Tragedy of the Commons Simulation

PURPOSE AND BACKGROUND

The purpose of this simulation is to explore how resources are used and exploited when they are available to multiple parties. The "tragedy of the commons" is the situation in which individuals use a common resource for their own personal gain and degradation of the commons results, leading to a decrease in yield for both the group and the individual. In 1968, ecologist Garrett Harden published an essay titled "the tragedy of the commons". Hardin argued that the main difficulty in solving environmental problems is the conflict between the short lived self interest of individuals, and the long term welfare of society. According to Harden, someone or some group had to take responsibility for maintaining a resource. If no one takes that responsibility, the resource can be overused and become depleted.

MATERIALS AND EQUIPMENT USED

Food source (Gold Fish)
Straw (fishing pole)
Large Paper Plate or Bowl (common pond)
Small Cups (for holding fish caught)

PROCEDURE

Part I:

Divide yourselves into groups of four.

Imagine this scenario. Each one of you represents the head of a family that is starving. The only food source for these four families is a small fishing hole which is covered. In this simulation, the common pond is a large paper plate, your fishing pole is a straw, and the food source is given to you by the teacher. You must fish by sucking up the "fish" form the "lake" with straws. You will get a chance to **fish once a year (which last one minute)** and each time you fish you may take 0, 1, 2, 3, or 4 fish from the lake. You should rotate your fishing order every year so that everyone has a chance to go first. **It is your choice of how many fish you take, however, if you only take one fish, your family will starve. If you take more than 2 fish, you can sell them for profit.**

The fish in your lake will reproduce once a year. **[See your teacher at the end of each year- each remaining fish is able to spontaneously reproduce and make one new fish (4 fish become 8, i.e., to a maximum of 16)]** The simulation will continue for several rounds**.** When your group runs out of fish, the game is over for you.

DO NOT TALK OR COMMUNICATE WHILE FISHING!!\

RESULTS

Part I: Commons pond

Round #	Initial # of fish	# taken by fisher 1 _____	# taken by fisher 2 _____	# taken by fisher 3 _____	# taken by fisher 4 _____	Total left at the end of the round
Total fish caught						

Part II:
This part is exactly like the first, except that in this simulation, except members of the community are allowed to communicate plan, and talk.

Part II: Commons pond

Round #	Initial # of fish _____	# taken by fisher 1 _____	# taken by fisher 2 _____	# taken by fisher 3 _____	# taken by fisher 4 _____	Total left at the end of the round
1						
2						
3						
4						
Total Fish Caught						

ANALYSIS
Discuss your results and make sure that you answer the following questions:

1. What happened to the common resource in Part I? Why?

2. Did you get different results for the pond in Part II? Why?

3. In Part II, how did your strategy change, it at all? Does it make a difference to know what the rewards are?

4. Did anyone in your group take too many fish?
    a. How did that make you feel?
    b. Did everyone try to take as many as possible? Why or why not?
    c. Does society reward those with the "most"

5. Did anyone sacrifice the # of fish, for the good of the community? Why or why not?
    a. Does society ever reward that type of person?

6. Is it possible to maximize the number of fish caught per person AND the number of fish remaining in the pond at the same time? Why or why not?

7. Think of school commons you are familiar with (parking lots, bathrooms, lunch, lockers…) Do similar situations arise? Explain how might those problems be solved?

8. Name a local (Durham or surrounding County) natural resource that is a common resource? Do similar situations arise? Explain. How might those problems be solved?

9. Name a state (North Carolina) natural resource that is a common resource? Do similar situations arise? Explain. How might those problems be solved?

10. Name a national (United States) natural resource that is a common resource? Do similar situations arise? Explain. How might those problems be solved?

11. Name a global (the world) natural resource that is a common resource? Do similar situations arise? Explain. How might those problems be solved?

12. What are the global commons? Are these being used wisely? Why or why not?

13. Why does common usage lead to exploitation?

14. What can people do to use these resources most wisely? What would be the ideal way to manage the common pond?

15. If you cooperated with other fishers, what was the result of that cooperation?

CONCLUSION

Write a paragraph, briefly summarizing the results of this simulation, and discuss the implications of this simulation on the management of common resources in the environment. What other resource management examples can you think of where this topic is relevant? What would you suggest in these situations?

SUGGESTIONS FOR FURTHER INVESTIGATION

What changes would you make to this lab to advance your studies on this subject matter?