“The Tragedy of the Commons”

James River Fishing Activity

This is a simulation of what could happen in a river, lake and ocean if resources are mismanaged. Your group will need the following materials to complete this lab:

1 paper plate
16 “Multi – colored “Goldfish” crackers
4 straws (or one for each person)
4 dixie cups (or one for each person)

Each member in your group will represent a fishing company. This company sells the fish for profit. The plate will represent the James River, the “Goldfish will represent real fish, the straws will represent fishing boats/poles, and the cups will represent the number of fish each company has caught. Follow the directions below; make sure each fishing season’s fish catch is recorded on the data table.

1. Begin by placing 16 multi-colored gold fish on a paper plate. When the signal is given, each member of their group will have 10 seconds to fish the James River. You do this by sucking up air through the straw and picking up a “Goldfish” and placing them in the cup. You are not allowed to use your hands on the straw expect to hold your cup. Each fish company is required to catch at least one fish, or your company will suffer a catastrophic famine. It’s all up to you! At the end of the simulation, a prize will be given to the person in your group who has caught the most fish, so do your best! Finally, keep your fish in the cups and don’t eat them until counted! No stealing fish from other companies or you may go to jail.

2. At the end of the ten seconds (the end of the first season), count how many fish you caught and enter this on the data table. Now each fish that is left in the ocean will be given a chance to reproduce. However, I won’t tell you how many can reproduce and at what rate until after the first season!

3. Once you have finished the first season, go back and repeat steps #1 and #2 until you have fished for a total of 6 seasons, or until you have no more Goldfish remaining.
Data Table: 1.1

<table>
<thead>
<tr>
<th>Season #</th>
<th># of Fish left in the River</th>
<th>Catch of Person #1</th>
<th>Catch of Person #2</th>
<th>Catch of Person #3</th>
<th>Catch of Person #4</th>
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<tbody>
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<td>Totals:</td>
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Conclusion Questions:

1. Was your James River fishing sustainable? In other words at any point did you run out of fish in the James River? Is so, what season? Why did this happen?

2. Why do you suppose I didn’t tell you how many fish could reproduce, and at what rate, until after the first season? Is this comparable to what really happens in “real life”? Explain in detail.

3. Did your groups fishing strategy change after I told you how the “Goldfish” reproduced? If so, in what ways?
4. What incentive was there for you to fish as much as you could as an individual company? Give at least 2 reasons.

5. Were there any disincentive(s) for fishing as much as possible? Give at least 3 reasons.

6. Were there any incentive(s) for cooperation among countries? If so, what were they? Do you think this type of cooperation goes on in real life?

7. What does the term maximum sustainable yield mean?
8. In 1968, ecologist Garrett Hardin brought the issue of overuse of common resources to the attention of the broader scientific community when he described the tragedy of the commons: the tendency of a shared, limited resource to become depleted because people act from self-interest for short-term gain. In this essay, he describes the following as an example of this concept: “In short, when individuals use a common resource for their own personal gain, inevitably this will result in the degradation of the common resource, decreasing the yield for the individual and the entire group eventually. This happens because everyone takes ownership for the benefits they can receive from the common resources, but no one individual takes ownership or responsibility for the negative consequences of overusing that resource.”

Do you agree with Hardin’s assertion? Please write one paragraph on why or why not?

9. How could we modify this simulation to make it sustainable? In other words, how could “the fishing companies” avoid the “Tragedy of the Commons”?

10. If you were president, what type of law or Act would you create? Would this solve the problem?
11. List at least 5 other common resources, besides the “James River”, that may face the “Tragedy of the Commons”.

12. Another example of a common resource is the ocean. Explain how man fishes the ocean commercially? Click on the link below to watch a 52 second video explain what a trawling net is and do you think this practice sustainable or non-sustainable?

https://www.youtube.com/watch?&v=BnmGBdDNZ278Y&noredirect=1

13. What does the term bycatch mean? How does this term relate to the tragedy of the commons?

14. Homework Assignment: Name a common resource that has been depleted in Virginia (or your state). How has that resource become depleted? Using a computer, create a 4 to 5 slide powerpoint presentation concerning this common resource and why and how it could be depleted.