or calm waters.

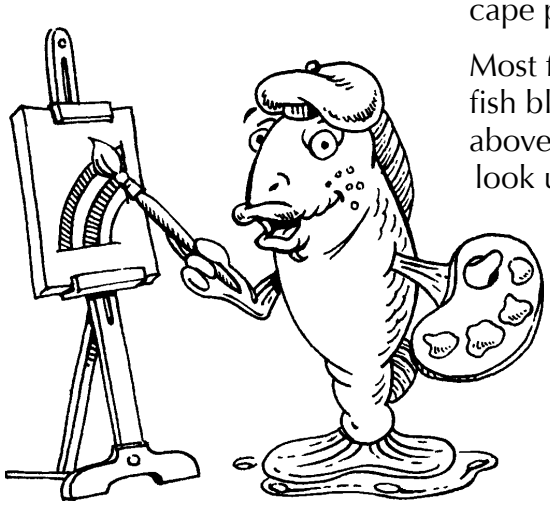
Flounder live on the bottom of rivers, inlets, sounds and the ocean. They have a very flat body so they can hide themselves on the sandy bottom and ambush their food.

Other fish that live in the open ocean are more streamlined to swim rapidly.

Color

There are many different colors of fish. Think about the tropical fish you have seen in an aquarium or in a book. Fish are colored for a reason. Brightly colored fish may use their colors to attract other fish in order to **reproduce** (have offspring). Some colorful fish are poisonous. Their easily recognized colors serve as a warning of danger.

Other fish are the color of the plants or rocks they live near. This adaptation allows them to **camouflage** (hide) themselves and escape predators or capture food more easily.

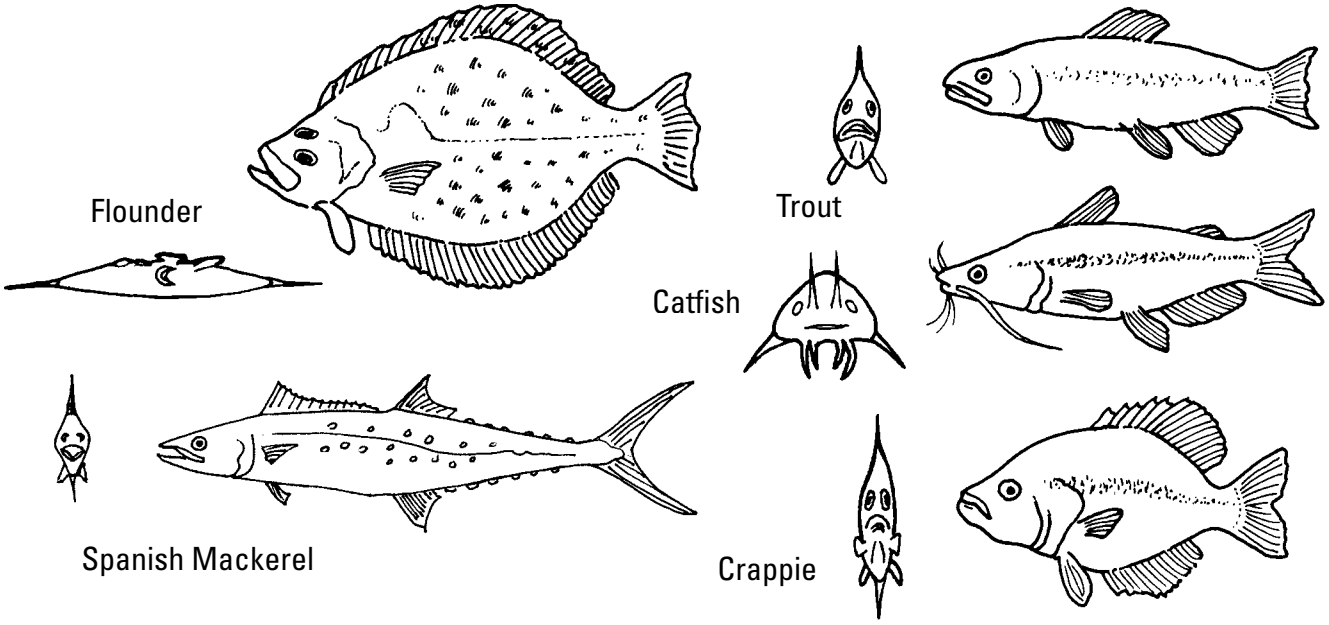


Most fish have dark backs and lighter bellies. The dark back of a fish blends in with the darker water when predators look at it from above. The light belly makes a fish harder to see when predators look up at it from below.

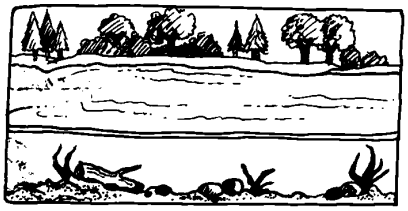
The water color affects the color of the fish. For example, fish living in brightly lit waters are lighter in color than the same species living in darker colored waters.

Where Do They Live?

A fish's habitat supplies the things it needs to survive—food, water, oxygen, shelter and space. In North Carolina, fish may live in freshwater (inland lakes, ponds and streams) or saltwater (the ocean). Some fish live in **brackish** water (a mix of freshwater and saltwater) in the sounds. Some fish migrate between saltwater and freshwater.

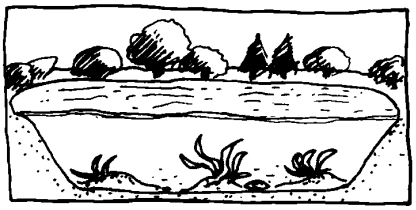


Match the fish to the habitat. In the blank, write the name of the fish that belongs in that habitat.



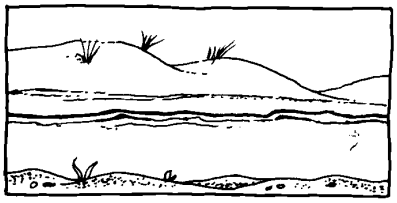
River Bottom

_____



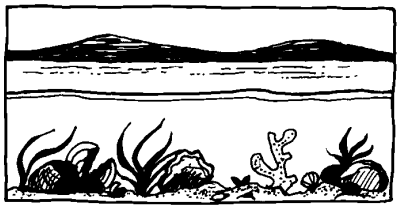
Freshwater Pond

_____



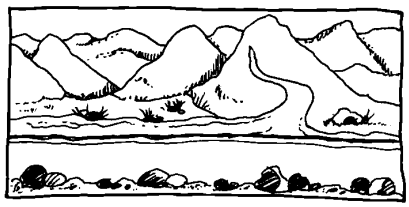
Sandy Bottom Sound

_____



Open Ocean

_____



Mountain Stream

_____

(Answers in the Instructor's Guide)

Make A Colorful Fish Mobile

Make a North Carolina fish mobile to hang in your classroom or at home with the CATCH fish mobile folder and Fish ID card provided by your teacher.

1. Using the Fish ID card as a guide, color the fish in their natural colors.

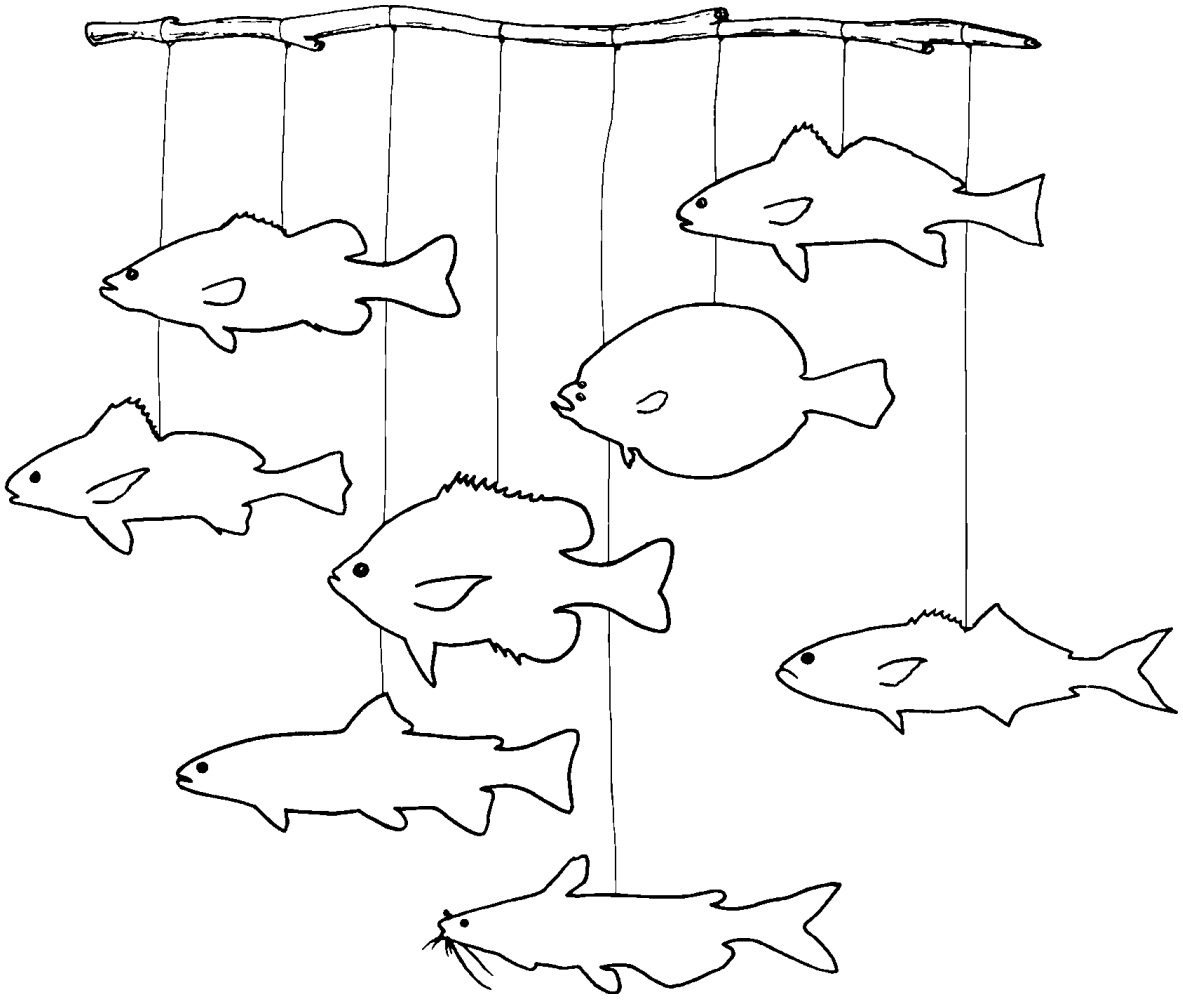
2. Cut out each fish shape.

3. Using a holepunch, punch a hole at the top of the cutout where the circle is.

4. Thread a piece of string, yarn or fishing line through each hole. Make each string a different length.

5. Hang the fish on a stick or clothes hanger.

6. Balance the mobile by moving the fish around until the mobile hangs straight.



Let this mobile remind you of the fish species that rely on the balance of nature. Don't forget, your environment is your responsibility!

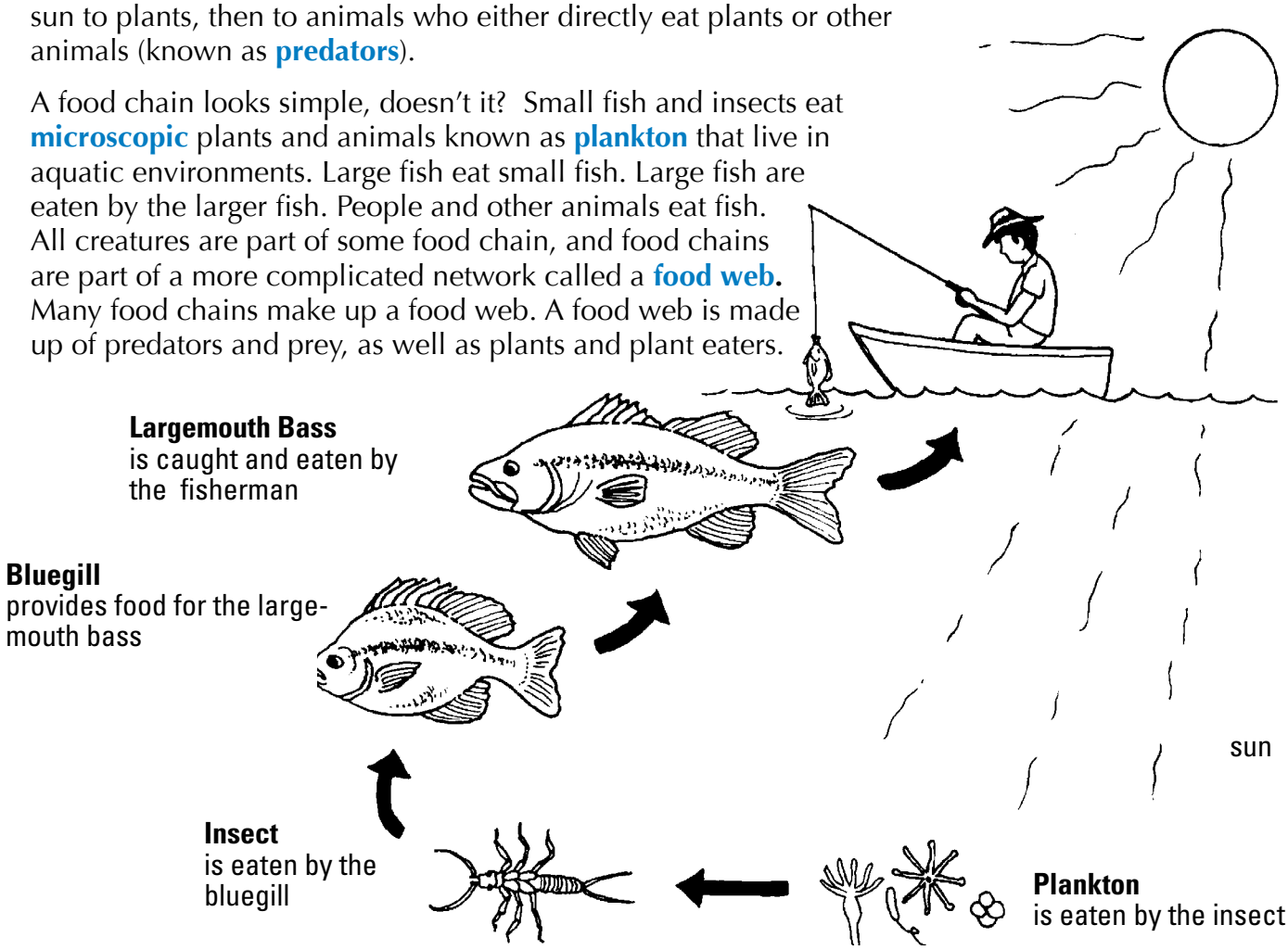
A Watery Home

When you plan a fishing trip, where do you go? A Piedmont pond? A mountain stream? The coast? Each of these places is a different **ecosystem.** A local pond and mountain stream are both freshwater ecosystems. The ocean is a saltwater ecosystem. Estuaries are mixtures of freshwater and saltwater ecosystems. North Carolina estuaries produce 90 percent of all recreational and commercial fish and shellfish.

Ecosystems are natural systems that include living and nonliving things. These living and nonliving things interact with each other in different ways to produce a stable habitat.

Plants and animals, like fish, make up the living parts. Rocks, soil, water and air make up the nonliving parts. All the living parts are related through **food chains**. In a food chain energy is passed from the sun to plants, then to animals who either directly eat plants or other animals (known as **predators**).

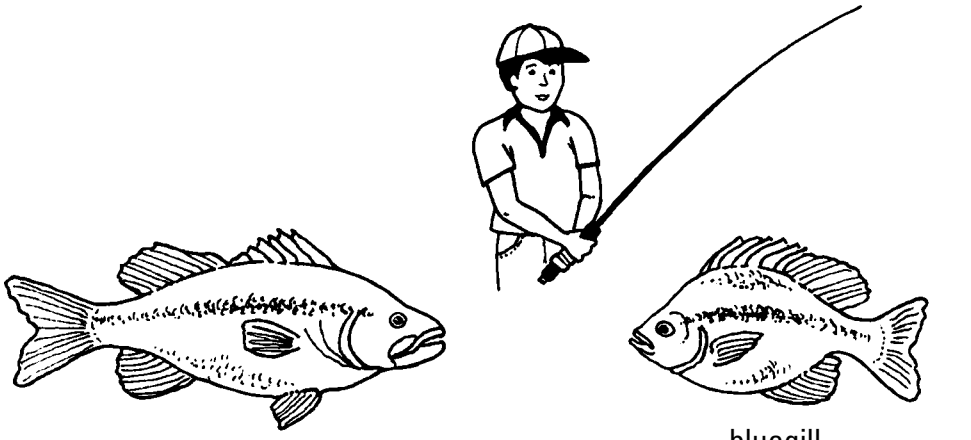
A food chain looks simple, doesn't it? Small fish and insects eat **microscopic** plants and animals known as **plankton** that live in aquatic environments. Large fish eat small fish. Large fish are eaten by the larger fish. People and other animals eat fish. All creatures are part of some food chain, and food chains are part of a more complicated network called a **food web.** Many food chains make up a food web. A food web is made up of predators and prey, as well as plants and plant eaters.



Make A Freshwater Food Web

Below are **organisms** (living things) that are associated with a farm pond. Draw a line from each organism (**prey**) to the organism (**predator**) that would eat it. Different colors can be used for each organism to clearly visualize the food web.

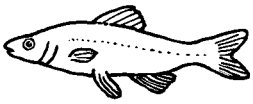
There can be more than one line from most plants and animals.



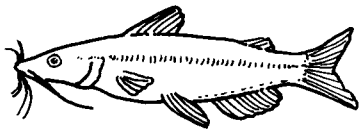
largemouth bass

bluegill

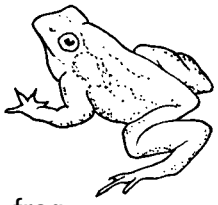
crayfish



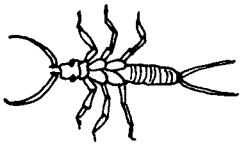
mosquito fish



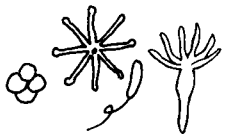
channel catfish



frog



insect



plankton

plants

(Answers in the Instructor's Guide)

Gone Fishin'

Put an **X** under the location you will most likely find the fish listed below. Some fish are found in more than one location.

Fish Species	Mountain Stream	Pond	Lake	River	Sound	Ocean
channel catfish						
bluefish						
rainbow trout						
flounder						
largemouth bass						
bluegill						
channel bass						
croaker						
black crappie						
striped bass						
smallmouth bass						
spot						
spotted seatrout						
Spanish mackerel						

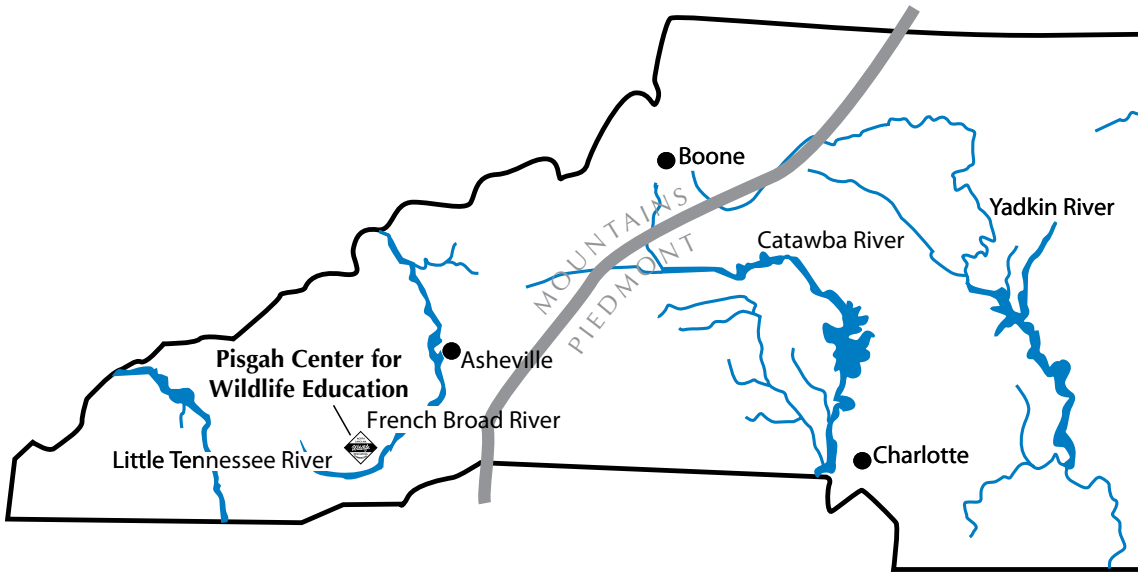
(Answers in the Instructor's Guide)

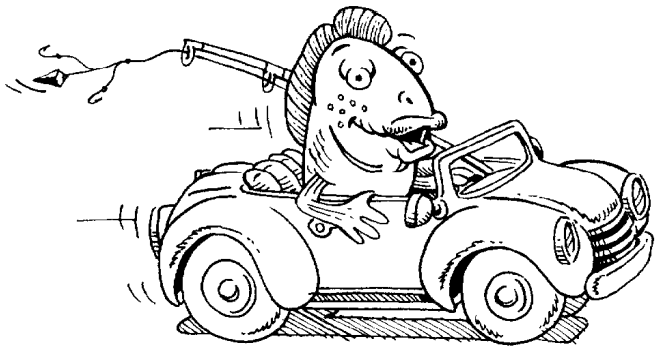
Where To Fish

What kinds of aquatic environments are found in North Carolina? Where is the best place to fish? What kinds of fish can you catch?

Fortunately, we have many different places to fish in our state. Each of these different places is a **habitat** for the fish that live there. A habitat is everything that animals, including fish, need to survive. Habitats include food, water, shelter, air and space.

The cold water streams and lakes in the mountains offer good trout and smallmouth bass fishing. The Piedmont lakes, ponds, and rivers offer good largemouth bass and bluegill fishing. On the coast, you can catch flounder and channel bass in the rivers, sounds and oceans.

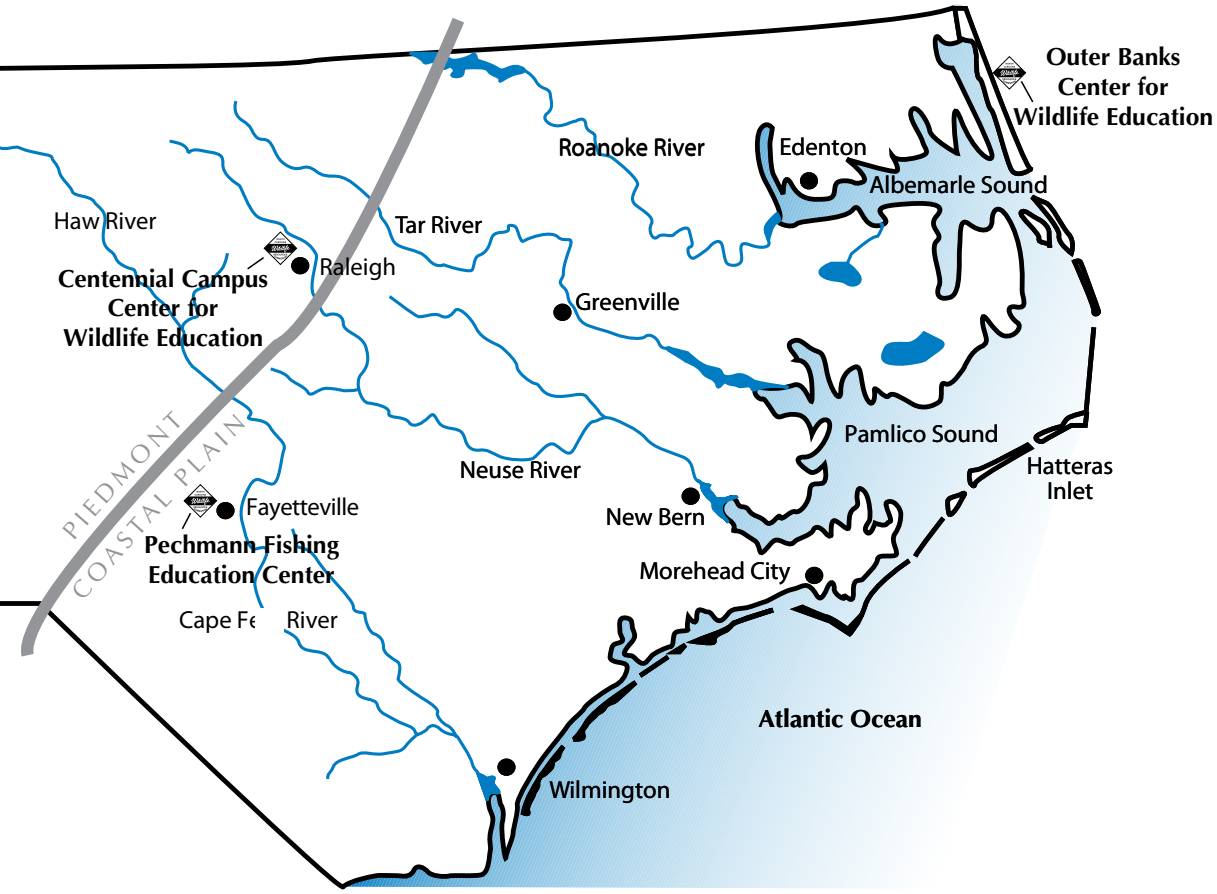




You can also catch fish in an **estuary** or an **inlet.** An estuary is an area of water where the salty sea water meets and mixes with inland freshwater. An inlet is a narrow water passage between the **sounds** and the ocean. A sound is a body of water separating two bodies of land in a coastal area.

One of the most overlooked places to fish in North Carolina is farm ponds. Fish populations in farm ponds reproduce rapidly, providing large numbers of fish in a small area. Thus, your chance of a successful fishing trip increases.

With miles of coastal shoreline and a large number of lakes, streams and ponds in North Carolina, you probably live close to a place where you can "wet a hook" and go fishing!



See What You Know!

1. Animals that live in the water are called _____ animals.

2. Name three adaptations fish have for living in water.

   a._____

   b._____

   c._____

3. What is the purpose of the slime that covers a fish's body?

   a. keeps the fish warm

   b. helps the fish slip away from predators

   c. protects the fish from disease

   d. catches prey that stick to it

4. Write the letter of the term that best fits the definition. Not all terms will be used.

___ 1. Used by fish for taking oxygen out of the water

___ 2. Animal that eats other animals

___ 3. A balanced system of living and nonliving things

___ 4. A network of food chains that show predator and prey relationships

___ 5. An adaptation that allows a fish to hide itself by blending in with its habitat

a. fins
b. camouflage
c. scales
d. predator
e. gills
f. lateral line
g. food web
h. ecosystem

5. A good place to fish for rainbow trout is:

   a. Piedmont farm pond

   b. mountain stream

   c. coastal river

   d. ocean fishing pier

6. Name two species of fish found in North Carolina. Where are they found? Name one item they use for food.

Fish	Habitat	Food
_____	_____	_____
_____	_____	_____

7. Fish have a poorly developed sense of smell. True ___ False ___

(Answers in the Instructor's Guide)

Notes:

Conservation And Outdoor Ethics

To Save A Fish

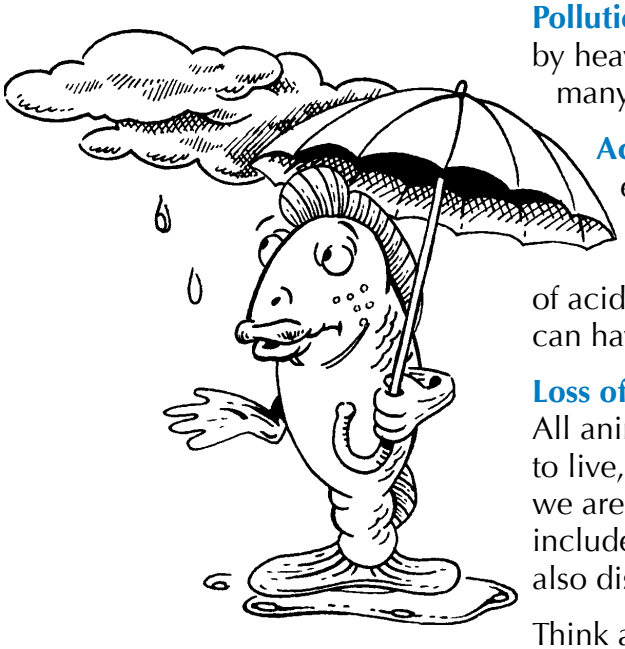
Listen to the news or study current events and you will hear about problems in our environment, such as litter, pollution and acid rain. What are these problems and what do they have to do with fishing?

Litter is one of the most visible problems, such as aluminum cans, plastic, plastic foam and glass bottles. Litter is ugly and ruins the natural beauty of a good fishing area. Litter can also injure and kill wildlife species when they mistake it for food and eat it or get entangled in it. Animals are especially likely to become entangled in plastic six-pack holders and discarded fishing line (monofilament line). Trapped animals often drown or die of starvation. Other animals such as sea turtles think plastic bags are jellyfish—their favorite food. They starve because their stomachs become filled with plastic bags and balloons they cannot digest.

Circle the types of litter you think could harm wildlife.

(Answers in the Instructor's Guide)

This looked much better on a 6-pack of soda.



Pollution such as sewage, oil spills, chemicals, and runoff caused by heavy rains makes water a difficult place for fish to live. In fact, many fish die as a result of pollution.

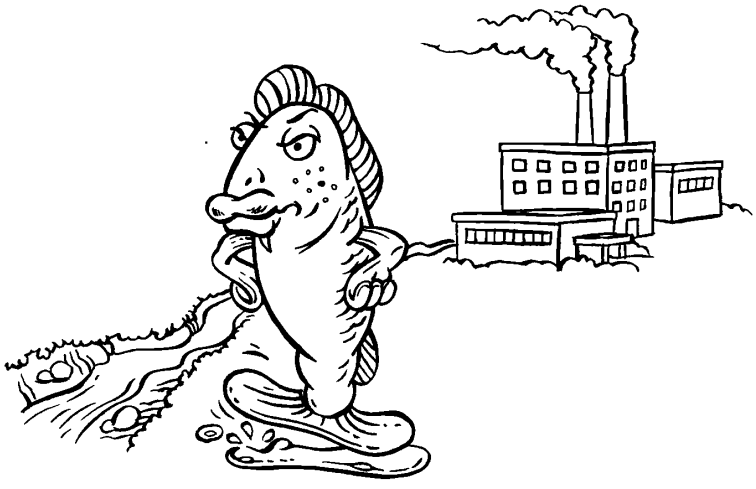
Acid rain is formed when polluted air from industry and auto exhaust mixes with water in clouds. As the clouds release the water in the form of rain, the acid reduces the water's ability to support life in the lakes, rivers and streams. Large amounts of acid rain can kill aquatic plants and animals. Even small amounts can have a damaging effect on the aquatic environment.

Loss of habitat is another problem facing fish and other wildlife. All animals, including ourselves, need habitats. Without a place to live, we and other animals would die. In many parts of our state we are destroying wildlife habitats. Some causes of loss of habitat include erosion and sedimentation. Food chains and food webs are also disrupted by loss of habitat.

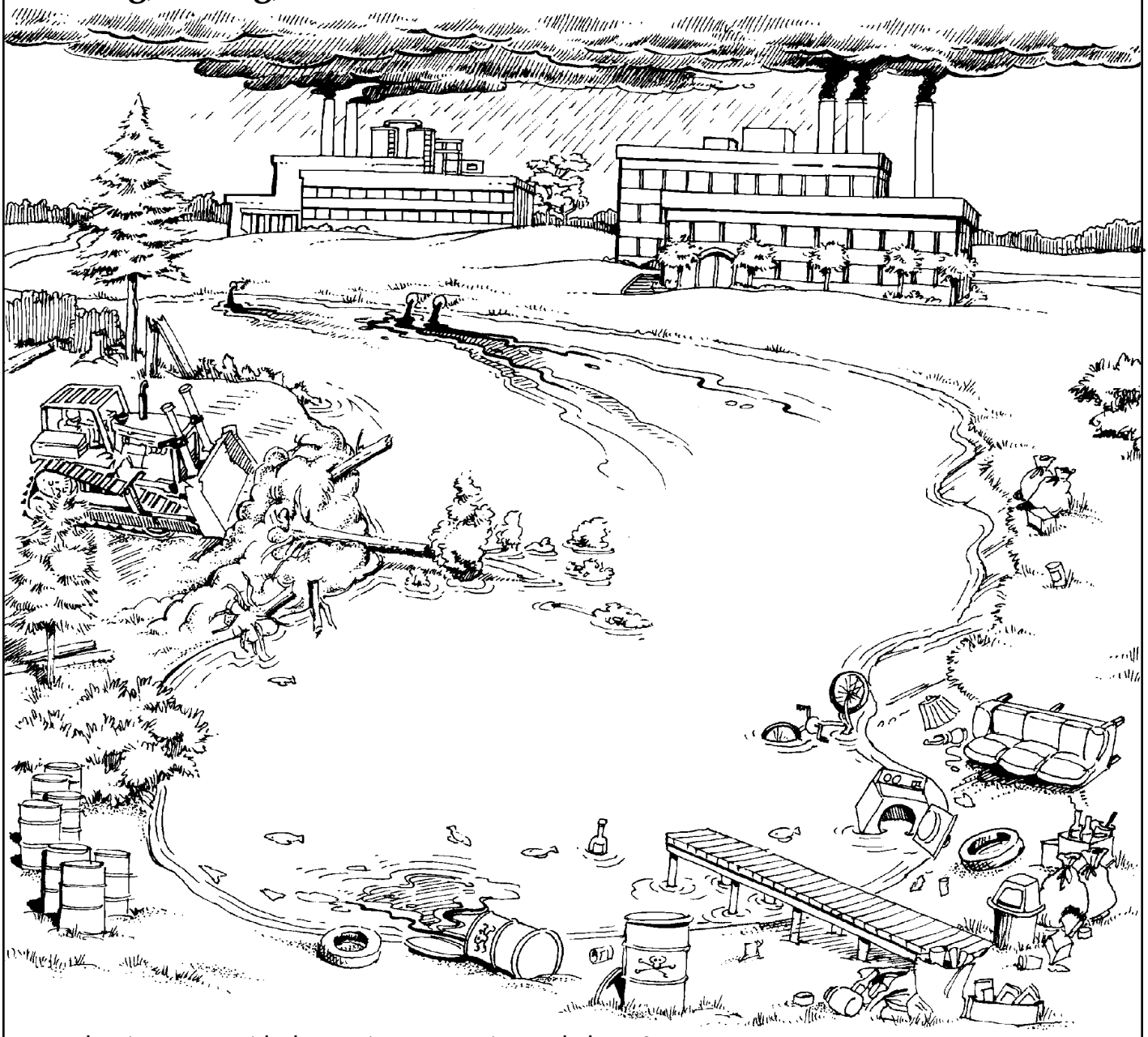
Think about the community you live in. Have new houses, shopping centers or other buildings been built there in the past year? Many acres of wildlife habitat on land and in the water are destroyed to make room for development. This is one of the biggest problems facing our state's wildlife, including fish.

The problems listed here were caused by people, and they can only be solved by people. The best solution is to prevent problems.

Conservation means wise use without waste. Use it, but don't abuse it! Think about ways you can conserve the environment at home or at school to help prevent problems before they happen.



Going, Going, Gone?



•What is wrong with the environment pictured above? _____

_____

•What is wrong with <u>your</u> environment? _____

_____

(Answers in the Instructor's Guide)

We're Doing Our Part!

•Draw a picture or paste a local newspaper article illustrating ways your community is helping to solve or prevent water quality and aquatic habitat concerns.

•Describe activities your community is doing to help solve or prevent your community's water quality and aquatic habitat concerns. _____

_____

_____

_____

Good Behavior

Good sports have more fun.

Good sportsmen use good **ethics** and obey the law. These **ethics** include courtesy, good manners, honesty and consideration when using the outdoors. When fishing in North Carolina, size and **creel limits** should be followed. Creel limits, or the number of fish you can keep legally in one day, and **size limits** encourage survival of fish species. Size limits allow fish to grow up and reproduce before getting harvested.

Catch and Release

Fish taste great! Fish are low in cholesterol. By providing vitamins and protein, fish are part of a healthy, well-balance diet. But if you don't plan on eating the fish you catch, you should release them unharmed. Handle the fish gently with wet hands to avoid removing the fish's protective slime. Remove the hook, and release the fish back into the water as soon as it is caught. **Catch and release** is an important part of the fisherman's code of ethics.

State Fishing Agencies

In North Carolina there are two state agencies that are responsible for making and enforcing rules that protect and conserve fish and wildlife. These agencies are the North Carolina Wildlife Resources Commission and the North Carolina Division of Marine Fisheries.

Both these agencies have fisheries biologists and enforcement officers. Fisheries biologists conduct research and management to improve fish populations and habitats. They also help develop and evaluate fishing regulations. Enforcement officers enforce laws about fish, wildlife and boating safety. Both biologists and enforcement officers can answer your questions and give you tips about fishing in a particular area. Generally, when you turn l6 years old you must get a fishing license to fish in freshwater. There are some exceptions to this rule.

For more information, refer to a "North Carolina Inland Fishing, Hunting, and Trapping Regulations Digest." This annual digest is found at www.ncwildlife.org and where fishing licenses are sold. For more information about saltwater fishing, refer to the N.C. Fisheries Rules for Coastal Waters. This publication is available through the Division of Marine Fisheries and most coastal marinas and bait shops.

See What You Know!

1. List three problems that threaten the aquatic environments.

   a._____

   b._____

   c._____

2. Explain how litter can injure or kill wildlife:

   _____

   _____

   _____

3. Three of the basic needs of animals are _____,

   _____, and _____.

4. _____ is the wise use of resources without wasting them.

   a. Habitat b. Conservation c. Pollution

5. True or False:

___ A fisherman must purchase a fishing license at the age of 14.

___ Acid rain is formed when polluted air mixes with water in clouds.

___ An Enforcement Officer enforces fish and wildlife laws.

___ You should always keep all the fish you catch.

___ Ethical behavior includes courtesy, good manners and responsible actions.

___ If you Catch and Release, you should wet your hands before handling a fish.

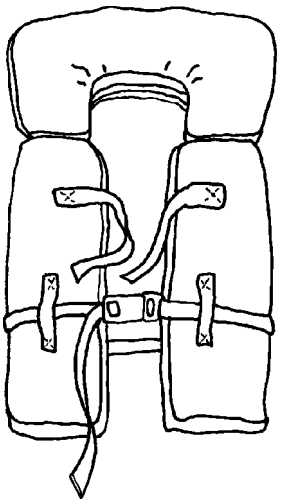
(Answers in the Instructor's Guide)

Fishing And Water Safety

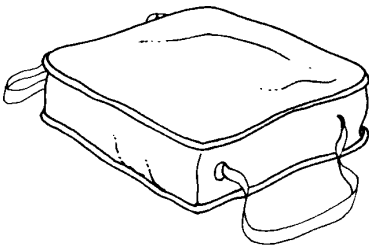
Play It Safe In Water

Do you know how to swim? Drowning is the second leading cause of accidental death for people your age.

Learning to swim is a good step in making your fishing trips safer, but even good swimmers can drown. The best way to prevent drowning is to use an approved **PFD (Personal Flotation Device)** around the water. A PFD is a type of life saving device.



This type of PFD is designed to be worn by a person. Always wear this type of PFD if you cannot swim.



A "float cushion" is a good PFD to take with you fishing... It can be thrown to a person in danger of drowning. This PFD is designed for a person to hang onto until he or she can reach safety. NEVER WEAR IT ON YOUR BACK!

Could you save a drowning person? Would you know what to do if someone needed your help? There are four steps you need to know to help someone in danger of drowning. They are **REACH, THROW, ROW, GO**. Always try first to **reach** the victim with something. If this is not possible, **throw** them something that will float or **row** to them.

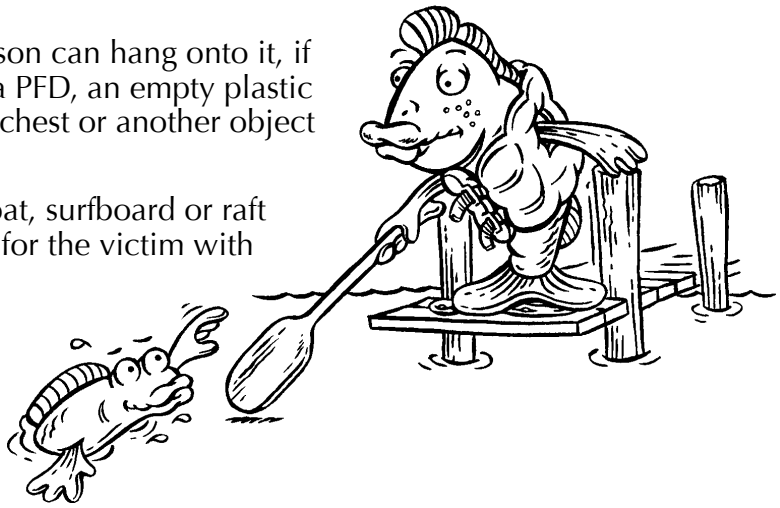
The last resort is to **go** for help.

1. **REACH** for someone in the water by using a boat paddle, a fishing pole, a tree limb or another object you can extend to the person.
CAUTION: Avoid reaching for the victim with your bare hands. You may be pulled into the water.

2. **THROW** an object that floats so the person can hang onto it, if you can't reach far enough. Examples are a PFD, an empty plastic bottle with the lid on tightly, an empty ice chest or another object that will float.

3. **ROW** to the person if there is a small boat, surfboard or raft nearby. CAUTION: Again, avoid reaching for the victim with your bare hands.

4. **GO** for help if you cannot reach, throw or row. Never swim out to help a person in danger of drowning unless you are trained in life saving techniques. You may drown along with the person you are trying to save.



HYPOTHERMIA CHART

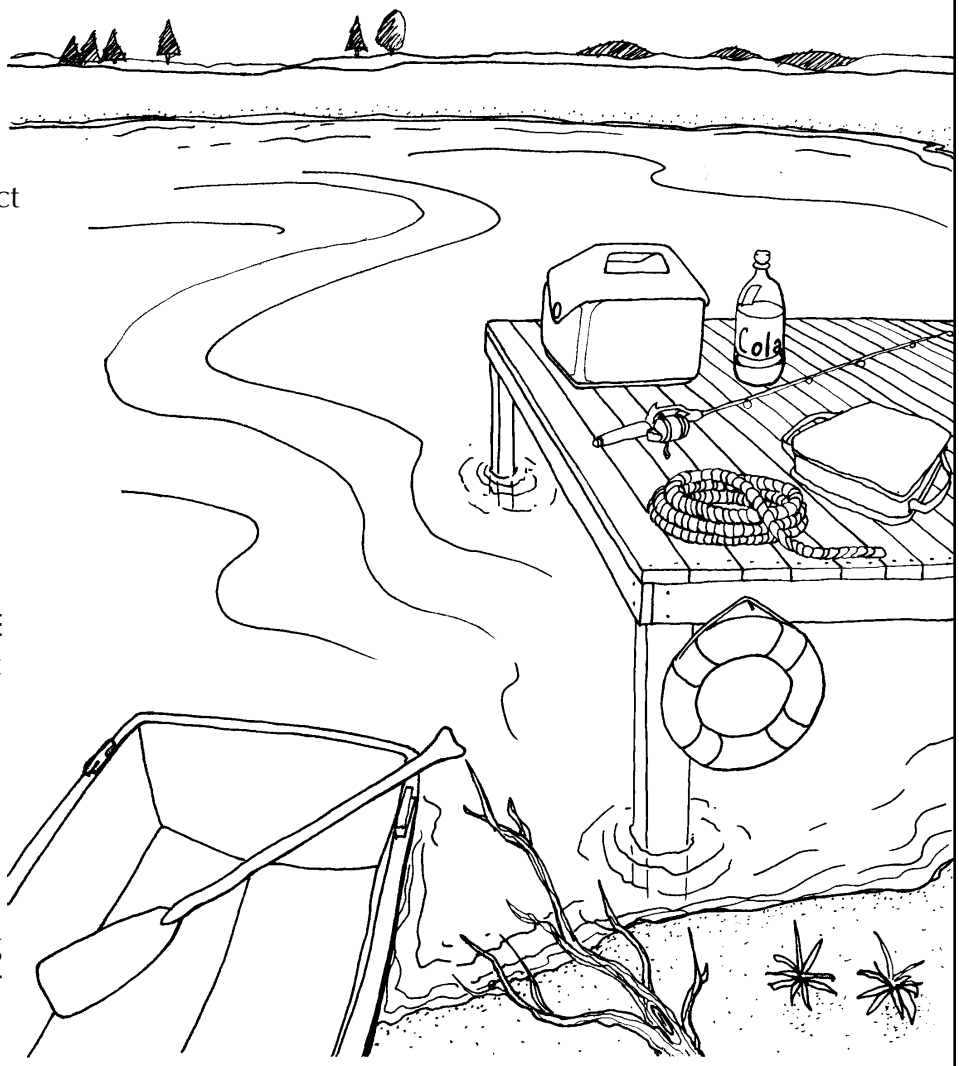
Water Temp (F)	Exhaustion or Unconsciousness	Survival Time
32.5˚	Under 15 minutes	15-45 minutes
32.5˚-40.0˚	15-30 minutes	30-90 minutes
40˚-50˚	30-60 minutes	1-3 hours
50˚-60˚	1-2 hours	1-6 hours
60˚-70˚	2-7 hours	2-40 hours
70˚-80˚	3-12 hours	3-indefinite
Over 80˚	indefinite	indefinite

When the water is cold, be especially careful not to get wet. Exposure to cold water can result in **hypothermia**, lowering of the body's normal temperature due to exposure to cold. Hypothermia can be very dangerous and can even lead to death.

(courtesy of U.S. Power Squadron)

Save A Friend

Below is a picture of a popular fishing spot. If you were there fishing with a friend and suddenly your friend fell in the water, what would you do?



Throw **Go**

Reach **Row**

Put these actions in the correct order you should take.

1. _____

2. _____

3. _____

4. _____

Using the items pictured at right, draw a **CIRCLE** around the things you could use to reach for a friend. A **SQUARE** around items that would float and that you could throw. A **TRIANGLE** around the things you could use to row out to your friend.

CAUTION: Avoid trying to swim to someone in danger. Only after reaching, throwing and rowing should you go for help.

Don't Fool Around Fishing
Fishing Safety Tips:

- Check the weather conditions for the day. Avoid bad weather.
- Always fish with a friend and let an adult know where you are and when you will return home.
- Handle fish carefully.
- Carry a first aid kit.
- Learn CPR (Coronary Pulmonary Resuscitation) and mouth-to-mouth resuscitation.
- Allow enough space between and around you and others before throwing (casting) your line/hook into the water. Practice safety before casting.

(Answers in the Instructor's Guide)

See What You Know!

1. PFD is an abbreviation for _____.

2. A throwable type of PFD is designed to be worn on your back.

   True _____ False _____

3. List the following rescue steps in their correct order. Next to each step name an item that could be used to help save a person in danger of drowning.

   a. ___ Row _____

   b. ___ Go _____

   c.___Throw _____

   d.___Reach _____

4. A lowering in a person's body temperature due to exposure to cold is known as _____.

   a. hypothermia b. hydroponics c. pneumonia

5. According to the chart on page 27, how long can a person survive if exposed to water 55 degrees Fahrenheit? _____.

6. Never swim out to rescue someone in danger of drowning unless you are trained in life saving techniques. True _____ False _____

7. Name three safety tips good sportsmen follow when fishing:

   1. _____

   2. _____

   3. _____

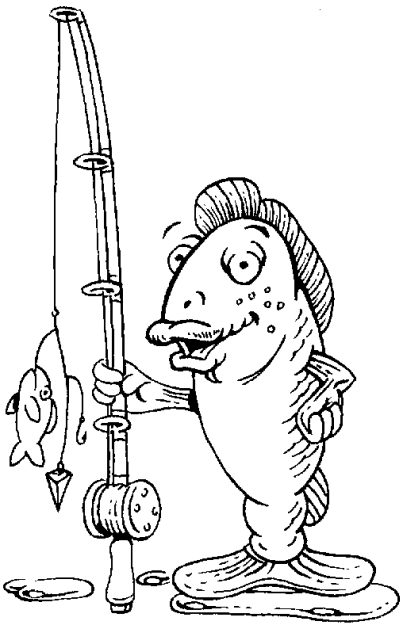
(Answers in the Instructor's Guide)

Fishing Skills And Equipment

Choosing the right equipment and learning to use it correctly will increase your chances of catching fish.

There are several types of fishing rods. Sometimes people call fishing rods "poles." The cane pole is the only real fishing pole. It is the simplest and least expensive way to fish. It is often used to catch panfish such as bluegill and crappie.

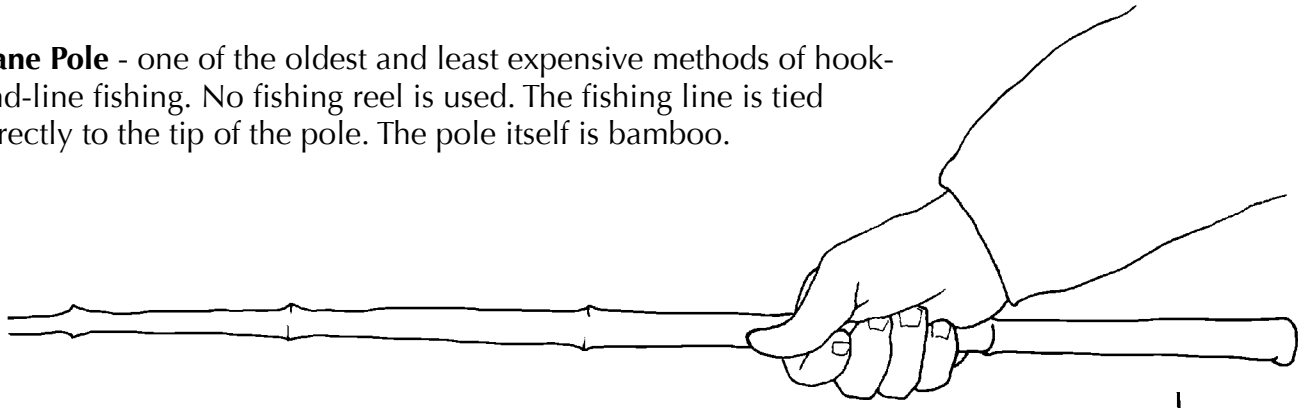
Most fishermen use rods in combination with fishing reels. There are four basic types of rod-and-reel combinations. They are **spinning**, **bait-casting, spincast** and **fly reel**.



I thought a big rod and reel would guarantee a big dinner.

Fishing Poles And Tackle

Cane Pole - one of the oldest and least expensive methods of hook-and-line fishing. No fishing reel is used. The fishing line is tied directly to the tip of the pole. The pole itself is bamboo.



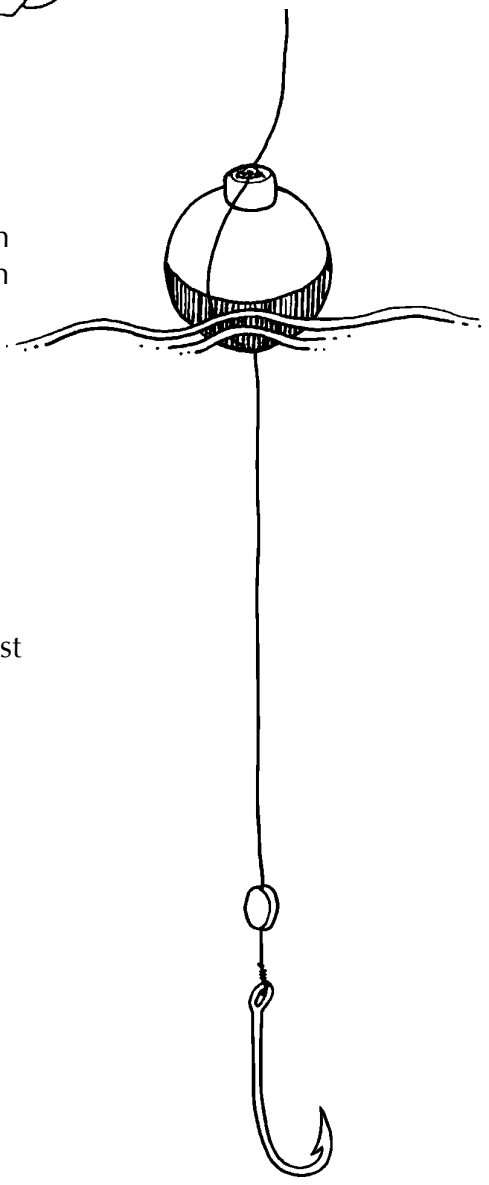
Fishing Line
Fishing line (for example - monofilament) comes in breaking strengths that correspond to the size of fish you are trying to catch.

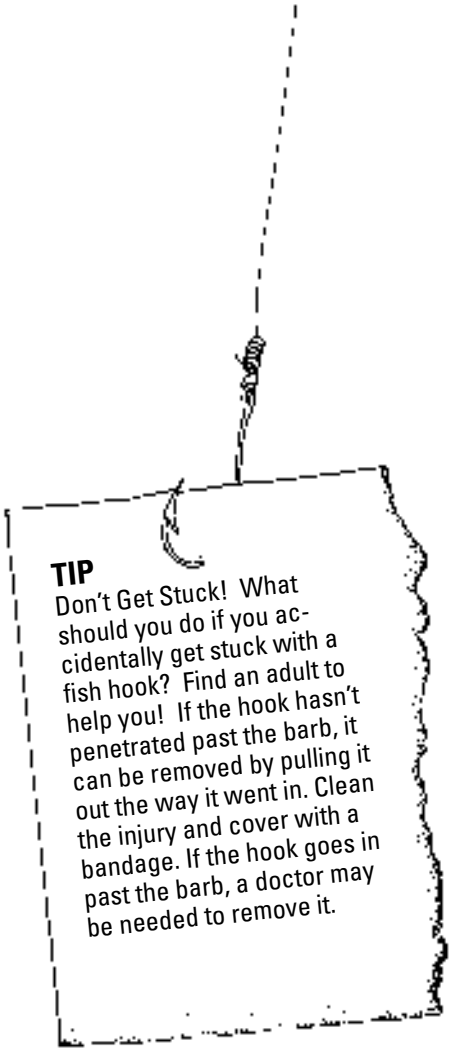
Examples: A 6-pound-test line might be used to catch a smaller fish like crappie or bluegill. A 15-pound-test line might be used to catch a larger fish like bass or catfish.

A number of items are used on a fishing line to help you catch fish. **Bobbers**, **sinkers** and **hooks** are called **terminal tackle** and come in various sizes, weights and shapes.

Bobber
The **bobber** is a floating object that is used to keep your bait off the bottom and let you know when a fish is on your line. When a fish bites the hook, your bobber will twitch, then go under the water. When it goes under, jerking your line will set the hook and will most likely result in catching a fish.

Bobbers can be made of plastic, cork or wood. Round plastic bobbers are most common. You can adjust the depth of your bait by moving the bobber up or down on the line.



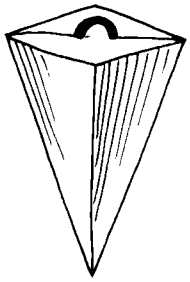


TIP
Don't Get Stuck! What should you do if you accidentally get stuck with a fish hook? Find an adult to help you! If the hook hasn't penetrated past the barb, it can be removed by pulling it out the way it went in. Clean the injury and cover with a bandage. If the hook goes in past the barb, a doctor may be needed to remove it.

Sinkers/Weights

Sinkers (lead weights) sink your bait to the desired depth and hold it there. The split shot is a common sinker used in freshwater, and the pyramid sinker is used in saltwater by surf fisherman along the coast.

Split Shot

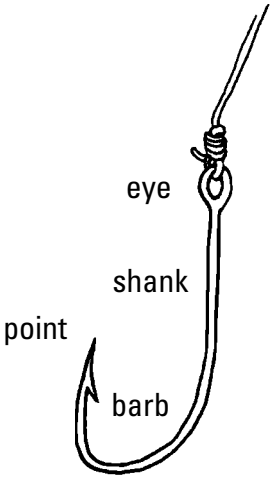


Pyramid Sinker

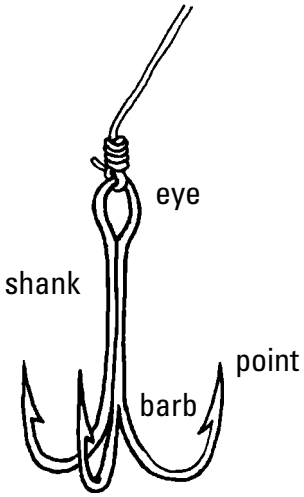
Hooks

To catch a fish, you need a **hook** at the end of your line. Would you use the same size hook to catch a bluegill that you would to catch a shark? Of course not! Choose the size and kind of hook you use according to the kind of fish you plan to catch.

Hooks must be sharp to work. Sharp hooks are also dangerous, so handle them with care.

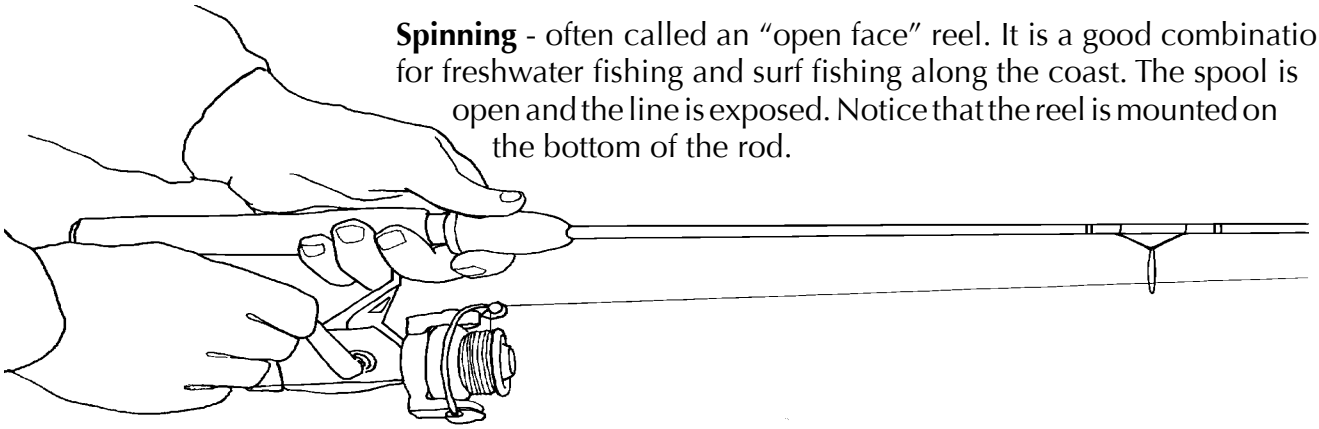


Single Hook

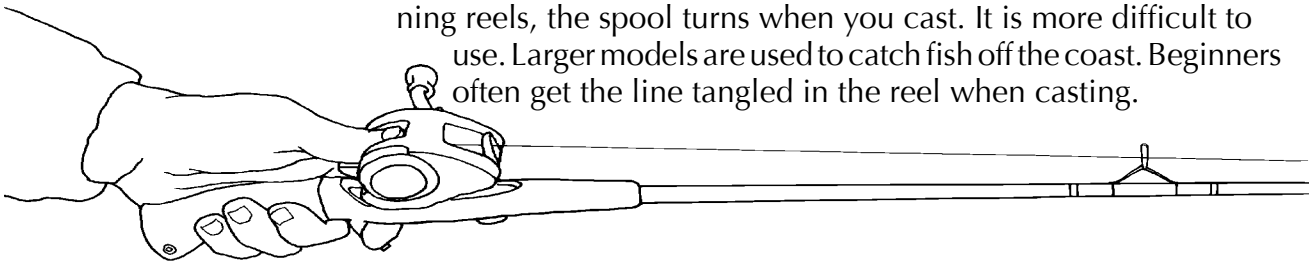


Treble Hook

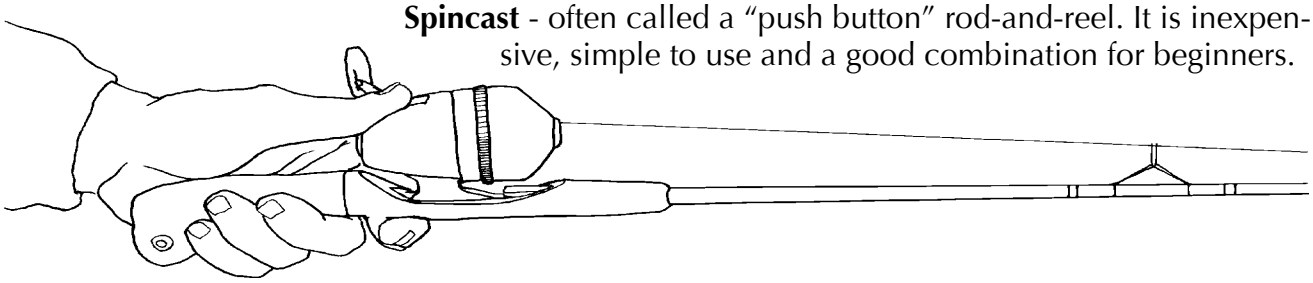
Rod-And-Reel Combinations



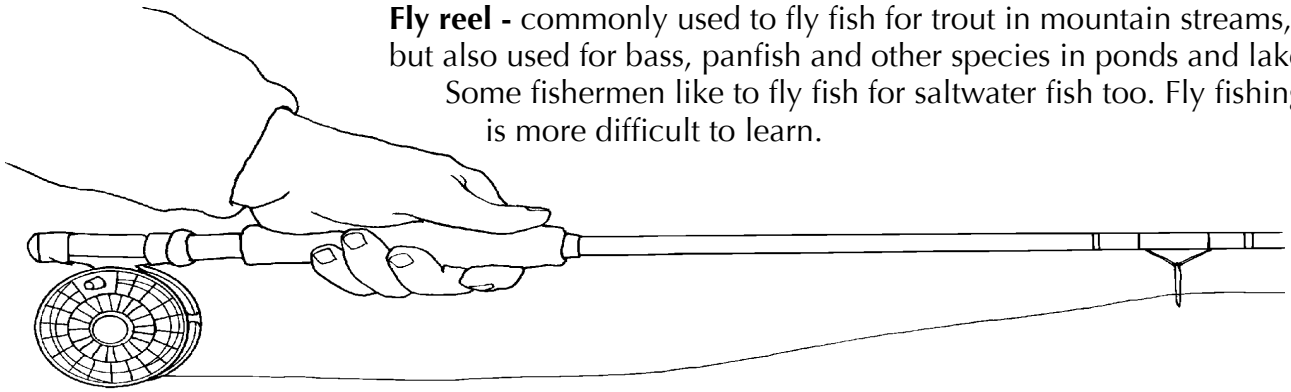
Spinning - often called an "open face" reel. It is a good combination for freshwater fishing and surf fishing along the coast. The spool is open and the line is exposed. Notice that the reel is mounted on the bottom of the rod.



Baitcasting - also called a revolving spool reel because, unlike spinning reels, the spool turns when you cast. It is more difficult to use. Larger models are used to catch fish off the coast. Beginners often get the line tangled in the reel when casting.



Spincast - often called a "push button" rod-and-reel. It is inexpensive, simple to use and a good combination for beginners.



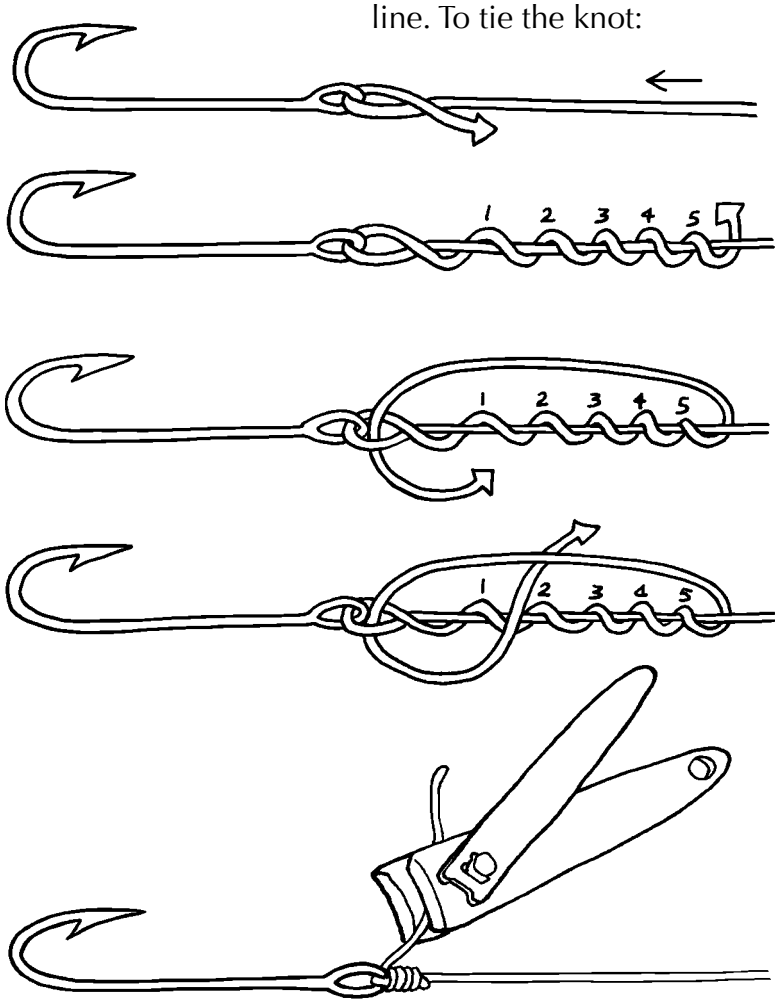
Fly reel - commonly used to fly fish for trout in mountain streams, but also used for bass, panfish and other species in ponds and lakes. Some fishermen like to fly fish for saltwater fish too. Fly fishing is more difficult to learn.

Fishing Knots

Have you ever been fishing and hooked a fish only to have it get away? Many times it is because the knot you used was not the right one, the knot was tied poorly or the knot had weakened over time and needed retying. Let's learn to tie a simple, strong fishing knot, known as the modified clinch knot.

Tie A Modified Clinch Knot

This knot is easier to tie than it is to pronounce! The modified clinch knot is used to attach hooks and lures to the end of your line. To tie the knot:



1. Thread the line through the eye of the hook. Pull enough line through the hook eye to tie the knot.

2. Hold the hook eye between your thumb and forefinger to secure the line. Wrap the line around itself at least 5 to 7 times.

3. Bring the end of the line through the small loop formed in front of the hook's eye. This will form a larger loop. Do not thread it back through the hook eye.

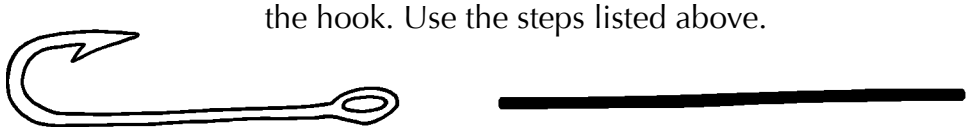
4. Bring the end of the line back through the larger loop. Pull the line tightly to close up the loops and complete the knot.

5. After the knot is complete, cut off excess line with clippers.

CAUTION: Never try to bite off excess line with your teeth.

Now You Tie It!

Use a pencil to draw a modified clinch knot to connect the line to the hook. Use the steps listed above.



Bait

There are two basic kinds of bait—**natural** and **artificial**.

Natural Baits

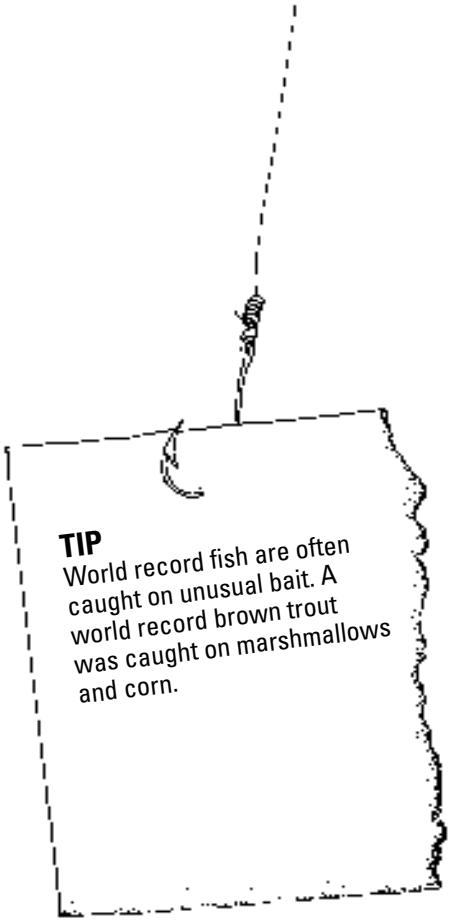
Natural baits are any kind of bait that can be digested by a fish as food, especially foods the fish might find in the water. Some baits like cheese, corn, tiny marshmallows and chicken liver are obviously not food in the water. However, they are still considered natural baits because they are edible and can be digested by the fish. Natural bait should be kept in a cool place to prevent spoiling.

Artificial Baits

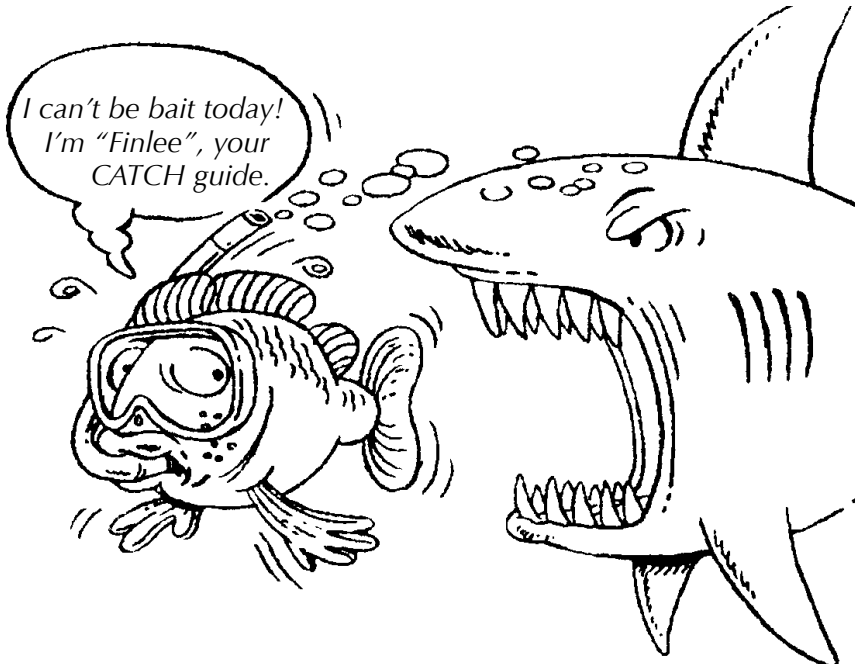
Artificial baits, also called **lures**, are inedible and made of plastic, wood, metal or rubber. Many resemble different kinds of food that fish eat. Some artificial lures wiggle. Some make noises under water to attract fish without imitating any specific natural food.

For more information about fishing with artificial lures and the types to use in your area:

- ask an experienced fisherman
- go to a local bait and tackle shop
- check out one of the references listed in the back of this book.



TIP
World record fish are often caught on unusual bait. A world record brown trout was caught on marshmallows and corn.

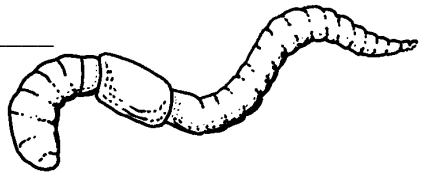


Natural Or Artificial

Below are different types of bait used to catch fish. Under each type of bait, write the letter **A** if the bait is artificial or the letter **N** if the bait is natural.

earthworm

1. _____

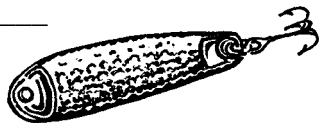


cricket

2. _____

spoon

3. _____

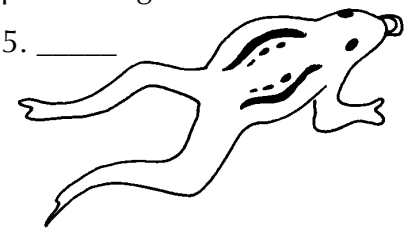


catalpa worm

4. _____

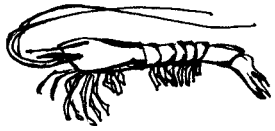
plastic frog

5. _____



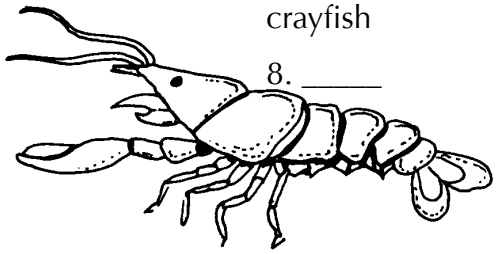
shrimp

6. _____



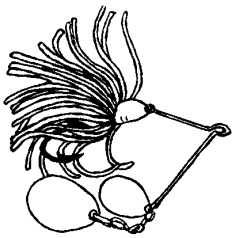
crayfish

8. _____



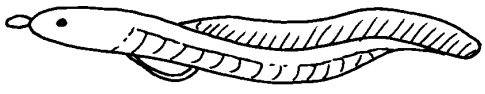
spinner bait

7. _____



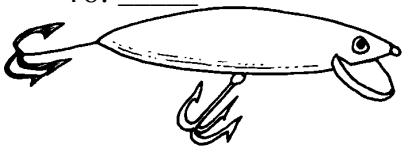
plastic eel

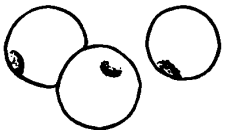
9. _____



plug

10. _____





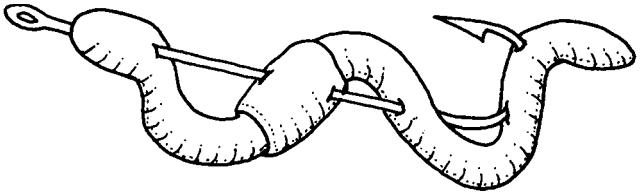
salmon eggs

11. _____

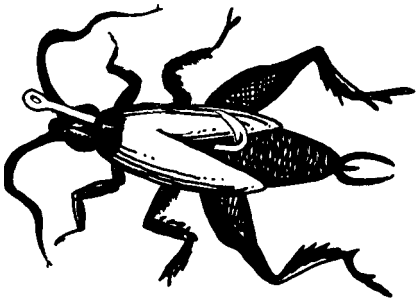
(Answers in the Instructor's Guide)

Using Natural Bait

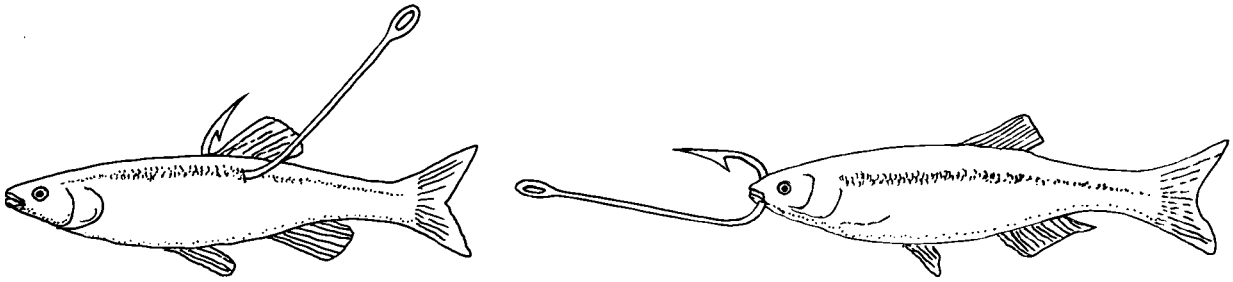
How you put the bait on the hook may be as important as the type of bait you choose.



Worms should be threaded on the hook. If you hook a worm only once, it can wiggle off the hook or a fish will steal your bait. Some fishermen believe you should hide the point of the hook in the worm.



Hook crickets in their bodies. Place the hook just behind the head under the "collar" and through the back. This method will keep the cricket on the hook.



Minnows can be hooked through the back or through both lips. Either method keeps the minnow alive and moving to attract fish.

Word Puzzle

Find the following words in the puzzle. The words are vertical, horizontal, backward and forward.

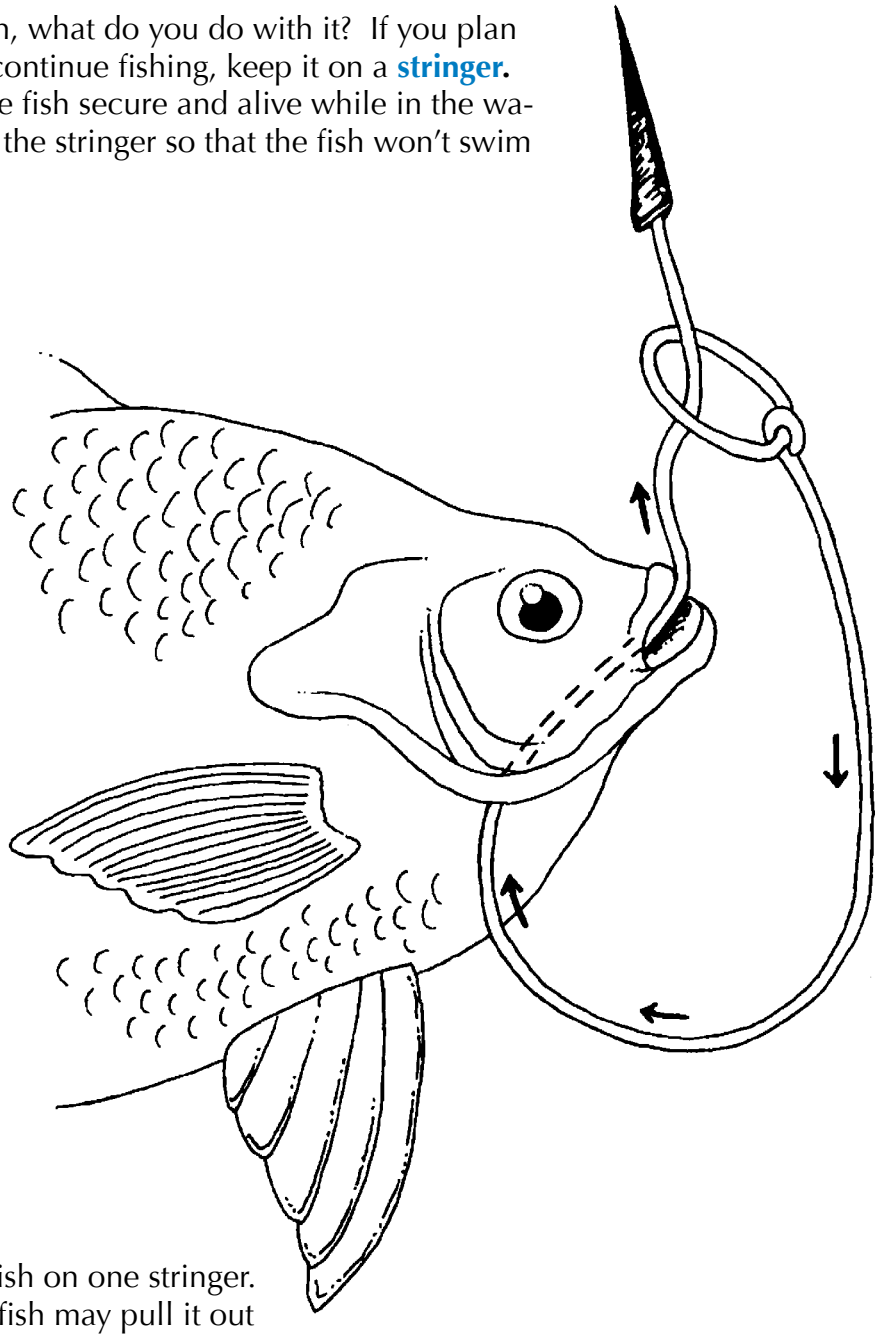
rod	reel	fishing	bait	artificial
spinning	hook	bobber	sinker	natural
worms	knot	tackle	weight	stringer
catch	lure	aquatic	bass	shark

S P C A T C H E W Q T E R S K O O H A T
G H C M N O V Z A F R E E L S C H C H E
R P M A I G V F I S H I N G D S W Z P O
M N W R I C R E P D C G Z E C U E M E C
N Y P T E S E T T A O R O D O C I Y I T
A E A I C E L D D W P M T I W W G C U A
T M W F S T O M N O P E R B E R H W B C
U M W I Q X N T E R P E R A T U T E I K
R E V C R D H Y P M T H E R M I A S E L
A T U I W T E D I S P I N N I N G P R E
L E N A A C C E Y T E F C I T A U Q A Y
J L S L S B O B B E R X C W A P M N I E
T E M I T U M E A X M J T O N K L P O I
S T R I N G E R E I O G T X W T I O V E
F R G U E U X B E S J T D C Z L U R E S
M U R V B J A C G B E U M C E E S W I M
E S H A R K Q O T A F G K L S S A B V B
F C E L A Y U B I I R M L T Z R I O J Y
R V Y B G E J G F T X Z X S I N K E R J

(Answers in the Instructor's Guide)

Care Of The Catch

Once you catch a fish, what do you do with it? If you plan to keep the fish and continue fishing, keep it on a **stringer.** Stringers will keep the fish secure and alive while in the water. Be sure to secure the stringer so that the fish won't swim away with it.

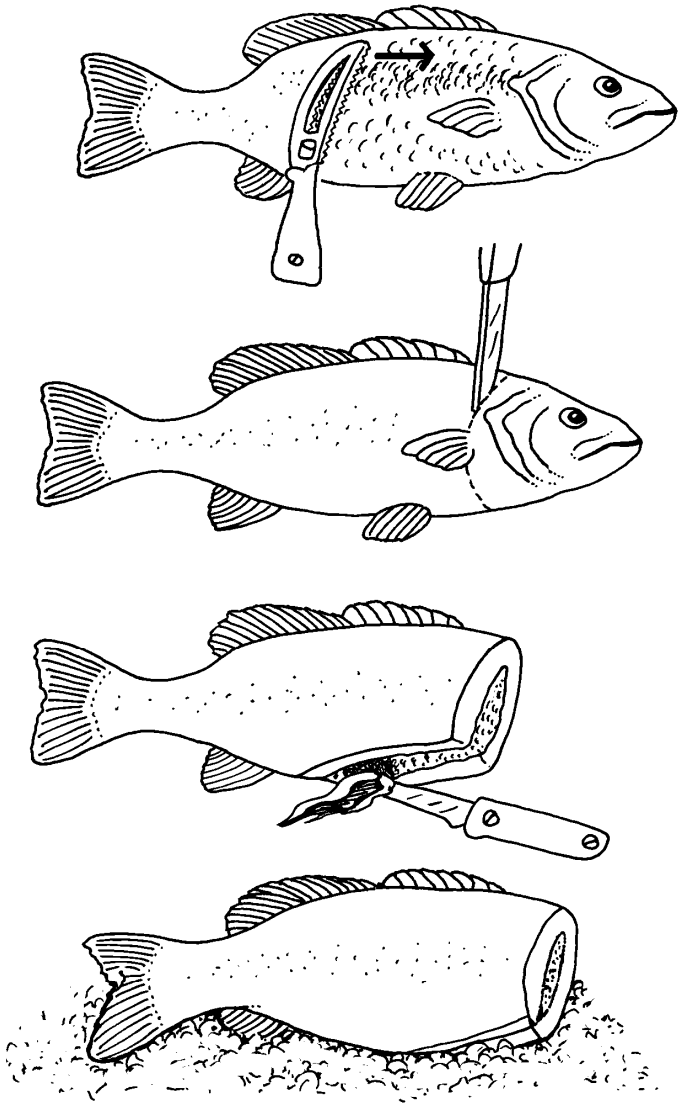


Remember:

Don't put too many fish on one stringer. It might break or the fish may pull it out of the bank. Do not use a stringer in warm water. The fish may spoil. If the water is too warm, put the fish on ice in a cooler.

Fish should be cleaned as soon as possible and placed in the refrigerator or on ice until eaten. There are several ways to clean a fish depending on the kind of fish and how you plan to prepare the meat.

Dressing A Fish



1. Use a fish scaler. Hold the tail firmly and scrape the scales off working from tail toward the head.

2. Remove the fish's head by cutting across the back and behind the pectoral fins on each side of the fish.

3. Use the knife to remove any remaining organs.

4. Rinse the fish with fresh water, then place on ice.

This is only one way to dress a fish. Other popular methods are filleting and skinning. For information on fish preparation, check out a book on outdoor or fish cookery from the library.

If you plan to cook your own catch, get an adult to help you. Do not cook with hot grease on your own. It can be dangerous. Be careful when using sharp knives.

See What You Know!

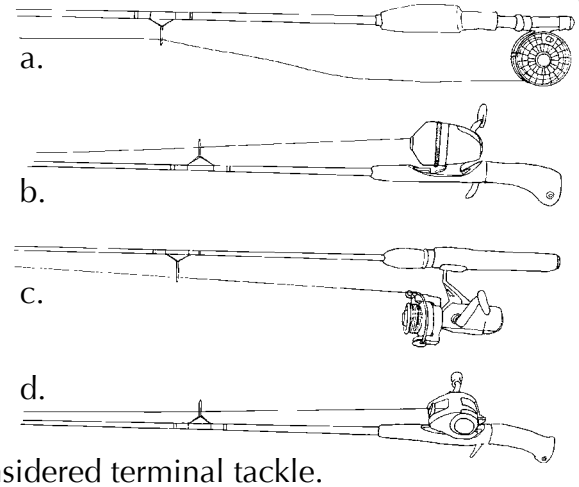
1. Match the proper names on the left to the illustrations on the right.

spinning _____

baitcasting _____

spincast _____

fly reel _____



2. Name two items considered terminal tackle.

1._____

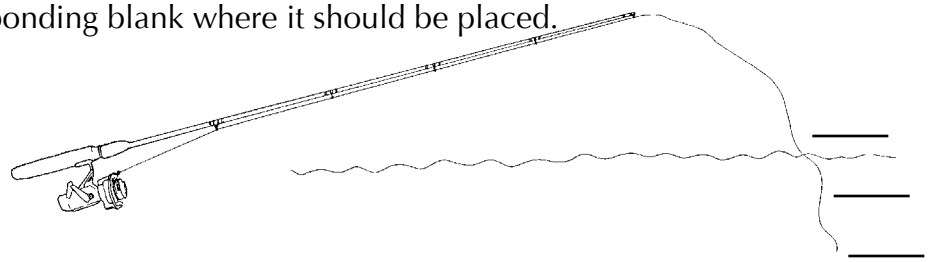
2._____

3. Below is a rod and reel without terminal tackle. Write the letter of the tackle item in the corresponding blank where it should be placed.

a. hook

b. sinker

c. bobber



4. A modified clinch knot is used to attach one line to another.
True _____ False _____

5. Natural baits are those baits that can be digested by a fish as food.
True _____ False _____

6. Name two examples of natural bait.

_____ _____

7. We should go fishing because:

a. Fishing doesn't require a lot of money or equipment.

b. Fishing is easy to learn.

c. Fishing can be done any time of the day, during any season and almost anywhere.

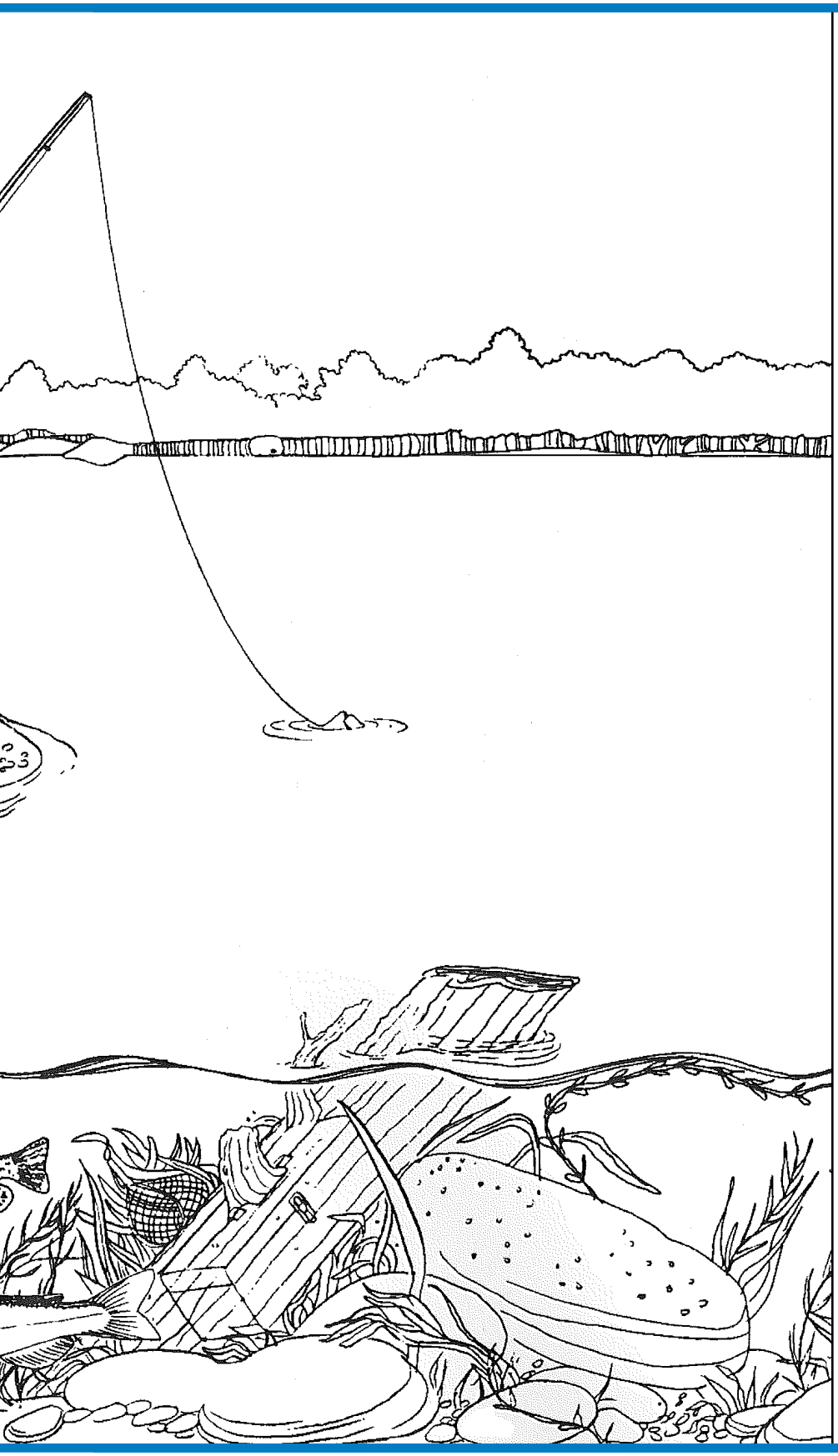
d. Fishing is FUN!

e. All of the above.

Find It!

This illustration represents a farm pond, a common aquatic habitat found around the state.

Try to find the hidden objects in this picture. Look for a fish, boat, tackle box, worm, bobber, dragonfly, popping lure, landing net, jar, spinnerbait, pliers and two fishing hooks.



Can you identify these fish?

1. _____
2. _____
3. _____
4. _____

(Answers in the Instructor's Guide)

Fish Tales

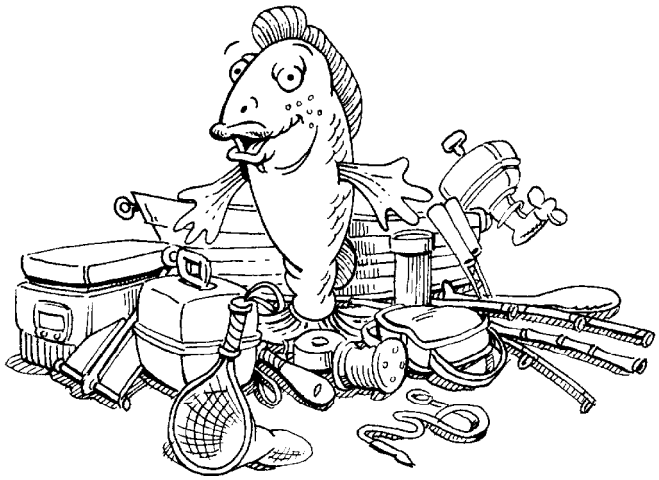
Attach photographs of your fishing trips or magazine illustrations of fishing equipment you would like to have (Tackle Wish List) or pictures of your family members' catch. Ask family members to help you find pictures.

or

Use this space to write a story about your favorite fishing trip.

✓ Fishing Checklist

- ❑ Good sportsmanship and safety
- ❑ Cane pole or rod and reel
- ❑ PFD
- ❑ Fish stringer
- ❑ Tackle box
- ❑ Hooks
- ❑ Sinkers or weights
- ❑ Bobbers
- ❑ Extra line
- ❑ Natural bait
- ❑ Artificial lures
- ❑ Clippers
- ❑ Needlenose pliers
- ❑ Hand towel
- ❑ Plastic garbage bag
- ❑ Old tennis shoes
- ❑ First aid kit
- ❑ Drinks and snacks
- ❑ Insect repellant
- ❑ Sunglasses and sunblock
- ❑ Cleaning knife
- ❑ Fish scaler
- ❑ Cooler with ice



Let's Go Fishing!

Glossary

acid rain - rain that has picked up particles of sulfur dioxide and nitrogen oxide.

adaptation - the biological process of making adjustments to fit the environment.

artificial bait - inedible bait that cannot be digested by fish; usually made of plastic, wood, metal or rubber.

aquatic - growing, living in or frequenting water.

barbels - whiskers on certain fish, such as a catfish, that allow them to feel and smell for food along the bottom of rivers and lakes.

brackish - water containing both salt and fresh water.

camouflage - to conceal or hide by blending in with the environment.

catch and release - a practice used by sport fishermen in which the fish is caught and released unharmed.

conservation - the wise and intelligent use and protection of natural resources.

creel limit - the number of fish, by species, that can be caught and kept legally in one day.

ecosystem - all living things and their environment linked together by the flow of food and energy in an area of any size.

ethics - a set of personal rules. Good sportsmen obey an outdoor code of ethics that includes courtesy, good manners, honesty and consideration.

estuary - water passage where the sea tide meets a river current.

fins - wing-like extensions on a fish's body that allow movement through the water.

food chain - the transfer of food energy from the sun to plants through a series of animals, from repeated eating and being eaten.

food web - an interlocking pattern of food chains.

gills - an organ that allows an aquatic animal to breathe in water. Gills remove oxygen that is dissolved in the water.

habitat - the arrangement of food, water, air, shelter and space that meets an animal's or plant's needs.

hypothermia - a lowering of the body's temperature that can result in injury or death. Occurs quickly in cold water where body heat is lost more rapidly than in cold air.

inlet - a narrow water passage connecting two bodies of water (a sound and the ocean).

lateral line - a series of enlarged cells along the side of a fish that sense vibrations in the water.

litter - trash or garbage lying scattered about.

loss of habitat - favorable conditions necessary for wildlife survival are reduced or destroyed by a variety of causes such as development erosion or oil spills.

lure - artificial bait used to catch fish.

marine - of or found in the sea.

microscopic - very small.

migration - the periodic movement of fish from one area to another and back again as a natural part of their life.

natural bait - bait that is nutritionally beneficial to fish and comes from natural sources (crickets, worms, meat, minnows, etc.).

organism - a living thing.

otoliths - internal ears buried beneath the skin on either side of the head of the fish.

PFD - personal flotation device used to prevent a person from drowning.

plankton - small plants and animals that can be seen only under a microscope (microscopic).

pollution - harmful materials in the air, water or land, that cause the environment to be dirty, unhealthy or hazardous to living things.

predator - an animal that kills and eats other animals.

prey - an animal that is killed and eaten by another animal.

reproduce - to produce offspring

scales - protective body covering found on most fish species.

size limit - the limit on how big a fish must be to keep.

slime - a moist secretion found on scales in order to protect fish from disease.

sound - a body of water separating two bodies of land in a coastal area (usually separates mainland and an island).

spawn - when fish reproduce.

species - a population of individuals that is more or less alike, and that is able to breed and produce offspring under natural conditions.

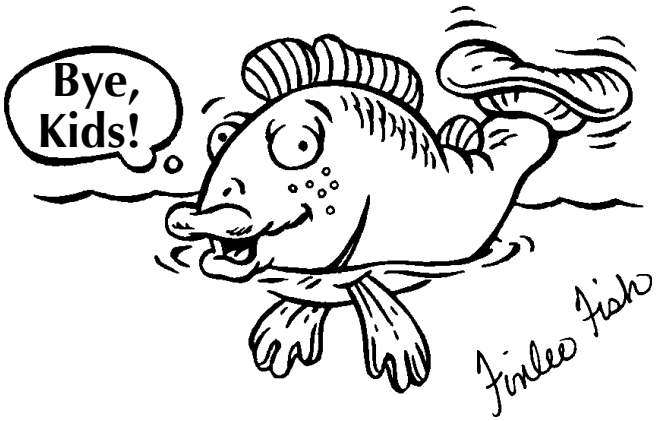
stringer - a cord or rope used to secure fish that have been caught.

terminal tackle - parts of fishing equipment including the sinkers, bobbers and hooks that attach near the end of fishing line.

terrestrial - growing, living on or frequenting land.

Fisherman's Code Of Ethics

1. Know and obey all conservation laws.
2. Inform others of the laws and insist that they obey them.
3. Be courteous to others in the outdoors.
4. Keep only the number of fish you need, and never more than the legal limit. Release all others.
5. Always ask permission before going onto private lands.
6. Never litter. Leave an area cleaner than you found it.
7. Treat others the same way you want them to treat you.
8. Report fish and wildlife violations to:
   N.C. Wildlife Resources Commission 1-800-662-7137
   Division of Marine Fisheries 1-800-682-2632



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This is to certify that_____

has completed the Caring for Aquatics Through Conservation Habits (CATCH) program.

Given this ____ day of_____,20____.

_____ _____

CATCH

North Carolina Wildlife Resources Commission