



Biological Magnification Lab

In this activity you will be simulating the process of *BIOLOGICAL MAGNIFICATION* in an ecosystem. When a pollutant or toxin (something bad) enters the environment it affects all living things. It especially affects the larger animals such as panthers, eagles, and alligators.

Problem:

“ Which animal has the **most** amount of pollution for their size in an ecosystem?”

Hypothesis:

Materials:

1 Large, 3 medium, and 9 small disposable cups

Candy pieces

Procedures:

1. Each cup represents an organism at a different level in the food chain. The large cup is your top predator, the medium is your middle predator, and your smallest cup is your first animal in the food chain. For example: Large=eagle, medium=fish, small-shrimp.
2. Record the number of candy pieces in each cup as you do each step in the data table on page 2.
3. The candy pieces will each represent an amount of toxin (pollutant) that is in the food being eaten by the small cup (shrimp) a day.
 - a. Each small cup (shrimp) can only eat 2 pieces of candy.
 - b. Put 2 pieces of candy into each one of your 9 small shrimp cups.
 - c. Now your medium fish cups are going to eat those shrimp cups into the 3 medium fish cups. (Remember, three shrimp each fish). How many pieces of candy does each of the medium fish cups have now?
 - d. Your 1 big (eagle cup) can eat 3 fish a day. Put all the candy from the 3 medium fish cups into the 1 large eagle cup. (Remember, the eagle can eat 3 medium fish cups a day). How many pieces of candy does the eagle have in its body now?

4. Now for each type of cup, fill it as much as possible with the candy pieces. Count how many each pieces maximum each cup can hold at one time. Record this number.
5. Divide the number each had after eating by the maximum number of candy pieces they can hold. Multiply this number by a 100. This is you`re percentage of pollution each animal has after eating. Record this number as well.

Data Table

Animal	Shrimp (small cup)	Fish (medium cup)	Eagle (large cup)
Number of pieces in each of the food chain			
Maximum amount of pieces each animal (cup) can hold			
Amount of candy pieces after eating/ total maximum possible it can hold $\times 100 = \text{percent pollution}$			

Analyze (thinking and talk about it):

1. How many pieces of candy did each shrimp have in its body?
2. How many pieces of candy did each of the fish have in its bodies?
3. Who gets the pollutant first?
4. Who gets it last? How?

Conclusion: Answer the following questions to complete the conclusion.

1. Did the evidence support that your hypothesis was right or wrong? Why do you know this?
2. Use the numbers (data) from your chart to talk about this: Which animal do you think would get the sickest first? Why?
3. What kind of things can be done to reduce the amount of pollutants in the environment?
4. Why is it important to get rid of pollution in the environment?