

Fishing versus Overfishing

Activity Extension: Fishing Community Simulation

How can communities manage their fisheries? Play a game in which small groups of three to six students receive a plate of 20 peanuts or candies (to represent fish). In each group or “community” each player can go “fishing” in turn by taking 0–3 “fish” (peanuts or candies). There should be no talking. Each player gets two turns.

For round two, replenish the stock in each fishery by doubling the number of fish remaining. Repeat the procedure for a total of three “years” of two turns each. If any group has fished out all of their fish, they are done because the fishery has been wiped out. At the end of the three years fill in the data table (below) for each group.

Once students have been able to observe that if people take fish too rapidly, the population is depleted, each group can play a different variation of the game (give each group a card with directions for a variation). Each group can play its variation for three years, with each player taking two turns per year. At the end of the three years complete the data table.

Group 1: Game with **Information** Provided

If people limit the number of fish they take, the fishery can keep up with the harvest rate, and in the long run there will be more fish. If they take fish too rapidly, they may get a lot of fish, but the population doesn’t have time to replenish itself and may go to 0. Play again with no talking.

Group 2: Game with **Strategy** Provided

A good strategy for playing is for each person to take 1 or 2 fish most of the time. This will allow the population to last longer. But you are free to make your own choice. Play again with no talking.

Group 3: Game with **Communication and Cooperation**

Before you play again, talk together about how you are going to play the game. You may continue to talk during the game and decide together how many fish to take.

Discussion Questions

- Ask each group to explain how they managed their fishing grounds. Was there any difference in results between the first three years and the second three played with variations.
- Which group caught the most fish? Which had the greatest increase in population? Ask students which way they think is best for the fish, and which is best for the individual fisherman?
- What do students need to know to be able to harvest a resource sustainably? (e.g., population size, life cycles and reproductive capacity, market demand).
- What is necessary to put this information into practice? (e.g., leadership, communication, trust, regulations, understanding of consequences, examples of failure).
- Do students know of any locally-managed fisheries?

Fish Data Table

	Number fish remaining in the fishery	Number of fish caught per person (list each person's catch)	Number of fish caught per group
<u>Group 1</u> After 3 years			
After 3 more years with information			
<u>Group 2</u> After 3 years			
After 3 more years with strategy			
<u>Group 3</u> After 3 years			
After 3 more years with communication			

Based on “The Tragedy of the Commons Game” from 4-H Youth Programs, Cooperative Extension Service, Michigan State University, ©1991 Michigan State Board of Trustees.