

# **UNIT 8:**

## **Survival of the Fishes**

## *Teacher's Notes*

# Survival of the Fishes

All individual animals share the same basic needs for food, water, shelter, and space. Survival of their kind also requires others of the same species. How and where animals meet these needs, however, varies tremendously. Fish must meet them in an aquatic environment and have developed many different ways of doing so. This activity focuses on how one species of fish, the large mouth bass, meets its needs.

Largemouth bass are found in warm, shallow waters of small lakes, shallow bays of larger lakes and occasionally in larger, slow-moving rivers.

### **Food:**

Depending on size, largemouth bass will eat plankton, other fish, crayfish, insects and frogs.

### **Water Quality:**

Since fish live in water, this need must be refined to include the type and quality of water each fish species can or will live in. Largemouth bass prefer warmer water (26° to 28°) and can tolerate quite high temperatures (above 35°). At that point, they will become inactive and rest in the shade. They avoid low oxygen levels (dissolved oxygen levels of below 1.5mg/L) but can tolerate slightly turbid water.

### **Shelter:**

Largemouth bass lurk among stumps and both submerged and emergent vegetation, particularly water lilies and cattails.

### **Space:**

Largemouth bass need a space about 9 m in diameter around each nest for reproduction.

### **Others:**

Spawning occurs from late spring to mid-summer in a nest among the vegetation swept clean by the male. 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.



# Survival of the Fish

## Overview of Activity:

Students will relate their own basic needs to those of a mystery animal (large mouth bass), and discover through small group work that it is a largemouth bass.

## Outcomes:

- Determine the difference between a need and a desire
- List at least three basic needs shared by all animals
- Show how those needs are met by both humans and at least one kind of fish

## Purpose:

In this activity, students first clarify their own needs, and how they differ from wants, things like music and TV (which they may desire, but can survive without). Then they make a link to the needs of largemouth bass through a set of cards showing the types of food, water and shelter that they require. In small groups, students will probably come up the "fish" as the mystery animal, and use the puzzle pieces to find out which fish. For older students, no help may be necessary. For younger students, the number on each piece run left to right in rows of four, i.e. 1,2,3,4, then 5 under 1,6 under 7 and so on.

### **ACTIVITY 1**

#### Materials Needed:

- Student worksheet 1,2 and 3
- "Fish of Ontario" poster

#### Procedures:

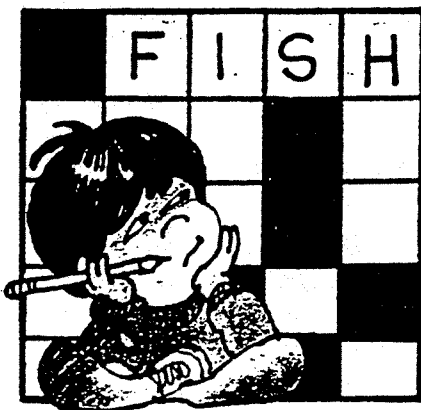
1. Have students hold their breath. As they hold it, have them think about how they feel —what is their body telling them they need to do?
2. Ask, "what else does your body do to tell you what you need?" (thirst: liquids/water; hunger : food; cold: clothing/shelter) Accept all answers. Other possibilities include: loneliness-other people (parents) and feeling crowded (space)
3. Ask if there's anything else that they need to live. Accept all answers. Go through the list and have them eliminate things that they can live without, even though they may not want to. Have them group similar things into the smallest number of categories, and label them as basic needs.

4. Note that all living things have similar needs. Divide the class into groups of five or six, and put each group near its card area. Tell each student that their task is to discover the identity of a mystery animal by finding one (and only one) card in their area from each of three different needs (food, water and shelter/space). If you have six in a group, ask students who can't find all three needs to join together to make a set. When they've found them, they should each make a guess as to what kind of animal it is, and write or draw that animal. Note: The Teacher Resource Sheet provides a key, but the pictures are general enough for several interpretations. Probe for why the student thinks an item is food, water or shelter
5. Ask the students to share their guesses about the animal. Then have them look at all the need cards together, and try to decide as a group what kind of animal it is.

6. Once they've decided, or have settled on two or three answers, have them turn the cards over, or distribute separate cards from Student Worksheet 2, and assemble the picture that is printed on the back. Have them compare the picture to the fish cards, or "Fish of Ontario" poster to find out exactly what kind of fish it is.
7. Review the needs for largemouth bass as indicated by the cards, and explain that, while other kinds of fish have the same needs, they may meet them in different ways, e.g., with other kinds of food and shelter.

#### ACTIVITY 3

1. The need for space will vary by species and, at times, by what the fish is doing.
2. You can illustrate this by having students stand together as if to sing a song (or sing one).
3. Then, within the same amount of space, have them try to untie and retie their shoe (those without shoe ties can simulate this by trying to tie a piece of string around their ankle). Or have them try to lie down and nap in the same space.



#### ACTIVITY 2

1. If you have an aquarium, examine how you help meet the basic needs of the fish in it:
  - **Food:** What's in it? How often are the fish fed?
  - **Water:** What's done to keep it "good" (Aeration, filters, heater)
  - **Shelter:** How do the fish use the rocks, plants, and ornaments? Do they hide from one another? From you?
  - **Space:** Find out how many fish should be kept in your aquarium, and why? Do you have too many? Do they appear "crowded"?
  - **Others:** If you have more than one kind of fish do fish of the same kind stick together? Students could time how long they interact with (swim with, chase, etc.) their own kind and other kinds of fishes. Livebearers or nesting fishes provide an opportunity to discuss reproductive needs.

#### ACTIVITY 4 (Outside of Class)

1. Students can experience some of the difficulties a male bass goes through in guarding his nest.
2. Choose about one student in six to be a male bass. He must guard his "eggs" (a pile of stones or other small objects) from predation by crayfish, dragonfly and diving beetle larvae, golden shiners and various sunfish (the other students).
3. He does this by tagging each predator, who then must drop any egg, retreat and start again.
4. Scatter the bass at least 3m apart and allow the predators to circulate among them. If the bass are too efficient, require them to leave the nest periodically in order to pick up food scattered on the edges of their nesting territory (two to three food tokens per round). Discuss why large mouth bass sometimes lay up to 100 000 eggs (4400 to 15 400 per kg of female)

#### Possible Extensions:

1. Have students research the basic needs of other fish and create their own needs game.

### Student Performance Criteria
















Students will be able to identify the basic needs of all animals. They should be able to use the proper terminology: food, water, shelter and space. Students should also be able to identify their own basic needs compared to a largemouth bass.

### Discussions:

Have students draw and explain similar human and largemouth bass needs, using Student Worksheet 3 or their own format. In Student Worksheet 3, each set of needs should be side by side, i.e., human and fish needs for food, water, shelter, space and others.

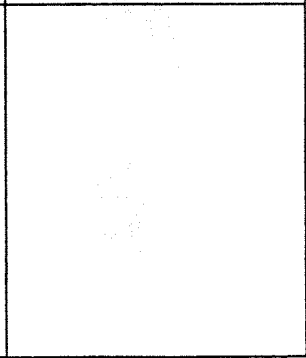
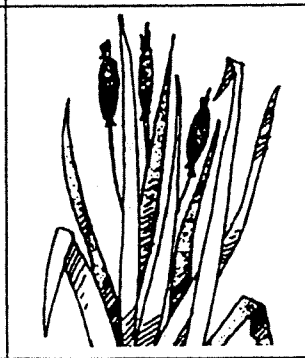
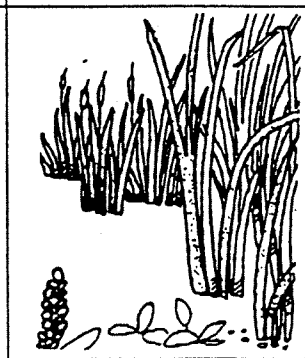
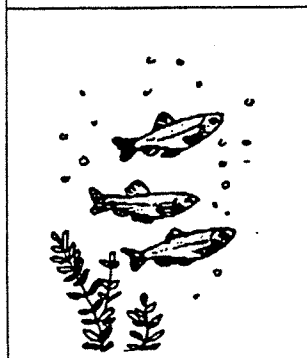
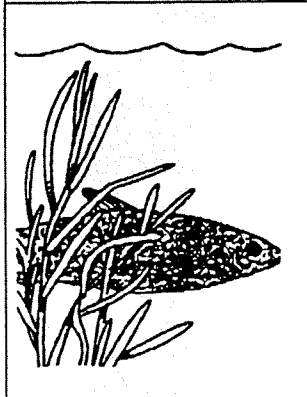
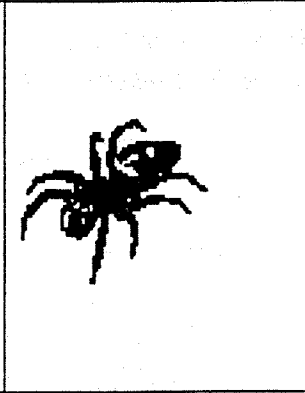
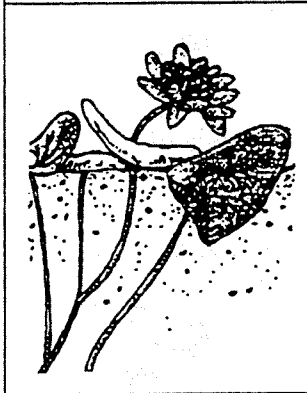
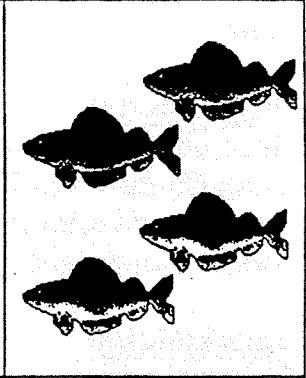
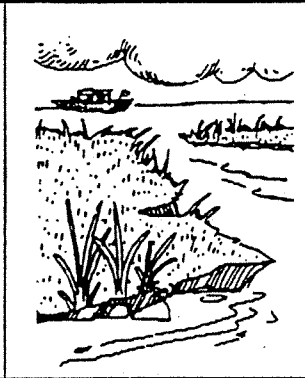
### Conclusions:

Students become familiar with their own basic needs those of the animals around them through the use of the largemouth bass. They also develop an understanding of the survival needs of fish.

Survival of the Fishes Fishes Needs Key Teacher's Notes			
Food 	Water 	Shelter 	Food 
Water 	Shelter 	Food 	Water 
Shelter 	Food 	Water 	Shelter 
Food 	Water 	Shelter 	

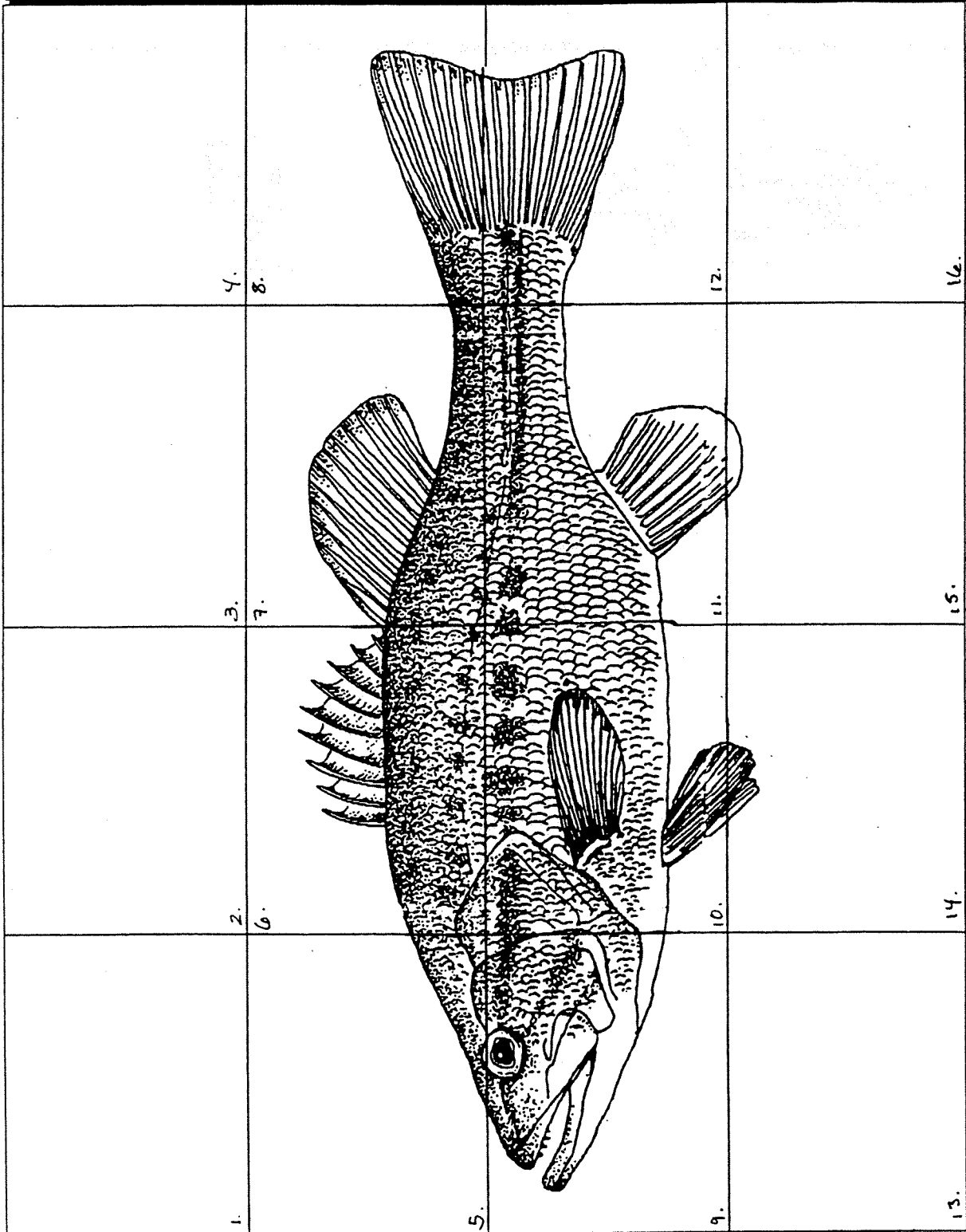
# Survival of the Fishes

## Student Worksheet: 1 Fishes Needs



# Survival of the Fishes

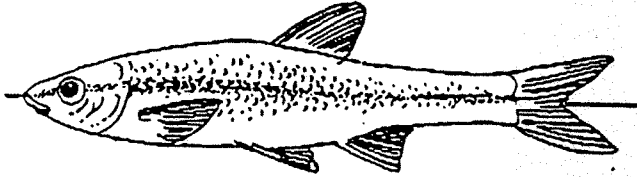
## Student Worksheet 2: Mystery Fish



# Survival of the Fishes

## Student Worksheet 3

Fish



Person

