

Activity 1: Sharing Natural Resources

Objective: Simulate the sharing of natural resources and compare the management of public and private resources.

Materials (per group of 4):

one large plate

cup to hold “extra” goldfish crackers

goldfish crackers (or similar food items)

four small plates

copies of data table

calculator (optional)

Directions:

Simulation A: Using Shared Resources

1. Work in groups of 4. Place the large plate in the center of a table. Put 16 goldfish crackers on the plate.

The plate represents a pond and the goldfish crackers represent fish that you need to catch to stay alive. The rules of the simulation are as follows:

- (a) The pond can't hold more than 16 fish.
 - (b) Every “month” (round 1, 2, 3, 4) each person needs to catch and eat at least 2 fish to get enough protein to stay alive.
 - (c) The fish that are alive at the end of each round will reproduce. For example, if there are 5 fish in the pond they will double to 10. If there are 9 fish in the pond they will all try to double, but the pond can't hold more than 16 so the total will be 16, not 18 (2 of the 9 don't get to reproduce).
2. Start round 1. Have each person take a turn fishing. Remember: You must eat at least 2 fish to stay alive but you may take more than 2 if you are hungry.
 3. At the end of round 1, record how many fish each person ate in your data chart. Also record how many fish are left in the pond.
 4. Have the remaining fish double but remember that the pond can't hold more than 16 fish (this is important if you have a group of 2 or 3 people instead of 4). Record the number of fish in the pond after they have reproduced.
 5. Repeat steps 2, 3, and 4 for round 2; then for round 3; then for round 4.
 6. At the end of round 4, add up the total number of fish caught during the simulation and the total number of fish remaining in the pond at the end of the activity.

Simulation B: Using Shared and Private Resources

You will be repeating the simulation above, with a few changes:

- (a) The shared pond stays in the center but **each person also has a privately owned pond** (give each person a small plate to represent his or her private pond).
- (b) The common pond still holds 16 fish but **each private pond can hold only 3 fish**.
- (c) You still need at least 2 fish each round to stay alive BUT **you can take fish from the shared pond and/or your private pond each round** – you can take from the shared pond, the common pond, or from both.
- (d) The fish in the common pond can still double (up to 16) each round but the private **pond fish can double but can't go higher than 3**. For example, 1 remaining fish doubles to 2 but 2 remaining fish increase to 3.

Run all 4 rounds of the second simulation and record your data at the end of each round.

Now answer the analysis and conclusion questions at the end of the activity and discuss them with your group and other groups. Your discussion should help you understand why managing and protecting shared or limited resources like air and water is so much more difficult than managing privately owned resources! Protecting our environment and conserving our resources is a worldwide challenge.

Sharing Natural Resources: Data Sheet

Name _____

Objective: Simulate the sharing of natural resources and compare the management of public and private resources.

Materials (per group of 4):

- one large plate
- cup to hold “extra” goldfish crackers
- goldfish crackers (or similar food items)

- four small plates
- copies of data table
- calculator (optional)



Part A: Shared Resources

Round Number	Fish Caught: Person A	Fish Caught: Person B	Fish Caught: Person C	Fish Caught: Person D	Fish Remaining in SHARED Pond at End of Round	Fish in Pond After Doubling (16 max)
1						
2						
3						
4						
Total Fish Caught per Person ==>					Grand Total Caught by all 4 people = _____	



Part B: Shared Resources and Private Resources



Round Number	Fish Caught: Person A	Fish Caught: Person B	Fish Caught: Person C	Fish Caught: Person D	Fish Remaining in SHARED Pond at End of Round	Fish in SHARED Pond After Doubling (16 max)	Fish left in PRIVATE Ponds				Fish Left in PRIVATE Ponds After Doubling (3 max each)
							A	B	C	D	
1											
2											
3											
4											
Total Fish Caught per Person →					Grand Total Caught = _____						

Analysis and Conclusion: Discuss these questions with your group and with other groups.

1. Describe what tended to happen to each group's fish population in the shared pond during Simulation A. Why do you think this happened?
2. If everyone in your group took 2 fish each round your group could have caught a total of 32 fish without decreasing the fish population in the pond. How many fish did your group catch? If less than 32, why?
3. Describe what tended to happen to each group's fish population in the shared population during Simulation B. What happened to the fish population in each person's private pond?
4. If everyone in your group took 1 fish from the private pond and 2 fish from the shared pond each round, your group could have caught a total of 48 fish without decreasing the fish populations in any of the ponds. How many fish did your group catch? If less than 48, why?
5. Why do you think shared resources are more likely to be used up than private resources?