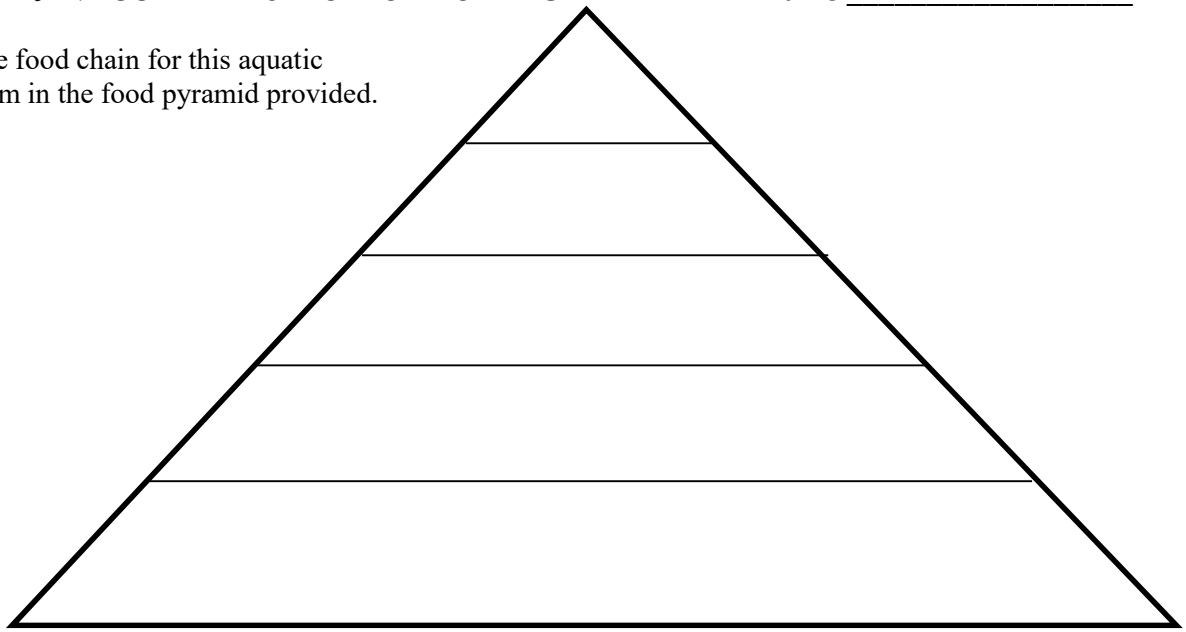
Activity—Accumulation of Toxins

Name _____

Show the food chain for this aquatic ecosystem in the food pyramid provided.



Individual Data:

Organism:	Normal	Red	Orange	Yellow	Green	Blue	Total

Class Data:

Organism	Pop. Size	Normal	Red	Orange	Yellow	Green	Blue	Total
Phytoplankton								
Daphnia								
Herring								
Salmon								
Orca								

Post activity questions:

1. On the previous page of the packet, label the energy pyramid with: producers, primary consumers, secondary consumers, etc.

2. Using the class data, calculate the average number of toothpicks (sum of all colors) absorbed by a single phytoplankton. (Note: the average is = total toothpicks ÷ number of individuals)

3. Next, calculate the average number of each color absorbed by a single phytoplankton. Create a table to show calculations.

4. Use the data to calculate the percentages of each type of pollutant absorbed by a single phytoplankton. Hint: % = [(number of toothpick color ÷ total number of toothpicks) ÷ # of phytoplankton] x 100

5. Fill in the table above by recording the data for daphnia, herring, salmon, and orca from the Excel spreadsheet.

Class Average Data (% per individual organism):

Organism	Total	Red	Orange	Yellow	Green	Blue	Normal
Phytoplankton							
Daphnia							
Herring							
Salmon							
Orca							

6. Create a bar graph showing the average total % and average contamination % for each organism. Use the corresponding toothpick color for each bar.

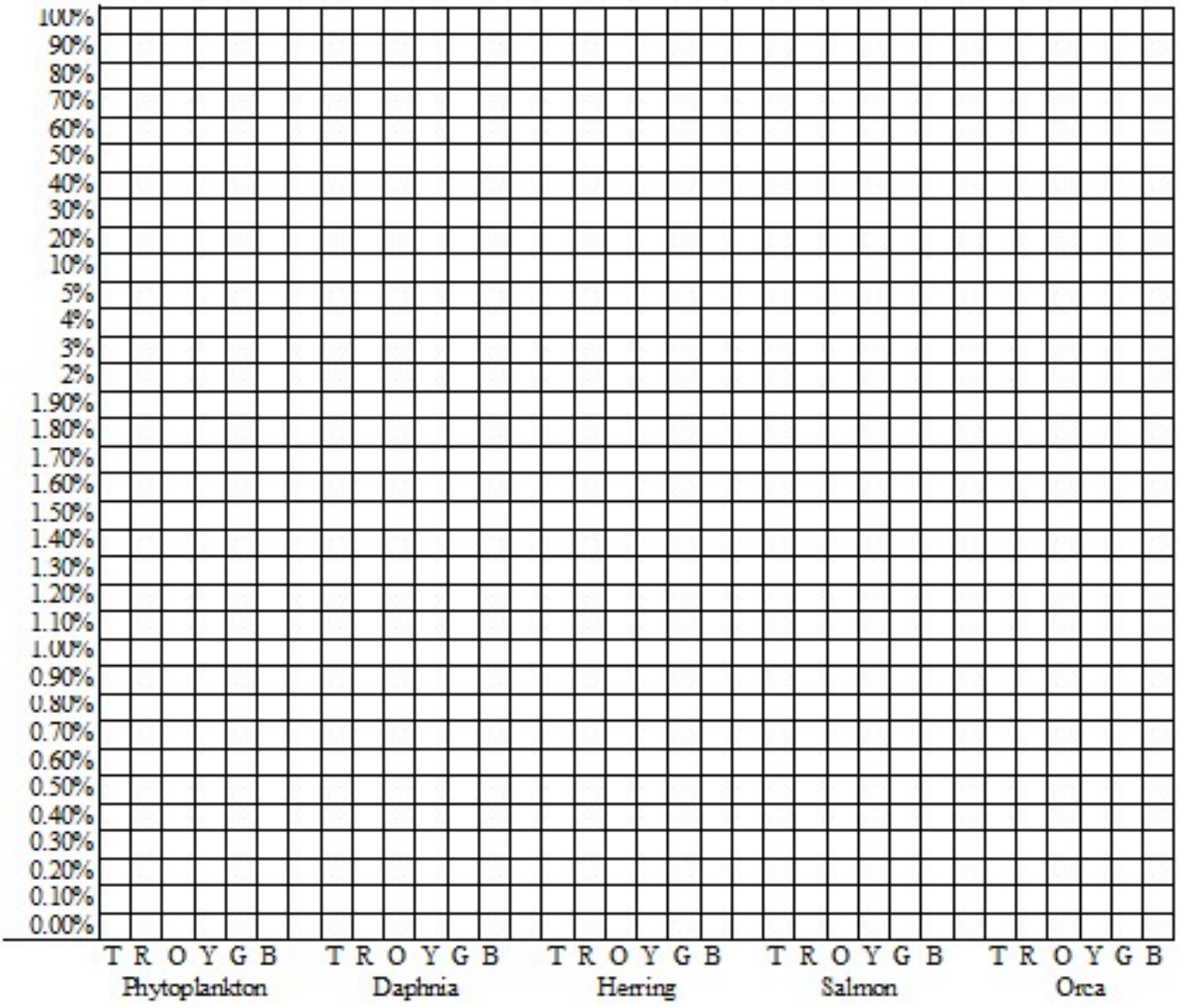
7. At what trophic level did the accumulation (build up) of toxins begin to create health problems? Use the average number of toothpicks as evidence. Put a star above each bar graph that represents potential health problems.

8. Using the data above, what conclusions can you draw about accumulation of toxins in the food web?

9. Having conducted this lab, explain what the term biomagnification means related to the buildup of toxins.

10. List at least 5 top consumers found on Earth. Explain why they are most susceptible to toxins.

Biomagnification of Toxins in a Food Web



Key:

T = Total Food Eaten as Avg. % per Individual

R =

O =

Y =

G =

B =