



GO FISH

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Objectives

Participating young people and adults will:

- 1. Identify and describe food, water and shelter as three essential components of habitat.**
- 2. Describe the importance of good habitat for fish and other wildlife.**
- 3. Define "limiting factors" and give examples.**
- 4. Recognize that some fluctuations in wildlife populations are natural as ecological systems undergo a constant change.**
- 5. Define carrying capacity**

Youth Development Objectives

Participating young people will:

- 1. Enhance ability to acquire and analyze information.**
- 2. Enhance problem solving and working with models and simulations.**
- 3. Enhance enjoyment of fishing and other outdoor recreation.**

Roles for Teen and Junior Leaders

- 1. Assist with organizing materials**

Best Time: As an introduction to habitat components, just before management activities in People and Fish.

Best Location: Outside, level playing field. Indoors; gym, large open room.

Time Required: 20-30 minutes

Equipment/Materials

Paper, chalkboard or flip chart to write on
Markers

Safety Considerations.

Area should be level, grass covered. Playing field should be scouted before hand. Hazards such as large rocks, holes, uneven ground should be avoided or clearly identified. As this is a physical activity, leader must work to ensure that the activity level is appropriate.

2. Conduct inspection of site for safety considerations
3. Record keeping
4. Serve as predators in extension activity
5. Serve as fish in simulation

Potential Parental Involvement

1. See “Roles for Teen and Junior Leaders” above.

Evaluation Activities/Suggestions

1. Create tables of limiting factors for common sportfish.
2. Explain how limiting factors influence fishing success.
3. Explain the factors, which influence populations.

References

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Lesson Outline

Presentation

Application

- I. Youth count by fours
- II. Ones become fish
- III. Two’s, three’s and four’s become habitat
- IV. Habitat components
 - A. Food
 - B. Water
Includes water quality, temperature
 - C. Shelter
Shelter from predators, current

Introduction: This activity demonstrates the influence of three of the four habitat components: food, water and shelter (space being the fourth) on populations. Also demonstrates how populations fluctuate and habitat determines carrying capacity.

1. Mark two parallel lines on the ground about 20 ft. apart.
2. **DIRECT** youth to count off by fours. **EXPLAIN** that the ones are now fish and go to one line. The twos, threes, and fours are habitat components and together they line up on the other lineBthe habitat line.
3. **ASK** youth what habitat components are necessary for life. They should say food, water, shelter and perhaps oxygen. **EXPLAIN** that the fish (the 1’s) will need to find food, water and shelter in the habitat. Also **EXPLAIN** that in this simulation, **THEY WILL ONLY NEED TO FIND ONE COMPONENT at a time.** In the

natural world, fish need all components in right amount. When a fish is looking for food, it should **SIGNAL** that by clamping its hands over its stomach. When looking for water, it puts its hands over its mouth. When looking for shelter, it holds its hands together over its head. A fish can choose to look for any one of its needs during each round of the activity. A fish cannot change what it is looking for once it has seen what is available.

4. The 2s, 3s, and 4s are food, water, and shelter. Each youth can choose at the beginning of each round which component he or she will be during that round.. They use the same **SIGNALS** as the fish, and they cannot change in the middle of a round.

5. The game starts with all players lined up on their respective line and with their backs turned to the youth on the other line.

6. The group leader begins the first round by **ASKING** all the youth to choose what they will be and then make that sign.

7. When you see that the youth are ready, count "**ONE....TWO....THREE....GO FISH.**" At that point the youth turn to face each other while they continue to hold their signs.

8. When the **fish see** the habitat component they need, they are to **run to it and tag it**. Each fish must hold the sign until getting to the habitat component person with the same sign. Each fish that reaches its necessary habitat component takes that component back to the "fish" side. This simulates the population increasing. When more than one fish reaches a habitat component, the youth who gets there first survives. Any fish that **fails to find its food, water, or shelter dies and becomes part of the habitat**. That is, in the next round, the fish that died is a habitat component and so is available as food, water or shelter to the fish that are still alive. **Habitat components stay in place on their line until a fish takes them**. If no fish needs a particular habitat component during a round, the habitat component just stays where it is in the habitat line. The habitat person can change which component

V. When needs are met, population increases

VI. When needs are not met, population decreases.

VI. Environmental conditions that change the habitat, change the population.

VII. Predators also serve as limiting factors for their prey. Conversely the prey can limit the predator population.

it is from round to round.

Optional: manipulate the habitat to make more or less of a limiting factor. This simulates drought, floods, and other conditions, which will impact the population.

Optional: add one or two predators to the middle of the playing field. These predators can only catch one fish per round. Compare/contrast population numbers with and without predators.

VII. Biologists calculate population estimates, charts and graphs.

- A. Determine carrying capacity**
- B. Determine limiting factors.**

9. **RECORD** the number of fish at the beginning of the game and at the end of each round. At the end of at least five rounds, **GATHER** the youth together to **DISCUSS** the activity. Encourage them to talk about what they saw. For **example**, they saw a small school of fish begin by finding more than enough of its habitat needs. The population of fish expanded over two to three rounds of the game, until the habitat was depleted and there was not sufficient food, water and shelter for all the members of the school. At that point, the fish starved or died of thirst or lack of shelter and they returned to the habitat.

10. Using the paper and marker, **CREATE A CHART** depicting each round. Numbers of fish are on the vertical axis, while years are the horizontal axis. The number of fish at the beginning of the game and at the end of each round represent the number of fish in a series of years. The beginning of the game is year one and each round is an additional year.

11. **ASK** youth to discuss what happened to the population as the habitat components changed, as the population increased or decreased.

Lesson Narrative

All organisms have specific habitat needs. They will only survive and reproduce in places where those needs are met. How those needs are metBquantity and quality influence the numbers of that organism. That is they limit the population and are called limiting factors.

There are three general categories of needs: food, water (includes water temp, quality etc) and shelter (includes shelter from predators, current). These needs change depending on age of organism. That is the food needs of a very young trout are different than a luncker.

Young fish are more sensitive to changes in water quality than older fish. The habitat components limit the population.

When needs are met, organisms reproduce and the population increases. These are the boom times. The increase in population puts more demands on the habitat. The population will increase until the habitat can no longer support it. The result is fewer organisms have their needs met and those that don't die. Lower populations eventually result in the bust times. The number of organisms that a habitat can support is called its carrying capacity. When that capacity is exceeded, the population decreases to a level that the habitat can support.

Populations in the wild are rarely stable. They fluctuate from year to year and as changes occur in their habitat. That is why biologists look at data collected over many years. But they also collect data on the habitat itself. They can then determine if the habitat is at or near its carrying capacity, or what factors are limiting the population. Obviously, these factors have an influence on fishing. If a habitat could support more fish but doesn't, what can we do? Often regulations are put in place to protect some size fish from being caught.

Other times, not enough fish may be caught and taken from the habitat. Often the best example of this is sunfish populations in small ponds. Sunfish numbers can rise so high that there is not enough food to grow big fish. But there are lots of little ones! Biologists refer to this as a stunted population.

Exhibit or Sharing Suggestions

1. Prepare population graphs, labeling population changes, habitat changes.
2. Demonstrate this activity for other groups.

Community Service and "Giving Back" Activities

Extensions or Ways of Learning More

1. Calculate the actual carrying capacity of this habitat by determining average population.
2. Make lists of major sport fish and their specific habitat needs—food, water and shelter.