Enough is Enough

Real World Ecosystems
Activity
Grade Level: 5-8

Main Objectives

This activity is designed to help learners quickly grasp several key concepts related to ecological populations. It uses important examples such as the classic lynx and hare population cycle, the collapse of the northern cod fishery, and others.

Learning Outcomes

By the end of this activity, learners will:

- Define the term "population"
- Describe several important factors that influence or limit the size of natural populations
- Cite examples of what happens when normal population limits are removed from populations
- Describe the reasons for cycles in certain natural populations
- Describe some methods for estimating populations
- Describe the work of wildlife managers and some of the methods they use
- Explain why the east coast fishery for northern cod collapsed

Length of Activity

3 hours

Materials List

Enough is Enough Backgrounder
Enough is Enough Learner Worksheet
Enough is Enough Learner Worksheet Answer Key

Procedure

Step 1: Backgrounder

a. Provide the learners with copies of the Enough is Enough Backgrounder. Allow the class to read the backgrounder individually or in groups.
b. As learners are finishing up their reading, be sure to remind them to discuss amongst themselves the "Think About" questions at the end of the backgrounder.

Step 2: Worksheet

a. Provide the learners with the worksheet and have them answer the questions as a take-home assignment, or in class.
b. Answers to the worksheet questions can be found in the answer key.

Tips and Extensions

- Provide your learners with small 50cm by 50cm wireframes, and use them to estimate the numbers of different kinds of plants in the schoolyard. They can use them to count the number of grass plants, clover, chickweed, dandelion, or other easily-identified plants that occur in your area. After estimating the numbers of each kind of plant within the sample area, have them measure the size of the schoolyard with a tape measure and calculate the total population of each by extrapolation.
- Invite a local wildlife biologist to your class as a guest speaker. If possible, have them bring some

of the equipment they use in their work, such as radio transmitter-equipped collars, small mammal live traps, and other materials.

Comprehension

You may wish to test learners' comprehension with the following prompts and questions:

- What would happen to a population that has lots of food but too little space? For instance, what would happen if you kept mice in a big cage and fed them all the food and water they could eat? *This experiment was performed many times by different researchers. Generally, the mice grew in numbers to the point where they became so crowded that they started to kill each other. Also, mouse litters became smaller, partly due to the stress of overcrowding. In some cases, the entire population died out because of a disease that was easily spread because of close contact.*
- Some biologists think that by continuing to allow the hunting of grizzly bears in Alberta, we could totally wipe them out here. They say that if their numbers fall to a few hundred animals, even if no more are hunted, they could still disappear. Why? T*he answer has to do with population density. If the bears are reduced to below a certain critical number, they may be too widely separated to find each other during mating season. The result could be falling numbers of newborn cubs, and the natural death rate may be greater than the birth rate. Their numbers would continue to fall until they are completely gone from their range.*
- What are the factors that determine the size of a population of humans living in a town? *The factors are the same as for other animals living in other habitats. The overall population is determined by the number of people, but changes depending on how many babies are born each year, how many people die, how many move in (immigration), and how many move away (emigration).*